



August 14, 2015

Mr. Craig Rankine  
Site Manager  
Department of Ecology  
2108 Grand Blvd, MS: S-70  
Vancouver, Washington 98661-4622

Re: Semi-Annual Groundwater Monitoring Report  
January through June 2015  
NuStar Vancouver Facility  
Vancouver, Washington  
1126-17

Dear Mr. Rankine:

Enclosed, please find the Semi-Annual Groundwater Monitoring Report for January to June 2015. The report was prepared on behalf of NuStar Terminals Services, Inc. (NuStar) by Apex Companies, LLC (Apex) and presents data collected from January to June 2015.

If you have any questions or would like to discuss this further, please contact me at (503) 924-4704 ext. 1925.

Sincerely,

A handwritten signature in black ink that reads 'Stephanie B. Salisbury'. The signature is written in a cursive, flowing style.

Stephanie Bosze Salisbury, L.G.  
Associate Geologist

**ATTACHMENT**

Semi-Annual Groundwater Monitoring Report, January through June 2015 (2 hard copies)

**cc:** Ms. Renee Robinson, NuStar Energy, L.P. (electronic deliverable)  
Mr. Joe Aldridge, NuStar Energy L.P. (electronic deliverable)  
Ms. Patty Boyden, Port of Vancouver (1 digital [CD-ROM] copy)  
Mr. Richard Roché, Parametrix (1 digital [CD-ROM] copy)  
Mr. Stephan Rosen, NuStar Energy L.P. (1 digital [CD-ROM] copy)



*Semi-Annual Groundwater  
Monitoring Report  
January through June 2015  
NuStar Vancouver Facility  
Vancouver, Washington*

Prepared for:  
NuStar Terminals Services, Inc.

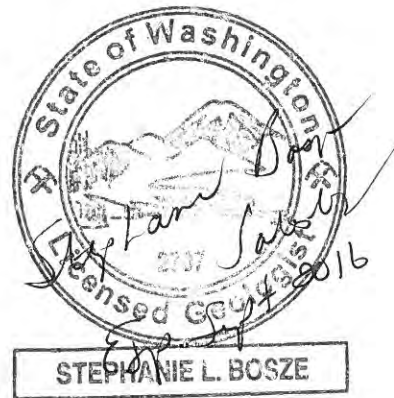
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**Semi-Annual Groundwater Monitoring Report  
January through June 2015  
NuStar Vancouver Facility  
Vancouver, Washington**

**Prepared for:  
NuStar Terminals Services, Inc.**

**August 14, 2015  
1126-17**



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*Stephanie Bosze Salisbury, L.G.  
Associate Geologist*

A handwritten signature in blue ink, appearing to read 'Amanda Spencer', written over a horizontal line.

*Amanda Spencer  
Principal Hydrogeologist*

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## **1.0 Introduction**

This semi-annual groundwater monitoring report was prepared by Apex Companies, LLC (Apex) on behalf of NuStar Terminals Services, Inc. (NuStar) for the NuStar Vancouver Facility (Facility) in Vancouver, Washington (Figure 1). This report presents the results of the groundwater monitoring activities completed at the Facility during the first and second quarters of 2015. Additionally, the report includes a summary and evaluation of interim action monitoring data for the reporting period.

The Facility is located at the Port of Vancouver (POV) Terminal No. 2 in Vancouver, Washington (Figure 1). The Facility Site Plan is shown on Figure 2. The property is roughly rectangular with nominal dimensions of 600 by 1,300 feet, and a total area of about 19 acres, and is on the north shore of the Columbia River. Industrial properties owned by the POV border the remaining sides of the Facility.

## **2.0 Groundwater Monitoring Field Activities**

The groundwater monitoring was performed in accordance with the *Groundwater Monitoring Plan* (GWMP; Ash Creek, 2008), which was approved by the Washington State Department of Ecology (Ecology) in a letter to NuStar dated July 30, 2009. The monitoring program for January through June 2015 is summarized in Table 1.

Two monitoring events were conducted during this period: the first quarter 2015 groundwater monitoring event was conducted from March 17 through 20, 2015 and the second quarter 2015 event was conducted from June 15 through 19, 2015.

### **2.1 Water Level Measurements**

First quarter 2015 groundwater levels were measured on March 15, 2015 and second quarter 2015 groundwater levels were measured on June 15, 2015. Monitoring well locations are shown on the Facility Site Plan (Figure 2). The wells are screened in three different groundwater zones: Shallow, Intermediate, and Deep. The depth to groundwater was measured at Facility monitoring wells, multi-level groundwater monitoring (MGMS) wells (second quarter only), and selected off-site wells (MW-14, MW-17, MW-23i, MW-25i, MW-26, MW-30i, MW-31i, MW-32s, MW-32i, MW-E, MW-F, MW-G, S-1 and S-2). Multiple ground water wells MGMS1-3, MGMS2, and MGMS3 were not gauged during the first quarter gauging event as the narrow diameter water level probe required for those wells was not functioning properly. The groundwater elevation data are listed in Table 2.

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## 2.2 Monitoring Well Sampling and Analysis

The sampling and analysis program for first and second quarter 2015 is summarized in Table 1. Groundwater monitoring data sheets for the sampling events are included in Appendix A. In addition to the monitoring program samples, field blanks, trip blanks, equipment blanks, matrix spike/matrix spike duplicate (MS/MSD) samples from well MW-16, and duplicate samples from MGMS3-4(40), MW-7, MW-12, and MW-19 were collected during the first and second quarter 2015 monitoring events for quality assurance/quality control (QA/QC) purposes. During the first and second quarter 2015 groundwater monitoring events, well EW-1 did not have sufficient water for sampling.

For both sampling events, the samples were uniquely labeled, stored in an insulated cooler with ice, and transported under chain-of-custody protocol to Pace Analytical Laboratory (Pace) in Davis, California for laboratory analysis. Samples were analyzed for selected volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B (EPA Method 8021 list). Groundwater analytical results for both events are shown in Table 3. Historical data are tabulated in Appendix B.

## 3.0 Groundwater Elevations

Depth-to-groundwater measurements made during the first and second quarter 2015 monitoring events are listed in Table 2. Groundwater elevations and estimated elevation contours for the Shallow and Intermediate Zone wells for the first quarter 2015 are shown on Figures 3 and 4, respectively. Groundwater elevations and estimated elevation contours for the Shallow and Intermediate Zone wells for the second quarter 2015 are shown on Figures 5 and 6, respectively.

### 3.1 First Quarter 2015

**Shallow Zone.** On March 17, 2015, depth-to-groundwater measurements were made at Shallow Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. The observed depths to groundwater in these wells ranged from 24.02 to 31.60 feet below the ground surface (bgs), and the corresponding groundwater elevations in these wells ranged from 5.40 to 9.13 feet above mean sea level (MSL; Figure 3).

During the first quarter 2015 monitoring event, gauging of the Shallow Zone wells was completed between 8:23 am and 10:15 a.m. During the time interval in which Shallow Zone monitoring wells were gauged, the water level in the adjacent Columbia River decreased by 0.33 feet. River stage data were obtained from the nearest National Oceanographic and Atmospheric Administration (NOAA) tide station (Columbia River – Vancouver), which is located approximately 0.5 mile upstream of the Facility.

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During the first quarter 2015 gauging event, the groundwater gradient at the western portion of the Site the gradient was 0.007 foot per foot (ft/ft) towards the river. At the eastern portion of the Site there was a groundwater divide located near well MW-16 with a gradient of 0.0004 ft/ft towards the river and 0.003 ft/ft towards the northeast.

**Intermediate Zone.** On March 17, 2015, depth-to-groundwater measurements were made at Intermediate Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. Groundwater levels in Intermediate Zone wells were measured collectively during a predicted tidal inflection to minimize the magnitude of tidal influence on water levels during the gauging event. Water levels were collected from Intermediate Zone wells within 73 minutes (between 10:16 a.m. and 11:29 am.). During the time interval in which Intermediate Zone wells were gauged, water levels in the adjacent Columbia River decreased by 0.14 foot.

The observed depths to groundwater in the Intermediate Zone wells ranged from 22.76 to 27.40 feet bgs, and groundwater elevations in these wells ranged from 6.93 to 7.16 feet above MSL (Figure 4). Groundwater flow was to the north/northeast with a slight gradient of approximately 0.0002 ft/ft.

**Deep Zone.** Depth to groundwater was measured in well MW-24d, which is screened from 210 to 230 feet bgs, within the Troutdale Formation. Depth to water in well MW-24d was 26.65 feet bgs, corresponding to an elevation of 7.26 feet above MSL. A groundwater potentiometric map was not prepared for Deep Zone groundwater.

### **3.2 Second Quarter 2015**

**Shallow Zone.** On June 15, 2015, depth-to-groundwater measurements were made at Shallow Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. The observed depths to groundwater in these wells ranged from 25.38 to 32.74 feet bgs, and groundwater elevations in these wells ranged from 4.86 to 7.71 feet above MSL (Figure 5).

During the second quarter 2015 monitoring event, gauging of the Shallow Zone wells was completed between 8:12 a.m. and 11:17 a.m. During the gauging activities, the water level in the adjacent Columbia River decreased by 1.14 feet. Groundwater flow in the western portion of the site the gradient was 0.005 ft/ft to the southwest and in the eastern portion of the side there is a groundwater high near well MW-3 with a gradient of 0.002 ft/ft to the northeast and 0.004 ft/ft to the southwest.

**Intermediate Zone.** On June 15, 2015, depth-to-groundwater measurements were made at Intermediate Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. Water levels were collected from Intermediate Zone wells within 58 minutes (between 1:12 pm. and 2:10 p.m.). During the Intermediate Zone gauging event, water levels in the adjacent Columbia River decreased by 0.20 foot. The observed depths to groundwater in these wells ranged from 24.85 to



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29.48 feet bgs, and groundwater elevations in these wells ranged from 4.70 to 5.16 feet above MSL (Figure 6). During the June gauging event there was a groundwater high located near well MW-21i-105 with a gradient toward the river of approximately 0.0007 ft/ft.

**Deep Zone.** Depth to water in Deep Zone well MW-24d was 28.51 feet bgs, corresponding to an elevation of 5.40 feet above MSL.

## **4.0 Groundwater Sample Analytical Results**

Complete copies of the laboratory reports for the first and second quarter 2015 groundwater monitoring events, including the quality assurance evaluation report and chain-of-custody documentation, are included in Appendix C.

### **4.1 First Quarter 2015**

The March 2015 monitoring program included the collection of groundwater samples from the wells listed in the first column of Table 1. The sample results for first quarter 2015 are summarized in Table 3 and select VOCs are shown on Figure 7.

### **4.2 Second Quarter 2015**

The June 2015 monitoring program included the collection of groundwater samples from the wells listed in the second column of Table 1. The sample results for second quarter 2015 are summarized in Table 3 and select VOCs are shown on Figure 8.

### **4.3 Evaluation of Results**

VOC concentration trend plots for each monitoring well are provided in Appendix D. Monitoring results demonstrate decreasing VOC concentration trends in Shallow and Intermediate Zone groundwater in 32 of 33 monitoring wells, the exception being well MGMS3-132, which exhibited a flat concentration trend. Monitoring wells in the source area exhibit concentration decreases of over 99% for tetrachloroethene (PCE) and trichloroethene (TCE) since initiating interim actions in 2008 and 2011. VOCs in monitoring wells on the periphery or outside of the source area also reflect historical decreasing trends.

## **5.0 Interim Action Measure Activities**

An interim action was implemented at the Facility during the spring/summer of 2008 and included bioremediation injections for remediation of site groundwater and the installation of a soil vapor extraction (SVE) system for the remediation of VOCs in vadose-zone soils. These activities are herein

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referred to as the 2008 interim action. The interim action was expanded during the summer of 2011; the expansion is herein referred to as the 2011 interim action. The expansion included 17 additional SVE well locations (shallow and deeper SVE well pairs at each location; total of 34 wells), additional bioremediation injections in the 2008 interim action area, and bioremediation injections in an expanded interim action area. Details of the 2008 and 2011 interim actions are provided in the *Interim Action Installation Report* (Ash Creek, 2009b) and the *2011 Interim Action Evaluation Report* (Ash Creek, 2012), respectively, and are also summarized in the *First Semi-Annual 2013 Groundwater Monitoring Report* (Apex, 2013).

## 5.1 Summary of 2008 Interim Action

The 2008 interim action consisted of SVE in the vadose zone and enhanced anaerobic bioremediation of the Shallow Zone groundwater. The 2008 enhanced bioremediation locations and the SVE system layout are provided in Appendix E. The 2008 SVE system removed approximately 3,150 pounds of VOCs between startup in September 2008 and the expansion in 2011. The mass removal rate at startup in 2008 was 58.8 pounds per day (lbs/day), and had decreased to an average of 1.7 lbs/day during the third quarter of 2011. Historical monitoring tables and a mass removal chart are provided in Appendix E.

## 5.2 Summary of 2011 Interim Action

A soil and groundwater investigation in 2010 indicated that the 2008 interim action had reduced VOCs in vadose-zone soils by 90 percent for PCE and 98 percent for TCE, and had reduced total molar ethene concentrations in source area groundwater by 77 percent (Ash Creek, 2011). The investigation results were summarized in an appendix to the *2011 Interim Action Work Plan* (Work Plan; Ash Creek, 2011) that was submitted to Ecology on March 25, 2011. The Work Plan included a proposal for the expansion of the SVE system to include 17 additional SVE well locations, additional bioremediation injections in the 2008 interim action area, and bioremediation injections in an expanded interim action area. On May 23, 2011, Ecology approved the Work Plan. The bioinjection activities were conducted from July 21 through August 31, 2011, and the SVE installation activities were conducted from August 2 through 5, 2011 and August 29 through October 3, 2011. The 2011 bioremediation injection locations are shown on Figure 9 and the 2011 SVE expansion layout is shown on Figure 10.

The original Facility SVE system, herein referred to as the 2008 SVE system, was comprised of 17 wells, divided among five branches, which were connected by a network of underground piping as shown on drawings provided in Appendix E. As part of the 2011 SVE system expansion, Branches 4 and 5 were disconnected from the other System branches and were connected to a new blower unit located approximately 150 feet to the northeast of the railroad tracks (Figure 10). The wells and piping associated with Branches 4 and 5 and the associated blower unit are herein referred to as the "North System".

From August 2 through 5, 2011, 17 additional SVE well pairs (for a total of 34 additional SVE wells) were installed within and to the south of Warehouse No. 13 (a.k.a. the Butler building), in general accordance with

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the *2011 Interim Action Work Plan* (Ash Creek, 2011). For each well pair, one well is screened in vadose-zone soils from 10 to 15 feet bgs and the second well is screened in vadose-zone soils from 15 to 25 feet bgs. These 17 well pairs, along with the Branch 1 through 3 wells from the 2008 SVE system, are piped underground to a blower unit located outside of the southeast corner of Warehouse No. 13. These SVE wells, associated underground piping, and the blower unit are herein referred to as the "South System". Effluent from the South System is treated with a series of two carbon vessels prior to discharge.

## **5.3 Interim Action Monitoring and Evaluation**

### **5.3.1 Enhanced Bioremediation Injections**

In conjunction with the first and second quarter 2015 monitoring events, additional groundwater samples were collected from wells MW-7, MW-12, MW-24i, MGMS2-40, EX, and MP-1, in order to evaluate the performance of the bioremediation injections. The samples collected from these wells were analyzed by Pace Analytical; for the following analyses:

- Total organic carbon (TOC; by EPA Method 5310 D); and
- Ethene by (EPA Method RSK-175M).

In addition to the laboratory analysis of groundwater samples, field measurements of oxidation-reduction potential (ORP) and dissolved oxygen (DO) were collected from the monitoring wells during the first and second quarter 2015 monitoring events. Table 4 shows the results of interim action groundwater monitoring from the February 2007 baseline event through the second quarter 2015 monitoring event. Wells MW-24i and MGMS2-40 were not located within the 2008 interim action injection area but are located within the 2011 interim action injection area; therefore, interim action monitoring data for these wells are only presented from the second quarter 2011 baseline event through fourth quarter 2014. Well MW-12 is located downgradient and outside of the 2011 interim action area and was not affected by the 2008 interim action. It is currently being used to monitor the effectiveness of the 2011 injections in areas downgradient and outside of the injection areas. Therefore, data for this well are also only presented from after the 2011 baseline event through second quarter 2015.

A discussion of reductive dechlorination of VOCs in groundwater from prior to the 2008 interim action through second quarter 2015 is provided below. It should be noted that while the injections occurred over a finite period of time, the 2011 interim action is considered ongoing until the injected substrate mass is spent and is being monitored quarterly for effectiveness.

**VOC Concentrations Evaluation.** Concentration trend plots for PCE, TCE, total dichloroethenes (DCE), and vinyl chloride (VC) in interim action area wells MW-7, EX, MP-1, and MGMS2-40 are provided in Appendix F. VOC data are included from the baseline event prior to the 2008 interim action (first quarter 2007; second quarter 2007 for well MGMS2-40) through June 2015.

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The concentration of PCE has decreased in each well, with observed reductions through June 2015 ranging from 77 percent in well MP-1 to over 93 percent in wells MW-7, EX, and MGMS2-40. Likewise, the concentration of TCE also decreased in the interim action monitoring wells with reductions through June 2015 of about 81 percent in well MP-1 and over 93 percent in wells MW-7, EX, and MGMS2-40. The concentrations of successive degradation products of PCE (sequentially TCE, cis-1,2-dichloroethene [cDCE], and VC) are often variable because these concentrations reflect the net conditions of these products being generated by the breakdown of the higher-order chloroethene and being subsequently reduced to further degradation products. As a result, it is not unusual to see temporary increases in concentrations of degradation products while the reductive dechlorination process is ongoing. Overall, the concentrations of PCE and TCE have shown a decreasing concentration trend since implementation of the interim action, while total DCE and VC have shown variable concentrations with less distinctive trends. After implementation of the 2011 interim action in August 2011, a marked increase in total DCE and, to a lesser extent, VC, was observed in the interim action area monitoring wells, indicating an increase in reductive dechlorination was occurring in response to the interim action. In interim action wells MGMS2-40, MW-7, and EX, the rapid increase in DCE concentration in response to the interim action injections has been followed by a decreasing trend for DCE.

Ethene is an end product of the reductive dechlorination process; the detection of ethene confirms the completion of the reductive dechlorination pathway and ultimate destruction of the target VOCs at the Facility. Ethene was detected in well MGMS2-40 during the March 2015 and June 2015 groundwater monitoring events at concentrations of 0.0081 milligrams per liter (mg/L) and 0.0340 mg/L, respectively. Ethene was not detected in the other interim action evaluation wells during the March and June 2015 monitoring events. As ethene is the end product of the reductive dechlorination process, the lack of ethene during the recent monitoring events may only be temporary and indicate limited mass from the preceding stage in the reductive dechlorination process (i.e. degradation of vinyl chloride). Furthermore, ethene is a short-lived stage in the process and can be difficult to “capture” when sampling with a three-month frequency. Additional monitoring is needed to better evaluate whether conditions for reductive dechlorination are still favorable in Shallow Zone groundwater at the Facility.

Another indicator of effective reduction of chlorinated ethenes is a decrease in the total molar chloroethene concentration (the combined molar concentration of PCE, TCE, DCE, and VC combined). The use of total molar concentrations allows an assessment of changes in the total number of related contaminant molecules as the reductive dechlorination process transitions from the relatively heavy PCE to the progressively lighter TCE, DCE, and VC. Molar concentration trend plots for wells MW-7, EX, MP-1, and MGMS2-40 are provided in Appendix F. Between the February 2007 baseline event and the June 2015 monitoring event, the decrease in total molar concentration in the interim action monitoring wells MP-1, MW-7, EX and MGMS2-40 ranged from 73 percent to over 99 percent.

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**Total Organic Carbon Evaluation.** The presence of elevated TOC indicates that the bioremediation injections have increased the electron donor carbon source needed to reductively dechlorinate the VOCs present in groundwater at the Facility. TOC concentrations in interim action area wells (MW-7, MP-1, EX, MW-12, MGMS2-40 and MW-24i) were analyzed prior to the 2011 bioinjections (second quarter 2011) and have been measured quarterly since then to allow an ongoing comparison and evaluation of whether TOC has been depleted. In all six wells, TOC increased significantly after the 2011 injections, with increases ranging from one to two orders of magnitude by September 2012. While June 2015 TOC concentrations still remain elevated above pre-2011 bioinjection concentrations in well MW-7, TOC concentrations in the remaining interim action evaluation wells, EX, MP-1, MW-12, MW-24i and MGMS2-40, have decreased to at or below pre-injection concentrations for the first time since second quarter 2011. The noted decrease in TOC in interim action wells suggest that the injection substrate may be depleted or near-depletion in the 2011 interim action area. Other indicators of reductive dechlorination (DO, ORP, etc.) were also evaluated for this monitoring event, as described in the sections below.

**Oxidation-Reduction Potential and Dissolved Oxygen Evaluation.** Negative ORP and low DO concentrations are strong indicators of the anaerobic conditions suitable for reductive dechlorination. Of the Shallow Zone wells located in the 2011 interim action area (MW-7, MP-1, EX and MGMS2-40), ORP decreased from positive to negative between the 2011 interim action baseline sampling event in June 2011 and the event following injection of the substrate in December 2011. ORP values during the second quarter 2015 monitoring event were negative in five of the six wells used to evaluate the interim action (MW-7, MP-1, EX, MW-24i and MGMS2-40). These data suggest that anaerobic conditions suitable for reductive dechlorination may still be present in the interim action area.

While there has been some variability in DO concentrations since implementation of the interim action, DO concentrations were above 1.0 mg/L during the first and second quarters of 2015, with the exception of wells MP-1 and MW-12. DO concentrations in well MGMS2-40 was greater than one, but were below DO concentrations present prior to the 2011 bioinjections. Future monitoring of DO and other indicators of reductive dechlorination (VOCs, TOC, ORP, etc.) will evaluate if groundwater conditions are still suitable for anaerobic degradation of chlorinated VOCs.

**Summary of Enhanced Bioremediation Results.** The 2011 groundwater interim action was implemented in July and August 2011 and included over 155 bioremediation injections across the primary source area and surrounding vicinity. Since implementation, groundwater in the 2011 interim action area has been monitored quarterly for indicators of reductive dechlorination. The results from the first and second 2015 events indicated that enhanced reductive dechlorination is continuing to treat source area groundwater as evidenced by the following.

- PCE and TCE concentrations are consistently decreasing (greater than 93% reduction in three of four interim action area wells).

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- Observed trends in breakdown product concentrations are consistent with accelerated reductive dechlorination.
  - ORP values are negative in five out of six interim action monitoring wells.

Ethene (the final breakdown product of reductive dechlorination) was only present in one of six interim action monitoring wells during the March and June 2015 groundwater monitoring events, compared to five of six monitoring wells during the June 2014 event. TOC has decreased to at or below pre-2011 injection concentrations in four out of six interim action evaluation wells. While VOC concentrations continue to decrease at the Site, ethene and TOC data indicate that groundwater conditions in the interim action area may be becoming less suitable for anaerobic degradation. Continued quarterly monitoring will be used to evaluate the ongoing effectiveness of the interim action.

**VOC Reductions in Intermediate Zone Groundwater.** Concentration trends for PCE continue to decrease in all 15 Intermediate Zone monitoring wells. Data indicate that the current interim action is aiding in the reduction of VOCs in Intermediate Zone groundwater beneath the source area as evidenced by the following second quarter 2015 data for well MW-24i.

- PCE and TCE concentrations have decreased by two orders of magnitude since the well was initially sampled in October 2010. PCE values have decreased from 0.052 mg/L in October 2010 to less than 0.00050 mg/L in June 2015. TCE values have decreased from 0.029 mg/L in October 2010 to less than 0.00050 mg/L in June 2015. The concentrations of PCE and TCE in well MW-24i are currently below Ecology's Model Toxics Control Act (MTCA) Method A cleanup levels.
- ORP concentrations are negative suggesting reductive dechlorination has been occurring under anaerobic conditions. Prior to the interim action, ORP concentrations in the well were positive.

Concentrations of VOCs in source area (Shallow Zone) groundwater are rapidly decreasing in response to the 2011 interim action, thus limiting the VOC mass available to migrate to Intermediate Zone groundwater.

### **5.3.2 SVE Monitoring Evaluation**

The following paragraphs summarize the monitoring and analytical results as well as the total VOC mass removal for the North and South SVE Systems at the Facility. Field vapor measurements were collected with a photoionization detector (PID) and effluent vapor samples from the SVE systems were collected into Summa™ canisters and submitted to TestAmerica Laboratories (Test America) in Los Angeles, California, for analysis of VOCs by method TO-15.

Monthly SVE monitoring events occurred on January 26, February 26, March 30, April 24, and May 28 during this reporting period. North SVE System operating data and analytical data are provided in Tables 5 and 6, respectively. South SVE System operating data and analytical data are provided in Tables 7 and 8, respectively.

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**SVE System Mass Removal.** The approximate VOC mass removed by the North and South SVE Systems through June 2015 is presented in Tables 9 and 10 and on Figures 11 and 12, respectively. The North and South Systems have removed approximately 190 and 2,049 pounds of VOCs since startup in October 2011, respectively. Including the mass removed from the 2008 SVE System, the total mass removal by SVE at the Facility to date is approximately 5,390 pounds.

## **6.0 Future Activities**

Quarterly groundwater monitoring for the third and fourth quarters of 2015 will be conducted in September and December 2015, respectively. The proposed sampling will be completed in general accordance with the GWMP (Ash Creek, 2008). SVE operations and maintenance will occur on a monthly basis in accordance with the schedule proposed in the *2011 Interim Action Evaluation Report* (Ash Creek, 2012). A joint Draft NuStar – Port of Vancouver Feasibility Study (FS) was submitted to Ecology in January 2015, and the report is currently posted for public review and comment. A Draft Cleanup Action Plan will be submitted to Ecology within 60 days after Ecology approval of the FS.

Ecology is currently in the process of reviewing the FS and responding to public comments on the document. Due to potential delays in groundwater treatment that may occur while the FS is pending approval, NuStar has proposed to implement the NuStar source area remedial action proposed in the FS (additional bioremediation injections along the southern portion of the property) as an interim cleanup action. An *Interim Action Work Plan* is currently being prepared and will be submitted to Ecology in August 2015. Per Ecology's request, the interim action will also include baseline sediment and surface water sampling in the Columbia River.

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## **7.0 References**

- Apex Companies, LLC. *First Semi-Annual Groundwater Monitoring Report, January through June 2013. NuStar Vancouver Facility Vancouver, Washington.* August 14, 2013.
- Ash Creek Associates, Inc. (Ash Creek), 2007. *Release Area Interim Action Design, Support Terminals Services Vancouver Facility.* May 8, 2007.
- Ash Creek, 2008. *Groundwater Monitoring Plan, NuStar Vancouver Facility, Vancouver, Washington.* May 1, 2008.
- Ash Creek, 2009a. *Revised Remedial Investigation Report, NuStar Terminals Services, Inc. Vancouver Main Terminal.* October 1, 2009.
- Ash Creek, 2009b. *Interim Action Installation Report. NuStar Terminals Services, Inc., Vancouver Washington.* May 5, 2009.
- Ash Creek, 2010. (DRAFT) *Feasibility Study NuStar Terminals Services, Inc. Vancouver Main Terminal Vancouver, Washington.* January 14, 2010.
- Ash Creek, 2011. *2011 Interim Action Work Plan NuStar Vancouver Facility, Vancouver, Washington.* March 25, 2011.
- Ash Creek, 2012. *2011 Interim Action Evaluation Report. NuStar Vancouver Facility, Vancouver, Washington.* March 29, 2012.



Table 1  
 Groundwater Monitoring Plan: First and Second Quarters 2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Monitoring Program	Well ID	Groundwater Zone	Included Monitoring Wells	
			First Quarter	Second Quarter
Groundwater monitoring includes depth-to-water measurement.	MW-1	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-2	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-3	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-5	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-6	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-7	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-8	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-9	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-10	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-12	Shallow	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-13	Shallow	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-14	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-15	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-16	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-17	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-18i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-19	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-19i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-20i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-21i-40	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-21i-105	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-22i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-23i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-24i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-24d	Deep	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-25i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-26	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-30i	Intermediate	<input type="checkbox"/>	<input type="checkbox"/>
	MW-31i	Intermediate	<input type="checkbox"/>	<input type="checkbox"/>
	MW-32s	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-32i	Intermediate	<input type="checkbox"/>	<input type="checkbox"/>
	MGMS1-3(43)	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS1-2 (60)	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS1-1(110)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS2-4(40)	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS2-3 (60)	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS2-2(110)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS2-1(132)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS3-4(40)	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Please refer to notes at end of table.

Table 1  
 Groundwater Monitoring Plan: First and Second Quarters 2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Monitoring Program	Well ID	Groundwater Zone	Included Monitoring Wells	
			First Quarter	Second Quarter
Groundwater monitoring includes depth-to-water measurement.	MGMS3-3(60)	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS3-2(101)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS3-1(132)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-E	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MW-F	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MW-G	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	EW-1	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	EX	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MP-1	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MP-2	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MP-3	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MP-4	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	S-1	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	S-2	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Notes:**

- = Included in sampling program represented in this report.
- = Not included in sampling program represented in this report: water level measurement only.
- Wells MW-E, MW-G, MW-30i, MW-31i, and MW-32i are sampled by the Port of Vancouver.

Table 2  
 Groundwater Elevation Data: 2014-2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
<i>Groundwater Monitoring Wells</i>			
MW-1 (32.60)	09/22/14	28.53	4.07
	12/08/14	24.29	8.31
	03/17/15	25.30	7.30
	06/15/15	26.71	5.89
MW-2 (34.04)	09/22/14	30.13	3.91
	12/08/14	26.50	7.54
	03/17/15	28.64	5.40
	06/15/15	28.04	6.00
MW-3 (34.41)	09/22/14	30.02	4.39
	12/08/14	26.39	8.02
	03/17/15	27.21	7.20
	06/15/15	27.93	6.48
MW-5 (33.86)	09/22/14	29.18	4.68
	12/08/14	26.18	7.68
	03/17/15	26.43	7.43
	06/15/15	27.67	6.19
MW-6 (32.83)	09/22/14	28.14	4.69
	12/08/14	24.61	8.22
	03/17/15	25.06	7.77
	06/15/15	26.53	6.30
MW-7 (33.74)	09/22/14	28.78	4.96
	12/08/14	26.35	7.39
	03/17/15	26.23	7.51
	06/15/15	27.38	6.36
MW-8 (33.97)	09/22/14	28.22	5.75
	12/08/14	26.19	7.78
	03/17/15	25.90	8.07
	06/15/15	27.10	6.87
MW-9 (33.86)	09/22/14	28.88	4.98
	12/08/14	26.51	7.35
	03/17/15	26.26	7.60
	06/15/15	27.59	6.27

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2014-2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-10 (34.83)	09/22/14	28.56	6.27
	12/08/14	27.40	7.43
	03/17/15	25.70	9.13
	06/15/15	27.12	7.71
MW-12 (31.43)	09/22/14	27.34	4.09
	12/08/14	22.93	8.50
	03/17/15	24.02	7.41
	06/15/15	25.38	6.05
MW-13 (33.15)	09/22/14	28.46	4.69
	12/08/14	25.06	8.09
	03/17/15	25.80	7.35
	06/15/15	27.05	6.10
MW-14 (33.81)	09/22/14	28.84	4.97
	12/08/14	25.55	8.26
	03/17/15	26.33	7.48
	06/15/15	27.57	6.24
MW-15 (39.13)	09/22/14	33.74	5.39
	12/08/14	31.89	7.24
	03/17/15	31.60	7.53
	06/15/15	32.74	6.39
MW-16 (33.05)	09/22/14	29.25	3.80
	12/08/14	--	--
	03/17/15	25.70	7.35
	06/15/15	26.89	6.16
MW-17 (32.65)	09/22/14	28.02	4.63
	12/08/14	25.15	7.50
	03/17/15	25.32	7.33
	06/15/15	26.52	6.13
MW-18i (33.40)	09/22/14	29.99	3.41
	12/08/14	25.61	7.79
	03/17/15	26.30	7.10
	06/15/15	28.42	4.98

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2014-2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-19 (33.59)	09/22/14	28.87	4.72
	12/08/14	25.81	7.78
	03/17/15	26.26	7.33
	06/15/15	27.48	6.11
MW-19i (33.62)	09/22/14	30.32	3.30
	12/08/14	25.84	7.78
	03/17/15	26.55	7.07
	06/15/15	28.79	4.83
MW-20i (33.14)	09/22/14	29.76	3.38
	12/08/14	25.35	7.79
	03/17/15	26.10	7.04
	06/15/15	28.27	4.87
MW21i-40 (34.10)	09/22/14	30.63	3.47
	12/08/14	26.26	7.84
	03/17/15	27.02	7.08
	06/15/15	29.14	4.96
MW-21i-105 (33.99)	09/22/14	30.50	3.49
	12/08/14	26.19	7.80
	03/17/15	26.91	7.08
	06/15/15	28.95	5.04
MW-22i (34.39)	09/22/14	30.92	3.47
	12/08/14	26.55	7.84
	03/17/15	27.31	7.08
	06/15/15	29.42	4.97
MW-23i (33.80)	09/22/14	30.42	3.38
	12/08/14	26.00	7.80
	03/17/15	26.72	7.08
	06/15/15	28.82	4.98
MW-24i (33.47)	09/22/14	30.09	3.38
	12/08/14	25.56	7.91
	03/17/15	26.31	7.16
	06/15/15	28.77	4.70

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2014-2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-25i (33.58)	09/22/14	30.23	3.35
	12/08/14	25.79	7.79
	03/17/15	26.53	7.05
	06/15/15	28.64	4.94
MW-26 (33.73)	09/22/14	28.69	5.04
	12/08/14	26.72	7.01
	03/17/15	26.15	7.58
	06/15/15	27.45	6.28
MW-24d (33.91)	09/22/14	30.56	3.35
	12/08/14	26.65	7.26
	03/17/15	26.65	7.26
	06/15/15	28.51	5.40
EW-1 (31.40)	09/22/14	27.23	4.17
	12/08/14	22.87	8.53
	03/17/15	24.07	7.33
	06/15/15	25.40	6.00
<i>Secor Interim Action Pilot Study Wells</i>			
S-1 (33.24)	09/22/14	29.91	3.33
	12/08/14	25.40	7.84
	03/17/15	26.11	7.13
	06/15/15	28.28	4.96
S-2 (33.15)	09/22/14	29.86	3.29
	12/08/14	24.92	8.23
	03/17/15	26.15	7.00
	06/15/15	27.22	5.93
<i>Multi-Level Monitoring Wells</i>			
MGMS1-3 (43)* (32.86)	09/22/14	28.45	4.41
	12/08/14	24.86	8.00
	03/17/15	NM	NM
	06/16/15	26.82	6.04
MGMS1-2(60)* (32.86)	09/22/14	29.81	3.05
	12/08/14	25.15	7.71
	03/17/15	NM	NM
	06/16/15	27.70	5.16
MGMS1-1(110)* (32.86)	09/22/14	29.78	3.08
	12/08/14	25.16	7.70
	03/17/15	NM	NM
	06/16/15	NM	NM

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2014-2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MGMS2-4(40)* (32.59)	09/22/14	27.07	5.52
	12/08/14	24.45	8.14
	03/17/15	NM	NM
	06/16/15	26.83	5.76
MGMS2-3(60)* (32.59)	09/22/14	29.36	3.23
	12/08/14	24.66	7.93
	03/17/15	NM	NM
	06/16/15	27.77	4.82
MGMS2-2(110)* (32.59)	09/22/14	29.37	3.22
	12/08/14	24.66	7.93
	03/17/15	NM	NM
	06/16/15	NM	NM
MGMS2-1(132)* (32.59)	09/22/14	29.42	3.17
	12/08/14	24.65	7.94
	03/17/15	NM	NM
	06/16/15	NM	NM
MGMS3-4(40)* (31.65)	09/22/14	27.93	3.72
	12/08/14	23.74	7.91
	03/17/15	NM	NM
	06/16/15	26.10	5.55
MGMS3-3(60)* (31.65)	09/22/14	29.75	1.90
	12/08/14	23.80	7.85
	03/17/15	NM	NM
	06/16/15	26.61	5.04
MGMS3-2(101)* (31.65)	09/22/14	28.60	3.05
	12/08/14	23.96	7.69
	03/17/15	NM	NM
	06/16/15	NM	NM
MGMS3-1(132)* (31.65)	09/22/14	28.67	2.98
	12/08/14	23.82	7.83
	03/17/15	NM	NM
	06/16/15	NM	NM

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2014-2015  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
<i>Port of Vancouver Wells</i>			
MW-30i* (29.77)	09/22/14	26.34	3.43
	12/08/14	22.01	7.76
	03/17/15	22.76	7.01
	06/15/15	24.85	4.92
MW-31i* (31.33)	09/22/14	27.84	3.49
	12/08/14	23.52	7.81
	03/17/15	24.40	6.93
	06/15/15	26.46	4.87
MW-32s (34.34)	09/22/14	--	--
	12/08/14	--	--
	03/17/15	27.35	6.99
	06/15/15	28.45	5.89
MW-32i* (34.41)	09/22/14	--	--
	12/08/14	--	--
	03/17/15	27.40	7.01
	06/15/15	29.48	4.93
MW-E (30.64)	09/22/14	27.58	3.06
	12/08/14	23.12	7.52
	03/17/15	24.12	6.52
	06/15/15	25.46	5.18
MW-F (33.48)	09/22/14	Dry	NA
	12/08/14	26.02	7.46
	03/17/15	27.09	6.39
	06/15/15	28.28	5.20
MW-G* (31.50)	09/22/14	Dry	NA
	12/08/14	24.32	7.18
	03/17/15	25.11	6.39
	06/15/15	26.64	4.86

**Notes:**

1. TOC = Top of casing; BTOC = Below top of casing.
2. Utilizes new survey information from June 2010. NGVD29 datum (ft MSL).
3. \* Water levels measurement points are located at the top of the plastic fittings mounted on the well covers.
4. -- = not accessible. Well MW-32 s/i and MW-16 were inaccessible while gauging.
5. NM = Not measured.
6. NA = not applicable. Well was dry.
7. The shallow (40 foot) and Intermediate (60 foot) ports of the MGMS wells were gauged separately one day after the other site wells were gauged. Field staff did not have the narrow diameter water level probe available during the June 15, 2015 gauging event. Deep zone MGMS ports were inadvertently not gauged during the June 2015 monitoring event.



Table 3  
Groundwater Analytical Results: 2014  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-1	9/30/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.17	0.0013	0.00083	0.012	< 0.00050	< 0.00050	0.0097	0.0033
	12/11/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.030	< 0.00050	< 0.00050	0.017	< 0.00050	< 0.00050	0.0094	< 0.00050
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0062	< 0.00050	< 0.00050	0.047	0.00067	< 0.00050	0.0011	< 0.00050	< 0.00050	0.0019	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0095	< 0.00050	< 0.00050	0.075	0.00080	< 0.00050	0.0043	< 0.00050	< 0.00050	0.0046	0.0049
MW-2	3/21/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	9/30/2014	< 0.00050	0.0023	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/19/2015	< 0.00050	0.00096	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-3	9/30/2014	< 0.00050	< 0.00050	0.001	< 0.00050	0.0067	0.00070	< 0.00050	0.11	0.0021	0.0013	0.18	0.0028	< 0.00050	0.047	< 0.00050
	12/11/2014	< 0.00050	< 0.00050	0.0012	< 0.00050	0.00080	< 0.00050	< 0.00050	0.028	0.0017	< 0.00050	0.15	0.0022	< 0.00050	0.037	< 0.00050
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/15/2015	< 0.00050	< 0.00050	0.00086	< 0.00050	0.0011	< 0.00050	< 0.00050	0.049	0.0020	0.00088	0.16	0.0028	< 0.00050	0.044	< 0.00050
MW-5	9/30/2014	< 0.00050	0.028	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.020	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0036
	12/16/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.033	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0022	0.0019
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.027	< 0.00050	< 0.00050	0.0084	< 0.00050	< 0.00050	0.0058	0.0056
	6/17/2015	< 0.00050	0.0022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0032	< 0.00050	< 0.00050	0.00063	< 0.00050	< 0.00050	0.00064	< 0.00050
MW-6	3/21/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	10/2/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-7	9/30/2014	< 0.00050	0.0019	< 0.00050	< 0.00050	0.0027	< 0.00050	< 0.00050	0.0045	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0098
	9/30/2014 DUP	< 0.00050	0.0017	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.0043	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0088
	12/15/2014	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0034	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	0.015
	12/15/2014 DUP	< 0.00050	0.0016	< 0.00050	< 0.00050	0.0045	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.00061	< 0.00050	< 0.00050	0.0015	0.021
	3/20/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.0084	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	0.0010
	3/20/2015 DUP	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.0077	< 0.00050	< 0.00050	0.00053	< 0.00050	< 0.00050	0.0010	0.010
	6/17/2015	< 0.00050	0.00072	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0010	0.013
	6/17/2015 DUP	< 0.00050	0.00071	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.00096	< 0.00050	< 0.00050	0.0010	0.012
MW-8	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0038	< 0.00050	< 0.00050	0.0061	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.013	0.00086	< 0.00050	0.0023	< 0.00050	< 0.00050	0.00062	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0076	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0059	< 0.00050	< 0.00050	< 0.00050	< 0.00050

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2014  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-9	9/30/2014	<0.0090	<0.0090	<0.0090	<0.0090	0.0023	<0.0090	<0.0090	0.077	0.0023	<0.0090	0.23	0.0029	<0.0090	0.11	0.0013
	12/15/2014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.035	0.00064	<0.0050	0.018	<0.0050
	3/19/2015	<0.0050	<0.0050	<0.0050	<0.0050	0.00077	<0.0050	<0.0050	0.019	0.00060	<0.0050	0.16	0.0020	<0.0050	0.060	<0.0050
	6/17/2015	<0.0050	<0.0050	<0.0050	<0.0050	0.00093	<0.0050	0.00054	0.013	0.00078	<0.0050	0.16	0.0019	<0.0050	0.062	0.0016
MW-10	3/19/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0088	< 0.00050	< 0.00050	0.016	< 0.00050
	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0020	< 0.00050	< 0.00050	0.0020	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0017	< 0.00050	< 0.00050	0.0018	< 0.00050
MW-12	9/30/2014	<0.015	<0.015	<0.015	<0.015	0.190	<0.015	0.039	3.50	0.045	<0.015	0.67	0.036	<0.015	0.48	0.042
	9/30/2014 DUP	<0.015	<0.015	<0.015	<0.015	0.180	<0.015	0.039	3.50	0.045	<0.015	0.68	0.035	<0.015	0.46	0.042
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.034	0.00064	<0.00050	0.025	<0.00050	<0.00050	0.015	<0.00050
	12/11/2014 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.032	0.00060	<0.00050	0.024	<0.00050	<0.00050	0.014	<0.00050
	3/20/2015	<0.0050	<0.0050	<0.0050	<0.0050	0.102	<0.0050	0.025	2.11	0.029	<0.0050	0.58	0.018	<0.0050	0.34	0.037
	3/20/15 DUP	<0.0125	<0.0125	<0.0125	<0.0125	0.143	<0.0125	0.026	2.49	0.029	<0.0125	0.50	0.022	<0.0125	0.34	0.029
	6/19/2015	<0.010	<0.010	<0.010	<0.010	0.15	<0.010	0.028	2.57	0.025	<0.010	0.51	0.024	<0.010	0.36	0.031
6/19/2015 DUP	<0.010	<0.010	<0.010	<0.010	0.16	<0.010	0.031	2.68	0.030	<0.010	0.52	0.023	<0.010	0.36	0.033	
MW-13	09/30/14	<0.0040	<0.0040	<0.0040	<0.0040	0.038	<0.0040	0.020	0.890	0.019	<0.0040	3.1	0.013	<0.0040	2.0	<0.0040
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.018	0.00066	<0.00050	0.091	<0.00050	<0.00050	0.065	<0.00050
	3/18/2015	<0.0016	<0.0016	<0.0016	<0.0016	0.019	<0.0016	0.0031	0.52	0.0074	<0.0016	0.55	0.0024	<0.0016	0.61	<0.0016
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.034	<0.00050	0.016	0.62	0.015	<0.00050	2.0	0.010	<0.00050	1.4	0.0020
MW-14	9/24/2014	<0.0025	<0.0025	<0.0025	<0.0025	0.010	<0.0025	0.0040	0.120	<0.0025	<0.0025	0.24	0.004	<0.0025	0.64	<0.0025
	12/9/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0047	<0.00050	<0.00050	0.029	0.00061	<0.00050	0.063	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	0.0059	0.13	0.0022	<0.00050	0.31	0.0059	<0.00050	0.91	<0.00050
	6/16/2015	<0.0031	<0.0031	<0.0031	<0.0031	0.015	<0.0031	0.0049	0.12	<0.0031	<0.0031	0.25	0.0044	<0.0031	0.79	<0.0031
MW-15	3/21/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	9/30/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00087	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-16	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00077	< 0.00050	0.00066	0.0088	< 0.00050	< 0.00050	0.20	0.0014	< 0.00050	0.047	< 0.00050
	12/11/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00064	< 0.00050	< 0.00050	0.0040	< 0.00050	< 0.00050	0.076	0.00096	< 0.00050	0.017	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00070	< 0.00050	< 0.00050	0.0060	< 0.00050	< 0.00050	0.16	0.00094	< 0.00050	0.031	< 0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00061	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.18	0.0010	<0.00050	0.042	<0.00050
MW-17	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	9/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.0032	< 0.00050	< 0.00050	0.0068	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00071	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0039	< 0.00050	< 0.00050	0.0126	< 0.00050

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2014  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-18i	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00051</b>	< 0.00050	< 0.00050	<b>0.0015</b>	< 0.00050	< 0.00050	<b>0.00093</b>	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0029</b>	< 0.00050	< 0.00050	<b>0.0020</b>	< 0.00050	< 0.00050	<b>0.0013</b>	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0023</b>	< 0.00050	< 0.00050	<b>0.0020</b>	< 0.00050	< 0.00050	<b>0.0011</b>	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0013</b>	< 0.00050	< 0.00050	<b>0.0020</b>	< 0.00050	< 0.00050	<b>0.0011</b>	< 0.00050
MW-19	9/30/2014	< 0.015	< 0.015	< 0.015	< 0.015	<b>0.018</b>	< 0.015	<b>0.038</b>	<b>0.52</b>	< 0.015	< 0.015	<b>4.4</b>	<b>0.061</b>	< 0.015	<b>1.7</b>	<b>0.032</b>
	9/30/2014 DUP	< 0.015	< 0.015	< 0.015	< 0.015	<b>0.018</b>	< 0.015	<b>0.037</b>	<b>0.51</b>	< 0.015	< 0.015	<b>4.4</b>	<b>0.060</b>	< 0.015	<b>1.7</b>	<b>0.030</b>
	12/12/2014	< 0.0050	< 0.0050	< 0.0050	< 0.0050	<b>0.096</b>	< 0.0050	<b>0.020</b>	<b>1.5</b>	<b>0.012</b>	< 0.0050	<b>1.4</b>	<b>0.019</b>	< 0.0050	<b>0.79</b>	<b>0.060</b>
	12/12/2014 DUP	< 0.0050	< 0.0050	< 0.0050	< 0.0050	<b>0.11</b>	< 0.0050	<b>0.021</b>	<b>1.5</b>	<b>0.014</b>	< 0.0050	<b>1.5</b>	<b>0.021</b>	< 0.0050	<b>0.89</b>	<b>0.068</b>
	3/18/2015	< 0.0042	< 0.0042	< 0.0042	< 0.0042	<b>0.073</b>	< 0.0042	<b>0.048</b>	<b>1.46</b>	<b>0.018</b>	< 0.0042	<b>5.9</b>	<b>0.057</b>	< 0.0042	<b>4.0</b>	<b>0.054</b>
	3/18/2015 DUP	< 0.0042	< 0.0042	< 0.0042	< 0.0042	<b>0.083</b>	< 0.0042	<b>0.048</b>	<b>1.41</b>	<b>0.018</b>	< 0.0042	<b>4.9</b>	<b>0.056</b>	< 0.0042	<b>3.5</b>	<b>0.047</b>
	6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.022</b>	< 0.00050	<b>0.049</b>	<b>0.63</b>	<b>0.0066</b>	< 0.00050	<b>8.1</b>	<b>0.094</b>	< 0.00050	<b>2.2</b>	<b>0.028</b>
6/18/2015 DUP	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.023</b>	< 0.00050	<b>0.049</b>	<b>0.61</b>	<b>0.0075</b>	< 0.00050	<b>8.0</b>	<b>0.99</b>	< 0.00050	<b>2.1</b>	<b>0.031</b>	
MW-19i	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00056</b>	< 0.00050	< 0.00050	<b>0.0064</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0027</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0040</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0063</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-20i	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00068</b>	< 0.00050	< 0.00050	<b>0.012</b>	< 0.00050	< 0.00050	<b>0.0043</b>	< 0.00050	< 0.00050	<b>0.0026</b>	< 0.00050
	12/12/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0051</b>	< 0.00050	< 0.00050	<b>0.00068</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.010</b>	< 0.00050	< 0.00050	<b>0.0030</b>	< 0.00050	< 0.00050	<b>0.0017</b>	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.011</b>	< 0.00050	< 0.00050	<b>0.0037</b>	< 0.00050	< 0.00050	<b>0.0022</b>	< 0.00050
MW-21i-105	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0058</b>	< 0.00050	< 0.00050	<b>0.0054</b>	< 0.00050	< 0.00050	<b>0.0033</b>	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00094</b>	< 0.00050	< 0.00050	<b>0.037</b>	< 0.00050	< 0.00050	<b>0.0054</b>	< 0.00050	< 0.00050	<b>0.0096</b>	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.013</b>	< 0.00050	< 0.00050	<b>0.0066</b>	< 0.00050	< 0.00050	<b>0.0054</b>	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.021</b>	< 0.00050	< 0.00050	<b>0.0035</b>	< 0.00050	< 0.00050	<b>0.0040</b>	< 0.00050
MW-21i-40	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0040</b>	< 0.00050	<b>0.0014</b>	<b>0.100</b>	<b>0.086</b>	< 0.00050	<b>0.031</b>	<b>0.00051</b>	< 0.00050	<b>0.032</b>	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0042</b>	< 0.00050	<b>0.0014</b>	<b>0.100</b>	<b>0.00060</b>	< 0.00050	<b>0.030</b>	<b>0.00051</b>	< 0.00050	<b>0.032</b>	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0038</b>	< 0.00050	<b>0.0015</b>	<b>0.102</b>	<b>0.00051</b>	< 0.00050	<b>0.044</b>	< 0.00050	< 0.00050	<b>0.037</b>	< 0.00050
	6/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0027</b>	< 0.00050	<b>0.00076</b>	<b>0.062</b>	< 0.00050	< 0.00050	<b>0.025</b>	< 0.00050	< 0.00050	<b>0.022</b>	< 0.00050

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2014  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-22i	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0088</b>	< 0.00050	< 0.00050	<b>0.0017</b>	< 0.00050	< 0.00050	<b>0.0098</b>	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0092</b>	< 0.00050	< 0.00050	<b>0.0021</b>	< 0.00050	< 0.00050	<b>0.011</b>	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0082</b>	< 0.00050	< 0.00050	<b>0.0018</b>	< 0.00050	< 0.00050	<b>0.0087</b>	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0086</b>	< 0.00050	< 0.00050	<b>0.0016</b>	< 0.00050	< 0.00050	<b>0.0090</b>	< 0.00050
MW-23i	9/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/9/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00078</b>	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-24i	9/30/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0018</b>	< 0.00050	< 0.00050	<b>0.021</b>	< 0.00050	< 0.00050	<b>0.020</b>	< 0.00050	< 0.00050	<b>0.010</b>	< 0.00050
	12/15/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00060</b>	< 0.00050	< 0.00050	<b>0.012</b>	< 0.00050	< 0.00050	<b>0.0024</b>	< 0.00050	< 0.00050	<b>0.0011</b>	< 0.00050
	3/20/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00058</b>	< 0.00050	< 0.00050	<b>0.0059</b>	< 0.00050	< 0.00050	<b>0.0061</b>	< 0.00050	< 0.00050	<b>0.0031</b>	< 0.00050
	6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0034</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-24d	10/2/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0042</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/15/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0030</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0038</b>	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0038</b>	< 0.00050	< 0.00050	<b>0.0038</b>	< 0.00050	< 0.00050	<b>0.0017</b>	< 0.00050
MW-25i	9/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/9/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-26	9/24/2014	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<b>0.0039</b>	< 0.0020	< 0.0020	<b>0.068</b>	< 0.0020	< 0.0020	<b>0.22</b>	<b>0.0031</b>	< 0.0020	<b>0.34</b>	< 0.0020
	12/9/2014	< 0.00090	< 0.00090	< 0.00090	< 0.00090	<b>0.0038</b>	< 0.00090	<b>0.00096</b>	<b>0.055</b>	<b>0.0013</b>	< 0.00090	<b>0.16</b>	<b>0.0028</b>	< 0.00090	<b>0.28</b>	< 0.00090
	3/17/2015	< 0.0010	< 0.0010	< 0.0010	< 0.0010	<b>0.0058</b>	< 0.0010	<b>0.0017</b>	<b>0.076</b>	<b>0.0018</b>	< 0.0010	<b>0.27</b>	<b>0.0037</b>	< 0.0010	<b>0.46</b>	< 0.0010
	6/16/2015	< 0.0017	< 0.0017	< 0.0017	< 0.0017	<b>0.0050</b>	< 0.0017	< 0.0017	<b>0.078</b>	< 0.0017	< 0.0017	<b>0.21</b>	<b>0.0028</b>	< 0.0017	<b>0.39</b>	< 0.0017
MW-32s	6/25/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/11/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/19/2015	< 0.00050	< 0.00050	<b>0.00077</b>	< 0.00050	<b>0.0015</b>	< 0.00050	< 0.00050	<b>0.074</b>	<b>0.0025</b>	< 0.00050	< 0.00050	<b>0.0035</b>	< 0.00050	<b>0.052</b>	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2014  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
EW-1	3/20/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.032	0.0016	< 0.00050	0.012	< 0.00050
	9/27/2014	Insufficient water for sampling during monitoring event.														
S-1	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0043	< 0.00050
	12/9/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0014	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0049	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00073	< 0.00050	< 0.00050	0.0014	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0018	< 0.00050
S-2	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0045	< 0.00050	< 0.00050	0.0047	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/9/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0039	< 0.00050	< 0.00050	0.0046	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0045	< 0.00050	< 0.00050	0.0055	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0041	< 0.00050	< 0.00050	0.0038	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MGMS1-3(43)	9/23/2014	< 0.015	< 0.015	< 0.015	< 0.015	0.19	< 0.015	0.035	4.7	0.069	< 0.015	0.12	< 0.015	< 0.015	0.42	0.55
	12/12/2014	< 0.007	< 0.007	< 0.007	< 0.007	0.20	< 0.007	0.023	4.0	0.052	< 0.0070	0.10	< 0.007	< 0.007	0.35	0.81
	3/19/2015	< 0.0125	< 0.0125	< 0.0125	< 0.0125	0.13	< 0.0125	< 0.0125	2.5	0.017	< 0.0125	0.03	< 0.0125	< 0.0125	0.13	0.25
	6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0027	< 0.00050	< 0.00050	0.059	< 0.00050	< 0.00050	0.00084	< 0.00050	< 0.00050	0.0028	0.0031
MGMS1-2(60)	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0023	< 0.00050	< 0.00050	0.026	< 0.00050	< 0.00050	0.034	< 0.00050	< 0.00050	0.020	0.012
	12/12/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.020	< 0.00050	< 0.00050	0.014	< 0.00050
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.026	< 0.00050	< 0.00050	0.023	< 0.00050	< 0.00050	0.016	< 0.00050
	6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.0091	< 0.00050
MGMS1-1(110)	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.063	< 0.00050	< 0.00050	0.023	< 0.00050	< 0.00050	0.027	0.00065
	9/24/2014	Not sampled; 60 foot port accidentally sampled twice.														
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0027	< 0.00050	0.00069	0.13	< 0.00050	< 0.00050	0.024	< 0.00050	< 0.00050	0.0415	0.00082
MGMS2-4(40)	9/23/2014	< 0.00050	0.0025	< 0.00050	< 0.00050	0.030	< 0.00050	0.030	0.590	0.0024	< 0.00050	0.17	0.0032	< 0.00050	0.11	0.80
	12/12/2014	< 0.00050	0.012	< 0.00050	< 0.00050	0.035	< 0.00050	< 0.00050	0.010	< 0.00050	< 0.00050	0.0034	< 0.00050	< 0.00050	0.0023	0.018
	3/20/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0043	< 0.00050	0.0039	0.047	< 0.00050	< 0.00050	0.031	< 0.00050	< 0.00050	0.022	0.017
	6/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.014	< 0.00050	0.0013	0.054	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.013	0.048
MGMS2-3(60)	9/23/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.														
	12/12/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.														
	3/20/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.029	< 0.00050	< 0.00050	0.041	< 0.00050	< 0.00050	0.024	0.0052
	6/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0020	< 0.00050	0.00056	0.038	< 0.00050	< 0.00050	0.035	< 0.00050	< 0.00050	0.024	0.0079
MGMS2-2(110)	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.021	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0062	0.0025
	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.025	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0073	0.0049
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.0079	< 0.00050	< 0.00050	0.0048	0.0046

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2014  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MGMS2-1(132)	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.022</b>	< 0.00050	< 0.00050	<b>0.012</b>	< 0.00050	< 0.00050	<b>0.0054</b>	<b>0.0026</b>
	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.032</b>	< 0.00050	< 0.00050	<b>0.0098</b>	< 0.00050	< 0.00050	<b>0.0060</b>	<b>0.0055</b>
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.011</b>	< 0.00050	< 0.00050	<b>0.0094</b>	< 0.00050	< 0.00050	<b>0.0044</b>	<b>0.00075</b>
MGMS3-4(40)	9/23/2014	< 0.00090	< 0.00090	< 0.00090	< 0.00090	<b>0.010</b>	< 0.00090	<b>0.0017</b>	<b>0.41</b>	<b>0.0058</b>	< 0.00090	<b>0.072</b>	< 0.00090	< 0.00090	<b>0.055</b>	<b>0.074</b>
	9/23/2014 DUP	< 0.00020	< 0.00020	< 0.00020	< 0.00020	<b>0.011</b>	< 0.00020	< 0.00020	<b>0.43</b>	<b>0.0055</b>	< 0.00020	<b>0.070</b>	< 0.00020	< 0.00020	<b>0.053</b>	<b>0.075</b>
	12/12/2014	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<b>0.0079</b>	< 0.0020	< 0.0020	<b>0.49</b>	<b>0.0042</b>	< 0.0020	<b>0.036</b>	< 0.0020	< 0.0020	<b>0.028</b>	<b>0.020</b>
	3/18/2015	< 0.0016	< 0.0016	< 0.0016	< 0.0016	<b>0.02</b>	< 0.0016	<b>0.0032</b>	<b>0.90</b>	<b>0.0073</b>	< 0.0016	<b>0.25</b>	< 0.0016	< 0.0016	<b>0.16</b>	<b>0.022</b>
	3/18/2015 DUP	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.017</b>	< 0.00050	<b>0.0024</b>	<b>0.71</b>	<b>0.0055</b>	< 0.00050	<b>0.19</b>	< 0.00050	< 0.00050	<b>0.12</b>	<b>0.017</b>
6/19/2015	< 0.00084	< 0.00084	< 0.00084	< 0.00084	<b>0.0072</b>	< 0.00084	< 0.00084	<b>0.34</b>	<b>0.0032</b>	< 0.00084	<b>0.034</b>	< 0.00084	< 0.00084	<b>0.033</b>	<b>0.073</b>	
MGMS3-3(60)	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00071</b>	< 0.00050	< 0.00050	<b>0.0020</b>	< 0.00050	< 0.00050	<b>0.0088</b>	< 0.00050	< 0.00050	<b>0.0047</b>	< 0.00050
	12/12/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0019</b>	< 0.00050	< 0.00050	<b>0.0022</b>	< 0.00050	< 0.00050	<b>0.00072</b>	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.012</b>	< 0.00050	< 0.00050	<b>0.0060</b>	< 0.00050	< 0.00050	<b>0.0037</b>	< 0.00050
	6/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0060</b>	< 0.00050	< 0.00050	<b>0.0035</b>	< 0.00050	< 0.00050	<b>0.0016</b>	< 0.00050
MGMS3-2(101)	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0068</b>	< 0.00050	< 0.00050	<b>0.0091</b>	< 0.00050	< 0.00050	<b>0.0065</b>	< 0.00050
	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0037</b>	< 0.00050	< 0.00050	<b>0.0030</b>	< 0.00050	< 0.00050	<b>0.0015</b>	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0051</b>	< 0.00050	< 0.00050	<b>0.0044</b>	< 0.00050	< 0.00050	<b>0.0028</b>	< 0.00050
MGMS3-1(132)	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00062</b>	< 0.00050	<b>0.00051</b>	<b>0.011</b>	< 0.00050	< 0.00050	<b>0.013</b>	< 0.00050	< 0.00050	<b>0.011</b>	<b>0.00076</b>
	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00054</b>	< 0.00050	< 0.00050	<b>0.0089</b>	< 0.00050	< 0.00050	<b>0.0090</b>	< 0.00050	< 0.00050	<b>0.0079</b>	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.00053</b>	< 0.00050	< 0.00050	<b>0.0093</b>	< 0.00050	< 0.00050	<b>0.0063</b>	< 0.00050	< 0.00050	<b>0.0060</b>	<b>0.00056</b>
EX-1	9/30/2014	Insufficient water for sampling.														
	12/15/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.010</b>	< 0.00050	< 0.00050	<b>0.022</b>	< 0.00050	< 0.00050	<b>0.0027</b>	< 0.00050
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0035</b>	< 0.00050	<b>0.0021</b>	<b>0.69</b>	<b>0.0019</b>	< 0.00050	<b>0.17</b>	<b>0.0025</b>	< 0.00050	<b>0.056</b>	<b>0.0028</b>
MP-1	6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	<b>0.0026</b>	< 0.00050	<b>0.0026</b>	<b>0.42</b>	<b>0.0016</b>	< 0.00050	<b>0.19</b>	<b>0.00088</b>	< 0.00050	<b>0.042</b>	<b>0.0032</b>
	9/30/2014	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<b>0.0028</b>	< 0.0020	< 0.0020	<b>0.11</b>	< 0.0020	< 0.0020	<b>0.36</b>	< 0.0020	< 0.0020	<b>0.063</b>	<b>0.016</b>
	12/15/2014	< 0.0015	< 0.0015	< 0.0015	< 0.0015	<b>0.0017</b>	< 0.0015	< 0.0015	<b>0.058</b>	< 0.0015	< 0.0015	<b>0.32</b>	< 0.0015	< 0.0015	<b>0.059</b>	< 0.0015
	3/20/2015	< 0.0010	< 0.0010	< 0.0010	< 0.0010	<b>0.0036</b>	< 0.0010	<b>0.0015</b>	<b>0.19</b>	<b>0.0015</b>	< 0.0010	<b>0.57</b>	<b>0.0010</b>	< 0.0010	<b>0.096</b>	<b>0.025</b>
6/18/2015	< 0.00084	< 0.00084	< 0.00084	< 0.00084	<b>0.0029</b>	< 0.00084	<b>0.0015</b>	<b>0.091</b>	<b>0.00087</b>	< 0.00084	<b>0.38</b>	< 0.00084	< 0.00084	<b>0.081</b>	< 0.00084	

Notes:

1. HVOCs = Halogenated volatile organic compounds analysis by U.S. Environmental Protection Agency (EPA) Method 8260B.
2. mg/L (ppm) = Milligrams per liter (parts per million).
3. Bold values represents detected concentration of listed analyte.
4. < = Not detected at or above the specified laboratory method reporting limit (MRL).
5. E = Chloroform was detected in the equipment blank during the September 2014 sampling event. Chloroform was flagged with a "E" in samples where the concentration was five times or less than the maximum detection in the equipment blank.

Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number:	MW-7																											
	Sample Date:																											
	2/6/2007	12/16/2008	3/23/2009	6/18/2009	9/18/2009	12/18/2009	3/16/2010	6/17/2010	9/23/2010	12/10/2010	3/11/2011	6/7/2011	9/19/2011	12/9/2011	3/12/2012	06/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/25/2014	9/30/2014	12/15/2014	3/20/2015	6/17/2015
Analyte	Concentrations in mg/L (ppm)																											
<b>Volatile Organic Compounds</b>																												
Tetrachloroethene	31.5	15	3.3	0.890	2.600	1.600	0.550	0.200	0.75	0.22	0.42	0.43	0.41	0.20	0.041	0.025	0.028	0.011	0.0016	0.0016	<0.00050	0.00051	0.0098	<0.00050	<0.00050	0.00061	<0.00050	0.0012
Trichloroethene	0.352	0.450	0.270	0.350	0.250	0.160	0.056	0.072	0.11	0.036	0.082	0.11	0.08	0.032	0.0086	0.0052	0.0052	0.0068	0.00078	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.00150	0.0011	0.0010	
cis-1,2-Dichloroethene	<0.100	0.130	0.420	0.520	0.930	0.330	0.180	0.360	0.69	0.094	0.15	1.4	1.3	3.4	1.6	0.5	0.18	0.13	0.11	0.058	0.056	0.0069	0.013	0.00062	0.0045	0.016	0.0084	0.012
trans-1,2-Dichloroethene	<0.100	<0.050	<0.015	<0.0030	<0.0030	<0.0050	<0.0020	<0.0015	<0.0030	<0.00090	0.00091	0.0033	<0.0050	0.0068	<0.0050	<0.0020	0.0007	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Vinyl chloride	<0.100	<0.050	<0.015	<0.0030	<0.0030	<0.0050	<0.0020	<0.0015	0.0048	0.0017	0.0093	0.0079	0.0780	0.11	0.60	0.29	0.08	0.018	0.011	0.016	0.01	0.0091	0.008	0.0014	0.0098	0.0210	0.0010	0.013
Ethene	N/A	N/A	N/A	N/A	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00119	0.00776	<0.0010	N/A	0.0387	0.071	0.13	0.047	0.0195	0.0133	0.00586	0.0186	0.005	0.22	0.0219	<0.0010	<0.0010	<0.0062	<0.010
1,1-Dichloroethene	<0.100	<0.050	<0.015	<0.0030	0.0055	<0.0050	<0.0020	<0.0015	<0.0030	<0.00090	0.0016	0.0034	<0.0050	0.0069	<0.0050	<0.0020	0.00054	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1-Dichloroethane	<0.100	<0.050	<0.015	0.0037	0.0098	0.0067	<0.0020	<0.0015	0.0033	0.0018	0.0066	0.0048	<0.0050	0.0080	0.0092	0.0090	0.0038	0.0019	0.00069	0.00051	0.0015	0.0029	0.00160	0.00019	0.0027	0.0045	0.0010	0.0026
1,2-Dichloroethane	<0.100	<0.050	<0.00050	<0.0030	<0.0030	<0.0050	<0.0020	<0.0015	<0.0030	<0.00090	<0.00090	<0.0025	<0.0050	<0.0050	<0.0050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	<0.100	<0.050	<0.015	0.0052	0.0100	0.0067	0.0020	0.0027	0.0035	0.0016	0.0051	0.004	<0.0050	<0.0050	<0.0050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
<b>Attenuation Chemistry</b>																												
Total Organic Carbon	< 1.00	2.40	6.7	N/A	4.10	2.50	2.6	2.8	8.2	0.84	1.10	4.7	3,400	1,600	1,000	790	790	550	250	220	270	250	77	120	160	28.5	23.5	46
<b>Field Parameters</b>																												
Dissolved Oxygen	1.20	0.72	0.69	6.97	0.59	1.23	1.37	1.86	0.64	6.29	6.65	0.45	4.53	1.19	2.97	6.28	2.29	0.34	1.02	0.29	0.45	0.44	0.43	0.6	1.93	1.61	1.19	0.81
Oxidation Reduction Potential (mV)	245.7	-103.2	-614.5	-16.4	121.7	162.1	147.7	240.0	-483.4	111.6	132.3	108.6	695.8	-117.5	96.8	-137.9	93.3	24.1	53.3	47.9	-189.3	-66.1	76.9	-90.5	-112.0	-34.0	-76.8	-4.9

Please refer to notes at end of table.

Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number: Sample Date:	MP-1																											
	2/6/2007	12/16/2008	3/23/2009	6/18/2009	9/18/2009	12/18/2009	3/16/2010	6/17/2010	9/23/2010	12/10/2010	3/14/2011	6/7/2011	9/19/2011	12/9/2011	3/9/2012	6/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/23/2014	9/30/2014	12/15/2014	3/20/2015	6/18/2015
Analyte	Concentrations in mg/L (ppm)																											
<b>Volatile Organic Compounds</b>																												
Tetrachloroethene	1.61	1.60	1.20	1.50	1.1	1.0	1.5	0.800	0.73	1.0	1.200	0.64	0.03	0.64	0.49	0.69	0.34	0.23	0.23	0.33	0.26	0.29	0.36	1.2	0.36	0.32	0.57	0.38
Trichloroethene	0.421	0.230	0.180	0.180	0.31	0.180	0.400	0.140	0.12	0.15	0.180	0.13	0.072	0.12	0.14	0.12	0.083	0.048	0.069	0.070	0.066	0.070	0.054	0.130	0.063	0.059	0.096	0.081
cis-1,2-Dichloroethene	0.347	0.070	0.089	0.043	0.24	0.058	0.410	0.120	0.041	0.027	0.150	0.075	0.004	0.049	0.44	0.53	0.17	0.17	0.14	0.19	0.077	0.067	0.24	0.29	0.11	0.058	0.19	0.091
trans-1,2-Dichloroethene	0.0085	<0.0050	<0.0040	<0.0040	0.0089	<0.0040	0.013	<0.0030	<0.0030	<0.0030	<0.0030	<0.0025	<0.0015	0.0031	0.0063	0.0029	0.0022	0.0017	0.0025	0.0016	0.0015	0.00092	<0.0015	0.0017	<0.0020	<0.0015	0.0015	0.00087
Vinyl chloride	0.0236	<0.0050	<0.0040	<0.0040	0.0073	<0.0040	0.010	<0.0030	<0.0030	<0.0030	0.0059	<0.0025	0.0016	<0.0025	0.021	0.048	0.0045	0.0018	0.0018	0.0018	<0.00090	<0.00090	<0.0015	0.0050	0.0160	<0.0015	0.025	<0.00084
Ethene	N/A	N/A	N/A	N/A	<0.001	<0.001	0.00247	<0.0010	<0.0010	<0.0010	<0.0000010	<0.0010	NA	0.003280	0.0159	0.0666	0.016	0.0211	0.00586	0.00296	0.00317	<0.0010	0.033	0.0196	<0.0010	<0.0010	<0.0062	<0.010
1,1-Dichloroethene	<0.0050	<0.0050	<0.0040	<0.0040	<0.00040	<0.0040	0.0047	<0.0030	<0.0030	<0.0030	<0.0030	<0.0025	<0.0015	<0.0025	0.0028	0.0028	<0.0015	<0.00090	0.00094	0.00140	<0.00090	0.0011	<0.0015	0.0023	<0.0020	<0.0015	0.0015	0.0015
1,1-Dichloroethane	0.0184	<0.005	0.006	0.0043	0.014	<0.0040	0.022	0.0032	<0.0030	<0.0030	0.0071	0.0049	0.0024	0.0026	0.0094	0.0056	0.004	0.0020	0.0051	0.0045	0.0029	0.0017	0.0022	0.0049	0.0028	0.0017	0.0036	0.0029
1,2-Dichloroethane	<0.0050	<0.0050	<0.0040	<0.0040	<0.0040	<0.0040	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0025	<0.0015	<0.0025	<0.0015	<0.0025	<0.0015	<0.00090	<0.00090	<0.00090	<0.00090	<0.00090	<0.0015	<0.0015	<0.0020	<0.0015	<0.0010	<0.00084
1,1,1-Trichloroethane	0.0112	0.010	0.010	0.012	0.008	0.007	0.0086	0.0054	0.004	0.0045	0.0064	0.0033	0.0019	0.0031	0.0035	0.012	0.002	0.0010	0.0010	0.0014	0.00095	0.0012	0.00180	0.0095	<0.0020	<0.0015	0.0010	<0.00084
<b>Attenuation Chemistry</b>																												
Total Organic Carbon	< 1.00	1.80	2.0	N/A	1.50	1.60	2.4	2.4	2.0	1.0	0.96	1.6	3.7	8.3	16	26	23	18	35	28	35	26	38	34	29	2.4	7.8	6.0
<b>Field Parameters</b>																												
Dissolved Oxygen	0.39	1.37	1.05	3.65	0.48	0.78	0.89	3.22	0.53	0.52	1.35	0.52	0.69	0.83	0.23	0.83	0.43	0.28	0.44	0.34	0.44	1.10	0.69	3.00	4.09	0.88	1.04	1.75
Oxidation Reduction Potential (mV)	208.9	-78.5	127.3	-43.7	99.7	155.3	83.2	228.3	-464.0	-4.6	159.6	48.9	913.5	-51.7	77.7	-51.7	98.2	-15.2	60.4	187.2	1.2	10.3	-18.7	-14.0	42.3	-28.6	29.8	-148.5

Please refer to notes at end of table.



Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number: Sample Date:	EX																											
	2/6/2007	12/16/2008	3/23/2009	6/18/2009	9/18/2009	12/18/2009	3/16/2010	6/17/2010	9/23/2010	12/21/2010	3/31/2011	6/7/2011	9/19/2011	12/9/2011	3/9/2012	6/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/23/2014	9/30/2014	12/15/2014	3/19/2015	6/18/2015
Analyte	Concentrations in mg/L (ppm)																											
<b>Volatile Organic Compounds</b>																												
Tetrachloroethene	2.81	4.50	1.40	0.02	2.10	0.70	0.150	0.150	2.4	0.9	6.8	1.4	4.1	<0.050	0.033	0.0030	0.003	0.00087	0.0012	0.00079	0.0041	0.002	0.020	0.029	NS	0.022	0.17	0.19
Trichloroethene	0.564	0.830	0.420	0.011	0.380	0.056	0.033	0.039	0.22	0.099	0.91	0.17	0.46	<0.050	0.010	0.0011	< 0.0015	<0.00050	<0.00050	<0.00050	0.0026	0.0014	0.0075	0.0150	NS	0.0027	0.056	0.042
cis-1,2-Dichloroethene	0.0682	0.490	0.050	0.004	0.120	0.006	0.020	0.092	0.09	0.03	0.24	0.140	0.29	12	1.4	0.17	0.32	0.026	<0.00050	0.0016	0.071	0.034	0.030	0.160	NS	0.010	0.69	0.42
trans-1,2-Dichloroethene	< 0.010	<0.015	<0.0050	<0.00050	0.00076	<0.0025	<0.00050	<0.00050	0.00053	<0.00050	<0.0040	<0.0040	<0.0050	0.0093	0.0086	0.0013	< 0.0015	<0.00050	<0.00050	<0.00050	0.00068	<0.00050	<0.00050	0.00097	NS	<0.00050	0.0019	0.0016
Vinyl chloride	< 0.010	<0.015	<0.0050	<0.00050	0.0011	<0.0025	<0.00050	0.0022	0.0018	0.00071	0.0051	<0.0040	0.014	0.14	0.29	0.12	0.042	0.012	0.0044	<0.00050	0.03	0.028	0.011	0.038	NS	<0.00050	0.0028	0.0032
Ethene	N/A	N/A	N/A	N/A	<0.001	0.0556	<0.00050	<0.0010	<0.0010	<0.0010	0.00191	<0.0010	N/A	0.0114	0.0242	0.15	0.0472	0.00592	<0.0010	<0.0010	0.0354	0.0453	0.0911	0.0815	NS	<0.0010	<0.0062	<0.010
1,1-Dichloroethene	< 0.010	<0.015	<0.0050	<0.00050	0.0033	<0.0025	<0.00050	<0.00050	0.0016	0.00059	0.0081	<0.0040	0.011	0.019	<0.0040	0.00068	< 0.0015	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	0.0011	NS	<0.00050	0.0021	0.0026
1,1-Dichloroethane	< 0.010	0.054	<0.0050	<0.00050	0.0041	<0.0025	<0.00050	0.00097	0.0015	0.00083	0.0082	<0.0040	0.0079	0.016	0.0050	0.0034	0.0015	<0.00050	<0.00050	<0.00050	0.0019	0.0038	0.00080	0.00290	NS	<0.00050	0.0035	0.0026
1,2-Dichloroethane	< 0.010	<0.015	<0.0050	<0.00050	<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.0040	<0.0040	<0.0050	<0.0050	<0.0040	< 0.00050	< 0.0015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NS	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	0.04	0.071	0.043	0.001	0.038	0.004	0.0032	0.0023	0.02	0.0067	0.11	0.015	0.073	0.017	<0.0040	0.00059	< 0.0015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NS	<0.00050	0.0025	0.00088
<b>Attenuation Chemistry</b>																												
Total Organic Carbon	1.45	3.30	3.0	N/A	4.9	1.8	2.4	3.3	3.6	<0.50	1.9	3.5	560	320	89	110	77	59	64	12	42	46	35	34	NS	158	<5.0	7.5
<b>Field Parameters</b>																												
Dissolved Oxygen	0.24	0.74	0.47	0.37	0.60	2.13	0.88	0.84	0.93	0.91	--	0.70	0.63	1.23	0.14	1.23	0.15	0.25	0.37	0.54	0.43	1.66	0.51	0.41	NS	2.41	1.05	2.29
Oxidation Reduction Potential (mV)	164.8	-174.5	68.8	-9.3	109.0	170.1	102.6	239.5	-521.6	131.7	--	115.2	907.9	-68.3	-33.6	-68.3	-29.5	3.3	67.0	158.8	-175.4	11.9	158.7	-50	NS	-52.2	18.2	-35.2

Please refer to notes at end of table.

Table 4  
 Interim Action: Groundwater Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number: Sample Date:	MW-12																
	6/7/2011	9/19/2011	12/7/2011	3/12/2012	6/22/2012	9/14/2012	12/13/2012	3/15/2013	6/13/2013	9/20/2013	12/16/2014	3/24/2014	6/24/2014	9/30/2014	12/11/2014	3/20/2015	6/19/2015
Analyte	Concentrations in mg/L (ppm)																
<b>Volatile Organic Compounds</b>																	
Tetrachloroethene	0.053	0.86	0.52	0.77	0.27	1.1	0.038	0.76	0.61	0.51	0.15	0.18	0.042	0.68	0.025	0.58	0.51
Trichloroethene	0.025	0.69	0.38	0.54	0.2	0.73	0.023	0.54	0.50	0.4	0.11	0.17	0.034	0.48	0.015	0.34	0.36
cis-1,2-Dichloroethene	0.059	4.7	2.9	3.8	1.7	5.4	0.062	4.3	4.8	3.4	0.8	1.9	0.31	3.50	0.034	2.1	2.6
trans-1,2-Dichloroethene	0.001	0.055	0.033	0.045	0.039	0.073	0.00097	0.056	0.053	0.049	0.01	0.025	0.0023	0.045	0.00064	0.029	0.025
Vinyl chloride	<0.00050	0.063	0.04	0.046	0.022	0.084	<0.00050	0.054	0.059	0.05	0.0098	0.047	<0.0015	0.042	<0.00050	0.037	0.031
Ethene	<0.0010	NA	0.00615	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0062	<0.010
1,1-Dichloroethene	<0.00050	0.045	0.028	0.044	0.016	0.058	<0.00050	0.040	0.039	0.037	0.0076	0.018	0.0019	0.039	<0.00050	0.025	0.028
1,1-Dichloroethane	0.0018	0.24	0.13	0.21	0.1	0.27	0.0010	0.20	0.24	0.17	0.036	0.11	0.014	0.19	0.00073	0.10	0.15
1,2-Dichloroethane	<0.00050	0.0025	0.0013	<0.015	<0.0050	<0.015	<0.00050	0.0018	<0.015	0.0016	<0.0025	0.00077	<0.0015	<0.015	<0.00050	<0.0050	<0.010
1,1,1-Trichloroethane	0.0007	0.065	0.034	0.048	0.013	0.076	0.00053	0.053	0.046	0.037	0.0058	0.0086	0.0016	0.036	<0.00050	0.018	0.024
<b>Attenuation Chemistry</b>																	
Total Organic Carbon	0.94	8.3	59	65	56	100	4.9	95	62	110	23	41	13	93	1.9	4	4.8
<b>Field Parameters</b>																	
Dissolved Oxygen	3.16	0.84	1.00	1	0.66	0.43	1.07	0.62	0.39	0.59	1.22	1.94	3.68	6.09	0.65	0.89	0.71
Oxidation Reduction Potential (mV)	110.4	906.3	109.0	45.3	117.1	140.7	128.6	117.3	205.2	-10.7	40.4	29.1	1.5	47.1	-110.0	75.7	10.2

Please refer to notes at end of table.

Table 4  
 Interim Action: Groundwater Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number:	MW-24i																
	Sample Date:	6/7/2011	9/16/2011	12/7/2011	3/12/2012	6/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/23/2014	9/30/2014	12/15/2014	3/20/2015
Analyte	Concentrations in mg/L (ppm)																
<b>Volatile Organic Compounds</b>																	
Tetrachloroethene	0.0066	0.027	0.019	0.030	0.00085	0.031	0.0021	0.023	0.0062	0.015	0.0067	0.010	0.0013	0.020	0.0024	0.0061	<0.00050
Trichloroethene	0.0014	0.024	0.014	0.011	<0.00050	0.02	0.00065	0.015	0.0036	0.0059	0.0034	0.0055	0.0052	0.010	0.0011	0.0031	<0.00050
cis-1,2-Dichloroethene	0.002	0.27	0.10	0.079	0.014	0.058	0.051	0.048	0.028	0.015	0.008	0.016	0.013	0.021	0.012	0.0059	0.0034
trans-1,2-Dichloroethene	<0.00050	0.0017	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Vinyl chloride	<0.00050	0.019	0.0075	0.0045	0.0026	<0.00050	<0.00050	<0.00050	<0.00080	<0.00080	<0.00050	<0.00080	0.00210	<0.00050	<0.00050	<0.00050	<0.00050
Ethene	<0.0010	NA	0.00229	0.00203	0.00152	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0291	<0.0010	<0.0010	<0.0062	<0.010
1,1-Dichloroethene	<0.00050	0.0025	0.00084	<0.00050	<0.00050	0.00087	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1-Dichloroethane	<0.00050	0.013	0.005	0.0059	0.0018	0.0044	<0.00050	0.0028	0.0027	0.0010	0.0013	0.0013	0.0012	0.0018	0.00060	0.00058	<0.00050
1,2-Dichloroethane	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	<0.00050	0.0056	0.0029	0.0023	<0.00050	0.00079	<0.00050	0.00057	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
<b>Attenuation Chemistry</b>																	
Total Organic Carbon	1.2	7.0	290	33	44	15	16	9.5	11	11	7.9	9.4	8.4	12.0	<1.0	<1.0	1.6
<b>Field Parameters</b>																	
Dissolved Oxygen	6.40	0.61	3.50	2.11	3.50	0.40	2.11	0.79	0.39	1.92	3.08	3.16	4.70	2.01	6.27	10.28	1.08
Oxidation Reduction Potential (mV)	59.0	646.9	-147.5	-1.2	-147.5	-54.0	6.3	13.1	130.2	-31.2	16.9	-55.4	-49.7	129.7	-13.9	38.6	-158.7

Please refer to notes at end of table.

Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number: Sample Date:	MGMS2-40																
	6/7/2011	9/12/2011	12/7/2011	3/8/2012	6/19/2012	9/12/2012	12/11/2012	3/15/2013	6/11/2013	9/17/2013	12/16/2013	3/24/2014	6/26/2014	9/23/2014	12/12/2014	3/20/2015	6/19/2015
Analyte	Concentrations in mg/L (ppm)																
<b>Volatile Organic Compounds</b>																	
Tetrachloroethene	4.4	0.79	0.061	0.0099	0.0072	0.089	0.010	0.0056	0.00094	0.016	0.0024	0.0026	0.021	0.170	0.0034	0.031	0.018
Trichloroethene	1.4	0.38	0.039	0.0054	0.0025	0.08	0.0034	0.0022	<0.00050	0.017	0.0014	0.0018	0.0220	0.110	0.0023	0.022	0.013
cis-1,2-Dichloroethene	1.6	7.4	5.3	0.47	0.02	0.31	0.033	0.30	0.0079	0.29	0.0084	0.084	0.088	0.590	0.010	0.047	0.054
trans-1,2-Dichloroethene	0.017	0.020	<0.015	0.0028	0.0013	0.0032	0.0013	0.0020	<0.00050	0.0014	<0.00050	<0.00050	0.00084	0.0024	<0.00050	<0.00050	<0.00050
Vinyl chloride	0.048	0.058	0.46	0.26	0.063	0.44	0.0040	0.27	0.0048	0.33	0.0034	0.27	0.09	0.80	0.018	0.017	0.048
Ethene	<0.001	NA	0.0145	0.368	0.566	0.264	0.11	0.121	0.0556	0.143	0.0333	0.930	0.2070	0.0121	0.0340	0.0081	0.034
1,1-Dichloroethene	0.030	0.028	<0.015	0.0023	<0.00050	0.0028	<0.00050	0.0019	<0.00050	0.0048	<0.00050	0.0029	0.0100	0.030	<0.00050	0.0039	0.0013
1,1-Dichloroethane	0.065	0.044	0.035	0.038	0.053	0.039	0.0048	0.028	0.0083	0.028	0.0097	0.0450	0.0310	0.030	0.035	0.0043	0.014
1,2-Dichloroethane	<0.015	<0.015	<0.015	<0.0020	<0.00050	<0.0015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	0.057	0.048	<0.015	0.0052	<0.00050	0.005	<0.00050	0.0025	<0.00050	0.0016	<0.00050	<0.00050	<0.00050	0.0032	<0.00050	<0.00050	<0.00050
<b>Attenuation Chemistry</b>																	
Total Organic Carbon	2.2	110	300	290	500	140	280	81	110	98	110	120	120	94	7.9	8	11
<b>Field Parameters</b>																	
Dissolved Oxygen	0.86	2.63	6.28	1.22	6.28	1.16	0.55	0.33	0.42	0.27	1.19	1.06	2.22	1.31	1.41	20.02	13.5
Oxidation Reduction Potential (mV)	49.5	338.9	-137.9	-73.6	-137.9	-40.1	-82.3	-24.3	-116.7	-209.9	-41.9	-126.1	-23.7	-119.0	-162.1	-83.7	-117.5

**Notes:**

1. mg/L (ppm) = Milligrams per liter (parts per million).
2. NA = Not analyzed.
3. Ethene is analyzed by EPA Method RSK-175M. All other VOCs were analyzed by EPA Method 8260.
4. **Boldface** value represents detected concentration of listed analyte.

Table 5  
 North SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Branch 4		Branch 5		Post Blower		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	
10/12/2011	0.0	-13.0	0.0	-12.0	7.2	0.1	--
11/2/2011	--*	-25.0	6.7	-25.0	--	--	--
11/17/2011	0.8	-16.0	6.9	-16.0	7.0	0.1	PID complications; Routinely reported error code. Potential moisture issues.
12/5/2011	--	--	--	--	--	--	System off on arrival and would not restart. Contractor identified electrical issues. Blower removed for replacement.
12/14/2011	--	--	--	--	--	--	System not operating, pending blower replacement. Blower reinstalled January 10, 2012
1/23/2012	--	-15.0	6.5	-15.0	3.9	0.1	Water in sample port of Branch 4, could not get PID reading
2/17/2012	0.1	-11.0	0.9	-11.0	2.9	1.0	--
3/22/2012	6.8	-12.0	5.4	-12.0	1.3	0.05	--
4/26/2012	1.3	-4.2	6.4	-4.0	1.0	0.05	--
5/23/2012	0.1	-3.4	3.2	-3.4	0.4	--	--
6/20/2012	0.0	-2.8	0.0	-2.7	0.1	0.2	--
7/24/2012	3.2	-3.2	9.2	-3.2	0.2	0.4	Used Rental PID.
8/22/2012	0.4	-2.4	1.0	-2.4	0.0	0.2	--
9/25/2012	0.1	-1.7	0.5	-1.7	0.0	0.2	Used ACA PID #3.
10/29/2012	--	--	--	--	--	--	System not operating.
11/26/2012	8.4	-4.0	9.2	-4.0	3.0	0.05	Used ACA PID #3.
12/21/2012	0.1	-0.63	0.0	-0.62	0.0	0.1	Used ACA PID #3.
1/24/2013	10.4	-0.45	0.0	-0.15	0.5	0.1	Used ACA PID #3.
2/28/2013	37.1	-0.22	2.1	-0.15	1.3	0.1	Used ACA PID #3.
3/25/2013	--	--	--	--	--	--	System not operating.
4/29/2013	--	--	--	--	--	--	System not operating.
5/24/2013	0.4	-23.0	0.1	-23.0	7.9	0.1	Used APEX PID #3.
6/25/2013	--	-20.0	--	-20.0	--	0.1	--
7/25/2013	6.6	-20.0	13.3	-20.0	6.1	0.1	Used APEX PID #3.
8/27/2013	1.9	-18.0	16.9	-18.0	6.8	0.1	Used APEX PID #3.
9/30/2013	0.0	-20.0	0.0	-20.0	2.1	0.1	Used APEX PID #3.

Please refer to notes at end of table.

Table 5  
 North SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Branch 4		Branch 5		Post Blower		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	
10/24/2013	1.3	-20.0	1.2	-20.0	2.3	0.1	Used APEX PID #3.
11/25/2013	0.3	-23.0	0.2	-23.0	1.1	0.1	Used APEX PID #3.
12/27/2013	1.0	-21.0	0.6	-21.0	2.6	0.1	Used APEX PID #1
1/29/2014	0.2	-20.0	0.1	-20.0	0.0	3.0	--
2/24/2014	2.4	-20.0	2.6	-20.0	2.6	9.0	Used APEX PID #3.
3/31/2014	0.3	-20.0	1.0	-20.0	0.2	1.0	Used APEX PID #4
4/29/2014	2.0	-20.0	1.4	-20.0	0.0	2.0	--
5/27/2014	2.0	-20.0	1.3	-20.0	0.9	2.0	--
7/3/2014	0.5	-20.0	0.3	-18.0	0.4	4.0	--
7/28/2014	4.0	-20.0	2.6	-19.0	0.1	3.0	Used APEX PID #3.
8/25/2014	--	-20.0	--	-19.0	3.7	3.5	Used APEX PID #3.
9/30/2014	2.1	-17.0	0.6	-17.0	1.7	--	--
10/27/2014	0.4	-26.0	1.4	-26.0	2.3	2.0	Used APEX PID #3.
11/25/2014	0.3	-21.0	1.5	-20.0	0.5	--	Used APEX PID #3.
12/29/2014	20.2	-25.0	32.1	-25.0	--	2.0	Used APEX PID #3.
1/26/2015	2.0	-25.0	3.2	-25.0	0.7	3.0	Used APEX PID #3. Knockout drum emptied.
2/26/2015	0.0	-22.0	0.0	-25.0	0.0	0.1	--
3/30/2015	0.0	-23.0	0.2	-27.0	0.0	0.4	Used APEX PID #3.
4/24/2015	0.0	-23.0	0.2	-27.0	0.0	0.4	
5/28/2015	5.5	-26.0	4.8	-26.0	5.5	0.05	--

**Notes:**

1. PID readings in parts per million (ppm), calibrated to 100 ppm isobutylene.
2. Pressure readings in inches of water, measured with magnahelic gauge.
3. NM = Not measured.
4. -- = Not available; branch not in use or no measurement collected during the site visit.
5. NA = Not available; photoionization detector (PID) malfunction.
6. \* = During the 11/2/2011 monitoring event, PID malfunctioned while monitoring Branch 4. Instrument readings would not stabilize.

Table 6  
North SVE System – Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Sampling Location	Sample ID	Date	1,1,1-Trichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
			Concentrations in µg/m <sup>3</sup>								
System Effluent	North_EFF-20111012	10/12/2011	<b>69</b>	<16	<b>160</b>	<16	<14	<b>9,500</b>	<b>16</b>	<b>700</b>	<10
System Effluent	Post Blower_North_012312	1/23/2012	<170	<120	<120	<120	<110	<b>16,000</b>	<120	<b>530</b>	<79
System Effluent	North_Effluent_0121712	2/17/2012	<140	<100	<100	<100	<91	<b>11,000</b>	<99	<b>300</b>	<67
System Effluent	North Effluent-032212	3/22/2012	<28	<54	<27	<27	<23	<b>6,600</b>	<25	<b>140</b>	<8.6
System Effluent	North_Effluent_062012	6/20/2012	<1.6	<3.2	<1.6	<1.6	<b>5.3</b>	<b>250</b>	<1.5	<b>15</b>	<0.51
System Effluent	North_Effluent_082212	8/22/2012	<1.6	<3.2	<1.6	<1.6	<1.4	<b>140</b>	<1.5	<b>11</b>	<0.51
System Effluent	North_Effluent_112612	11/26/2012	<b>39</b>	<14	<b>52</b>	<7.1	<6.2	<b>22,000</b>	<6.8	<b>510</b>	<4.6
System Effluent	North_Effluent_122112	12/21/2012	<31	<59	<30	<30	<26	<b>3,500</b>	<28	<b>61</b>	<19
System Effluent	North_Effluent_022813	2/28/2013	<36	<70	<35	<35	<31	<b>4,400</b>	<33	<b>160</b>	<22
System Effluent	SVE North	5/24/2013	<240	<170	<b>280</b>	<170	<380	<b>23,000</b>	<160	<b>1,100</b>	<110
System Effluent	SVE North	6/25/2013	<b>76</b>	<51	<b>88</b>	<51	<110	<b>13,000</b>	<49	<b>730</b>	<33
System Effluent	SVE North	8/27/2013	<150	<110	<110	<110	<230	<b>17,000</b>	<100	<b>800</b>	<69
System Effluent	SVE North Effluent	10/24/2013	<82	<60	<60	<60	<130	<b>10,000</b>	<57	<b>570</b>	<39
System Effluent	SVE North Effluent	12/27/2013	<44	<32	<32	<32	<69	<b>7,000</b>	<30	<b>470</b>	<20
System Effluent	SVE North Effluent	1/29/2014	<10	<40	<b>22</b>	<40	<87	<b>1,300</b>	<38	<b>110</b>	<26
System Effluent	SVE_North_Post Carbon	2/24/2014	<b>55</b>	<83	<b>68</b>	<41	<36	<b>8,700</b>	<39	<b>760</b>	<27
System Effluent	SVE North Post Carbon	3/5/2014	<b>25</b>	<39	<b>29</b>	<20	<17	<b>4,600</b>	<19	<b>300</b>	<13
System Effluent	VCP_North_Effluent	3/31/2014	<b>19</b>	<13	<b>18</b>	<13	<28	<b>3,500</b>	<12	<b>200</b>	<8.2
System Effluent	North_SVE_Effluent_042914	4/29/2014	<b>22</b>	<15	<b>17</b>	<15	<33	<b>3,500</b>	<14	<b>220</b>	<9.8
System Effluent	North_SVE_Effluent_052714	5/27/2014	<31	<23	<23	<23	<50	<b>4,100</b>	<22	<b>280</b>	<15
System Effluent	North_VCP_Effluent	7/3/2014	<23	<17	<b>20</b>	<17	<37	<b>4,500</b>	<16	<b>290</b>	<11
System Effluent	SVE North	7/28/2014	<120	<88	<88	<88	<190	<b>7,200</b>	<84	<b>460</b>	<22
System Effluent	North SVE	9/30/2014	<48	<35	<b>48</b>	<35	<76	<b>7,300</b>	<33	<b>480</b>	<22
System Effluent	SVE North Effluent	10/27/2014	<110	<80	<80	<80	<180	<b>15,000</b>	<76	<b>410</b>	<52
System Effluent	SVE North 11.25.14	11/25/2014	<39	<28	<28	<28	<62	<b>7,100</b>	<27	<b>390</b>	<18
System Effluent	SVENorth122914	12/29/2014	<140	<99	<99	<99	<220	<b>15,000</b>	<94	<b>290</b>	<64
System Effluent	SVE North	1/26/2015	<b>16</b>	<31	<16	<16	<14	<b>1,500</b>	<15	<b>130</b>	<10
System Effluent	SVE North	2/26/2015	<1.6	<3.2	<1.6	<1.6	<1.5	<b>32</b>	<1.5	<2.1	<1.0
System Effluent	SVE North	3/30/2015	<b>15</b>	<9.6	<b>9.5</b>	<4.8	<4.2	<b>1,700</b>	<4.6	<b>130</b>	<3.1
System Effluent	SVE N	4/24/2015	<8.5	<16	<8.2	<8.2	<7.2	<b>550</b>	<7.8	<b>50</b>	<5.3
System Effluent	SVE North	5/14/2015	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	<1.5	<2.1	<1.0
System Effluent	SVE North	5/28/2015	<3.8	<7.3	<3.6	<3.6	<3.2	<b>360</b>	<b>3.6</b>	<b>8.0</b>	<2.4

Notes:

1. µg/m<sup>3</sup> = Micrograms per cubic meter.
2. Samples analyzed by Modified EPA Method TO-15.
3. Only analytes detected in at least one sample are presented in this table.
4. **Bold** values represents detected concentration of listed analyte.

Table 7  
 South SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Pre-Blower		Post Blower (Pre-Carbon)		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
10/12/2011	--	-14.0	17.1	24.0	0	12.0	0.2	4.0	--
10/18/2011	--	-14.0	15.5	--	15.5	14.0	0.5	3.0	Pre-carbon, post blower tap is now covered by noise suppression panels.
11/2/2011	--	-15.0	18.2	26.0	0.0	26.0	2.0	7.0	--
11/17/2011	--	-18.0	8.9	27.0	--*	15.0	--*	6.8	--
12/5/2011	8.3	-18.0	10.7	39.0	0.0	19.0	2.2	6.1	System switch off upon arrival. System restarted. Monitoring event conducted approximately 3 hours after restart.
12/14/2011	11.8	-19.0	21.0	28.0	0.0	18.0	0.7	6.2	--
1/9/2012	7.3	-17.0	8.3	29.0	0.0	18.0	0.0	6.2	--
1/23/2012	7.0	-17.0	8.9	29.0	0.0	17.0	0.0	6.9	--
2/17/2012	6.0	-18.0	11.2	29.0	0.0	18.0	0.0	6.0	--
3/22/2012	13.3	-16.0	10.7	27.0	0.0	15.0	0.0	6.5	--
4/26/2012	10.3	-17.0	11.6	27.0	0.0	16.0	0.0	6.4	--
5/23/2012	10.4	-20.0	10.6	31.0	0.0	19.0	0.0	6.6	--
6/20/2012	7.3	-21.0	7.5	33.0	0.5	20.0	0.0	6.3	--
7/24/2012	19.8	-20.0	41.5	32.0	226.3	20.0	98.8	6.2	Used rental PID.
8/22/2012	8.0	-48.0	10.1	29.0	5.5	18.0	1.1	4.6	--
9/25/2012	10.0	-46.0	13.7	29.0	9.5	15.0	12.8	4.3	Used ACA PID #3.
10/29/2012	8.4	-34.0	18.6	47.0	0.3	28.0	12.9	4.3	Used ACA PID #3; Carbon change-out on 10/29/2012
11/26/2012	13.7	<-100	1.6	18.0	0.1	6.6	3.1	0.66	Used ACA PID #3.
12/21/2012	0.5	-107	0.5	17.0	0.0	6.1	0.0	0.49	Used ACA PID #3.
1/24/2013	5.1	-105	0.5	10.0	0.0	6.5	0.0	0.61	Used ACA PID #3.
2/28/2013	2.8	-105	0.1	18.0	0.0	7.0	0.0	0.60	Used ACA PID #3.
3/25/2013	8.4	-102	0.9	16.0	0.1	7.0	0.0	0.58	Used Apex PID #3
4/29/2013	0.2	-98	0.4	15.0	0.0	6.3	0.1	0.49	Used Apex PID #3

Please refer to notes at end of table.



Table 7  
 South SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Pre-Blower		Post Blower (Pre-Carbon)		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
5/24/2013	41.0	-18	49.7	47.0	0.2	26	0.7	5.0	Used Apex PID #3
6/25/2013	--	-15	--	51.0	--	31	--	5.1	--
7/25/2013	12.3	-16	13.9	50.0	0.7	32	0.5	6.0	Used Apex PID #3
8/27/2013	13.2	-16	12.1	52.0	3.8	31	1.2	5.2	Used Apex PID #3
9/30/2013	5.2	-15	15.4	45.0	27.4	30	0.4	5.2	Used Apex PID #3
10/24/2013	3.1	-14	13.2	50.0	6.8	32	1.5	5.2	Used Apex PID #3
11/25/2013	1.4	-19	19.3	51.0	12.4	35	2.8	5.3	Used Apex PID #3
12/27/2013	0.3	-19	7.7	55.0	3.1	32	0.0	5.4	Used Apex PID #1
1/29/2014	2.4	-19	6.7	50.0	5.7	30	0.2	10.0	--
2/24/2014	7.7	-19	19.7	50.0	2.4	30	1.4	10.0	Used Apex PID #3
3/31/2014	2.6	-15	4.6	46.0	5.4	30	0.0	8.0	Used APEX PID #4
4/29/2014	2.0	-14	3.4	48.8	9.7	30	0.0	8.0	--
5/27/2014	3.5	-14	5.0	49.0	10.2	28	0.1	7.0	--
7/3/2014	1.6	-18	2.4	50.0	1.4	30	0.1	10.0	--
7/28/2014	8.5	-19	9.0	50.0	11.0	30	8.7	8.0	Used Apex PID #3
8/25/2014	4.6	-17	7.5	49.0	15.8	26	11.0	7.0	Used Apex PID #3
9/30/2014	0.5	-14	5.2	40.0	4.0	28	2.7	5.0	--
10/27/2014	--	--	--	--	--	--	--	--	System off upon arrival. Unable to turn back on.
11/3/2014	5.0	-20	23.0	50.0	13.1	20	14.6	8.0	Used Apex PID #3
11/25/2014	--	--	--	--	--	--	--	--	System off for drum replacement.
12/29/2014	--	--	--	--	--	--	--	--	System off.
1/26/2015	27.1	-25	34.6	20.0	1.0	17	0.0	10.0	Used Apex PID #3
2/26/2015	0.8	-20	12.9	30.0	0.2	19	0.1	8.0	--
3/30/2015	0.4	-20	14.2	29.0	0.1	20	0.1	8.0	Used Apex PID #3
4/24/2015	0.4	-20	14.2	29.0	0.1	20	0.1	8.0	
5/28/2015	1.0	-20	57.5	28.0	63.6	17	33.0	7.0	--

**Notes:**

1. PID readings in parts per million (ppm), calibrated to 100 ppm isobutylene.
2. Pressure readings in inches of water, measured with magnahelic gauge.
3. NM = Not measured.
4. -- = Not available or not applicable.
5. \* = PID was malfunctioning. No data were collected.

Table 8  
 South SVE System – Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m <sup>3</sup>										
Pre Carbon	INF 1006	10/6/2011	<330	<320	470	<320	<280	40,000	<300	520	5,100	<210	<350
Post Carbon	EFF 1006	10/6/2011	<16	<16	390	<16	<14	<27	<15	140	50	<10	<17
Pre Carbon	Post Blower 110211	11/2/2011	<290	<280	430	<280	<250	26,000	<270	<390	2,100	<180	<310
Pre Carbon	SOUTHSVE_PRECARBON_121411	12/14/2011	<580	<570	620	<570	<500	54,000	<540	<780	2,800	<360	<620
Post Carbon	SOUTHSVE_POSTCARBON_121411	12/14/2011	<16	35	23	<16	17	1,600	<15	78	1,300	12	<17
Post Carbon	POST CARBON_SOUTH_012312	1/23/2012	<16	<16	<16	<16	<14	<27	<15	<22	<21	<10	<17
Pre Carbon	South_PreCarbon_021712	2/17/2012	<300	<300	460	<300	<260	28,000	<280	<410	1,200	<190	<330
Post Carbon	South_PostCarbon_021712	2/17/2102	<16	<16	<16	<16	<14	<27	<15	<22	<21	<17	<10
Pre Carbon	South Influent - 032212	3/22/2012	<190	<190	310	<95	<84	30,000	<91	99	960	<31	<100
Post Carbon	South Effluent - 032212	3/22/2012	<1.2	<3.2	<1.6	<1.6	4	<2.7	<1.5	<1.6	<2.1	6.4	<3.5
Pre Carbon	South_SVE_PRECARBON	4/26/2012	<210	<560	<280	<280	<240	32,000 S	<270	<290	640 S	<90	<610
Post Carbon	South_SVE_POSTCARBON	4/26/2012	<1.2	<3.2	<1.6	<1.6	4	<2.7	<1.5	<1.6	<2.1	2.4	<3.5
Pre Carbon	SOUTH_SVE_PRECARBON	5/23/2012	<100	<260	200	<130	<120	19,000	<130	<140	780	<43	<290
Post Carbon	South_SVE_PRECARBON	5/23/2012	<1.2	<3.2	<1.6	<1.6	3	<2.7	<1.5	<1.6	<2.1	3.7	<3.5
Pre Carbon	South_PreCarbon_062012	6/20/2012	<240	<630	360	<320	<280	35,000	<300	<330	1,400	<100	<1040
Post Carbon	South_PostCarbon_062012	6/20/2012	<0.30	<0.80	<0.40	<0.40	1.0	<0.40	<0.40	<0.30	<0.40	1.2	<1.2
Pre Carbon	South_PreCarbon_072412	7/24/2012	<150	<390	240	<200	<170	33,000	<190	<200	1,100	<63	<640
Post Carbon	South_PostCarbon_072412	7/24/2012	<1.2	11	<1.6	<1.6	3.0	<2.7	2.2	<1.6	<2.1	3.9	<5.2
Pre Carbon	South_PreCarbon_082212	8/22/2012	<250	<660	760	<330	<290	47,000	<310	<340	2,000	<110	1,080
Post Carbon	South_PostCarbon_082212	8/22/2012	<21	<55	<27	<27	<24	<47	<26	<28	<37	<8.8	<90
Pre Carbon	South_PreCarbon_092512	9/25/2012	<270	<700	500	<400	<310	50,000	<330	<360	1,900	<230	<770
Post Carbon	South_PostCarbon_092512	9/25/2012	13	18	1,200	11	5.7	<2.7	<1.5	<1.6	<2.1	6.2	<3.5
Pre Carbon	South_PreCarbon_102912	10/29/2012	<320	<850	440	<480	<370	60,000	<400	<440	2,200	<270	<930
Post Carbon	South_PostCarbon_102912	10/29/2012	<5.3	<14	<7	<7	<7	<7	<7	<7	<7	<7	<14
Pre Carbon	South_PreCarbon_112612	11/26/2012	<95	<250	<120	<120	<110	10,000	<120	<130	530	<80	<410
Post Carbon	South_PostCarbon_112612	11/26/2012	<2.7	<7.2	<3.6	<3.6	<3.6	<3.6	<3.6	<2.7	<3.6	<3.6	<10.8
Pre Carbon	South_PreCarbon_122112	12/21/2012	<71	<190	110	<93	<82	14,000	<89	<96	600	<60	<300
Post Carbon	South_PostCarbon_122112	12/21/2012	<1.2	<3.2	<1.6	<1.6	1.6	<2.7	<1.5	<1.6	<2.1	3.0	<5.2
Pre Carbon	South_PreCarbon_012413	1/24/2013	<9.2	<24	14	<12	<11	1,700	<11	<12	100	<7.8	<39
Post Carbon	South_PostCarbon_012413	1/24/2013	<1.2	<3.2	<1.6	<1.6	3.3	<2.7	<1.5	<1.6	<2.1	3.7	<5.2
Pre Carbon	South_PreCarbon_022813	2/28/2013	<5.9	<15	8.5	<7.7	<6.7	940	<7.3	<7.9	84	<5.0	<25.4
Post Carbon	South_PostCarbon_022813	2/28/2013	<1.2	<3.2	<1.6	<1.6	8.1	<2.7	<1.5	<1.6	<2.1	<1.0	<5.2

Please refer to notes at end of table.

Table 8  
 South SVE System – Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Total Xylenes
			Concentrations in $\mu\text{g}/\text{m}^3$										
Pre Carbon	South_PreCarbon_032513	3/25/2013	<29	<75	<38	<38	<33	3,700	<36	<39	160	<24	<123
Post Carbon	South_PostCarbon_032513	3/25/2013	<1.2	<3.2	<1.6	<1.6	2.0	<2.7	<1.5	<1.6	<2.1	2.0	<5.2
Pre Carbon	SVE South Pre Carbon	4/29/2013	<6.3	<16	10	<8.2	<7.2	950	<7.8	<8.4	48	<5.3	<26.9
Post Carbon	SVE South Post Carbon	4/29/2013	<0.30	<0.80	<0.40	<0.40	<0.40	<0.40	<0.40	<0.30	<0.40	0.93	<1.2
Pre Carbon	SVE South Pre Carbon	5/24/2013	<1,100	<1,100	2,400	<1,100	<2,400	240,000	<1,100	<1,500	8,400	<720	<4,300
Post Carbon	SVE South Post Carbon	5/24/2013	<0.81	<0.79	<0.79	<0.79	<1.7	<1.4	<0.75	<1.1	<1.1	<0.51	<3.1
Pre Carbon	SVE South Pre Carbon	6/25/2013	<150	<150	630	<150	<330	39,000	<140	<210	1,800	<97	<570
Post Carbon	SVE South Post Carbon	6/25/2013	<0.81	8.1	3.8	<0.79	5.6	<1.4	<0.75	<1.1	<1.1	3.1	<3.1
Pre Carbon	SVE South Pre Carbon	7/25/2013	<120	<120	380	<120	<260	22,000	<110	<160	1,200	<77	<460
Post Carbon	SVE South Post Carbon	7/25/2013	<0.81	17	65	2.1	3.4	<1.4	1.2	<1.1	<1.1	2.6	1.4
Pre Carbon	SVE South Pre Carbon	8/27/2013	<150	<150	520	<150	<330	28,000	<140	<210	1,500	<97	<580
Post Carbon	SVE South Post Carbon	8/27/2013	3.3	13	270	7.0	4.7	<2.7	<1.5	<2.2	<2.1	3.7	<6.0
Pre Carbon	SVE South Precarbon	9/30/2013	<110	<110	450	<110	<240	26,000	<110	<150	1,400	<72	<420
Pre Carbon	SVE South Pre Carbon	10/24/2013	<140	<140	430	<140	<310	27,000	<130	<190	1,100	<90	<530
Post Carbon	SVE South Post Carbon	10/24/2013	3.8	4.9	390	3.3	<5.2	4.3	<2.3	5.4	<3.2	2.6	<5.1
Pre Carbon	SVE South Pre Carbon	11/25/2013	<100	<98	250	<98	<220	21,000	<93	<140	840	<63	<380
Post Carbon	SVE South Post Carbon	11/25/2013	<2.8	4.1	250	<2.8	7.3	<4.8	<2.6	17	56	<1.8	<10.6
Pre Carbon	SVE South Pre Carbon	12/27/2013	<110	<110	270	<110	<240	20,000	<100	<150	900	<70	<420
Post Carbon	SVE South Post Carbon	12/27/2013	2.5	4.5	220	2.4	3.8	3.5	<1.1	6.8	62	<0.77	<4.6
Pre Carbon	SVE South Pre-Carbon	1/29/2014	<80	<79	260	<79	<170	20,000	<75	<110	800	<51	<306
Post Carbon	SVE South Post-Carbon	1/29/2014	4.5	7.2	330	4.8	<8.7	7.9	<3.8	13	98	3.1	<15.3
Pre Carbon	SVE_South_Pre_Carbon	2/24/2014	<190	<490	430	<240	240.0	34,000	600	<250	1,500	<160	<800
Post Carbon	SVE_South_Effluent	2/24/2014	<1.2	<3.2	41	<1.6	<1.4	<2.7	<1.5	<1.6	<2.1	<1.0	<5.2
Pre Carbon	SVE South Pre Carbon	3/5/2014	<110	<280	270	<140	<120	16,000	660	<140	660	<90	1,090
Post Carbon	SVE South Effluent	3/5/2014	3.7	<8.3	310	4.2	4.4	<7.1	<4.0	<4.3	21	<2.7	<13.7
Pre Carbon	VCP_South_Post_Blower	3/31/2014	<83	<82	260	<82	<180	20,000	<78	<110	630	<53	<309
Post Carbon	VCP_South_Effluent	3/31/2014	3.3	4.9	290	4.2	<4.3	<3.4	<1.9	3.3	21	1.4	<7.6
Pre Carbon	South_SVE_Postblower_042914	4/29/2014	<47	<46	180	<46	<100	13,000	<44	<63	550	<30	<180
Post Carbon	South_SVE_Effluent_042914	4/29/2014	5.1	5.0	540	<4.8	<11	<8.2	<4.6	<6.6	37	<3.1	<18.3
Pre Carbon	South_SVE_Postblower_052714	5/27/2014	<57	<55	160	<55	<120	12,000	<53	<76	490	<36	<201
Post Carbon	South_SVE_PostCarbon_052714	5/27/2014	5.0	<4.8	530	<4.8	<11	<8.2	<4.6	14	8.1	<3.1	<18.3

Please refer to notes at end of table.

Table 8  
 South SVE System – Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Total Xylenes
			Concentrations in $\mu\text{g}/\text{m}^3$										
Pre Carbon	South_VCP_Post Blower	7/3/2014	<18	<18	<b>56</b>	<18	<45	<b>2,800</b>	<18	<18	<b>150</b>	<18	<63
Post Carbon	South_VCP_Post Carbon	7/3/2014	<16	<16	<b>760</b>	<16	<35	<b>55</b>	<15	<b>430</b>	<b>3,200</b>	<10	<60
Pre Carbon	SVE Pre Carbon	7/28/2014	<69	<67	<b>200</b>	<67	<150	<b>15,000</b>	<64	<93	<b>750</b>	<43	<254
Post Carbon	SVE Post Carbon	7/28/2014	<68	<67	<b>270</b>	<67	<150	<b>13,000</b>	<63	<b>530</b>	<b>12,000</b>	<43	<253
Pre Carbon	South SVE Pre Carbon	8/25/2014	<140	<130	<b>340</b>	<130	<290	<b>20,000</b>	<130	<180	<b>1,100</b>	<86	<520
Post Carbon	South SVE Post Carbon	8/25/2014	<140	<130	<b>270</b>	<130	<290	<b>9,600</b>	<130	<180	<b>2,700</b>	<86	<520
Pre Carbon	South SVE_Pre Carbon	9/30/2014	<110	<110	<b>250</b>	<110	<230	<b>17,000</b>	<100	<150	<b>930</b>	<69	<410
Post Carbon	South SVE_Post Carbon	9/30/2014	<130	<120	<b>280</b>	<120	<270	<b>23,000</b>	<120	<170	<b>620</b>	<80	<480
Pre Carbon	SVE South Post Blower	11/3/2014	<130	<130	<b>320</b>	<130	<280	<b>24,000</b>	<120	<170	<b>1,100</b>	<81	<490
Post Carbon	SVE South Post Carbon	11/3/2014	<81	<81	<b>130</b>	<81	<180	<b>12,000</b>	<77	<110	<b>290</b>	<52	<309
Pre Carbon	SVE South Pre Carbon	1/26/2015	<190	<500	<b>420</b>	<250	<220	<b>21,000</b>	<b>240</b>	<260	<b>860</b>	<160	<820
Post Carbon	SVE South Post Carbon	1/26/2015	<78	<200	<100	<100	<90	<170	<b>190</b>	<110	<140	<66	<330
Pre Carbon	SVE South Pre Carbon	2/26/2015	<150	<390	<b>260</b>	<200	<170	<b>18,000</b>	<b>280</b>	<200	<b>660</b>	<130	<650
Post Carbon	SVE South Post Carbon	2/26/2015	<1.2	<3.2	<1.6	<1.6	<b>3.2</b>	<2.7	<1.5	<1.6	<2.1	<b>2.5</b>	<5.2
Pre Carbon	SVE South Pre Carbon	3/30/2015	<61	<160	<b>200</b>	<79	<b>160</b>	<b>17,000</b>	<b>180</b>	<82	<b>570</b>	<51	<257
Post Carbon	SVE South Post Carbon	3/30/2015	<1.2	<3.2	<1.6	<1.6	<b>2.8</b>	<2.7	<b>2.7</b>	<1.6	<b>51</b>	<b>2.5</b>	<5.2
Pre Carbon	SVE S Pre Carbon	4/24/2015	<37	<97	<b>170</b>	<49	<43	<b>5,400</b>	<46	<50	<b>410</b>	<31	<163
Post Carbon	SVE S Post Carbon	4/24/2015	<6.2	<16	<8.1	<8.1	<7.1	<b>660</b>	<7.7	<8.3	<b>19</b>	<5.2	<b>18</b>
Pre Carbon	SVE South Pre Carbon	5/28/2015	<60	<160	<b>140</b>	<79	<b>92</b>	<b>8,000</b>	<b>240</b>	<81	<b>460</b>	<51	<256
Post Carbon	SVE South Post Carbon	5/28/2015	<4.9	<13	<6.3	<6.3	<5.6	<b>650</b>	<6.0	<6.5	<b>16</b>	<4.1	<b>22.1</b>

Notes:

1.  $\mu\text{g}/\text{m}^3$  = Micrograms per cubic meter.
2. Samples analyzed by Modified EPA Method TO-15.
3. Only analytes detected in at least one sample are presented in this table.
4. S= Surrogate recoveries were above acceptable recovery limits. Results may be biased high
5. **Bold** values represents detected concentration of listed analyte.

Table 9  
 North SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sample Date	Post-Blower Pressure (in H <sub>2</sub> O)	Air Flow Rate <sup>(1)</sup> (cfm)	Total VOCs (mg/m <sup>3</sup> )	VOC Removal (lb/day)
10/12/2011	0.1	250	10.5	0.2
1/23/2012	0.1	361	16.5	0.5
2/17/2012	0.05	215	11.3	0.2
3/22/2012	--	210	6.7	0.1
6/20/2012	0.2	217.8	0.3	0.005
8/22/2012	0.2	216	0.2	0.003
11/26/2012	0.05	215	22.6	0.436
12/21/2012	0.1	215	3.6	0.069
2/28/2013	0.1	215	4.6	0.088
5/24/2013	0.1	215	24.4	0.471
6/25/2013	0.1	215	13.8	0.267
8/27/2013	0.1	215	17.8	0.344
10/24/2013	0.1	215	10.6	0.204
12/27/2013	0.1	215	7.5	0.144
1/29/2014	3.0	215	1.4	0.028
2/24/2014	9.0	215	9.5	0.184
3/31/2014	1.0	215	3.7	0.072
4/29/2014	2.0	215	3.7	0.072
5/27/2014	2.0	215	4.4	0.085
7/3/2014	4.0	215	4.8	0.093
7/28/2014	3.0	215	7.7	0.148
9/30/2014	--	215	7.8	0.151
10/27/2014	2.0	215	15.4	0.298
11/25/2014	--	215	7.5	0.145
12/29/2014	2.0	215	15.3	0.296
1/26/2015	3.0	215	1.6	0.032
2/26/2015	0.1	215	0.0	0.001
3/30/2015	0.4	215	1.8	0.036
4/24/2015	0.4	215	0.6	0.012
5/14/2015	--	215	0.0	0.000
5/28/2015	0.05	215	0.4	0.007

Please refer to notes at end of table.

Table 9  
 North SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Activity	VOC Removal Rate (lb/day)	Days of Operation	Approximate VOCs Removed (lbs)	Approximate Cumulative VOCs Removed (lbs)
10/10/2011	Startup	--	--	--	--
10/12/2011	Sample	0.2	37	9	9
1/23/2012	Sample	0.5	31	17	26
2/17/2012	Sample	0.2	25	6	32
3/22/2012	Sample	0.1	34	5	37
6/20/2012	Sample	0.005	90	1	38
8/22/2012	Sample	0.003	63	1	39
11/26/2012	Sample	0.436	66	29	68
12/21/2012	Sample	0.069	25	2	70
2/28/2013	Sample	0.088	69	7	77
5/24/2013	Sample	0.471	--	--	77
6/25/2013	Sample	0.267	32	9	86
8/27/2013	Sample	0.344	63	22	108
10/24/2013	Sample	0.204	58	12	120
12/27/2013	Sample	0.144	64	10	130
1/29/2014	Sample	0.028	33	1	131
2/24/2014	Sample	0.184	--	--	131
3/31/2014	Sample	0.072	35	3	134
4/29/2014	Sample	0.072	29	3	137
5/27/2014	Sample	0.085	28	3	140
7/3/2014	Sample	0.093	37	4	144
7/28/2014	Sample	0.148	25	4	148
9/30/2014	Sample	0.151	64	10	158
10/27/2014	Sample	0.298	27	9	167
11/25/2014	Sample	0.145	29	5	172
12/29/2014	Sample	0.296	34	11	183
1/26/2015	Sample	0.032	28	1	184
2/26/2015	Sample	0.001	31	1	185
3/30/2015	Sample	0.036	32	2	187
4/24/2015	Sample	0.012	25	1	188
5/14/2015	Sample	0.000	20	0	188
5/28/2015	Sample	0.007	14	1	189
6/30/2015	Estimate	0.007	33	1	190

**Notes:**

1. Air flow rate read from system gauge.
2. cfm = Cubic feet per minute.
3. mg/m<sup>3</sup> = Milligrams per cubic meter.
4. lb/day = Pounds per day.
5. lbs = Pounds.

Table 10  
 South SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sample Date	Post-Blower Pressure (in H <sub>2</sub> O)	Air Flow Rate <sup>(1)</sup> (cfm)	Total VOCs (mg/m <sup>3</sup> )	VOC Removal (lb/day)
10/6/2011	33.0	590	46	2.4
11/2/2011	27.0	590	29	1.5
12/14/2011	27.0	590	57	3.0
2/17/2012	29.0	-- <sup>6</sup>	30	1.6
3/22/2012	27.0	658	31	1.9
4/26/2012	27.0	--	38	2.3
5/23/2012	31.0	--	20	1.2
6/20/2012	33.0	--	37	2.2
7/24/2012	32.0	--	34	2.0
8/22/2012	29.0	--	51	3.0
9/25/2012	29.0	--	52	3.1
10/29/2012	47.0	--	63	3.7
11/26/2012	18.0	--	11	0.6
12/21/2012	17.0	--	15	0.9
1/24/2013	10.0	--	2	0.1
2/28/2013	18.0	--	1	0.1
3/25/2013	16.0	--	4	0.2
4/29/2013	15.0	--	1	0.1
5/24/2013	47.0	--	251	14.8
6/25/2013	51.0	--	41	2.5
7/25/2013	50.0	--	24	1.4
8/27/2013	52.0	--	30	1.8
9/30/2013	45.0	--	28	1.6
10/24/2013	50.0	--	29	1.7
11/25/2013	51.0	--	22	1.3
12/27/2013	55.0	--	21	1.3
1/29/2014	50.0	--	21	1.2
2/24/2014	50.0	--	37	2.2
3/31/2014	46.0	--	21	1.2
4/29/2014	48.8	--	14	0.8
5/27/2014	49.0	--	13	0.7
7/3/2014	50.0	--	3	0.2
7/28/2014	50.0	--	16	0.9
8/25/2014	49.0	--	21	1.2
9/30/2014	40.0	--	18	1.1
11/3/2014	50.0	--	25	1.5
1/26/2015	20.0	--	23	1.3
2/26/2015	30.0	--	19	1.1
3/30/2015	29.0	--	18	1.1
4/24/2015	29.0	--	6	0.4
5/28/2015	28.0	--	9	0.5

Please refer to notes at end of table.

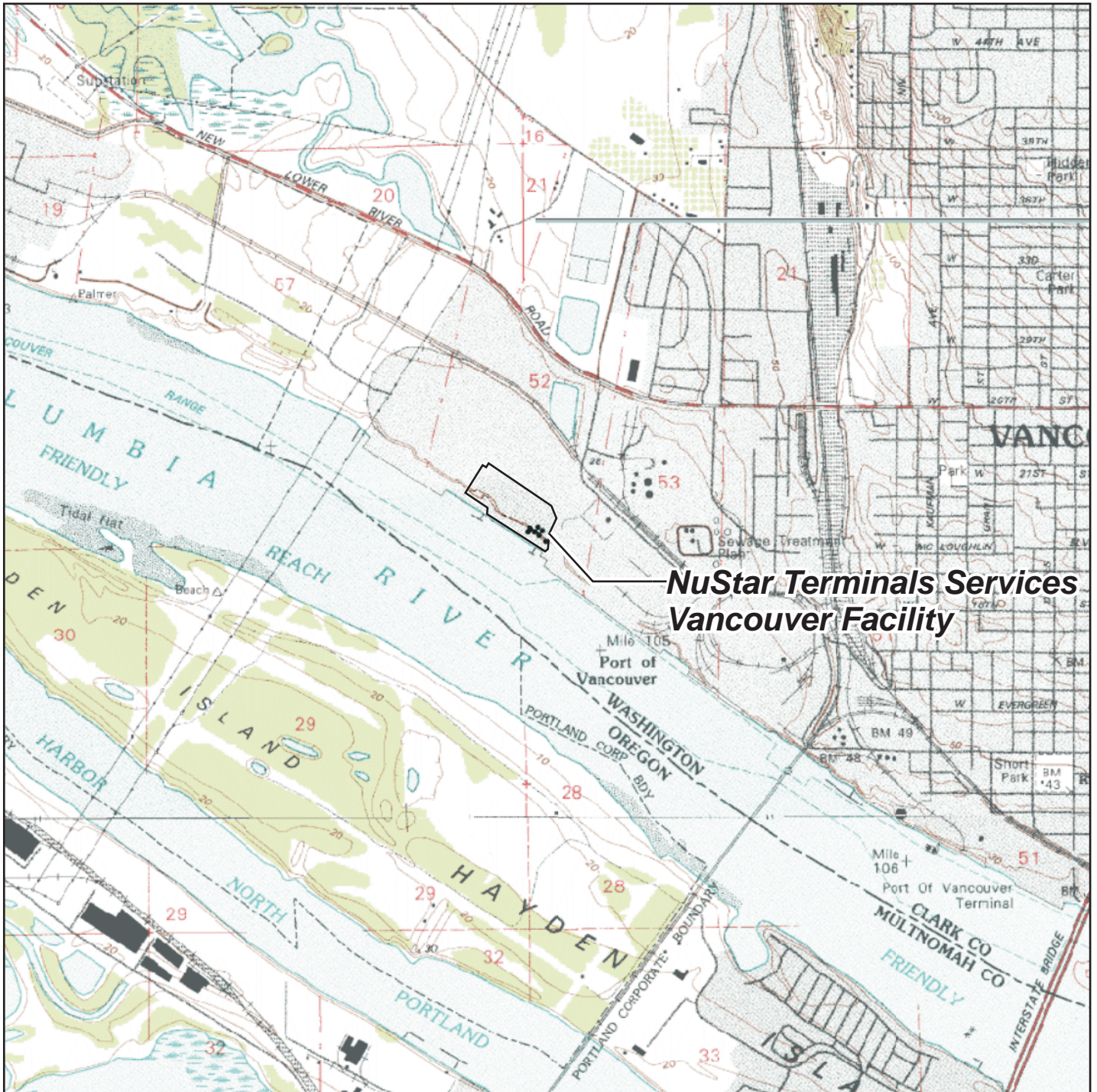
Table 10  
 South SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Activity	VOC Removal Rate (lb/day)	Days of Operation	Approximate VOCs Removed (lbs)	Approximate Cumulative VOCs Removed (lbs)
10/6/2011	Startup	2.4	0.5	2	2
11/2/2011	Sample	1.5	27	41	43
12/14/2011	Sample	3.0	42	96	139
2/17/2012	Sample	1.6	65	151	290
3/22/2012	Sample	1.9	34	59	349
4/26/2012	Sample	2.3	35	73	422
5/23/2012	Sample	1.2	29	51	473
6/20/2012	Sample	2.2	28	47	520
7/24/2012	Sample	2.0	34	72	592
8/22/2012	Sample	3.0	29	74	666
9/25/2012	Sample	3.1	34	104	770
10/29/2012	Sample	3.7	34	116	886
11/26/2012	Sample	0.6	28	61	947
12/21/2012	Sample	0.9	25	19	966
1/24/2013	Sample	0.1	34	17	983
2/28/2013	Sample	0.1	35	3	986
3/25/2013	Sample	0.2	25	4	990
4/29/2013	Sample	0.1	35	6	996
5/24/2013	Sample	14.8	--	--	996
6/25/2013	Sample	2.5	32	277	1273
7/25/2013	Sample	1.4	30	58	1331
8/27/2013	Sample	1.8	33	53	1384
9/30/2013	Sample	1.6	34	59	1443
10/24/2013	Sample	1.7	24	41	1484
11/25/2013	Sample	1.3	32	48	1532
12/27/2013	Sample	1.2	32	41	1573
1/29/2014	Sample	1.2	33	41	1614
2/24/2014	Sample	2.2	--	--	1614
3/31/2014	Sample	1.2	35	60	1674
4/29/2014	Sample	0.8	29	30	1704
5/27/2014	Sample	0.7	28	22	1726
7/3/2014	Sample	0.2	37	18	1744
7/28/2014	Sample	0.9	25	15	1759
8/25/2014	Sample	1.2	28	31	1790
9/30/2014	Sample	1.1	36	42	1832
11/3/2014	Sample	1.5	30	39	1871
12/31/2014	Estimated	1.5	22	33	1904
1/26/2015	Sample	1.3	26	37	1941
2/26/2015	Sample	1.1	31	39	1980
3/30/2015	Sample	1.1	32	36	2016
4/24/2015	Sample	0.4	25	18	2034
5/28/2015	Sample	0.5	34	15	2049

**Notes:**

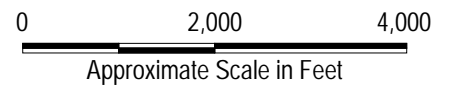
1. Air flow rate read from system gauge.
2. cfm = cubic feet per minute.
3. mg/m<sup>3</sup> = Milligrams per cubic meter.
4. lb/day = Pounds per day.
5. lbs = Pounds.
6. Flow rate was not measured on dates with dashes. For calculations, rate is assumed to be the same as measured the date before.
7. System was down during the October 27, 2014 monitoring event and was restarted on October 29, 2014. It is assumed that the system was down for a total of four days, although the exact duration of shutdown is unknown.





**NuStar Terminals Services  
Vancouver Facility**

Base map prepared from USGS 7.5-minute quadrangles as provided by Topozone.



Vancouver



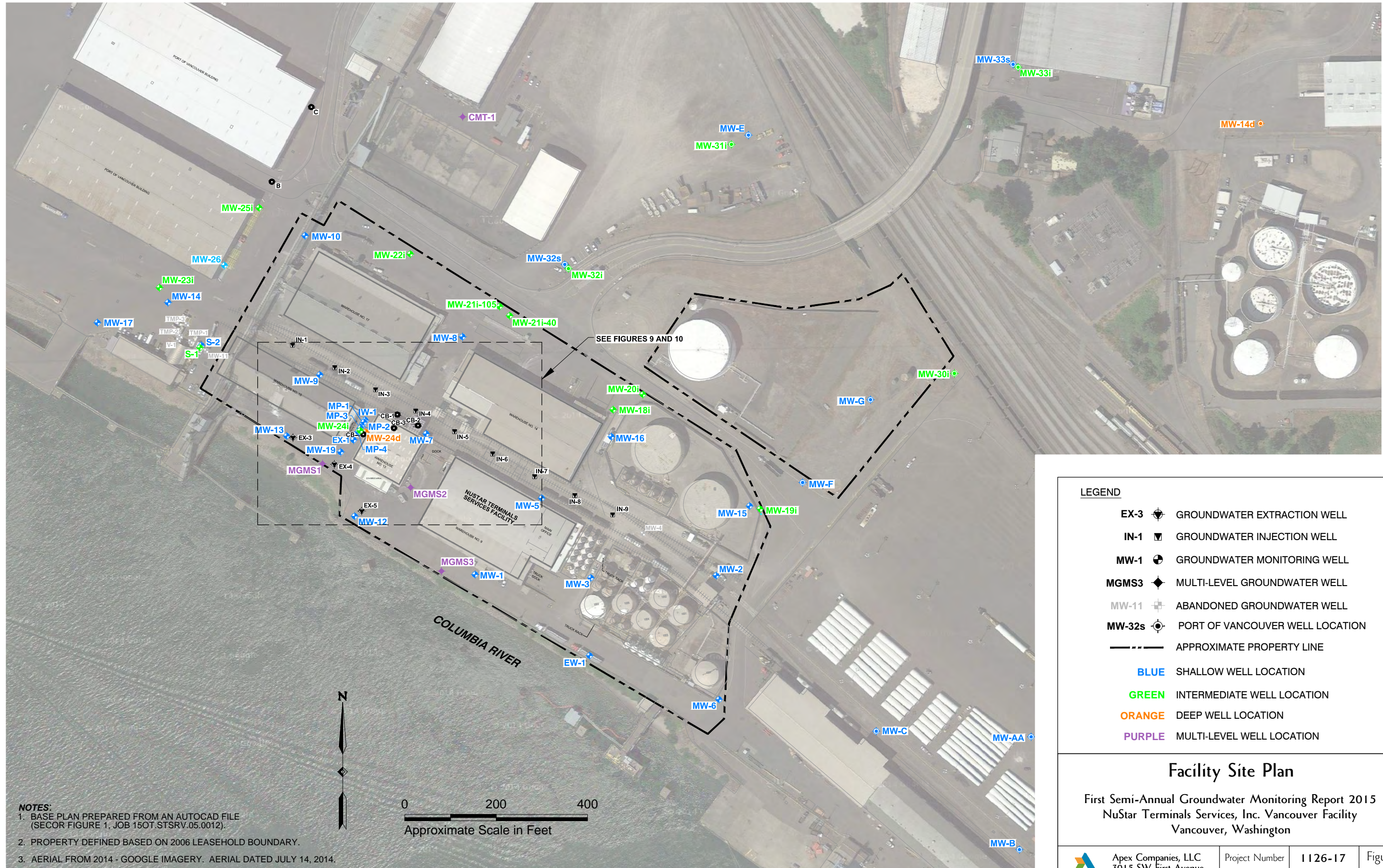
### Facility Location Map

First Semi-Annual Groundwater Monitoring Report 2015  
NuStar Terminals Services, Inc. Vancouver Facility  
Vancouver, Washington

Apex Companies, LLC  
3015 SW First Avenue  
Portland, Oregon 97201

Project Number 1126-17  
August 2015

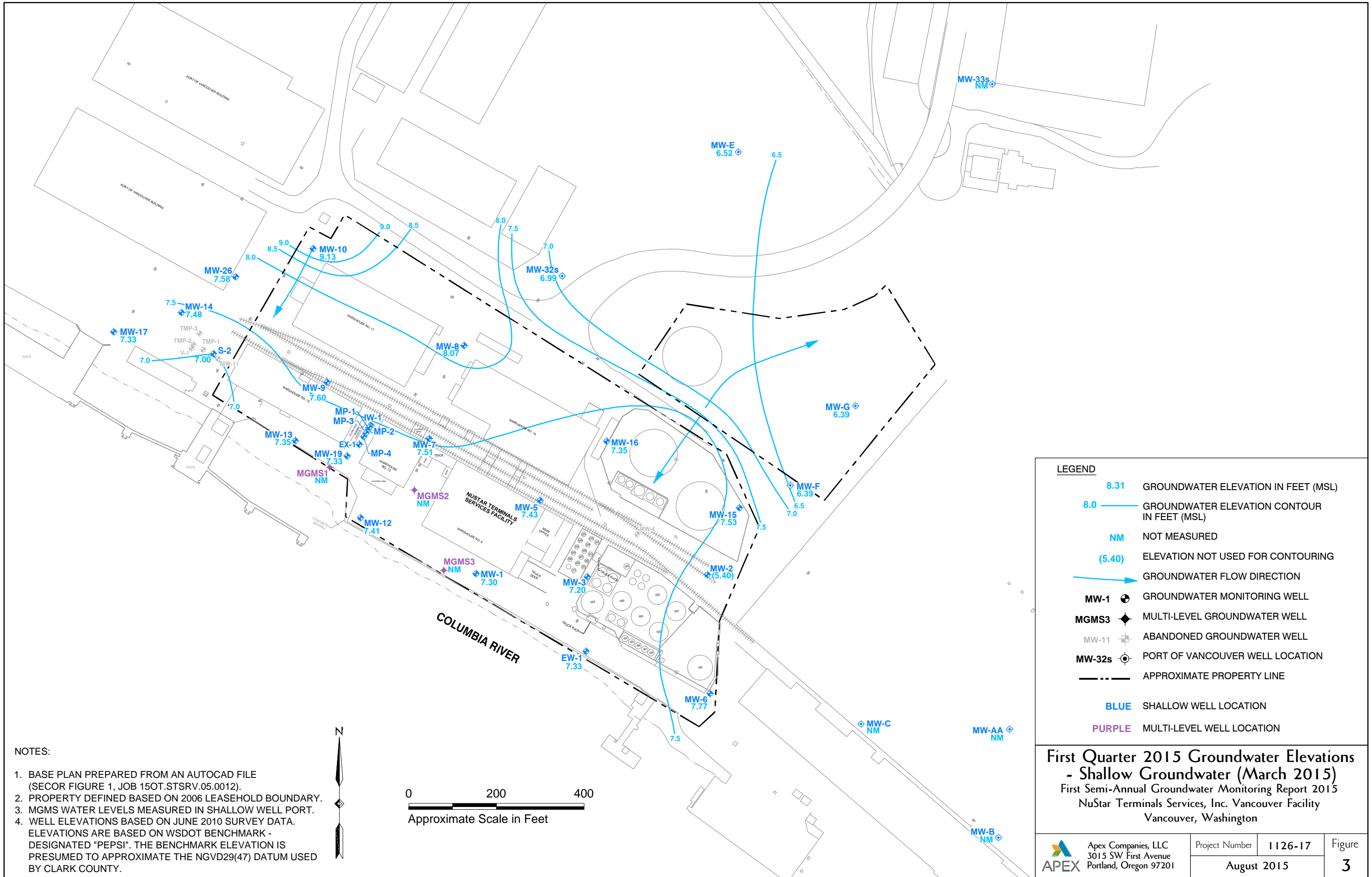
Figure 1



**NOTES:**  
 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).  
 2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.  
 3. AERIAL FROM 2014 - GOOGLE IMAGERY. AERIAL DATED JULY 14, 2014.

LEGEND	
EX-3	GROUNDWATER EXTRACTION WELL
IN-1	GROUNDWATER INJECTION WELL
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL
MW-11	ABANDONED GROUNDWATER WELL
MW-32s	PORT OF VANCOUVER WELL LOCATION
---	APPROXIMATE PROPERTY LINE
BLUE	SHALLOW WELL LOCATION
GREEN	INTERMEDIATE WELL LOCATION
ORANGE	DEEP WELL LOCATION
PURPLE	MULTI-LEVEL WELL LOCATION

**Facility Site Plan**  
 First Semi-Annual Groundwater Monitoring Report 2015  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



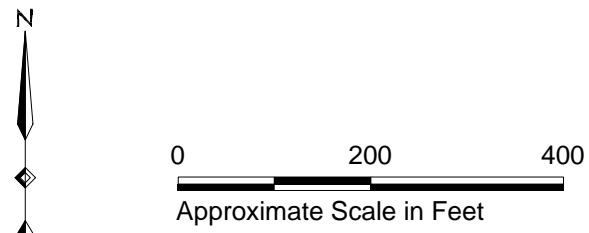
**LEGEND**

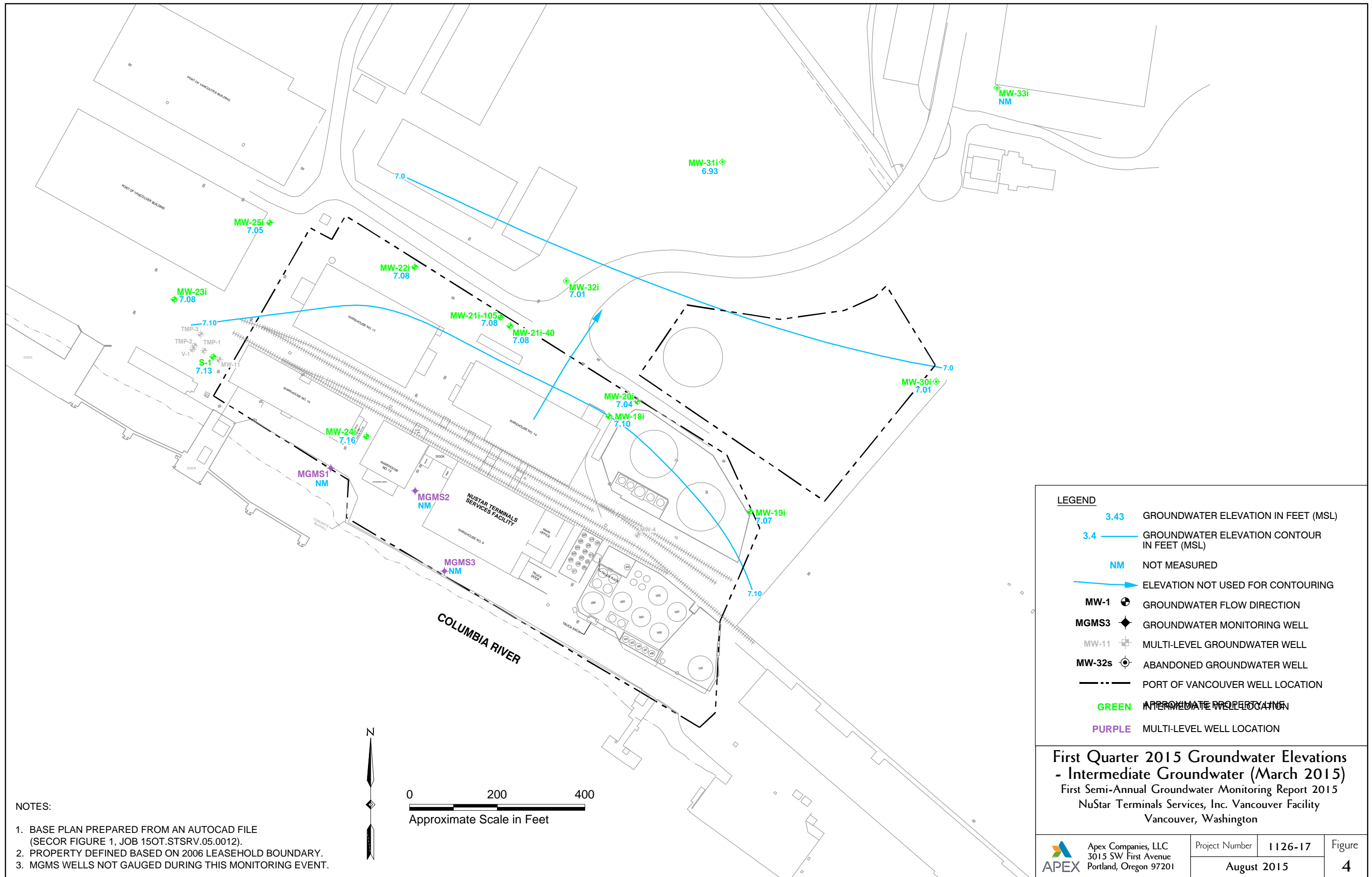
- 8.31 GROUNDWATER ELEVATION IN FEET (MSL)
- 8.0 GROUNDWATER ELEVATION CONTOUR IN FEET (MSL)
- NM NOT MEASURED
- (5.40) ELEVATION NOT USED FOR CONTOURING
- GROUNDWATER FLOW DIRECTION
- MW-1 GROUNDWATER MONITORING WELL
- MGMS3 MULTI-LEVEL GROUNDWATER WELL
- MW-11 ABANDONED GROUNDWATER WELL
- MW-32s PORT OF VANCOUVER WELL LOCATION
- APPROXIMATE PROPERTY LINE
- BLUE SHALLOW WELL LOCATION
- PURPLE MULTI-LEVEL WELL LOCATION

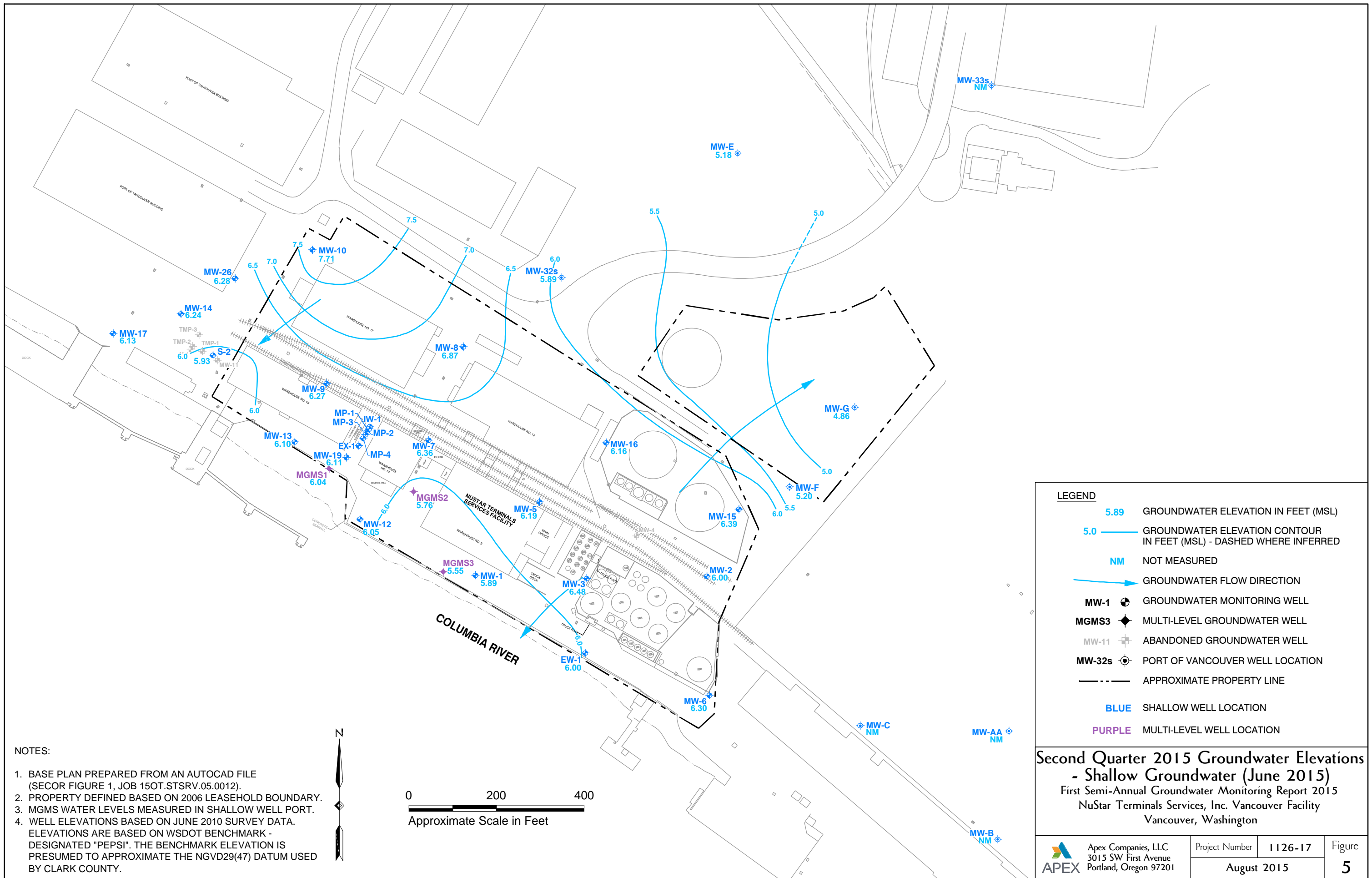
**First Quarter 2015 Groundwater Elevations - Shallow Groundwater (March 2015)**  
 First Semi-Annual Groundwater Monitoring Report 2015  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

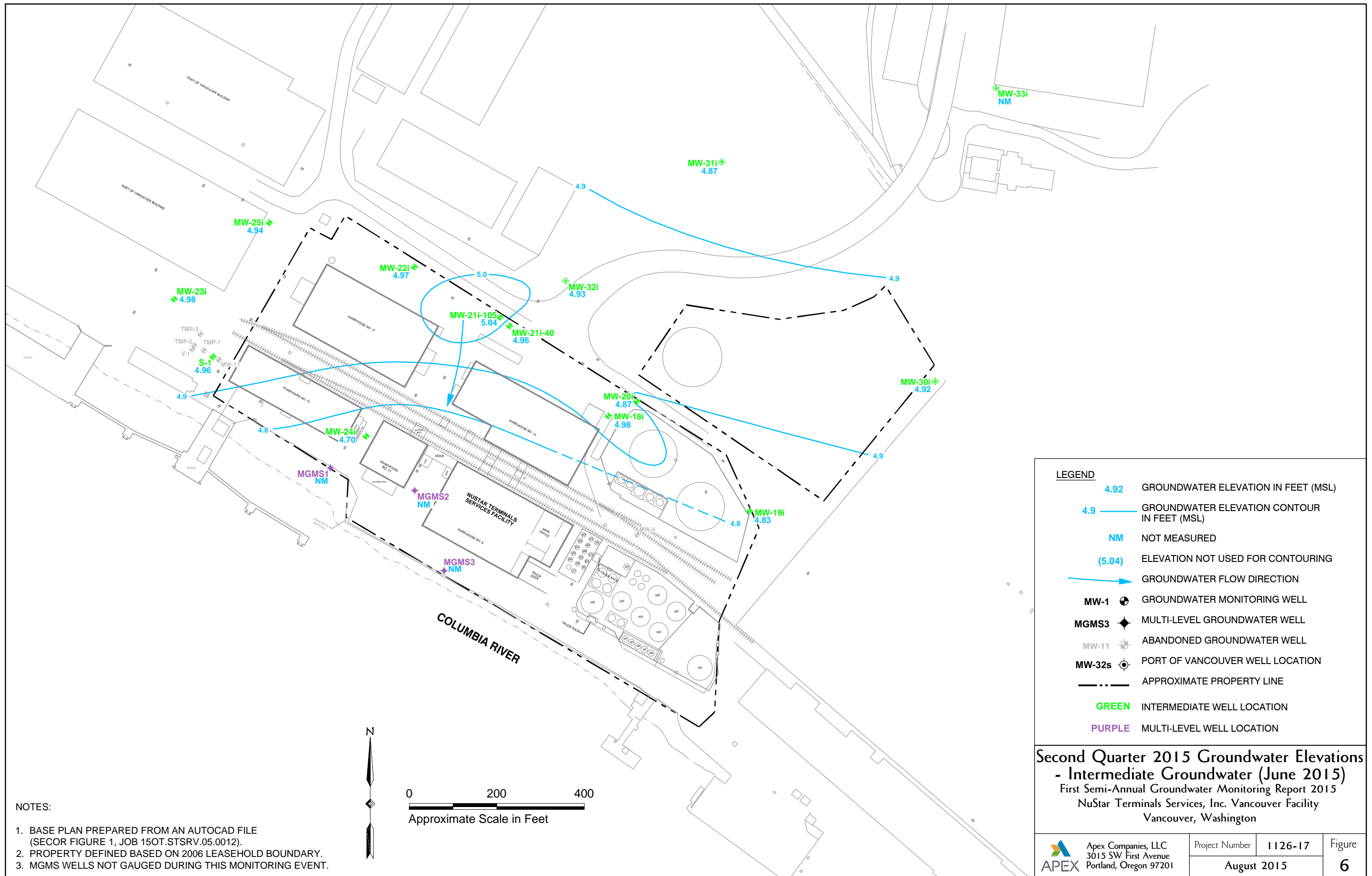
**NOTES:**

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
3. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
4. WELL ELEVATIONS BASED ON JUNE 2010 SURVEY DATA. ELEVATIONS ARE BASED ON WSDOT BENCHMARK - DESIGNATED "PEPSI". THE BENCHMARK ELEVATION IS PRESUMED TO APPROXIMATE THE NGVD29(47) DATUM USED BY CLARK COUNTY.







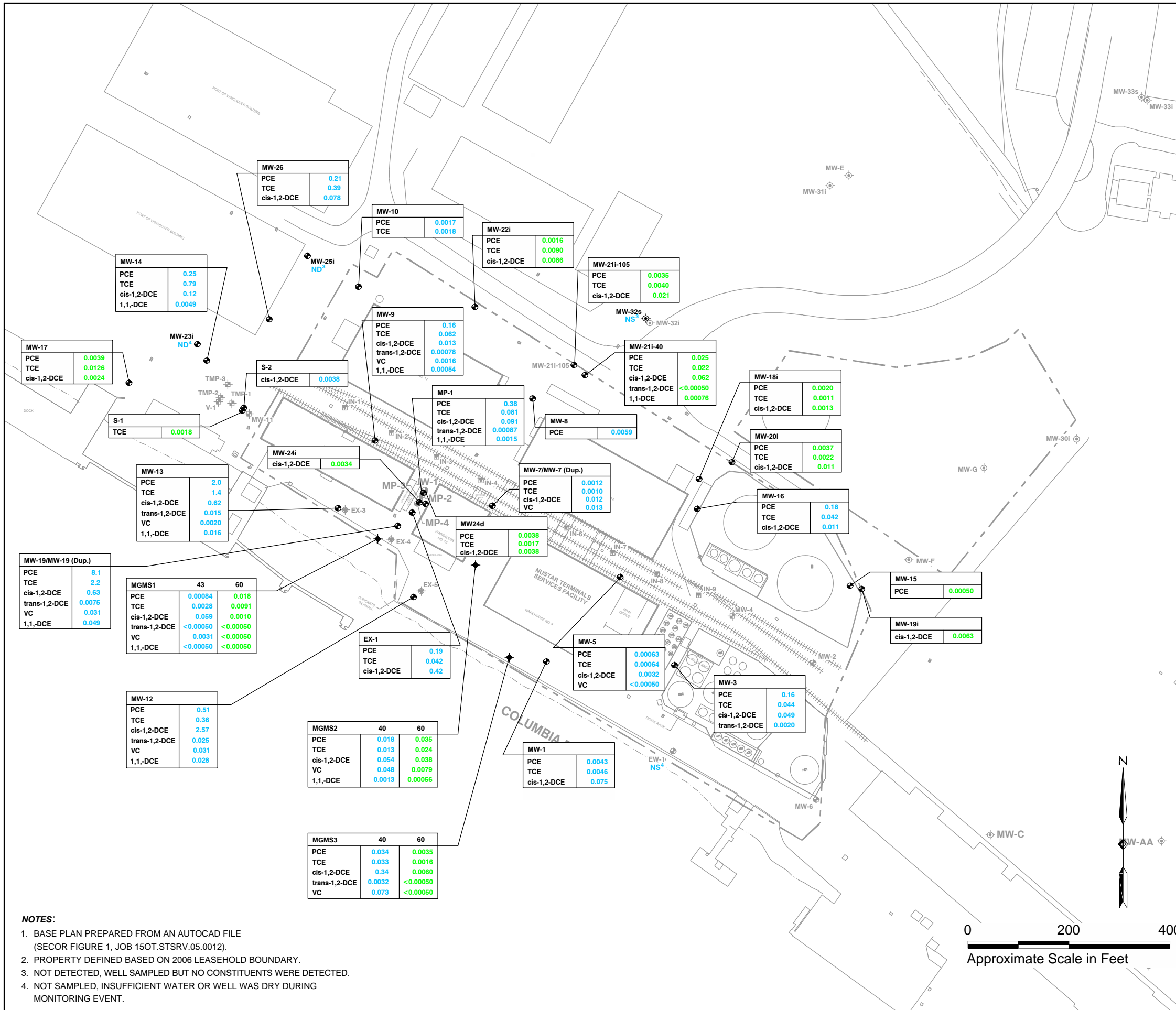


LEGEND	
4.92	GROUNDWATER ELEVATION IN FEET (MSL)
4.9	GROUNDWATER ELEVATION CONTOUR IN FEET (MSL)
NM	NOT MEASURED
(5.04)	ELEVATION NOT USED FOR CONTOURING
→	GROUNDWATER FLOW DIRECTION
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL
MW-11	ABANDONED GROUNDWATER WELL
MW-32s	PORT OF VANCOUVER WELL LOCATION
---	APPROXIMATE PROPERTY LINE
GREEN	INTERMEDIATE WELL LOCATION
PURPLE	MULTI-LEVEL WELL LOCATION

**Second Quarter 2015 Groundwater Elevations  
- Intermediate Groundwater (June 2015)**  
First Semi-Annual Groundwater Monitoring Report 2015  
NuStar Terminals Services, Inc. Vancouver Facility  
Vancouver, Washington

- NOTES:
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
  2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
  3. MGMS WELLS NOT GAUGED DURING THIS MONITORING EVENT.





**LEGEND**

**WELL IDENTIFICATION**

**DEPTH OF PORT SAMPLED (IF NOT SPECIFIED - SINGLE PORT WELL)**

**CHEMICAL CONCENTRATION IN mg/L (ONLY DETECTED COMPOUNDS ARE SHOWN)**

MGMS1	60
PCE	0.018
TCE	0.0091
cis-1,2-DCE	0.0010
trans-1,2-DCE	<0.00050
VC	<0.00050
1,1-DCE	<0.00050

**ANALYTE SAMPLED**

- EX-3** GROUNDWATER EXTRACTION WELL
  - IN-1** GROUNDWATER INJECTION WELL
  - MW-1** GROUNDWATER MONITORING WELL
  - MGMS3** MULTI-LEVEL GROUNDWATER WELL
  - MW-11** ABANDONED GROUNDWATER WELL
  - MW-32s** PORT OF VANCOUVER WELL LOCATION
- BLUE** SHALLOW ZONE CONCENTRATION DATA (DEPTHS OF 0 TO 45 FEET)
- GREEN** INTERMEDIATE ZONE CONCENTRATION DATA (DEPTHS OF 45 TO 100 FEET)

**ABBREVIATIONS**

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
cis-1,2-DCE	CIS-1,2-DICHLOROETHENE
trans-1,2-DCE	TRANS-1,2-DICHLOROETHENE
VC	VINYL CHLORIDE
1,1-DCE	1,1-DICHLOROETHENE

- NOTES:**
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
  2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
  3. NOT DETECTED, WELL SAMPLED BUT NO CONSTITUENTS WERE DETECTED.
  4. NOT SAMPLED, INSUFFICIENT WATER OR WELL WAS DRY DURING MONITORING EVENT.

**Second Quarter 2015  
Groundwater Concentrations**  
First Semi-Annual Groundwater Monitoring Report 2015  
NuStar Terminals Services, Inc. Vancouver Facility  
Vancouver, Washington

Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1126-17	Figure	8
	August 2015			



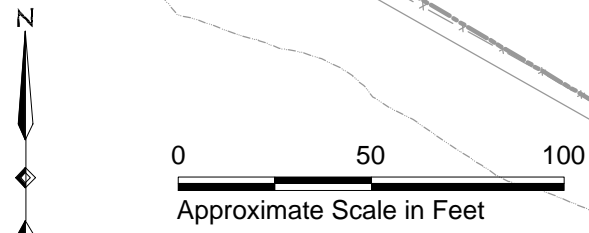


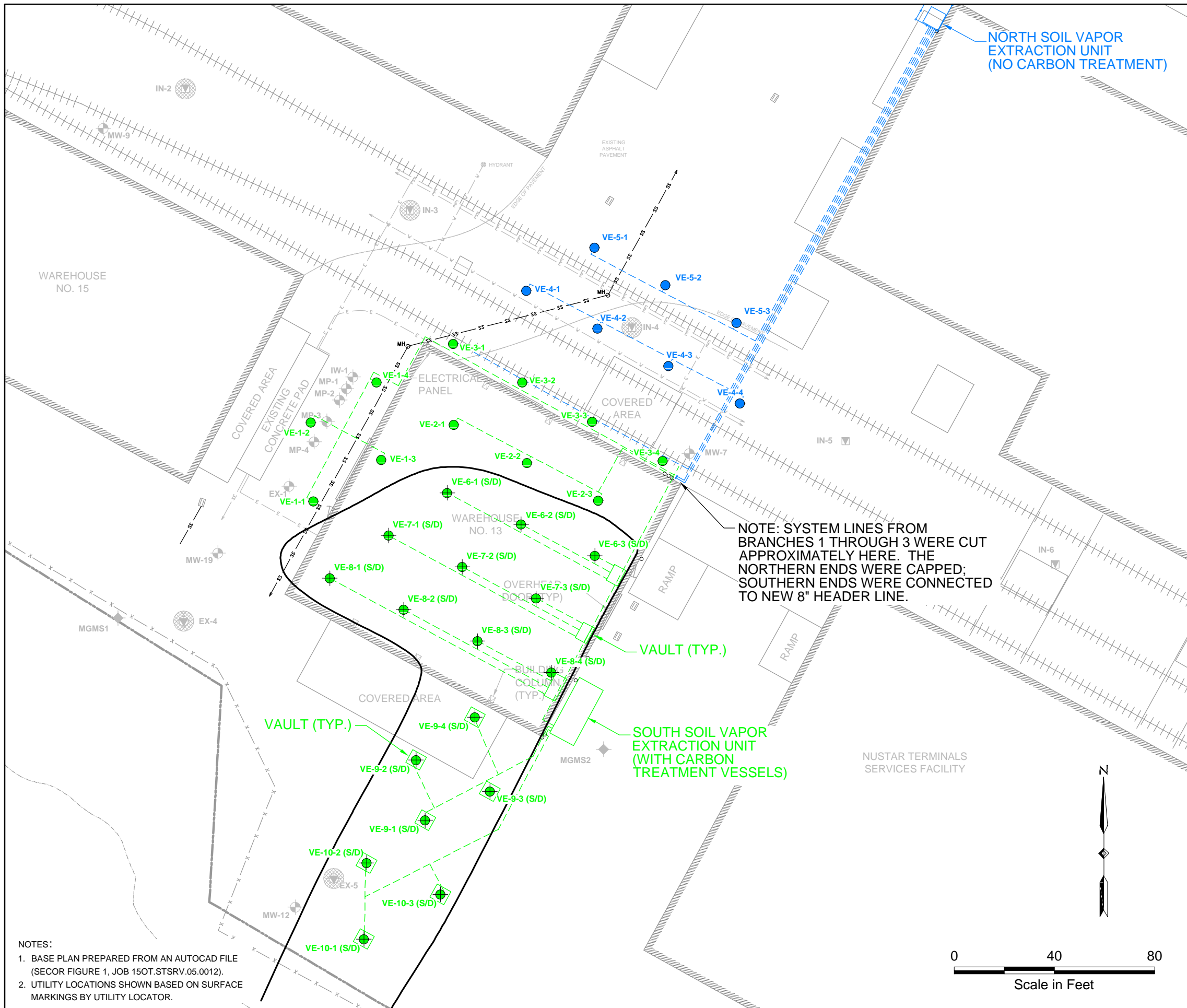
**LEGEND:**

- SOURCE AREA INJECTION POINT
- STANDARD OIL SUBSTRATE INJECTION POINT
- ANGLED INJECTION POINT
- 2008 INTERIM ACTION INJECTION POINT
- EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- EARLY 2000s INTERIM ACTION GROUNDWATER INJECTION WELL AND VAPOR EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE
- RAILROAD TRACKS

**2011 Bioremediation Injection Locations**  
 First Semi-Annual Groundwater Monitoring Report 2015  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

**NOTES:**  
 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).  
 2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.  
 3. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.





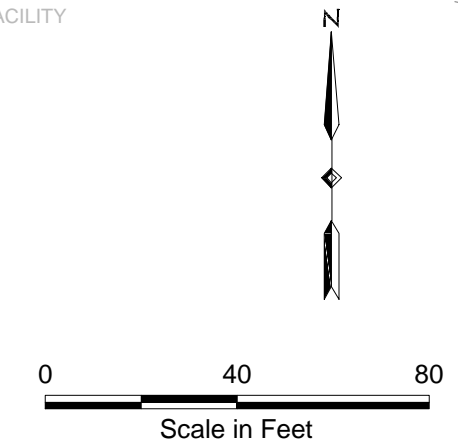
NORTH SOIL VAPOR EXTRACTION UNIT (NO CARBON TREATMENT)

NOTE: SYSTEM LINES FROM BRANCHES 1 THROUGH 3 WERE CUT APPROXIMATELY HERE. THE NORTHERN ENDS WERE CAPPED; SOUTHERN ENDS WERE CONNECTED TO NEW 8" HEADER LINE.

**LEGEND:**

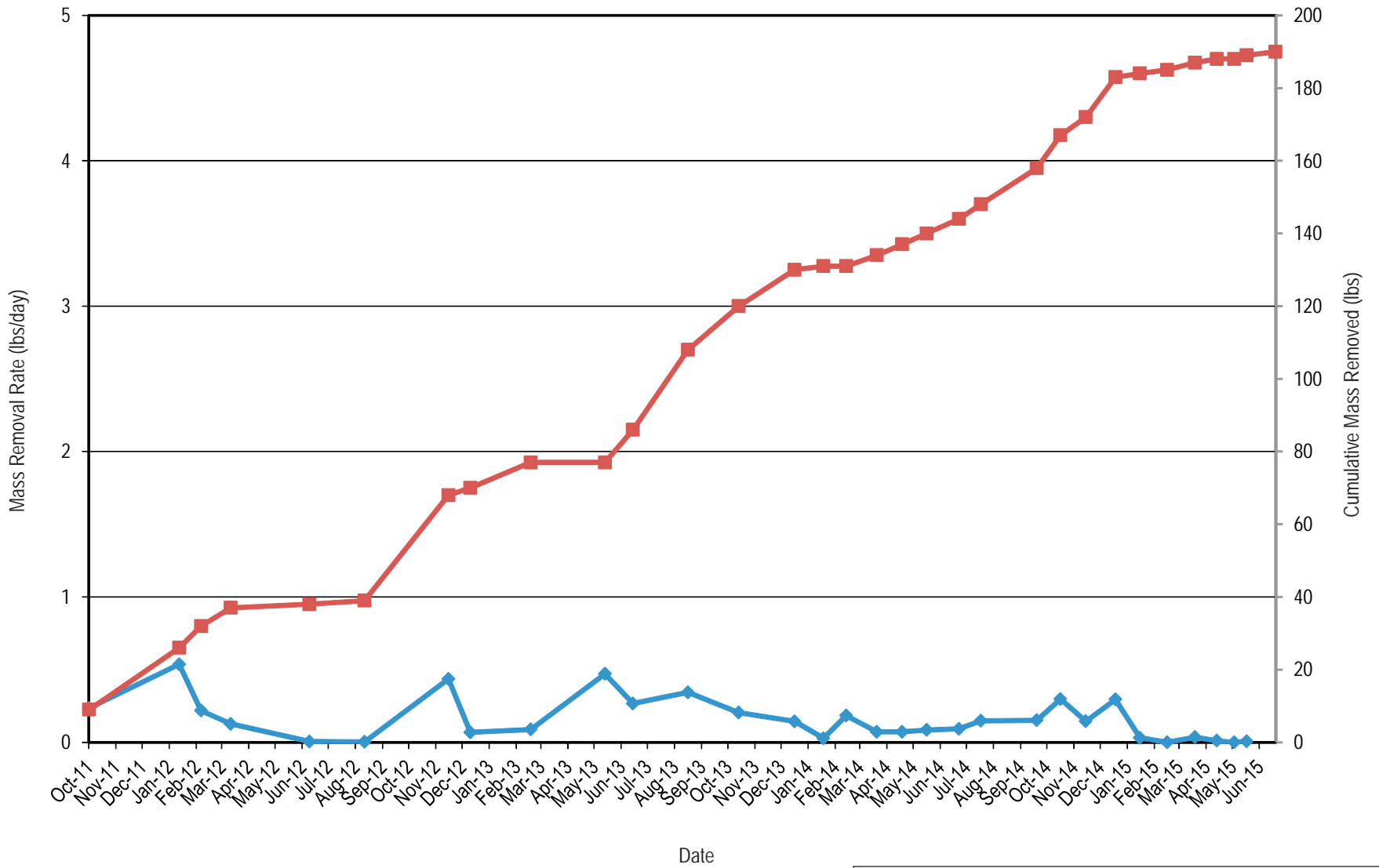
- VE-6-2 (S/D) 2011 WELL PAIR LOCATION (SHALLOW SCREENED FROM 5-15 FEET BGS) (DEEP SCREENED 15-25 FEET BGS)
- VE-1-2 2008 INTERIM ACTION VAPOR EXTRACTION WELL LOCATION
- VAPOR EXTRACTION WELL (2000-2005)
- EX-3 EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- IN-1 EARLY 2000s INTERIM ACTION GROUNDWATER INJECTION WELL AND VAPOR EXTRACTION WELL
- MW-1 GROUNDWATER MONITORING WELL
- MGMS3 MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- x - x - FENCE
- E - E - ELECTRICAL
- SE - SE - SYSTEM ELECTRICAL
- SS - SS - STORM SEWER
- V - V - WATER
- MHO MANHOLE
- RAILROAD TRACKS
- - - - UNDERGROUND SOIL VAPOR EXTRACTION (SVE) PIPING
- BLUE NORTH VAPOR EXTRACTION UNIT
- GREEN SOUTH VAPOR EXTRACTION UNIT

NOTES:  
 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).  
 2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.



**2011 SVE Layout**  
 First Semi-Annual Groundwater Monitoring Report 2015  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1126-17	Figure	10
		August 2015			



**Legend:**

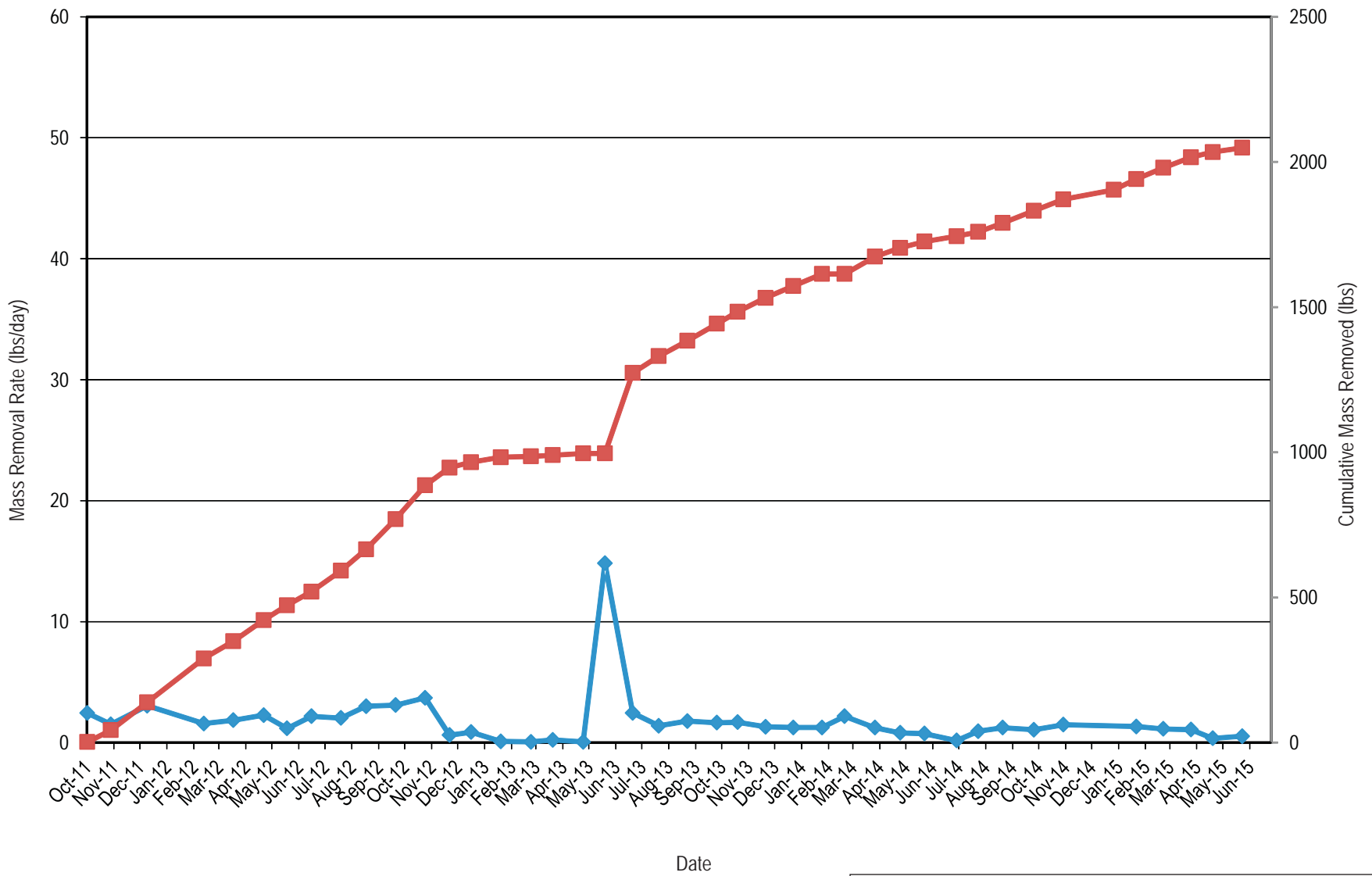
- ◆ Volatile Organic Compound (VOC) Removal Rate (lbs/day)
- Approximate Cumulative VOCs Removed (lbs/day)

### North SVE System - VOC Mass Removal

First Semi-Annual Groundwater Monitoring Report 2015  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

 Apex Companies, LLC  
 3015 SW First Avenue  
 Portland, Oregon 97201

Project Number	1126-16	Figure <b>11</b>
August 2015		



**Legend:**

- ◆ Volatile Organic Compound (VOC) Removal Rate (lbs/day)
- Approximate Cumulative VOCs Removed (lbs/day)

### South SVE System - VOC Mass Removal

First Semi-Annual Groundwater Monitoring Report 2015  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

 Apex Companies, LLC  
 3015 SW First Avenue  
 Portland, Oregon 97201

Project Number	1126-16	Figure <b>12</b>
August 2015		

***Appendix A***

---

**Field Sampling Data Sheets**



3015 SW First Avenue  
 Portland, Oregon 97201-4707  
 (503) 924-4704 Phone  
 (503) 943-6357 Fax

PROJECT NUMBER 1126-17  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 6/15/15

PROJECT	<u>WATER Vancouver</u>	ARRIVAL TIME	<u>0740</u>
LOCATION	<u>Vancouver, WA</u>	DEPARTURE TIME	<u>1440</u>
CLIENT	<u>Water</u>	WEATHER	<u>650, sunny</u>
PURPOSE OF OBSERVATIONS	<u>GW Monitoring</u>		
APEX REPRESENTATIVE	<u>CB</u>	APEX PROJECT MANAGER	<u>S. Schibing</u>
CONTRACTOR	_____	PERMIT NO.	<u>190162</u>
CONTRACTOR REP.	_____	H&S REVIEW	<u>✓</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0650 Apex, loading up  
 0740 on-site, check in and get work permit  
 0810 begin gauging shallow wells / sampling activities  
 1120 complete gauging of shallow wells - begin sampling  
 1157 sample MW-3  
 1215 C. Luk on-site  
 1300 begin gauging intermediate & deep wells  
 1440 off-site

BY [Signature]  
 APEX REPRESENTATIVE

REVIEWED BY \_\_\_\_\_  
 APEX PROJECT MANAGER



3015 SW First Avenue  
 Portland, Oregon 97201-4707  
 (503) 924-4704 Phone  
 (503) 943-6357 Fax

PROJECT NUMBER 1126-17  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 6/16/15

PROJECT <u>Vancouver Terminal</u>	ARRIVAL TIME <u>0730</u>
LOCATION <u>Vancouver, WA</u>	DEPARTURE TIME <u>1245</u>
CLIENT <u>NWSTU</u>	WEATHER <u>60° PC</u>
PURPOSE OF OBSERVATIONS <u>CW Sampling</u>	
APEX REPRESENTATIVE <u>OB</u>	APEX PROJECT MANAGER <u>S. Seligson</u>
CONTRACTOR _____	PERMIT NO. <u>190164</u>
CONTRACTOR REP. _____	H&S REVIEW <u>✓</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0730 on-site get work permit  
 0815 sample S-1  
 0841 sample S-2  
 0915 sample MW-23i  
 0938 sample MW-14  
 1026 sample MW-26  
 1105 sample MW-25i  
 1144 sample MW-22i  
 1200 sample MW-19i  
 1330 gauge MGMS wells (did not have string IP 6/15)  
 1345 sign-out, off site

BY   
 \_\_\_\_\_  
 APEX REPRESENTATIVE

REVIEWED BY \_\_\_\_\_  
 \_\_\_\_\_  
 APEX PROJECT MANAGER



3015 SW First Avenue  
 Portland, Oregon 97201-4707  
 (503) 924-4704 Phone  
 (503) 943-6357 Fax

PROJECT NUMBER 1126-17  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE ~~6/16~~ 6/17/15

PROJECT	<u>Vancouver Terminal</u>	ARRIVAL TIME	<u>0750</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	<u>1420</u>
CLIENT	<u>WStr</u>	WEATHER	<u>70°, PC</u>
PURPOSE OF OBSERVATIONS	<u>GWM</u>		
APEX REPRESENTATIVE	<u>CB</u>	APEX PROJECT MANAGER	<u>S. Solberg</u>
CONTRACTOR	<u>—</u>	PERMIT NO.	<u>190165</u>
CONTRACTOR REP.	<u>—</u>	H&S REVIEW	<u>—</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0750	off-site check in	
0800	place new drum in warehouse, label + clamp water	
0840	Sample MW-9	
0918	Sample MW-7, MW-7 DUP	
0955	Sample MW-8	
1030	Sample MW-21i-105	
1050	Sample MW-32s	
1120	Sample MW-20i	
1150	Sample MW-16	
1219	Sample MW-18i	
1319	Sample MW-5	
1348	Sample MW-1	1400 Sample Field Blak 6-17
1410	Sign-out	
1420	off-site	

BY   
 APEX REPRESENTATIVE

REVIEWED BY \_\_\_\_\_  
 APEX PROJECT MANAGER





3015 SW First Avenue  
 Portland, Oregon 97201-4707  
 (503) 924-4704 Phone  
 (503) 943-6357 Fax

PROJECT NUMBER 1126-17  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 6/18/15

PROJECT	<u>Vancouver Terminal</u>	ARRIVAL TIME	<u>0730</u>
LOCATION	<u>Vancouver, WA</u>	DEPARTURE TIME	<u>1320</u>
CLIENT	<u>Duster</u>	WEATHER	<u>70° Sunny</u>
PURPOSE OF OBSERVATIONS	<u>GWM</u>		
APEX REPRESENTATIVE	<u>CB</u>	APEX PROJECT MANAGER	<u>S. Schilling</u>
CONTRACTOR	<u>_____</u>	PERMIT NO.	<u>190166</u>
CONTRACTOR REP.	<u>_____</u>	H&S REVIEW	<u>✓</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

<u>0730</u>	<u>on-site, get permit</u>
<u>0810</u>	<u>sample MP-1</u>
<u>0844</u>	<u>sample MW-24i</u>
<u>0922</u>	<u>sample MW-24d</u>
<u>0954</u>	<u>sample EX-1</u>
<u>1049</u>	<u>sample MW-19, MW-19 DUP</u>
<u>1203</u>	<u>sample MW-13</u>
<u>1230</u>	<u>sample MGMS 1-43</u>
<u>1244</u>	<u>sample MGMS 1-60</u>
<u>1310</u>	<u>sign-out</u>
<u>1320</u>	<u>off-site</u>

BY [Signature]  
 \_\_\_\_\_  
 APEX REPRESENTATIVE

REVIEWED BY \_\_\_\_\_  
 \_\_\_\_\_  
 APEX PROJECT MANAGER



3015 SW First Avenue  
 Portland, Oregon 97201-4707  
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 (503) 943-6357 Fax

PROJECT NUMBER 1126-17  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 6/19/15

PROJECT	<u>Vancouver Terminal</u>	ARRIVAL TIME	<u>0735</u>
LOCATION	<u>Vancouver, WA</u>	DEPARTURE TIME	<u>1210</u>
CLIENT	<u>Austr</u>	WEATHER	<u>Fog, Cloudy</u>
PURPOSE OF OBSERVATIONS	<u>GUDA</u>		
APEX REPRESENTATIVE	<u>CR</u>	APEX PROJECT MANAGER	<u>S. Schilling</u>
CONTRACTOR	_____	PERMIT NO.	<u>190170</u>
CONTRACTOR REP.	_____	H&S REVIEW	<u>✓</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0735 on-site, sign in and get permit  
 0828 Sample MW-12, MW-12 Dup, MW-12 MS/MSD  
 0927 Sample MGMS3-40  
 0945 Sample MGMS3-60  
 1006 Sample MGMS2-40  
 1029 Sample MGMS2-60  
 1102 Sample MW-21i-40 → used peri pump due to stuck cap  
 1120 Sample Field Blak 6-19  
 1170 Sample Equipment Blak  
 1145 dump purge water, secure drum  
 → currently 1 drum on-site and it is ~3/4 full  
 1155 Sign out  
 1210 off site

BY   
 APEX REPRESENTATIVE  
 1106 6.17

REVIEWED BY \_\_\_\_\_  
 APEX PROJECT MANAGER

1

WELL GAGING DATA SHEET




Client:	NWR	Job Number:	1126-17
Project:	Vancouver	Date:	6/5/15
Weather:	65° sunny	Sampler:	CB
		Time In/Out:	0740

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MP-1	0812	—	27.72		—		
EX-1	0813	—	27.52		—		
MW-9	0814	—	27.48		—		No well cover - lid needs replace
MW-7	0819	—	27.38		—		
MW-9	0824	—	27.59		—		
MW-13	0827	—	27.05		—		
MW-12	0830	—	25.38		—		
S-2	0834	—	27.22		—		
MW-14	0840	—	27.57		—		
MW-17	0844	—	26.52		—		
MW-26	0847	—	27.45		—		
MW-10	0857	—	27.12		—		
MW-8	0855	—	27.10		—		
MW-325	0859	—	28.45		—		
MW-6	0907	—	26.64		—		
MW-F	0914	—	28.28		—		
MW-15	0920	—	32.74		—		stand pipe in tank form
MW-2	0931	—	28.04		—		
MW-6	0935	—	26.53		—		
EW-1	0938	—	25.40		—		
MW-1	0942	—	26.71		—		
MW-5	0951	—	27.67		—		
MW-E	1000	—	25.46		—		
MW-16	1007	—	26.89		—		
MW-3	1117	—	27.93		—		
MW-24	1309	—	28.51		—		
MW-29	1312	—	28.77		—		
S-1	1315	—	28.28		—		
MW-23	1328	—	28.82		—		
MW-25	1324	—	28.64		—		
MW-22	1326	—	29.42		—		
MW-21	105 1328	—	28.95		—		NO WELL LID

2

WELL GAGING DATA SHEET

	Job Number:	1126-17		
	Client:	NIVSTAR	Date:	6/15/15
	Project:	VANC GWM	Sampler:	CB/CL
	Weather:	88° HOT	Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-21-40	1330	---	29.14	---	---		CAP STUCK
MW-32	1345	---	29.48	---	---		
MW-20	1350	---	28.22	---	---		
MW-18	1353	---	28.42	---	---		
MW-31	1353	---	26.46	---	---		
MW-30	1403	---	24.85	---	---		
MW-19	1410	---	28.75	---	---		
6/16/15	M6MS1-2(45)	1330	26.82	---	---		didn't have skinny IP on 6/15
	M6MS1-2(6)	1331	27.70	---	---		
	M6MS2-4(4)	1334	26.83	---	---		
	M6MS2-3(6)	1335	27.77	---	---		
	M6MS2-4(4)	1338	26.10	---	---		
	M6MS3-2(6)	1339	26.61	---	---		

**WELL MONITORING DATA SHEET**



Well I.D.	MW-1	Job Number:	1126-17
Client:	Woster	Date:	6/17/15
Project:	Vancouver	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	26.67	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	dead hole	Comments							
Sampling Method:	CF	Tubing Type:	SB								
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1335			26.67		8.63	16.51	93	2.40	-74.5	-	clear
1338			26.67		8.66	15.82	92	1.82	-79.6	-	↓
1341			26.67		8.62	15.34	91	1.47	-83.3	-	
1344			26.67		8.60	15.21	90	1.21	-86.9	-	
1347			26.67		8.58	15.08	89	1.02	-89.3	-	


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-1	Sampling Flow Rate:		Analytical Laboratory:	Pace	
Sample Time:	1348	Final Depth to Water:	26.67	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4xUOA	HCl	HUC	yes (no)			
			yes	no		
			yes	no		
			yes	no		
			yes	no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.: <u>MW-3</u>	Job Number: <u>1126-17</u>
	Client: <u>WSTA</u>	Date: <u>6/15/15</u>
	Project: <u>Vancouver</u>	Sampler: <u>CB</u>
	Weather: <u>90° sunny</u>	Time In/Out:

WELL DATA					
Well Depth:	<u>27.93</u>	Well Diameter:	<u>2"</u>	Water Height	
Depth to Water:		Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	<u>—</u>	x Casing Volumes	
Purge Volume:		Free Product Thickness:	<u>—</u>	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA											
Purge Method: <u>BP</u>			Pump Intake Depth: <u>ded-tubg</u>			Comments					
Sampling Method: <u>LF</u>			Tubing Type: <u>STB</u>								
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<u>1138</u>			<u>28.12</u>		<u>8.05</u>	<u>16.82</u>	<u>60</u>	<u>5.25</u>	<u>112.8</u>	<u>—</u>	<u>cloudy</u>
<u>1141</u>			<u>28.22</u>		<u>7.25</u>	<u>17.15</u>	<u>62</u>	<u>4.17</u>	<u>132.9</u>	<u>—</u>	
<u>1144</u>			<u>28.28</u>		<u>6.98</u>	<u>17.40</u>	<u>65</u>	<u>3.97</u>	<u>138.6</u>	<u>—</u>	
<u>1147</u>			<u>28.32</u>		<u>6.84</u>	<u>17.69</u>	<u>69</u>	<u>4.07</u>	<u>141.9</u>	<u>—</u>	
<u>1150</u>			<u>28.36</u>		<u>6.76</u>	<u>17.85</u>	<u>71</u>	<u>4.02</u>	<u>144.8</u>	<u>—</u>	
<u>1153</u>			<u>28.50</u>		<u>6.71</u>	<u>17.94</u>	<u>69</u>	<u>4.00</u>	<u>148.0</u>	<u>—</u>	
<u>1156</u>	<u>1 gal</u>		<u>28.55</u>		<u>6.67</u>	<u>18.07</u>	<u>69</u>	<u>3.92</u>	<u>149.1</u>	<u>—</u>	<u>↓</u>

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA						
Sample ID: <u>MW-3</u>	Sampling Flow Rate	Analytical Laboratory: <u>Accu/Env</u>				
Sample Time: <u>1157</u>	Final Depth to Water: <u>28.61</u>	Did Well Dewater?	<u>No</u>			
# Containers/Type: <u>4xVDA</u>	Preservative: <u>HCl</u>	Analysis/Method: <u>HWDGS</u>	Field Filtered:	Filter Size	MS/MSD	Duplicate ID
			yes <u>(0)</u>	<u>—</u>		
			yes			
			yes			
			yes			
			yes			
			yes			

COMMENTS

**WELL MONITORING DATA SHEET**



Well I.D.	MW-5	Job Number:	1126-17
Client:	W. Str	Date:	6/17/18
Project:	Uncomer	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	27.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP LF				Pump Intake Depth:	Depl. + 10"				Comments	
Sampling Method:					Tubing Type:	SB					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1309			27.70		8.00	19.42	63	1.99	-41.3	—	clear
1312			27.70		7.94	17.09	64	1.60	-44.8	—	
1315			27.70		7.90	16.80	65	1.48	-46.2	—	
1318		7.75 gal	27.70		7.85	16.61	65	1.32	-48.9	—	↓


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-5	Sampling Flow Rate		Analytical Laboratory:	Pee e	
Sample Time:	1319	Final Depth to Water:	27.70	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HVOC	yes <u>no</u>			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-7	Job Number:	1126-17
	Client:	NW Star	Date:	6/17/15
	Project:	Vacuum	Sampler:	CS
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	27.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BR IF	Pump Intake Depth:	0.00... SB	Comments	
Sampling Method:		Tubing Type:			

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
0905			27.70		7.76	16.18	58	2.09	-8.7	—	clear
0908			27.70		7.68	16.21	58	1.72	-8.4	—	↓
0911			27.70		7.54	16.25	58	1.20	-6.8	—	
0914			27.70		7.47	16.25	58	0.90	-5.6	—	
0917	1 gal		27.70		7.44	16.24	58	0.81	-4.9	—	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID:	MW-7	Sampling Flow Rate		Analytical Laboratory:	Pass	
Sample Time:	0918	Final Depth to Water:	27.70	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
8x UVA	HCC	HVOC	yes no			MW-7 DUP
2x 250ml	H2SO4	TOC	yes no			↓
6x UVA	None	Methane/Ethanol	yes no			
			yes no			

**COMMENTS**




**WELL MONITORING DATA SHEET**

	Well I.D.:	MW-8	Job Number:	M26-17
	Client:	WATER	Date:	6/17/15
	Project:	Vancouver	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	4" <i>4.1</i>	Water Height	
Depth to Water:	27.10	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				Pump Intake Depth:				Comments				
ISP				200.0 ft								
LF				SB								
Sampling Method:												
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria	
0945			27.10		7.10	15.40	58	1.61	45.9	—	clear	
0948			27.10		6.85	14.67	58	1.48	51.2	—		
0951			27.10		6.81	14.60	58	1.32	52.1	—		
0954		78.5	27.10		6.78	14.54	58	1.20	53.5	—		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-8	Sampling Flow Rate:		Analytical Laboratory:	Pace	
Sample Time:	0955	Final Depth to Water:	27.10	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x UOA	HCl	HVOL	yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

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**WELL MONITORING DATA SHEET**



Well I.D.	MW-9	Job Number:	1126-17
Client:	WATER	Date:	6/17/15
Project:	Wrecker	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	2765	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP			Pump Intake Depth:	ded + by					Comments	
Sampling Method:	CF			Tubing Type:	SB						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0830			2765		7.88	14.92	59	2.01	32.2	-	clear
0833			2765		7.48	13.74	59	1.72	38.3	-	
0836			2765		7.45	13.61	59	1.52	41.2	-	
0839	7594		2765		7.42	13.52	59	1.40	43.8	-	


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-9	Sampling Flow Rate:		Analytical Laboratory:	Face	
Sample Time:	0840	Final Depth to Water:	2765	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x UOA	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.:	MW-12	Job Number:	1126-9
	Client:	WStar	Date:	6/19/15
	Project:	Vancouver	Sampler:	
	Weather:		Time In/Out:	

WELL DATA				
Well Depth:		Well Diameter:	4"	Water Height
Depth to Water:	25.92	Screened Interval:		x Multiplier
Water Column Length:		Depth to Free Product:		x Casing Volumes
Purge Volume:		Free Product Thickness:		= Purge Volume
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters


PURGING DATA																			
Purge Method:				BP				Pump Intake Depth:				Red-Mon				Comments			
Sampling Method:				LF				Tubing Type:				SB							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks							
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria								
0815			25.92		7.56	16.27	60	2.62	0.7	—	Clear								
0818			25.92		7.20	15.25	60	1.92	7.9	—	↓								
0820			25.92		7.24	14.91	60	1.14	10.0	—									
0824			25.92		7.22	14.88	60	0.85	10.1	—									
0827		1 gal	25.92		7.01	14.87	60	0.71	10.2	—									
0827																			

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA							
Sample ID:		MW-12		Sampling Flow Rate:		Analytical Laboratory:	
Sample Time:		0828		Final Depth to Water:		25.92	
Did Well Dewater?		NO		Filter Size:		MS/MSD	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
16x VOA	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	yes	MW-12 DUP	
4x 250ml PI	H2SO4	TUR	yes <input type="radio"/> no <input checked="" type="radio"/>	—	yes	↓	
12x VOA	None	BSK-175	yes <input type="radio"/> no <input checked="" type="radio"/>	—	yes		
			yes	no			
			yes	no			
			yes	no			

COMMENTS							

**WELL MONITORING DATA SHEET**

	Well I.D.	MW-13	Job Number:	1126-17
	Client:	Uster	Date:	10/18/15
	Project:	Uncover	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	27.30	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:		BP CF		Pump Intake Depth:		deduction SB		Comments			
Sampling Method:				Tubing Type:							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1150			27.30		7.77	16.69	59	1.88	34.8	-	clear
1153			27.30		7.51	15.72	60	0.87	53.3	-	
1156			27.30		7.23	15.05	61	0.99	81.9	-	
1159			27.30		7.17	15.03	62	1.18	92.8	-	
1202	1 gal		27.30		7.13	15.01	62	1.33	101.6	-	⚠


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-13	Sampling Flow Rate		Analytical Laboratory:	Pace
Sample Time:	1203	Final Depth to Water:	27.30	Did Well Dewater?	No
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
4x VOA	HCl	HVOC	yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


### WELL MONITORING DATA SHEET

	Well I.D.	MW-14	Job Number:	1126-17
	Client:	WSP	Date:	6/16/15
	Project:	WATER	Sampler:	CB
	Weather:		Time In/Out:	

WELL DATA				
Well Depth:	27.65	Well Diameter:	4"	Water Height
Depth to Water:		Screened Interval:		x Multiplier
Water Column Length:		Depth to Free Product:		x Casing Volumes
Purge Volume:		Free Product Thickness:		= Purge Volume
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters


PURGING DATA												
Purge Method:				Pump Intake Depth:				Comments				
Sampling Method:				Tubing Type:								
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria	
0928			27.65		7.40	16.50	60	1.38	117.2	—	Clear	
0931			27.65		7.27	14.94	61	1.18	110.8	—		
0934			27.65		7.22	14.72	62	1.01	108.6	—		
0937	175 gal		27.65		7.18	14.59	62	0.86	106.9	—	↓	

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA						
Sample ID:	MW-14	Sampling Flow Rate		Analytical Laboratory:	P&S	
Sample Time:	0938	Final Depth to Water:	27.65	Did Well Dewater?	CW	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HVOC	yes    no			
			yes    no			
			yes    no			
			yes    no			
			yes    no			
			yes    no			

COMMENTS

**WELL MONITORING DATA SHEET**

	Well I.D.	MW-16	Job Number:	U26-17
	Client:	WSP	Date:	6/17/15
	Project:	Vancouver	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	25.58	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:		BP		Pump Intake Depth:		dead line		Comments			
Sampling Method:		LF		Tubing Type:		SB					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1140			25.58		7.33	14.86	65	1.90	43.5	-	Clear
1143			25.58		7.21	14.45	100	1.68	43.2	-	
1146			25.58		7.10	14.39	99	1.60	44.0	-	
1149			25.58		7.12	14.34	99	1.52	45.2	-	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-16	Sampling Flow Rate		Analytical Laboratory:	Peric	
Sample Time:	1150	Final Depth to Water:	25.58	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	NVOLS	yes (C)			
			yes	no		
			yes	no		
			yes	no		
			yes	no		

**COMMENTS**


G 36  
S 21

**WELL MONITORING DATA SHEET**



Well I.D.	MW-18i	Job Number:	1126-17
Client:	WStar	Date:	6/17/15
Project:	Vancouver	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	27.58	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	dead-tubing	Comments							
Sampling Method:	LF	Tubing Type:	SB								
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1209			27.58		8.04	17.60	57	5.92	32.8	—	clear
1212			27.58		8.00	16.63	55	5.60	33.7	—	
1215			27.58		7.99	16.41	54	5.41	34.8	—	
1218			27.58		7.96	16.18	53	5.25	36.5	—	


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-18i	Sampling Flow Rate		Analytical Laboratory:	Peer	
Sample Time:	1219	Final Depth to Water:	27.58	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HVOC	yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-19	Job Number:	726-17
	Client:	NW Str	Date:	6/18/15
	Project:	Vacuum	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	27.72	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP CF				Pump Intake Depth:	Clear. Hwy				Comments	
Sampling Method:					Tubing Type:	SB					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1036			27.72		8.39	15.38	58	2.22	-20.0	-	Clear
1039			27.72		8.28	14.72	58	1.53	-20.7	-	
1042			27.72		8.01	14.61	58	1.00	-16.2	-	
1045			27.72		7.99	14.69	59	0.80	-15.9	-	
1048		1 gal	27.72		8.00	14.69	59	0.75	-17.3	-	↓

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-19	Sampling Flow Rate:		Analytical Laboratory:	Ree
Sample Time:	1049	Final Depth to Water:	27.72	Did Well Dewater?:	No
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
800 VOA	HCL	HVOC	yes no		MW-19 DUP
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**




**WELL MONITORING DATA SHEET**



Well I.D.	MW-19i	Job Number:	1126-17
Client:	WUSTO	Date:	6/16/18
Project:	Unconform	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	2790	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP				Pump Intake Depth:	Ded. tubing				Comments	
Sampling Method:	LF				Tubing Type:	SB					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1207			2790		7.88	16.23	96	1.49	66.2	-	cloudy
1210			2790		7.80	15.02	89	1.25	65.4	-	↓
1213			2790		7.78	14.34	87	1.03	65.0	-	
1216			2790		7.77	14.22	87	0.92	65.0	-	
1219		1 gal	2790		7.77	14.10	86	0.88	64.8	-	


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-19i	Sampling Flow Rate		Analytical Laboratory:	Ranc	
Sample Time:	1200	Final Depth to Water:	27.90	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.: <u>MW-201</u>	Job Number: <u>1126-17</u>
	Client: <u>Wester</u>	Date: <u>6/17/15</u>
	Project: <u>Vancouver</u>	Sampler: <u>CB</u>
	Weather:	Time In/Out:

**WELL DATA**

Well Depth:	Well Diameter: <u>2"</u>	Water Height
Depth to Water: <u>27.10</u>	Screened Interval:	x Multiplier
Water Column Length:	Depth to Free Product:	x Casing Volumes
Purge Volume:	Free Product Thickness:	= Purge Volume
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653
		1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <u>BP</u>		Pump Intake Depth: <u>200.00</u>		Comments							
Sampling Method: <u>LR</u>		Tubing Type: <u>SB</u>									
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<u>1110</u>			<u>27.10</u>		<u>7.71</u>	<u>16.72</u>	<u>61</u>	<u>4.20</u>	<u>26.2</u>	<u>-</u>	<u>clear</u>
<u>1113</u>			<u>27.10</u>		<u>7.51</u>	<u>14.42</u>	<u>55</u>	<u>3.90</u>	<u>28.3</u>	<u>-</u>	
<u>1116</u>			<u>27.10</u>		<u>7.45</u>	<u>14.21</u>	<u>53</u>	<u>3.71</u>	<u>34.9</u>	<u>-</u>	
<u>1119</u>	<u>75 gal</u>		<u>27.10</u>		<u>7.42</u>	<u>14.09</u>	<u>53</u>	<u>3.52</u>	<u>38.5</u>	<u>-</u>	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID: <u>MW-201</u>	Sampling Flow Rate	Analytical Laboratory: <u>Pace</u>				
Sample Time: <u>1120</u>	Final Depth to Water: <u>27.10</u>	Did Well Dewater? <u>NO</u>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<u>4x VOA</u>	<u>HCl</u>	<u>HVOC</u>	yes <u>(no)</u>			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

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**WELL MONITORING DATA SHEET**

	Well I.D.	MW-21i-40	Job Number:	1126-17
	Client:	Austr	Date:	6/19/15
	Project:	Vancouver	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height:	
Depth to Water:		Screened Interval:		x Multiplier:	
Water Column Length:		Depth to Free Product:		x Casing Volumes:	
Purge Volume:		Free Product Thickness:		= Purge Volume:	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	Peri				Pump Intake Depth:	~1' off bottom				Comments	
Sampling Method:	LF				Tubing Type:	LOPE					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1052			—		7.75	17.14	70	2.38	-1.4	—	
1055			—		7.59	17.19	70	1.97	2.0	—	
1058			—		7.57	17.10	75	1.83	1.2	—	
1101		75 gal	—		7.55	17.13	75	1.71	0.7	—	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-21i-40	Sampling Flow Rate:		Analytical Laboratory:	Pace	
Sample Time:	1102	Final Depth to Water:		Did Well Dewater?:	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VBA	HCl	HVOC	yes <input checked="" type="checkbox"/> no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

well cap stuck on - can't get off, but has hole in top of it that can fit peri tubing - could not gauge w/ tubing in it though

**WELL MONITORING DATA SHEET**



Well I.D.	MW-21i-105	Job Number:	1126-17
Client:	WUSA	Date:	6/17/05
Project:	Norcarver	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	27.85	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BSP LF	Pump Intake Depth:	chd. (6') SB	Comments	
Sampling Method:		Tubing Type:			

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1017			27.85		7.62	15.70	57	2.80	32.0	-	cloudy
1020			27.85		7.78	15.45	62	2.35	18.0	-	
1023			27.85		7.96	14.97	77	3.78	8.8	-	
1026			27.85		7.97	14.98	76	3.49	6.2	-	
1029	1 gal		27.85		7.97	15.00	76	3.30	5.4	-	↓

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-21i-105	Sampling Flow Rate		Analytical Laboratory:	PCC	
Sample Time:	1030	Final Depth to Water:	27.85	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x UOA	HCC	HVBC	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-22i	Job Number:	1126-17
Client:	Nuster	Date:	6/16/15
Project:	Vancouver	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	24	Water Height	
Depth to Water:	28.62	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP			Pump Intake Depth:	28.62					Comments	
Sampling Method:	LF			Tubing Type:	5/8"						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<< Stabilization Criteria
1134			28.62		8.48	17.59	63	2.13	27.0	-	clear
1137			28.62		8.39	16.77	63	1.84	29.0	-	clear
1140			28.62		8.33	16.14	65	1.64	28.9	-	clear
1143		75gal	28.62		8.29	16.01	65	1.40	29.5	-	clear


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-22i	Sampling Flow Rate:		Analytical Laboratory:	P&L	
Sample Time:	1144	Final Depth to Water:	28.62	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HVOC	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.: <u>MW-23:</u>	Job Number: <u>1126-17</u>
	Client: <u>Water</u>	Date: <u>6/16/10</u>
	Project: <u>Vendor</u>	Sampler: <u>CB</u>
	Weather:	Time In/Out:

**WELL DATA**

Well Depth:		Well Diameter: <u>24</u>	Water Height
Depth to Water: <u>27.48</u>	Screened Interval:	x Multiplier	
Water Column Length:	Depth to Free Product:	x Casing Volumes	
Purge Volume:	Free Product Thickness:	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653
			1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <u>BP</u>		Pump Intake Depth: <u>200 ft</u>		Comments							
Sampling Method: <u>LF</u>		Tubing Type: <u>SB</u>									
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
<u>0902</u>			<u>27.55</u>		<u>8.72</u>	<u>16.52</u>	<u>81</u>	<u>6.41</u>	<u>80.0</u>	<u>—</u>	<u>clear</u>
<u>0905</u>			<u>27.55</u>		<u>8.59</u>	<u>14.34</u>	<u>67</u>	<u>5.99</u>	<u>84.5</u>	<u>—</u>	
<u>0908</u>			<u>27.55</u>		<u>8.40</u>	<u>13.72</u>	<u>62</u>	<u>5.61</u>	<u>89.9</u>	<u>—</u>	
<u>0911</u>			<u>27.55</u>		<u>8.35</u>	<u>13.58</u>	<u>61</u>	<u>5.40</u>	<u>93.8</u>	<u>—</u>	
<u>0914</u>	<u>1 gal</u>		<u>27.55</u>		<u>8.30</u>	<u>13.48</u>	<u>61</u>	<u>5.20</u>	<u>97.9</u>	<u>—</u>	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID: <u>MW-23:</u>	Sampling Flow Rate	Analytical Laboratory: <u>VECO</u>				
Sample Time: <u>0915</u>	Final Depth to Water: <u>27.55</u>	Did Well Dewater? <u>NO</u>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<u>4x VOA</u>	<u>HCl</u>	<u>ANOC</u>	yes <u>no</u>	<u>                    </u>		
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

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**WELL MONITORING DATA SHEET**

	Well I.D.	NW-24i	Job Number:	1126-17
	Client:	NWstr	Date:	6/18/15
	Project:	Veneau	Sampler:	CB
	Weather:		Time In/Out:	

WELL DATA				
Well Depth:		Well Diameter:	2"	Water Height
Depth to Water:	27.60	Screened Interval:		x Multiplier
Water Column Length:		Depth to Free Product:		x Casing Volumes
Purge Volume:		Free Product Thickness:		= Purge Volume
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653
1 gallon = 3.785 liters				

PURGING DATA													
Purge Method:			BP			Pump Intake Depth:			Med. Hwy			Comments	
Sampling Method:			LF			Tubing Type:			SB				
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria		
0834			2760		9.49	15.00	82	2.09	493.9	—	clear		
0837			2760		9.39	13.75	77	1.50	-164.5	—	↓		
0840			2760		9.34	13.45	77	1.22	-161.9	—			
0843	27.60	2760	2760		9.30	13.29	76	1.08	-158.7	—			

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA						
Sample ID:	NW-24i	Sampling Flow Rate		Analytical Laboratory:		Peece
Sample Time:	0844	Final Depth to Water:	27.60	Did Well Dewater?		No
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HEVCX	yes no			
1x 252ml PI	H2SO4	TUC	yes no			
3x VOA	None	RSK (B)	yes no			
			yes no			
			yes no			

COMMENTS

**WELL MONITORING DATA SHEET**



Well I.D.: <i>MW-240</i>	Job Number: <i>1126-17</i>
Client: <i>Water</i>	Date: <i>06/18/15</i>
Project: <i>Ureover</i>	Sampler: <i>CB</i>
Weather:	Time In/Out:

**WELL DATA**

Well Depth:	Well Diameter: <i>2"</i>	Water Height:		
Depth to Water: <i>28.54</i>	Screened Interval:	x Multiplier:		
Water Column Length:	Depth to Free Product:	x Casing Volumes:		
Purge Volume:	Free Product Thickness:	= Purge Volume:		
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <i>BP</i>	Pump Intake Depth: <i>28.54</i>	Comments:									
Sampling Method: <i>IE</i>	Tubing Type: <i>well diam?</i>										
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<i>0912</i>			<i>28.84</i>		<i>8.52</i>	<i>14.27</i>	<i>52</i>	<i>1.99</i>	<i>-65.2</i>	<i>—</i>	<i>clear</i>
<i>0915</i>			<i>28.54</i>		<i>8.34</i>	<i>14.2</i>	<i>51</i>	<i>1.63</i>	<i>-59.4</i>	<i>—</i>	<i>↓</i>
<i>0918</i>			<i>28.54</i>		<i>8.30</i>	<i>14.00</i>	<i>51</i>	<i>1.41</i>	<i>-57.2</i>	<i>—</i>	<i>↓</i>
<i>0921</i>			<i>28.54</i>		<i>8.26</i>	<i>13.92</i>	<i>51</i>	<i>1.20</i>	<i>-54.8</i>	<i>—</i>	<i>↓</i>

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID: <i>MW-240</i>	Sampling Flow Rate:	Analytical Laboratory: <i>Rise</i>				
Sample Time: <i>0922</i>	Final Depth to Water: <i>28.54</i>	Did Well Dewater? <i>N</i>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<i>40LBA</i>	<i>HCl</i>	<i>NUXC</i>	yes <i>(no)</i>			
			yes	no		
			yes	no		
			yes	no		
			yes	no		

**COMMENTS**



**WELL MONITORING DATA SHEET**



Well I.D.	MW-25i	Job Number:	1126-17
Client:	WSPR	Date:	6/16/17
Project:	June	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	27.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BD	Pump Intake Depth:	27.70	Comments	
Sampling Method:	LF	Tubing Type:	5/8"		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1055			27.70		7.84	16.79	63	1.91	70.5	-	Clear
1058			27.70		7.47	13.78	90	1.52	80.8	-	↓
1101			27.70		7.42	13.71	88	1.39	85.2	-	
1104			27.70		7.38	13.65	87	1.28	90.1	-	


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-25i	Sampling Flow Rate		Analytical Laboratory:	PCA	
Sample Time:	1105	Final Depth to Water:	27.70	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VCA	HCC	HVOC	yes (no)			
			yes	no		
			yes	no		
			yes	no		
			yes	no		
			yes	no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-26	Job Number:	1126-17
	Client:	Wester	Date:	6/16/18
	Project:	Uncover	Sampler:	CB
	Weather:		Time In/Out:	

WELL DATA					
Well Depth:		Well Diameter:	2"	Water Height:	
Depth to Water:	27.54	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

PURGING DATA													
Purge Method:				BP CF		Pump Intake Depth:				Dgl. + 1/2" SB		Comments	
Sampling Method:				Tubing Type:									
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
1016			27.54		7.02	15.92	61	3.92	99.9	-	Clear		
1019			27.54		6.70	14.91	61	3.62	102.6	-	↓		
1022			27.54		6.66	14.81	61	3.39	105.2	-			
1025		1.75 gal	27.54		6.64	14.75	61	3.20	107.9	-			

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA						
Sample ID:	MW-26	Sampling Flow Rate	27.54	Analytical Laboratory:		PCC
Sample Time:	1026	Final Depth to Water:	27.54	Did Well Dewater?		No
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	Duplicate ID
4x UDA	HCl	MVCE	yes	no		
			yes	no		
			yes	no		
			yes	no		
			yes	no		

COMMENTS

**WELL MONITORING DATA SHEET**



Well I.D.	MW-325	Job Number:	1120-17
Client:	Mustr	Date:	6/17/15
Project:	Vancouver	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	28.71	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP-interval	Pump Intake Depth:	interval BP	Comments	
Sampling Method:	LF	Tubing Type:	LDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1046			28.71		7.03	15.68	79	2.05	50.1	~	clear
1049			28.71		7.00	15.68	84	1.62	48.2	~	
1052			28.71		6.97	15.69	86	1.63	48.3	~	
1055	1.75 gal		28.71		6.95	15.68	87	1.65	47.7	~	↓


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-325	Sampling Flow Rate		Analytical Laboratory:	Trace
Sample Time:	1050	Final Depth to Water:	28.71	Did Well Dewater?	No
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
4x UVA	HCl	HVCC	yes (no)		
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	S-1	Job Number:	1126-77
	Client:	Wstr	Date:	6/16/15
	Project:	Vancouver	Sampler:	CR3
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"
Depth to Water:	26.65	Screened Interval:	
Water Column Length:		Depth to Free Product:	—
Purge Volume:		Free Product Thickness:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				BP		Pump Intake Depth:				SB		Comments	
Sampling Method:				LF		Tubing Type:				ded. tubing			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
0805			26.74		5.78	15.12	65	4.20	147.1	—	clear		
0808			26.74		5.44	14.21	63	2.51	159.3	—	↓		
0811			26.74		5.46	13.91	61	2.29	160.8	—	↓		
0814		74 gal	26.74		5.51	13.86	61	2.10	160.2	—	↓		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	S-1	Sampling Flow Rate		Analytical Laboratory:	PGL		
Sample Time:	0815	Final Depth to Water:	26.74	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
4x VOA	HCl	HVOC	yes (no)	—	—	—	
			yes	no			
			yes	no			
			yes	no			
			yes	no			
			yes	no			

**COMMENTS**

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**WELL MONITORING DATA SHEET**



Well I.D.	S-2	Job Number:	1124-17
Client:	NWStar	Date:	6/16/15
Project:	Vancouver	Sampler:	CR
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	26.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP			Pump Intake Depth:	ded. to 2"			Comments			
Sampling Method:	LF			Tubing Type:	SR						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
0828			26.80		6.41	15.60	58	1.97	143.0	-	rust colored
0831			26.91		6.49	14.33	59	1.59	135.8	-	
0834			26.91		6.59	14.05	59	1.30	128.3	-	
0837			26.91		6.62	13.89	59	1.14	125.3	-	
0840		1 gal	26.91		6.63	13.85	59	1.04	123.2	-	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	S-2	Sampling Flow Rate:		Analytical Laboratory:	ACE	
Sample Time:	0841	Final Depth to Water:	26.91	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	FIVOC	yes <input checked="" type="radio"/> no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MGMS1-43	Job Number:	1126-17
Client:	Muster	Date:	6/18/15
Project:	Vancouver	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	27.38	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	int. BP	Pump Intake Depth:	222.15m	Comments	
Sampling Method:	LC	Tubing Type:	222.15m		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1200			27.38		9.20	16.40	67	10.10	-73.7	-	clear
1203			27.38		9.05	15.74	70	9.86	-74.7	-	
1206			27.38		9.01	15.56	72	9.72	-76.2	-	
1209	75.5		27.38		8.96	15.44	72	9.45	-78.5	-	


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS1-43	Sampling Flow Rate		Analytical Laboratory:	Rae
Sample Time:	1230	Final Depth to Water:	27.38	Did Well Dewater?	No
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
4x VOA	HCl	HVOC	yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MGM51-60	Job Number:	1126-17
	Client:	WSP	Date:	10/18/15
	Project:	Wrecker	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	27.50	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:				int. BP		Pump Intake Depth:				dead tubing		Comments	
Sampling Method:				LF		Tubing Type:				dead tubing			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
1236			27.50		8.72	15.92	82	3.92	-48.1	—	clear		
1239			27.50		8.35	15.46	70	3.47	-22.5	—	↑		
1240			27.50		8.30	15.33	69	3.25	-15.2	—	↓		
1243		27.50	27.50		8.25	15.25	68	3.01	-8.9	—	↓		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID:	MGM51-60	Sampling Flow Rate		Analytical Laboratory:	APEX	
Sample Time:	1244	Final Depth to Water:	27.50	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2x VOA	HCl	HVOC	yes (no)			
			yes	no		
			yes	no		
			yes	no		
			yes	no		
			yes	no		

**COMMENTS**

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**WELL MONITORING DATA SHEET**

	Well I.D.: <u>MGMS2-40</u>	Job Number: <u>1126-17</u>
	Client: <u>Wstr</u>	Date: <u>6/19/15</u>
	Project: <u>Uncover</u>	Sampler: <u>03</u>
	Weather:	Time In/Out:

**WELL DATA**

Well Depth:	Well Diameter:	Water Height
Depth to Water: <u>25.25</u>	Screened Interval:	x Multiplier
Water Column Length:	Depth to Free Product:	x Casing Volumes
Purge Volume:	Free Product Thickness:	= Purge Volume
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653
		1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <u>int. BP</u>				Pump Intake Depth: <u>dead. 767</u>				Comments			
Sampling Method: <u>LF</u>				Tubing Type: <u>ded. tubing</u>							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<u>0958</u>			<u>25.25</u>		<u>9.10</u>	<u>17.50</u>	<u>61</u>	<u>14.08</u>	<u>-115.0</u>	<u>-</u>	<u>clear</u>
<u>1001</u>			<u>25.25</u>		<u>9.03</u>	<u>17.34</u>	<u>61</u>	<u>13.82</u>	<u>-117.3</u>	<u>-</u>	↓
<u>1004</u>			<u>25.25</u>		<u>9.00</u>	<u>17.34</u>	<u>61</u>	<u>13.68</u>	<u>-117.6</u>	<u>-</u>	
<u>1005</u>			<u>25.25</u>		<u>8.94</u>	<u>17.21</u>	<u>61</u>	<u>13.50</u>	<u>-117.5</u>	<u>-</u>	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID: <u>MGMS2-40</u>	Sampling Flow Rate	Analytical Laboratory: <u>Pue</u>				
Sample Time: <u>1006</u>	Final Depth to Water: <u>25.25</u>	Did Well Dewater? <u>No</u>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<u>4x VOA</u>	<u>HCl</u>	<u>HVOC</u>	yes <input type="radio"/> no <input checked="" type="radio"/>			
<u>1x 250ml PI</u>	<u>H2SO4</u>	<u>TUC</u>	yes <input type="radio"/> no <input checked="" type="radio"/>			
<u>3x VOA</u>	<u>None</u>	<u>RSK 175</u>	yes <input type="radio"/> no <input checked="" type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			

**COMMENTS**

sputting out -> keeps DO high



**WELL MONITORING DATA SHEET**



Well I.D.	MGM52-60	Job Number:	1126-17
Client:	WStar	Date:	6/19/15
Project:	Wincoave	Sampler:	
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	26.65	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	int BP + per LF			Pump Intake Depth:	deck + 5m			Comments			
Sampling Method:	LF			Tubing Type:	deck + 5m						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1019		26.05	26.65		7.73	17.91	81	1.01	-20.2	-	clear
1022		26.05	26.65		7.76	17.76	78	0.84	-22.2	-	
1025		26.05	26.65		7.79	17.38	75	0.64	-23.8	-	
1028		26.05	26.65		7.81	17.30	75	0.50	-25.2	-	↓

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGM52-60	Sampling Flow Rate:		Analytical Laboratory:	Perce	
Sample Time:	1029	Final Depth to Water:	26.65	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x UDA	HCl	AUX	yes (no)			
			yes	no		
			yes	no		
			yes	no		
			yes	no		
			yes	no		

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MGM53-40	Job Number:	1126-17
Client:	West	Date:	6/19/15
Project:	Vancouver	Sampler:	CB
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	25.90	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	mt. BP			Pump Intake Depth:	ded. +5'			Comments			
Sampling Method:	LF			Tubing Type:	ded. +5'						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	-- Stabilization Criteria
0917			25.90		8.86	15.98	60	6.66	-42.1	—	clear
0920			25.90		8.06	15.18	64	6.18	-20.8	—	↓
0923			25.90		8.01	15.10	64	5.95	-18.2	—	↓
0926		75 gal	25.90		7.97	15.01	65	5.73	-17.1	—	↓


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGM53-40	Sampling Flow Rate		Analytical Laboratory:	Pace	
Sample Time:	0927	Final Depth to Water:	25.90	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
40 VOA	HCl	HU07	yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.:	MGMS3-60	Job Number:	1126-17
	Client:	Wstr	Date:	6/15/15
	Project:	Vancouver	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	25.83	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:		Pump Intake Depth:		Comments							
Sampling Method:		Tubing Type:									
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
0935			25.83		8.15	16.81	58	5.45	-8.7	-	Clear
0938			25.83		8.02	16.03	54	4.98	-10.6	-	
0941			25.83		8.03	15.92	53	4.79	-11.0	-	
0944	75 gal		25.83		8.03	15.85	53	4.62	-10.9	-	↓


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS3-60	Sampling Flow Rate:		Analytical Laboratory:	Race	
Sample Time:	0945	Final Depth to Water:	25.83	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HVOC	yes    no			
			yes    no			
			yes    no			
			yes    no			
			yes    no			
			yes    no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MP-1	Job Number:	1126-17
	Client:	Waste	Date:	6/18/15
	Project:	Uncovered	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	27.75	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		ISP		Pump Intake Depth:		ded. tubing		Comments			
Sampling Method:		LF		Tubing Type:		SB					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
0800			27.75		8.94	14.67	59	2.33	-152.5	-	clear
0803			27.75		8.69	14.24	60	1.99	-148.3	-	
0806			27.75		8.65	14.12	60	1.85	-150.0	-	
0809		75.91	27.75		8.62	14.01	60	1.75	-148.5	-	↓


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MP-1	Sampling Flow Rate:		Analytical Laboratory:	KSC	
Sample Time:	0810	Final Depth to Water:	27.75	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x VOA	HCl	HVOC	yes (no)			
1x BSCW PI	H <sub>2</sub> SO <sub>4</sub>	TSC	yes (no)			
3x VOA	None	MSK 175	yes (no)			
			yes	no		
			yes	no		
			yes	no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	EX-1	Job Number:	1126-17
	Client:	Muster	Date:	10/15/15
	Project:	Recover	Sampler:	CB
	Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	27.54	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				BP				Pump Intake Depth:				2nd. tubing				Comments			
Sampling Method:				CF				Tubing Type:				SB							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks							
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria								
0944			27.54		8.05	16.40	58	2.90	-32.6	-	cloudy								
0948			27.54		8.24	15.99	58	2.62	-37.2	-	↓								
0950			27.54		8.25	15.93	58	2.45	-36.7	-	↓								
0953		175 gal	27.54		8.26	15.88	58	2.29	-35.2	-	↓								

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	EX-1	Sampling Flow Rate		Analytical Laboratory:	Peele		
Sample Time:	0954	Final Depth to Water:	27.54	Did Well Dewater?	No		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
4x VOA	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>				
1x 250mL PI	H <sub>2</sub> SO <sub>4</sub>	TOL	yes <input type="radio"/> no <input checked="" type="radio"/>				
3x VOA	NH <sub>4</sub>	PSIC (PIS)	yes <input type="radio"/> no <input checked="" type="radio"/>				
			yes <input type="radio"/> no <input type="radio"/>				
			yes <input type="radio"/> no <input type="radio"/>				
			yes <input type="radio"/> no <input type="radio"/>				

**COMMENTS**

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***Appendix B***

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**Historical Groundwater Analytical Data**

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-1	11/17/93	--	0.5	--	--	<0.250	<0.250	--	14.0	--	--	0.75	<0.250	--	1.40	<0.500
	09/01/95	<0.250	<0.500	<0.250	<0.250	<0.250	<0.250	<0.250	13.0	<0.250	<0.250	0.62	<0.250	--	0.89	0.61
	09/24/96	<0.0050	<0.0200	<0.0020	<0.0020	0.054	<0.0020	0.0084	11.0	0.083	0.017	2.60	0.068	--	1.80	0.42
	12/02/96	0.0008	<0.00050	<0.00050	<0.00020	0.0067	<0.00050	0.0003	1.50	0.0044	<0.00020	1.20	0.0073	--	0.31	0.0016
	11/12/97	<0.125	<0.250	<0.125	<0.125	<0.125	<0.125	<0.125	11.6	<0.125	<0.125	6.33	<0.125	--	2.88	<0.250
	08/11/99	<0.0500	<0.250	<0.0250	<0.250	0.0431	<0.0250	<0.0250	8.59	0.086	<0.0250	2.52	0.0525	--	1.21	0.408
	11/16/99	<0.0500	<0.125	<0.0250	<0.0500	0.038	<0.0250	<0.0250	6.25	0.0475	<0.0250	2.40	0.028	--	0.829	0.148
	02/29/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	6.72	0.0609	<0.0500	1.37	<0.100	--	0.59	0.438
	06/27/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	6.48	0.0651	<0.0500	1.78	<0.100	--	0.795	0.284
	08/31/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	5.16	<0.0500	<0.0500	1.96	<0.100	--	0.72	<0.0500
	11/30/00	<0.0200	<0.100	<0.0100	<0.0100	0.015	<0.0100	<0.0100	1.55	0.0127	<0.0100	0.66	<0.0200	--	0.234	<0.0100
	02/27/01	<0.100	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	4.99	<0.0500	<0.0500	1.14	<0.100	--	0.44	0.19
	05/29/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	4.05	<0.0250	<0.0250	1.04	<0.0500	--	0.407	0.091
	09/25/01	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	5.00	<0.0500	<0.0500	0.89	<0.0500	--	0.44	0.24
	12/17/01	<0.0020	<0.0100	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.109	0.00126	<0.0010	0.164	<0.0020	--	0.0429	<0.0010
	03/19/02	<0.0500	<0.0250	<0.0250	<0.0500	0.035	<0.0250	<0.0250	4.12	0.035	<0.0250	0.71	<0.0250	--	0.349	0.17
	05/30/02	<0.0100	<0.0050	<0.0050	<0.0100	0.0108	<0.0050	<0.0050	1.14	0.0066	<0.0050	0.307	<0.0050	--	0.101	0.0223
	11/08/02	<0.0200	<0.0100	<0.0100	<0.0200	0.0228	<0.0100	<0.0100	1.98	0.0202	<0.0100	0.367	<0.0100	--	0.174	0.0144
	05/30/03	<0.0200	<0.0100	<0.0100	<0.0200	0.0212	<0.0100	<0.0100	2.18	<0.0100	<0.0100	1.20	0.0142	--	0.34	0.0226
	11/02/04	<0.0200	<0.0100	<0.0100	<0.0200	0.0224	<0.0100	<0.0100	2.13	0.0236	<0.0100	0.335	<0.0100	--	0.169	0.0228
	11/16/04	<0.0120	<0.0120	<0.0120	<0.0120	0.015	<0.0120	<0.0120	1.30	<0.0120	<0.0120	0.31	<0.0120	--	0.13	<0.0120
	05/18/05	<0.0050	<0.0025	<0.0025	<0.0050	0.012	<0.0025	<0.0025	0.773	0.0141	<0.0025	0.193	<0.0025	--	0.0876	0.0038
	05/23/07	<0.0100	<0.0100	<0.0100	<0.0100	0.0155	<0.0100	<0.0100	1.11	<0.0100	<0.0100	0.0585	<0.0100	--	0.0454	0.0117
	09/11/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.916	<0.0250	<0.0250	0.034	<0.0250	--	0.034	0.0625
	12/13/07	<0.0100	<0.00500	<0.00500	<0.0100	0.0097	<0.00500	<0.00500	0.526	0.005	<0.00500	0.0819	<0.00500	--	0.0454	0.0088
	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	0.0161	<0.000500	0.00166	0.826	0.00918	0.00	0.0497	0.001	<0.000500	0.0456	0.0588
	09/19/08	<0.0200	<0.0100	<0.0100	<0.0200	0.0204	<0.0100	<0.0100	0.633	<0.0100	<0.0100	0.108	<0.0100	<0.0100	0.0748	<0.0100
	12/10/08	<0.0025	<0.0025	<0.0025	<0.0025	0.015	<0.0025	<0.0025	0.57	0.0062	<0.0025	0.028	<0.0025	<0.0025	0.025	0.048

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-1	03/27/09	<0.0025	<0.0025	<0.0025	<0.0025	0.017	<0.00050	<0.0025	0.58	0.0057	<0.0025	0.039	<0.0025	<0.0025	0.042	0.0044
(continued)	06/17/09	<0.00090	<0.00090	<0.00090	<0.00090	0.0063	<0.00090	<0.00090	0.31	0.0036	0.00099	0.021	<0.00090	<0.00090	0.014	0.0097
	09/18/09	<0.00080	<0.00080	<0.00080	<0.00080	0.019	<0.00080	<0.00080	0.59	0.0042	0.0019	0.029	<0.00080		0.027	0.0081
	12/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.17	0.00072	0.00067	0.053	0.00053	<0.00050	0.026	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0093	<0.00050	0.00061	0.30	0.0036	0.0014	0.022	<0.00050	<0.00050	0.021	0.026
	06/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0096	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.0066	<0.00050
	09/23/10	<0.00090	<0.00090	<0.00090	<0.00090	0.012	<0.00090	<0.00090	0.380	0.0034	0.0016	0.025	<0.00090	<0.00090	0.027	0.0071
	12/09/10	<0.0015	<0.0015	<0.0015	<0.0015	0.007	0.0015	<0.0015	0.250	0.0022	<0.0015	0.025	<0.0015	<0.0015	0.017	0.0080
	03/10/11	<0.0015	<0.0015	<0.0015	<0.0015	0.0075	<0.0015	<0.0015	0.250	0.003	<0.0015	0.016	<0.0015	<0.0015	0.016	0.018
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0044	<0.0005	<0.0005	0.011	<0.0005	<0.0005	0.0034	<0.0005
	09/19/11	<0.0015	<0.0015	<0.0015	<0.0015	0.012	<0.0015	<0.0015	0.3	0.0032	<0.0015	0.0052	<0.0015	<0.0015	0.013	0.03
	12/09/11	<0.0015	<0.0015	<0.0015	<0.0015	0.011	<0.0015	<0.0015	0.26	0.0029	<0.0015	0.0062	<0.0015	<0.0015	0.0084	0.04
	03/09/12	<0.00050	<0.00050	<0.00050	<0.00050	0.008	<0.00050	<0.00050	0.20	0.0024	0.0010	0.0031	<0.00050	<0.00050	0.0095	0.02
	06/22/12	<0.0005	<0.0005	<0.0005	<0.0005	0.005	<0.0005	<0.0005	0.14	0.0017	0.0005	0.0170	<0.0005	<0.0005	0.0130	0.01
	09/13/12	<0.0015	<0.0015	<0.0015	<0.0015	0.010	<0.0015	<0.0015	0.26	0.0024	<0.0015	<0.0015	<0.0015	<0.0015	0.0070	0.03
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.047	0.00064	<0.00050	0.026	<0.00050	<0.00050	0.014	<0.00050
	03/15/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.14	0.0016	0.00080	0.00083	<0.00050	<0.00050	0.0060	0.00098
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0072	<0.00050	<0.00050	0.13	0.0019	0.00063	0.0011	<0.00050	<0.00050	0.0024	0.028
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.18	0.0016	0.0010	0.0032	<0.00050	<0.00050	0.0056	0.00092
	12/16/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0078	<0.00050	<0.00050	0.11	0.0018	<0.00050	0.0085	<0.00050	<0.00050	0.0059	0.013
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0091	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0043	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0056	0.0450	0.0010	<0.00050	<0.00050	<0.00050	<0.00050	0.00065	0.0059
	9/30/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.17	0.0013	0.00083	0.012	<0.00050	<0.00050	0.0097	0.0033
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.030	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.0094	<0.00050
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0062	<0.00050	<0.00050	0.047	0.00067	<0.00050	0.0011	<0.00050	<0.00050	0.0019	<0.0050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0095	<0.00050	<0.00050	0.075	0.00080	<0.00050	0.0043	<0.00050	<0.00050	0.0046	0.0049

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-2	11/17/93	--	0.051	--	--	0.012	<0.00050	--	0.01	--	--	<0.00050	<0.00050	--	<0.00050	<0.00010
	09/01/95	<0.00050	0.016	<0.00050	<0.00020	0.0082	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	0.0022
	09/24/96	<0.00050	0.019	<0.00020	<0.00020	0.0096	0.0005	<0.00020	0.0094	<0.00020	<0.00020	<0.00020	<0.00020	--	0.0003	0.0051
	12/02/96	<0.00050	0.0088	<0.00050	<0.00020	0.0069	0.0006	<0.00020	0.011	<0.0010	<0.00020	<0.00050	<0.0010	--	<0.00030	0.0072
	11/13/97	<0.00050	<0.0010	<0.00050	<0.00050	0.00532	0.000571	<0.00050	0.0079	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.0010
	08/11/99	<0.0010	0.0183	<0.00050	<0.00050	0.00638	<0.00050	<0.00050	0.02	<0.00050	<0.00050	<0.00050	<0.0010	--	0.0104	0.00164
	02/29/00	<0.0010	0.016	<0.00050	<0.00050	0.00568	<0.00050	<0.00050	0.0235	<0.00050	<0.00050	<0.00050	<0.0010	--	0.00452	0.00121
	06/27/00	<0.0010	0.0183	<0.00050	<0.00050	0.00534	<0.00050	0.00127	0.0234	<0.00050	<0.00050	0.0128	<0.0010	--	0.0166	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050
	05/30/02	<0.0010	0.00168	<0.00050	<0.0010	0.00265	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.00061	<0.00050	--	<0.00050	<0.00050
	11/08/02	<0.0010	0.0104	<0.00050	<0.0010	0.00313	<0.00050	<0.00050	0.00184	<0.00050	<0.00050	0.00105	<0.00050	--	0.00098	<0.00050
	05/30/03	<0.0010	0.00364	<0.00050	<0.0010	0.00195	<0.00050	<0.00050	0.00059	<0.00050	<0.00050	0.0066	<0.00050	--	0.00113	<0.00050
	09/12/07	<0.00100	0.0059	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	03/07/08	<0.00100	0.00786	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.001	<0.000500	<0.000500	<0.000500	<0.000500
	09/18/08	<0.00100	0.00593	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	03/24/09	<0.00050	0.0048	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/09	<0.00050	0.0051	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00085	<0.00050
	03/19/10	<0.00050	0.0057	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/23/10	<0.0005	0.0038	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	03/09/11	<0.00050	0.0048	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/11	<0.00050	0.0043	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/09/12	<0.00050	0.0043	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/13/12	<0.00050	0.0034	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	0.0031	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/19/13	<0.00050	0.0029	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/30/2014	<0.00050	0.0023	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/19/2015	<0.00050	0.00096	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-3	11/17/93	--	0.21	--	--	0.027	0.004	--	0.24	--	--	0.19	0.02	--	0.097	0.13
	09/01/95	<0.0500	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	2.70	<0.0500	<0.0500	1.30	<0.0500	--	0.14	0.73
	09/24/96	<0.0050	<0.0200	0.0079	<0.0020	0.012	<0.0020	<0.0020	1.10	0.0095	0.004	1.80	0.021	--	0.33	0.082
	12/02/96	<0.0500	<0.0500	<0.0500	<0.0200	<0.0300	<0.0500	<0.0200	0.65	<0.100	<0.0200	2.10	<0.100	--	0.47	<0.0500
	11/12/97	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.46	<0.0250	<0.0250	2.00	<0.0250	--	0.241	<0.0500
	08/11/99	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.50	<0.0100	<0.0100	1.76	0.0254	--	0.247	<0.0100
	11/16/99	<0.0200	<0.0500	<0.0100	<0.0200	0.014	<0.0100	<0.0100	0.628	0.0152	<0.0100	0.70	<0.0100	--	0.132	<0.0100
	02/29/00	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.473	<0.0100	<0.0100	1.89	0.0254	--	0.356	<0.0100
	06/27/00	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.41	<0.0100	0.0102	1.46	<0.0200	--	0.241	<0.0100
	08/31/00	<0.0200	<0.100	<0.0100	<0.0100	0.0522	<0.0100	<0.0100	2.58	0.0255	<0.0100	0.399	<0.0200	--	0.1	0.171
	11/30/00	<0.0050	<0.0250	<0.0025	<0.0025	0.0133	<0.0025	<0.0025	0.374	0.00373	<0.0025	0.366	<0.0050	--	0.0803	0.0031
	02/27/01	<0.0050	<0.0250	0.00364	<0.0025	0.00578	<0.0025	<0.0025	0.153	<0.0025	0.0025	0.358	<0.0050	--	0.0761	<0.0025
	05/29/01	<0.0050	<0.0250	0.0028	<0.0025	<0.0025	<0.0025	<0.0025	0.112	<0.0025	<0.0025	0.647	0.00512	--	0.0933	<0.0025
	09/25/01	<0.0013	0.0031	0.0024	<0.0013	0.01	0.002	<0.0013	0.21	0.003	0.0017	0.55	0.0072	--	0.09	0.0049
	12/17/01	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.164	<0.0050	<0.0050	0.826	0.0169	--	0.155	<0.0050
	03/19/02	<0.0050	<0.0025	0.00275	<0.0050	<0.0025	<0.0025	<0.0025	0.138	0.0041	<0.0025	0.758	0.0096	--	0.107	<0.0025
	05/30/02	<0.0100	0.0078	<0.0050	<0.0100	0.0278	<0.0050	<0.0050	1.38	0.0426	0.006	0.302	0.0115	--	0.0551	0.0967
	11/08/02	<0.0050	0.015	<0.0025	<0.0050	0.0294	0.00355	<0.0025	0.399	0.00905	0.0057	0.359	0.0058	--	0.0671	0.0194
	05/30/03	<0.0050	<0.0025	0.00645	<0.0050	<0.0025	<0.0025	<0.0025	0.0501	0.00365	<0.0025	0.706	0.00495	--	0.0726	<0.0025
	11/16/04	<0.0100	<0.0050	<0.0050	<0.0100	0.015	<0.0050	<0.0050	0.44	0.0059	<0.0050	0.27	<0.0050	--	0.072	<0.0050
	03/23/05	<0.0020	0.00226	0.00416 B	<0.0020	0.00892	<0.0010	<0.0010	0.246	0.0084	0.00286	0.329	0.00504	--	0.0719	0.00384
	05/18/05	<0.0020	<0.0010	0.00386	<0.0020	0.00574	<0.0010	<0.0010	0.188	0.00472	0.00302	0.304	0.00506	--	0.0885	<0.0010
	05/23/07	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.11	0.0063	<0.00200	0.349	0.00454	--	0.0706	<0.00200
	09/11/07	<0.00500	0.00995	0.0144	<0.00500	0.043	0.0061	<0.00250	0.95	0.0282	0.012	0.601	0.031	--	0.223	0.0061
	12/12/07	<0.0100	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	<0.00500	0.0957	<0.00500	<0.00500	0.254	<0.00500	--	0.0632	<0.00500
	03/06/08	<0.00100	<0.000500	0.00210 J	<0.00100	0.00132	<0.000500	<0.000500	0.127	0.00849	0.00237	0.144	0.00566	<0.000500	0.0947	<0.000500
	09/19/08	<0.00500	0.0037	0.00265 J	<0.00500	0.0106	<0.00250	<0.00250	0.187	0.00585	0.00295	0.283	0.0066	<0.00250	0.075	<0.00250
	12/10/08	<0.00090	0.0015	0.0019	<0.00090	0.0053	0.0012	<0.00090	0.12	0.0043	0.0015	0.20	0.0038	<0.00090	0.054	<0.00090
	03/26/09	<0.00050	<0.00050	0.0014	<0.00050	0.0016	<0.00050	<0.00050	0.083	0.0043	0.0012	0.18	0.0036	<0.00050	0.046	<0.00050
	06/17/09	<0.00050	<0.00050	0.0011	<0.00050	0.00089	<0.00050	<0.00050	0.076	0.0047	0.00071	0.19	0.0034	<0.00050	0.049	<0.00050
	09/18/09	<0.00050	<0.00050	0.0033	<0.00050	0.01	<0.00050	<0.00050	0.18	0.0062	0.0022	0.27	0.0073	<0.00050	0.062	0.0012

Please refer to notes at end of table.

MW-3	12/17/09	<0.00090	<0.00090	0.00096	<0.00090	<0.00090	<0.00090	<0.00090	0.05	0.0032	<0.00090	0.18	0.0032	<0.00090	0.047	<0.00090
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Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
(continued)	03/19/10	<0.00090	<0.00090	0.001 BE	<0.00090	<0.00090	<0.00090	<0.00090	0.077	0.0054	<0.00090	0.28	0.0041	<0.00090	0.049	<0.00090
	06/16/10	<0.00050	<0.00050	0.0023	<0.00050	0.0016	0.0009	<0.00050	0.042	0.0017	<0.00050	0.18	0.0019	<0.00050	0.03	<0.00050
	09/23/10	<0.0005	<0.0005	0.0028 BE	<0.0005	0.00056	<0.0005	<0.0005	0.075	0.0044	0.00051	0.220	0.003	<0.0005	0.039	<0.0005
	12/09/10	<0.0005	<0.0005	0.0027	<0.0005	<0.0005	<0.0005	<0.0005	0.039	0.0034	<0.0005	0.210	0.003	<0.0005	0.035	<0.0005
	03/10/11	<0.00050	<0.00050	0.0054	<0.00050	<0.00050	<0.00050	<0.00050	0.0089	0.0011	<0.00050	0.110	0.0016	<0.00050	0.015	<0.00050
	06/10/11	<0.0005	<0.0005	0.0016	<0.0005	0.0022	0.00076	<0.0005	0.036	0.0011	0.00054	0.099	0.0016	<0.0005	0.03	<0.0005
	09/16/11	< 0.00050	< 0.00050	0.002	< 0.00050	0.003	0.00059	< 0.00050	0.07	0.0017	0.00091	0.13	0.0024	< 0.00050	0.031	< 0.00050
	12/09/11	< 0.00050	< 0.00050	0.0022	< 0.00050	0.0029	0.00054	< 0.00050	0.062	0.0016	0.00083	0.19	0.0026	< 0.00050	0.045	< 0.00050
	03/12/12	< 0.00050	< 0.00050	0.0024	< 0.00050	0.001	< 0.00050	< 0.00050	0.05	0.0028	0.0010	0.1400	0.0031	< 0.00050	0.0450	< 0.00050
	06/21/12	< 0.0005	< 0.0005	0.0023	< 0.0005	0.001	< 0.0005	< 0.0005	0.05	0.0027	0.0006	0.1700	0.0027	< 0.0005	0.0370	< 0.0005
	09/13/12	< 0.00050	< 0.00050	0.0017	< 0.00050	0.004	< 0.00050	< 0.00050	0.10	0.0021	0.0014	0.1400	0.0033	< 0.00050	0.0450	< 0.00050
	12/13/12	< 0.00050	< 0.00050	0.0013	< 0.00050	0.00078	< 0.00050	< 0.00050	0.027	0.0016	<0.00050	0.17	0.0020	< 0.00050	0.036	< 0.00050
	03/14/13	< 0.00050	< 0.00050	0.0018	< 0.00050	0.0010	< 0.00050	< 0.00050	0.064	0.0025	0.0014	0.16	0.0032	< 0.00050	0.053	< 0.00050
	06/14/13	<0.00090	<0.00090	0.0014	<0.00090	0.0011	<0.00090	<0.00090	0.068	0.0031	0.0013	0.21	0.0033	<0.00090	0.048	<0.00090
	09/19/13	< 0.00050	< 0.00050	0.0011	< 0.00050	0.0011	< 0.00050	< 0.00050	0.099	0.0015	0.0014	0.086	0.0017	< 0.00050	0.03	< 0.00050
	12/16/13	< 0.00050	< 0.00050	0.0014	< 0.00050	0.0013	< 0.00050	< 0.00050	0.047	0.0021	0.00081	0.17	0.0024	< 0.00050	0.038	< 0.00050
	3/21/2014	< 0.00050	< 0.00050	0.0013	< 0.00050	0.00064	< 0.00050	< 0.00050	0.0270	0.0016	< 0.00050	0.150	0.0020	< 0.00050	0.030	< 0.00050
	6/24/2014	< 0.00050	0.00086	0.00086	< 0.00050	0.00140	< 0.00050	< 0.00050	0.0650	0.0032	0.00130	0.180	0.0032	< 0.00050	0.044	< 0.00050
	9/30/2014	< 0.00050	< 0.00050	0.001	< 0.00050	0.0067	0.00070	< 0.00050	0.11	0.0021	0.0013	0.18	0.0028	< 0.00050	0.047	< 0.00050
	12/11/2014	< 0.00050	< 0.00050	0.0012	< 0.00050	0.00080	< 0.00050	< 0.00050	0.028	0.0017	< 0.00050	0.15	0.0022	< 0.00050	0.037	< 0.00050
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/15/2015	< 0.00050	<0.00050	0.00086	< 0.00050	0.0011	< 0.00050	< 0.00050	0.049	0.0020	0.00088	0.16	0.0028	< 0.00050	0.044	< 0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-4	11/17/93	--	0.85	--	--	0.012	<0.0500	--	0.02	--	--	0.04	<0.0500	--	0.0054	<0.0100
	09/01/95	<0.0050	0.34	<0.0050	<0.0050	0.0052	<0.0500	<0.0050	0.014	<0.0050	<0.0050	<0.0500	<0.0500	--	<0.0500	0.030
	09/24/96	<0.00050	0.3	<0.00020	<0.00020	0.0071	0.0014	<0.00020	0.0032	<0.00020	0.001	0.0005	<0.00050	--	0.0008	0.0047
	12/02/96	<0.00050	0.31	<0.00050	0.0003	0.0038	0.001	<0.00020	0.019	<0.0010	0.0003	<0.00050	<0.0010	--	<0.00030	0.039
	11/13/97	<0.00050	0.252	<0.00050	<0.00050	0.00422	0.00123	<0.00050	0.00691	<0.00050	0.000688	<0.00050	<0.00050	--	<0.00050	<0.0010
	08/11/99	<0.0020	0.144	<0.0010	<0.0010	0.00121	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0036	<0.0020	--	<0.0010	<0.0010
	11/16/99	<0.0010	0.0263	<0.00050	<0.0010	0.0023	<0.00050	<0.00050	0.00418	<0.00050	<0.00050	0.0012	<0.00050	--	0.00088	0.00207
	02/29/00	<0.0020	0.119	<0.0010	<0.0010	0.00284	<0.0010	<0.0010	0.0041	<0.0010	<0.0010	<0.0010	<0.0020	--	<0.0010	0.00572
	06/28/00	<0.0050	0.0594	<0.0025	<0.0025	0.00389	<0.0025	<0.0025	0.0025	<0.0025	<0.0025	<0.0025	<0.0025	--	<0.0025	<0.0025
	07/05/00	Well Abandoned														
MW-5	11/17/93	--	1.90	--	--	<0.0250	<0.0250	--	0.10	--	--	1.20	<0.0250	--	0.052	<0.0500
	09/01/95	<0.001	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	1.3	<0.001	<0.001	60.0	<0.001	--	<0.001	<0.002
	09/24/96	<0.0050	0.14	<0.0020	<0.0020	0.035	<0.0020	0.0075	2.6	0.08	0.0053	16.0	0.064	--	0.67	0.37
	12/02/96	0.071	<0.0500	<0.0500	0.027	<0.0300	<0.0500	<0.0200	5.6	<0.100	<0.0200	27.0	0.11	--	1.70	0.34
	11/12/97	<0.500	<0.001	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	28.0	<0.500	--	1.25	<0.001
	08/11/99	<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	1.75	<0.100	<0.100	25.1	<0.200	--	0.862	0.238
	02/29/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.126	<0.0500	<0.0500	5.25	<0.100	--	0.135	<0.0500
	08/31/00	<0.0500	<0.250	<0.0250	<0.0250	0.0414	<0.0250	<0.0250	1.86	<0.0250	<0.0250	5.66	<0.0500	--	0.347	0.28
	11/30/00	<0.0500	<0.250	<0.0250	<0.0250	0.0273	<0.0250	<0.0250	3.85	0.0268	<0.0250	6.15	<0.0500	--	0.511	0.189
	02/27/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	1.37	<0.0250	<0.0250	7.35	<0.0500	--	0.445	0.127
	05/30/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	2.41	<0.0250	<0.0250	5.56	<0.0500	--	0.439	0.129
	09/25/01	<0.0250	0.2	<0.0250	<0.0250	0.034	<0.0250	<0.0250	1.80	<0.0250	<0.0250	2.20	<0.0250	--	0.18	0.18
	12/17/01	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	1.48	<0.0500	<0.0500	10.1	<0.100	--	0.646	<0.0500
	03/19/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.36	<0.0250	<0.0250	4.64	<0.0250	--	0.221	0.114
	05/29/02	<0.0500	0.046	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.916	<0.0250	<0.0250	4.33	<0.0250	--	0.238	0.0395
	08/29/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	1.16	<0.0250	<0.0250	4.09	<0.0250	--	0.288	0.31
	11/08/02	<0.0050	0.178	<0.0025	<0.0050	0.0083	<0.0025	<0.0025	0.385	0.00325	<0.0025	0.603	<0.0025	--	0.0634	0.066
01/23/03	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.582	<0.0250	<0.0250	4.09	<0.0250	--	0.349	<0.0250	
05/30/03	<0.0100	0.0141	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.382	<0.0050	<0.0050	1.45	0.0079	--	0.14	0.067	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
MW-5 (continued)	11/10/03	<0.0010	0.0842	<0.0010	<0.0010	0.00106	<0.0010	<0.0010	0.0907	<0.0010	<0.0010	0.161	<0.0010	--	0.0308	0.00942	
	05/04/04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.432	<0.0200	<0.0200	2.44	<0.0200	--	0.178	0.188	
	11/16/04	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	6.30	<0.0500	<0.0500	1.80	<0.0500	--	0.37	0.99	
	03/23/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0262	<0.0100	<0.0100	2.35	0.0276	<0.0100	0.511	<0.0100	--	0.147	0.604	
	05/18/05	<0.0050	<0.0025	<0.0025	<0.0050	0.00925	<0.0025	0.00645	0.817	0.0102	<0.0025	0.611	<0.0025	--	0.156	0.329	
	08/18/05	<0.00500	0.00515	<0.00250	<0.00500	0.0144	<0.00250	<0.00250	0.397	0.0047	<0.00250	0.169 B	<0.00250	--	0.0818	0.278	
	11/15/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0362	<0.0100	<0.0100	2.79	0.014	<0.0100	0.408	<0.0100	--	0.177	0.615	
	02/21/06	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0727	0.00106	<0.000500	0.184	0.001	--	0.0315	0.00505	
	06/05/06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2.80	<0.0200	<0.0200	0.157	<0.0200	--	0.075	0.199	
	09/06/06	<0.00200	0.0106	<0.00100	<0.00200	0.0083	<0.00100	<0.00100	0.377	0.00366	<0.00100	0.104	<0.00100	--	0.045	0.0299	
	12/06/06	<0.00200	<0.00100	<0.00100	<0.00200	0.00132	<0.00100	0.00134	0.113	0.00128	0.00152	0.24	0.0016	--	0.058	0.0433	
	02/07/07	<0.0100	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	<0.00500	1.22	0.018	<0.00500	0.124	<0.00500	--	0.0269	0.6	
	05/22/07	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.634	0.00845	<0.00500	0.102	<0.00500	--	0.0408	0.0594	
	09/12/07	<0.00100	0.0675	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0162	<0.00050	<0.00050	0.00089	<0.00050	--	0.00138	0.00186	
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	0.0071	<0.00050	0.00467	2.42	0.00922	0.00114	0.18	<0.00050	--	0.179	0.416	
	03/07/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00218	<0.000500	0.00133	0.411	0.00321	<0.000500	0.0864	<0.000500	<0.000500	0.0261	0.105	
	09/18/08	<0.00100	0.101	<0.000500	<0.00100	0.00079	<0.000500	<0.000500	0.0112	<0.000500	<0.000500	0.00114	<0.000500	<0.000500	0.00127	0.00174	
	12/10/08	<0.0020	<0.0020	<0.0020	<0.0020	0.0037	<0.0020	<0.0020	0.36	0.0023	<0.0020	0.049	<0.0020	<0.0020	0.053	0.15	
	03/27/09	<0.00050	0.0042	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.17	0.001	<0.00050	0.00059	<0.00050	<0.00050	<0.00050	0.064	
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	0.0006	0.16	0.0025	<0.00050	0.011	<0.00050	<0.00050	0.012	0.011	
	09/18/09	<0.00050	0.065 BE	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	0.0012
	12/17/09	<0.00050	<0.00080	<0.00050	<0.00050	0.0021	<0.00050	0.0014	0.34	0.002	<0.00050	0.019	<0.00050	<0.00050	0.037	0.093	
	03/19/10	<0.00050	0.0014	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	0.072	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.014	0.021	
06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0036	<0.00050	0.00083	0.094	0.001	0.00054	0.0041	<0.00050	<0.00050	0.01	0.023		
09/23/10	<0.0005	0.059	<0.0005	<0.0005	0.00084	<0.0005	<0.0005	0.0097	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00097	0.0013		
12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00084	<0.0005	<0.0005	0.14	0.00073	<0.0005	0.0056	<0.0005	<0.0005	0.0088	0.015		
03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00096	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.0076	0.0047		
06/10/11	<0.0005	<0.0005	<0.0005	<0.0005	0.005	<0.0005	<0.0005	0.04	<0.0005	0.00063	0.0022	<0.0005	<0.0005	0.0038	0.026		
09/19/11	< 0.00050	0.0023	< 0.00050	< 0.00050	0.0028	< 0.00050	< 0.00050	0.097	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.011	0.0063		
12/09/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.047	< 0.00050	< 0.00050	0.0027	< 0.00050	< 0.00050	0.0077	0.0028		

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-5 (continued)	03/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0034
	06/22/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.01	< 0.0005	< 0.0005	0.0005	< 0.0005	< 0.0005	0.0029	0.003
	09/14/12	< 0.00050	0.0200	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.03	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.003
	12/13/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00072	< 0.00050	< 0.00050	0.067	0.00065	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0017	0.0066
	03/15/13	< 0.00050	0.0074	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.048	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	0.0066
	06/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0085	< 0.00050	< 0.00050	0.0072	< 0.00050	< 0.00050	0.0072	0.0017
	09/19/13	< 0.00050	0.023	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0046	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	0.00061
	12/16/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00088	< 0.00050	< 0.00050	0.18	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0008	0.071
	3/21/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.039	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0034	0.010
	6/25/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.014	< 0.00050	< 0.00050	0.00130	< 0.00050	< 0.00050	0.008	0.002
	9/30/2014	< 0.00050	0.028	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.020	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0036
	12/16/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.033	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0022	0.0019
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.027	< 0.00050	< 0.00050	0.0084	< 0.00050	< 0.00050	0.0058	0.0056
	6/17/2015	< 0.00050	0.0022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0032	< 0.00050	< 0.00050	0.00063	< 0.00050	< 0.00050	0.00064	< 0.00050
	MW-6	11/17/93	--	<0.0010	--	--	<0.00050	<0.00050	--	0.0012	--	--	0.0021	<0.00050	--	0.00054
09/01/95		<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.0010
09/24/96		<0.00050	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0003	<0.00020	<0.00020	<0.00020	<0.00050	--	<0.00020	<0.0010
12/02/96		<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00050	<0.00020	<0.0010	<0.00020	<0.00050	<0.0010	<0.0010	--	<0.00020	<0.00020
11/12/97		<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00103	<0.00050	--	<0.00050	<0.0010
08/11/99		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	0.00137	<0.00050
11/16/99		<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
02/29/00		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000654	<0.0010	--	<0.00050	<0.00050
06/27/00		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050
05/29/01		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050
05/30/02		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00151	<0.00050	<0.00050	0.00131	<0.00050	--	<0.00050	<0.00050
11/08/02		<0.0010	<0.00050	<0.00050	<0.0010	0.00051	<0.00050	<0.00050	0.00255	<0.00050	<0.00050	0.00097	<0.00050	--	0.00055	0.00052
05/30/03		<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.00373	<0.00050	--	0.00099	<0.00050
11/17/04		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00088	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
05/17/05		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-6 (continued)	09/12/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00116	<0.000500	<0.000500	<0.000500	<0.000500
	09/19/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/05/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	10/2/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
MW-7	12/02/96	0.081	<0.0500	<0.0500	0.039	<0.0300	<0.0500	0.11	0.11	<0.100	<0.0200	73.0	1.90	--	7.60	<0.0500
	11/12/97	<0.500	<0.001	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	36.4	<0.500	--	7.67	<0.001
	08/11/99	<0.001	<0.005	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	49.0	1.21	--	4.65	<0.500
	11/16/99	<0.100	<0.250	<0.0500	<0.100	<0.0500	<0.0500	0.092	0.353	<0.0500	<0.0500	54.8	0.914	--	5.32	<0.0500
	02/28/00	<0.001	<0.005	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	52.4	<0.001	--	4.06	<0.500
	06/28/00	<0.001	<0.005	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	54.3	<0.001	--	3.39	<0.500
	08/31/00	<0.500	<0.002	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	50.9	0.824	--	3.96	<0.250
	11/30/00	<0.500	<0.002	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	33.5	0.52	--	3.56	<0.250
	02/27/01	<0.500	<0.002	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	26.7	<0.500	--	3.29	<0.250
	05/30/01	<0.200	<1	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	20.4	0.214	--	2.82	<0.100
	09/25/01	<0.0250	<0.0250	<0.0250	<0.0250	0.028	<0.0250	0.035	0.35	<0.0250	<0.0250	19.0	0.26	--	2.50	<0.0250
	12/17/01	<0.100	<0.0500	<0.0500	<0.0500	0.0846	<0.0500	<0.0500	0.506	<0.0500	<0.0500	10.1	0.2	--	1.96	<0.0500
	03/18/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.206	<0.0250	<0.0250	7.25	0.071	--	1.02	<0.0250
05/31/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.0425	<0.0250	<0.0250	5.50	<0.0250	--	0.311	<0.0250	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-7 (continued)	08/29/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	0.0505	0.093	<0.0250	<0.0250	4.94	0.0445	--	0.634	<0.0250
	11/07/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.123	<0.0250	<0.0250	5.81	0.043	--	0.758	<0.0250
	01/23/03	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	0.0598	<0.0100	<0.0100	2.01	0.014	--	0.282	<0.0100
	05/28/03	<0.0100	<0.0050	<0.0050	<0.0050	0.0063	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.08	0.0109	--	0.0679	<0.0050
	11/11/03	<0.0200	<0.0200	<0.0200	<0.0200	0.0402	<0.0200	<0.0200	0.246	<0.0200	<0.0200	2.46	0.062	--	0.599	<0.0200
	01/27/04	<0.0200	<0.0100	<0.0100	<0.0200	0.017	<0.0100	<0.0100	0.105	<0.0100	<0.0100	3.51	0.033	--	0.38	<0.0100
	05/04/04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.0724	<0.0200	<0.0200	3.94	0.022	--	0.323	<0.0200
	11/16/04	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.099	<0.0500	<0.0500	8.00	<0.0500	--	0.52	<0.0500
	03/24/05	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.0985	<0.0250	<0.0250	3.93	0.026	--	0.404	<0.0250
	05/18/05	<0.0100	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.0727	<0.0050	<0.0050	1.31	0.0124	--	0.18	<0.0050
	05/18/05 DUP	<0.0100	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.0694	<0.0050	<0.0050	1.25	0.0124	--	0.179	<0.0050
	08/18/05	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	0.0548	<0.0100	<0.0100	1.80	<0.0100	--	0.237	<0.0100
	11/15/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0152	<0.0100	<0.0100	0.107	<0.0100	<0.0100	1.96	0.0296	--	0.333	<0.0100
	02/21/06	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	2.64	<0.0100	--	0.139	<0.0100
	06/05/06	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	26.1	<0.200	--	0.568	<0.200
	09/06/06	<0.100	<0.0500	<0.0500	<0.100	<0.0500	<0.0500	<0.0500	0.056	<0.0500	<0.0500	12.8	<0.0500	--	0.422	<0.0500
	12/06/06	<0.200	<0.100	<0.100	<0.200	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	24.6	<0.100	--	0.408	<0.100
	02/07/07	<0.200	<0.100	<0.100	<0.200	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	31.5	<0.100	--	0.352	<0.100
	05/22/07	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	29.1	<0.200	--	0.45	<0.200
	09/12/07	<0.200	<0.100	<0.100	<0.200	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	21.3	<0.100	--	0.366	<0.100
	12/13/07	<0.500	<0.250	<0.250	<0.500	<0.250	<0.250	<0.250	0.345	<0.250	<0.250	18.7	<0.250	--	1.04	0.28
	03/06/08 <sup>7</sup>	<0.00100	<0.000500	<0.000500	<0.00100	0.00506	0.00257	0.00399	0.0423	0.0029	<0.000500	26.3	0.0387	<0.000500	0.43	<0.000500
	06/10/08	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	27.0	<0.500	<0.500	0.575	<0.500
	09/18/08	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	23.2	<0.500	<0.500	0.53	<0.500
	12/11/08	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.13	<0.050	<0.050	15.0	<0.050	<0.050	0.45	<0.050
	12/11/08 DUP	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.12	<0.050	<0.050	14.0	<0.050	<0.050	0.43	<0.050
03/23/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.42	<0.00050	<0.00050	3.33	<0.00050	<0.00050	0.27	<0.00050	
06/18/09	<0.0030	<0.0030	<0.0030	<0.0030	0.0037	<0.0030	<0.0030	0.52	<0.0030	<0.0030	0.89	0.0052	<0.0030	0.35	<0.0030	
06/18/09 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.0038	<0.0025	<0.0025	0.52	<0.0025	<0.0025	0.91	0.0056	<0.0025	0.36	<0.0025	

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-7	09/18/09	<0.0030	<0.0030	<0.0030	<0.0030	0.0098	<0.0030	0.0055	0.93	<0.0030	<0.0030	2.6	0.01	<0.0030	0.25	<0.0030
(continued)	09/18/09 DUP	<0.0030	<0.0030	<0.0030	<0.0030	0.0087	<0.0030	0.0048	0.85	<0.0030	<0.0030	2.6	0.0093	<0.0030	0.24	<0.0030
	12/18/09	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	0.33	<0.0050	<0.0050	1.6	0.0067	<0.0050	0.16	<0.0050
	12/18/09 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	0.32	<0.0050	<0.0050	1.5	0.0066	<0.0050	0.16	<0.0050
	03/16/10	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.18	<0.0025	<0.0025	0.5	<0.0025	<0.0025	0.052	<0.0025
	03/16/10 DUP	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.18	<0.0020	<0.0020	0.6	<0.0020	<0.0020	0.055	<0.0020
	06/17/10	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.36	<0.0015	<0.0015	0.2	0.0027	<0.0015	0.072	<0.0015
	06/17/10 DUP	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.36	<0.0015	<0.0015	0.2	0.0028	<0.0015	0.072	<0.0015
	09/23/10	<0.003	<0.003	<0.003	<0.003	0.0033	<0.003	<0.003	0.690	<0.003	<0.003	0.750	0.0035	<0.003	0.110	0.0048
	09/23/10 DUP	<0.003	<0.003	<0.003	<0.003	0.0031	<0.003	<0.003	0.700	<0.003	<0.003	0.740	0.0038	<0.003	0.100	0.0041
	12/10/10	<0.0009	<0.0009	<0.0009	<0.0009	0.0018	<0.0009	<0.0009	0.094	<0.0009	<0.0009	0.220	0.0016	<0.0009	0.036	0.0017
	12/10/10 DUP	<0.0009	<0.0009	<0.0009	<0.0009	0.0017	<0.0009	<0.0009	0.098	<0.0009	<0.0009	0.230	0.0017	<0.0009	0.036	0.0018
	03/11/11	<0.00090	<0.00090	<0.00090	<0.00090	0.0066	<0.00090	0.0016	0.150	0.00091	<0.00090	0.420	0.0051	<0.00090	0.082	0.0093
	03/11/11 DUP	<0.00090	<0.00090	<0.00090	<0.00090	0.0065	<0.00090	0.0019	0.150	0.0011	<0.00090	0.400	0.0052	<0.00090	0.080	0.0097
	06/07/11	<0.0025	<0.0025	<0.0025	<0.0025	0.0048	<0.0025	0.0034	1.4	0.0033	<0.0025	0.43	0.004	<0.0025	0.11	0.0079
	06/07/11 DUP	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	1.4	<0.006	<0.006	0.4	<0.006	<0.006	0.11	0.0078
	09/19/11	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	1.3	< 0.0050	< 0.0050	0.41	< 0.0050	< 0.0050	0.084	0.078
	09/19/11 DUP	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	1.3	< 0.0070	< 0.0070	0.42	< 0.0070	< 0.0070	0.087	0.081
	12/07/11	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0080	< 0.0050	0.0069	3.4	0.0068	< 0.0050	0.2	< 0.0050	< 0.0050	0.032	0.11
	12/07/11 DUP	< 0.0060	< 0.0060	< 0.0060	< 0.0060	0.0076	< 0.0060	0.0078	3.4	0.0068	< 0.0060	0.21	< 0.0060	< 0.0060	0.032	0.11
	03/12/12	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.009	< 0.0050	< 0.0050	1.60	< 0.0050	< 0.0050	0.0410	< 0.0050	< 0.0050	0.0086	0.60
	03/12/12 DUP	< 0.0070	< 0.0070	< 0.0070	< 0.0070	0.010	< 0.0070	< 0.0070	1.60	< 0.0070	< 0.0070	0.0420	< 0.0070	< 0.0070	0.0089	0.66
	06/22/2012	< 0.002	0.0092	< 0.002	< 0.002	0.010	< 0.002	< 0.002	0.54	< 0.002	< 0.002	0.0240	< 0.002	< 0.002	0.0051	0.30
	06/22/12 DUP	< 0.002	0.0081	< 0.002	< 0.002	0.009	< 0.002	< 0.002	0.50	< 0.002	< 0.002	0.0250	< 0.002	< 0.002	0.0052	0.29
	09/14/12	< 0.00050	0.0063	< 0.00050	< 0.00050	0.004	< 0.00050	0.0005	0.18	0.0007	< 0.00050	0.0280	< 0.00050	0.0005	0.0052	0.08
	09/14/12 DUP	< 0.00050	0.0057	< 0.00050	< 0.00050	0.004	< 0.00050	< 0.00050	0.18	0.0008	< 0.00050	0.0280	< 0.00050	< 0.00050	0.0053	0.08
	12/14/12	< 0.00050	0.0063	< 0.00050	< 0.00050	0.0019	< 0.00050	< 0.00050	0.13	< 0.00050	< 0.00050	0.0082	< 0.00050	< 0.00050	0.0053	0.016
	12/14/12 DUP	< 0.00050	0.0056	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.13	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.0068	0.018
	03/15/13	< 0.00050	0.0052	< 0.00050	< 0.00050	0.00068	< 0.00050	< 0.00050	0.11	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.00075	0.011
	03/15/13 DUP	< 0.00050	0.0054	< 0.00050	< 0.00050	0.00069	< 0.00050	< 0.00050	0.11	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.00078	0.011

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-7 (continued)	06/14/13	< 0.00050	0.0020	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.057	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	< 0.00050	0.015
	06/14/13 DUP	< 0.00050	0.0020	< 0.00050	< 0.00050	0.00051	< 0.00050	< 0.00050	0.058	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	< 0.00050	0.016
	09/20/13	< 0.00050	0.0030	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.056	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.01
	09/20/13 DUP	< 0.00050	0.0030	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.056	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.01
	12/16/13	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0029	< 0.00050	< 0.00050	0.0069	< 0.00050	< 0.00050	0.00051	< 0.00050	< 0.00050	< 0.00050	0.0091
	12/16/13 DUP	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0063	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0089
	3/24/2014	< 0.00050	0.00097	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0098	< 0.00050	< 0.00050	0.0026	0.0076
	3/24/2014 DUP	< 0.00050	0.0010	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0094	< 0.00050	< 0.00050	0.0025	0.0077
	6/25/2014	< 0.00050	0.0013	< 0.00050	< 0.00050	0.00017	< 0.00050	< 0.00050	0.00059	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013
	6/25/14 DUP	< 0.00050	0.00015	< 0.00050	< 0.00050	0.00019	< 0.00050	< 0.00050	0.00062	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0014
	9/30/2014	< 0.00050	0.0019	< 0.00050	< 0.00050	0.0027	< 0.00050	< 0.00050	0.0045	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0098
	9/30/2014 DUP	< 0.00050	0.0017	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.0043	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0088
	12/15/2014	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0034	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	0.015
	12/15/2014 DUP	< 0.00050	0.0016	< 0.00050	< 0.00050	0.0045	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.00061	< 0.00050	< 0.00050	0.0015	0.021
	3/20/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.0084	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	0.0010
	3/20/15 DUP	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.0077	< 0.00050	< 0.00050	0.00053	< 0.00050	< 0.00050	0.0010	0.010
	6/17/2015	< 0.00050	0.00072	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0010	0.013
6/17/2015 DUP	< 0.00050	0.00071	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.00096	< 0.00050	< 0.00050	0.0010	0.012	
MW-8	12/02/96	< 0.00050	< 0.00050	< 0.00050	< 0.00020	0.001	< 0.00050	0.0002	0.0065	< 0.0010	< 0.00020	0.0023	< 0.0010	--	0.012	< 0.00050
	11/13/97	< 0.0010	< 0.0020	< 0.0010	< 0.0010	0.00172	< 0.0010	0.00244	0.00932	< 0.0010	< 0.0010	0.0524	0.004	--	0.0386	< 0.0020
	08/11/99	< 0.0010	< 0.0050	< 0.00050	< 0.00050	0.00075	< 0.00050	< 0.00050	0.00182	< 0.00050	< 0.00050	0.0462	0.00479	--	0.0243	< 0.00050
	11/16/99	< 0.0010	< 0.0025	< 0.00050	< 0.0010	0.00122	< 0.00050	< 0.00050	0.00211	< 0.00050	< 0.00050	0.0398	0.00155	--	0.0155	< 0.00050
	02/28/00	< 0.0010	< 0.0050	< 0.00050	< 0.00050	0.000929	< 0.00050	0.000721	0.00238	< 0.00050	< 0.00050	0.0418	0.0037	--	0.0205	< 0.00050
	06/27/00	< 0.0010	< 0.0050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00146	< 0.00050	< 0.00050	0.0337	0.00288	--	0.0175	< 0.00050
	05/30/01	< 0.100	< 0.0050	< 0.00050	< 0.00050	0.000611	< 0.00050	< 0.00050	0.000601	< 0.00050	< 0.00050	0.0118	< 0.0010	--	0.00546	< 0.00050
	05/30/02	< 0.0010	< 0.00050	< 0.00050	< 0.0010	0.00109	< 0.00050	< 0.00050	0.00202	< 0.00050	< 0.00050	0.0121	< 0.00050	--	0.00447	< 0.00050
	05/28/03	< 0.0010	< 0.00050	< 0.00050	< 0.0010	< 0.00050	< 0.00050	< 0.00050	0.00084	< 0.00050	< 0.00050	0.0404	0.00155	--	0.0112	< 0.00050
	11/02/04	< 0.0010	< 0.00050	< 0.00050	< 0.0010	0.00102	< 0.00050	< 0.00050	0.00199	< 0.00050	< 0.00050	0.00888	< 0.00050	--	0.0024	< 0.00050
	11/16/04	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0009	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.0006	< 0.00050	--	0.0031	< 0.00050
	03/23/05	< 0.0010	< 0.00050	< 0.00050	< 0.0010	0.00078	< 0.00050	< 0.00050	0.00182	< 0.00050	< 0.00050	0.0135	0.00053	--	0.00241	< 0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-8 (continued)	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	0.0011	<0.00050	<0.00050	0.00645	<0.00050	<0.00050	0.0132	<0.00050	--	0.00692	<0.00050
	05/17/05 DUP	<0.0010	<0.00050	<0.00050	<0.0010	0.00119	<0.00050	<0.00050	0.00697	<0.00050	<0.00050	0.0114	<0.00050	--	0.00639	<0.00050
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00078	<0.000500	<0.000500	0.00419	<0.000500	<0.000500	0.0148	0.00065	--	0.00299	<0.000500
	06/05/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00126	<0.00100	<0.00100	0.0198	<0.00100	<0.00100	0.0207	0.00100	--	0.0114	<0.00100
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00111	<0.00050	<0.00050	0.0142	<0.00050	<0.00050	0.0183	<0.00050	--	0.00508	<0.00050
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0228	<0.00100	--	0.00232	<0.00100
	09/12/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00052	<0.00050	<0.00050	0.0124	0.0006	--	0.00065	<0.00050
	12/12/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00103	<0.00050	<0.00050	0.0137	<0.00050	<0.00050	0.00827	<0.00050	--	0.00271	<0.00050
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00164	<0.000500	<0.000500	0.0191 J	<0.000500	<0.000500	0.0014	<0.000500
	6/10/08 <sup>7</sup>	<0.00100	<0.00100	<0.00100	<0.00100	0.00107	<0.00100	<0.00100	0.0105	<0.00100	<0.00100	0.0108	<0.00100	<0.00100	0.00387	<0.00100
	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00158	<0.000500	<0.000500	0.0132	0.0005	<0.000500	0.00121	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0091	<0.00050	<0.00050	0.00057	<0.00050
	12/09/08 DUP	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0097	<0.00050	<0.00050	0.00059	<0.00050
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.008	<0.00050	<0.00050	0.00056	<0.00050
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.0014	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.011	<0.00050	<0.00050	<0.00050	<0.00050
	12/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0032	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.00051	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0110	<0.00050	<0.00050	<0.00050	<0.00050
	06/14/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0200	0.00052	<0.00050	0.0042	<0.00050	<0.00050	0.0011	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	<0.0005	0.0081	<0.0005	<0.0005	<0.0005	<0.0005
	12/08/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	<0.0005	0.0200	0.0011	<0.0005	0.0025	<0.0005	<0.0005	0.0006	<0.0005
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	<0.00050	0.020	0.00058	<0.00050	0.0079	<0.00050	<0.00050	0.00095	<0.00050
	06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	0.0015	<0.0005	<0.0005	0.04	0.00082	<0.0005	0.004	<0.0005	<0.0005	0.0011	<0.0005
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.00054	<0.00050
	12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	0.01	<0.00050	<0.00050	<0.00050	<0.00050
	03/06/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0068	<0.00050	<0.00050	0.0006	<0.00050
	06/20/12	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.0005	0.02	<0.0005	<0.0005	0.0061	<0.0005	<0.0005	0.0014	<0.0005
09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0070	<0.00050	<0.00050	<0.00050	<0.00050	
12/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.036	0.0010	<0.00050	0.0048	<0.00050	<0.00050	0.0010	<0.00080	
03/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00094	<0.00050	<0.00050	0.0072	<0.00050	<0.00050	<0.00050	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-8 (continued)	06/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00084	< 0.00050	< 0.00050	0.018	0.00064	< 0.00050	0.0062	< 0.00050	< 0.00050	0.00076	< 0.00050
	09/19/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0066	< 0.00050	< 0.00050	0.0048	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0055	0.00054	< 0.00050	0.0040	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/19/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.021	0.0011	< 0.00050	0.0023	< 0.00050	< 0.00050	0.00085	< 0.00050
	6/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0031	< 0.00050	< 0.00050	0.0056	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0038	< 0.00050	< 0.00050	0.0061	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.013	0.00086	< 0.00050	0.0023	< 0.00050	< 0.00050	0.00062	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0076	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0059	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-9	12/02/96	< 0.0500	< 0.0500	< 0.0500	< 0.0200	< 0.0300	< 0.0500	< 0.0200	< 0.0200	< 0.100	< 0.0200	5	0.2	--	1.6	< 0.0500
	11/13/97	< 0.0500	< 0.100	< 0.0500	< 0.0500	< 0.0500	< 0.0500	< 0.0500	0.487	< 0.0500	< 0.0500	2.89	< 0.0500	--	1.84	< 0.100
	08/11/99	< 0.0200	< 0.100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	0.054	< 0.0100	< 0.0100	1.49	0.0432	--	0.52	< 0.0100
	11/16/99	< 0.0200	< 0.0500	< 0.0100	< 0.0200	< 0.0100	< 0.0100	< 0.0100	0.103	< 0.0100	< 0.0100	1.73	0.032	--	0.31	< 0.0100
	02/28/00	< 0.0200	< 0.100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	2.04	0.0364	--	0.32	< 0.0100
	06/27/00	< 0.0500	< 0.250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	1.30	< 0.0500	--	0.30	< 0.0250
	08/31/00	< 0.0100	< 0.0500	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	1.56	0.0313	--	0.23	< 0.0050
	11/30/00	< 0.0100	< 0.0500	< 0.0050	< 0.0050	0.0217	< 0.0050	0.0105	1.33	0.0117	< 0.0050	0.823	0.0266	--	0.528	0.00815
	09/25/01	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0038	< 0.0025	< 0.0025	0.0091	< 0.0025	< 0.0025	0.68	0.016	--	0.14	< 0.0025
	12/17/01	< 0.0050	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.306	< 0.0050	--	0.0742	< 0.0025
	03/18/02	< 0.0010	< 0.00050	< 0.00050	< 0.0010	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.113	< 0.00050	--	0.0191	< 0.00050
	05/31/02	< 0.0020	< 0.0010	< 0.0010	< 0.0020	< 0.0010	< 0.0010	< 0.0010	0.00122	< 0.0010	< 0.0010	0.296	0.00144	--	0.044	< 0.0010
	08/29/02	< 0.0020	< 0.0010	< 0.0010	< 0.0020	< 0.0010	< 0.0010	< 0.0010	0.00188	< 0.0010	< 0.0010	0.294	0.00212	--	0.0674	< 0.0010
	11/07/02	< 0.0050	< 0.0025	< 0.0025	< 0.0050	< 0.0025	< 0.0025	< 0.0025	0.0172	< 0.0025	< 0.0025	0.453	0.004	--	0.145	< 0.0025
	01/23/03	< 0.0020	< 0.0010	< 0.0010	< 0.0020	< 0.0010	< 0.0010	< 0.0010	0.00166	< 0.0010	< 0.0010	0.205	0.00274	--	0.0595	< 0.0010
	05/28/03	< 0.0010	< 0.00050	< 0.00050	< 0.0010	0.00181	< 0.00050	< 0.00050	0.00097	< 0.00050	< 0.00050	0.141	0.00285	--	0.0274	< 0.00050
	11/11/03	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0237	< 0.0050	< 0.0050	0.401	0.00625	--	0.0914	< 0.0050
	01/27/04	< 0.0020	< 0.0010	< 0.0010	< 0.0020	< 0.0010	< 0.0010	< 0.0010	0.00258	< 0.0010	< 0.0010	0.179	0.00254	--	0.0581	< 0.0010
	05/04/04	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.00109	< 0.0010	< 0.0010	0.178	0.00256	--	0.0519	< 0.0010
11/15/04	< 0.0250	< 0.0250	< 0.0250	< 0.0250	0.028	< 0.0250	< 0.0250	1.20	0.027	< 0.0250	1.80	< 0.0250	--	1.00	< 0.0250	
03/24/05	< 0.0050	< 0.0025	< 0.0025	< 0.0050	0.00	< 0.0025	< 0.0025	0.0542	< 0.0025	< 0.0025	0.675	0.008	--	0.239	< 0.0025	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-9	05/18/05	<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00268	<0.0010	<0.0010	0.00241	0.00208	--	0.0624	<0.0010
(continued)	08/18/05	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	<0.00250	0.0205 B	<0.00250	<0.00250	0.551	0.0076	--	0.209	<0.00250
	11/15/05	<0.0100	<0.00500	<0.00500	<0.0100	0.0271	<0.00500	0.0068	1.02	0.0186	<0.00500	1.04	0.0141	--	0.633	0.0212
	02/21/06	<0.0100	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	<0.00500	0.0167	<0.00500	<0.00500	0.534	<0.00500	--	0.165	<0.00500
	06/05/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00147	<0.00100	<0.00100	0.151	0.0026	--	0.0573	<0.00100
	09/05/06	<0.00500	<0.00250	<0.00250	<0.00500	0.0055	<0.00250	<0.00250	0.117	0.00315	<0.00250	0.698	0.0068	--	0.314	<0.00250
	12/06/06	<0.00500	<0.00250	<0.00250	<0.00500	0.00295	<0.00250	<0.00250	0.059	<0.00250	<0.00250	0.578	0.00555	--	0.237	<0.00250
	02/07/07	<0.00500	<0.00250	<0.00250	<0.00500	0.00315	<0.00250	<0.00250	0.0726	<0.00250	<0.00250	0.591	0.0061	--	0.239	0.00265
	05/23/07	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00632	<0.00200	<0.00200	0.21	0.003	--	0.0904	<0.00200
	09/12/07	<0.00200	<0.00100	<0.00100	<0.00200	0.00234	<0.00100	<0.00100	0.0471	0.00144	<0.00100	0.282	0.00512	--	0.184	<0.00100
	12/13/07	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	0.253	0.00445	--	0.0784	<0.00250
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00192	<0.000500	<0.000500	0.138	0.00377	<0.000500	0.0615	<0.000500
	06/10/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00273	<0.00100	<0.00100	0.297	0.00516	<0.00100	0.0877	<0.00100
	09/18/08	<0.00500	<0.00250	<0.00250	<0.00500	0.00705	<0.00250	<0.00250	0.172	0.0038	<0.0005000	0.524	0.00535	<0.000500	0.315	0.00415
	12/09/08	<0.00090	<0.00090	<0.00090	<0.00090	0.0038	<0.00090	0.0013	0.13	0.0025	<0.00090	0.27	0.0051	<0.00090	0.14	0.0023
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0054	<0.00050	<0.00050	0.17	0.004	<0.00050	0.056	<0.00050
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.0011	0.072	0.0028	<0.00050	0.42	0.0049	<0.00050	0.18	0.0018
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.17	0.0044	<0.00050	0.06	<0.00050
	12/17/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050	0.12	0.0025	<0.00050	0.04	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00080	<0.00050	<0.00050	0.16	0.003	<0.00050	0.05	<0.00050
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.10	0.0014	<0.00050	0.04	<0.00050
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	<0.0005	0.140	0.0029	<0.0005	0.050	<0.0005
	12/10/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.100	0.0013	<0.0005	0.330	<0.0005
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00066	<0.00050	<0.00050	0.017	0.00082	<0.00050	0.190	0.0027	<0.00050	0.081	0.00052
	03/11/11 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00067	<0.00050	<0.00050	0.017	0.00085	<0.00050	0.200	0.0028	<0.00050	0.084	0.00051
	06/10/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.0005	0.053	0.0019	<0.0005	0.031	<0.0005
	09/19/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.072	0.0023	<0.00050	0.23	0.0031	<0.00050	0.12	0.00078
	12/09/11	<0.00090	<0.00090	<0.00090	<0.00090	0.053	<0.00090	0.011	1.8	0.04	<0.00090	0.6	0.01	<0.00090	0.59	0.026
	03/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.02	0.0006	<0.00050	0.1400	0.0020	<0.00050	0.0560	<0.00050
	06/22/12	<0.0005	<0.0005	<0.0005	<0.0005	0.003	<0.0005	0.0011	0.14	0.0043	<0.0005	0.2200	0.0033	<0.0005	0.1800	0.00

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-9 (continued)	09/14/12	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090	0.02	< 0.00090	< 0.00090	0.2100	0.0024	< 0.00090	0.0780	< 0.00090
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.00070	<0.00050	<0.00050	0.029	0.00096	<0.00050	0.11	0.0011	<0.00050	0.049	<0.00050
	03/15/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0050	<0.00050	<0.00050	0.086	0.0018	<0.00050	0.034	<0.00050
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	0.0010	0.10	0.0037	<0.00050	0.24	0.0031	<0.00050	0.15	0.0022
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	0.00051	0.074	0.0022	<0.00050	0.16	0.0020	<0.00050	0.087	0.00082
	12/16/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0065	<0.00050	0.0014	0.230	0.0064	<0.00050	0.210	0.0035	<0.00050	0.180	0.0028
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.039	0.00057	<0.00050	0.019	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00068	0.041	0.00160	<0.00050	0.190	0.0023	<0.00050	0.091	0.0011
	9/30/2014	<0.00090	<0.00090	<0.00090	<0.00090	0.0023	<0.00090	<0.00090	0.077	0.0023	<0.00090	0.23	0.0029	<0.00090	0.11	0.0013
	12/15/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.035	0.00064	<0.00050	0.018	<0.00050
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	<0.00050	<0.00050	0.019	0.00060	<0.00050	0.16	0.0020	<0.00050	0.060	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	0.00054	0.013	0.00078	<0.00050	0.16	0.0019	<0.00050	0.062	0.0016
	MW-10	12/02/96	<0.00050	<0.00050	<0.00050	<0.00020	<0.00030	<0.00050	<0.00020	<0.00020	<0.0010	<0.00020	0.0027	<0.0010	--	0.0004
11/13/97		<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00153	<0.00050	--	0.00365	<0.0010
08/11/99		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00202	<0.0010	--	0.00124	<0.00050
11/16/99		<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0696	0.00189	--	0.0103	<0.00050
02/28/00		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00163	<0.0010	--	0.00116	<0.00050
06/27/00		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00172	<0.0010	--	0.00374	<0.00050
05/30/01		<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00125	<0.0010	--	0.00252	<0.00050
05/30/02		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00405	<0.00050	--	0.00143	<0.00050
05/28/03		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00086	<0.00050	<0.00050	0.00221	<0.00050	--	0.00128	<0.00050
11/02/04		<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	--	0.00098	<0.00050
11/16/04		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	--	0.0034	<0.00050
03/23/05		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00102	<0.00050	--	0.00121	<0.00050
05/17/05		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00126	<0.00050	--	0.00119	<0.00050
09/12/07		<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00059 J	<0.00050	--	0.00083	<0.00050
03/05/08		<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00166	<0.000500	<0.000500	0.00167	<0.000500
09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00113	<0.000500	<0.000500	0.0014	<0.000500	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-10 (continued)	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0016	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0020	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0016	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	0.0014	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0008	<0.00050
	09/14/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.0021	< 0.00050
	03/06/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0020	< 0.00050
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.0014	< 0.00050
	03/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.0031	< 0.00050
	09/18/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0014	< 0.00050
	3/19/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0088	< 0.00050	< 0.00050	0.016	< 0.00050
	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0020	< 0.00050	< 0.00050	0.0020	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0017	< 0.00050	< 0.00050	0.0018	< 0.00050
MW-11	12/02/96	<0.0500	<0.0500	<0.0500	<0.0200	<0.0300	<0.0500	0.052	0.14	<0.100	<0.0200	2.20	0.55	--	5.90	<0.0500
	11/13/97	<0.0500	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.686	0.0903	--	2.72	<0.100
	08/10/99	<0.0050	<0.0250	<0.0025	<0.0025	0.0137	<0.0025	0.0228	0.0144	<0.0025	<0.0025	0.259	0.112	--	1.30	<0.0025
	11/16/99	<0.0200	<0.0500	<0.0100	<0.0200	0.012	<0.0100	0.0168	0.0188	<0.0100	<0.0100	0.478	0.0948	--	1.50	<0.0100
	02/28/00	<0.0050	<0.0250	<0.0025	<0.0025	0.00271	<0.0025	0.0079	0.00505	<0.0025	<0.0025	0.247	0.0302	--	0.473	<0.0025
	06/27/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0121	<0.0050	0.0289	0.0148	<0.0050	<0.0050	0.337	0.108	--	1.39	<0.0050
	08/31/00	<0.0200	<0.100	<0.0100	<0.0100	0.0154	<0.0100	0.028	0.0248	<0.0100	<0.0100	0.646	0.159	--	1.69	<0.0100
	11/30/00	<0.0200	<0.100	<0.0100	<0.0100	0.0122	<0.0100	0.0264	0.0193	<0.0100	<0.0100	0.342	0.125	--	1.55	<0.0100
	02/27/01	<0.005	<0.0250	<0.0025	<0.0025	0.00365	<0.0025	0.00782	0.0071	<0.0025	<0.0025	0.198	0.0351	--	0.468	<0.0025
	05/30/01	<0.0100	<0.0500	<0.0050	<0.0050	0.0052	<0.0050	0.0136	0.00909	<0.0050	<0.0050	0.256	0.0488	--	0.858	<0.0050
	09/25/01	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.26	0.057	--	0.82	<0.013
	12/17/01	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	0.0154	0.0259	<0.0050	<0.0050	0.983	0.0409	--	1.39	<0.0050
	03/18/02	<0.0100	<0.0050	<0.0050	<0.0100	0.0119	<0.0050	0.0194	0.0171	<0.0050	<0.0050	0.433	0.0798	--	1.37	<0.0050
	05/30/02	<0.0100	<0.0050	<0.0050	<0.0100	0.0059	<0.0050	0.0109	0.0156	<0.0050	<0.0050	0.571	0.0456	--	0.965	<0.0050
	11/07/02	<0.0100	<0.0050	<0.0050	<0.0100	0.015	<0.0050	0.0193	0.0189	<0.0050	<0.0050	0.347	0.112	--	1.64	<0.0050
01/23/03	<0.0050	<0.0025	<0.0025	<0.0050	0.00335	<0.0025	0.0043	0.00535	<0.0025	<0.0025	0.265	0.0241	--	0.534	<0.0025	
05/28/03	<0.0100	<0.0050	<0.0050	<0.0100	0.0133	<0.0050	0.0179	0.0176	<0.0050	<0.0050	0.305	0.105	--	1.58	<0.0050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-11 (continued)	11/11/03	<0.0050	<0.0050	<0.0050	<0.0050	0.005	<0.0050	0.00515	0.00915	<0.0050	<0.0050	0.191	0.0388	--	0.504	<0.0050
	01/26/04	<0.0100	<0.0050	<0.0050	<0.0100	0.0096	<0.0050	0.0115	0.0135	<0.0050	<0.0050	0.369	0.0733	--	1.07	<0.0050
	03/22/04	Well Abandoned														
MW-12	12/02/96	<0.0500	<0.0500	<0.0500	<0.0200	<0.0300	<0.0500	<0.0200	0.029	<0.100	<0.0200	2.50	<0.100	--	0.95	<0.0500
	11/12/97	<0.250	<0.500	<0.250	<0.250	<0.250	<0.250	<0.250	2.71	<0.250	<0.250	12.9	0.645	--	5.40	<0.500
	08/11/99	<0.200	<0.001	<0.100	<0.100	0.12	<0.100	<0.100	2.68	<0.100	<0.100	11.3	0.758	--	3.52	<0.100
	11/16/99	<0.200	<0.500	<0.100	<0.200	<0.100	<0.100	<0.100	0.16	<0.100	<0.100	18.2	0.922	--	4.63	<0.100
	02/28/00	<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	0.908	<0.100	<0.100	3.78	<0.200	--	1.21	<0.100
	06/27/00	<0.100	<0.500	<0.0500	<0.0500	0.161	<0.0500	<0.0500	2.88	<0.0500	<0.0500	12.0	0.712	--	3.18	<0.0500
	05/30/01	<0.0500	<0.250	<0.0250	<0.0250	0.0648	<0.0250	0.054	1.65	<0.0250	<0.0250	4.99	0.298	--	1.81	<0.0250
	05/30/02	<0.0050	<0.0025	<0.0025	<0.0050	0.00425	<0.0025	<0.0025	0.101	<0.0025	<0.0025	0.344	0.0066	--	0.0816	<0.0025
	05/29/03	<0.0050	<0.0025	<0.0025	<0.0050	0.0284	<0.0025	0.008	0.601	0.0057	<0.0025	0.362	0.0182	--	0.199	<0.0025
	11/16/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.059	<0.0025	<0.0025	0.41	0.0035	--	0.096	<0.0025
	03/23/05	<0.0200	<0.0100	<0.0100	<0.0200	0.247	<0.0100	0.053	3.64	0.0402	<0.0100	1.08	0.0498	--	0.639	0.0142
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	0.001	0.0301	0.00057	<0.00050	0.0511	0.00092	--	0.0214	<0.00050
	05/22/07	<0.00500	<0.00500	<0.00500	<0.00500	0.0356	<0.00500	0.00745	0.785	0.0111	<0.00500	0.233	0.0078	--	0.139	<0.00500
	09/11/07	<0.100	<0.0500	<0.0500	<0.100	0.316	<0.0500	0.057	6.70	0.053	<0.0500	0.431	<0.0500	--	0.516	<0.0500
	12/12/07	<0.00200	<0.00100	<0.00100	<0.00200	0.0011	<0.00100	<0.00100	0.0438	<0.00100	<0.00100	0.106	0.00316	--	0.0396	<0.00100
	03/05/08	<0.00100	0.00497	<0.000500	<0.00100	0.156	0.00201	0.0462	3.17	0.0418	<0.000500	0.44	0.0212	<0.000500	0.329	0.0185
	09/19/08	<0.0500	<0.0250	<0.0250	<0.0500	0.394	<0.0250	0.066	7.65	0.069	<0.0250	0.968	0.045	<0.0250	0.924	0.058
	12/10/08	<0.0040	<0.0040	<0.0040	<0.0040	0.033	<0.0040	0.0066	0.67	0.0087	<0.0040	0.099	0.005	<0.0040	0.08	<0.0040
	03/27/09	<0.0040	0.0048	<0.0040	<0.0040	0.23	<0.0040	0.039	4.80	0.046	<0.0040	0.54	0.028	<0.0040	0.44	0.031
	03/27/09 DUP	<0.0040	0.005	<0.0040	<0.0040	0.25	<0.0040	0.044	4.70	0.051	<0.0040	0.60	0.032	<0.0040	0.49	0.035
06/18/09	<0.015	<0.015	<0.015	<0.015	0.17	<0.015	0.032	3.50	0.036	<0.015	0.27	<0.015	<0.015	0.23	0.026	
06/18/09 DUP	<0.015	<0.015	<0.015	<0.015	0.17	<0.015	0.032	3.60	0.037	<0.015	0.31	<0.015	<0.015	0.25	0.025	
09/18/09	<0.015	<0.015	<0.015	<0.015	0.24	<0.015	0.046	4.2	0.05	<0.015	0.54	0.0260	<0.015	0.44	0.051	
09/18/09 DUP	<0.015	<0.015	<0.015	<0.015	0.26	<0.015	0.049	4.6	0.052	<0.015	0.59	0.0280	<0.015	0.47	0.056	
12/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.1	0.0011	0.0013	0.17	0.0022	<0.00050	0.065	<0.00050	
12/18/09 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.096	0.0011	0.0013	0.16	0.0021	<0.00050	0.062	<0.00050	

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-12	03/19/10	<0.00050	0.0041	<0.00050	<0.00050	0.220	0.0026	0.048	4.4	0.053	<0.00050	0.48	0.0280	0.0007	0.380	0.037
(continued)	03/19/10 DUP	<0.015	<0.015	<0.015	<0.015	0.270	<0.015	0.044	4.9	0.054	<0.015	0.60	0.0290	<0.015	0.460	0.039
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.019	<0.00050	<0.00050	0.038	<0.00050	<0.00050	0.017	<0.00050
	06/16/10 DUP	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.018	0.00054	<0.00050	0.0370	<0.00050	<0.00050	0.016	<0.00050
	09/23/10	<0.015	<0.015	<0.015	<0.015	0.260	<0.015	0.047	4.8	0.056	<0.015	0.780	0.038	<0.015	0.560	0.068
	9/23/10 DUP	<0.015	<0.015	<0.015	<0.015	0.260	<0.015	0.049	4.8	0.057	<0.015	0.800	0.041	<0.015	0.580	0.065
	12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.004	<0.0005	<0.0005	0.005	<0.0005	<0.0005	0.0021	<0.0005
	12/09/10 DUP	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.004	<0.0005	<0.0005	0.0058	<0.0005	<0.0005	0.002	<0.0005
	03/10/11	<0.00050	0.00067	<0.00050	<0.00050	0.094	0.00096	0.017	1.9	0.019	0.00055	0.340	0.012	<0.00050	0.220	0.011
	03/10/11 DUP	<0.00050	0.00087	<0.00050	<0.00050	0.093	0.001	0.017	1.6	0.019	0.00055	0.260	0.013	<0.00050	0.180	0.011
	06/07/11	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.059	0.0010	<0.0005	0.053	0.0007	<0.0005	0.025	<0.0005
	06/07/11 DUP	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.06	0.001	<0.0005	0.058	0.00069	<0.0005	0.027	<0.0005
	09/19/11	< 0.00050	0.003	< 0.00050	< 0.00050	0.24	0.0025	0.045	4.7	0.055	< 0.00050	0.86	0.065	0.00094	0.69	0.063
	09/19/11 DUP	< 0.02	< 0.02	< 0.02	< 0.02	0.24	< 0.02	0.053	4.7	0.06	< 0.02	0.86	0.06	< 0.02	0.68	0.068
	12/07/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.13	0.0013	0.028	2.9	0.033	< 0.00050	0.52	0.034	0.00054	0.38	0.04
	12/07/11 DUP	< 0.00050	< 0.015	< 0.00050	< 0.00050	0.14	0.0013	0.029	2.9	0.033	< 0.00050	0.58	0.034	0.00055	0.4	0.041
	03/12/12	<0.015	<0.015	<0.015	<0.015	0.210	<0.015	0.0440	3.80	0.0450	<0.015	0.7700	0.0480	<0.015	0.5400	0.05
	03/12/12 DUP	<0.020	<0.020	<0.020	<0.020	0.220	<0.020	0.0440	4.00	0.0470	<0.020	0.7400	0.0500	<0.020	0.5400	0.05
	06/22/2012	< 0.005	< 0.005	< 0.005	< 0.005	0.100	< 0.005	0.0160	1.70	0.0390	< 0.005	0.2700	0.0130	< 0.005	0.2000	0.02
	06/22/12 DUP	< 0.005	< 0.005	< 0.005	< 0.005	0.100	< 0.005	0.0160	1.70	0.0390	< 0.005	0.2700	0.0130	< 0.005	0.1900	0.02
	09/14/12	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.220	< 0.0050	0.0450	4.70	0.0560	< 0.0050	0.8900	0.0610	< 0.0050	0.5900	0.06
	09/14/12 DUP	< 0.015	< 0.015	< 0.015	< 0.015	0.270	< 0.015	0.0580	5.40	0.0730	< 0.015	1.1000	0.0760	< 0.015	0.7300	0.08
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.062	0.00097	<0.00050	0.038	0.00052	<0.00050	0.022	<0.00050
	12/13/12 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.062	0.00092	<0.00050	0.038	0.00053	<0.00050	0.023	<0.00050
	03/15/13	<0.00050	0.0010	<0.00050	<0.00050	0.20	0.0017	0.040	4.3	0.055	<0.00050	0.76	0.053	0.00071	0.54	0.053
	03/15/13 DUP	<0.00050	0.0010	<0.00050	<0.00050	0.20	0.0018	0.040	4.2	0.056	<0.00050	0.75	0.052	0.00066	0.52	0.054
	06/13/13	<0.015	<0.015	<0.015	<0.015	0.23	<0.015	0.038	4.7	0.053	<0.015	0.59	0.044	<0.015	0.48	0.055
	06/13/13 DUP	<0.015	<0.015	<0.015	<0.015	0.24	<0.015	0.039	4.8	0.053	<0.015	0.61	0.046	<0.015	0.50	0.059
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	0.17	0.0016	0.037	3.4	0.049	<0.00050	0.51	0.037	0.00066	0.4	0.05

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-12 (continued)	09/20/13 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.18	0.0017	0.036	3.4	0.048	<0.00050	0.52	0.037	0.00063	0.4	0.049
	12/16/13	<0.0025	<0.0025	<0.0025	<0.0025	0.036	<0.0025	0.0075	0.80	0.010	<0.0025	0.15	0.0057	<0.0025	0.11	0.0096
	12/16/13 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.035	<0.0025	0.0076	0.77	0.0096	<0.0025	0.14	0.0058	<0.0025	0.11	0.0098
	3/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.11	0.00077	0.018	1.9	0.025	<0.00050	0.18	0.0086	<0.00050	0.17	0.047
	3/24/2014 DUP	<0.0070	<0.0070	<0.0070	<0.0070	0.097	<0.0070	0.016	1.9	0.022	<0.0070	0.17	0.0075	<0.0070	0.14	0.035
	6/24/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.014	<0.0015	0.0017	0.3	0.0021	<0.0015	0.042	<0.0015	<0.0015	0.03	<0.0015
	6/24/2014 DUP	<0.0015	<0.0015	<0.0015	<0.0015	0.014	<0.0015	0.0019	0.31	0.0023	<0.0015	0.042	0.0016	<0.0015	0.034	<0.0015
	9/30/2014	<0.015	<0.015	<0.015	<0.015	0.190	<0.015	0.039	3.50	0.045	<0.015	0.67	0.036	<0.015	0.48	0.042
	9/30/2014 DUP	<0.015	<0.015	<0.015	<0.015	0.180	<0.015	0.039	3.50	0.045	<0.015	0.68	0.035	<0.015	0.46	0.042
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.034	0.00064	<0.00050	0.025	<0.00050	<0.00050	0.015	<0.00050
	12/11/2014 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.032	0.00060	<0.00050	0.024	<0.00050	<0.00050	0.014	<0.00050
	3/20/2015	<0.0050	<0.0050	<0.0050	<0.0050	0.102	<0.0050	0.025	2.11	0.029	<0.0050	0.58	0.018	<0.0050	0.34	0.037
	3/20/15 DUP	<0.0125	<0.0125	<0.0125	<0.0125	0.143	<0.0125	0.026	2.49	0.029	<0.0125	0.50	0.022	<0.0125	0.34	0.029
	6/19/2015	<0.010	<0.010	<0.010	<0.010	0.15	<0.010	0.028	2.57	0.025	<0.010	0.51	0.024	<0.010	0.36	0.031
	6/19/2015 DUP	<0.010	<0.010	<0.010	<0.010	0.16	<0.010	0.031	2.68	0.030	<0.010	0.52	0.023	<0.010	0.36	0.033
MW-13	12/02/96	0.0007	<0.00050	<0.00050	<0.00020	<0.00030	<0.00050	0.0003	0.0091	<0.0010	<0.00020	0.75	0.0066	--	0.082	<0.00050
	11/12/97	<0.250	<0.500	<0.250	<0.250	0.291	<0.250	<0.250	5.05	<0.250	<0.250	18.1	<0.250	--	9.05	<0.500
	08/11/99	<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	2.28	<0.100	<0.100	9.59	<0.200	--	3.92	<0.100
	11/16/99	<0.0500	<0.125	<0.0250	<0.0500	0.108	<0.0250	0.051	2.62	<0.0250	<0.0250	7.21	0.0675	--	3.05	--
	02/28/00	<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	0.562	<0.100	<0.100	1.34	<0.200	--	0.602	<0.100
	06/28/00	<0.100	<0.500	<0.0500	<0.0500	0.132	<0.0500	0.142	4.21	<0.0500	<0.0500	14.7	0.155	--	6.36	<0.0500
	05/30/01	<0.200	<1	<0.100	<0.100	<0.100	<0.100	<0.100	2.46	<0.100	<0.100	10.3	<0.200	--	4.62	<0.100
	05/30/02	<0.0020	<0.0010	<0.0010	<0.0020	0.00144	<0.0010	0.00128	0.0604	<0.0010	<0.0010	0.241	0.00168	--	0.0864	<0.0010
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00171	<0.00050	0.00175	0.0796	0.00126	<0.00050	0.121	0.00158	--	0.13	<0.00050
	11/16/04	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	1.20	<0.0120	--	0.23	<0.0120
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00314	<0.00050	<0.00050	0.0712	<0.00050	--	0.0103	<0.00050
	09/12/07	<0.0500	<0.0250	<0.0250	<0.0500	0.055	<0.0250	0.028	1.29	<0.0250	<0.0250	2.73	0.0295	--	2.02	<0.0250
	12/12/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00336	<0.00050	<0.00050	0.0513	0.0006	--	0.0195	<0.00050
03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00832	<0.000500	0.00446	0.174	0.00452	<0.000500	0.383	0.00421	<0.000500	0.337	0.001	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-13 (continued)	06/25/08	<0.00500	<0.00500	<0.00500	<0.00500	0.0152	<0.00500	<0.00500	0.32	0.0104	<0.00500	0.132	<0.00500	--	0.16	<0.00500
	09/19/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0056	<0.00250	<0.00250	0.116	0.00265	<0.00250	0.266	<0.00250	<0.00250	0.187	<0.00250
	12/10/08	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.00062	0.032	0.00069	<0.00050	0.025	<0.00050	<0.00050	0.039	<0.00050
	03/27/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.017	<0.00050
	03/27/09 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00079	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.017	<0.00050
	06/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	0.0008	0.058	0.0018	<0.00050	0.016	<0.00050	<0.00050	0.042	<0.00050
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	0.0033	0.13	0.0029	<0.00050	0.43	0.004	<0.00050	0.27	0.001
	12/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.066	0.00061	<0.00050	0.045	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.0014	0.064	0.0012	<0.00050	0.13	0.0013	<0.00050	0.11	<0.00050
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.0076	<0.00050
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0027	<0.0005	<0.0005	0.045	<0.0005	<0.0005	0.012	<0.0005
	12/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.00065	<0.00050
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.0061	<0.0005	<0.0005	0.0042	<0.0005
	09/19/11	< 0.00050	0.00054	< 0.00050	< 0.00050	0.035	< 0.00050	0.017	0.7	0.02	< 0.00050	2.2	0.017	0.00063	1.3	0.0036
	12/09/11	< 0.0090	< 0.0090	< 0.0090	< 0.0090	0.023	< 0.0090	0.011	0.53	0.018	< 0.0090	2.8	0.012	< 0.0090	1.4	< 0.0090
	03/12/12	<0.0090	< 0.0090	< 0.0090	< 0.0090	0.024	< 0.0090	0.0140	0.60	0.0140	< 0.0090	1.8000	0.0110	< 0.0090	1.2000	< 0.0090
06/22/12	< 0.004	< 0.004	< 0.004	< 0.004	0.040	< 0.004	0.0130	0.94	0.0300	< 0.004	1.3000	0.0086	< 0.004	1.0000	0.00	
09/14/12	< 0.0040	< 0.0040	< 0.0040	< 0.0040	0.038	< 0.0040	0.0210	0.90	0.0220	< 0.0040	3.1000	0.0160	< 0.0040	1.8000	< 0.0040	
12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.013	0.00062	<0.00050	0.088	<0.00050	<0.00050	0.051	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-13 (continued)	03/15/13	<0.00050	<0.00050	<0.00050	<0.00050	0.034	<0.00050	0.021	0.89	0.020	<0.00050	2.4	0.014	0.00068	1.7	0.0032
	06/14/13	<0.0040	<0.0040	<0.0040	<0.0040	0.019	<0.0040	0.0094	0.52	0.015	<0.0040	1.1	0.0060	<0.0040	0.92	<0.0040
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	0.04	<0.00050	0.02	0.77	0.019	<0.00050	2.6	0.013	0.00074	1.7	0.0034
	12/13/13	<0.0040	<0.0040	<0.0040	<0.0040	0.011	<0.0040	0.0066	0.28	0.0058	<0.0040	1.3	0.005	<0.0040	0.72	<0.0040
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.1	<0.00050	<0.00050	0.054	<0.00050
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.88	0.033	<0.00050	1.5	0.0120	0.00067	1.3	0.0032
	09/30/14	<0.0040	<0.0040	<0.0040	<0.0040	0.038	<0.0040	0.020	0.890	0.019	<0.0040	3.1	0.013	<0.0040	2.0	<0.0040
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.018	0.00066	<0.00050	0.091	<0.00050	<0.00050	0.065	<0.00050
	3/18/2015	<0.0016	<0.0016	<0.0016	<0.0016	0.019	<0.0016	0.0031	0.52	0.0074	<0.0016	0.55	0.0024	<0.0016	0.61	<0.0016
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.034	<0.00050	0.016	0.62	0.015	<0.00050	2.0	0.010	<0.00050	1.4	0.0020
MW-14	11/12/97	<0.0050	<0.0100	<0.0050	<0.0050	0.00501	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0426	<0.0050	--	0.394	<0.0100
	08/10/99	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0151	<0.0100	<0.0100	0.121	0.0356	--	0.853	<0.0100
	11/16/99	<0.0020	<0.0050	<0.0010	<0.0020	0.00248	<0.0010	0.00248	0.0042	<0.0010	<0.0010	0.186	0.0108	--	0.313	<0.0010
	02/28/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	0.0832	0.0851	<0.0500	<0.0500	0.711	0.19	--	5.30	<0.0500
	06/27/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0101	<0.0050	0.0189	0.219	<0.0050	<0.0050	0.207	0.0462	--	1.15	<0.0050
	11/30/00	<0.0020	<0.0100	<0.0010	<0.0010	0.00108	<0.0010	0.00188	0.00227	<0.0010	<0.0010	0.0213	0.00554	--	0.157	<0.0010
	05/30/01	<0.0010	<0.0500	<0.0050	<0.0050	0.00616	<0.0050	0.0138	0.0304	<0.0050	<0.0050	0.268	0.0282	--	1.28	<0.0050
	05/30/02	<0.0100	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	<0.0050	0.0783	0.0119	--	0.303	<0.0050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.0009	<0.00050	0.00147	0.00415	<0.00050	<0.00050	0.0806	0.00499	--	0.188	<0.00050
	11/15/04	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.096	<0.0250	<0.0250	0.48	<0.0250	--	1.20	<0.0250
	05/17/05	<0.0020	<0.0010	<0.0010	<0.0020	0.00464	<0.0010	0.0023	0.0411	<0.0010	<0.0010	0.127	0.00928	--	0.367	<0.0010
	09/12/07	<0.0200	<0.0100	<0.0100	<0.0200	0.0216	<0.0100	<0.0100	0.162	<0.0100	<0.0100	0.18	0.0222	--	0.963	<0.0100
	03/05/08	<0.00100	<0.000500	0.000850 J	<0.00100	0.0243	<0.000500	0.0139	0.217	0.00386	<0.000500	0.549	0.0272	<0.000500	1.77	<0.000500
	06/25/08	<0.00500	<0.00500	<0.00500	<0.00500	0.0152	<0.00500	0.0102	0.113	<0.00500	<0.00500	0.36	0.0182	--	1.29	<0.00500
	09/19/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0191	<0.00250	0.0086	0.173	<0.00250	<0.00250	0.425	0.0166	<0.00250	1.32	<0.00250
	12/10/08	<0.0050	<0.0050	<0.0050	<0.0050	0.017	<0.0050	0.0096	0.16	<0.0050	<0.0050	0.33	0.017	<0.0050	1.20	<0.0050
	03/27/09	<0.0025	<0.0025	<0.0025	<0.0025	0.016	<0.0025	0.0067	0.16	0.0025	<0.0025	0.32	0.014	<0.0025	0.98	<0.0025
06/17/09	<0.0025	<0.0025	<0.0025	<0.0025	0.021	<0.0025	0.012	0.15	<0.0025	<0.0025	0.40	0.021	<0.0025	1.40	<0.0025	
09/18/09	<0.00050	<0.00050	0.00074	<0.00050	0.019	<0.00050	0.0088	0.15	0.002	<0.00050	0.44	0.017	<0.00050	1.30	<0.00050	
12/15/09	<0.0025	<0.0025	<0.0025	<0.0025	0.011	<0.0025	0.0047	0.12	<0.0025	<0.0025	0.41	0.0076	<0.0025	0.82	<0.0025	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-14 (continued)	03/17/10	<0.0025	<0.0025	<0.0025	<0.0025	0.022	<0.0025	0.0095	0.14	<0.0025	<0.0025	0.32	0.015	<0.0025	1.3	<0.0025
	07/02/10	<0.0025	<0.0025	<0.0025	<0.0025	0.0070	<0.0025	0.0048	0.052	<0.0025	<0.0025	0.22	0.0059	<0.0025	0.61	<0.0025
	09/22/10	<0.003	<0.003	<0.003	<0.003	0.016	<0.003	0.0065	0.140	<0.003	<0.003	0.230	0.01	<0.003	0.800	<0.003
	12/08/10	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	0.0007	0.011	<0.0005	<0.0005	0.082	0.0015	<0.0005	0.150	<0.0005
	03/09/11	<0.0030	<0.0030	<0.0030	<0.0030	0.0068	<0.0030	0.0038	0.055	<0.0030	<0.0030	0.200	0.005	<0.0030	0.540	<0.0030
	06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	0.00064	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.027	0.0011	<0.0005	0.066	<0.0005
	09/14/11	<0.0025	<0.0025	<0.0025	<0.0025	0.012	<0.0025	0.0057	0.12	<0.0025	<0.0025	0.3	0.008	<0.0025	0.85	<0.0025
	12/06/11	<0.0025	<0.0025	<0.0025	<0.0025	0.0084	<0.0025	0.0039	0.088	<0.0025	<0.0025	0.32	0.0057	<0.0025	0.74	<0.0025
	03/07/12	<0.0025	<0.0025	<0.0025	<0.0025	0.009	<0.0025	0.0046	0.09	<0.0025	<0.0025	0.2700	0.0061	<0.0025	0.7600	<0.0025
	06/19/12	<0.0025	<0.0025	<0.0025	<0.0025	0.011	<0.0025	0.0056	0.07	<0.0025	<0.0025	0.2000	0.0074	<0.0025	0.7300	<0.0025
	09/11/12	<0.0025	<0.0025	<0.0025	<0.0025	0.011	<0.0025	0.0051	0.11	<0.0025	<0.0025	0.2800	0.0066	<0.0025	0.7300	<0.0025
	12/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.027	<0.00050
	03/12/13	<0.00050	<0.00050	0.00056	<0.00050	0.012	<0.00050	0.0044	0.10	0.0017	<0.00050	0.23	0.0072	<0.00050	0.67	<0.00050
	06/12/13	<0.0030	<0.0030	<0.0030	<0.0030	0.011	<0.0030	0.0050	0.084	<0.0030	<0.0030	0.26	0.0066	<0.0030	0.77	<0.0030
	09/18/13	<0.00050	<0.00050	<0.00050	<0.00050	0.013	<0.00050	0.0046	0.13	0.0020	<0.00050	0.24	0.0059	<0.00050	0.64	<0.00050
	12/11/13	<0.0015	<0.0015	<0.0015	<0.0015	0.0084	<0.0015	0.0028	0.083	<0.0015	<0.0015	0.18	0.0037	<0.0015	0.46	<0.0015
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.02	<0.00050
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.017	<0.00050	0.0070	0.12	0.0018	<0.00050	0.21	0.00087	<0.00050	0.67	<0.00050
	9/24/2014	<0.0025	<0.0025	<0.0025	<0.0025	0.010	<0.0025	0.0040	0.120	<0.0025	<0.0025	0.24	0.004	<0.0025	0.64	<0.0025
	12/9/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0047	<0.00050	<0.00050	0.029	0.00061	<0.00050	0.063	<0.00050
3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	0.0059	0.13	0.0022	<0.00050	0.31	0.0059	<0.00050	0.91	<0.00050	
6/16/2015	<0.0031	<0.0031	<0.0031	<0.0031	0.015	<0.0031	0.0049	0.12	<0.0031	<0.0031	0.25	0.0044	<0.0031	0.79	<0.0031	
MW-15	11/13/97	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	0.00678	<0.00050	<0.00050	0.00238	0.00168	--	0.00181	<0.0010
	11/16/99	<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.967	0.0137	--	0.0634	<0.00050
	02/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0179	0.00155	--	0.00101	<0.00050
	06/27/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00544	0.00103	--	0.000565	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00232	<0.0010	--	<0.00050	<0.00050
	05/31/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00259	0.00063	--	<0.00050	<0.00050
	05/29/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.00442	<0.00050	--	0.0013	<0.00050
	11/02/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	--	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-15 (continued)	11/16/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.012	<0.00050	--	0.0031	<0.00050
	03/24/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	--	0.00149	<0.00050
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	--	0.001	<0.00050
	09/13/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00054 J	<0.00050	--	<0.00050	<0.00050
	03/07/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00263 J	<0.000500	<0.000500	<0.000500	<0.000500
	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.001	<0.000500	<0.000500	<0.000500	<0.000500
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	<0.00050	<0.00050
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	<0.00050	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	<0.00050	<0.00050
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00076	<0.0005	<0.0005	<0.0005	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	<0.00050	<0.00050
	03/09/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	<0.00050	<0.00050	<0.00050
	09/10/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	<0.00050	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	<0.00050	<0.00050
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
9/30/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00087	<0.00050	<0.00050	<0.00050	<0.00050	
3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
MW-16	11/12/97	<0.0050	<0.0100	<0.0050	<0.0050	0.0198	<0.0050	0.0278	0.0236	<0.0050	<0.0050	0.328	0.0575	--	0.142	<0.0100
	08/11/99	<0.0050	<0.0250	<0.0025	<0.0025	0.0152	<0.0025	<0.0025	0.0072	<0.0025	<0.0025	0.205	0.0556	--	0.0856	<0.0025
	02/28/00	<0.0020	<0.0100	<0.0010	<0.0010	0.0104	<0.0010	0.012	0.0074	<0.0010	<0.0010	0.523	0.0545	--	0.112	<0.0010
	06/27/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0124	<0.0050	0.0139	0.00839	<0.0050	<0.0050	0.236	0.045	--	0.0938	<0.0050
	05/30/01	<0.0100	<0.0500	<0.0050	<0.0050	0.00928	<0.0050	0.012	0.00895	<0.0050	<0.0050	0.302	0.0301	--	0.11	<0.0050
	05/30/02	<0.0050	<0.0025	<0.0025	<0.0050	0.0135	<0.0025	0.0106	0.00865	<0.0025	<0.0025	0.467	0.024	--	0.119	<0.0025
	05/29/03	<0.0050	<0.0025	<0.0025	<0.0050	0.0036	<0.0025	0.00335	0.00285	<0.0025	<0.0025	0.412	0.0134	--	0.076	<0.0025
	11/02/04	<0.0020	<0.0100	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00166	<0.0010	<0.0010	0.26	0.0069	--	0.0254	<0.0010
	11/16/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.30	0.0078	--	0.026	<0.0025
	03/24/05	<0.0020	<0.0010	<0.0010	<0.0020	0.0018	<0.0010	0.00134	0.00196	<0.0010	<0.0010	0.373	0.0118	--	0.0494	<0.0010
05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00439	<0.00050	0.00314	0.00925	<0.00050	<0.00050	0.12	0.00909	--	0.0415	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-16 (continued)	11/15/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00275	<0.000500	0.00186	0.0025	<0.000500	<0.000500	0.152	0.00894	--	0.0334	<0.000500
	06/06/06	<0.00200	<0.00200	<0.00200	<0.00200	0.0122	<0.00200	0.00338	0.21	<0.00200	<0.00200	0.0846	0.00256	--	0.0252	0.00564
	12/06/06	<0.00200	<0.00100	<0.00100	<0.00200	0.0042	<0.00100	0.00212	0.0167	<0.00100	<0.00100	0.176	0.00588	--	0.0456	<0.00100
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	0.00257	<0.00100	<0.00100	0.014	<0.00100	<0.00100	0.0988	0.00335	--	0.0238	<0.00100
	09/13/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00315	<0.00050	0.00108	0.0066	<0.00050	<0.00050	0.163	0.00587	--	0.0492	<0.00050
	12/12/07	<0.00200	<0.00100	<0.00100	<0.00100	0.00232	<0.00100	0.00144	0.0059	<0.00100	<0.00100	0.11	0.00592	--	0.0282	<0.00100
	03/07/08	<0.00100	<0.000500	<0.000500	<0.00100	0.003	<0.000500	0.00186	0.00593	<0.000500	<0.000500	0.28	0.00612	<0.000500	0.0733	<0.000500
	09/18/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0027	<0.00250	<0.00250	0.00515	<0.00250	<0.00250	0.30	0.0062	<0.00250	0.0652	<0.00250
	12/09/08	<0.0010	<0.0010	<0.0010	<0.0010	0.0026	<0.0010	0.0018	0.0055	<0.0010	<0.0010	0.30	0.0057	<0.0010	0.067	<0.0010
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	0.00082	0.0032	<0.00050	<0.00050	0.15	0.0052	<0.00050	0.028	<0.00050
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.005	<0.00050	0.00095	0.029	<0.00050	<0.00050	0.054	0.0018	<0.00050	0.016	0.00068
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.0011	0.002	<0.00050	<0.00050	0.22	0.0048	<0.00050	0.033	<0.00050
	12/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	0.0006	0.0014	<0.00050	<0.00050	0.1	0.0032	<0.00050	0.019	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.0010	0.002	<0.00050	<0.00050	0.11	0.0045	<0.00050	0.036	<0.00050
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0049	<0.00050	0.0009	0.037	<0.00050	<0.00050	0.039	0.00094	<0.00050	0.0099	0.0016
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	0.00094	0.0028	<0.0005	<0.0005	0.240	0.0042	<0.0005	0.043	<0.0005
	12/10/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	0.00054	0.0016	<0.0005	<0.0005	0.094	0.0024	<0.0005	0.018	<0.0005
	03/10/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	0.0005	0.0062	<0.00050	<0.00050	0.110	0.0019	<0.00050	0.021	<0.00050
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	0.0049	<0.0005	0.0012	0.063	<0.0005	<0.0005	0.028	<0.0005	<0.0005	0.0071	0.0022
	09/19/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0051	< 0.00050	< 0.00050	0.16	0.0027	< 0.00050	0.013	< 0.00050
	12/08/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00092	< 0.00050	0.00061	0.0022	< 0.00050	< 0.00050	0.21	0.0029	< 0.00050	0.038	< 0.00050
	06/20/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.004	< 0.0005	0.0006	0.02	< 0.0005	< 0.0005	0.0600	0.0010	< 0.0005	0.0140	0.00
	09/13/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.002	< 0.00050	0.0006	0.01	< 0.00050	< 0.00050	0.1900	0.0024	< 0.00050	0.0350	< 0.00050
	12/13/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0015	< 0.00050	0.00068	0.0057	< 0.00050	< 0.00050	0.11	0.0011	< 0.00050	0.024	< 0.00050
	03/14/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00098	< 0.00050	0.00070	0.0047	< 0.00050	< 0.00050	0.20	0.0020	< 0.00050	0.050	< 0.00050
	06/14/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0060	< 0.00050	< 0.00050	0.084	0.00096	< 0.00050	0.018	< 0.00050
	09/19/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00092	< 0.00050	0.00075	0.0071	< 0.00050	< 0.00050	0.18	0.0014	< 0.00050	0.057	< 0.00050
12/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00080	< 0.00050	0.00068	0.0059	< 0.00050	< 0.00050	0.16	0.0014	< 0.00050	0.052	< 0.00050	
3/20/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0027	< 0.00050	0.00089	0.019	< 0.00050	< 0.00050	0.052	< 0.00050	< 0.00050	0.013	0.00055	
6/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0020	< 0.00050	< 0.00050	0.010	< 0.00050	< 0.00050	0.070	0.00070	< 0.00050	0.012	< 0.00050	
9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00077	< 0.00050	0.00066	0.0088	< 0.00050	< 0.00050	0.20	0.0014	< 0.00050	0.047	< 0.00050	

Please refer to notes at end of table.

MW-16	12/11/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00064	< 0.00050	< 0.00050	0.0040	< 0.00050	< 0.00050	0.076	0.00096	< 0.00050	0.017	< 0.00050
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Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
(continued)	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00070	< 0.00050	< 0.00050	0.0060	< 0.00050	< 0.00050	0.16	0.00094	< 0.00050	0.031	< 0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00061	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.18	0.0010	<0.00050	0.042	<0.00050
MW-17	11/13/97	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	--	<0.00050	<0.0010
	11/16/99	<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.127	0.0015	--	0.00954	<0.00050
	02/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00185	<0.0010	--	0.00251	<0.00050
	06/27/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00227	<0.0010	--	<0.00050	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00082	<0.00050	--	<0.00050	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00175	<0.00050	--	0.00092	<0.00050
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	--	<0.00050	<0.00050
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00806	<0.00050	--	0.00668	<0.00050
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00882	<0.00100	<0.00100	0.0378	<0.00100	--	0.0282	<0.00100
	09/11/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050 J	<0.00050	--	<0.00050	<0.00050
	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	0.0009	<0.000500	<0.000500	0.00096	<0.000500	<0.000500	0.00105	<0.000500	<0.000500	0.00362	<0.000500
	09/19/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.0008	<0.000500
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00069	<0.00050	<0.00050	0.003	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.0032	<0.00050
	03/23/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.00320	0.00058	<0.00050	0.0180	<0.00050
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00069	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	0.0030	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00065	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0082	<0.00050
	09/13/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00096	< 0.00050	< 0.00050	0.00071	< 0.00050	< 0.00050	0.0031	< 0.00050
	03/07/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.002	< 0.00050	< 0.00050	0.01	< 0.00050	< 0.00050	0.0068	0.0006	< 0.00050	0.0250	< 0.00050
	09/11/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00073	< 0.00050	< 0.00050	0.00066	< 0.00050	< 0.00050	0.0025	< 0.00050
	03/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0019	< 0.00050	< 0.00050	0.0041	< 0.00050	< 0.00050	0.011	< 0.00050
	09/17/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.0042	< 0.00050	< 0.00050	0.0089	< 0.00050
	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	9/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.0032	< 0.00050	< 0.00050	0.0068	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00071	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0039	< 0.00050	< 0.00050	0.0126	< 0.00050

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-18i	09/29/00	ND	ND	0.000694	ND	0.000843	ND	ND	0.0165	ND	ND	0.0117	ND	--	0.00832	ND
	11/30/00	<0.0010	<0.0050	<0.00050	<0.00050	0.000907	<0.00050	<0.00050	0.0116	<0.00050	<0.00050	0.0124	<0.0010	--	0.0176	<0.00050
	02/27/01	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0102	<0.0025	<0.0025	0.0152	<0.0050	--	0.01	<0.0025
	05/30/01	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.00647	<0.0025	<0.0025	0.0295	<0.0050	--	0.00806	<0.0025
	09/25/01	<0.0010	<0.0010	<0.0010	<0.0010	0.0018	<0.0010	<0.0010	0.023	<0.0010	<0.0010	0.062	0.0023	--	0.039	<0.0010
	03/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.0012	<0.00050	<0.00050	0.0173	<0.00050	<0.00050	0.0711	0.00122	--	0.031	<0.00050
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00118	<0.00050	<0.00050	0.0186	<0.00050	<0.00050	0.0532	0.00114	--	0.0193	<0.00050
	08/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00691	<0.00050	<0.00050	0.0182	<0.00050	--	0.00734	<0.00050
	11/07/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00056	<0.00050	<0.00050	0.0101	<0.00050	<0.00050	0.0233	<0.00050	--	0.0097	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00068	<0.00050	<0.00050	0.0123	<0.00050	<0.00050	0.0276	0.0005	--	0.0125	<0.00050
	05/29/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00059	<0.00050	<0.00050	0.0104	<0.00050	<0.00050	0.0239	0.0005	--	0.0108	<0.00050
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0161	<0.0010	<0.0010	0.0315	<0.0010	--	0.0163	<0.0010
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	<0.00050	0.0142	<0.00050	<0.00050	0.0697	0.001	--	0.0	<0.00050
	05/04/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0156	<0.0010	<0.0010	0.112	<0.0010	--	0.0121	<0.0010
	08/17/04	<0.0010	<0.00050	0.00376	<0.00050	0.00081	0.00186	<0.00050	0.0226	0.00078	<0.00050	0.0438	0.00096	--	0.024	<0.0010
	11/02/04	<0.00050	<0.00050	<0.00050	<0.00050	0.00109	<0.00050	<0.00050	0.0218	<0.00050	<0.00050	0.0322	0.0006	--	0.0178	<0.00050
	11/16/04	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.042	0.00069	--	0.021	<0.00050
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00892	<0.00050	<0.00050	0.013	<0.00050	--	0.00601	<0.00050
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.00969	<0.00050	--	0.01	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00117	<0.000500	<0.000500	0.0180 B	<0.000500	<0.000500	0.0214 B	0.00058	--	0.0163 B	<0.000500
	08/18/05 DUP	<0.00100	<0.000500	<0.000500	<0.00100	0.00117	<0.000500	<0.000500	0.0185 B	<0.000500	<0.000500	0.0218 B	0.00057	--	0.0162 B	<0.000500
	11/15/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00731	<0.000500	<0.000500	0.0114	<0.000500	--	0.00631	<0.000500
	02/21/06	<0.00100	<0.000500	<0.000500	<0.00100	0.00093	<0.000500	<0.000500	0.0148	<0.000500	<0.000500	0.0243	0.00052	--	0.0152	<0.000500
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00588	<0.00100	<0.00100	0.00846	<0.00100	--	0.00447	<0.00100
	09/06/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00579	<0.00050	<0.00050	0.00789	<0.00050	--	0.00423	<0.00050
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00056	<0.00050	<0.00050	0.0116	<0.00050	<0.00050	0.0112	<0.00050	--	0.00691	<0.00050
	02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00068	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.015	<0.00050	--	0.00932	<0.00050
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0146	<0.00100	<0.00100	0.0172	<0.00100	--	0.0113	<0.00100
	09/11/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00487	<0.00050	<0.00050	0.00113	<0.00050	--	0.00146	<0.00050
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00299	<0.00050	<0.00050	0.00557	<0.00050	--	0.00332	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-18i (continued)	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	0.001	<0.000500	<0.000500	0.0132	<0.000500	<0.000500	0.0132	<0.000500	<0.000500	0.00978	<0.000500
	06/10/08	<0.00100	0.001	0.001	<0.00100	<0.00100	<0.00100	<0.00100	0.00417	<0.00100	<0.00100	0.00431	<0.00100	--	0.00218	<0.00100
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00395	<0.000500	<0.000500	0.0031	<0.000500	<0.000500	0.00255	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.0074	<0.00050
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.008	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.0047	<0.00050
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0033	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0017	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0082	<0.00050	<0.00050	0.0059	<0.00050	<0.00050	0.0045	<0.00050
	12/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0016	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	0.0110	<0.00050	<0.00050	0.0097	<0.00050	<0.00050	0.0060	<0.00050
	06/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0030	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	0.0018	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00071	<0.0005	0.0005	0.015	<0.0005	<0.0005	0.0098	<0.0005	<0.0005	0.0074	<0.0005
	12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	0.0005	0.015	<0.0005	<0.0005	0.0120	<0.0005	<0.0005	0.0080	<0.0005
	03/10/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0052	<0.00050
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.002	<0.0005	<0.0005	0.0021	<0.0005	<0.0005	0.001	<0.0005
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0033	<0.00050	<0.00050	0.0029	<0.00050	<0.00050	0.0019	<0.00050
	12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0098	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.0048	<0.00050
	03/07/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.02	<0.00050	<0.00050	0.0120	<0.00050	<0.00050	0.0064	<0.00050
	06/21/12	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00	<0.0005	<0.0005	0.0015	<0.0005	<0.0005	0.0010	<0.0005
	09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.001	<0.00050
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0021	<0.00050
	03/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0052	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0021	<0.00050
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0013	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	0.0013	<0.00050
	12/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.0053	<0.00050	<0.00050	0.0036	<0.00050
	3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.00070	<0.00050
	6/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00063	<0.00050	<0.00050	0.00019	<0.00050	<0.00050	0.001	<0.00050
	9/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.00093	<0.00050
	12/10/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0029	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0013	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0011	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0011	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19	11/07/02	<0.0200	<0.0100	<0.0100	<0.0200	0.252	<0.0100	0.0662	2.45	0.023	<0.0100	3.10	0.139	--	1.81	0.0792
	05/30/03	<0.0500	<0.0250	<0.0250	<0.0500	0.109	<0.0250	0.036	1.30	<0.0250	<0.0250	7.16	0.104	--	2.07	0.0355
	11/16/04	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.065	<0.0500	<0.0500	<0.0500	7.30	0.13	--	1.40	<0.0500
	05/18/05	<0.0100	<0.0050	<0.0050	<0.0100	0.0193	<0.0050	<0.0050	0.161	<0.0050	<0.0050	1.50	0.0338	--	0.205	0.0246
	11/15/05	<0.0200	<0.0100	<0.0100	<0.0200	0.027	<0.0100	0.0188	0.23	<0.0100	<0.0100	3.08	0.0672	--	0.785	0.0146
	11/15/05 DUP	<0.0200	<0.0100	<0.0100	<0.0200	0.025	<0.0100	0.0202	0.221	<0.0100	<0.0100	2.86	0.0644	--	0.762	0.0152
	06/05/06	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0809	<0.0100	<0.0100	1.28	0.0131	--	0.237	<0.0100
	12/06/06	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	0.0762	<0.0100	<0.0100	2.06	0.0172	--	0.304	<0.0100
	05/22/07	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.114	<0.0200	<0.0200	2.72	0.0514	--	0.504	<0.0200
	09/11/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.0855	<0.0250	<0.0250	3.37	0.0625	--	0.608	<0.0250
	12/12/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.08	<0.0250	<0.0250	2.07	0.0385	--	0.326	<0.0250
	03/05/08 <sup>7</sup>	<0.00100	<0.000500	<0.000500	<0.00100	0.0125	<0.000500	0.0205	0.149	0.00453	<0.000500	4.06	0.066	<0.000500	1.03	0.00641
	06/25/08	<0.0200	<0.0200	<0.0200	<0.0200	0.0458	<0.0200	0.0296	0.435	<0.0200	<0.0200	2.79	0.0466	--	1.41	<0.0200
	09/19/08	<0.0500	<0.0250	<0.0250	<0.0500	0.062	<0.0250	0.0375	0.715	<0.0250	<0.0250	4.99	0.0565	<0.0250	2.87	0.0395
	12/10/08	<0.025	<0.025	<0.025	<0.025	0.051	<0.025	<0.025	0.50	<0.025	<0.025	6.60	0.11	<0.025	1.10	<0.025
	03/27/09	<0.015	<0.015	<0.015	<0.015	0.053	<0.015	0.039	0.65	<0.015	<0.015	4.50	0.12	<0.015	1.90	0.025
	03/27/09 DUP	<0.015	<0.015	<0.015	<0.015	0.056	<0.015	0.039	0.67	<0.015	<0.015	4.80	0.13	<0.015	1.90	0.025
	06/18/09	<0.0025	<0.0025	<0.0025	<0.0025	0.0054	<0.0025	0.0053	0.082	<0.0025	<0.0025	0.68	0.0086	<0.0025	0.24	<0.0025
	06/18/09 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.0051	<0.0025	0.0054	0.08	<0.0025	<0.0025	0.66	0.0084	<0.0025	0.24	<0.0025
	09/18/09	<0.0025	<0.0025	<0.0025	<0.0025	0.012	<0.0025	0.036	0.17	0.0046	<0.0025	9.4	0.14	<0.0025	2	0.011
	09/18/09 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.012	<0.0025	0.036	0.17	0.0044	<0.0025	9.7	0.14	<0.0025	2	0.012
	12/18/09	<0.010	<0.010	<0.010	<0.010	0.087	<0.010	0.029	0.78	0.013	<0.010	3.2	0.057	<0.010	1.2	0.035
	12/18/09 DUP	<0.010	<0.010	<0.010	<0.010	0.084	<0.010	0.027	0.74	0.012	<0.010	3.1	0.053	<0.010	1.2	0.032
	03/19/10	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0083	0.045	<0.005	<0.005	1.9	0.019	<0.005	0.38	<0.005
	03/19/10 DUP	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.0083	0.044	<0.007	<0.007	1.8	0.018	<0.007	0.36	<0.007
	06/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0067	<0.00050	<0.00050	0.067	<0.00050	<0.00050	0.025	<0.00050
	06/17/10 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.0069	<0.00050	<0.00050	0.065	0.00052	<0.00050	0.024	<0.00050
	09/23/10	<0.0025	<0.0025	<0.0025	<0.0025	0.0087	<0.0025	0.021	0.110	0.0036	<0.0025	3.4	0.050	<0.0025	0.9200	0.012
	09/23/10 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.0085	<0.0025	0.021	0.110	0.0034	<0.0025	3.7	0.049	<0.00025	0.89	0.013
	12/09/10	<0.015	<0.015	<0.015	<0.015	0.0590	<0.015	0.038	0.590	<0.015	<0.015	6.2	0.068	<0.015	1.50	0.0480

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19 (continued)	12/09/10 DUP	<0.0015	<0.0015	<0.0015	<0.0015	0.0580	<0.0015	0.037	0.590	<0.0015	<0.0015	6.0	0.067	<0.0015	1.5000	0.0480
	03/08/11	<0.0050	<0.0050	<0.0050	<0.0050	0.023	<0.0050	0.012	0.280	<0.0050	<0.0050	1.5	0.018	<0.0050	0.590	0.013
	06/10/11	<0.0009	<0.0009	<0.0009	<0.0009	0.022	<0.0009	0.0027	0.16	0.0014	<0.0009	0.24	0.0036	<0.0009	0.13	0.0056
	06/10/11 DUP	<0.0009	<0.0009	<0.0009	<0.0009	0.019	<0.0009	0.0023	0.14	0.0013	<0.0009	0.22	0.0033	<0.0009	0.12	0.005
	09/19/11	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.053	<0.0015	<0.0015	0.4	0.003	<0.0015	0.078	<0.0015
	09/19/11 DUP	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.053	<0.0020	<0.0020	0.41	0.0032	<0.0020	0.08	<0.0020
	12/09/11	<0.0015	<0.0015	<0.0015	<0.0015	0.0050	<0.0015	0.0043	0.11	<0.0015	<0.0015	0.73	0.01	<0.0015	0.22	0.0039
	12/09/2011 DUP	<0.0020	<0.0020	<0.0020	<0.0020	0.0054	<0.0020	0.0047	0.12	<0.0020	<0.0020	0.77	0.01	<0.0020	0.23	0.0039
	03/09/12	<0.0025	<0.0025	<0.0025	<0.0025	0.046	<0.0025	0.0260	0.82	0.0010	<0.0025	2.4	0.0500	<0.0025	1.2	0.07
	03/09/12 DUP	<0.0040	<0.0040	<0.0040	<0.0040	0.043	<0.0040	0.0240	0.77	0.0088	<0.0040	2.4	0.0460	<0.0040	1.2	0.06
	06/22/2012	<0.005	<0.005	<0.005	<0.005	0.074	<0.005	0.0170	1.00	0.0140	<0.005	1.3	0.0210	<0.005	1.0	0.06
	06/22/12 DUP	<0.005	<0.005	<0.005	<0.005	0.074	<0.005	0.0180	1.00	0.0130	<0.005	1.3	0.0220	<0.005	1.0	0.06
	09/14/12	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	0.3	<0.0050	<0.0050	2.2	0.031	<0.0050	0.34	0.008
	09/14/12 DUP	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	0.3	<0.0050	<0.0050	2.3	0.031	<0.0050	0.34	<0.0050
	12/14/12	<0.0015	0.0098	<0.0015	<0.0015	0.021	<0.0015	0.0018	0.33	0.0036	<0.0015	0.29	0.0032	<0.0015	0.14	0.0031
	12/14/12 DUP	<0.0010	0.0093	<0.0010	<0.0010	0.021	<0.0010	0.0017	0.34	0.0037	<0.0010	0.30	0.0031	<0.0010	0.14	0.0030
	03/15/13	<0.0015	0.0047	<0.0015	<0.0015	0.029	<0.0015	0.021	0.87	0.0055	<0.0015	3.2	0.067	<0.0015	1.6	0.0090
	03/15/13 DUP	<0.0015	0.0047	<0.0015	<0.0015	0.030	<0.0015	0.020	0.82	0.0061	<0.0015	3.2	0.068	<0.0015	1.5	0.0092
	06/14/13	<0.0090	<0.0090	<0.0090	<0.0090	0.025	<0.0090	0.013	0.73	<0.0090	<0.0090	2.5	0.029	<0.0090	1.0	<0.0090
	06/14/13 DUP	<0.0090	<0.0090	<0.0090	<0.0090	0.025	<0.0090	0.011	0.72	<0.0090	<0.0090	2.4	0.026	<0.0090	1.0	<0.0090
	09/20/13	<0.00050	0.0012	<0.00050	<0.00050	0.014	<0.00050	0.025	0.52	0.0045	<0.00050	3	0.061	<0.00050	1.1	0.01
	09/20/13 DUP	<0.0010	0.0011	<0.0010	<0.0010	0.012	<0.0010	0.021	0.49	0.0038	<0.0010	3.2	0.052	<0.0010	1.2	0.0090
	12/16/13	<0.015	<0.015	<0.015	<0.015	0.037	<0.015	0.022	0.68	<0.015	<0.015	3.0	0.036	<0.015	1.1	<0.015
	12/16/13 DUP	<0.015	<0.015	<0.015	<0.015	0.036	<0.015	0.022	0.66	<0.015	<0.015	2.9	0.037	<0.015	1.1	<0.015
	3/21/2014	<0.00050	0.0014	<0.00050	<0.00050	0.0048	<0.00050	0.0024	0.13	0.0012	<0.00050	0.18	0.0016	<0.00050	0.051	0.0043
	3/21/2014 DUP	<0.00050	0.0014	<0.00050	<0.00050	0.0048	<0.00050	0.0022	0.13	0.0011	<0.00050	0.18	0.0016	<0.00050	0.051	0.0043
	6/26/2014	<0.0050	0.00089	<0.00050	<0.00050	0.00054	0.11	0.038	2	0.021	<0.00050	1.9	0.036	0.0008	1.5	0.0062
	6/26/14 DUP	<0.0050	0.0011	<0.00050	<0.00050	0.11	<0.00050	0.038	1.9	0.021	<0.00050	1.9	0.036	0.0007	1.6	0.0061
9/30/2014	<0.015	<0.015	<0.015	<0.015	0.018	<0.015	0.038	0.52	<0.015	<0.015	4.4	0.061	<0.015	1.7	0.032	
9/30/2014 DUP	<0.015	<0.015	<0.015	<0.015	0.018	<0.015	0.037	0.51	<0.015	<0.015	4.4	0.060	<0.015	1.7	0.030	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19 (continued)	12/12/2014	<0.0050	<0.0050	<0.0050	<0.0050	0.096	<0.0050	0.020	1.5	0.012	<0.0050	1.4	0.019	<0.0050	0.79	0.060
	12/12/2014 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.0050	0.021	1.5	0.014	<0.0050	1.5	0.021	<0.0050	0.89	0.068
	3/18/2015	<0.0042	<0.0042	<0.0042	<0.0042	0.073	<0.0042	0.048	1.46	0.018	<0.0042	5.9	0.057	<0.0042	4.0	0.054
	3/18/2015 DUP	<0.0042	<0.0042	<0.0042	<0.0042	0.083	<0.0042	0.048	1.41	0.018	<0.0042	4.9	0.056	<0.0042	3.5	0.047
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.022	<0.00050	0.049	0.63	0.0066	<0.00050	8.1	0.094	<0.00050	2.2	0.028
	6/18/2015 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.023	<0.00050	0.049	0.61	0.0075	<0.00050	8.0	0.99	<0.00050	2.1	0.031
MW-19i	06/10/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00846	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00128	<0.00100
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00193	0.00053	<0.000500	0.0271	<0.000500	<0.000500	0.00172	<0.000500	<0.000500	0.00577	<0.000500
	12/10/08	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.028	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0056	<0.00050
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0033	<0.00050
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.00067	<0.00050	<0.00050	0.0015	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0017	0.00064	<0.00050	0.028	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	0.00079
	12/15/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	<0.00050	0.01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	0.00053	<0.00050	0.015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050
	06/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0047	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	0.00058	<0.0005	0.020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0024	<0.0005
	12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	<0.0005	<0.0005	0.014	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00094	<0.00050	<0.00050	0.014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00088	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	09/15/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0041	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00073	< 0.00050
	12/09/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00072	< 0.00050	< 0.00050	0.0088	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050
	03/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.01	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0014	< 0.00050
	06/21/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	09/13/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0042	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00065	< 0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19i (continued)	12/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0023	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	03/14/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00065	< 0.00050	< 0.00050	0.0095	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050
	06/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	09/19/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00056	< 0.00050	< 0.00050	0.0068	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00060	< 0.00050	< 0.00050	0.0066	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/20/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0051	< 0.00050	< 0.00050	0.00083	< 0.00050	< 0.00050	0.0016	< 0.00050
	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00056	< 0.00050	< 0.00050	0.0064	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0027	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0040	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0063	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-20i	06/10/08	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	0.018	< 0.00100	< 0.00100	0.00577	< 0.00100	< 0.00100	0.0032	< 0.00100
	09/17/08	< 0.00100	< 0.000500	< 0.000500	< 0.00100	0.00212	< 0.000500	< 0.000500	0.0423	< 0.000500	< 0.000500	0.0128	< 0.000500	< 0.000500	0.011	< 0.000500
	12/11/08	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0021	< 0.00050	< 0.00050	0.047	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.0093	< 0.00050
	03/25/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.036	< 0.00050	< 0.00050	0.0084	< 0.00050	< 0.00050	0.0064	< 0.00050
	06/16/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.03	< 0.00050	< 0.00050	0.0063	< 0.00050	< 0.00050	0.0051	< 0.00050
	09/17/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.034	< 0.00050	< 0.00050	0.0074	< 0.00050	< 0.00050	0.005	< 0.00050
	12/16/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0093	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.001	< 0.00050
	03/18/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0021	< 0.00050	< 0.00050	0.047	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.007	< 0.00050
	06/15/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00051	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0043	< 0.00050	< 0.00050	0.002	< 0.00050
	09/22/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0018	< 0.0005	< 0.0005	0.043	< 0.0005	< 0.0005	0.0170	< 0.0005	< 0.0005	0.0100	< 0.0005
	12/09/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.013	< 0.0005	< 0.0005	0.0037	< 0.0005	< 0.0005	0.0020	< 0.0005
	03/11/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0096	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0023	< 0.00050
	06/08/11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0029	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	09/15/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00096	< 0.00050	< 0.00050	0.021	< 0.00050	< 0.00050	0.0076	< 0.00050	< 0.00050	0.0045	< 0.00050
	12/08/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.026	< 0.00050	< 0.00050	0.0064	< 0.00050	< 0.00050	0.0042	< 0.00050
	03/07/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.03	< 0.00050	< 0.00050	0.0110	< 0.00050	< 0.00050	0.0059	< 0.00050
	06/21/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.01	< 0.0005	< 0.0005	0.0026	< 0.0005	< 0.0005	0.0015	< 0.0005
	09/13/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00083	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.0061	< 0.00050	< 0.00050	0.0038	< 0.00050
	12/13/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0069	< 0.00050	< 0.00050	0.0014	< 0.00050	< 0.00050	0.00084	< 0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-20i (continued)	03/14/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.028	< 0.00050	< 0.00050	0.0092	< 0.00050	< 0.00050	0.0060	< 0.00050
	06/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00072	< 0.00050	< 0.00050	0.014	< 0.00050	< 0.00050	0.0073	< 0.00050	< 0.00050	0.0037	< 0.00050
	09/19/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00064	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.0039	< 0.00050	< 0.00050	0.0024	< 0.00050
	12/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00090	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0019	< 0.00050
	3/20/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0034	< 0.00050	< 0.00050	0.00056	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/30/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.004	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.00058	< 0.00050
	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00068	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0043	< 0.00050	< 0.00050	0.0026	< 0.00050
	12/12/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0051	< 0.00050	< 0.00050	0.00068	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.010	< 0.00050	< 0.00050	0.0030	< 0.00050	< 0.00050	0.0017	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.0037	< 0.00050	< 0.00050	0.0022	< 0.00050
MW-21i-105	06/10/08	< 0.00200	< 0.00200	< 0.00200	< 0.00200	0.002	< 0.00200	< 0.00200	0.0158	< 0.00200	< 0.00200	0.0532	< 0.00200	< 0.00050	0.0251	< 0.00200
	09/18/08	< 0.00100	< 0.000500	< 0.000500	< 0.00100	0.00078	< 0.000500	< 0.000500	0.00542	< 0.000500	< 0.000500	0.00297	< 0.000500	< 0.00050	0.00177	< 0.000500
	12/11/08	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0022	< 0.00050	0.00088	0.061	< 0.00050	< 0.00050	0.033	0.00087	< 0.00050	0.017	< 0.00050
	03/26/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0014	< 0.00050	< 0.00050	0.061	< 0.00050	< 0.00050	0.00076	< 0.00050	< 0.00050	0.0007	< 0.00050
	06/17/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.076	< 0.00050	< 0.00050	0.0043	0.0006	< 0.00050	0.0034	< 0.00050
	09/17/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.073	< 0.00050	< 0.00050	0.011	0.00059	< 0.00050	0.0067	< 0.00050
	12/16/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.06	< 0.00050	< 0.00050	0.014	0.00065	< 0.00050	0.0093	< 0.00050
	03/18/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0017	< 0.00050	< 0.00050	0.06	< 0.00050	< 0.00050	0.006	0.00058	< 0.00050	0.0076	< 0.00050
	06/15/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0017	< 0.00050	0.00063	0.06	< 0.00050	< 0.00080	0.029	0.00084	< 0.00050	0.0220	< 0.00050
	09/22/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0017	< 0.0005	< 0.0005	0.075	< 0.0005	< 0.0005	0.0052	0.0006	< 0.00050	0.0051	< 0.0005
	12/08/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0020	< 0.0005	0.00052	0.072	< 0.0005	< 0.0005	0.0270	0.0009	< 0.00050	0.014	< 0.00050
	03/09/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0019	< 0.00050	0.00069	0.061	< 0.00050	< 0.00050	0.032	0.0011	< 0.00050	0.017	< 0.00050
	06/09/11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0016	< 0.0005	0.00061	0.063	< 0.0005	< 0.0005	0.029	0.0007	< 0.0005	0.017	< 0.0005
	09/15/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0019	< 0.00050	< 0.00050	0.088	< 0.00050	< 0.00050	0.012	0.00059	< 0.00050	0.012	< 0.00050
	12/08/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.073	< 0.00050	< 0.00050	0.015	0.00058	< 0.00050	0.0093	< 0.00050
	03/07/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.04	< 0.00050	< 0.00050	0.0056	< 0.00050	< 0.00050	0.0057	< 0.00050
	06/20/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001	< 0.0005	< 0.0005	0.05	< 0.0005	< 0.0005	0.0014	< 0.0005	< 0.0005	0.0030	< 0.0005
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00082	< 0.00050	< 0.00050	0.034	< 0.00050	< 0.00050	0.005	< 0.00050	< 0.00050	0.0063	< 0.00050
	12/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0014	< 0.00050	< 0.00050	0.060	0.0010	< 0.00050	0.013	< 0.00050	< 0.00050	0.015	< 0.00050
	03/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00090	< 0.00050	< 0.00050	0.042	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0037	< 0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-21i-105 (continued)	06/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00120	< 0.00050	< 0.00050	0.048	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0099	< 0.00050
	09/18/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.051	< 0.00050	< 0.00050	0.0028	< 0.00050	< 0.00050	0.0042	< 0.00050
	12/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0014	< 0.00050	< 0.00050	0.061	0.0016	< 0.00050	0.004	< 0.00050	< 0.00050	0.0054	< 0.00050
	3/20/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.052	< 0.00050	< 0.00050	0.0044	< 0.00050	< 0.00050	0.0068	< 0.00050
	6/25/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0058	< 0.00050	< 0.00050	0.0054	< 0.00050	< 0.00050	0.0033	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00094	< 0.00050	< 0.00050	0.037	< 0.00050	< 0.00050	0.0054	< 0.00050	< 0.00050	0.0096	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0066	< 0.00050	< 0.00050	0.0054	< 0.00050
	6/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.021	< 0.00050	< 0.00050	0.0035	< 0.00050	< 0.00050	0.0040	< 0.00050
MW-21i-40	09/18/08	< 0.00100	< 0.000500	< 0.000500	< 0.00100	0.00748	< 0.000500	0.00438	0.124	0.00077	< 0.000500	0.107	0.00201	< 0.000500	0.133	< 0.000500
	12/11/08	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0066	< 0.00050	0.0036	0.13	0.00084	< 0.00050	0.10	0.0016	< 0.00050	0.11	< 0.00050
	03/26/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0062	< 0.00050	0.0036	0.13	0.00063	< 0.00050	0.077	0.0013	< 0.00050	0.088	< 0.00050
	06/17/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0066	< 0.00050	0.0031	0.12	0.00079	< 0.00050	0.071	0.0015	< 0.00050	0.088	< 0.00050
	09/18/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0059	< 0.00050	0.0032	0.12	0.001	< 0.00050	0.075	0.0013	< 0.00050	0.092	0.00055
	12/16/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0057	< 0.00050	0.0026	0.12	0.001	< 0.00050	0.09	0.0012	< 0.00050	0.089	< 0.00050
	03/18/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0055	< 0.00050	0.0028	0.12	0.001	< 0.00050	0.084	0.0011	< 0.00050	0.091	< 0.00050
	06/15/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0054	< 0.00050	0.0024	0.12	0.001	< 0.00050	0.062	0.0012	< 0.00050	0.064	< 0.00050
	09/22/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0049	< 0.0005	0.0022	0.110	0.00073	< 0.0005	0.0680	0.001	< 0.0005	0.0750	< 0.0005
	12/08/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0051	< 0.0005	0.0023	0.110	0.00077	< 0.0005	0.0720	0.001	< 0.0005	0.0690	< 0.0005
	03/10/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0046	< 0.00050	0.0019	0.100	0.00064	< 0.00050	0.053	0.001	< 0.00050	0.057	< 0.00050
	06/09/11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0047	< 0.0005	0.0021	0.11	0.0007	< 0.0005	0.05	0.00096	< 0.0005	0.055	< 0.0005
	09/15/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.005	< 0.00050	0.0019	0.11	0.00065	< 0.00050	0.054	0.0011	< 0.00050	0.057	< 0.00050
	12/08/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0048	< 0.00050	0.0021	0.11	0.00066	< 0.00050	0.061	0.00096	< 0.00050	0.06	< 0.00050
	03/07/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.005	< 0.00050	0.0021	0.11	0.0008	< 0.00050	0.0740	0.0015	< 0.00050	0.0580	< 0.00050
	06/20/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.005	< 0.0005	0.0020	0.16	0.0008	< 0.0005	0.0190	0.0008	< 0.0005	0.0230	< 0.0005
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.005	< 0.00050	0.0018	0.11	0.00063	< 0.00050	0.05	0.0011	< 0.00050	0.048	< 0.00050
	12/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0053	< 0.00050	0.0020	0.12	0.00069	< 0.00050	0.074	0.0011	< 0.00050	0.053	< 0.00050
	03/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0046	< 0.00050	0.0018	0.12	0.00060	< 0.00050	0.043	0.00083	< 0.00050	0.042	< 0.00050
	06/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.048	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0099	< 0.00050
09/18/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0047	< 0.00050	0.0014	0.1	0.00053	< 0.00050	0.038	0.00068	< 0.00050	0.033	< 0.00050	
12/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0046	< 0.00050	0.0013	0.1	0.0010	< 0.00050	0.041	0.00073	< 0.00050	0.037	< 0.00050	

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-21i-40 (continued)	3/20/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0045	< 0.00050	0.0015	0.100	0.00061	< 0.00050	0.040	0.00076	< 0.00050	0.034	< 0.00050
	6/25/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0043	< 0.00050	0.0013	0.100	0.00051	< 0.00050	0.033	0.00065	< 0.00050	0.029	< 0.00050
	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0040	< 0.00050	0.0014	0.100	0.086	< 0.00050	0.031	0.00051	< 0.00050	0.032	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0042	< 0.00050	0.0014	0.100	0.00060	< 0.00050	0.030	0.00051	< 0.00050	0.032	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0038	< 0.00050	0.0015	0.102	0.00051	< 0.00050	0.044	< 0.00050	< 0.00050	0.037	< 0.00050
	6/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0027	< 0.00050	0.00076	0.062	< 0.00050	< 0.00050	0.025	< 0.00050	< 0.00050	0.022	< 0.00050
MW-22i	06/10/08	< 0.00100	< 0.00100	< 0.00100	< 0.00100	0.00102	< 0.00100	< 0.00100	0.03	< 0.00100	< 0.00100	0.0103	< 0.00100	< 0.00100	0.03	< 0.00100
	09/17/08	< 0.00100	< 0.000500	< 0.000500	< 0.00100	0.00748	< 0.000500	0.00438	0.124	0.00077	< 0.000500	0.107	0.00201	< 0.000500	0.133	< 0.000500
	12/11/08	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	0.00073	0.063	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.0068	< 0.00050
	03/25/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	0.00064	0.05	< 0.00050	< 0.00050	0.0025	< 0.00050	< 0.00050	0.014	< 0.00050
	06/16/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	0.00052	0.039	< 0.00050	< 0.00050	0.0085	< 0.00050	< 0.00050	0.024	< 0.00050
	09/17/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	0.00057	0.04	< 0.00050	< 0.00050	0.0033	< 0.00050	< 0.00050	0.021	< 0.00050
	12/15/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0008	< 0.00050	< 0.00050	0.028	< 0.00050	< 0.00050	0.0038	< 0.00050	< 0.00050	0.02	< 0.00050
	03/18/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0009	< 0.00050	< 0.00050	0.034	< 0.00050	< 0.00050	0.0026	< 0.00050	< 0.00050	0.016	< 0.00050
	06/14/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0006	< 0.00050	< 0.00050	0.017	< 0.00050	< 0.00050	0.004	< 0.00050	< 0.00050	0.018	< 0.00050
	09/22/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.00075	< 0.0005	< 0.0005	0.024	< 0.0005	< 0.0005	0.0036	< 0.0005	< 0.0005	0.0180	< 0.0005
	12/08/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.00073	< 0.0005	< 0.0005	0.021	< 0.0005	< 0.0005	0.0035	< 0.0005	< 0.0005	0.0180	< 0.0005
	03/11/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00067	< 0.00050	< 0.00050	0.017	< 0.00050	< 0.00050	0.0036	< 0.00050	< 0.00050	0.017	< 0.00050
	06/08/11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0006	< 0.0005	< 0.0005	0.018	< 0.0005	< 0.0005	0.0018	< 0.0005	< 0.0005	0.012	< 0.0005
	09/14/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00055	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.011	< 0.00050
	12/08/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00058	< 0.00050	< 0.00050	0.017	< 0.00050	< 0.00050	0.0025	< 0.00050	< 0.00050	0.014	< 0.00050
	03/06/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.01	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0130	< 0.00050
	06/20/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001	< 0.0005	< 0.0005	0.01	< 0.0005	< 0.0005	0.0019	< 0.0005	< 0.0005	0.0110	< 0.0005
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00052	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.0015	< 0.00050	< 0.00050	0.01	< 0.00050
	12/13/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.011	< 0.00050
	03/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0022	< 0.00050	< 0.00050	0.011	< 0.00050
06/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.014	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.0096	< 0.00050	
09/18/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.01	< 0.00050	< 0.00050	0.0021	< 0.00050	< 0.00050	0.011	< 0.00050	
12/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0093	< 0.00050	< 0.00050	0.0014	< 0.00050	< 0.00050	0.0082	< 0.00050	
3/19/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.010	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0096	< 0.00050	
6/25/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.009	< 0.00050	< 0.00050	0.0011	< 0.00050	< 0.00050	0.0057	< 0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-22i (continued)	9/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0088	< 0.00050	< 0.00050	0.0017	< 0.00050	< 0.00050	0.0098	< 0.00050
	12/10/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0092	< 0.00050	< 0.00050	0.0021	< 0.00050	< 0.00050	0.011	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0082	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.0087	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0086	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.0090	< 0.00050
MW-23i	06/10/08	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100
	06/10/08 DUP	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100
	09/17/08	< 0.00100	< 0.000500	< 0.000500	< 0.00100	< 0.000500	< 0.000500	< 0.000500	< 0.000500	< 0.000500	< 0.000500	< 0.000500	< 0.000500	< 0.000500	< 0.000500	< 0.000500
	12/09/08	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	03/25/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	06/16/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00054	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	09/16/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/15/09	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	03/17/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	07/02/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	09/22/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	12/08/10	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	03/09/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	06/08/11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	09/13/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/06/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	03/07/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	06/19/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	09/11/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00067	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
03/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	
06/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	
09/18/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	
12/11/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	
3/19/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	
6/25/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-23i (continued)	9/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/9/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MW-24i	10/01/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0033	< 0.00050	0.00094	0.052	< 0.00050	< 0.00050	0.052	0.0019	< 0.00050	0.029	< 0.00050
	12/10/10	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0035	< 0.00050	< 0.00050	0.00630	< 0.00050	< 0.00050	0.00200	< 0.00050
	03/14/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00088	< 0.00050	< 0.00050	0.015	< 0.00050	< 0.00050	0.023	0.001	< 0.00050	0.0074	< 0.00050
	06/07/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.002	< 0.00050	< 0.00050	0.0066	< 0.00050	< 0.00050	0.0014	< 0.00050
	09/16/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.013	< 0.00050	0.0025	0.27	0.0017	< 0.00050	0.027	0.0056	< 0.00050	0.024	0.019
	12/07/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0050	< 0.00050	0.00084	0.1	< 0.00050	< 0.00050	0.019	0.0029	< 0.00050	0.014	0.0075
	03/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.006	< 0.00050	< 0.00050	0.08	< 0.00050	< 0.00050	0.0300	0.0023	< 0.00050	0.0110	0.00
	06/22/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.002	< 0.00050	< 0.00050	0.01	< 0.00050	< 0.00050	0.0009	< 0.00050	< 0.00050	< 0.00050	0.00
	09/14/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0044	< 0.00050	0.00087	0.058	< 0.00050	< 0.00050	0.031	0.00079	< 0.00050	0.02	< 0.00050
	12/14/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0051	< 0.00050	< 0.00050	0.0021	< 0.00050	< 0.00050	0.00065	< 0.00050
	03/15/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0028	< 0.00050	< 0.00050	0.048	< 0.00050	< 0.00050	0.023	0.00057	< 0.00050	0.015	< 0.00050
	06/14/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0027	< 0.00050	< 0.00050	0.028	< 0.00050	< 0.00050	0.0062	< 0.00050	< 0.00050	0.0036	< 0.00080
	09/20/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.015	< 0.00050	< 0.00050	0.015	< 0.00050	< 0.00050	0.0059	< 0.00080
	12/16/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0084	< 0.00050	< 0.00050	0.0067	< 0.00050	< 0.00050	0.0034	< 0.00050
	3/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.010	< 0.00050	< 0.00050	0.0055	< 0.00080
	6/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0052	0.00210
	9/30/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.021	< 0.00050	< 0.00050	0.020	< 0.00050	< 0.00050	0.010	< 0.00050
12/15/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00060	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0024	< 0.00050	< 0.00050	0.0011	< 0.00050	
3/20/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00058	< 0.00050	< 0.00050	0.0059	< 0.00050	< 0.00050	0.0061	< 0.00050	< 0.00050	0.0031	< 0.00050	
6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0034	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	
MW-24d	09/14/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/09/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	03/08/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	06/21/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	09/14/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/14/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-24d (continued)	03/15/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	06/14/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	09/20/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/16/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0070	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050
	6/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0039	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	10/2/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0042	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/15/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0030	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0038	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0038	< 0.00050	< 0.00050	0.0038	< 0.00050	< 0.00050	0.0017
MW-25i	09/16/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/08/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	03/06/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	06/20/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	09/11/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	03/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	06/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	09/18/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/11/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/19/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	6/25/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	9/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	12/9/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
	3/17/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
6/16/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-26	09/16/11	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.007	< 0.0020	0.0022	0.12	0.0026	< 0.0020	0.25	0.0057	< 0.0020	0.49	< 0.0020
	12/08/11	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0071	< 0.0020	0.0025	0.11	0.0022	< 0.0020	0.3	0.0058	< 0.0020	0.5	< 0.0020
	03/06/12	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.008	< 0.0020	0.0022	0.10	< 0.0020	< 0.0020	0.2100	0.0046	< 0.0020	0.4500	< 0.0020
	06/19/12	< 0.002	< 0.002	< 0.002	< 0.002	0.014	< 0.002	0.0030	0.09	< 0.002	< 0.002	0.1600	0.0052	< 0.002	0.4600	< 0.002
	09/11/12	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0063	< 0.0020	0.0023	0.11	0.003	< 0.0020	0.28	0.0043	< 0.0020	0.46	< 0.0020
	12/12/12	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0056	< 0.0020	< 0.0020	0.12	0.0037	< 0.0020	0.30	0.0038	< 0.0020	0.47	< 0.0020
	03/13/13	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0049	< 0.0020	< 0.0020	0.083	< 0.0020	< 0.0020	0.21	0.0029	< 0.0020	0.39	< 0.0020
	06/12/13	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0082	< 0.0020	< 0.0020	0.080	< 0.0020	< 0.0020	0.17	0.0045	< 0.0020	0.36	< 0.0020
	09/18/13	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0057	< 0.0020	< 0.0020	0.096	0.0024	< 0.0020	0.21	0.0032	< 0.0020	0.41	< 0.0020
	12/11/13	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0078	< 0.0020	< 0.0020	0.075	< 0.0020	< 0.0020	0.15	0.0039	< 0.0020	0.37	< 0.0020
	3/19/2014	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0049	< 0.0020	< 0.0020	0.095	0.0021	< 0.0020	0.22	0.0029	< 0.0020	0.35	< 0.0020
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.0064	0.049	0.00086	<0.00050	0.15	0.0021	<0.00050	0.2	<0.00050
	9/24/2014	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0039	< 0.0020	< 0.0020	0.068	< 0.0020	< 0.0020	0.22	0.0031	< 0.0020	0.34	< 0.0020
	12/9/2014	<0.00090	<0.00090	<0.00090	<0.00090	0.0038	<0.00090	0.00096	0.055	0.0013	<0.00090	0.16	0.0028	<0.00090	0.28	<0.00090
	3/17/2015	<0.0010	<0.0010	<0.0010	<0.0010	0.0058	<0.0010	0.0017	0.076	0.0018	<0.0010	0.27	0.0037	<0.0010	0.46	<0.0010
	6/16/2015	<0.0017	<0.0017	<0.0017	<0.0017	0.0050	<0.0017	<0.0017	0.078	<0.0017	<0.0017	0.21	0.0028	<0.0017	0.39	<0.0017
MW-32s	03/24/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00579	<0.00050	--	<0.00050	<0.00050
	08/18/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	07/02/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/22/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/07/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-32s (continued)	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	<0.0005	0.00094	<0.0005	<0.0005	0.0011	<0.0005
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/21/12	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/11/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/11/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/16/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/19/2015	<0.00050	<0.00050	0.00077	<0.00050	0.0015	<0.00050	<0.00050	0.074	0.0025	<0.00050	<0.00050	0.0035	<0.00050	0.052	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-F	06/14/95	--	<0.010	<0.0050	<0.0050	<0.0050	0.005	<0.0050	0.015	<0.0050	--	<0.0050	<0.0050	--	<0.0050	<0.010
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000754	<0.00050	<0.00050	0.00599	<0.00050	<0.00050	0.000506	<0.0010	--	0.00118	<0.00050
	05/29/01	<0.0010	<0.0050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	0.00647	<0.00050	<0.00050	<0.00050	<0.0010	--	0.000585	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	0.00144	<0.00050	<0.00050	0.0179	<0.00050	<0.00050	<0.00050	<0.0010	--	0.000709	<0.00050
	03/18/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/31/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/28/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00112	0.00065	<0.00050	0.00954	<0.00050	<0.00050	<0.00050	<0.00050	--	0.00069	<0.00050
	11/08/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00115	0.00081	<0.00050	0.00986	<0.00050	<0.00050	<0.00050	<0.00050	--	0.00065	<0.00050
	01/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/29/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00111	0.00083	<0.00050	0.0106	<0.00050	<0.00050	<0.00050	<0.00050	--	0.00062	<0.00050
	11/10/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01/26/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/04/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-F (continued)	11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	03/24/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00087	0.00064	<0.00050	0.00831	<0.00050	<0.00050	0.00052	<0.00050	--	0.00074	<0.00050
	05/17/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/18/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	0.0005	0.00052	<0.00050	0.00593	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	0.001	0.001	<0.000500	0.00857	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00057	<0.000500
EW-1	04/25/91	--	<0.0020	--	--	0.035	0.02	--	0.75	--	--	9.1	0.28	--	0.44	0.0093
	11/17/93	--	<0.200	---	--	<0.100	<0.100	--	1.70	--	--	8.6	<0.100	--	0.48	<0.200
	09/01/95	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.14	<0.0250	<0.0250	2.4	0.074	--	0.34	<0.0500
	09/24/96	<0.0010	<0.0040	0.003	<0.0004	0.0085	0.0021	<0.00040	0.26	0.0062	<0.00040	0.049	0.034	--	0.029	0.089
	12/02/96	0.0007	<0.00050	0.0019	<0.00020	0.0057	0.005	0.001	0.53	0.0033	<0.00020	0.31	0.086	--	0.098	0.01
	11/12/97	<0.0025	<0.0050	<0.0025	<0.0025	0.00505	0.00338	<0.0025	0.0685	0.00491	<0.0025	0.111	0.0051	--	0.0474	0.0092
	08/11/99	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0145	<0.0050	<0.0050	0.369	<0.0100	--	0.0399	<0.0050
	11/16/99	<0.0050	<0.0125	<0.0025	<0.0050	<0.0025	0.00315	<0.0025	0.0417	0.003	<0.0025	0.314	0.0069	--	0.0355	0.0051
	02/29/00	<0.0020	<0.0100	<0.0010	<0.0010	<0.0010	0.00642	<0.0010	0.0137	<0.0010	<0.0010	0.0973	0.00348	--	0.0208	<0.0010
	06/27/00	<0.0020	<0.0100	0.00212	<0.0010	<0.0010	0.00642	<0.0010	0.0175	<0.0010	<0.0010	0.293	0.00537	--	0.0351	<0.0010
	08/31/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0319	<0.0025	<0.0025	0.325	<0.0050	--	0.0384	<0.0025
	01/30/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0456	<0.0025	<0.0025	0.38	0.00586	--	0.0539	<0.0025
	02/27/01	<0.0020	<0.0100	0.00142	<0.0010	0.00251	0.00283	<0.0010	0.035	<0.0010	<0.0010	0.24	0.00798	--	0.0475	0.00243
	05/29/01	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0224	<0.0050	<0.0050	0.338	<0.0100	--	0.0611	<0.0050
	09/25/01	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0050	0.32	0.0095	--	0.061	<0.0050
	12/17/01	<0.0020	<0.0100	<0.0010	<0.0010	0.00119	<0.0010	<0.0010	0.0258	<0.0010	<0.0010	0.217	0.0128	--	0.0471	<0.0010
	03/19/02	<0.0020	<0.0010	<0.0010	<0.0020	0.00104	<0.0010	<0.0010	0.0175	<0.0010	<0.0010	0.323	0.00566	--	0.0461	<0.0010
	05/30/02	<0.0020	<0.0010	0.00138	<0.0020	0.001	0.00168	<0.0010	0.0235	<0.0010	<0.0010	0.319	0.00646	--	0.0399	<0.0010
	08/29/02	<0.0020	<0.0010	0.00136	<0.0020	0.00244	0.00124	<0.0010	0.0204	<0.0010	<0.0010	0.307	0.00338	--	0.0378	<0.0010
	11/08/02	<0.0020	<0.0010	0.00146	<0.0020	0.00302	0.00396	<0.0010	0.0284	<0.0010	<0.0010	0.274	0.00554	--	0.0502	<0.0010
	01/23/03	<0.0020	<0.0010	0.00136	<0.0020	0.00234	<0.0010	<0.0010	0.017	<0.0010	<0.0010	0.252	0.00506	--	0.0519	<0.0010
	05/30/03	<0.0020	<0.0010	0.00522	<0.0020	<0.0010	<0.0010	<0.0010	0.00612	<0.0010	<0.0010	0.255	0.00506	--	0.0411	<0.0010
11/10/03	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.009	<0.0050	<0.0050	0.0858	<0.0050	--	0.0162	<0.0050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
EW-1 (continued)	01/27/04	<0.0010	<0.00050	0.00207	<0.0010	0.00087	0.00078	<0.00050	0.0052	<0.00050	<0.00050	0.151	0.00426	--	0.0376	<0.00050
	05/04/04	<0.0010	<0.0010	0.00473	<0.0010	<0.0010	0.00125	<0.0010	0.00436	<0.0010	<0.0010	0.168	0.00309	--	0.0308	<0.0010
	08/17/04	<0.0010	<0.00050	0.00376	<0.00050	0.00081	0.00186	<0.00050	0.00683	<0.00050	<0.00050	0.144	0.00173	--	0.0232	<0.00050
	11/17/04	<0.0025	<0.0025	0.004	<0.0025	<0.0025	<0.0025	<0.0025	0.0096	<0.0025	<0.0025	0.18	0.0036	--	0.033	<0.0025
	05/18/05	<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00828	<0.0010	<0.0010	0.207	<0.0010	--	0.0232	0.0023
	11/14/05	<0.00200	<0.00100	0.00106	<0.00200	0.00136	0.0027	<0.00100	0.0111	<0.00100	<0.00100	0.187	<0.00100	--	0.0261	<0.00100
	06/05/06	<0.00100	<0.00100	0.00240	<0.00100	<0.00100	<0.00100	<0.00100	0.00618	<0.00100	<0.00100	0.102	0.00355	--	0.0191	<0.00100
	12/06/06	<0.00100	<0.00050	0.00207	<0.00100	0.00113	<0.00050	<0.00050	0.00898	<0.00050	<0.00050	0.133	0.0021	--	0.0283	<0.00050
	09/12/07	<0.00100	<0.00050	0.00266	<0.00100	0.00051	0.00114	<0.00050	0.00628	<0.00050	<0.00050	0.0769	0.00147	--	0.0183	<0.00050
	03/06/08	<0.00100	<0.000500	0.00171 J	<0.00100	0.00064	0.00104	<0.000500	0.00575	<0.000500	<0.000500	0.0809	0.00145	<0.000500	0.0199	<0.000500
	09/19/08	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	<0.00250	0.0146	<0.00250	<0.00250	0.0861	<0.00250	<0.00250	0.0208	<0.00250
	03/26/09	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	0.00076	<0.00050	0.0038	<0.00050	<0.00050	0.081	0.001	<0.00050	0.014	<0.00050
	09/17/09	<0.00050	<0.00050	0.0034	<0.00050	0.00063	<0.00050	<0.00050	0.0083	<0.00050	<0.00050	0.1	0.00074	<0.00050	0.017	<0.00050
	03/19/10	<0.00050	<0.00050	0.0035 BE	<0.00050	<0.00050	<0.00050	0.00052	0.0041	<0.00050	<0.00050	0.089	0.00150	<0.00050	0.022	<0.00050
	09/23/10	<0.00050	<0.00050	0.0017 BE	<0.00050	0.00086	0.00094	<0.00050	0.010	<0.00050	<0.00050	0.087	0.00064	<0.00050	0.017	<0.00050
	03/10/11	<0.00050	<0.00050	0.0052	<0.00050	<0.00050	<0.00050	<0.00050	0.003	<0.00050	<0.00050	0.067	0.00089	<0.00050	0.013	<0.00050
	09/16/11	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.075	0.00069	<0.00050	0.0099	<0.00050
	03/12/12	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	0.0520	0.0007	<0.00050	0.0130	<0.00050
	09/13/12	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.06	0.00058	<0.00050	0.0086	<0.00050
	03/15/12	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.078	0.00063	<0.00050	0.012	<0.00050
09/19/13	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	<0.00050	<0.00050	0.0053	<0.00050	<0.00050	0.063	0.00057	<0.00050	0.014	<0.00050	
3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.032	0.0016	<0.00050	0.012	<0.00050	
9/27/2014	Insufficient water for sampling during monitoring event.															
S-1	08/10/99	<0.0010	<0.0050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00263	<0.00050	<0.00050	0.00781	0.0013	--	0.0206	<0.00050
	02/29/00	<0.0010	<0.0050	<0.00050	<0.00050	0.000761	<0.00050	<0.00050	0.00221	<0.00050	<0.00050	0.0606	0.00298	--	0.0244	<0.00050
	06/28/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	0.0027	0.0582	<0.0025	<0.0025	0.749	0.0145	--	0.232	<0.0025
	08/31/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.00498	<0.0025	<0.0025	0.313	0.00514	--	0.0604	<0.0025
	11/30/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00161	<0.00050	<0.00050	0.00978	0.00195	--	0.0298	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.000551	0.00166	<0.00050	<0.00050	0.0135	0.00226	--	0.0452	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000974	<0.00050	<0.00050	0.00738	<0.0010	--	0.0126	<0.00050
	09/25/01	<0.0025	<0.0025	<0.0025	<0.0025	0.0026	<0.0025	0.004	0.0027	<0.0025	<0.0025	0.039	0.018	--	0.21	<0.0025

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
S-1 (continued)	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00421	<0.00050	--	0.00373	<0.00050
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00845	<0.00050	--	0.0104	<0.00050
	11/07/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00234	<0.00050	<0.00050	0.00871	0.00102	--	0.0197	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00078	<0.00050	<0.00050	0.00615	0.00056	--	0.013	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0022	<0.000500	--	0.00867	<0.00050
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00185	<0.0010	<0.0010	0.00422	<0.0010	--	0.0132	<0.0010
	01/26/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00657	0.001	--	0.0155	<0.00050
	05/04/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00117	<0.0010	<0.0010	0.00407	<0.0010	--	0.0106	<0.0010
	11/15/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0028	<0.00050	<0.00050	0.0084	0.00082	--	0.018	<0.00050
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00075	<0.00050	<0.00050	0.00189	<0.00050	--	0.00287	<0.00050
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00224	<0.00050	<0.00050	0.00373	<0.00050	--	0.00839	<0.00050
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00363	<0.00100	<0.00100	0.00402	<0.00100	--	0.00685	<0.00100
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00461	<0.00050	<0.00050	0.00487	<0.00050	--	0.00844	<0.00050
	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00515	<0.000500	<0.000500	<0.000500	0.00414	<0.000500	<0.000500	<0.000500
	06/25/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00167	<0.00100	<0.00100	<0.00100	0.00137	<0.00100	<0.00100	<0.00100
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00555	<0.000500	<0.000500	0.00281	<0.000500	<0.000500	0.00607	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	0.0014	<0.00050
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0027	<0.00050
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00091	<0.00050	<0.00050	0.00081	<0.00050	<0.00050	0.0018	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.005	<0.00050
12/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.0061	<0.00050	
03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.001	<0.00050	
07/02/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0015	<0.0005	
12/08/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	0.0008	<0.0005	<0.0005	0.0030	<0.0005	
03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	
06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	
09/14/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.004	<0.00050	
12/06/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0031	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
S-1 (continued)	03/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00	< 0.00050	< 0.00050	0.0007	< 0.00050	< 0.00050	0.0018	< 0.00050
	06/21/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.00	< 0.0005	< 0.0005	0.0009	< 0.0005	< 0.0005	0.0035	< 0.0005
	09/14/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00088	< 0.00050	< 0.00050	0.00088	< 0.00050	< 0.00050	0.0026	< 0.00050
	12/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.00096	< 0.00050	< 0.00050	0.0038	< 0.00050
	03/13/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00078	< 0.00050	< 0.00050	0.0015	< 0.00050
	06/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00074	< 0.00050	< 0.00050	0.0022	< 0.00050
	09/20/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.0018	< 0.00050	< 0.00050	0.0054	< 0.00050
	12/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0051	< 0.00050
	3/20/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0010	< 0.00050
	6/24/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00082	< 0.00050	< 0.00050	0.0021	< 0.00050
	9/27/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0043	< 0.00050
	12/9/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0014	< 0.00050	< 0.00050	0.0013	< 0.00050	< 0.00050	0.0049	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00073	< 0.00050	< 0.00050	0.0014	< 0.00050
	6/16/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050
	S-2	08/11/99	<0.0010	<0.0050	<0.00050	<0.00050	0.00237	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.0010	--	0.000843
11/15/04		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00052	<0.00050	<0.00050	0.0044	<0.00050	--	0.0016	<0.00050
12/12/12		<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
03/13/13		<0.00050	<0.00050	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
06/12/13		<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
09/20/13		<0.00050	<0.00050	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0033	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
12/12/13		<0.00050	<0.00050	<0.00050	<0.00050	0.003	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
3/20/2014		<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
6/24/2014		<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
9/27/2014		<0.00050	<0.00050	<0.00050	<0.00050	0.0045	<0.00050	<0.00050	0.0047	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
12/9/2014		<0.00050	<0.00050	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0046	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0045	<0.00050	<0.00050	0.0055	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
6/16/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
MGMS1-3(43)	06/28/00	<0.0500	<0.250	<0.0250	<0.0250	0.278	<0.0250	0.0559	4.27	<0.0250	<0.0250	0.734	<0.0500	--	1.84	<0.0250
	08/30/00	<0.200	<0.001	<0.100	<0.100	0.42	<0.100	0.116	8.85	<0.100	<0.100	5.94	<0.200	--	3.04	<0.100
	11/29/00	<0.100	<0.500	<0.0500	<0.0500	0.249	<0.0500	0.0762	4.56	<0.0500	<0.0500	1.21	<0.100	--	1.14	<0.0500

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-3(43) (continued)	02/27/01	<0.100	<0.500	<0.0500	<0.0500	0.697	<0.0500	0.164	14.0	<0.0500	<0.0500	0.148	<0.100	--	1.39	0.133
	05/31/01	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	5.87	<0.0500	<0.0500	0.13	<0.100	--	0.599	<0.0500
	09/24/01	<0.013	<0.013	<0.013	<0.013	0.15	<0.013	0.032	4.70	<0.013	<0.013	0.31	<0.013	--	0.45	0.025
	12/18/01	<0.0500	<0.250	<0.0250	<0.0250	0.153	<0.0250	0.0333	3.60	<0.0250	<0.0250	0.276	<0.0500	--	0.568	<0.0250
	03/19/02	<0.100	<0.0500	<0.0500	<0.100	0.31	<0.0500	0.103	6.70	<0.0500	<0.0500	2.09	<0.0500	--	1.72	0.086
	05/29/02	<0.0500	<0.0250	<0.0250	<0.0500	0.188	<0.0250	0.039	4.70	<0.0250	<0.0250	0.47	<0.0250	--	0.624	0.0375
	08/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00372	<0.00050	0.00084	0.0947	0.00054	<0.00050	0.0349	0.00075	--	0.0357	0.00146
	11/11/02	<0.100	<0.0500	<0.0500	<0.100	0.183	<0.0500	<0.0500	4.81	<0.0500	<0.0500	0.757	<0.0500	--	0.831	0.051
	01/23/03	<0.100	<0.0500	<0.0500	<0.100	0.378	<0.0500	0.076	10.5	<0.0500	<0.0500	0.782	<0.0500	--	1.29	0.109
	05/28/03	<0.100	<0.0500	<0.0500	<0.100	0.402	<0.0500	0.072	9.51	<0.0500	<0.0500	0.27	<0.0500	--	0.841	0.114
	11/11/03	<0.0500	<0.0500	<0.0500	<0.0500	0.252	<0.0500	<0.0500	9.71	<0.0500	<0.0500	0.516	<0.0500	--	1.02	0.058
	01/27/04	<0.0500	<0.0250	<0.0250	<0.0500	0.29	<0.0250	0.0545	8.16	0.0535	<0.0250	0.393	<0.0250	--	0.808	0.095
	05/03/04	<0.100	<0.100	<0.100	<0.100	0.37	<0.100	<0.100	12.3	<0.100	<0.100	0.83	<0.100	--	1.52	0.111
	08/17/04	<0.100	<0.0500	<0.0500	<0.100	0.401	<0.0500	0.114	12.7	0.109	<0.0500	1.54	<0.0500	--	2.34	0.151
	11/15/04	<0.120	<0.120	<0.120	<0.120	0.27	<0.120	<0.120	9.60	<0.120	<0.120	1.40	<0.120	--	1.60	<0.120
	03/24/05	<0.100	<0.0500	<0.0500	<0.100	0.481	<0.0500	0.148	15.6	0.135	<0.0500	1.39	<0.0500	--	2.09	0.266
	05/16/05	<0.0500	<0.0250	<0.0250	<0.0500	0.327	<0.0250	0.089	9.7	0.083	<0.0250	0.802	<0.0250	--	1.41	0.157
	05/17/05	<0.100	<0.0500	<0.0500	<0.100	0.353	<0.0500	0.086	10.6	0.094	<0.0500	0.92	<0.0500	--	1.66	0.173
	11/17/05	<0.100	<0.0500	<0.0500	<0.100	0.392	<0.0500	0.121	13.4	0.133	<0.0500	1.31	<0.0500	--	2.28	0.186
	06/06/06	<0.100	<0.100	<0.100	<0.100	0.385	<0.100	<0.100	11.8	0.115	<0.100	0.628	<0.100	--	1.37	0.192
	12/06/06	<0.100	<0.0500	<0.0500	<0.100	0.256	<0.0500	0.072	10.0	0.092	<0.0500	0.843	<0.0500	--	1.26	0.155
	05/22/07	<0.100	<0.100	<0.100	<0.100	0.439	<0.100	0.119	14.2	0.152	<0.100	0.91	<0.100	--	1.92	0.245
	09/11/07	<0.100	<0.050	<0.050	<0.100	0.303	<0.0500	0.109	11.7	0.128	<0.050	1.10	<0.050	--	2.06	0.189
	12/12/07	<0.100	<0.0500	<0.0500	<0.100	0.27	<0.0500	0.075	8.74	0.093	<0.0500	1.01	<0.0500	--	1.54	0.167
	03/05/08	<0.0500	<0.0250	<0.0250	<0.0500	0.37	<0.0250	0.128	6.74	0.22	<0.0250	1.48	0.036	<0.0250	2.35	0.234
	09/16/08	<0.100	<0.0500	<0.0500	<0.100	0.302	<0.0500	0.112	10.4	0.139	<0.0500	2.70	<0.0500	<0.0500	2.50	0.171
	12/08/08	<0.0040	<0.0040	<0.0040	<0.0040	0.19	<0.0040	0.063	6.00	0.078	<0.0040	1.30	0.019	<0.0040	1.20	0.10
03/25/09	<0.015	<0.015	<0.015	<0.015	0.11	<0.015	0.066	3.50	0.034	<0.015	3.60	0.049	<0.015	2.10	0.049	
09/15/09	<0.015	<0.015	<0.015	<0.015	0.14	<0.015	0.074	4.2	0.045	<0.015	4.3	0.044	<0.015	2.3	0.084	
12/14/09	<0.015	<0.015	<0.015	<0.015	0.14	<0.015	0.046	4	0.055	<0.015	1.5	0.015	<0.015	1.1	0.067	
03/17/10	<0.015	<0.015	<0.015	<0.015	0.16	<0.015	0.063	4.6	0.044	<0.015	2.8	0.032	<0.015	1.9	0.078	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-3(43) (continued)	06/14/10	<0.025	<0.025	<0.025	<0.025	0.22	<0.025	0.046	5.4	0.069	<0.025	0.79	<0.025	<0.025	0.9	0.085
	09/21/10	<0.015	<0.015	<0.015	<0.015	0.130	<0.015	0.055	3.8	0.043	<0.015	2.9	0.037	<0.015	1.9	0.068
	12/07/10	<0.015	<0.015	<0.015	<0.015	0.190	<0.015	0.063	5.500	0.069	<0.015	2.5	0.023	<0.015	1.8	0.096
	03/08/11	<0.020	<0.020	<0.020	<0.020	0.170	<0.020	0.052	4.6	0.056	<0.020	1.4	<0.020	<0.020	1.3	0.086
	06/06/11	<0.015	<0.015	<0.015	<0.015	0.19	<0.015	0.036	4.7	0.071	<0.015	0.61	<0.015	<0.015	0.79	0.097
	09/13/11	< 0.02	< 0.02	< 0.02	< 0.02	0.29	< 0.02	0.078	8	0.16	< 0.02	0.9	< 0.02	< 0.02	1.8	0.16
	03/08/12	<0.0040	<0.040	<0.040	<0.040	0.340	<0.040	0.0620	9.50	0.1500	<0.040	0.2400	<0.040	<0.040	0.6900	0.89
	06/21/12	< 0.020	< 0.020	< 0.020	< 0.020	0.220	< 0.020	0.0250	4.40	0.0760	< 0.020	0.0740	< 0.020	< 0.020	0.2600	1.10
	09/12/12	< 0.02	< 0.02	< 0.02	< 0.02	0.28	< 0.02	0.072	8.8	0.18	< 0.02	0.36	< 0.02	< 0.02	0.97	0.89
	12/11/12	< 0.02	< 0.02	< 0.02	< 0.02	0.22	< 0.02	0.040	6.1	0.11	< 0.02	0.16	< 0.02	< 0.02	0.43	0.68
	03/12/13	<0.02	<0.02	<0.02	<0.02	0.22	<0.02	0.021	4.7	0.074	<0.02	0.11	<0.02	<0.02	0.34	1.6
	06/11/13	<0.02	<0.02	<0.02	<0.02	0.19	<0.02	<0.02	3.9	0.056	<0.02	0.078	<0.02	<0.02	0.26	1.1
	09/17/13	<0.015	<0.015	<0.015	<0.015	0.19	<0.015	0.021	4.6	0.066	<0.015	0.1	<0.015	<0.015	0.35	1.1
	12/10/13	<0.015	<0.015	<0.015	<0.015	0.21	<0.015	0.018	3.6	0.054	<0.015	0.095	<0.015	<0.015	0.27	1.8
	3/18/2014	<0.020	<0.020	<0.020	<0.020	0.15	<0.020	<0.020	3.6	0.040	<0.020	0.093	<0.020	<0.020	0.26	0.44
	6/26/2014	<0.007	<0.007	<0.007	<0.007	0.12	<0.007	0.014	2	0.014	<0.007	0.021	<0.007	<0.007	0.057	0.48
	9/23/2014	<0.015	<0.015	<0.015	<0.015	0.19	<0.015	0.035	4.7	0.069	<0.015	0.12	<0.015	<0.015	0.42	0.55
	12/12/2014	<0.007	<0.007	<0.007	<0.007	0.20	<0.007	0.023	4.0	0.052	<0.0070	0.10	<0.007	<0.007	0.35	0.81
3/19/2015	<0.0125	<0.0125	<0.0125	<0.0125	0.13	<0.0125	<0.0125	2.5	0.017	<0.0125	0.03	<0.0125	<0.0125	0.13	0.25	
6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	0.059	<0.00050	<0.00050	0.00084	<0.00050	<0.00050	0.0028	0.0031	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-2(60)	06/28/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0536	<0.0050	<0.0050	0.369	<0.0050	<0.0050	0.658	0.0197	--	0.24	<0.0050
	08/30/00	<0.0200	<0.100	<0.0100	<0.0100	0.0217	<0.0100	0.0131	0.267	<0.0100	<0.0100	2.59	0.108	--	0.586	<0.0100
	11/29/00	<0.0020	<0.0100	<0.0010	<0.0010	0.00158	<0.0010	0.00109	0.0577	<0.0010	<0.0010	0.121	0.00458	--	0.0403	<0.0010
	02/27/01	<0.0010	<0.0050	<0.0005	<0.0005	0.000838	<0.0005	0.000686	0.0329	<0.0005	<0.0005	0.0546	0.00206	--	0.0247	<0.0005
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000662	<0.00050	0.000581	0.039	<0.00050	<0.00050	0.0694	<0.0010	--	0.0278	0.00052
	09/24/01	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.089	<0.013	<0.013	0.83	0.014	--	0.15	<0.013
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0204	<0.00050	<0.00050	0.0128	<0.0010	--	0.0157	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00252	<0.00050	0.00099	0.068	<0.00050	<0.00050	0.0629	0.0012	--	0.034	0.00348
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00078	<0.00050	<0.00050	0.0228	<0.00050	<0.00050	0.0234	<0.00050	--	0.0142	0.0006
	08/29/02	<0.0100	<0.0050	<0.0050	<0.0100	0.0306	<0.0050	0.0051	0.661	<0.0050	<0.0050	0.138	<0.0050	--	0.116	<0.0050
	11/11/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00299	<0.00050	0.00083	0.086	<0.00050	<0.00050	0.0382	0.00116	--	0.0389	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00153	<0.00050	0.00074	0.0426	<0.00050	<0.00050	0.0428	0.00078	--	0.0342	0.00104
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00287	<0.00050	0.00121	0.072	<0.00050	<0.00050	0.0511	0.00118	--	0.0476	0.00063
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	0.00184	<0.0010	<0.0010	0.0488	<0.0010	<0.0010	0.0459	<0.0010	--	0.036	<0.0010
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.00206	<0.00050	0.00106	0.0723	0.00069	<0.00050	0.0409	0.00066	--	0.0431	0.00063
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	0.00407	<0.0010	0.00122	0.0707	<0.0010	<0.0010	0.0548	0.00136	--	0.0435	0.00253
	08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.00068	0.039	<0.00050	<0.00050	0.031	<0.00050	--	0.028	0.00067
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00131	<0.00050	<0.00050	0.0375	0.00056	<0.00050	0.0332	<0.00050	--	0.0217	0.0013
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	<0.00050	0.0406	<0.00050	<0.00050	0.0217	<0.00050	--	0.0198	<0.00050
	05/16/05 DUP	<0.0010	<0.00050	<0.00050	<0.0010	0.00102	<0.00050	<0.00050	0.0421	<0.00050	<0.00050	0.0214	<0.00050	--	0.0205	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00728	<0.000500	0.00241	0.145	0.0012	<0.000500	0.0765 B	0.00146	--	0.0656	0.00516 B
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00253	<0.000500	0.00099	0.087	0.00059	<0.000500	0.0348	<0.000500	--	0.0264	0.00093
	02/20/06	<0.00100	<0.000500	<0.000500	<0.00100	0.00617	<0.000500	0.00193	0.136	0.0011	<0.000500	0.0619	0.00093	--	0.0455	0.00417
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00102	<0.00100	<0.00100	0.0337	<0.00100	<0.00100	0.0234	<0.00100	--	0.0187	<0.00100
	09/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00537	<0.00050	0.00175	0.115	0.00084	<0.00050	0.0559	0.0008	--	0.0375	0.00479
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00339	<0.00050	0.00112	0.0909	0.00062	<0.00050	0.0395	<0.00050	--	0.0283	0.00215
02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00437	<0.00050	0.00137	0.116	0.00093	<0.00050	0.0559	0.00058	--	0.0407	0.003	
05/22/07	<0.00100	<0.00100	<0.00100	<0.00100	0.00118	<0.00100	<0.00100	0.0385	<0.00100	<0.00100	0.0316	<0.00100	--	0.0252	<0.00100	
09/11/07	<0.00500	<0.00250	<0.00250	<0.00500	0.0266	<0.00250	0.00875	0.711	0.0072	<0.00250	0.0814	0.00295	--	0.216	0.0119	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-2(60) (continued)	12/12/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00183	<0.00050	0.00079	0.0649	0.00065	<0.00050	0.0281	<0.00050	--	0.0249	0.00067
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00665	<0.000500	0.00	0.166	0.00292	<0.000500	0.0754	0.00081	<0.000500	0.0605	0.00279
	09/16/08	<0.00500	<0.00250	<0.00250	<0.00250	0.0055	<0.00250	<0.00250	0.16	<0.00250	0.0388	<0.00250	<0.00250	<0.00250	0.0655	<0.00250
	12/08/08	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	0.0012	0.088	0.0011	<0.00050	0.04	0.00051	<0.00050	0.038	0.0013
	12/08/08 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.0039	<0.00050	0.0012	0.084	0.0011	<0.00050	0.042	0.00052	<0.00050	0.038	0.0013
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	0.0013	0.071	0.00075	<0.00050	0.04	0.00065	<0.00050	0.037	0.00054
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	0.0008	0.047	0.0009	<0.00050	0.026	<0.00050	<0.00050	0.03	0.00055
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	0.00082	0.044	0.00058	<0.00050	0.042	<0.00050	<0.00050	0.03	0.00082
	12/14/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.016	<0.00050
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	0.00096	0.061	0.00068	<0.00050	0.04	0.00051	<0.00050	0.038	<0.00050
	06/14/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.02	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.015	<0.00050
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0021	<0.0005	0.00057	0.046	<0.0005	<0.0005	0.042	<0.0005	<0.0005	0.032	0.0008
	12/07/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.016	<0.0005	<0.0005	0.019	<0.0005	<0.0005	0.015	<0.0005
	03/08/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	0.019	<0.00050	<0.00050	0.027	<0.00050	<0.00050	0.016	<0.00050
	06/06/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0083	<0.0005	<0.0005	0.016	<0.0005	<0.0005	0.011	<0.0005
	09/13/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	0.00073	0.042	0.0005	<0.00050	0.042	0.00089	<0.00050	0.03	0.00074
	12/06/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.033	<0.00050	<0.00050	0.022	0.00060
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.0360	<0.00050	<0.00050	0.0210	<0.00050
	06/19/12	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.0005	0.03	<0.0005	<0.0005	0.0220	<0.0005	<0.0005	0.0160	<0.0005
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	0.00066	0.036	<0.00050	<0.00050	0.033	<0.00050	<0.00050	0.02	0.0011
	12/11/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.020	<0.00050	<0.00050	0.019	<0.00050	<0.00050	0.011	<0.00050
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	0.00056	0.038	<0.00050	<0.00050	0.035	<0.00050	<0.00050	0.020	0.00066
	06/11/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00066	<0.00050	<0.00050	0.029	<0.00050	<0.00050	0.027	<0.00050	<0.00050	0.018	<0.00050
	09/17/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00089	<0.00050	<0.00050	0.02	<0.00050	<0.00050	0.032	<0.00050	<0.00050	0.016	0.00054
	12/10/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.011	<0.00050
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0058	<0.00050
	6/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00100	<0.00050	<0.00050	0.0330	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.02	<0.00050
	9/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.020	0.012
12/12/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.020	<0.00050	<0.00050	0.014	<0.00050	
3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.023	<0.00050	<0.00050	0.016	<0.00050	
6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.0091	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-1(110)	06/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00378	<0.00050	<0.00050	0.0039	<0.0010	--	0.00335	<0.00050
	08/30/00	<0.0050	<0.0250	<0.0025	<0.0025	0.0037	<0.0025	0.00332	0.055	<0.0025	<0.0025	0.51	0.024	--	0.13	<0.0025
	11/29/00	<0.0050	<0.0250	<0.0025	<0.0025	0.00421	<0.0025	0.00459	0.051	<0.0025	<0.0025	0.583	0.0232	--	0.166	<0.0025
	02/27/01	<0.0050	<0.0250	<0.0025	<0.0025	0.00521	<0.0025	0.00339	0.0475	<0.0025	<0.0025	0.385	0.0165	--	0.105	<0.0025
	05/31/01	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0558	<0.0050	<0.0050	0.639	0.0138	--	0.141	<0.0050
	09/24/01	<0.0013	<0.0013	<0.0013	<0.0013	0.0061	<0.0013	0.0029	0.057	<0.0013	<0.0013	0.58	0.02	--	0.12	<0.0013
	12/18/01	<0.0050	<0.0250	<0.0025	<0.0025	0.00504	<0.0025	0.00268	0.0548	<0.0025	<0.0025	0.527	0.0202	--	0.131	<0.0025
	03/19/02	<0.0050	<0.0025	<0.0025	<0.0050	0.00525	<0.0025	<0.0025	0.054	<0.0025	<0.0025	0.454	0.0108	--	0.098	<0.0025
	05/29/02	<0.0050	<0.0025	<0.0025	<0.0050	0.0049	<0.0025	<0.0025	0.0623	<0.0025	<0.0025	0.299	0.0097	--	0.0651	<0.0025
	08/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00543	<0.00050	0.00132	0.11	0.0008	<0.00050	0.0602	0.00362	--	0.0478	<0.00050
	11/11/02	<0.0020	<0.0010	<0.0010	<0.0020	0.00474	<0.0010	0.0012	0.0461	<0.0010	<0.0010	0.208	0.00784	--	0.0661	<0.0010
	01/23/03	<0.0020	<0.0010	<0.0010	<0.0020	0.00444	<0.0010	0.00124	0.0653	<0.0010	<0.0010	0.21	0.00654	--	0.0741	<0.0010
	05/28/03	<0.0020	<0.0010	<0.0010	<0.0020	0.00396	<0.0010	<0.0010	0.0692	<0.0010	<0.0010	0.109	0.00248	--	0.0575	<0.0010
	11/11/03	<0.0020	<0.0020	<0.0020	<0.0020	0.00414	<0.0020	<0.0020	0.0448	<0.0020	<0.0020	0.256	0.0036	--	0.0602	<0.0020
	01/27/04	<0.0020	<0.0010	<0.0010	<0.0020	0.00422	<0.0010	0.0011	0.0671	<0.0010	<0.0010	0.167	0.00416	--	0.0697	<0.0010
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	0.00366	<0.0010	<0.0010	0.0472	<0.0010	<0.0010	0.19	0.00218	--	0.0559	<0.0010
	11/15/04	<0.0025	<0.0025	<0.0025	<0.0025	0.0037	<0.0025	<0.0025	0.095	<0.0025	<0.0025	0.076	<0.0025	--	0.064	<0.0025
	06/20/05	<0.0020	<0.0010	<0.0010	<0.0020	0.00922	<0.0010	0.00258	0.283	0.0018	<0.0010	0.0236	0.00162	--	0.07	0.00124
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00293	<0.000500	<0.000500	0.0513	<0.000500	<0.000500	0.102	0.00195	--	0.0761	<0.000500
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00215	<0.00100	<0.00100	0.044	<0.00100	<0.00100	0.0944	0.00136	--	0.0668	<0.00100
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00581	<0.00050	0.0006	0.142	<0.00050	<0.00050	0.0538	0.00088	--	0.0746	0.00057
	09/11/07	<0.00200	<0.00100	<0.00100	<0.00200	0.00378	<0.00100	0.0012	0.189	<0.00100	<0.00100	0.0316	<0.00100	--	0.0611	<0.00100
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00373	<0.000500	0.00091	0.242	0.00237	<0.000500	0.0327	0.00064	<0.000500	0.0444	<0.000500
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	0.00087	0.16	0.0009	<0.00050	0.025	<0.00050	<0.00050	0.039	<0.00050
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	0.00074	0.13	0.001	<0.00050	0.024	<0.00050	<0.00050	0.039	<0.00050
	09/15/09	<0.0025	<0.0025	<0.0025	<0.0025	0.02	<0.0025	0.0027	0.62	0.004	<0.0025	0.024	<0.0025	<0.0025	0.075	<0.0025
	03/17/10	<0.0025	<0.0025	<0.0025	<0.0025	0.02	<0.0025	0.0043	0.72	0.004	<0.0025	0.02	<0.0025	<0.0025	0.079	<0.0025
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0025	<0.0005	0.0011	0.1500	0.001	<0.0005	0.028	<0.0005	<0.0005	0.053	<0.0005
	03/10/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	0.00057	0.083	0.00052	<0.00050	0.026	<0.00050	<0.00050	0.031	<0.00050
	09/13/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	0.0012	0.11	0.00096	<0.00050	0.03	<0.00050	<0.00050	0.059	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-1(110) (continued)	03/08/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.06	< 0.00050	< 0.00050	0.0220	< 0.00050	< 0.00050	0.0210	< 0.00050
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00093	< 0.00050	0.00053	0.06	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.025	< 0.00050
	03/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00095	< 0.00050	< 0.00050	0.065	< 0.00050	< 0.00050	0.023	< 0.00050	< 0.00050	0.024	< 0.00050
	09/17/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0011	< 0.00050	0.00056	0.068	< 0.00050	< 0.00050	0.026	< 0.00050	< 0.00050	0.032	< 0.00050
	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0012	< 0.00050	< 0.00050	0.063	< 0.00050	< 0.00050	0.023	< 0.00050	< 0.00050	0.027	0.00065
	9/24/2014	Not sampled; 60 foot port accidentally sampled twice.														
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0027	< 0.00050	0.00069	0.13	< 0.00050	< 0.00050	0.024	< 0.00050	< 0.00050	0.0415	0.00082
MGMS2-4(40)	06/28/00	<0.0500	<0.250	<0.0250	<0.0250	0.0449	<0.0250	<0.0250	1.21	<0.0250	<0.0250	5.03	0.215	--	3.09	<0.0250
	08/30/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0234	<0.0050	0.0313	0.644	0.00728	<0.0050	2.98	0.152	--	1.85	<0.0050
	11/29/00	<0.100	<0.500	<0.0500	<0.0500	0.0513	<0.0500	0.094	1.42	<0.0500	<0.0500	8.74	0.424	--	3.98	<0.0500
	02/27/01	<0.0500	<0.250	<0.0250	<0.0250	0.0356	<0.0250	0.0662	0.753	<0.0250	<0.0250	7.36	0.28	--	3.36	<0.0250
	05/31/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.604	<0.0250	<0.0250	3.61	0.0944	--	2.05	<0.0250
	09/24/01	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.026	0.78	0.013	<0.0050	2.60	0.17	--	1.70	<0.0050
	12/18/01	<0.0500	<0.250	<0.0250	<0.0250	0.175	<0.0250	0.077	1.35	<0.0250	<0.0250	5.59	0.374	--	3.22	<0.0250
	03/19/02	<0.0500	<0.0250	<0.0250	<0.0500	0.036	<0.0250	0.036	0.868	<0.0250	<0.0250	6.24	0.18	--	3.04	<0.0250
	05/29/02	<0.0500	<0.0250	<0.0250	<0.0500	0.076	<0.0250	0.053	1.33	<0.0250	<0.0250	6.58	0.23	--	2.53	<0.0250
	11/11/02	<0.0200	<0.0100	<0.0100	<0.0200	0.0198	<0.0100	0.0136	0.639	<0.0100	<0.0100	3.08	0.0894	--	1.82	<0.0100
	01/23/03	<0.0200	<0.0100	<0.0100	<0.0200	0.0134	<0.0100	<0.0100	0.353	<0.0100	<0.0100	2.29	0.0526	--	1.48	<0.0100
	05/28/03	<0.0100	<0.0050	<0.0050	<0.0100	0.0054	<0.0050	<0.0050	0.11	<0.0050	<0.0050	1.19	0.0191	--	0.474	<0.0050
	11/11/03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0541	<0.0100	<0.0100	1.82	0.014	--	0.398	<0.0100
	01/27/04	<0.0200	<0.0100	<0.0100	<0.0200	0.0452	<0.0100	0.01	0.397	<0.0100	<0.0100	1.74	0.0558	--	0.688	<0.0100
	05/03/04	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0412	<0.0100	<0.0100	0.599	<0.0100	--	0.20	<0.0100
	08/17/04	<0.0100	<0.0050	<0.0050	<0.0100	0.0097	<0.0050	0.0061	0.158	<0.0050	<0.0050	1.53	0.0307	--	0.705	<0.0050
	11/15/04	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.31	<0.0250	<0.0250	2.90	<0.0250	--	1.30	<0.0250
	03/24/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0108	<0.0100	<0.0100	0.159	<0.0100	<0.0100	1.90	0.0258	--	0.834	<0.0100
05/16/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0342	<0.0100	0.0282	0.489	<0.0100	<0.0100	2.54	0.0522	--	1.15	<0.0100	
11/16/05	<0.0500	<0.0250	<0.0250	<0.0500	0.0435	<0.0250	<0.0250	0.396	<0.0250	<0.0250	4.24	0.0825	--	1.75	<0.0250	
06/06/06	<0.0500	<0.0500	<0.0500	<0.0500	0.062	<0.0500	<0.0500	0.917	<0.0500	<0.0500	4.82	0.055	--	1.77	<0.0500	
12/05/06	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.37	<0.0250	<0.0250	3.09	0.0315	--	1.20	<0.0250	
05/21/07	<0.0200	<0.0200	<0.0200	<0.0200	0.0274	<0.0200	<0.0200	0.359	<0.0200	<0.0200	2.88	0.0382	--	1.08	<0.0200	

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-4(40) (continued)	09/10/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.402	<0.0250	<0.0250	2.01	0.0525	--	1.60	<0.0250
	12/12/07	<0.0500	<0.0250	<0.0250	<0.0500	0.026	<0.0250	<0.0250	0.33	<0.0250	<0.0250	2.08	0.0355	--	0.914	<0.0250
	03/04/08 <sup>7</sup>	<0.00100	<0.000500	<0.000500	<0.00100	0.0204	<0.000500	0.0161	0.181	0.00771	<0.000500	1.81	0.0537	0.001	0.95	0.00468
	09/16/08	<0.0500	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.208	<0.0250	<0.0250	2.33	0.032	<0.0250	1.13	<0.0250
	12/08/08	Not sampled. Air leak in sampling point prohibited the collection of the sample.														
	03/24/09	<0.0020	<0.0020	<0.0020	<0.0020	0.0084	<0.0020	0.0036	0.10	0.002	<0.0020	0.99	0.014	<0.0020	0.43	<0.0020
	09/15/09	<0.0015	<0.0015	<0.0015	<0.0015	0.0031	<0.0015	<0.0015	0.052	<0.0015	<0.0015	0.44	0.0041	<0.0015	0.2	<0.0015
	12/14/09	<0.0015	<0.0015	<0.0015	<0.0015	0.054	<0.0015	0.016	0.36	0.0069	<0.0015	2.4	0.062	<0.0015	1	0.0026
	03/16/10	<0.007	<0.007	<0.007	<0.007	0.016	<0.007	<0.007	0.14	<0.007	<0.007	1.8	0.019	<0.007	0.81	<0.007
	06/14/10	<0.025	<0.025	<0.025	<0.025	0.072	<0.025	0.041	1.4	<0.025	<0.025	6.4	0.068	<0.025	1.5	0.043
	09/21/10	<0.0025	<0.0025	<0.0025	<0.0025	0.035	<0.0025	0.017	0.480	0.009	<0.0025	3.5	0.048	<0.0025	1.5	0.0054
	12/07/10	<0.015	<0.015	<0.015	<0.015	0.069	<0.015	0.026	0.700	<0.015	<0.015	4.1	0.083	<0.015	1.6	<0.015
	03/07/11	<0.015	<0.015	<0.015	<0.015	0.088	<0.015	0.030	0.930	<0.015	<0.015	3.7	0.091	<0.015	1.6	<0.015
	06/07/11	<0.015	<0.015	<0.015	<0.015	0.065	<0.015	0.03	1.6	0.017	<0.015	4.4	0.057	<0.015	1.4	0.048
	09/12/11	<0.015	<0.015	<0.015	<0.015	0.044	<0.015	0.028	7.4	0.02	<0.015	0.79	0.048	<0.015	0.38	0.058
	12/07/11	<0.015	<0.015	<0.015	<0.015	0.035	<0.015	<0.015	5.3	<0.015	<0.015	0.061	<0.015	<0.015	0.039	0.46
	03/08/12	<0.0020	<0.0020	<0.0020	<0.0020	0.038	<0.0020	0.0023	0.47	0.0028	<0.0020	0.0099	0.0052	<0.0020	0.0054	0.26
	06/19/12	<0.0005	0.0039	<0.0005	<0.0005	0.053	<0.0005	<0.0005	0.02	0.0013	<0.0005	0.0072	<0.0005	<0.0005	0.0025	0.06
	09/13/12	<0.0015	0.0018	<0.0015	<0.0015	0.039	<0.0015	0.0028	0.31	0.0032	<0.0015	0.089	0.005	<0.0015	0.08	0.44
	12/11/12	<0.00050	0.030	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.033	0.0013	<0.00050	0.010	<0.00050	<0.00050	0.0034	0.0040
	03/12/13	<0.00050	0.0082	<0.00050	<0.00050	0.028	<0.00050	0.0019	0.30	0.0020	<0.00050	0.0056	0.0025	<0.00050	0.0022	0.27
	06/11/13	<0.00050	0.015	<0.00050	<0.00050	0.0083	<0.00050	<0.00050	0.0079	<0.00050	<0.00050	0.00094	<0.00050	<0.00050	<0.00050	0.0048
	09/17/13	<0.00050	0.0094	<0.00050	<0.00050	0.028	<0.00050	0.0048	0.29	0.0014	<0.00050	0.016	0.0016	<0.00050	0.017	0.33
	12/16/13	<0.00050	0.0069	<0.00050	<0.00050	0.0097	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0014	0.0034
	3/24/2014	<0.00050	0.0024	<0.00050	<0.00050	0.045	<0.00050	0.0029	0.084	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0018	0.27
	6/26/2014	<0.00050	0.0061	<0.00050	<0.00050	0.031	<0.00050	0.01	0.088	0.00084	<0.00050	0.021	<0.00050	<0.00050	0.0220	0.09
	9/23/2014	<0.00050	0.0025	<0.00050	<0.00050	0.030	<0.00050	0.030	0.590	0.0024	<0.00050	0.17	0.0032	<0.00050	0.11	0.80
12/12/2014	<0.00050	0.012	<0.00050	<0.00050	0.035	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.0023	0.018	
3/20/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0043	<0.00050	0.0039	0.047	<0.00050	<0.00050	0.031	<0.00050	<0.00050	0.022	0.017	
6/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	0.0013	0.054	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.013	0.048	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-3(60)	06/28/00	<0.0050	<0.0250	<0.0025	<0.0025	0.0356	<0.0025	0.0083	0.433	<0.0025	<0.0025	0.11	0.0223	--	0.198	<0.0025
	08/30/00	<0.0100	<0.0500	<0.0050	<0.0050	0.036	<0.0050	0.013	1.12	<0.0050	<0.0050	0.164	0.032	--	0.136	<0.0050
	11/29/00	<0.0050	<0.0250	<0.0025	<0.0025	0.00508	<0.0025	0.00388	0.279	<0.0025	<0.0025	0.0268	<0.0050	--	0.038	<0.0025
	02/27/01	<0.002	<0.0100	<0.0010	<0.0010	0.0402	<0.0010	0.00265	0.0466	<0.0010	<0.0010	0.0207	0.0124	--	0.027	0.173
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	0.00247	<0.00050	0.0023	0.0391	<0.00050	<0.00050	0.113	0.00344	--	0.0756	0.00506
	09/24/01	<0.0025	<0.0025	<0.0025	<0.0025	0.014	<0.0025	0.011	0.18	0.0036	<0.0025	0.34	0.011	--	0.22	0.048
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000607	<0.00050	0.00101	0.015	<0.00050	<0.00050	0.0644	0.00206	--	0.0477	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	0.0054	<0.00050	0.00296	0.0629	0.00081	<0.00050	0.0919	0.00578	--	0.0801	0.0152
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00255	<0.00050	0.00202	0.0597	0.00082	<0.00050	0.119	0.0048	--	0.0676	0.00106
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.0101	<0.00050	0.0027	0.114	0.00112	<0.00050	0.111	0.00606	--	0.096	0.0228
	05/28/03	<0.0020	<0.0010	<0.0010	<0.0020	0.015	<0.0010	0.00328	0.178	0.00148	<0.0010	0.131	0.0093	--	0.126	0.0156
	11/11/03	<0.0020	<0.0020	<0.0020	<0.0020	0.0213	<0.0020	0.00456	0.208	<0.0020	<0.0020	0.223	0.00906	--	0.139	0.0206
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.0172	<0.00050	0.00283	0.117	0.00157	<0.00050	0.0963	0.00538	--	0.0922	0.0177
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	0.00479	<0.0010	0.00196	0.0864	<0.0010	<0.0010	0.121	0.00331	--	0.084	<0.0010
	11/15/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.013	0.0044	0.22	0.0028	<0.0025	0.17	0.0064	--	0.14	0.011
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00249	<0.00050	0.00147	0.092	0.00246	<0.00050	0.0977	0.00241	--	0.0739	0.001
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00149	<0.00050	0.00151	0.0452	0.00059	<0.00050	0.0741	0.00161	--	0.0415	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0276 B	<0.000500	<0.000500	0.0235 B	<0.000500	--	0.0130 B	<0.000500
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	0.0075	<0.000500	0.00205	0.0909	0.00116	<0.000500	0.107	0.0031	--	0.0783	0.00268
	02/20/06	<0.00100	<0.000500	<0.000500	<0.00100	0.00335	<0.000500	0.0016	0.065	0.00082	<0.000500	0.0995	0.00155	--	0.0623	0.00127
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.055	<0.00100	<0.00100	0.0763	0.00101	--	0.0362	<0.00100
	09/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00285	<0.00050	0.00113	0.0751	0.00073	<0.00050	0.073	0.00111	--	0.0456	0.00083
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00258	<0.00050	0.00144	0.077	0.00075	<0.00050	0.0987	0.00127	--	0.0612	0.00079
	02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00336	<0.00050	0.0013	0.0965	0.00079	<0.00050	0.0763	0.00164	--	0.055	0.00151
	05/21/07	<0.00100	<0.00100	<0.00100	<0.00100	0.00245	<0.00100	0.00133	0.0737	<0.00100	<0.00100	0.0991	0.00151	--	0.0545	<0.00100
	09/10/07	<0.0100	<0.00500	<0.00500	<0.0100	0.0312	<0.0050	0.0082	0.559	<0.00500	<0.00500	0.221	0.0108	--	0.192	0.0267
	12/12/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00149	<0.00050	0.00088	0.0786	0.00056	<0.00050	0.0661	0.00098	--	0.0368	0.00175
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00446	<0.000500	0.00219	0.164	0.00137	<0.000500	0.0897	0.00232	<0.000500	0.0722	0.00688
	09/16/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0104	<0.00250	0.00365	0.166	<0.00250	<0.00250	0.111	0.00385	<0.00250	0.0964	0.00715
	12/08/08	<0.00080	<0.00080	<0.00080	<0.00080	0.011	<0.00080	0.003	0.16	0.0017	<0.00080	0.11	0.0032	<0.00080	0.08	0.01

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-3(60) (continued)	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	0.0016	0.11	0.001	<0.00050	0.084	0.0022	<0.00050	0.053	0.0037
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0064	<0.00050	0.0023	0.091	0.0012	<0.00050	0.11	0.0024	<0.00050	0.072	0.0042
	12/14/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	0.0011	0.061	0.0008	<0.00050	0.084	0.0011	<0.00050	0.054	0.00096
	03/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	0.0036	0.14	0.0016	<0.00050	0.16	0.0082	<0.00050	0.11	0.012
	06/14/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.00075	0.046	0.0006	<0.00050	0.073	0.00086	<0.00050	0.038	0.00088
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	0.011	<0.0005	0.003	0.130	0.0015	<0.0005	0.150	0.0058	<0.0005	0.1	0.0068
	12/07/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0041	<0.0005	0.0018	0.086	0.0012	<0.0005	0.120	0.0017	<0.0005	0.077	0.0016
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.00086	0.073	0.00062	<0.00050	0.061	0.0012	<0.00050	0.034	0.0014
	06/06/11	<0.0005	<0.0005	<0.0005	<0.0005	0.00064	<0.0005	<0.0005	0.022	<0.0005	<0.0005	0.064	0.00054	<0.0005	0.027	<0.0005
	09/12/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.01	< 0.00050	0.0032	0.11	0.0014	< 0.00050	0.17	0.006	< 0.00050	0.1	0.002
	12/05/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0026	< 0.00050	0.00095	0.051	0.00054	< 0.00050	0.084	0.0010	< 0.00050	0.041	< 0.00050
	03/08/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.010	< 0.00050	0.0029	0.30	0.0019	< 0.00050	0.0710	0.0015	< 0.00050	0.0450	0.04
	06/19/12	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.002	< 0.0005	0.0010	0.08	0.0009	< 0.0005	0.0780	0.0008	< 0.0005	0.0450	0.01
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0015	< 0.00050	0.00056	0.048	< 0.00050	< 0.00050	0.044	< 0.00050	< 0.00050	0.02	0.0027
	12/11/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0026	< 0.00050	0.0025	0.059	0.0015	< 0.00050	0.057	0.00062	< 0.00050	0.036	0.016
	03/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00074	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.0090	< 0.00050
	06/11/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0024	< 0.00050	0.0015	0.053	0.00058	< 0.00050	0.029	0.00055	< 0.00050	0.021	0.012
	09/17/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0054	< 0.00050	0.00098	0.073	0.00066	< 0.00050	0.024	0.00060	< 0.00050	0.013	0.029
	12/10/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.003	< 0.00050	0.001	0.088	0.00088	< 0.00050	0.023	0.00060	< 0.00050	0.018	0.013
	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00096	< 0.00050	< 0.00050	0.028	< 0.00050	< 0.00050	0.033	< 0.00050	< 0.00050	0.013	0.0017
9/23/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.															
12/12/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.															
3/20/2015	<0.00050	< 0.00050	< 0.00050	< 0.00050	0.0016	< 0.00050	< 0.00050	0.029	< 0.00050	< 0.00050	0.041	< 0.00050	< 0.00050	0.024	0.0052	
6/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	0.00056	0.038	<0.00050	<0.00050	0.035	<0.00050	<0.00050	0.024	0.0079	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-2(110)	06/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0122	<0.00050	<0.00050	0.00604	<0.0010	--	0.0171	<0.00050
	08/30/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00441	<0.00050	<0.00050	0.0164	<0.0010	--	0.0147	<0.00050
	11/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00823	<0.00050	<0.00050	0.013	<0.0010	--	0.0193	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000756	0.00731	<0.00050	0.0152	<0.0010	--	0.0216	<0.00050
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.000938	0.0107	<0.00050	<0.00050	0.0244	0.00114	--	0.0291	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0006	0.0068	<0.00050	<0.00050	0.037	0.0011	--	0.034	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	0.00491	<0.00050	<0.00050	0.0351	<0.0010	--	0.0275	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00061	0.00997	<0.00050	<0.00050	0.0356	0.00123	--	0.0246	<0.00050
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00121	0.0319	<0.00050	<0.00050	0.114	0.00239	--	0.051	0.00061
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00101	0.0571	<0.00050	<0.00050	0.0478	0.00279	--	0.0441	0.00298
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00061	<0.00050	0.00073	0.0639	<0.00050	<0.00050	0.0546	0.00198	--	0.0431	0.00113
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	0.00114	<0.0010	<0.0010	0.0767	0.00107	<0.0010	0.0324	0.00219	--	0.0308	0.00203
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	<0.00050	0.049	<0.00050	<0.00050	0.0679	0.00117	--	0.03	0.001
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.014	<0.0010	<0.0010	0.028	<0.0010	--	0.0136	<0.0010
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	0.00062	0.06	<0.00050	<0.00050	0.05	0.0016	--	0.03	<0.00050
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0279	<0.00050	<0.00050	0.0215	0.00052	--	0.0109	<0.00050
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0151	<0.000500	<0.000500	0.018	<0.000500	--	0.00842	<0.000500
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0309	<0.00100	<0.00100	0.0139	<0.00100	--	0.00659	<0.00100
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0362	<0.00050	<0.00050	0.0179	<0.00050	--	0.00827	<0.00050
	09/10/07	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	0.0032	0.512	<0.00250	<0.00250	0.146	0.00565	--	0.0944	0.0149
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0595	<0.000500	<0.000500	0.0334	0.00075	<0.000500	0.0167	0.00282
	09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	0.00071	0.077	<0.000500	<0.000500	0.044	0.00118	<0.000500	0.0238	0.00345
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.04	<0.00050	<0.00050	0.027	<0.00050	<0.00050	0.011	0.0025
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.031	<0.00050	<0.00050	0.02	0.00057	<0.00050	0.0089	0.0023
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.016	<0.00050		0.0067	0.0018

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-2(110) (continued)	03/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.028	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.0081	0.0016
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.033	<0.0005	<0.0005	0.034	0.0006	<0.0005	0.014	0.0013
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.0086	0.001
	09/12/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.015	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.0083	< 0.00050
	03/08/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.03	< 0.00050	< 0.00050	0.0230	< 0.00050	< 0.00050	0.0093	0.00
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.02	< 0.00050	< 0.00050	0.0083	0.0014
	03/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.034	< 0.00050	< 0.00050	0.023	0.00052	< 0.00050	0.010	0.0027
	09/17/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.03	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.0087	0.0022
	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.021	< 0.00050	< 0.00050	0.013	< 0.00050	< 0.00050	0.0062	0.0025
	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.025	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0073	0.0049
3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.0079	< 0.00050	< 0.00050	0.0048	0.0046	
MGMS2-1(132)	06/28/00	<0.0010	<0.0050	<0.00050	<0.00050	0.00125	<0.00050	0.00177	0.0276	<0.00050	<0.00050	0.0275	0.00206	--	0.0543	<0.00050
	08/30/00	<0.0010	<0.0050	<0.00050	<0.00050	0.000903	<0.00050	<0.00050	0.023	<0.00050	<0.00050	0.0778	0.00247	--	0.0529	<0.00050
	11/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.000569	0.0124	<0.00050	<0.00050	0.0253	<0.0010	--	0.0278	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000537	<0.00050	0.000605	0.0114	<0.00050	<0.00050	0.0252	<0.001	--	0.0244	0.0026
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00886	<0.00050	<0.00050	0.0255	<0.0010	--	0.0244	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00076	0.0076	<0.00050	<0.00050	0.029	0.0011	--	0.03	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.000773	0.00681	<0.00050	<0.00050	0.0268	0.00136	--	0.0238	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00053	0.00862	<0.00050	<0.00050	0.0335	0.00077	--	0.0242	<0.00050
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00129	0.0354	0.00052	<0.00050	0.117	0.0025	--	0.0536	0.00062
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00096	0.0574	<0.00050	<0.00050	0.0499	0.00235	--	0.0462	0.00319
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00053	0.0272	<0.00050	<0.00050	0.0293	0.00098	--	0.024	0.00107
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0463	<0.0010	<0.0010	0.0288	0.00156	--	0.0297	0.00149
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	0.00056	0.0376	<0.00050	<0.00050	0.028	0.001	--	0.0222	0.00151
	05/04/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0382	<0.0010	<0.0010	0.00755	<0.0010	--	0.00522	<0.0010
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00058	0.062	<0.00050	<0.00050	0.038	0.0011	--	0.026	0.00085
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0295	<0.00050	<0.00050	0.0237	0.001	--	0.0152	0.00086
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00885	<0.000500	<0.000500	0.013	<0.000500	--	0.00606	<0.000500
06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0231	<0.00100	<0.00100	0.0148	<0.00100	--	0.00671	<0.00100	
12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0276	<0.00050	<0.00050	0.0149	<0.00050	--	0.00789	<0.00050	
09/10/07	<0.00500	<0.00250	<0.00250	<0.00500	0.00455	<0.00250	0.003	0.615	<0.00250	<0.00250	0.0932	0.01	--	0.061	0.0215	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-1(132) (continued)	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0373 J	<0.000500	<0.000500	0.0226 J	0.001	<0.000500	0.0129 J	0.0024
	09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00053	<0.000500	0.001	0.101	0.00056	<0.000500	0.0383	0.00137	<0.000500	0.0261	0.00611
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.032	<0.00050	<0.00050	0.024	0.00057	<0.00050	0.011	0.0015
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.032	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.012	0.0016
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.018	<0.00050		0.008	0.0015
	03/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.028	<0.00050	<0.00050	0.023	<0.00050	<0.00050	0.010	0.0016
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.028	<0.0005	<0.0005	0.031	<0.0005	<0.0005	0.012	0.0011
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.030	<0.00050	<0.00050	0.041	0.00056	<0.00050	0.013	0.00097
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.0240	<0.00050	<0.00050	0.0094	0.00
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.009	0.002
	03/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.024	< 0.00050	< 0.00050	0.019	< 0.00050	< 0.00050	0.0083	0.0019
	09/17/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.035	< 0.00050	< 0.00050	0.015	< 0.00050	< 0.00050	0.0081	0.0027
	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0054	0.0026
	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.032	< 0.00050	< 0.00050	0.0098	< 0.00050	< 0.00050	0.0060	0.0055
	3/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.0094	< 0.00050	< 0.00050	0.0044	0.00075
MGMS3-4(40)	08/30/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0132	<0.0050	0.00501	0.858	0.0141	<0.0050	0.58	0.0108	--	0.205	0.00665
	11/29/00	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.82	0.0106	<0.0100	2.81	<0.0200	--	0.395	<0.0100
	02/27/01	<0.0500	<0.250	<0.0250	<0.0250	0.0394	<0.0250	0.0292	4.57	<0.0250	<0.0250	2.97	<0.0500	--	0.756	0.0793
	05/31/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	2.92	0.0385	<0.0250	3.96	<0.0500	--	0.716	<0.0250
	09/24/01	<0.0025	<0.0025	<0.0025	<0.0025	0.0058	<0.0025	<0.0025	0.73	0.0054	<0.0025	1.40	0.0092	--	0.23	0.0035
	12/18/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	2.55	<0.0250	<0.0250	3.31	<0.0500	--	0.631	0.031
	03/19/02	<0.0200	<0.0100	<0.0100	<0.0200	0.0346	<0.0100	0.0154	3.37	0.0302	<0.0100	3.56	0.0238	--	0.707	0.057
	05/29/02	<0.0500	<0.0250	<0.0250	<0.0500	0.0715	<0.0250	0.026	5.18	0.0385	<0.0250	2.47	0.0335	--	0.728	0.086
	11/11/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	1.52	<0.0250	<0.0250	2.75	<0.0250	--	0.309	<0.0250
	01/23/03	<0.0200	<0.0100	<0.0100	<0.0200	0.137	<0.0100	0.0384	3.53	0.0326	<0.0100	2.38	0.118	--	1.40	0.0836
	05/28/03	<0.0500	<0.0250	<0.0250	<0.0500	0.056	<0.0250	0.0285	1.72	<0.0250	<0.0250	3.56	<0.0250	--	1.47	<0.0250
	11/11/03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.672	<0.0100	<0.0100	0.0583	<0.0100	--	0.0324	<0.0100
	01/27/04	<0.0200	<0.0100	<0.0100	<0.0200	0.02	<0.0100	<0.0100	1.90	0.0194	<0.0100	1.35	0.0	--	0.246	0.02
	05/03/04	<0.0200	<0.0200	<0.0200	<0.0200	0.05	<0.0200	<0.0200	1.42	<0.0200	<0.0200	2.70	0.0342	--	0.913	0.0248
	08/17/04	<0.0200	<0.0100	<0.0100	<0.0200	0.0716	<0.0100	0.017	3.30	0.031	<0.0100	1.36	0.0292	--	0.569	0.0452
11/15/04	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	1.40	<0.0250	<0.0250	1.60	<0.0250	--	0.29	<0.0250	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-4(40) (continued)	03/24/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0794	<0.0100	0.03	3.44	0.0342	<0.0100	2.33	0.0438	--	1.08	0.0602
	03/24/05 DUP	<0.0200	<0.0100	<0.0100	<0.0200	0.0832	<0.0100	0.0292	3.45	0.034	<0.0100	2.15	0.0	--	1.04	0.0586
	05/16/05	<0.0100	<0.0050	<0.0050	<0.0100	0.007	<0.0050	<0.0050	0.657	0.0113	<0.0050	1.13	0.01	--	0.224	<0.0050
	11/16/05	<0.0100	<0.00500	<0.00500	<0.0100	0.0058	<0.00500	<0.00500	0.794	0.0084	<0.00500	1.18	0.01	--	0.21	<0.00500
	03/14/06	<0.0500	<0.0500	<0.0500	<0.0500	0.051	<0.0500	<0.0500	4.13	<0.0500	<0.0500	1.41	<0.0500	--	0.484	<0.0500
	06/06/06	<0.0200	<0.0200	<0.0200	<0.0200	0.0204	<0.0200	<0.0200	2.29	0.0322	<0.0200	1.41	<0.0200	--	0.401	0.0236
	12/05/06	<0.0200	<0.0100	<0.0100	<0.0200	0.0298	<0.0100	<0.0100	3.57	0.029	<0.0100	1.02	<0.0100	--	0.36	0.0954
	05/22/07	<0.0200	<0.0200	<0.0200	<0.0200	0.0208	<0.0200	<0.0200	2.64	0.0202	<0.0200	0.952	<0.0200	--	0.349	0.0226
	09/10/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	2.34	<0.0250	<0.0250	0.499	<0.0250	--	0.215	0.0255
	12/12/07	<0.050	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.723	<0.0250	<0.0250	0.536	<0.0250	--	0.133	<0.0250
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.0324	0.00308	0.022	2.28	0.0254	0.00386	1.58	0.0275	<0.000500	0.972	0.0851
	09/16/08	<0.0500	<0.0250	<0.0250	<0.0500	0.0645	<0.0250	<0.0250	2.70	<0.0250	<0.0250	0.714	<0.0250	<0.0250	0.462	0.047
	12/08/08	<0.0090	<0.0090	<0.0090	<0.0090	0.024	<0.0090	<0.0090	1.80	0.020	<0.0090	0.35	<0.0090	<0.0090	0.16	0.09
	03/24/09	<0.0070	<0.0070	<0.0070	<0.0070	0.036	<0.0070	0.0079	1.60	0.012	<0.0070	0.6	0.011	<0.0070	0.28	0.033
	09/15/09	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	1.5	0.013	<0.0050	0.55	<0.0050	<0.0050	0.18	0.0082
	09/15/09 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	1.4	0.013	<0.0050	0.54	<0.0050	<0.0050	0.17	0.0098
	12/14/09	<0.0025	<0.0025	<0.0025	<0.0025	0.0081	<0.0025	<0.0025	0.75	0.0053	<0.0025	0.18	<0.0025	<0.0025	0.074	0.019
	03/17/10	<0.0025	<0.0025	<0.0025	<0.0025	0.052	<0.0025	0.014	1.8	0.018	0.0029	0.81	0.016	<0.0025	0.49	0.041
	03/17/10 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.051	<0.0050	0.014	1.6	0.018	<0.0050	0.78	0.016	<0.0050	0.47	0.039
	06/14/10	<0.00090	<0.00090	<0.00090	<0.00090	0.0024	<0.00090	<0.00090	0.23	0.0023	<0.00090	0.3	0.0022	<0.00090	0.088	0.0015
	09/20/10	<0.007	<0.007	<0.007	<0.007	0.032	<0.007	0.0086	1.800	0.016	<0.007	0.530	0.0079	<0.007	0.230	0.031
	09/20/10 DUP	<0.006	<0.006	<0.006	<0.006	0.031	<0.006	0.0074	1.700	0.015	<0.006	0.510	0.0074	<0.006	0.220	0.029
	12/07/10	<0.002	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	0.460	0.004	<0.002	0.330	0.0022	<0.002	0.095	0.003
03/07/11	<0.0020	<0.0020	<0.0020	<0.0020	0.020	<0.0020	0.0047	1.3	0.010	<0.0020	0.330	0.0040	<0.0020	0.140	0.053	
03/07/11 DUP	<0.0040	<0.0040	<0.0040	<0.0040	0.019	<0.0040	0.0049	1.2	0.010	<0.0040	0.320	<0.0040	<0.0040	0.140	0.046	
06/06/11	<0.003	<0.003	<0.003	<0.003	0.0065	<0.003	0.0041	0.78	0.007	<0.003	0.37	0.0054	<0.003	0.15	0.0085	
09/13/11	<0.0050	<0.0050	<0.0050	<0.0050	0.045	<0.0050	0.013	1.8	0.019	<0.0050	0.56	0.015	<0.0050	0.38	0.029	
09/13/11 DUP	<0.0070	<0.0070	<0.0070	<0.0070	0.04	<0.0070	0.012	1.7	0.016	<0.0070	0.57	0.012	<0.0070	0.33	0.023	
12/06/11	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0050	1	0.0093	<0.0050	0.14	<0.0050	<0.0050	0.064	0.044	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-4(40) (continued)	03/08/12	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.033	< 0.0050	0.0130	1	0.0140	< 0.0050	0.93	0.0170	< 0.0050	0.450	0.028
	03/08/12 DUP	<0.0060	<0.0060	<0.0060	<0.0060	0.035	<0.0060	0.0140	1.40	0.0140	<0.0060	0.9900	0.0180	<0.0060	0.4800	0.03
	06/21/2012	< 0.005	< 0.005	< 0.005	< 0.005	0.022	< 0.005	0.0056	1.30	0.0110	< 0.005	0.2200	< 0.005	< 0.005	0.1400	0.04
	09/12/12	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.023	< 0.0050	0.0062	1.4	0.013	< 0.0050	0.22	< 0.0050	< 0.0050	0.12	0.085
	09/12/12 DUP	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.023	< 0.0050	0.0053	1.4	0.013	< 0.0050	0.23	< 0.0050	< 0.0050	0.12	0.086
	12/11/12	<0.0020	<0.0020	<0.0020	<0.0020	0.0071	<0.0020	<0.0020	0.51	0.0065	<0.0020	0.18	<0.0020	<0.0020	0.072	0.0065
	03/12/13	<0.0020	<0.0020	<0.0020	<0.0020	0.030	<0.0020	0.0084	1.4	0.012	<0.0020	0.51	0.0087	<0.0020	0.26	0.035
	03/12/13 DUP	<0.0020	<0.0020	<0.0020	<0.0020	0.029	<0.0020	0.0088	1.3	0.012	<0.0020	0.47	0.0084	<0.0020	0.25	0.035
	06/11/13	<0.0025	<0.0025	<0.0025	<0.0025	0.011	<0.0025	<0.0025	0.74	0.0071	<0.0025	0.11	<0.0025	<0.0025	0.058	0.034
	09/16/13	<0.0020	<0.0020	<0.0020	<0.0020	0.0077	<0.0020	<0.0020	0.36	0.0046	<0.0020	0.1	<0.0020	<0.0020	0.048	0.024
	09/16/13 DUP	<0.0020	<0.0020	<0.0020	<0.0020	0.0085	<0.0020	<0.0020	0.38	0.0051	<0.0020	0.1	<0.0020	<0.0020	0.049	0.025
	12/10/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0047	<0.00090	<0.00090	0.23	0.0028	<0.00090	0.060	<0.00090	<0.00090	0.029	0.002
	12/10/13 DUP	<0.00090	<0.00090	<0.00090	<0.00090	0.0046	<0.00090	<0.00090	0.23	0.0027	<0.00090	0.061	<0.00090	<0.00090	0.029	0.0019
	3/18/2014	<0.00090	<0.00090	<0.00090	<0.00090	0.0027	<0.00090	0.00098	0.28	0.0018	0.00091	0.084	<0.00090	<0.00090	0.038	<0.00090
	3/18/2014 DUP	<0.00090	<0.00090	<0.00090	<0.00090	0.0026	<0.00090	<0.00090	0.28	0.0019	0.00093	0.086	<0.00090	<0.00090	0.039	<0.00090
	6/26/2014	<0.00090	<0.00090	<0.00090	<0.00090	0.012	<0.00090	0.0035	0.69	0.0057	<0.00090	0.180	0.0013	<0.00090	0.100	0.02
	6/26/14 DUP	<0.00090	<0.00090	<0.00090	<0.00090	0.011	<0.00090	0.0028	0.49	0.005	<0.00090	0.160	0.0011	<0.00090	0.93	0.0140
	9/23/2014	<0.00090	<0.00090	<0.00090	<0.00090	0.010	<0.00090	0.0017	0.41	0.0058	<0.00090	0.072	<0.00090	<0.00090	0.055	0.074
	9/23/2014 DUP	<0.00020	<0.00020	<0.00020	<0.00020	0.011	<0.00020	<0.00020	0.43	0.0055	<0.00020	0.070	<0.00020	<0.00020	0.053	0.075
	12/12/2014	<0.0020	<0.0020	<0.0020	<0.0020	0.0079	<0.0020	<0.0020	0.49	0.0042	<0.0020	0.036	<0.0020	<0.0020	0.028	0.020
3/18/2015	<0.0016	<0.0016	<0.0016	<0.0016	0.02	<0.0016	0.0032	0.90	0.0073	<0.0016	0.25	<0.0016	<0.0016	0.16	0.022	
3/18/2015 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.017	<0.00050	0.0024	0.71	0.0055	<0.00050	0.19	<0.00050	<0.00050	0.12	0.017	
6/19/2015	<0.00084	<0.00084	<0.00084	<0.00084	0.0072	<0.00084	<0.00084	0.34	0.0032	<0.00084	0.034	<0.00084	<0.00084	0.033	0.073	
MGMS3-3(60)	08/30/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0077	<0.00050	<0.00050	0.00703	<0.0010	--	0.00331	<0.00050
	11/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00311	<0.00050	<0.00050	0.0028	<0.0010	--	0.00128	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0215	<0.00050	<0.00050	0.0149	<0.0010	--	0.00732	<0.00050
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0101	<0.00050	<0.00050	0.00984	<0.0010	--	0.00476	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0071	<0.00050	<0.00050	0.0097	<0.00050	--	0.0037	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00326	<0.00050	<0.00050	0.017	<0.0010	--	0.00384	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.00050	<0.0010	0.00068	<0.00050	<0.00050	0.0176	<0.00050	<0.00050	0.0323	0.0005	--	0.014

Please refer to notes at end of table.

MGMS3-3(60)	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0405	<0.00050	<0.00050	0.0208	<0.00050	--	0.00792	<0.00050
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Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
(continued)	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.0005	<0.00050	<0.00050	0.0339	<0.00050	<0.00050	0.0203	<0.00050	--	0.0127	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00058	<0.00050	<0.00050	0.0883	0.00053	<0.00050	0.0169	<0.00050	--	0.0119	0.0007
	11/11/03	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.298	<0.0020	<0.0020	0.0361	<0.0020	--	0.023	<0.0020
	01/27/04	<0.0020	<0.0010	<0.0010	<0.0020	0.0012	<0.0010	<0.0010	0.274	0.00124	<0.0010	0.0252	<0.0010	--	0.0234	0.00128
	05/03/04	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.274	<0.0020	<0.0020	0.0466	<0.0020	--	0.027	<0.0020
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.043	<0.00050	<0.00050	0.0088	<0.00050	--	0.0034	<0.00050
	02/01/05	<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.179	0.00172	<0.0010	0.0156	<0.0010	--	0.01	<0.0010
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0338	<0.00050	<0.00050	0.0057	<0.00050	--	0.00239	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0479	<0.000500	<0.000500	0.00439 B	<0.000500	--	0.00196 B	0.00066 B
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00839	<0.000500	<0.000500	0.00259	<0.000500	--	0.00083	<0.000500
	02/21/06	<0.00500	<0.00250	<0.00250	<0.00500	0.00265	<0.00250	<0.00250	0.558	<0.00250	<0.00250	0.025	<0.00250	--	0.0144	0.0216
	03/14/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00292	<0.00100	0.00137	0.0971	<0.00100	<0.00100	0.0506	<0.00100	--	0.0392	<0.00100
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00797	<0.00100	<0.00100	0.00284	<0.00100	--	0.00104	<0.00100
	09/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00275	<0.00050	0.00117	0.108	0.00078	<0.00050	0.0473	0.00093	--	0.0342	0.00065
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0198	<0.00050	<0.00050	0.0105	<0.00050	--	0.00557	<0.00050
	02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00108	<0.00050	<0.00050	0.0443	<0.00050	<0.00050	0.0215	<0.00050	--	0.0154	<0.00050
	05/22/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0325	<0.00100	<0.00100	0.0452	<0.00100	--	0.0182	<0.00100
	09/10/07	<0.00200	<0.00100	<0.00100	<0.00200	0.00298	<0.00100	<0.00100	0.148	<0.00100	<0.00100	0.0288	<0.00100	--	0.0316	0.00167
	12/12/07	<0.00200	<0.00100	<0.00100	<0.00200	<0.00100	<0.00100	<0.00100	0.0115	<0.00100	<0.00100	0.00422	<0.00100	--	0.0019	0.00118
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00158	<0.000500	0.00068	0.0721	0.0006	<0.000500	0.0272	0.0005	<0.000500	0.0227	0.00233
	12/08/08	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.044	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0092	0.0013
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.042	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.014	0.00091
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.0043	0.00084
	12/14/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.00085	<0.00050
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	0.00069	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.01	0.00057
	06/14/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.0011	0.00069
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00081	<0.0005	<0.0005	0.028	<0.0005	<0.0005	0.018	<0.0005	<0.0005	0.011	0.00052
	12/07/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.009	<0.0005	<0.0005	0.003	<0.0005	<0.0005	0.002	0.00094
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0046	0.00067
	06/06/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0039	<0.0005	<0.0005	0.002	<0.0005	<0.0005	0.00073	<0.0005

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-3(60) (continued)	09/13/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00094	< 0.00050	< 0.00050	0.034	< 0.00050	< 0.00050	0.017	< 0.00050	< 0.00050	0.012	< 0.00050
	12/05/11	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.014	< 0.00050	< 0.00050	0.014	< 0.00050	< 0.00050	0.0073	< 0.00050
	03/08/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.02	< 0.00050	< 0.00050	0.0150	< 0.00050	< 0.00050	0.0090	< 0.00050
	06/21/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00	< 0.00050	< 0.00050	0.0030	< 0.00050	< 0.00050	0.0012	< 0.00050
	09/12/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.001	< 0.00050	< 0.00050	0.039	< 0.00050	< 0.00050	0.018	< 0.00050	< 0.00050	0.012	< 0.00050
	12/11/12	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0031	< 0.00050	< 0.00050	0.0023	< 0.00050	< 0.00050	0.00090	< 0.00050
	03/12/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00074	< 0.00050	< 0.00050	0.022	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.0090	< 0.00050
	06/11/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.016	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.0054	< 0.00050
	09/16/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.011	< 0.00050	< 0.00050	0.0068	< 0.00050	< 0.00050	0.0033	< 0.00050
	12/10/13	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0051	< 0.00050	< 0.00050	0.0036	< 0.00050	< 0.00050	0.0015	< 0.00050
	3/18/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0040	< 0.00050	< 0.00050	0.0025	< 0.00050	< 0.00050	0.00089	< 0.00050
	6/26/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0045	< 0.00050	< 0.00050	0.0034	< 0.00050	< 0.00050	0.0014	< 0.00050
	9/23/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00071	< 0.00050	< 0.00050	0.0020	< 0.00050	< 0.00050	0.0088	< 0.00050	< 0.00050	0.0047	< 0.00050
	12/12/2014	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0019	< 0.00050	< 0.00050	0.0022	< 0.00050	< 0.00050	0.00072	< 0.00050
	3/18/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.012	< 0.00050	< 0.00050	0.0060	< 0.00050	< 0.00050	0.0037	< 0.00050
	6/19/2015	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0060	< 0.00050	< 0.00050	0.0035	< 0.00050	< 0.00050	0.0016	< 0.00050
MGMS3-2(101)	08/30/00	< 0.0100	< 0.0500	< 0.0050	< 0.0050	0.00728	< 0.0050	< 0.0050	0.12	< 0.0050	< 0.0050	0.154	0.0121	--	0.0982	< 0.0050
	11/29/00	< 0.0050	< 0.0250	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0114	< 0.0025	< 0.0025	0.0115	< 0.0050	--	0.013	< 0.0025
	02/27/01	< 0.0020	< 0.0100	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0024	< 0.0010	< 0.0010	0.00336	< 0.0020	--	0.00198	< 0.0010
	05/31/01	< 0.0010	< 0.0050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00424	< 0.00050	< 0.00050	0.00307	< 0.0010	--	0.00185	< 0.00050
	09/24/01	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0036	< 0.00050	< 0.00050	0.0053	< 0.00050	--	0.0024	< 0.00050
	12/18/01	< 0.0010	< 0.0050	< 0.00050	< 0.00050	0.000864	< 0.00050	0.000913	0.0103	< 0.00050	< 0.00050	0.0509	0.00298	--	0.0239	< 0.00050
	03/19/02	< 0.0010	< 0.00050	< 0.00050	< 0.0010	< 0.00050	< 0.00050	< 0.00050	0.00402	< 0.00050	< 0.00050	0.00688	< 0.00050	--	0.00254	< 0.00050
	05/29/02	< 0.0010	< 0.00050	< 0.00050	< 0.0010	< 0.00050	< 0.00050	< 0.00050	0.00819	< 0.00050	< 0.00050	0.0115	< 0.00050	--	0.0039	< 0.00050
	01/23/03	< 0.0010	< 0.00050	< 0.00050	< 0.0010	< 0.00050	< 0.00050	< 0.00050	0.0212	< 0.00050	< 0.00050	0.0172	< 0.00050	--	0.00838	< 0.00050
	05/28/03	< 0.0010	< 0.00050	< 0.00050	< 0.0010	< 0.00050	< 0.00050	< 0.00050	0.0286	< 0.00050	< 0.00050	0.0184	< 0.00050	--	0.00876	< 0.00050
	11/11/03	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0537	< 0.0010	< 0.0010	0.0183	< 0.0010	--	0.0093	< 0.0010
	01/27/04	< 0.0010	< 0.00050	< 0.00050	< 0.0010	0.001	< 0.00050	< 0.00050	0.114	0.001	< 0.00050	0.024	< 0.00050	--	0.0151	< 0.00050
	05/03/04	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0221	< 0.0010	< 0.0010	0.00674	< 0.0010	--	0.00421	< 0.0010
	11/15/04	< 0.0010	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.047	< 0.00050	< 0.00050	0.0063	< 0.00050	--	0.0029	< 0.00050
	05/16/05	< 0.0010	< 0.00050	< 0.00050	< 0.0010	< 0.00050	< 0.00050	< 0.00050	0.0665	< 0.00050	< 0.00050	0.00359	< 0.00050	--	0.00148	0.00077

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-2(101) (continued)	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0253	<0.000500	<0.000500	0.00493	<0.000500	--	0.00166	0.00066
	03/14/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0231	<0.00100	<0.00100	0.00291	<0.00100	--	0.00114	0.00106
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0159	<0.00100	<0.00100	0.00356	<0.00100	--	0.00188	0.00106
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0326	<0.00050	<0.00050	0.00284	<0.00050	--	0.00117	0.00285
	09/10/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0404	<0.00050	<0.00050	0.00632	<0.00050	--	0.0037	0.0132
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0181	<0.000500	<0.000500	0.0034	<0.000500	<0.000500	0.00147	0.00564
	09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0204	<0.000500	<0.000500	0.00634	<0.000500	<0.000500	0.0035	0.00424
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.003	<0.00050	<0.00050	0.0015	0.0023
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0012	0.0022
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0021	0.0032
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.007	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0018	0.0012
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0055	<0.0005	<0.0005	0.003	<0.0005	<0.0005	0.0014	0.0012
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0022	0.00086
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0059	<0.00050	<0.00050	0.0045	<0.00050
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	0.0013	<0.00050
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0069	<0.00050	<0.00050	0.0056	<0.00050	<0.00050	0.0044	0.00059
	09/16/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	0.0021	<0.00050
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0068	<0.00050	<0.00050	0.0091	<0.00050	<0.00050	0.0065	<0.00050
9/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0030	<0.00050	<0.00050	0.0015	<0.00050	
3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0051	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	0.0028	<0.00050	
MGMS3-1(132)	08/30/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.00558	<0.0010	--	0.000746	<0.00050
	11/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00204	<0.00050	<0.00050	0.000754	<0.0010	--	<0.00050	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00108	<0.00050	<0.00050	0.00262	<0.0010	--	0.000722	<0.00050
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00667	<0.00050	<0.00050	0.00313	<0.0010	--	0.00144	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0061	<0.00050	--	0.0019	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00411	<0.00050	<0.00050	0.00875	<0.0010	--	0.00224	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00488	<0.00050	<0.00050	0.00963	<0.00050	--	0.00302	<0.00050
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0118	<0.00050	<0.00050	0.0146	<0.00050	--	0.00428	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0168	<0.00050	<0.00050	0.0114	<0.00050	--	0.00604	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00059	<0.00050	<0.00050	0.0933	0.00076	<0.00050	0.0163	<0.00050	--	0.0101	0.00083
11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0724	<0.0010	<0.0010	0.0122	<0.0010	--	0.008	<0.0010	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-1(132) (continued)	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0349	0.001	<0.00050	0.0127	<0.00050	--	0.00947	<0.00050
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0119	<0.0010	<0.0010	<0.0010	<0.0010	--	0.0142	<0.0010
	11/15/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.20	<0.0025	<0.0025	0.0062	<0.0025	--	0.0034	<0.0025
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0426	0.00079	<0.00050	0.00442	<0.00050	--	0.00223	<0.00050
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0199	<0.000500	<0.000500	0.00241	<0.000500	--	0.0008	<0.000500
	03/14/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0203	<0.00100	<0.00100	0.00213	<0.00100	--	<0.00100	<0.00100
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0186	<0.00100	<0.00100	0.00157	<0.00100	--	<0.00100	0.00136
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0241	<0.00050	<0.00050	0.00305	<0.00050	--	0.00108	0.00468
	09/10/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0365	<0.00050	<0.00050	0.00469	<0.00050	--	0.00317	0.0168
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0218	<0.000500	<0.000500	0.00337	<0.000500	<0.000500	0.00164	0.00683
	09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.026	<0.000500	<0.000500	0.00486	<0.000500	<0.000500	0.00352	0.00496
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.00079	0.0024
	03/24/09 DUP	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.00078	0.0023
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0043	<0.00050	<0.00050	0.0019	0.0016
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0077	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.0012	0.002
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0072	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0019	0.00092
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0065	<0.0005	<0.0005	0.0029	<0.0005	<0.0005	0.0023	0.0013
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.0038	0.0043
	09/13/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0056	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0034	0.00055
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0070	<0.00050	<0.00050	0.0069	0.00
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.006	<0.00050	<0.00050	0.0049	<0.00050	<0.00050	0.004	<0.00050
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0081	<0.00050	<0.00050	0.0072	0.00098
	09/16/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	0.0098	<0.00050	<0.00050	0.0079	<0.00050	<0.00050	0.0081	0.00084
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	<0.00050	0.00051	0.011	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.011	0.00076
	9/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	0.0089	<0.00050	<0.00050	0.0090	<0.00050	<0.00050	0.0079	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.0093	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	0.0060	0.00056

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
CMT1-1	11/11/03	<0.0010	<0.0010	0.00287	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
	01/26/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
	08/19/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	11/17/04	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
	03/23/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	--	<0.000500	<0.000500
	05/26/06	Well Abandoned														
CMT1-2	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
	01/26/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00075	<0.00050	--	0.00103	<0.00050
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
	08/19/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	11/17/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	--	0.00088	<0.00050
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00137	<0.00050	--	0.00099	<0.00050
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	<0.00050	--	0.00069	<0.00050
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.0006	<0.000500	--	<0.000500	<0.000500
	05/26/06	Well Abandoned														
CMT1-3	11/11/03	<0.0020	<0.0020	0.00356	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	--	<0.0020	<0.0020
	01/26/04	<0.0010	<0.00050	0.0011	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	05/03/04	<0.0010	<0.0010	0.00297	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
	08/19/04	<0.0010	<0.00050	0.00216	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	11/17/04	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	--	<0.0250	<0.0250
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0006	<0.00050	--	<0.00050	<0.00050
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	--	<0.000500	<0.000500
		05/26/06	Well Abandoned													

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
EX	03/23/09	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.05	<0.0050	<0.0050	1.4	0.043	<0.0050	0.42	<0.0050
	06/18/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0042	<0.00050	<0.00050	0.024	0.0011	<0.00050	0.011	<0.00050
	09/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	0.0033	0.12	0.00076	<0.00050	2.1	0.038	<0.00050	0.38	0.011
	12/18/09	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0056	<0.0025	<0.0025	0.7	0.0037	<0.0025	0.056	<0.0025
	03/16/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.02	<0.00050	<0.00050	0.15	0.0032	<0.00050	0.033	<0.00050
	06/17/10	<0.00050	<0.00050	<0.00050	<0.00050	0.00097	<0.00050	<0.00050	0.092	<0.00050	<0.00050	0.15	0.0023	<0.00050	0.039	0.0022
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0015	<0.0005	0.0016	0.090	0.00053	<0.0005	2.4	0.0200	<0.0005	0.220	0.0018
	12/21/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	<0.0005	0.0006	0.030	<0.00050	<0.0005	0.9	0.0067	<0.0005	0.099	0.00071
	03/31/11	<0.004	<0.004	<0.004	<0.004	0.0082	<0.004	0.0081	0.240	<0.004	<0.004	6.8	0.1100	<0.004	0.910	0.0051
	06/07/11	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.140	<0.004	<0.004	1.4	0.0150	<0.004	0.170	<0.004
	09/19/11	<0.0050	<0.0050	<0.0050	<0.0050	0.0079	<0.0050	0.011	0.29	<0.0050	<0.0050	4.1	0.073	<0.0050	0.46	0.014
	12/07/11	<0.0050	<0.0050	<0.0050	<0.0050	0.016	<0.0050	0.019	12	0.0093	<0.0050	<0.050	0.017	<0.0050	<0.050	0.14
	03/09/12	<0.0040	<0.0040	<0.0040	<0.0040	0.005	<0.0040	<0.0040	1.40	0.0086	<0.0040	0.0330	<0.0040	<0.0040	0.0100	0.29
	06/22/12	<0.0005	0.0055	<0.0005	<0.0005	0.003	<0.0005	0.0007	0.17	0.0013	<0.0005	0.0030	0.0006	<0.0005	0.0011	0.12
	09/14/12	<0.0015	0.0027	<0.0015	<0.0015	0.0015	<0.0015	<0.0015	0.32	<0.0015	<0.0015	0.003	<0.0015	<0.0015	<0.0015	0.042
	12/14/12	<0.00050	0.0014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.00087	<0.00050	<0.00050	<0.00050	0.012
	03/15/13	<0.00050	0.0028	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0095	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	<0.00050	0.0044
	06/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.00079	<0.00050	<0.00050	<0.00050	<0.00050
	09/20/13	<0.00050	0.0019	<0.00050	<0.00050	0.0019	<0.00050	0.00054	0.071	0.00068	<0.00050	0.0041	<0.00050	<0.00050	0.0026	0.03
	12/16/13	<0.00050	0.0014	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.0014	0.028
	3/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00080	<0.00050	<0.00050	0.030	<0.00050	<0.00050	0.020	<0.00050	<0.00050	0.0075	0.011
	6/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00290	<0.00050	0.0011	0.160	0.00097	<0.00050	0.029	<0.00050	<0.00050	0.0150	0.038
	9/30/2014	Insufficient water for sampling .														
	12/15/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.0027	<0.00050
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0035	<0.00050	0.0021	0.69	0.0019	<0.00050	0.17	0.0025	<0.00050	0.056	0.0028
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	0.0026	0.42	0.0016	<0.00050	0.19	0.00088	<0.00050	0.042	0.0032

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MP-1	03/23/09	<0.0040	<0.0040	<0.0040	<0.0040	0.006	<0.0040	<0.0040	0.089	<0.0040	<0.0040	1.2	0.01	<0.0040	0.18	<0.0040
	06/18/09	<0.0040	<0.0040	<0.0040	<0.0040	0.0043	<0.0040	<0.0040	0.043	<0.0040	<0.0040	1.5	0.012	<0.0040	0.18	<0.0040
	09/18/09	<0.0040	<0.0040	<0.0040	<0.0040	0.014	<0.0040	<0.0040	0.24	0.0089	<0.0040	1.1	0.0082	<0.0040	0.31	0.0073
	12/18/09	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.058	<0.0040	<0.0040	1	0.0071	<0.0040	0.18	<0.0040
	03/16/10	<0.0030	<0.0030	<0.0030	<0.0030	0.022	<0.0030	0.0047	0.41	0.013	<0.0030	1.5	0.0086	<0.0030	0.4	0.01
	06/17/10	<0.0030	<0.0030	<0.0030	<0.0030	0.0032	<0.0030	<0.0030	0.12	<0.0030	<0.0030	0.8	0.0054	<0.0030	0.14	<0.0030
	09/23/10	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.041	<0.003	<0.003	0.730	0.004	<0.003	0.12	<0.003
	12/10/10	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.027	<0.003	<0.003	1.0	0.005	<0.003	0.15	<0.003
	03/14/11	<0.0030	<0.0030	<0.0030	<0.0030	0.0071	<0.0030	<0.0030	0.150	<0.0030	<0.0030	1.2	0.0064	<0.0030	0.180	0.0059
	06/07/11	<0.0025	<0.0025	<0.0025	<0.0025	0.0049	<0.0025	<0.0025	0.075	<0.0025	<0.0025	0.64	0.0033	<0.0025	0.13	<0.0025
	09/19/11	< 0.0015	< 0.0015	< 0.0015	< 0.0015	0.0024	< 0.0015	< 0.0015	0.041	< 0.0015	< 0.0015	0.3	0.0019	< 0.0015	0.072	0.0016
	12/07/11	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0026	< 0.0025	< 0.0025	0.049	0.0031	< 0.0025	0.64	0.0031	< 0.0025	0.12	< 0.0025
	03/09/12	< 0.0015	< 0.0015	< 0.0015	< 0.0015	0.009	< 0.0015	0.0028	0.44	0.0063	< 0.0015	0.4900	0.0035	< 0.0015	0.1400	0.02
	06/22/12	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.006	< 0.0025	0.0028	0.53	0.0029	< 0.0025	0.6900	0.0120	< 0.0025	0.1200	0.05
	09/14/12	< 0.0015	< 0.0015	< 0.0015	< 0.0015	0.004	< 0.0015	< 0.0015	0.17	0.0022	< 0.0015	0.34	0.002	< 0.0015	0.083	0.0045
	12/14/12	<0.00090	<0.00090	<0.00090	<0.00090	0.0020	<0.00090	<0.00090	0.17	0.0017	<0.00090	0.23	0.0010	<0.00090	0.048	0.0018
	03/15/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0051	<0.00090	0.00094	0.14	0.0025	<0.00090	0.23	0.0010	<0.00090	0.069	0.0018
	06/14/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0045	<0.00090	0.0014	0.19	0.0016	<0.00090	0.33	0.0014	<0.00090	0.070	0.0018
	09/20/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0029	<0.00090	<0.00090	0.077	0.0015	<0.00090	0.26	0.00095	<0.00090	0.066	<0.00090
	12/16/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0017	<0.00090	0.0011	0.067	0.00092	<0.00090	0.29	0.0012	<0.00090	0.070	<0.00090
	3/24/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.0022	<0.0015	<0.0015	0.24	<0.0015	<0.0015	0.36	0.0018	<0.0015	0.054	<0.0015
	6/23/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.0049	<0.0015	0.0023	0.29	0.0017	<0.0015	1.2	0.0095	<0.0015	0.130	0.0050
	9/30/2014	<0.0020	<0.0020	<0.0020	<0.0020	0.0028	<0.0020	<0.0020	0.11	<0.0020	<0.0020	0.36	<0.0020	<0.0020	0.063	0.016
	12/15/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.0017	<0.0015	<0.0015	0.058	<0.0015	<0.0015	0.32	<0.0015	<0.0015	0.059	<0.0015

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MP-1	3/20/2015	<0.0010	<0.0010	<0.0010	<0.0010	0.0036	<0.0010	0.0015	0.19	0.0015	<0.0010	0.57	0.0010	<0.0010	0.096	0.025
(continued)	6/18/2015	<0.00084	<0.00084	<0.00084	<0.00084	0.0029	<0.00084	0.0015	0.091	0.00087	<0.00084	0.38	<0.00084	<0.00084	0.081	<0.00084

- Notes:
- HVOCs = Halogenated volatile organic compounds analysis by U.S. Environmental Protection Agency (EPA) Method 8260B: results reported in micrograms per liter ( µg/L).
  - TPH = Total petroleum hydrocarbons in the diesel and heavy oil range analysis by Washington Department of Ecology (WDOE) Method TPH-418.1 Results reported in milligrams per liter (mg/L).
  - = Not sampled or not analyzed.
  - < = Not detected at or above the specified laboratory method reporting limit (MRL).
  - B = Estimated concentration based on data quality review - similar detection in associated equipment blank (less than 5x difference).
  - J = Estimated concentration based on data quality review - similar detection in field blank (less than 5x difference).
  - n-Propylbenzene, 1,1,1,2-Tetrachloro-ethane, and 1,1,2-Trichloroethane were detected during the first semi-annual 2008 monitoring event. Refer to Table 3 of the *First Semi-Annual 2008 Groundwater Monitoring Report* for detection concentrations.
  - ND=Not detected and no reporting limit specified.
  - B = Chloroform was detected in one or more field blank during the March 2009 and September 2009 sampling events. Chloroform was flagged with a "B" in samples where the concentration was five times or less than the maximum detection in the field blank.
  - E = Chloroform was detected in the equipment blank during the March 2009 and September 2009 sampling events. Chloroform was flagged with an "E" in samples where the concentration was five times or less than the maximum detection in the equipment blank.



***Appendix C***

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**Laboratory Analytical Reports and Data Quality Review  
(on CD-ROM)**

## ***Appendix C – Laboratory Analytical Reports and Data Quality Review***

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This appendix documents the results of a quality assurance/quality control (QA/QC) review of the analytical data for groundwater samples collected during the March and June 2015 groundwater sampling events and air samples collected during the January, February, March, April, and May 2015 soil vapor extraction (SVE) effluent sampling events for the NuStar Terminals Services, Inc. (NuStar) Vancouver Facility (Facility) in Vancouver, Washington. TestAmerica Laboratories in Los Angeles, California and Pace Analytical (Pace) in Davis, California performed the analyses. A copy of each analytical laboratory report is included in this appendix.

The QA review included examination and validation of the laboratory summary report, including:

- Analytical methods;
- Detection limits;
- Sample holding times;
- Custody records;
- Surrogates, spikes, and blanks; and
- Duplicates.

The QA review did not include a review of raw data.

### **Analytical Methods**

Chemical analyses on collected water samples consisted of volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B. Select groundwater samples were also analyzed for TOC by EPA Method 5310D and ethene by EPA Method RSK-175M. SVE effluent vapor samples were analyzed for VOCs using EPA Method TO15.

### **Quality Assurance Objectives and Review**

The general QA objectives for this project were to develop and implement procedures for obtaining, evaluating, and confirming the usability of data of a specified quality for monitoring groundwater quality trends and SVE monitoring data at the Facility. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody procedures.

## **Appendix C – Laboratory Analytical Reports and Data Quality Review**

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Reporting limits and analytical results were compared to action levels for each parameter in the media of concern. Precision, accuracy, representativeness, completeness, and comparability parameters used to indicate data quality are defined below.

**Reporting Limits.** Detection limits are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested detection limits by the EPA or the Washington State Department of Ecology (Ecology). In some cases, the detection limits may be raised due to high concentrations of analytes in the samples or matrix interferences. Detection limits were generally consistent with industry standards and below promulgated regulatory standards when possible (if not raised, as previously discussed). Reporting limits were reviewed and are generally acceptable for this project. Reporting limits for individual samples are varied based on the magnitude of the chemical impact. It is not expected that any of the raised detection limits compromise the usability of the data.

**Holding Times.** Samples were analyzed within the holding times specified for the VOC analyses, with the exception of the following:

- TCE in sample MW-19
- PCE and TCE in sample MW-19 DUP
- cis-1,2-Dichloroethene in sample MGMS3-40
- PCE and TCE in MW-14

For these samples analytes results were initially above the instrument calibration range. A larger calibration range was established and the samples were reanalyzed. By the time the samples were reanalyzed, the recommended EPA Method 8260B hold time was exceeded by one day. The laboratory was confident that the results of the analysis would not be affected by the extra hold time; therefore, no data are flagged.

**Method Blanks.** A method, or laboratory, blank is a sample prepared in the laboratory along with the actual samples and analyzed for the same parameters at the same time. It is used to assess if detected contaminants may have been the result of contamination of the samples in the laboratory. No analytes were detected in the laboratory method blanks for the groundwater or air analyses.

**Laboratory Control Samples and Laboratory Control Sample Duplicate.** Laboratory Control Samples (LCS) were also analyzed by the laboratories to assess the accuracy of the analytical equipment. LCS are prepared from an analyte-free matrix that is then spiked with known levels of the constituents of interest (COI; i.e., a standard). The concentrations are measured and the results compared to the known spiked levels. This comparison is expressed as percent recovery. The LCS percent recovery was within control limits for the water samples and for the SVE air samples, with one exception. The LCS results associated the first quarter 2015 groundwater samples for the analyte bromomethane was above control limits,

## **Appendix C – Laboratory Analytical Reports and Data Quality Review**

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indicating a possible high bias for this analyte. Since bromomethane was not detected above the method reporting limit in the associated samples, no data are flagged.

In addition, a second laboratory control sample (the Laboratory Control Sample Duplicate [LCSD]) is prepared as above and analyzed. This is compared to the initial laboratory control sample to assess the precision of the analytical method (RPD). The percent recovery and RPD were within acceptable control limits for both the groundwater and air samples.

**Matrix Spike Analyses.** Matrix Spike (MS) analyses are performed on samples submitted to the laboratory that are of the same matrix as the actual sample. The MS is spiked with known levels of the COI. These analyses are used to assess the potential for matrix interference with recovery or detection of the COI and the accuracy of the determination. The spiked sample results are compared to the expected result (i.e., sample concentration plus spike amount) and reported as percent recovery.

Several MS and MS duplicates (MSD) were analyzed during the batch analyses for both groundwater monitoring events. During the first quarter 2015 monitoring event, recoveries for some Matrix Spike/ Matrix Spike Duplicate analytes were outside control limits. This may indicate a bias for the samples that were spiked. Since the LCS recoveries were within control limits, no data were flagged.

During the second quarter groundwater 2015 monitoring event, several MS/MSD results associated with samples were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data were flagged. MS/MSD results for the analyte bromomethane were above control limits, indicating a possible high bias for this analyte. Since bromomethane was not detected above the method reporting limit in the associated samples, no data are flagged.

The MS/MSD RPD for chloroethene and methylene chloride associated with two of the project samples, was outside of control limits. Because the analytes were not detected in the associated project samples, no data were flagged.

No MS or MSD samples were analyzed as part of the air sample QC batch.

**Laboratory Duplicate.** A laboratory duplicate is a second analysis of the QA/QC sample, which serves as an internal check on laboratory quality as well as potential variability of the sample matrix. The laboratory duplicate is analyzed and compared to the primary sample analysis to assess the precision of the analytical method. This comparison can be expressed by the RPD between the original and duplicate samples. There was no lab duplicate analyzed; however, MSD and LCSD samples were analyzed for the MS and LCS samples, respectively. Results were within control limits.

## **Appendix C – Laboratory Analytical Reports and Data Quality Review**

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**Surrogate Recovery.** Surrogates are organic compounds that are similar in chemical composition to the COI and spiked into environmental and batch quality control samples prior to sample preparation and analysis. Surrogate recoveries for environmental samples are used to evaluate matrix interference on a sample-specific basis. Surrogate recoveries were within control limits for both the groundwater and air samples.

**Field Duplicate.** A field duplicate is a second field sample collected from a selected monitoring well. Field duplicate samples serve as a check on laboratory quality as well as potential variability of the sample matrix. The field duplicate is analyzed and compared with the first sample to assess the precision of the analytical method. This comparison can be expressed by the RPD between the original and duplicate samples. In groundwater samples from both monitoring events, the analytes were below the RPD limit of +/-30 percent. Field duplicates were not collected for air samples.

**Field Blank.** A field blank is a sample of analyte-free water poured into a clean sample container in the field, preserved, and shipped to the laboratory with field samples. Field blanks assess the potential for contamination from field conditions during sampling. No analytes were identified in the field blanks collected during the first and second quarter 2015 monitoring event

**Equipment Blank.** An equipment blank is a sample of analyte-free water poured over or through decontaminated field sampling equipment during a sampling event. Equipment blanks assess the potential for contamination from the total sampling, sample preparation, and measurement process when decontaminated sampling equipment is used to collect samples. No analytes were identified in the equipment blanks collected during the first and second quarter 2015 monitoring events.

**Trip Blank.** A trip blank is a clean sample of a matrix that is taken from the laboratory to the sampling site and transported back to the laboratory without having been exposed to sampling procedures. Trip blanks assess contamination introduced during shipping and field-handling activities. Trip blanks were not analyzed during this reporting period.

**Conclusion.** In conclusion, the overall QA objectives have been met, and the data are of adequate quality for use in this project.

July 07, 2015

Stephanie Bosze-Salisbury  
Apex Companies, LLC  
3015 SW First Avenue  
Portland, OR 97201

RE: Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

Dear Stephanie Bosze-Salisbury:

Enclosed are the analytical results for sample(s) received by the laboratory on June 23, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott M Forbes  
scott.forbes@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

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### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414  
A2LA Certification #: 2926.01  
Alaska Certification #: UST-078  
Alaska Certification #MN00064  
Alabama Certification #40770  
Arizona Certification #: AZ-0014  
Arkansas Certification #: 88-0680  
California Certification #: 01155CA  
Colorado Certification #Pace  
Connecticut Certification #: PH-0256  
EPA Region 8 Certification #: 8TMS-L  
Florida/NELAP Certification #: E87605  
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Georgia EPD #: Pace  
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Illinois Certification #: 200011  
Indiana Certification#C-MN-01  
Iowa Certification #: 368  
Kansas Certification #: E-10167  
Kentucky Dept of Envi. Protection - DW #90062  
Kentucky Dept of Envi. Protection - WW #:90062  
Louisiana DEQ Certification #: 3086  
Louisiana DHH #: LA140001  
Maine Certification #: 2013011  
Maryland Certification #: 322  
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137  
Mississippi Certification #: Pace  
Montana Certification #: MT0092  
Nevada Certification #: MN\_00064  
Nebraska Certification #: Pace  
New Jersey Certification #: MN-002  
New York Certification #: 11647  
North Carolina Certification #: 530  
North Carolina State Public Health #: 27700  
North Dakota Certification #: R-036  
Ohio EPA #: 4150  
Ohio VAP Certification #: CL101  
Oklahoma Certification #: 9507  
Oregon Certification #: MN200001  
Oregon Certification #: MN300001  
Pennsylvania Certification #: 68-00563  
Puerto Rico Certification  
Saipan (CNMI) #:MP0003  
South Carolina #:74003001  
Texas Certification #: T104704192  
Tennessee Certification #: 02818  
Utah Certification #: MN000642013-4  
Virginia DGS Certification #: 251  
Virginia/VELAP Certification #: Pace  
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West Virginia Certification #: 382  
West Virginia DHHR #:9952C  
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### Davis Certification IDs

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North Dakota Certification #: R-214  
Oregon Certification #: CA300002

Washington Certification #: C926-14a  
California Certification #: 08263CA

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### New Orleans Certification IDs

California Env. Lab Accreditation Program Branch:  
11277CA  
Florida Department of Health (NELAC): E87595  
Illinois Environmental Protection Agency: 0025721  
Kansas Department of Health and Environment (NELAC):  
E-10266  
Louisiana Dept. of Environmental Quality (NELAC/LELAP):  
02006

Pennsylvania Dept. of Env Protection (NELAC): 68-04202  
Texas Commission on Env. Quality (NELAC):  
T104704405-09-TX  
U.S. Dept. of Agriculture Foreign Soil Import: P330-10-  
00119

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1249017001	MW-3	Water	06/15/15 11:57	06/23/15 10:00
1249017002	S-1	Water	06/16/15 08:15	06/23/15 10:00
1249017003	S-2	Water	06/16/15 08:41	06/23/15 10:00
1249017004	MW-23i	Water	06/16/15 09:15	06/23/15 10:00
1249017005	MW-14	Water	06/16/15 09:38	06/23/15 10:00
1249017006	MW-26	Water	06/16/15 10:26	06/23/15 10:00
1249017007	MW-25i	Water	06/16/15 11:05	06/23/15 10:00
1249017008	MW-22i	Water	06/16/15 11:44	06/23/15 10:00
1249017009	MW-19i	Water	06/16/15 12:20	06/23/15 10:00
1249017010	MW-9	Water	06/17/15 08:40	06/23/15 10:00
1249017011	MW-7	Water	06/17/15 09:18	06/23/15 10:00
1249017012	MW-7 DUP	Water	06/17/15 09:18	06/23/15 10:00
1249017013	MW-8	Water	06/17/15 09:55	06/23/15 10:00
1249017014	MW-21i-105	Water	06/17/15 10:30	06/23/15 10:00
1249017015	MW-32s	Water	06/17/15 10:56	06/23/15 10:00
1249017016	MW-20i	Water	06/17/15 11:20	06/23/15 10:00
1249017017	MW-16	Water	06/17/15 11:50	06/23/15 10:00
1249017018	MW-18i	Water	06/17/15 12:19	06/23/15 10:00
1249017019	MW-5	Water	06/17/15 13:19	06/23/15 10:00
1249017020	MW-1	Water	06/17/15 13:48	06/23/15 10:00
1249017021	Field Blank 6-17	Water	06/17/15 14:00	06/23/15 10:00
1249017022	MP-1	Water	06/18/15 08:10	06/23/15 10:00
1249017023	MW-24i	Water	06/18/15 08:44	06/23/15 10:00
1249017024	MW-24d	Water	06/18/15 09:22	06/23/15 10:00
1249017025	EX-1	Water	06/18/15 09:54	06/23/15 10:00
1249017026	MW-19	Water	06/18/15 10:49	06/23/15 10:00
1249017027	MW-19 DUP	Water	06/18/15 10:49	06/23/15 10:00
1249017028	MW-13	Water	06/18/15 12:03	06/23/15 10:00
1249017029	MGMS1-43	Water	06/18/15 12:30	06/23/15 10:00
1249017030	MGMS1-60	Water	06/18/15 12:44	06/23/15 10:00
1249017031	MW-12	Water	06/19/15 08:28	06/23/15 10:00
1249017032	MW-12 DUP	Water	06/19/15 08:28	06/23/15 10:00
1249017033	MGMS3-40	Water	06/19/15 09:27	06/23/15 10:00
1249017034	MGMS3-60	Water	06/19/15 09:45	06/23/15 10:00
1249017035	MGMS2-40	Water	06/19/15 10:06	06/23/15 10:00
1249017036	MGMS2-60	Water	06/19/15 10:29	06/23/15 10:00
1249017037	MW-21i-40	Water	06/19/15 11:02	06/23/15 10:00

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## SAMPLE SUMMARY

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

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<b>Lab ID</b>	<b>Sample ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
1249017038	Field Blank 6-19	Water	06/19/15 11:20	06/23/15 10:00
1249017039	Equipment Blank	Water	06/19/15 11:30	06/23/15 10:00
1249017040	Trip Blank-1	Water	06/22/15 00:00	06/23/15 10:00
1249017041	Trip Blank-2	Water	06/22/15 00:00	06/23/15 10:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1249017001	MW-3	EPA 8260B	JMB	32	PASI-DAV
1249017002	S-1	EPA 8260B	JMB	32	PASI-DAV
1249017003	S-2	EPA 8260B	JMB	32	PASI-DAV
1249017004	MW-23i	EPA 8260B	JMB	32	PASI-DAV
1249017005	MW-14	EPA 8260B	JMB	32	PASI-DAV
1249017006	MW-26	EPA 8260B	JMB	32	PASI-DAV
1249017007	MW-25i	EPA 8260B	JMB	32	PASI-DAV
1249017008	MW-22i	EPA 8260B	JMB	32	PASI-DAV
1249017009	MW-19i	EPA 8260B	JMB	32	PASI-DAV
1249017010	MW-9	EPA 8260B	JCP	32	PASI-DAV
1249017011	MW-7	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	32	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017012	MW-7 DUP	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	32	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017013	MW-8	EPA 8260B	JCP	32	PASI-DAV
1249017014	MW-21i-105	EPA 8260B	JCP	32	PASI-DAV
1249017015	MW-32s	EPA 8260B	JCP	32	PASI-DAV
1249017016	MW-20i	EPA 8260B	JCP	32	PASI-DAV
1249017017	MW-16	EPA 8260B	JCP	32	PASI-DAV
1249017018	MW-18i	EPA 8260B	JCP	32	PASI-DAV
1249017019	MW-5	EPA 8260B	JCP	32	PASI-DAV
1249017020	MW-1	EPA 8260B	JCP	32	PASI-DAV
1249017021	Field Blank 6-17	EPA 8260B	JCP	32	PASI-DAV
1249017022	MP-1	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	32	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017023	MW-24i	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	32	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017024	MW-24d	EPA 8260B	JCP	32	PASI-DAV
1249017025	EX-1	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	32	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017026	MW-19	EPA 8260B	JCP	32	PASI-DAV
1249017027	MW-19 DUP	EPA 8260B	JCP	32	PASI-DAV

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### SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1249017028	MW-13	EPA 8260B	JCP	32	PASI-DAV
1249017029	MGMS1-43	EPA 8260B	JCP	32	PASI-DAV
1249017030	MGMS1-60	EPA 8260B	JCP	32	PASI-DAV
1249017031	MW-12	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	34	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017032	MW-12 DUP	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	32	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017033	MGMS3-40	EPA 8260B	JCP	32	PASI-DAV
1249017034	MGMS3-60	EPA 8260B	JCP	32	PASI-DAV
1249017035	MGMS2-40	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	32	PASI-DAV
		SM 5310B	JMA	1	PASI-N
1249017036	MGMS2-60	EPA 8260B	JCP	32	PASI-DAV
1249017037	MW-21i-40	EPA 8260B	JCP	32	PASI-DAV
1249017038	Field Blank 6-19	EPA 8260B	JCP	32	PASI-DAV
1249017039	Equipment Blank	EPA 8260B	JCP	32	PASI-DAV

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-3		Lab ID: 1249017001	Collected: 06/15/15 11:57	Received: 06/23/15 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/29/15 13:54	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/29/15 13:54	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/29/15 13:54	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/29/15 13:54	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/29/15 13:54	108-90-7	
Chloroethane	ND	ug/L	0.50	1		06/29/15 13:54	75-00-3	
Chloroform	<b>0.86</b>	ug/L	0.50	1		06/29/15 13:54	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/29/15 13:54	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/29/15 13:54	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/29/15 13:54	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/29/15 13:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/29/15 13:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/29/15 13:54	106-46-7	
1,1-Dichloroethane	<b>1.1</b>	ug/L	0.50	1		06/29/15 13:54	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/29/15 13:54	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/29/15 13:54	75-35-4	
cis-1,2-Dichloroethene	<b>48.9</b>	ug/L	0.50	1		06/29/15 13:54	156-59-2	
trans-1,2-Dichloroethene	<b>2.0</b>	ug/L	0.50	1		06/29/15 13:54	156-60-5	
1,2-Dichloropropane	<b>0.88</b>	ug/L	0.50	1		06/29/15 13:54	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/29/15 13:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/29/15 13:54	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/29/15 13:54	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/29/15 13:54	79-34-5	
Tetrachloroethene	<b>164</b>	ug/L	0.50	1		06/29/15 13:54	127-18-4	
1,1,1-Trichloroethane	<b>2.8</b>	ug/L	0.50	1		06/29/15 13:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/29/15 13:54	79-00-5	
Trichloroethene	<b>44.2</b>	ug/L	0.50	1		06/29/15 13:54	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/29/15 13:54	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/29/15 13:54	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		06/29/15 13:54	17060-07-0	
Toluene-d8 (S)	91	%	70-130	1		06/29/15 13:54	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130	1		06/29/15 13:54	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

Sample: S-1	Lab ID: 1249017002	Collected: 06/16/15 08:15	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/30/15 08:43	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/30/15 08:43	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/30/15 08:43	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/30/15 08:43	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/30/15 08:43	108-90-7	
Chloroethane	ND	ug/L	0.50	1		06/30/15 08:43	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/30/15 08:43	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/30/15 08:43	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/30/15 08:43	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/30/15 08:43	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 08:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 08:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 08:43	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/30/15 08:43	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/30/15 08:43	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/30/15 08:43	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 08:43	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 08:43	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/30/15 08:43	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 08:43	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 08:43	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/30/15 08:43	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/30/15 08:43	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		06/30/15 08:43	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/30/15 08:43	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/30/15 08:43	79-00-5	
Trichloroethene	1.8	ug/L	0.50	1		06/30/15 08:43	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/30/15 08:43	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/30/15 08:43	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		06/30/15 08:43	17060-07-0	
Toluene-d8 (S)	92	%	70-130	1		06/30/15 08:43	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	1		06/30/15 08:43	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

Sample: S-2		Lab ID: 1249017003		Collected: 06/16/15 08:41	Received: 06/23/15 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/30/15 09:09	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/30/15 09:09	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/30/15 09:09	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/30/15 09:09	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/30/15 09:09	108-90-7	
Chloroethane	ND	ug/L	0.50	1		06/30/15 09:09	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/30/15 09:09	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/30/15 09:09	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/30/15 09:09	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/30/15 09:09	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 09:09	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 09:09	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 09:09	106-46-7	
1,1-Dichloroethane	<b>4.1</b>	ug/L	0.50	1		06/30/15 09:09	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/30/15 09:09	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/30/15 09:09	75-35-4	
cis-1,2-Dichloroethene	<b>3.8</b>	ug/L	0.50	1		06/30/15 09:09	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 09:09	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/30/15 09:09	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 09:09	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 09:09	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/30/15 09:09	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/30/15 09:09	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		06/30/15 09:09	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/30/15 09:09	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/30/15 09:09	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/30/15 09:09	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/30/15 09:09	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/30/15 09:09	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	98	%.	70-130	1		06/30/15 09:09	17060-07-0	
Toluene-d8 (S)	91	%.	70-130	1		06/30/15 09:09	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	70-130	1		06/30/15 09:09	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-23i		Lab ID: 1249017004		Collected: 06/16/15 09:15		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/30/15 09:36	75-27-4		
Bromoform	ND	ug/L	0.50	1		06/30/15 09:36	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/30/15 09:36	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/30/15 09:36	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/30/15 09:36	108-90-7		
Chloroethane	ND	ug/L	0.50	1		06/30/15 09:36	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/30/15 09:36	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/30/15 09:36	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/30/15 09:36	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/30/15 09:36	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 09:36	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 09:36	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 09:36	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/30/15 09:36	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		06/30/15 09:36	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/30/15 09:36	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 09:36	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 09:36	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/30/15 09:36	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 09:36	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 09:36	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/30/15 09:36	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/30/15 09:36	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		06/30/15 09:36	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/30/15 09:36	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/30/15 09:36	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		06/30/15 09:36	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/30/15 09:36	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/30/15 09:36	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	96	%.	70-130	1		06/30/15 09:36	17060-07-0		
Toluene-d8 (S)	91	%.	70-130	1		06/30/15 09:36	2037-26-5		
4-Bromofluorobenzene (S)	94	%.	70-130	1		06/30/15 09:36	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-14		Lab ID: 1249017005		Collected: 06/16/15 09:38		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	3.1	6.25		06/30/15 11:52	75-27-4		
Bromoform	ND	ug/L	3.1	6.25		06/30/15 11:52	75-25-2		
Bromomethane	ND	ug/L	125	6.25		06/30/15 11:52	74-83-9		
Carbon tetrachloride	ND	ug/L	3.1	6.25		06/30/15 11:52	56-23-5		
Chlorobenzene	ND	ug/L	3.1	6.25		06/30/15 11:52	108-90-7		
Chloroethane	ND	ug/L	3.1	6.25		06/30/15 11:52	75-00-3		
Chloroform	ND	ug/L	3.1	6.25		06/30/15 11:52	67-66-3		
Chloromethane	ND	ug/L	3.1	6.25		06/30/15 11:52	74-87-3		
Dibromochloromethane	ND	ug/L	3.1	6.25		06/30/15 11:52	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	3.1	6.25		06/30/15 11:52	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	3.1	6.25		06/30/15 11:52	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	3.1	6.25		06/30/15 11:52	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	3.1	6.25		06/30/15 11:52	106-46-7		
1,1-Dichloroethane	<b>14.7</b>	ug/L	3.1	6.25		06/30/15 11:52	75-34-3		
1,2-Dichloroethane	ND	ug/L	3.1	6.25		06/30/15 11:52	107-06-2		
1,1-Dichloroethene	<b>4.9</b>	ug/L	3.1	6.25		06/30/15 11:52	75-35-4		
cis-1,2-Dichloroethene	<b>117</b>	ug/L	3.1	6.25		06/30/15 11:52	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	3.1	6.25		06/30/15 11:52	156-60-5		
1,2-Dichloropropane	ND	ug/L	3.1	6.25		06/30/15 11:52	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	3.1	6.25		06/30/15 11:52	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	3.1	6.25		06/30/15 11:52	10061-02-6		
Methylene Chloride	ND	ug/L	31.2	6.25		06/30/15 11:52	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	3.1	6.25		06/30/15 11:52	79-34-5		
Tetrachloroethene	<b>248</b>	ug/L	3.1	6.25		06/30/15 11:52	127-18-4		
1,1,1-Trichloroethane	<b>4.4</b>	ug/L	3.1	6.25		06/30/15 11:52	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	3.1	6.25		06/30/15 11:52	79-00-5		
Trichloroethene	<b>792</b>	ug/L	3.1	6.25		06/30/15 11:52	79-01-6		
Trichlorofluoromethane	ND	ug/L	3.1	6.25		06/30/15 11:52	75-69-4		
Vinyl chloride	ND	ug/L	3.1	6.25		06/30/15 11:52	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	70-130	6.25		06/30/15 11:52	17060-07-0		
Toluene-d8 (S)	92	%	70-130	6.25		06/30/15 11:52	2037-26-5		
4-Bromofluorobenzene (S)	92	%	70-130	6.25		06/30/15 11:52	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-26	Lab ID: 1249017006	Collected: 06/16/15 10:26	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	1.7	3.33		06/30/15 11:25	75-27-4	
Bromoform	ND	ug/L	1.7	3.33		06/30/15 11:25	75-25-2	
Bromomethane	ND	ug/L	66.6	3.33		06/30/15 11:25	74-83-9	
Carbon tetrachloride	ND	ug/L	1.7	3.33		06/30/15 11:25	56-23-5	
Chlorobenzene	ND	ug/L	1.7	3.33		06/30/15 11:25	108-90-7	
Chloroethane	ND	ug/L	1.7	3.33		06/30/15 11:25	75-00-3	
Chloroform	ND	ug/L	1.7	3.33		06/30/15 11:25	67-66-3	
Chloromethane	ND	ug/L	1.7	3.33		06/30/15 11:25	74-87-3	
Dibromochloromethane	ND	ug/L	1.7	3.33		06/30/15 11:25	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.7	3.33		06/30/15 11:25	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	1.7	3.33		06/30/15 11:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.7	3.33		06/30/15 11:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.7	3.33		06/30/15 11:25	106-46-7	
1,1-Dichloroethane	5.0	ug/L	1.7	3.33		06/30/15 11:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.7	3.33		06/30/15 11:25	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.7	3.33		06/30/15 11:25	75-35-4	
cis-1,2-Dichloroethene	77.9	ug/L	1.7	3.33		06/30/15 11:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.7	3.33		06/30/15 11:25	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.7	3.33		06/30/15 11:25	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	1.7	3.33		06/30/15 11:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.7	3.33		06/30/15 11:25	10061-02-6	
Methylene Chloride	ND	ug/L	16.6	3.33		06/30/15 11:25	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.7	3.33		06/30/15 11:25	79-34-5	
Tetrachloroethene	205	ug/L	1.7	3.33		06/30/15 11:25	127-18-4	
1,1,1-Trichloroethane	2.8	ug/L	1.7	3.33		06/30/15 11:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.7	3.33		06/30/15 11:25	79-00-5	
Trichloroethene	385	ug/L	1.7	3.33		06/30/15 11:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.7	3.33		06/30/15 11:25	75-69-4	
Vinyl chloride	ND	ug/L	1.7	3.33		06/30/15 11:25	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	98	%	70-130	3.33		06/30/15 11:25	17060-07-0	
Toluene-d8 (S)	92	%	70-130	3.33		06/30/15 11:25	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	3.33		06/30/15 11:25	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-25i		Lab ID: 1249017007		Collected: 06/16/15 11:05		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/30/15 10:03	75-27-4		
Bromoform	ND	ug/L	0.50	1		06/30/15 10:03	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/30/15 10:03	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/30/15 10:03	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/30/15 10:03	108-90-7		
Chloroethane	ND	ug/L	0.50	1		06/30/15 10:03	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/30/15 10:03	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/30/15 10:03	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/30/15 10:03	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/30/15 10:03	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:03	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:03	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:03	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/30/15 10:03	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		06/30/15 10:03	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/30/15 10:03	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 10:03	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 10:03	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/30/15 10:03	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 10:03	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 10:03	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/30/15 10:03	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/30/15 10:03	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		06/30/15 10:03	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/30/15 10:03	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/30/15 10:03	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		06/30/15 10:03	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/30/15 10:03	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/30/15 10:03	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	98	%.	70-130	1		06/30/15 10:03	17060-07-0		
Toluene-d8 (S)	92	%.	70-130	1		06/30/15 10:03	2037-26-5		
4-Bromofluorobenzene (S)	93	%.	70-130	1		06/30/15 10:03	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

Sample: MW-22i		Lab ID: 1249017008		Collected: 06/16/15 11:44		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/30/15 10:30	75-27-4		
Bromoform	ND	ug/L	0.50	1		06/30/15 10:30	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/30/15 10:30	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/30/15 10:30	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/30/15 10:30	108-90-7		
Chloroethane	ND	ug/L	0.50	1		06/30/15 10:30	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/30/15 10:30	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/30/15 10:30	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/30/15 10:30	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/30/15 10:30	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:30	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:30	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:30	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/30/15 10:30	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		06/30/15 10:30	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/30/15 10:30	75-35-4		
cis-1,2-Dichloroethene	<b>8.6</b>	ug/L	0.50	1		06/30/15 10:30	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 10:30	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/30/15 10:30	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 10:30	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 10:30	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/30/15 10:30	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/30/15 10:30	79-34-5		
Tetrachloroethene	<b>1.6</b>	ug/L	0.50	1		06/30/15 10:30	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/30/15 10:30	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/30/15 10:30	79-00-5		
Trichloroethene	<b>9.0</b>	ug/L	0.50	1		06/30/15 10:30	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/30/15 10:30	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/30/15 10:30	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	96	%.	70-130	1		06/30/15 10:30	17060-07-0		
Toluene-d8 (S)	92	%.	70-130	1		06/30/15 10:30	2037-26-5		
4-Bromofluorobenzene (S)	93	%.	70-130	1		06/30/15 10:30	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-19i		Lab ID: 1249017009		Collected: 06/16/15 12:20		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/30/15 10:58	75-27-4		
Bromoform	ND	ug/L	0.50	1		06/30/15 10:58	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/30/15 10:58	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/30/15 10:58	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/30/15 10:58	108-90-7		
Chloroethane	ND	ug/L	0.50	1		06/30/15 10:58	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/30/15 10:58	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/30/15 10:58	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/30/15 10:58	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/30/15 10:58	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:58	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:58	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 10:58	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/30/15 10:58	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		06/30/15 10:58	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/30/15 10:58	75-35-4		
cis-1,2-Dichloroethene	<b>6.3</b>	ug/L	0.50	1		06/30/15 10:58	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 10:58	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/30/15 10:58	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 10:58	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 10:58	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/30/15 10:58	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/30/15 10:58	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		06/30/15 10:58	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/30/15 10:58	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/30/15 10:58	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		06/30/15 10:58	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/30/15 10:58	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/30/15 10:58	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	96	%.	70-130	1		06/30/15 10:58	17060-07-0		
Toluene-d8 (S)	91	%.	70-130	1		06/30/15 10:58	2037-26-5		
4-Bromofluorobenzene (S)	94	%.	70-130	1		06/30/15 10:58	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-9	Lab ID: 1249017010	Collected: 06/17/15 08:40	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 00:08	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 00:08	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 00:08	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 00:08	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 00:08	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/01/15 00:08	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 00:08	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 00:08	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 00:08	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 00:08	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:08	106-46-7	
1,1-Dichloroethane	<b>0.93</b>	ug/L	0.50	1		07/01/15 00:08	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 00:08	107-06-2	
1,1-Dichloroethene	<b>0.54</b>	ug/L	0.50	1		07/01/15 00:08	75-35-4	
cis-1,2-Dichloroethene	<b>12.5</b>	ug/L	0.50	1		07/01/15 00:08	156-59-2	
trans-1,2-Dichloroethene	<b>0.78</b>	ug/L	0.50	1		07/01/15 00:08	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 00:08	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 00:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 00:08	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 00:08	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 00:08	79-34-5	
Tetrachloroethene	<b>160</b>	ug/L	0.50	1		07/01/15 00:08	127-18-4	
1,1,1-Trichloroethane	<b>1.9</b>	ug/L	0.50	1		07/01/15 00:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 00:08	79-00-5	
Trichloroethene	<b>61.8</b>	ug/L	0.50	1		07/01/15 00:08	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 00:08	75-69-4	
Vinyl chloride	<b>1.6</b>	ug/L	0.50	1		07/01/15 00:08	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		07/01/15 00:08	17060-07-0	
Toluene-d8 (S)	106	%	70-130	1		07/01/15 00:08	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	1		07/01/15 00:08	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-7	Lab ID: 1249017011	Collected: 06/17/15 09:18	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		06/24/15 18:20	74-84-0	
Ethene	ND	ug/L	10.0	1		06/24/15 18:20	74-85-1	
Methane	<b>6960</b>	ug/L	10.0	1		06/24/15 18:20	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 00:28	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 00:28	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 00:28	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 00:28	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 00:28	108-90-7	
Chloroethane	<b>0.72</b>	ug/L	0.50	1		07/01/15 00:28	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 00:28	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 00:28	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 00:28	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 00:28	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:28	106-46-7	
1,1-Dichloroethane	<b>2.6</b>	ug/L	0.50	1		07/01/15 00:28	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 00:28	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 00:28	75-35-4	
cis-1,2-Dichloroethene	<b>12.0</b>	ug/L	0.50	1		07/01/15 00:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 00:28	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 00:28	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 00:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 00:28	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 00:28	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 00:28	79-34-5	
Tetrachloroethene	<b>1.2</b>	ug/L	0.50	1		07/01/15 00:28	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 00:28	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 00:28	79-00-5	
Trichloroethene	<b>1.0</b>	ug/L	0.50	1		07/01/15 00:28	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 00:28	75-69-4	
Vinyl chloride	<b>12.6</b>	ug/L	0.50	1		07/01/15 00:28	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		07/01/15 00:28	17060-07-0	
Toluene-d8 (S)	106	%	70-130	1		07/01/15 00:28	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130	1		07/01/15 00:28	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>46.0</b>	mg/L	1.0	1		06/25/15 17:02	7440-44-0	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-7 DUP	Lab ID: 1249017012	Collected: 06/17/15 09:18	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		06/24/15 21:07	74-84-0	
Ethene	ND	ug/L	10.0	1		06/24/15 21:07	74-85-1	
Methane	<b>8300</b>	ug/L	10.0	1		06/24/15 21:07	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 00:48	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 00:48	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 00:48	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 00:48	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 00:48	108-90-7	
Chloroethane	<b>0.71</b>	ug/L	0.50	1		07/01/15 00:48	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 00:48	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 00:48	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 00:48	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 00:48	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 00:48	106-46-7	
1,1-Dichloroethane	<b>2.6</b>	ug/L	0.50	1		07/01/15 00:48	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 00:48	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 00:48	75-35-4	
cis-1,2-Dichloroethene	<b>12.2</b>	ug/L	0.50	1		07/01/15 00:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 00:48	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 00:48	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 00:48	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 00:48	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 00:48	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 00:48	79-34-5	
Tetrachloroethene	<b>0.96</b>	ug/L	0.50	1		07/01/15 00:48	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 00:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 00:48	79-00-5	
Trichloroethene	<b>1.0</b>	ug/L	0.50	1		07/01/15 00:48	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 00:48	75-69-4	
Vinyl chloride	<b>12.3</b>	ug/L	0.50	1		07/01/15 00:48	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		07/01/15 00:48	17060-07-0	
Toluene-d8 (S)	106	%	70-130	1		07/01/15 00:48	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130	1		07/01/15 00:48	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>47.5</b>	mg/L	1.0	1		06/25/15 17:21	7440-44-0	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-8		Lab ID: 1249017013		Collected: 06/17/15 09:55		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 01:08	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/01/15 01:08	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/01/15 01:08	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 01:08	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 01:08	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/01/15 01:08	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/01/15 01:08	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/01/15 01:08	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 01:08	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 01:08	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:08	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:08	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:08	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 01:08	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 01:08	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:08	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:08	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:08	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 01:08	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 01:08	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 01:08	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 01:08	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 01:08	79-34-5		
Tetrachloroethene	5.9	ug/L	0.50	1		07/01/15 01:08	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 01:08	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 01:08	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		07/01/15 01:08	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 01:08	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 01:08	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		07/01/15 01:08	17060-07-0		
Toluene-d8 (S)	106	%	70-130	1		07/01/15 01:08	2037-26-5		
4-Bromofluorobenzene (S)	99	%	70-130	1		07/01/15 01:08	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-21i-105		Lab ID: 1249017014		Collected: 06/17/15 10:30		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 01:27	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/01/15 01:27	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/01/15 01:27	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 01:27	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 01:27	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/01/15 01:27	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/01/15 01:27	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/01/15 01:27	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 01:27	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 01:27	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:27	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:27	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:27	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 01:27	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 01:27	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:27	75-35-4		
cis-1,2-Dichloroethene	<b>20.8</b>	ug/L	0.50	1		07/01/15 01:27	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:27	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 01:27	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 01:27	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 01:27	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 01:27	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 01:27	79-34-5		
Tetrachloroethene	<b>3.5</b>	ug/L	0.50	1		07/01/15 01:27	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 01:27	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 01:27	79-00-5		
Trichloroethene	<b>4.0</b>	ug/L	0.50	1		07/01/15 01:27	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 01:27	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 01:27	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		07/01/15 01:27	17060-07-0		
Toluene-d8 (S)	106	%	70-130	1		07/01/15 01:27	2037-26-5		
4-Bromofluorobenzene (S)	101	%	70-130	1		07/01/15 01:27	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-32s	Lab ID: 1249017015	Collected: 06/17/15 10:56	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 01:47	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 01:47	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 01:47	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 01:47	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 01:47	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/01/15 01:47	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 01:47	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 01:47	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 01:47	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 01:47	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:47	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:47	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 01:47	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 01:47	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 01:47	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 01:47	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 01:47	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 01:47	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 01:47	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 01:47	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 01:47	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		07/01/15 01:47	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 01:47	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 01:47	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		07/01/15 01:47	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 01:47	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 01:47	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%.	70-130	1		07/01/15 01:47	17060-07-0	
Toluene-d8 (S)	106	%.	70-130	1		07/01/15 01:47	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	70-130	1		07/01/15 01:47	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-20i		Lab ID: 1249017016		Collected: 06/17/15 11:20		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 02:07	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/01/15 02:07	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/01/15 02:07	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 02:07	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 02:07	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/01/15 02:07	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/01/15 02:07	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/01/15 02:07	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 02:07	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 02:07	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:07	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:07	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:07	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 02:07	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 02:07	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 02:07	75-35-4		
cis-1,2-Dichloroethene	<b>10.8</b>	ug/L	0.50	1		07/01/15 02:07	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 02:07	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 02:07	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 02:07	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 02:07	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 02:07	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 02:07	79-34-5		
Tetrachloroethene	<b>3.7</b>	ug/L	0.50	1		07/01/15 02:07	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 02:07	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 02:07	79-00-5		
Trichloroethene	<b>2.2</b>	ug/L	0.50	1		07/01/15 02:07	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 02:07	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 02:07	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		07/01/15 02:07	17060-07-0		
Toluene-d8 (S)	105	%	70-130	1		07/01/15 02:07	2037-26-5		
4-Bromofluorobenzene (S)	99	%	70-130	1		07/01/15 02:07	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-16	Lab ID: 1249017017	Collected: 06/17/15 11:50	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 02:27	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 02:27	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 02:27	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 02:27	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 02:27	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/01/15 02:27	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 02:27	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 02:27	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 02:27	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 02:27	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:27	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:27	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:27	106-46-7	
1,1-Dichloroethane	<b>0.61</b>	ug/L	0.50	1		07/01/15 02:27	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 02:27	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 02:27	75-35-4	
cis-1,2-Dichloroethene	<b>10.5</b>	ug/L	0.50	1		07/01/15 02:27	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 02:27	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 02:27	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 02:27	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 02:27	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 02:27	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 02:27	79-34-5	
Tetrachloroethene	<b>179</b>	ug/L	0.50	1		07/01/15 02:27	127-18-4	
1,1,1-Trichloroethane	<b>1.0</b>	ug/L	0.50	1		07/01/15 02:27	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 02:27	79-00-5	
Trichloroethene	<b>41.6</b>	ug/L	0.50	1		07/01/15 02:27	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 02:27	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 02:27	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	104	%	70-130	1		07/01/15 02:27	17060-07-0	
Toluene-d8 (S)	107	%	70-130	1		07/01/15 02:27	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130	1		07/01/15 02:27	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-18i		Lab ID: 1249017018		Collected: 06/17/15 12:19		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 02:46	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/01/15 02:46	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/01/15 02:46	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 02:46	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 02:46	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/01/15 02:46	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/01/15 02:46	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/01/15 02:46	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 02:46	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 02:46	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:46	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:46	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 02:46	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 02:46	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 02:46	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 02:46	75-35-4		
cis-1,2-Dichloroethene	<b>1.3</b>	ug/L	0.50	1		07/01/15 02:46	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 02:46	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 02:46	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 02:46	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 02:46	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 02:46	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 02:46	79-34-5		
Tetrachloroethene	<b>2.0</b>	ug/L	0.50	1		07/01/15 02:46	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 02:46	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 02:46	79-00-5		
Trichloroethene	<b>1.1</b>	ug/L	0.50	1		07/01/15 02:46	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 02:46	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 02:46	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		07/01/15 02:46	17060-07-0		
Toluene-d8 (S)	106	%.	70-130	1		07/01/15 02:46	2037-26-5		
4-Bromofluorobenzene (S)	99	%.	70-130	1		07/01/15 02:46	460-00-4		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-5		Lab ID: 1249017019		Collected: 06/17/15 13:19	Received: 06/23/15 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 03:06	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 03:06	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 03:06	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 03:06	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 03:06	108-90-7	
Chloroethane	<b>2.2</b>	ug/L	0.50	1		07/01/15 03:06	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 03:06	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 03:06	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 03:06	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 03:06	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 03:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 03:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 03:06	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 03:06	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 03:06	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 03:06	75-35-4	
cis-1,2-Dichloroethene	<b>3.2</b>	ug/L	0.50	1		07/01/15 03:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 03:06	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 03:06	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 03:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 03:06	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 03:06	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 03:06	79-34-5	
Tetrachloroethene	<b>0.63</b>	ug/L	0.50	1		07/01/15 03:06	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 03:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 03:06	79-00-5	
Trichloroethene	<b>0.64</b>	ug/L	0.50	1		07/01/15 03:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 03:06	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 03:06	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%.	70-130	1		07/01/15 03:06	17060-07-0	
Toluene-d8 (S)	106	%.	70-130	1		07/01/15 03:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	70-130	1		07/01/15 03:06	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-1		Lab ID: 1249017020		Collected: 06/17/15 13:48	Received: 06/23/15 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 03:26	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 03:26	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 03:26	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 03:26	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 03:26	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/01/15 03:26	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 03:26	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 03:26	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 03:26	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 03:26	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 03:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 03:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 03:26	106-46-7	
1,1-Dichloroethane	<b>9.5</b>	ug/L	0.50	1		07/01/15 03:26	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 03:26	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 03:26	75-35-4	
cis-1,2-Dichloroethene	<b>75.0</b>	ug/L	0.50	1		07/01/15 03:26	156-59-2	
trans-1,2-Dichloroethene	<b>0.80</b>	ug/L	0.50	1		07/01/15 03:26	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 03:26	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 03:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 03:26	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 03:26	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 03:26	79-34-5	
Tetrachloroethene	<b>4.3</b>	ug/L	0.50	1		07/01/15 03:26	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 03:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 03:26	79-00-5	
Trichloroethene	<b>4.6</b>	ug/L	0.50	1		07/01/15 03:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 03:26	75-69-4	
Vinyl chloride	<b>4.9</b>	ug/L	0.50	1		07/01/15 03:26	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	104	%.	70-130	1		07/01/15 03:26	17060-07-0	
Toluene-d8 (S)	106	%.	70-130	1		07/01/15 03:26	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	70-130	1		07/01/15 03:26	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: Field Blank 6-17		Lab ID: 1249017021	Collected: 06/17/15 14:00	Received: 06/23/15 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/30/15 21:29	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/30/15 21:29	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/30/15 21:29	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/30/15 21:29	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/30/15 21:29	108-90-7	
Chloroethane	ND	ug/L	0.50	1		06/30/15 21:29	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/30/15 21:29	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/30/15 21:29	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/30/15 21:29	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/30/15 21:29	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 21:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 21:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/30/15 21:29	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/30/15 21:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/30/15 21:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/30/15 21:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 21:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/30/15 21:29	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/30/15 21:29	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 21:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/30/15 21:29	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/30/15 21:29	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/30/15 21:29	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		06/30/15 21:29	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/30/15 21:29	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/30/15 21:29	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/30/15 21:29	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/30/15 21:29	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/30/15 21:29	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	99	%.	70-130	1		06/30/15 21:29	17060-07-0	
Toluene-d8 (S)	105	%.	70-130	1		06/30/15 21:29	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	70-130	1		06/30/15 21:29	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: <b>MP-1</b>	Lab ID: <b>1249017022</b>	Collected: 06/18/15 08:10	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		06/24/15 22:53	74-84-0	
Ethene	ND	ug/L	10.0	1		06/24/15 22:53	74-85-1	
Methane	<b>7480</b>	ug/L	10.0	1		06/24/15 22:53	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.84	1.67		07/02/15 05:49	75-27-4	
Bromoform	ND	ug/L	0.84	1.67		07/02/15 05:49	75-25-2	
Bromomethane	ND	ug/L	33.4	1.67		07/02/15 05:49	74-83-9	
Carbon tetrachloride	ND	ug/L	0.84	1.67		07/02/15 05:49	56-23-5	
Chlorobenzene	ND	ug/L	0.84	1.67		07/02/15 05:49	108-90-7	
Chloroethane	ND	ug/L	0.84	1.67		07/02/15 05:49	75-00-3	
Chloroform	ND	ug/L	0.84	1.67		07/02/15 05:49	67-66-3	
Chloromethane	ND	ug/L	0.84	1.67		07/02/15 05:49	74-87-3	
Dibromochloromethane	ND	ug/L	0.84	1.67		07/02/15 05:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.84	1.67		07/02/15 05:49	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.84	1.67		07/02/15 05:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.84	1.67		07/02/15 05:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.84	1.67		07/02/15 05:49	106-46-7	
1,1-Dichloroethane	<b>2.9</b>	ug/L	0.84	1.67		07/02/15 05:49	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.84	1.67		07/02/15 05:49	107-06-2	
1,1-Dichloroethene	<b>1.5</b>	ug/L	0.84	1.67		07/02/15 05:49	75-35-4	
cis-1,2-Dichloroethene	<b>91.0</b>	ug/L	0.84	1.67		07/02/15 05:49	156-59-2	
trans-1,2-Dichloroethene	<b>0.87</b>	ug/L	0.84	1.67		07/02/15 05:49	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.84	1.67		07/02/15 05:49	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.84	1.67		07/02/15 05:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.84	1.67		07/02/15 05:49	10061-02-6	
Methylene Chloride	ND	ug/L	8.4	1.67		07/02/15 05:49	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.84	1.67		07/02/15 05:49	79-34-5	
Tetrachloroethene	<b>376</b>	ug/L	5.0	10		07/02/15 13:16	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.84	1.67		07/02/15 05:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.84	1.67		07/02/15 05:49	79-00-5	
Trichloroethene	<b>80.8</b>	ug/L	0.84	1.67		07/02/15 05:49	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.84	1.67		07/02/15 05:49	75-69-4	
Vinyl chloride	ND	ug/L	0.84	1.67		07/02/15 05:49	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	94	%	70-130	1.67		07/02/15 05:49	17060-07-0	
Toluene-d8 (S)	92	%	70-130	1.67		07/02/15 05:49	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1.67		07/02/15 05:49	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>6.0</b>	mg/L	1.0	1		06/25/15 17:40	7440-44-0	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-24i	Lab ID: 1249017023	Collected: 06/18/15 08:44	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		06/24/15 23:02	74-84-0	
Ethene	ND	ug/L	10.0	1		06/24/15 23:02	74-85-1	
Methane	ND	ug/L	10.0	1		06/24/15 23:02	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 17:26	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 17:26	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 17:26	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 17:26	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 17:26	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/01/15 17:26	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 17:26	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 17:26	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 17:26	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 17:26	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 17:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 17:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 17:26	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 17:26	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 17:26	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 17:26	75-35-4	
cis-1,2-Dichloroethene	3.4	ug/L	0.50	1		07/01/15 17:26	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 17:26	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 17:26	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 17:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 17:26	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 17:26	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 17:26	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		07/01/15 17:26	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 17:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 17:26	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		07/01/15 17:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 17:26	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 17:26	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	95	%	70-130	1		07/01/15 17:26	17060-07-0	
Toluene-d8 (S)	92	%	70-130	1		07/01/15 17:26	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		07/01/15 17:26	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	1.6	mg/L	1.0	1		06/25/15 17:58	7440-44-0	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-24d		Lab ID: 1249017024	Collected: 06/18/15 09:22	Received: 06/23/15 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 17:53	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/01/15 17:53	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/01/15 17:53	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 17:53	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 17:53	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/01/15 17:53	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/01/15 17:53	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/01/15 17:53	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 17:53	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 17:53	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 17:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 17:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 17:53	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 17:53	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 17:53	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 17:53	75-35-4	
cis-1,2-Dichloroethene	<b>3.8</b>	ug/L	0.50	1		07/01/15 17:53	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 17:53	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 17:53	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 17:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 17:53	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 17:53	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 17:53	79-34-5	
Tetrachloroethene	<b>3.8</b>	ug/L	0.50	1		07/01/15 17:53	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 17:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 17:53	79-00-5	
Trichloroethene	<b>1.7</b>	ug/L	0.50	1		07/01/15 17:53	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 17:53	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 17:53	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		07/01/15 17:53	17060-07-0	
Toluene-d8 (S)	92	%	70-130	1		07/01/15 17:53	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	1		07/01/15 17:53	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: EX-1	Lab ID: 1249017025	Collected: 06/18/15 09:54	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		06/24/15 23:10	74-84-0	
Ethene	ND	ug/L	10.0	1		06/24/15 23:10	74-85-1	
Methane	ND	ug/L	10.0	1		06/24/15 23:10	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 04:56	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 04:56	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 04:56	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 04:56	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 04:56	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 04:56	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 04:56	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 04:56	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 04:56	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 04:56	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:56	106-46-7	
1,1-Dichloroethane	2.6	ug/L	0.50	1		07/02/15 04:56	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 04:56	107-06-2	
1,1-Dichloroethene	2.6	ug/L	0.50	1		07/02/15 04:56	75-35-4	
cis-1,2-Dichloroethene	420	ug/L	5.0	10		07/02/15 13:43	156-59-2	
trans-1,2-Dichloroethene	1.6	ug/L	0.50	1		07/02/15 04:56	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 04:56	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 04:56	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 04:56	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 04:56	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 04:56	79-34-5	
Tetrachloroethene	186	ug/L	0.50	1		07/02/15 04:56	127-18-4	
1,1,1-Trichloroethane	0.88	ug/L	0.50	1		07/02/15 04:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 04:56	79-00-5	
Trichloroethene	42.0	ug/L	0.50	1		07/02/15 04:56	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 04:56	75-69-4	
Vinyl chloride	3.2	ug/L	0.50	1		07/02/15 04:56	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		07/02/15 04:56	17060-07-0	
Toluene-d8 (S)	92	%	70-130	1		07/02/15 04:56	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		07/02/15 04:56	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	7.5	mg/L	1.0	1		06/25/15 18:17	7440-44-0	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-19	Lab ID: 1249017026	Collected: 06/18/15 10:49	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 05:22	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 05:22	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 05:22	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 05:22	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 05:22	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 05:22	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 05:22	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 05:22	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 05:22	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 05:22	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 05:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 05:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 05:22	106-46-7	
1,1-Dichloroethane	<b>21.5</b>	ug/L	0.50	1		07/02/15 05:22	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 05:22	107-06-2	
1,1-Dichloroethene	<b>48.5</b>	ug/L	0.50	1		07/02/15 05:22	75-35-4	
cis-1,2-Dichloroethene	<b>628</b>	ug/L	50.0	100		07/02/15 14:10	156-59-2	
trans-1,2-Dichloroethene	<b>6.6</b>	ug/L	0.50	1		07/02/15 05:22	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 05:22	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 05:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 05:22	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 05:22	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 05:22	79-34-5	
Tetrachloroethene	<b>8080</b>	ug/L	50.0	100		07/02/15 14:10	127-18-4	
1,1,1-Trichloroethane	<b>94.3</b>	ug/L	0.50	1		07/02/15 05:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 05:22	79-00-5	
Trichloroethene	<b>2200</b>	ug/L	50.0	100		07/02/15 14:10	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 05:22	75-69-4	
Vinyl chloride	<b>28.0</b>	ug/L	0.50	1		07/02/15 05:22	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		07/02/15 05:22	17060-07-0	
Toluene-d8 (S)	94	%	70-130	1		07/02/15 05:22	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		07/02/15 05:22	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-19 DUP		Lab ID: 1249017027		Collected: 06/18/15 10:49	Received: 06/23/15 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 02:14	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 02:14	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 02:14	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 02:14	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 02:14	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 02:14	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 02:14	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 02:14	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 02:14	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 02:14	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 02:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 02:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 02:14	106-46-7	
1,1-Dichloroethane	<b>22.7</b>	ug/L	0.50	1		07/02/15 02:14	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 02:14	107-06-2	
1,1-Dichloroethene	<b>48.8</b>	ug/L	0.50	1		07/02/15 02:14	75-35-4	
cis-1,2-Dichloroethene	<b>614</b>	ug/L	50.0	100		07/02/15 14:37	156-59-2	M1
trans-1,2-Dichloroethene	<b>7.5</b>	ug/L	0.50	1		07/02/15 02:14	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 02:14	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 02:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 02:14	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 02:14	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 02:14	79-34-5	
Tetrachloroethene	<b>7990</b>	ug/L	50.0	100		07/02/15 14:37	127-18-4	
1,1,1-Trichloroethane	<b>98.5</b>	ug/L	0.50	1		07/02/15 02:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 02:14	79-00-5	
Trichloroethene	<b>2090</b>	ug/L	50.0	100		07/02/15 14:37	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 02:14	75-69-4	
Vinyl chloride	<b>30.7</b>	ug/L	0.50	1		07/02/15 02:14	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		07/02/15 02:14	17060-07-0	
Toluene-d8 (S)	94	%	70-130	1		07/02/15 02:14	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		07/02/15 02:14	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-13	Lab ID: 1249017028	Collected: 06/18/15 12:03	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 02:41	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 02:41	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 02:41	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 02:41	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 02:41	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 02:41	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 02:41	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 02:41	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 02:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 02:41	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 02:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 02:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 02:41	106-46-7	
1,1-Dichloroethane	<b>33.9</b>	ug/L	0.50	1		07/02/15 02:41	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 02:41	107-06-2	
1,1-Dichloroethene	<b>15.9</b>	ug/L	0.50	1		07/02/15 02:41	75-35-4	
cis-1,2-Dichloroethene	<b>615</b>	ug/L	50.0	100		07/02/15 15:04	156-59-2	M1
trans-1,2-Dichloroethene	<b>15.3</b>	ug/L	0.50	1		07/02/15 02:41	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 02:41	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 02:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 02:41	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 02:41	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 02:41	79-34-5	
Tetrachloroethene	<b>1960</b>	ug/L	50.0	100		07/02/15 15:04	127-18-4	
1,1,1-Trichloroethane	<b>10.4</b>	ug/L	0.50	1		07/02/15 02:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 02:41	79-00-5	
Trichloroethene	<b>1390</b>	ug/L	50.0	100		07/02/15 15:04	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 02:41	75-69-4	
Vinyl chloride	<b>2.0</b>	ug/L	0.50	1		07/02/15 02:41	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		07/02/15 02:41	17060-07-0	
Toluene-d8 (S)	92	%	70-130	1		07/02/15 02:41	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		07/02/15 02:41	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MGMS1-43		Lab ID: 1249017029		Collected: 06/18/15 12:30		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 10:54	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/02/15 10:54	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/02/15 10:54	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 10:54	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 10:54	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/02/15 10:54	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/02/15 10:54	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/02/15 10:54	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 10:54	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 10:54	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 10:54	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 10:54	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 10:54	106-46-7		
1,1-Dichloroethane	2.7	ug/L	0.50	1		07/02/15 10:54	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 10:54	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		07/02/15 10:54	75-35-4		
cis-1,2-Dichloroethene	59.1	ug/L	0.50	1		07/02/15 10:54	156-59-2	M1	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/02/15 10:54	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 10:54	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 10:54	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 10:54	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 10:54	75-09-2	R1	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 10:54	79-34-5		
Tetrachloroethene	0.84	ug/L	0.50	1		07/02/15 10:54	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/02/15 10:54	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 10:54	79-00-5		
Trichloroethene	2.8	ug/L	0.50	1		07/02/15 10:54	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 10:54	75-69-4		
Vinyl chloride	3.1	ug/L	0.50	1		07/02/15 10:54	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		07/02/15 10:54	17060-07-0		
Toluene-d8 (S)	92	%	70-130	1		07/02/15 10:54	2037-26-5		
4-Bromofluorobenzene (S)	96	%	70-130	1		07/02/15 10:54	460-00-4		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: <b>MGMS1-60</b>	Lab ID: <b>1249017030</b>	Collected: 06/18/15 12:44	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 18:59	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 18:59	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 18:59	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 18:59	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 18:59	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 18:59	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 18:59	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 18:59	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 18:59	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 18:59	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 18:59	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 18:59	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 18:59	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		07/02/15 18:59	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 18:59	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/02/15 18:59	75-35-4	
cis-1,2-Dichloroethene	<b>9.5</b>	ug/L	0.50	1		07/02/15 18:59	156-59-2	M1
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/02/15 18:59	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 18:59	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 18:59	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 18:59	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 18:59	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 18:59	79-34-5	
Tetrachloroethene	<b>17.7</b>	ug/L	0.50	1		07/02/15 18:59	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/02/15 18:59	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 18:59	79-00-5	
Trichloroethene	<b>9.1</b>	ug/L	0.50	1		07/02/15 18:59	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 18:59	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		07/02/15 18:59	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	95	%.	70-130	1		07/02/15 18:59	17060-07-0	
Toluene-d8 (S)	90	%.	70-130	1		07/02/15 18:59	2037-26-5	
4-Bromofluorobenzene (S)	93	%.	70-130	1		07/02/15 18:59	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-12	Lab ID: 1249017031	Collected: 06/19/15 08:28	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	15.1	ug/L	10.0	1		06/24/15 23:42	74-84-0	
Ethene	ND	ug/L	10.0	1		06/24/15 23:42	74-85-1	
Methane	ND	ug/L	10.0	1		06/24/15 23:42	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	10.0	20		07/01/15 21:17	75-27-4	
Bromoform	ND	ug/L	10.0	20		07/01/15 21:17	75-25-2	
Bromomethane	ND	ug/L	400	20		07/01/15 21:17	74-83-9	
Carbon tetrachloride	ND	ug/L	10.0	20		07/01/15 21:17	56-23-5	
Chlorobenzene	ND	ug/L	10.0	20		07/01/15 21:17	108-90-7	
Chloroethane	ND	ug/L	10.0	20		07/01/15 21:17	75-00-3	
Chloroform	ND	ug/L	10.0	20		07/01/15 21:17	67-66-3	
Chloromethane	ND	ug/L	10.0	20		07/01/15 21:17	74-87-3	
Dibromochloromethane	ND	ug/L	10.0	20		07/01/15 21:17	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	20		07/01/15 21:17	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	10.0	20		07/01/15 21:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	20		07/01/15 21:17	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	20		07/01/15 21:17	106-46-7	
1,1-Dichloroethane	151	ug/L	10.0	20		07/01/15 21:17	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	20		07/01/15 21:17	107-06-2	
1,1-Dichloroethene	28.2	ug/L	10.0	20		07/01/15 21:17	75-35-4	
cis-1,2-Dichloroethene	2570	ug/L	10.0	20		07/01/15 21:17	156-59-2	M1
trans-1,2-Dichloroethene	25.0	ug/L	10.0	20		07/01/15 21:17	156-60-5	
1,2-Dichloropropane	ND	ug/L	10.0	20		07/01/15 21:17	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	10.0	20		07/01/15 21:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	10.0	20		07/01/15 21:17	10061-02-6	
Gasoline Range Organics	3500	ug/L	1000	20		07/01/15 21:17		DQ
Methylene Chloride	ND	ug/L	100	20		07/01/15 21:17	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	20		07/01/15 21:17	79-34-5	
Tetrachloroethene	514	ug/L	10.0	20		07/01/15 21:17	127-18-4	
TPH as Gas	3500	ug/L	1000	20		07/01/15 21:17		DQ
1,1,1-Trichloroethane	23.6	ug/L	10.0	20		07/01/15 21:17	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	20		07/01/15 21:17	79-00-5	
Trichloroethene	356	ug/L	10.0	20		07/01/15 21:17	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	20		07/01/15 21:17	75-69-4	
Vinyl chloride	31.1	ug/L	10.0	20		07/01/15 21:17	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	97	%	70-130	20		07/01/15 21:17	17060-07-0	
Toluene-d8 (S)	92	%	70-130	20		07/01/15 21:17	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	20		07/01/15 21:17	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	4.8	mg/L	1.0	1		06/25/15 18:36	7440-44-0	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-12 DUP	Lab ID: 1249017032	Collected: 06/19/15 08:28	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	12.5	ug/L	10.0	1		06/25/15 03:19	74-84-0	
Ethene	ND	ug/L	10.0	1		06/25/15 03:19	74-85-1	
Methane	ND	ug/L	10.0	1		06/25/15 03:19	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	10.0	20		07/02/15 07:37	75-27-4	
Bromoform	ND	ug/L	10.0	20		07/02/15 07:37	75-25-2	
Bromomethane	ND	ug/L	400	20		07/02/15 07:37	74-83-9	
Carbon tetrachloride	ND	ug/L	10.0	20		07/02/15 07:37	56-23-5	
Chlorobenzene	ND	ug/L	10.0	20		07/02/15 07:37	108-90-7	
Chloroethane	ND	ug/L	10.0	20		07/02/15 07:37	75-00-3	
Chloroform	ND	ug/L	10.0	20		07/02/15 07:37	67-66-3	
Chloromethane	ND	ug/L	10.0	20		07/02/15 07:37	74-87-3	
Dibromochloromethane	ND	ug/L	10.0	20		07/02/15 07:37	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	20		07/02/15 07:37	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	10.0	20		07/02/15 07:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	20		07/02/15 07:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	20		07/02/15 07:37	106-46-7	
1,1-Dichloroethane	157	ug/L	10.0	20		07/02/15 07:37	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	20		07/02/15 07:37	107-06-2	
1,1-Dichloroethene	31.0	ug/L	10.0	20		07/02/15 07:37	75-35-4	
cis-1,2-Dichloroethene	2680	ug/L	10.0	20		07/02/15 07:37	156-59-2	M1
trans-1,2-Dichloroethene	30.0	ug/L	10.0	20		07/02/15 07:37	156-60-5	
1,2-Dichloropropane	ND	ug/L	10.0	20		07/02/15 07:37	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	10.0	20		07/02/15 07:37	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	10.0	20		07/02/15 07:37	10061-02-6	
Methylene Chloride	ND	ug/L	100	20		07/02/15 07:37	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	20		07/02/15 07:37	79-34-5	
Tetrachloroethene	516	ug/L	10.0	20		07/02/15 07:37	127-18-4	
1,1,1-Trichloroethane	23.4	ug/L	10.0	20		07/02/15 07:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	20		07/02/15 07:37	79-00-5	
Trichloroethene	362	ug/L	10.0	20		07/02/15 07:37	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	20		07/02/15 07:37	75-69-4	
Vinyl chloride	33.2	ug/L	10.0	20		07/02/15 07:37	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	94	%	70-130	20		07/02/15 07:37	17060-07-0	
Toluene-d8 (S)	92	%	70-130	20		07/02/15 07:37	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	20		07/02/15 07:37	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	4.8	mg/L	1.0	1		06/25/15 20:11	7440-44-0	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: <b>MGMS3-40</b>	Lab ID: <b>1249017033</b>	Collected: 06/19/15 09:27	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.84	1.67		07/02/15 06:17	75-27-4	
Bromoform	ND	ug/L	0.84	1.67		07/02/15 06:17	75-25-2	
Bromomethane	ND	ug/L	33.4	1.67		07/02/15 06:17	74-83-9	
Carbon tetrachloride	ND	ug/L	0.84	1.67		07/02/15 06:17	56-23-5	
Chlorobenzene	ND	ug/L	0.84	1.67		07/02/15 06:17	108-90-7	
Chloroethane	ND	ug/L	0.84	1.67		07/02/15 06:17	75-00-3	
Chloroform	ND	ug/L	0.84	1.67		07/02/15 06:17	67-66-3	
Chloromethane	ND	ug/L	0.84	1.67		07/02/15 06:17	74-87-3	
Dibromochloromethane	ND	ug/L	0.84	1.67		07/02/15 06:17	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.84	1.67		07/02/15 06:17	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.84	1.67		07/02/15 06:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.84	1.67		07/02/15 06:17	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.84	1.67		07/02/15 06:17	106-46-7	
1,1-Dichloroethane	<b>7.2</b>	ug/L	0.84	1.67		07/02/15 06:17	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.84	1.67		07/02/15 06:17	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.84	1.67		07/02/15 06:17	75-35-4	
cis-1,2-Dichloroethene	<b>339</b>	ug/L	5.0	10		07/02/15 15:31	156-59-2	M1
trans-1,2-Dichloroethene	<b>3.2</b>	ug/L	0.84	1.67		07/02/15 06:17	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.84	1.67		07/02/15 06:17	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.84	1.67		07/02/15 06:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.84	1.67		07/02/15 06:17	10061-02-6	
Methylene Chloride	ND	ug/L	8.4	1.67		07/02/15 06:17	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.84	1.67		07/02/15 06:17	79-34-5	
Tetrachloroethene	<b>34.4</b>	ug/L	0.84	1.67		07/02/15 06:17	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.84	1.67		07/02/15 06:17	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.84	1.67		07/02/15 06:17	79-00-5	
Trichloroethene	<b>32.8</b>	ug/L	0.84	1.67		07/02/15 06:17	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.84	1.67		07/02/15 06:17	75-69-4	
Vinyl chloride	<b>73.3</b>	ug/L	0.84	1.67		07/02/15 06:17	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	94	%	70-130	1.67		07/02/15 06:17	17060-07-0	
Toluene-d8 (S)	91	%	70-130	1.67		07/02/15 06:17	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	1.67		07/02/15 06:17	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: <b>MGMS3-60</b>		Lab ID: <b>1249017034</b>		Collected: 06/19/15 09:45	Received: 06/23/15 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 19:26	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 19:26	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 19:26	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 19:26	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 19:26	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 19:26	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 19:26	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 19:26	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 19:26	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 19:26	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 19:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 19:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 19:26	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		07/02/15 19:26	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 19:26	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		07/02/15 19:26	75-35-4	
cis-1,2-Dichloroethene	<b>6.0</b>	ug/L	0.50	1		07/02/15 19:26	156-59-2	M1
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/02/15 19:26	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 19:26	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 19:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 19:26	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 19:26	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 19:26	79-34-5	
Tetrachloroethene	<b>3.5</b>	ug/L	0.50	1		07/02/15 19:26	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/02/15 19:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 19:26	79-00-5	
Trichloroethene	<b>1.6</b>	ug/L	0.50	1		07/02/15 19:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 19:26	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		07/02/15 19:26	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	95	%.	70-130	1		07/02/15 19:26	17060-07-0	
Toluene-d8 (S)	89	%.	70-130	1		07/02/15 19:26	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	70-130	1		07/02/15 19:26	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: <b>MGMS2-40</b>		Lab ID: <b>1249017035</b>		Collected: 06/19/15 10:06	Received: 06/23/15 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	<b>17.3</b>	ug/L	10.0	1		06/25/15 03:27	74-84-0	
Ethene	<b>33.7</b>	ug/L	10.0	1		06/25/15 03:27	74-85-1	
Methane	<b>1050</b>	ug/L	10.0	1		06/25/15 03:27	74-82-8	
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 19:53	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 19:53	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 19:53	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 19:53	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 19:53	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 19:53	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 19:53	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 19:53	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 19:53	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 19:53	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 19:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 19:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 19:53	106-46-7	
1,1-Dichloroethane	<b>13.8</b>	ug/L	0.50	1		07/02/15 19:53	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 19:53	107-06-2	
1,1-Dichloroethene	<b>1.3</b>	ug/L	0.50	1		07/02/15 19:53	75-35-4	
cis-1,2-Dichloroethene	<b>53.8</b>	ug/L	0.50	1		07/02/15 19:53	156-59-2	M1
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/02/15 19:53	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 19:53	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 19:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 19:53	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 19:53	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 19:53	79-34-5	
Tetrachloroethene	<b>18.4</b>	ug/L	0.50	1		07/02/15 19:53	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/02/15 19:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 19:53	79-00-5	
Trichloroethene	<b>12.8</b>	ug/L	0.50	1		07/02/15 19:53	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 19:53	75-69-4	
Vinyl chloride	<b>48.3</b>	ug/L	0.50	1		07/02/15 19:53	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		07/02/15 19:53	17060-07-0	
Toluene-d8 (S)	89	%	70-130	1		07/02/15 19:53	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		07/02/15 19:53	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>11.0</b>	mg/L	1.0	1		06/25/15 20:48	7440-44-0	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MGMS2-60		Lab ID: 1249017036		Collected: 06/19/15 10:29	Received: 06/23/15 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 04:02	75-27-4	
Bromoform	ND	ug/L	0.50	1		07/02/15 04:02	75-25-2	
Bromomethane	ND	ug/L	20.0	1		07/02/15 04:02	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 04:02	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 04:02	108-90-7	
Chloroethane	ND	ug/L	0.50	1		07/02/15 04:02	75-00-3	
Chloroform	ND	ug/L	0.50	1		07/02/15 04:02	67-66-3	
Chloromethane	ND	ug/L	0.50	1		07/02/15 04:02	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 04:02	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 04:02	106-93-4	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:02	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:02	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:02	106-46-7	
1,1-Dichloroethane	<b>2.0</b>	ug/L	0.50	1		07/02/15 04:02	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 04:02	107-06-2	
1,1-Dichloroethene	<b>0.56</b>	ug/L	0.50	1		07/02/15 04:02	75-35-4	
cis-1,2-Dichloroethene	<b>38.1</b>	ug/L	0.50	1		07/02/15 04:02	156-59-2	M1
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/02/15 04:02	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 04:02	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 04:02	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 04:02	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 04:02	75-09-2	R1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 04:02	79-34-5	
Tetrachloroethene	<b>35.1</b>	ug/L	0.50	1		07/02/15 04:02	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/02/15 04:02	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 04:02	79-00-5	
Trichloroethene	<b>23.5</b>	ug/L	0.50	1		07/02/15 04:02	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 04:02	75-69-4	
Vinyl chloride	<b>7.9</b>	ug/L	0.50	1		07/02/15 04:02	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	93	%	70-130	1		07/02/15 04:02	17060-07-0	
Toluene-d8 (S)	91	%	70-130	1		07/02/15 04:02	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		07/02/15 04:02	460-00-4	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: MW-21i-40		Lab ID: 1249017037		Collected: 06/19/15 11:02		Received: 06/23/15 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/02/15 04:29	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/02/15 04:29	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/02/15 04:29	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/02/15 04:29	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/02/15 04:29	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/02/15 04:29	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/02/15 04:29	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/02/15 04:29	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/02/15 04:29	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/02/15 04:29	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:29	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:29	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/02/15 04:29	106-46-7		
1,1-Dichloroethane	2.7	ug/L	0.50	1		07/02/15 04:29	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/02/15 04:29	107-06-2		
1,1-Dichloroethene	0.76	ug/L	0.50	1		07/02/15 04:29	75-35-4		
cis-1,2-Dichloroethene	61.6	ug/L	0.50	1		07/02/15 04:29	156-59-2	M1	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/02/15 04:29	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/02/15 04:29	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 04:29	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/02/15 04:29	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/02/15 04:29	75-09-2	R1	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/02/15 04:29	79-34-5		
Tetrachloroethene	24.7	ug/L	0.50	1		07/02/15 04:29	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/02/15 04:29	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/02/15 04:29	79-00-5		
Trichloroethene	21.8	ug/L	0.50	1		07/02/15 04:29	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/02/15 04:29	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		07/02/15 04:29	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		07/02/15 04:29	17060-07-0		
Toluene-d8 (S)	92	%	70-130	1		07/02/15 04:29	2037-26-5		
4-Bromofluorobenzene (S)	95	%	70-130	1		07/02/15 04:29	460-00-4		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: Field Blank 6-19		Lab ID: 1249017038	Collected: 06/19/15 11:20	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 23:59	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/01/15 23:59	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/01/15 23:59	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 23:59	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 23:59	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/01/15 23:59	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/01/15 23:59	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/01/15 23:59	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 23:59	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 23:59	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 23:59	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 23:59	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 23:59	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 23:59	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 23:59	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 23:59	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 23:59	156-59-2	M1	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 23:59	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 23:59	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 23:59	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 23:59	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 23:59	75-09-2	R1	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 23:59	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		07/01/15 23:59	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 23:59	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 23:59	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		07/01/15 23:59	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 23:59	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 23:59	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	96	%.	70-130	1		07/01/15 23:59	17060-07-0		
Toluene-d8 (S)	92	%.	70-130	1		07/01/15 23:59	2037-26-5		
4-Bromofluorobenzene (S)	94	%.	70-130	1		07/01/15 23:59	460-00-4		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Sample: Equipment Blank		Lab ID: 1249017039	Collected: 06/19/15 11:30	Received: 06/23/15 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		07/01/15 23:32	75-27-4		
Bromoform	ND	ug/L	0.50	1		07/01/15 23:32	75-25-2		
Bromomethane	ND	ug/L	20.0	1		07/01/15 23:32	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		07/01/15 23:32	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		07/01/15 23:32	108-90-7		
Chloroethane	ND	ug/L	0.50	1		07/01/15 23:32	75-00-3		
Chloroform	ND	ug/L	0.50	1		07/01/15 23:32	67-66-3		
Chloromethane	ND	ug/L	0.50	1		07/01/15 23:32	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		07/01/15 23:32	124-48-1		
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		07/01/15 23:32	106-93-4		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 23:32	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 23:32	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		07/01/15 23:32	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		07/01/15 23:32	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		07/01/15 23:32	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		07/01/15 23:32	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 23:32	156-59-2	M1	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		07/01/15 23:32	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		07/01/15 23:32	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 23:32	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		07/01/15 23:32	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		07/01/15 23:32	75-09-2	R1	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		07/01/15 23:32	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		07/01/15 23:32	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		07/01/15 23:32	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		07/01/15 23:32	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		07/01/15 23:32	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		07/01/15 23:32	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		07/01/15 23:32	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	94	%.	70-130	1		07/01/15 23:32	17060-07-0		
Toluene-d8 (S)	92	%.	70-130	1		07/01/15 23:32	2037-26-5		
4-Bromofluorobenzene (S)	96	%.	70-130	1		07/01/15 23:32	460-00-4		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

QC Batch: AIR/23548 Analysis Method: RSK 175  
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE  
Associated Lab Samples: 1249017011

METHOD BLANK: 2003561 Matrix: Water  
Associated Lab Samples: 1249017011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	06/24/15 14:41	
Ethene	ug/L	ND	10.0	06/24/15 14:41	
Methane	ug/L	ND	10.0	06/24/15 14:41	

LABORATORY CONTROL SAMPLE & LCSD: 2003562

Parameter	Units	2003563					% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec				
Ethane	ug/L	114	120	116	106	102	85-115	3	20	
Ethene	ug/L	106	112	108	106	101	85-115	4	20	
Methane	ug/L	60.7	63.9	61.3	105	101	85-115	4	20	

SAMPLE DUPLICATE: 2003564

Parameter	Units	92255418002 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	13.1	13.0	1	20	

SAMPLE DUPLICATE: 2003565

Parameter	Units	92255411001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	82.0	88.1	7	20	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

QC Batch: AIR/23562 Analysis Method: RSK 175  
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE  
Associated Lab Samples: 1249017012, 1249017022, 1249017023, 1249017025, 1249017031

METHOD BLANK: 2004828 Matrix: Water  
Associated Lab Samples: 1249017012, 1249017022, 1249017023, 1249017025, 1249017031

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	06/24/15 18:36	
Ethene	ug/L	ND	10.0	06/24/15 18:36	
Methane	ug/L	ND	10.0	06/24/15 18:36	

LABORATORY CONTROL SAMPLE & LCSD: 2004829

Parameter	Units	2004829		2004830		% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	% Rec				
Ethane	ug/L	114	116	124	102	85-115	6	20	
Ethene	ug/L	106	108	115	101	85-115	6	20	
Methane	ug/L	60.7	61.3	65.0	101	85-115	6	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2004832

Parameter	Units	2004832		2004833		% Rec	MSD	% Rec	MSD	% Rec	Max RPD	Qual
		1249017031 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Ethane	ug/L	15.1	114	114	119	91	101	91	101	54-148	9	20
Ethene	ug/L	ND	106	106	96.9	91	99	91	99	50-150	8	20
Methane	ug/L	ND	60.7	60.7	56.0	89	97	89	97	30-150	8	20

SAMPLE DUPLICATE: 2004831

Parameter	Units	1249017012 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	12.1		20	
Ethene	ug/L	ND	.89J		20	
Methane	ug/L	8300	11600	33	20	E,R1

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

QC Batch: AIR/23563 Analysis Method: RSK 175  
 QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE  
 Associated Lab Samples: 1249017032, 1249017035

METHOD BLANK: 2005070 Matrix: Water

Associated Lab Samples: 1249017032, 1249017035

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	06/25/15 00:46	
Ethene	ug/L	ND	10.0	06/25/15 00:46	
Methane	ug/L	ND	10.0	06/25/15 00:46	

LABORATORY CONTROL SAMPLE & LCSD: 2005071

2005072

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	124	121	109	106	85-115	2	20	
Ethene	ug/L	106	115	113	108	106	85-115	2	20	
Methane	ug/L	60.7	65.0	64.1	107	106	85-115	1	20	

SAMPLE DUPLICATE: 2005073

Parameter	Units	10311649001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	5.2 mg/L	6330	19	20	

SAMPLE DUPLICATE: 2005074

Parameter	Units	92255569002 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	2.1J	2J		20	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

QC Batch: DAVM/1656 Analysis Method: EPA 8260B  
 QC Batch Method: EPA 8260B Analysis Description: 8260 MSV  
 Associated Lab Samples: 1249017001, 1249017002, 1249017003, 1249017004, 1249017005, 1249017006, 1249017007, 1249017008, 1249017009

METHOD BLANK: 223681 Matrix: Water  
 Associated Lab Samples: 1249017001, 1249017002, 1249017003, 1249017004, 1249017005, 1249017006, 1249017007, 1249017008, 1249017009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/29/15 08:30	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/29/15 08:30	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/29/15 08:30	
1,1-Dichloroethane	ug/L	ND	0.50	06/29/15 08:30	
1,1-Dichloroethene	ug/L	ND	0.50	06/29/15 08:30	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	06/29/15 08:30	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/29/15 08:30	
1,2-Dichloroethane	ug/L	ND	0.50	06/29/15 08:30	
1,2-Dichloropropane	ug/L	ND	0.50	06/29/15 08:30	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/29/15 08:30	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/29/15 08:30	
Bromodichloromethane	ug/L	ND	0.50	06/29/15 08:30	
Bromoform	ug/L	ND	0.50	06/29/15 08:30	
Bromomethane	ug/L	ND	20.0	06/29/15 08:30	
Carbon tetrachloride	ug/L	ND	0.50	06/29/15 08:30	
Chlorobenzene	ug/L	ND	0.50	06/29/15 08:30	
Chloroethane	ug/L	ND	0.50	06/29/15 08:30	
Chloroform	ug/L	ND	0.50	06/29/15 08:30	
Chloromethane	ug/L	ND	0.50	06/29/15 08:30	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/29/15 08:30	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/29/15 08:30	
Dibromochloromethane	ug/L	ND	0.50	06/29/15 08:30	
Methylene Chloride	ug/L	ND	5.0	06/29/15 08:30	
Tetrachloroethene	ug/L	ND	0.50	06/29/15 08:30	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/29/15 08:30	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/29/15 08:30	
Trichloroethene	ug/L	ND	0.50	06/29/15 08:30	
Trichlorofluoromethane	ug/L	ND	0.50	06/29/15 08:30	
Vinyl chloride	ug/L	ND	0.50	06/29/15 08:30	
1,2-Dichloroethane-d4 (S)	%	95	70-130	06/29/15 08:30	
4-Bromofluorobenzene (S)	%	94	70-130	06/29/15 08:30	
Toluene-d8 (S)	%	91	70-130	06/29/15 08:30	

LABORATORY CONTROL SAMPLE: 223682

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	36.7	92	70-130	
1,1,2,2-Tetrachloroethane	ug/L	40	46.6	116	70-130	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

LABORATORY CONTROL SAMPLE: 223682

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,2-Trichloroethane	ug/L	40	38.6	97	70-130	
1,1-Dichloroethane	ug/L	40	37.5	94	70-130	
1,1-Dichloroethene	ug/L	40	34.6	87	70-130	
1,2-Dibromoethane (EDB)	ug/L	40	39.6	99	70-130	
1,2-Dichlorobenzene	ug/L	40	45.1	113	70-130	
1,2-Dichloroethane	ug/L	40	38.0	95	70-130	
1,2-Dichloropropane	ug/L	40	36.7	92	70-130	
1,3-Dichlorobenzene	ug/L	40	45.0	112	70-130	
1,4-Dichlorobenzene	ug/L	40	43.6	109	70-130	
Bromodichloromethane	ug/L	40	37.2	93	70-130	
Bromoform	ug/L	40	42.1	105	70-135	
Bromomethane	ug/L	40	34.9	87	50-135	
Carbon tetrachloride	ug/L	40	37.5	94	70-130	
Chlorobenzene	ug/L	40	43.1	108	70-130	
Chloroethane	ug/L	40	33.1	83	70-130	
Chloroform	ug/L	40	37.0	93	70-130	
Chloromethane	ug/L	40	35.7	89	70-130	
cis-1,2-Dichloroethene	ug/L	40	38.0	95	70-130	
cis-1,3-Dichloropropene	ug/L	40	35.1	88	70-130	
Dibromochloromethane	ug/L	40	35.3	88	70-130	
Methylene Chloride	ug/L	40	40.0	100	70-130	
Tetrachloroethene	ug/L	40	38.3	96	70-130	
trans-1,2-Dichloroethene	ug/L	40	39.2	98	70-130	
trans-1,3-Dichloropropene	ug/L	40	35.5	89	70-130	
Trichloroethene	ug/L	40	38.2	96	70-130	
Trichlorofluoromethane	ug/L	40	34.9	87	70-130	
Vinyl chloride	ug/L	40	36.0	90	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			105	70-130	
Toluene-d8 (S)	%			93	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 223683 223684

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1248574002 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	ND	40	40	34.6	35.5	86	89	70-130	3	25	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	39.4	42.5	99	106	70-130	7	25	
1,1,2-Trichloroethane	ug/L	ND	40	40	33.9	36.6	85	91	70-130	8	25	
1,1-Dichloroethane	ug/L	ND	40	40	34.2	35.6	86	89	70-130	4	25	
1,1-Dichloroethene	ug/L	ND	40	40	35.0	35.7	88	89	70-130	2	25	
1,2-Dibromoethane (EDB)	ug/L	ND	40	40	34.0	37.0	85	93	70-130	9	25	
1,2-Dichlorobenzene	ug/L	ND	40	40	39.5	40.7	99	102	70-130	3	25	
1,2-Dichloroethane	ug/L	ND	40	40	33.5	35.2	84	88	70-130	5	25	
1,2-Dichloropropane	ug/L	ND	40	40	33.4	34.9	84	87	70-130	4	25	
1,3-Dichlorobenzene	ug/L	ND	40	40	39.9	41.0	100	103	70-130	3	25	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 223683		223684		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1248574002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result										
1,4-Dichlorobenzene	ug/L	ND	40	40	38.2	39.4	96	98	70-130	3	25				
Bromodichloromethane	ug/L	ND	40	40	33.5	35.2	84	88	70-130	5	25				
Bromoform	ug/L	ND	40	40	35.8	38.2	90	96	70-135	7	25				
Bromomethane	ug/L	ND	40	40	36.7	35.9	92	90	50-135	2	25				
Carbon tetrachloride	ug/L	ND	40	40	35.3	37.0	88	93	70-130	5	25				
Chlorobenzene	ug/L	ND	40	40	38.9	40.4	97	101	70-130	4	25				
Chloroethane	ug/L	ND	40	40	33.9	34.5	85	86	70-130	2	25				
Chloroform	ug/L	ND	40	40	33.8	35.1	84	88	70-130	4	25				
Chloromethane	ug/L	ND	40	40	34.7	36.1	87	90	70-130	4	25				
cis-1,2-Dichloroethene	ug/L	ND	40	40	34.9	36.5	87	91	70-130	4	25				
cis-1,3-Dichloropropene	ug/L	ND	40	40	31.0	32.7	77	82	70-130	5	25				
Dibromochloromethane	ug/L	ND	40	40	30.7	32.8	77	82	70-130	7	25				
Methylene Chloride	ug/L	ND	40	40	30.7	31.9	77	80	70-130	4	25				
Tetrachloroethene	ug/L	ND	40	40	35.3	36.7	88	92	70-130	4	25				
trans-1,2-Dichloroethene	ug/L	ND	40	40	36.6	32.5	91	81	70-130	12	25				
trans-1,3-Dichloropropene	ug/L	ND	40	40	30.6	32.7	76	82	70-130	7	25				
Trichloroethene	ug/L	ND	40	40	35.2	36.8	88	92	70-130	4	25				
Trichlorofluoromethane	ug/L	ND	40	40	34.5	35.3	86	88	70-130	2	25				
Vinyl chloride	ug/L	ND	40	40	34.8	35.6	87	89	70-130	2	25				
1,2-Dichloroethane-d4 (S)	%.						98	101	70-130						
4-Bromofluorobenzene (S)	%.						106	105	70-130						
Toluene-d8 (S)	%.						93	94	70-130						

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

QC Batch: DAVM/1668 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV  
Associated Lab Samples: 1249017010, 1249017011, 1249017012, 1249017013, 1249017014, 1249017015, 1249017016, 1249017017, 1249017018, 1249017019, 1249017020, 1249017021

METHOD BLANK: 224193 Matrix: Water  
Associated Lab Samples: 1249017010, 1249017011, 1249017012, 1249017013, 1249017014, 1249017015, 1249017016, 1249017017, 1249017018, 1249017019, 1249017020, 1249017021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/30/15 19:29	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/30/15 19:29	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/30/15 19:29	
1,1-Dichloroethane	ug/L	ND	0.50	06/30/15 19:29	
1,1-Dichloroethene	ug/L	ND	0.50	06/30/15 19:29	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	06/30/15 19:29	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/30/15 19:29	
1,2-Dichloroethane	ug/L	ND	0.50	06/30/15 19:29	
1,2-Dichloropropane	ug/L	ND	0.50	06/30/15 19:29	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/30/15 19:29	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/30/15 19:29	
Bromodichloromethane	ug/L	ND	0.50	06/30/15 19:29	
Bromoform	ug/L	ND	0.50	06/30/15 19:29	
Bromomethane	ug/L	ND	20.0	06/30/15 19:29	
Carbon tetrachloride	ug/L	ND	0.50	06/30/15 19:29	
Chlorobenzene	ug/L	ND	0.50	06/30/15 19:29	
Chloroethane	ug/L	ND	0.50	06/30/15 19:29	
Chloroform	ug/L	ND	0.50	06/30/15 19:29	
Chloromethane	ug/L	ND	0.50	06/30/15 19:29	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/30/15 19:29	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/30/15 19:29	
Dibromochloromethane	ug/L	ND	0.50	06/30/15 19:29	
Methylene Chloride	ug/L	ND	5.0	06/30/15 19:29	
Tetrachloroethene	ug/L	ND	0.50	06/30/15 19:29	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/30/15 19:29	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/30/15 19:29	
Trichloroethene	ug/L	ND	0.50	06/30/15 19:29	
Trichlorofluoromethane	ug/L	ND	0.50	06/30/15 19:29	
Vinyl chloride	ug/L	ND	0.50	06/30/15 19:29	
1,2-Dichloroethane-d4 (S)	%	98	70-130	06/30/15 19:29	
4-Bromofluorobenzene (S)	%	100	70-130	06/30/15 19:29	
Toluene-d8 (S)	%	106	70-130	06/30/15 19:29	

LABORATORY CONTROL SAMPLE: 224194

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	45.5	114	70-130	
1,1,2,2-Tetrachloroethane	ug/L	40	43.5	109	70-130	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

LABORATORY CONTROL SAMPLE: 224194

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,2-Trichloroethane	ug/L	40	46.9	117	70-130	
1,1-Dichloroethane	ug/L	40	45.4	114	70-130	
1,1-Dichloroethene	ug/L	40	45.9	115	70-130	
1,2-Dibromoethane (EDB)	ug/L	40	47.3	118	70-130	
1,2-Dichlorobenzene	ug/L	40	39.1	98	70-130	
1,2-Dichloroethane	ug/L	40	43.5	109	70-130	
1,2-Dichloropropane	ug/L	40	46.0	115	70-130	
1,3-Dichlorobenzene	ug/L	40	40.8	102	70-130	
1,4-Dichlorobenzene	ug/L	40	40.0	100	70-130	
Bromodichloromethane	ug/L	40	46.9	117	70-130	
Bromoform	ug/L	40	39.8	100	70-135	
Bromomethane	ug/L	40	35.9	90	50-135	
Carbon tetrachloride	ug/L	40	45.7	114	70-130	
Chlorobenzene	ug/L	40	40.1	100	70-130	
Chloroethane	ug/L	40	41.4	103	70-130	
Chloroform	ug/L	40	44.7	112	70-130	
Chloromethane	ug/L	40	38.5	96	70-130	
cis-1,2-Dichloroethene	ug/L	40	45.6	114	70-130	
cis-1,3-Dichloropropene	ug/L	40	49.1	123	70-130	
Dibromochloromethane	ug/L	40	43.2	108	70-130	
Methylene Chloride	ug/L	40	42.1	105	70-130	
Tetrachloroethene	ug/L	40	45.9	115	70-130	
trans-1,2-Dichloroethene	ug/L	40	45.9	115	70-130	
trans-1,3-Dichloropropene	ug/L	40	44.2	110	70-130	
Trichloroethene	ug/L	40	44.6	111	70-130	
Trichlorofluoromethane	ug/L	40	40.9	102	70-130	
Vinyl chloride	ug/L	40	40.0	100	70-130	
1,2-Dichloroethane-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Toluene-d8 (S)	%			105	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 224195 224196

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1248859007 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	ND	40	40	46.2	45.5	116	114	70-130	2	25	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	41.2	44.1	103	110	70-130	7	25	
1,1,2-Trichloroethane	ug/L	ND	40	40	46.1	47.5	115	119	70-130	3	25	
1,1-Dichloroethane	ug/L	ND	40	40	45.9	45.2	115	113	70-130	2	25	
1,1-Dichloroethene	ug/L	ND	40	40	46.4	45.7	116	114	70-130	1	25	
1,2-Dibromoethane (EDB)	ug/L	ND	40	40	46.0	47.9	115	120	70-130	4	25	
1,2-Dichlorobenzene	ug/L	ND	40	40	38.9	39.4	97	98	70-130	1	25	
1,2-Dichloroethane	ug/L	ND	40	40	42.9	42.9	107	107	70-130	0	25	
1,2-Dichloropropane	ug/L	ND	40	40	46.8	47.3	117	118	70-130	1	25	
1,3-Dichlorobenzene	ug/L	ND	40	40	40.4	40.9	101	102	70-130	1	25	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 224195		224196		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1248859007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result										
1,4-Dichlorobenzene	ug/L	ND	40	40	39.9	39.6	100	99	70-130	1	25				
Bromodichloromethane	ug/L	ND	40	40	47.3	48.1	118	120	70-130	2	25				
Bromoform	ug/L	ND	40	40	38.1	40.4	95	101	70-135	6	25				
Bromomethane	ug/L	ND	40	40	37.5	39.3	94	98	50-135	5	25				
Carbon tetrachloride	ug/L	ND	40	40	46.5	46.3	116	116	70-130	1	25				
Chlorobenzene	ug/L	ND	40	40	39.7	40.1	99	100	70-130	1	25				
Chloroethane	ug/L	ND	40	40	42.8	41.9	107	105	70-130	2	25				
Chloroform	ug/L	ND	40	40	44.8	44.7	112	112	70-130	0	25				
Chloromethane	ug/L	ND	40	40	41.2	41.3	103	103	70-130	0	25				
cis-1,2-Dichloroethene	ug/L	2.9	40	40	48.9	48.1	115	113	70-130	2	25				
cis-1,3-Dichloropropene	ug/L	ND	40	40	49.2	49.0	123	123	70-130	0	25				
Dibromochloromethane	ug/L	ND	40	40	43.2	44.0	108	110	70-130	2	25				
Methylene Chloride	ug/L	ND	40	40	42.1	42.1	105	105	70-130	0	25				
Tetrachloroethene	ug/L	ND	40	40	46.4	46.4	116	116	70-130	0	25				
trans-1,2-Dichloroethene	ug/L	ND	40	40	45.8	45.4	115	113	70-130	1	25				
trans-1,3-Dichloropropene	ug/L	ND	40	40	43.6	45.1	109	113	70-130	3	25				
Trichloroethene	ug/L	ND	40	40	45.2	44.9	113	112	70-130	1	25				
Trichlorofluoromethane	ug/L	ND	40	40	41.3	40.8	103	102	70-130	1	25				
Vinyl chloride	ug/L	ND	40	40	41.5	42.0	104	105	70-130	1	25				
1,2-Dichloroethane-d4 (S)	%.						95	97	70-130						
4-Bromofluorobenzene (S)	%.						103	104	70-130						
Toluene-d8 (S)	%.						106	106	70-130						

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

QC Batch: DAVM/1674 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV  
Associated Lab Samples: 1249017022, 1249017023, 1249017024, 1249017025, 1249017026

METHOD BLANK: 224210 Matrix: Water  
Associated Lab Samples: 1249017022, 1249017023, 1249017024, 1249017025, 1249017026

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	07/01/15 08:26	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	07/01/15 08:26	
1,1,2-Trichloroethane	ug/L	ND	0.50	07/01/15 08:26	
1,1-Dichloroethane	ug/L	ND	0.50	07/01/15 08:26	
1,1-Dichloroethene	ug/L	ND	0.50	07/01/15 08:26	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	07/01/15 08:26	
1,2-Dichlorobenzene	ug/L	ND	0.50	07/01/15 08:26	
1,2-Dichloroethane	ug/L	ND	0.50	07/01/15 08:26	
1,2-Dichloropropane	ug/L	ND	0.50	07/01/15 08:26	
1,3-Dichlorobenzene	ug/L	ND	0.50	07/01/15 08:26	
1,4-Dichlorobenzene	ug/L	ND	0.50	07/01/15 08:26	
Bromodichloromethane	ug/L	ND	0.50	07/01/15 08:26	
Bromoform	ug/L	ND	0.50	07/01/15 08:26	
Bromomethane	ug/L	ND	20.0	07/01/15 08:26	
Carbon tetrachloride	ug/L	ND	0.50	07/01/15 08:26	
Chlorobenzene	ug/L	ND	0.50	07/01/15 08:26	
Chloroethane	ug/L	ND	0.50	07/01/15 08:26	
Chloroform	ug/L	ND	0.50	07/01/15 08:26	
Chloromethane	ug/L	ND	0.50	07/01/15 08:26	
cis-1,2-Dichloroethene	ug/L	ND	0.50	07/01/15 08:26	
cis-1,3-Dichloropropene	ug/L	ND	0.50	07/01/15 08:26	
Dibromochloromethane	ug/L	ND	0.50	07/01/15 08:26	
Methylene Chloride	ug/L	ND	5.0	07/01/15 08:26	
Tetrachloroethene	ug/L	ND	0.50	07/01/15 08:26	
trans-1,2-Dichloroethene	ug/L	ND	0.50	07/01/15 08:26	
trans-1,3-Dichloropropene	ug/L	ND	0.50	07/01/15 08:26	
Trichloroethene	ug/L	ND	0.50	07/01/15 08:26	
Trichlorofluoromethane	ug/L	ND	0.50	07/01/15 08:26	
Vinyl chloride	ug/L	ND	0.50	07/01/15 08:26	
1,2-Dichloroethane-d4 (S)	%	92	70-130	07/01/15 08:26	
4-Bromofluorobenzene (S)	%	93	70-130	07/01/15 08:26	
Toluene-d8 (S)	%	92	70-130	07/01/15 08:26	

LABORATORY CONTROL SAMPLE: 224211

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	36.5	91	70-130	
1,1,2,2-Tetrachloroethane	ug/L	40	43.7	109	70-130	
1,1,2-Trichloroethane	ug/L	40	38.8	97	70-130	
1,1-Dichloroethane	ug/L	40	36.9	92	70-130	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

LABORATORY CONTROL SAMPLE: 224211

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	40	35.1	88	70-130	
1,2-Dibromoethane (EDB)	ug/L	40	39.3	98	70-130	
1,2-Dichlorobenzene	ug/L	40	43.2	108	70-130	
1,2-Dichloroethane	ug/L	40	37.9	95	70-130	
1,2-Dichloropropane	ug/L	40	37.0	92	70-130	
1,3-Dichlorobenzene	ug/L	40	42.7	107	70-130	
1,4-Dichlorobenzene	ug/L	40	41.2	103	70-130	
Bromodichloromethane	ug/L	40	37.7	94	70-130	
Bromoform	ug/L	40	40.4	101	70-135	
Bromomethane	ug/L	40	33.5	84	50-135	
Carbon tetrachloride	ug/L	40	37.7	94	70-130	
Chlorobenzene	ug/L	40	42.6	106	70-130	
Chloroethane	ug/L	40	34.0	85	70-130	
Chloroform	ug/L	40	37.2	93	70-130	
Chloromethane	ug/L	40	34.0	85	70-130	
cis-1,2-Dichloroethene	ug/L	40	38.0	95	70-130	
cis-1,3-Dichloropropene	ug/L	40	35.1	88	70-130	
Dibromochloromethane	ug/L	40	35.1	88	70-130	
Methylene Chloride	ug/L	40	33.2	83	70-130	
Tetrachloroethene	ug/L	40	37.3	93	70-130	
trans-1,2-Dichloroethene	ug/L	40	38.4	96	70-130	
trans-1,3-Dichloropropene	ug/L	40	35.2	88	70-130	
Trichloroethene	ug/L	40	37.2	93	70-130	
Trichlorofluoromethane	ug/L	40	35.1	88	70-130	
Vinyl chloride	ug/L	40	33.8	84	70-130	
1,2-Dichloroethane-d4 (S)	%			94	70-130	
4-Bromofluorobenzene (S)	%			106	70-130	
Toluene-d8 (S)	%			94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 224212 224213

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		1248906001 Result	Spike Conc.	Spike Conc.	Result							
1,1,1-Trichloroethane	ug/L	ND	40	40	36.4	37.9	91	95	70-130	4	25	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	37.5	38.9	94	97	70-130	3	25	
1,1,2-Trichloroethane	ug/L	ND	40	40	33.7	33.1	84	83	70-130	2	25	
1,1-Dichloroethane	ug/L	ND	40	40	34.8	36.1	87	90	70-130	4	25	
1,1-Dichloroethene	ug/L	ND	40	40	35.5	37.2	89	93	70-130	5	25	
1,2-Dibromoethane (EDB)	ug/L	ND	40	40	33.9	33.8	85	85	70-130	0	25	
1,2-Dichlorobenzene	ug/L	ND	40	40	37.8	37.8	95	95	70-130	0	25	
1,2-Dichloroethane	ug/L	ND	40	40	32.9	33.1	82	83	70-130	1	25	
1,2-Dichloropropane	ug/L	ND	40	40	33.8	33.8	85	85	70-130	0	25	
1,3-Dichlorobenzene	ug/L	ND	40	40	37.4	38.0	94	95	70-130	2	25	
1,4-Dichlorobenzene	ug/L	ND	40	40	35.6	36.3	89	91	70-130	2	25	
Bromodichloromethane	ug/L	ND	40	40	33.3	33.6	83	84	70-130	1	25	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 224212		224213		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1248906001 Result	MS Spike Conc.	MSD Spike Conc.	MSD Result								
Bromoform	ug/L	ND	40	40	34.6	34.8	86	87	70-135	1	25		
Bromomethane	ug/L	ND	40	40	35.3	34.8	88	87	50-135	1	25		
Carbon tetrachloride	ug/L	ND	40	40	37.8	39.9	95	100	70-130	5	25		
Chlorobenzene	ug/L	ND	40	40	38.2	38.9	96	97	70-130	2	25		
Chloroethane	ug/L	ND	40	40	34.2	35.6	86	89	70-130	4	25		
Chloroform	ug/L	ND	40	40	34.4	34.7	86	87	70-130	1	25		
Chloromethane	ug/L	ND	40	40	34.0	34.7	85	87	70-130	2	25		
cis-1,2-Dichloroethene	ug/L	ND	40	40	35.4	35.3	89	88	70-130	0	25		
cis-1,3-Dichloropropene	ug/L	ND	40	40	30.5	30.7	76	77	70-130	1	25		
Dibromochloromethane	ug/L	ND	40	40	30.0	29.9	75	75	70-130	0	25		
Methylene Chloride	ug/L	ND	40	40	30.8	31.0	76	76	70-130	1	25		
Tetrachloroethene	ug/L	ND	40	40	35.9	37.6	90	94	70-130	4	25		
trans-1,2-Dichloroethene	ug/L	ND	40	40	37.2	36.3	93	91	70-130	2	25		
trans-1,3-Dichloropropene	ug/L	ND	40	40	30.1	30.0	75	75	70-130	0	25		
Trichloroethene	ug/L	ND	40	40	35.7	37.2	89	93	70-130	4	25		
Trichlorofluoromethane	ug/L	ND	40	40	35.9	37.6	90	94	70-130	4	25		
Vinyl chloride	ug/L	ND	40	40	35.0	36.4	87	91	70-130	4	25		
1,2-Dichloroethane-d4 (S)	%						99	100	70-130				
4-Bromofluorobenzene (S)	%						104	106	70-130				
Toluene-d8 (S)	%						94	94	70-130				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

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QC Batch: DAVM/1675 Analysis Method: EPA 8260B  
 QC Batch Method: EPA 8260B Analysis Description: 8260 MSV  
 Associated Lab Samples: 1249017027, 1249017028, 1249017029, 1249017030, 1249017031, 1249017032, 1249017033, 1249017034, 1249017035, 1249017036, 1249017037, 1249017038, 1249017039

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METHOD BLANK: 224339 Matrix: Water  
 Associated Lab Samples: 1249017027, 1249017028, 1249017029, 1249017030, 1249017031, 1249017032, 1249017033, 1249017034, 1249017035, 1249017036, 1249017037, 1249017038, 1249017039

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	07/01/15 20:50	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	07/01/15 20:50	
1,1,2-Trichloroethane	ug/L	ND	0.50	07/01/15 20:50	
1,1-Dichloroethane	ug/L	ND	0.50	07/01/15 20:50	
1,1-Dichloroethene	ug/L	ND	0.50	07/01/15 20:50	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	07/01/15 20:50	
1,2-Dichlorobenzene	ug/L	ND	0.50	07/01/15 20:50	
1,2-Dichloroethane	ug/L	ND	0.50	07/01/15 20:50	
1,2-Dichloropropane	ug/L	ND	0.50	07/01/15 20:50	
1,3-Dichlorobenzene	ug/L	ND	0.50	07/01/15 20:50	
1,4-Dichlorobenzene	ug/L	ND	0.50	07/01/15 20:50	
Bromodichloromethane	ug/L	ND	0.50	07/01/15 20:50	
Bromoform	ug/L	ND	0.50	07/01/15 20:50	
Bromomethane	ug/L	ND	20.0	07/01/15 20:50	
Carbon tetrachloride	ug/L	ND	0.50	07/01/15 20:50	
Chlorobenzene	ug/L	ND	0.50	07/01/15 20:50	
Chloroethane	ug/L	ND	0.50	07/01/15 20:50	
Chloroform	ug/L	ND	0.50	07/01/15 20:50	
Chloromethane	ug/L	ND	0.50	07/01/15 20:50	
cis-1,2-Dichloroethene	ug/L	ND	0.50	07/01/15 20:50	
cis-1,3-Dichloropropene	ug/L	ND	0.50	07/01/15 20:50	
Dibromochloromethane	ug/L	ND	0.50	07/01/15 20:50	
Gasoline Range Organics	ug/L	ND	50.0	07/01/15 20:50	
Methylene Chloride	ug/L	ND	5.0	07/01/15 20:50	
Tetrachloroethene	ug/L	ND	0.50	07/01/15 20:50	
TPH as Gas	ug/L	ND	50.0	07/01/15 20:50	
trans-1,2-Dichloroethene	ug/L	ND	0.50	07/01/15 20:50	
trans-1,3-Dichloropropene	ug/L	ND	0.50	07/01/15 20:50	
Trichloroethene	ug/L	ND	0.50	07/01/15 20:50	
Trichlorofluoromethane	ug/L	ND	0.50	07/01/15 20:50	
Vinyl chloride	ug/L	ND	0.50	07/01/15 20:50	
1,2-Dichloroethane-d4 (S)	%	94	70-130	07/01/15 20:50	
4-Bromofluorobenzene (S)	%	95	70-130	07/01/15 20:50	
Toluene-d8 (S)	%	92	70-130	07/01/15 20:50	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

LABORATORY CONTROL SAMPLE: 224340

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	35.9	90	70-130	
1,1,2,2-Tetrachloroethane	ug/L	40	44.3	111	70-130	
1,1,2-Trichloroethane	ug/L	40	37.9	95	70-130	
1,1-Dichloroethane	ug/L	40	35.9	90	70-130	
1,1-Dichloroethene	ug/L	40	34.8	87	70-130	
1,2-Dibromoethane (EDB)	ug/L	40	38.4	96	70-130	
1,2-Dichlorobenzene	ug/L	40	41.7	104	70-130	
1,2-Dichloroethane	ug/L	40	37.1	93	70-130	
1,2-Dichloropropane	ug/L	40	35.7	89	70-130	
1,3-Dichlorobenzene	ug/L	40	41.2	103	70-130	
1,4-Dichlorobenzene	ug/L	40	39.2	98	70-130	
Bromodichloromethane	ug/L	40	36.6	92	70-130	
Bromoform	ug/L	40	39.9	100	70-135	
Bromomethane	ug/L	40	29.4	74	50-135	
Carbon tetrachloride	ug/L	40	37.4	94	70-130	
Chlorobenzene	ug/L	40	41.0	103	70-130	
Chloroethane	ug/L	40	32.9	82	70-130	
Chloroform	ug/L	40	36.3	91	70-130	
Chloromethane	ug/L	40	33.0	83	70-130	
cis-1,2-Dichloroethene	ug/L	40	36.9	92	70-130	
cis-1,3-Dichloropropene	ug/L	40	33.7	84	70-130	
Dibromochloromethane	ug/L	40	34.2	86	70-130	
Methylene Chloride	ug/L	40	32.2	81	70-130	
Tetrachloroethene	ug/L	40	36.5	91	70-130	
trans-1,2-Dichloroethene	ug/L	40	30.5	76	70-130	
trans-1,3-Dichloropropene	ug/L	40	33.9	85	70-130	
Trichloroethene	ug/L	40	36.7	92	70-130	
Trichlorofluoromethane	ug/L	40	35.3	88	70-130	
Vinyl chloride	ug/L	40	32.8	82	70-130	
1,2-Dichloroethane-d4 (S)	%			94	70-130	
4-Bromofluorobenzene (S)	%			106	70-130	
Toluene-d8 (S)	%			94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 224341 224342

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1249017031 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	23.6	800	800	757	792	92	96	70-130	5	25	
1,1,2,2-Tetrachloroethane	ug/L	ND	800	800	850	933	106	117	70-130	9	25	
1,1,2-Trichloroethane	ug/L	ND	800	800	743	794	93	99	70-130	7	25	
1,1-Dichloroethane	ug/L	151	800	800	873	916	90	96	70-130	5	25	
1,1-Dichloroethene	ug/L	28.2	800	800	727	736	87	88	70-130	1	25	
1,2-Dibromoethane (EDB)	ug/L	ND	800	800	759	816	95	102	70-130	7	25	
1,2-Dichlorobenzene	ug/L	ND	800	800	850	882	106	110	70-130	4	25	
1,2-Dichloroethane	ug/L	ND	800	800	740	788	92	98	70-130	6	25	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Parameter	Units	1249017031		MS		MSD		224341		224342		% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec								
1,2-Dichloropropane	ug/L	ND	800	800	726	767	91	96	70-130	5	25					
1,3-Dichlorobenzene	ug/L	ND	800	800	841	866	105	108	70-130	3	25					
1,4-Dichlorobenzene	ug/L	ND	800	800	811	831	101	104	70-130	3	25					
Bromodichloromethane	ug/L	ND	800	800	741	780	93	97	70-130	5	25					
Bromoform	ug/L	ND	800	800	793	869	99	109	70-135	9	25					
Bromomethane	ug/L	ND	800	800	733	769	92	96	50-135	5	25					
Carbon tetrachloride	ug/L	ND	800	800	761	800	95	100	70-130	5	25					
Chlorobenzene	ug/L	ND	800	800	832	861	104	108	70-130	3	25					
Chloroethane	ug/L	ND	800	800	684	710	85	89	70-130	4	25					
Chloroform	ug/L	ND	800	800	736	762	92	95	70-130	3	25					
Chloromethane	ug/L	ND	800	800	685	712	86	89	70-130	4	25					
cis-1,2-Dichloroethene	ug/L	2570	800	800	3110	3270	67	87	70-130	5	25	M0				
cis-1,3-Dichloropropene	ug/L	ND	800	800	688	721	86	90	70-130	5	25					
Dibromochloromethane	ug/L	ND	800	800	686	739	86	92	70-130	8	25					
Methylene Chloride	ug/L	ND	800	800	662	865	83	108	70-130	27	25	R1				
Tetrachloroethene	ug/L	514	800	800	1230	1290	89	96	70-130	4	25					
trans-1,2-Dichloroethene	ug/L	25.0	800	800	795	822	96	100	70-130	3	25					
trans-1,3-Dichloropropene	ug/L	ND	800	800	683	723	85	90	70-130	6	25					
Trichloroethene	ug/L	356	800	800	1070	1120	89	95	70-130	5	25					
Trichlorofluoromethane	ug/L	ND	800	800	709	716	89	89	70-130	1	25					
Vinyl chloride	ug/L	31.1	800	800	720	752	86	90	70-130	4	25					
1,2-Dichloroethane-d4 (S)	%.						94	96	70-130							
4-Bromofluorobenzene (S)	%.						104	106	70-130							
Toluene-d8 (S)	%.						95	94	70-130							

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

QC Batch: WETA/6383 Analysis Method: SM 5310B  
QC Batch Method: SM 5310B Analysis Description: 5310B TOC  
Associated Lab Samples: 1249017011, 1249017012, 1249017022, 1249017023, 1249017025, 1249017031, 1249017032, 1249017035

METHOD BLANK: 132545 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	06/25/15 16:05	

LABORATORY CONTROL SAMPLE: 132546

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25.9	25.7	99	90-110	

MATRIX SPIKE SAMPLE: 132548

Parameter	Units	1249017031 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	4.8	20	25.3	102	75-125	

SAMPLE DUPLICATE: 132547

Parameter	Units	1249017031 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	4.8	5.0	4	20	

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## QUALIFIERS

Project: NuStar Vancouver GWM  
Pace Project No.: 1249017

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-DAV Pace Analytical Services - Davis  
PASI-M Pace Analytical Services - Minneapolis  
PASI-N Pace Analytical Services - New Orleans

### SAMPLE QUALIFIERS

Sample: 1249017012

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1249017022

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1249017023

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1249017025

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1249017031

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1249017032

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1249017035

[1] The sample was not collected in the appropriate container for headspace analysis.

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## QUALIFIERS

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

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### ANALYTE QUALIFIERS

DQ	Primarily compounds not found in typical Gasoline.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1249017011	MW-7	RSK 175	AIR/23548		
1249017012	MW-7 DUP	RSK 175	AIR/23562		
1249017022	MP-1	RSK 175	AIR/23562		
1249017023	MW-24i	RSK 175	AIR/23562		
1249017025	EX-1	RSK 175	AIR/23562		
1249017031	MW-12	RSK 175	AIR/23562		
1249017032	MW-12 DUP	RSK 175	AIR/23563		
1249017035	MGMS2-40	RSK 175	AIR/23563		
1249017001	MW-3	EPA 8260B	DAVM/1656		
1249017002	S-1	EPA 8260B	DAVM/1656		
1249017003	S-2	EPA 8260B	DAVM/1656		
1249017004	MW-23i	EPA 8260B	DAVM/1656		
1249017005	MW-14	EPA 8260B	DAVM/1656		
1249017006	MW-26	EPA 8260B	DAVM/1656		
1249017007	MW-25i	EPA 8260B	DAVM/1656		
1249017008	MW-22i	EPA 8260B	DAVM/1656		
1249017009	MW-19i	EPA 8260B	DAVM/1656		
1249017010	MW-9	EPA 8260B	DAVM/1668		
1249017011	MW-7	EPA 8260B	DAVM/1668		
1249017012	MW-7 DUP	EPA 8260B	DAVM/1668		
1249017013	MW-8	EPA 8260B	DAVM/1668		
1249017014	MW-21i-105	EPA 8260B	DAVM/1668		
1249017015	MW-32s	EPA 8260B	DAVM/1668		
1249017016	MW-20i	EPA 8260B	DAVM/1668		
1249017017	MW-16	EPA 8260B	DAVM/1668		
1249017018	MW-18i	EPA 8260B	DAVM/1668		
1249017019	MW-5	EPA 8260B	DAVM/1668		
1249017020	MW-1	EPA 8260B	DAVM/1668		
1249017021	Field Blank 6-17	EPA 8260B	DAVM/1668		
1249017022	MP-1	EPA 8260B	DAVM/1674		
1249017023	MW-24i	EPA 8260B	DAVM/1674		
1249017024	MW-24d	EPA 8260B	DAVM/1674		
1249017025	EX-1	EPA 8260B	DAVM/1674		
1249017026	MW-19	EPA 8260B	DAVM/1674		
1249017027	MW-19 DUP	EPA 8260B	DAVM/1675		
1249017028	MW-13	EPA 8260B	DAVM/1675		
1249017029	MGMS1-43	EPA 8260B	DAVM/1675		
1249017030	MGMS1-60	EPA 8260B	DAVM/1675		
1249017031	MW-12	EPA 8260B	DAVM/1675		
1249017032	MW-12 DUP	EPA 8260B	DAVM/1675		
1249017033	MGMS3-40	EPA 8260B	DAVM/1675		
1249017034	MGMS3-60	EPA 8260B	DAVM/1675		
1249017035	MGMS2-40	EPA 8260B	DAVM/1675		
1249017036	MGMS2-60	EPA 8260B	DAVM/1675		
1249017037	MW-21i-40	EPA 8260B	DAVM/1675		
1249017038	Field Blank 6-19	EPA 8260B	DAVM/1675		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver GWM

Pace Project No.: 1249017

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1249017039	Equipment Blank	EPA 8260B	DAVM/1675		
1249017011	MW-7	SM 5310B	WETA/6383		
1249017012	MW-7 DUP	SM 5310B	WETA/6383		
1249017022	MP-1	SM 5310B	WETA/6383		
1249017023	MW-24i	SM 5310B	WETA/6383		
1249017025	EX-1	SM 5310B	WETA/6383		
1249017031	MW-12	SM 5310B	WETA/6383		
1249017032	MW-12 DUP	SM 5310B	WETA/6383		
1249017035	MGMS2-40	SM 5310B	WETA/6383		

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2795 2nd Street, Suite 300  
Davis, CA 95618  
Lab: 530.297.4800  
Fax: 530.297.4802

SRG # / Lab No.

1249017

Project Contact (Hardcopy or PDF To): Stephanie Bosze Company / Address: Apex Companies 3015 SW 1st Ave., Portland, OR 97201 Phone Number: 503-924-4704 ext. 1925 Fax Number: 503-924-4707 Project #: 320001126-17 Project Name: NuStar Vancouver GWM Project Address:		California EDF Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>CRA EQUIS Required</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>XLS Report Required</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Chain-of-Custody Record and Analysis Request																		
Global ID:		Analysis Request																				
EDD Deliverable To (Email Address): Stephanie Bosze Bill to: Apex Companies Sampler Name & Signature: Chris Brackett		Other: Please Specify																				
Sampling		Container			Preservative			Matrix			TAT											
Sample Designation	Date	Time	40 ml VOA	Sleeve	Poly	250 mL Glass	Tedlar	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	None	Water	Soil	Air	12 hr	24 hr	48hr	72hr	<input checked="" type="checkbox"/> 1 wk			
MW-21i-105	06/17/15	1030	4					4				X								X	014	
MW-32s	06/17/15	1056	4					4				X								X	015	
MW-20i	06/17/15	1120	4					4				X								X	016	
MW-16	06/17/15	1150	4					4				X								X	017	
MW-18i	06/17/15	1219	4					4				X								X	018	
MW-5	06/17/15	1319	4					4				X								X	019	
MW-1	06/17/15	1348	4					4				X								X	020	
Field Blank 6-17	06/17/15	1400	4					4				X								X	021	
MP-1	06/18/15	810	7	1				4	1	3		X								X	022	
MW-24i	06/18/15	844	7	1				4	1	3		X								X	023	
MW-24d	06/18/15	922	4					4				X								X	024	
EX-1	06/18/15	954	7	1				4	1	3		X								X	025	
MW-19	06/18/15	1049	4					4				X								X	026	
Relinquished by:		Date	Time													Remarks:						
Relinquished by:		Date	6/24/15	1300	06235 1030 PME Analytical													MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)				
Relinquished by:		Date	Time													Temp °C						
Relinquished by:		Date	Time													Initials						
Relinquished by:		Date	Time													Date						
Relinquished by:		Date	Time													Therm. ID #						
Relinquished by:		Date	Time													Coolant Present						
Relinquished by:		Date	Time													Yes / No						





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 Davis, CA 95618  
 Lab: 530.297.4800  
 Fax: 530.297.4802

SRG # / Lab No.

1249017

Page 3 of 4

Project Contact (Hardcopy or PDF To): Stephanie Bosze		California EDF Report? <b>CRA EQUIS Required</b>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									
Company / Address: Apex Companies 3015 SW 1st Ave., Portland, OR 97201		XLS Report Required		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									
Phone Number: 503-924-4704 ext 1925		Global ID:															
Fax Number: 503-924-4707		EDD Deliverable To (Email Address): Stephanie Bosze															
Project #: 320001126-17		Bill to: Apex Companies															
Project Name: NuStar Vancouver GWM		Sampler Name & Signature: Chris Brackett															
Sample Designation	Date	Time	Sampling			Container			Preservative			Matrix			Analysis Request	TAT	
			40 ml VOA	Sleeve	Poly	250 ml Glass	Tedlar	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	None	Water	Soil	Air			
MW-19 DUP	6/18/2015	1049	4					4								X	027
MW-13	6/18/2015	1203	4					4								X	028
MGMS1-43	6/18/2015	1230	4					4								X	029
MGMS1-60	6/18/2015	1244	4					4								X	030
MW-12	6/19/2015	828	7	1				4	1	3						X	031
MW-12 DUP	6/19/2015	828	7	1				4	1	3						X	032
MGMS3-40	6/19/2015	927	4					4								X	033
MGMS3-60	6/19/2015	945	4					4								X	034
MGMS2-40	6/19/2015	1006	7	1				4	1	3						X	035
MGMS2-60	6/19/2015	1029	4					4								X	036
MW-21i-40	6/19/2015	1102	4					4								X	037
Field Blank 6-19	6/19/2015	1120	4					4								X	038

Relinquished by: Date: 6/24/15 Time: 1300  
 Received by: Date: 6/23/15 Time: 062315  
 PACE Analytical

Remarks:  
 MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No



**Sample Condition Upon Receipt**

Client Name: Apex (Portland) Nurstar Vana Project #: \_\_\_\_\_

**WO#: 1249017**



1249017

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  OnTrac  Other: \_\_\_\_\_  
 Tracking Number: 8071 1280 9002 8999

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No  
 Optional: Proj. Due Date: \_\_\_\_\_ Proj. Name: \_\_\_\_\_

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No  
 Thermom. Used:  DA1434  DA2285 Type of Ice:  Wet  Blue  Dry Ice  None  Samples on ice, cooling process has begun

Cooler Temp Read(°C): 5.8/1.6 Cooler Temp Corrected(°C): 5.8/1.6 Biological Tissue Frozen?  Yes  No  N/A  
 Temp should be above freezing to 6°C Correction Factor: 0 Date and Initials of Person Examining Contents: Egy 062315

Chain of Custody Present?	Yes	No	N/A	Comments:
Chain of Custody Filled Out?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Sample -031 has a
Chain of Custody Relinquished?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. total of 12 HCL preserved 40ml
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. VOA's and 9 unpreserved 40ml
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. VOA's.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. 4 HCL VOA's were in a bag
Rush Turn Around Time Requested?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6. labeled as Trip blank-1
Sufficient Volume?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. and Trip blank-2. They
Correct Containers Used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. will be added to the project
-Pace Containers Used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. at the <sup>best</sup> sampler 040 and
Containers Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-041, respectively and as on HOLD.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	10.
Sample Labels Match COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. Note if sediment is visible in the dissolved container.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. (see note above)
All containers needing acid/base preservation have been checked?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	14.
Trip Blank Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. No date on labels for -040
Trip Blank Custody Seals Present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	or -041. The relinquishment date
Pace Trip Blank Lot # (if purchased):	6/22/15) was used as the collection date for these samples.			

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: S. Braye Date/Time: 6/24/15 1510  
 Comments/Resolution: Trip blanks to remain on hold.

**Project Manager Review:** Scott Iron Date: 6/24/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

# Chain of Custody

**SHORT HOLD**



Workorder: 1249017

Workorder Name: NuStar Vancouver GWM

Owner Received Date: 6/23/2015 Results Requested By: 6/30/2015

Report To

Scott M Forbes  
Pace Analytical Services, Inc.  
315 Chestnut St. PO Box 1212  
Virginia, MN 55792  
Phone (218) 735-6700  
Fax (218) 742-1010

Subcontract To

Pace Analytical Minnesota  
1700 Elm Street  
Suite 200  
Minneapolis, MN 55414  
Phone (612) 607-1700

Requested Analysis

Methane, Ethane, Ethene

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved	Preserved Containers	LAB USE ONLY
1	MW-7	PS	6/17/2015 09:18	1249017011	Water	3		001
2	MW-7 DUP	PS	6/17/2015 09:18	1249017012	Water	3		002
3	MP-1	PS	6/18/2015 08:10	1249017022	Water	3		003
4	MW-24i	PS	6/18/2015 08:44	1249017023	Water	3		004
5	EX-1	PS	6/18/2015 09:54	1249017025	Water	3		005
6	MW-12	RQS	6/19/2015 08:28	1249017031	Water	3		006
7	MW-12 DUP	PS	6/19/2015 08:28	1249017032	Water	3		007
8	MGMS2-40	PS	6/19/2015 10:06	1249017035	Water	3		008

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	SM - Pace Analytical	062315 1600	MSD - PD KCF	062415 0930
2				
3				

Cooler Temperature on Receipt 1.4 °C    Custody Seal  or N    Received on Ice  or N    Samples Intact  or N

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.  
This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name:  
Sample Condition Upon Receipt Form

Document Revised: 23Feb2015  
Page 1 of 1

Document No.:  
F-MN-L-213-rev.13

Issuing Authority:  
Pace Minnesota Quality Office

Client Name:

Project #:

Pace VM

WO#: 10311603



Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  Speedee  Other: \_\_\_\_\_

Tracking Number: 7739 0115 7452

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No

Optional: Proj. Due Date: \_\_\_\_\_ Proj. Name: \_\_\_\_\_

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_

Temp Blank?  Yes  No

Thermometer Used:  B88A9130516413  B88A912167504  B88A0143310098

Type of Ice:  Wet  Blue  None  Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.3 Cooler Temp Corrected (°C): 1.9

Biological Tissue Frozen?  Yes  No  N/A

Temp should be above freezing to 6°C Correction Factor: 10.1 Date and Initials of Person Examining Contents: 6/29/15

USDA Regulated Soil  N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps?)  Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required?  Yes  No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

Date: 6/29/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

WO#: 2021701



www.pacelabs.com

6898L8

Chain of Custody

Workorder: 1249017      Workorder Name: NuStar Vancouver GWM      Owner Received Date: 6/23/2015      Results Requested By: 6/30/2015

Report To: **Subcontract To:**  
 Scott M Forbes  
 Pace Analytical Services, Inc.  
 315 Chestnut St. PO Box 1212  
 Virginia, MN 55792  
 Phone (218) 735-6700  
 Fax (218) 742-1010

Pace Analytical New Orleans  
 1000 Riverbend Blvd  
 Suite F  
 St. Rose, LA 70087  
 Phone (504) 469-0333

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		LAB USE ONLY
						H2SO4	TOC	
1	MW-7	PS	6/17/2015 09:18	1249017011	Water	1		X
2	MW-7 DUP	PS	6/17/2015 09:18	1249017012	Water	1		X
3	MP-1	PS	6/18/2015 08:10	1249017022	Water	1		X
4	MW-24i	PS	6/18/2015 08:44	1249017023	Water	1		X
5	EX-1	PS	6/18/2015 09:54	1249017025	Water	1		X
6	MW-12	RQS	6/19/2015 08:28	1249017031	Water	1		X
7	MW-12 DUP	PS	6/19/2015 08:28	1249017032	Water	1		X
8	MGMS2-40	PS	6/19/2015 10:06	1249017035	Water	1		X

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Samples Intact	Y or N
1	<i>[Signature]</i>	06/23/15 15:10	<i>[Signature]</i>					
2	<i>[Signature]</i>	6/24/15 8:15	<i>[Signature]</i>	6/24/15 9:15				
3								

Cooler Temperature on Receipt: 2-7 °C      Custody Seal: Y      Received on Ice: Y      Samples Intact: Y

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.  
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

# Chain of Custody



Workorder: 1249017      Workorder Name: NuStar Vancouver GWM      Owner Received Date: 6/23/2015      Results Requested By: 6/30/2015

Scott M Forbes  
 Pace Analytical Services, Inc.  
 315 Chestnut St. PO Box 1212  
 Virginia, MN 55792  
 Phone (218) 735-6700  
 Fax (218) 742-1010

Pace Analytical New Orleans  
 1000 Riverbend Blvd  
 Suite F  
 St. Rose, LA 70087  
 Phone (504) 469-0333

Sample ID	Sample Type	Collect Date/Time	LAB ID	Matrix	Preserved Containers	TC	LAB USE ONLY
1	MW-7	6/17/2015 09:18	1249017011	Water	1	X	
2	MW-7 DUP	6/17/2015 09:18	1249017012	Water	1	X	
3	MP-1	6/18/2015 08:10	1249017022	Water	1	X	
4	MW-24i	6/18/2015 08:44	1249017023	Water	1	X	
5	EX-1	6/18/2015 09:54	1249017025	Water	1	X	
6	MW-12	6/19/2015 08:28	1249017031	Water	1	X	
7	MW-12 DUP	6/19/2015 08:28	1249017032	Water	1	X	
8	MENS2-40	6/19/2015 10:00	1249017033	Water	1	Y	

*Sample - ops only - 1 container. no biginshad. get assets*

*will send to new*

Transfers Released By: *[Signature]* Date/Time: 06/25/15/10:10  
 Received By: *[Signature]* Date/Time: 6-28-15 08:10  
 Custody Seal (Y) or N: *Y*  
 Received on (Y) or N: *Y*  
 Samples Intact (Y) or N: *Y*

Cooler Temperature on Receipt: 2.0 °C

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.  
 This chain of custody is considered complete as is since this information is available in the owner laboratory.



Sample Condition Up

1000 Riverbend Blvd., Suite F  
St. Rose, LA 70087

WO#: 2021701

PM: EI1 Due Date: 06/30/15  
CLIENT: PACE-CA PACE Davis CA

Courier:  Pace Courier  Hired Courier  Fed X  UPS  DHL  USPS  Customer  Other

Custody Seal on Cooler/Box Present: [see COC]

Custody Seals Intact:  Yes  No

Thermometer Used:  Therm Fisher IR 5  
 Therm Fisher IR 6  
 Therm Fisher IR 7

Type of Ice: Wet Blue None

Samples on ice: [see COC]

Date and Initials of person examining contents: 6-25-15

Cooler Temperature: [see COC]

Temp should be above freezing to 6°C

Temp must be measured from Temperature blank when present

Comments:

Temperature Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1
Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2
Chain of Custody Complete:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8
Filtered vol. Rec. for Diss. tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	9
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10
All containers received within manufacture's precautionary and/or expiration dates.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12
All containers preservation checked found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	15

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_





1000 Riverbend Blvd., Suite F  
St. Rose, LA 70087

### Sample Condition Upc

# WO#: 2021701

PM: EI1 Due Date: 06/30/15  
CLIENT: PACE-CA PACE Davis CA

F. . . . .

Courier:  Pace Courier  Hired Courier  Fed X  UPS  DHL  USPS  Customer  Other

Custody Seal on Cooler/Box Present: [see COC]

Custody Seals intact:  Yes  No

Thermometer Used:  Therm Fisher IR 5  
 Therm Fisher IR 6  
 Therm Fisher IR 7

Type of Ice: Wet Blue None

Samples on ice: [see COC]

Date and Initials of person examining contents: 6-24-15

Cooler Temperature: [see COC]

Temp should be above freezing to 6°C

Temp must be measured from Temperature blank when present

Comments:

Temperature Blank Present??	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	1
Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2
Chain of Custody Complete:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8
Filtered vol. Rec. for Diss. tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	9
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10
All containers received within manufacture's precautionary and/or expiration dates.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12
All containers preservation checked found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	15

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

# 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: 250-24108-1

Client Project/Site: NuStar Vancouver O&M

For:

Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:

2/4/2015 11:39:51 AM

David Alltucker, Project Manager I  
(916)374-4383

[david.alltucker@testamericainc.com](mailto:david.alltucker@testamericainc.com)

Designee for

Sarah Murphy, Project Management Assistant I  
(916)373-5600

[sarah.murphy@testamericainc.com](mailto:sarah.murphy@testamericainc.com)

### LINKS

Review your project  
results through

**TotalAccess**

Have a Question?



Visit us at:

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

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

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

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

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# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-24108-1	SVE South Pre Carbon	Air	01/26/15 09:31	01/26/15 13:20
250-24108-2	SVE South Post Carbon	Air	01/26/15 09:41	01/26/15 13:20
250-24108-3	SVE North	Air	01/26/15 10:01	01/26/15 13:20

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# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

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**Job ID: 250-24108-1**

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**Laboratory: TestAmerica Portland**

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**Narrative**

**Job Narrative**  
**250-24108-1**

**Receipt**

The samples were received on 1/26/2015 1:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

**Air - GC/MS VOA**

Method(s) TO-15: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for batch 64517 recovered outside control limits for the following analytes: Chloromethane (130%). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Qualifiers

### Air - GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD exceeds the control limits

## 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
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

**Client Sample ID: SVE South Pre Carbon**

**Lab Sample ID: 250-24108-1**

**Date Collected: 01/26/15 09:31**

**Matrix: Air**

**Date Received: 01/26/15 13:20**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		790		ppb v/v			02/03/15 01:00	158
Benzene	ND		63		ppb v/v			02/03/15 01:00	158
Benzyl chloride	ND		130		ppb v/v			02/03/15 01:00	158
Bromodichloromethane	ND		47		ppb v/v			02/03/15 01:00	158
Bromoform	ND		63		ppb v/v			02/03/15 01:00	158
Bromomethane	ND		130		ppb v/v			02/03/15 01:00	158
2-Butanone (MEK)	ND		130		ppb v/v			02/03/15 01:00	158
Carbon disulfide	ND		130		ppb v/v			02/03/15 01:00	158
Carbon tetrachloride	ND		130		ppb v/v			02/03/15 01:00	158
Chlorobenzene	ND		47		ppb v/v			02/03/15 01:00	158
Dibromochloromethane	ND		63		ppb v/v			02/03/15 01:00	158
Chloroethane	ND		130		ppb v/v			02/03/15 01:00	158
Chloroform	ND		47		ppb v/v			02/03/15 01:00	158
Chloromethane	ND	*	130		ppb v/v			02/03/15 01:00	158
1,2-Dibromoethane (EDB)	ND		130		ppb v/v			02/03/15 01:00	158
1,2-Dichlorobenzene	ND		63		ppb v/v			02/03/15 01:00	158
1,3-Dichlorobenzene	ND		63		ppb v/v			02/03/15 01:00	158
1,4-Dichlorobenzene	ND		63		ppb v/v			02/03/15 01:00	158
Dichlorodifluoromethane	ND		63		ppb v/v			02/03/15 01:00	158
1,1-Dichloroethane	ND		47		ppb v/v			02/03/15 01:00	158
1,2-Dichloroethane	ND		130		ppb v/v			02/03/15 01:00	158
1,1-Dichloroethene	ND		130		ppb v/v			02/03/15 01:00	158
<b>cis-1,2-Dichloroethene</b>	<b>110</b>		63		ppb v/v			02/03/15 01:00	158
trans-1,2-Dichloroethene	ND		63		ppb v/v			02/03/15 01:00	158
1,2-Dichloropropane	ND		63		ppb v/v			02/03/15 01:00	158
cis-1,3-Dichloropropene	ND		63		ppb v/v			02/03/15 01:00	158
trans-1,3-Dichloropropene	ND		63		ppb v/v			02/03/15 01:00	158
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		63		ppb v/v			02/03/15 01:00	158
Ethylbenzene	ND		63		ppb v/v			02/03/15 01:00	158
4-Ethyltoluene	ND		63		ppb v/v			02/03/15 01:00	158
Hexachlorobutadiene	ND		320		ppb v/v			02/03/15 01:00	158
2-Hexanone	ND		63		ppb v/v			02/03/15 01:00	158
Methylene Chloride	ND		63		ppb v/v			02/03/15 01:00	158
4-Methyl-2-pentanone (MIBK)	ND		63		ppb v/v			02/03/15 01:00	158
Styrene	ND		63		ppb v/v			02/03/15 01:00	158
1,1,2,2-Tetrachloroethane	ND		63		ppb v/v			02/03/15 01:00	158
<b>Tetrachloroethene</b>	<b>3100</b>		63		ppb v/v			02/03/15 01:00	158
<b>Toluene</b>	<b>63</b>		63		ppb v/v			02/03/15 01:00	158
1,2,4-Trichlorobenzene	ND		320		ppb v/v			02/03/15 01:00	158
1,1,1-Trichloroethane	ND		47		ppb v/v			02/03/15 01:00	158
1,1,2-Trichloroethane	ND		63		ppb v/v			02/03/15 01:00	158
<b>Trichloroethene</b>	<b>160</b>		63		ppb v/v			02/03/15 01:00	158
Trichlorofluoromethane	ND		63		ppb v/v			02/03/15 01:00	158
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		63		ppb v/v			02/03/15 01:00	158
1,2,4-Trimethylbenzene	ND		130		ppb v/v			02/03/15 01:00	158
1,3,5-Trimethylbenzene	ND		63		ppb v/v			02/03/15 01:00	158
Vinyl acetate	ND		130		ppb v/v			02/03/15 01:00	158
Vinyl chloride	ND		63		ppb v/v			02/03/15 01:00	158
m,p-Xylene	ND		130		ppb v/v			02/03/15 01:00	158

TestAmerica Portland

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Client Sample ID: SVE South Pre Carbon**

**Lab Sample ID: 250-24108-1**

**Date Collected: 01/26/15 09:31**

**Matrix: Air**

**Date Received: 01/26/15 13:20**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		63		ppb v/v			02/03/15 01:00	158
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		1900		ug/m3 Air			02/03/15 01:00	158
Benzene	ND		200		ug/m3 Air			02/03/15 01:00	158
Benzyl chloride	ND		650		ug/m3 Air			02/03/15 01:00	158
Bromodichloromethane	ND		320		ug/m3 Air			02/03/15 01:00	158
Bromoform	ND		650		ug/m3 Air			02/03/15 01:00	158
Bromomethane	ND		490		ug/m3 Air			02/03/15 01:00	158
2-Butanone (MEK)	ND		370		ug/m3 Air			02/03/15 01:00	158
Carbon disulfide	ND		390		ug/m3 Air			02/03/15 01:00	158
Carbon tetrachloride	ND		800		ug/m3 Air			02/03/15 01:00	158
Chlorobenzene	ND		220		ug/m3 Air			02/03/15 01:00	158
Dibromochloromethane	ND		540		ug/m3 Air			02/03/15 01:00	158
Chloroethane	ND		330		ug/m3 Air			02/03/15 01:00	158
Chloroform	ND		230		ug/m3 Air			02/03/15 01:00	158
Chloromethane	ND	*	260		ug/m3 Air			02/03/15 01:00	158
1,2-Dibromoethane (EDB)	ND		970		ug/m3 Air			02/03/15 01:00	158
1,2-Dichlorobenzene	ND		380		ug/m3 Air			02/03/15 01:00	158
1,3-Dichlorobenzene	ND		380		ug/m3 Air			02/03/15 01:00	158
1,4-Dichlorobenzene	ND		380		ug/m3 Air			02/03/15 01:00	158
Dichlorodifluoromethane	ND		310		ug/m3 Air			02/03/15 01:00	158
1,1-Dichloroethane	ND		190		ug/m3 Air			02/03/15 01:00	158
1,2-Dichloroethane	ND		510		ug/m3 Air			02/03/15 01:00	158
1,1-Dichloroethene	ND		500		ug/m3 Air			02/03/15 01:00	158
<b>cis-1,2-Dichloroethene</b>	<b>420</b>		250		ug/m3 Air			02/03/15 01:00	158
trans-1,2-Dichloroethene	ND		250		ug/m3 Air			02/03/15 01:00	158
1,2-Dichloropropane	ND		290		ug/m3 Air			02/03/15 01:00	158
cis-1,3-Dichloropropene	ND		290		ug/m3 Air			02/03/15 01:00	158
trans-1,3-Dichloropropene	ND		290		ug/m3 Air			02/03/15 01:00	158
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		440		ug/m3 Air			02/03/15 01:00	158
Ethylbenzene	ND		270		ug/m3 Air			02/03/15 01:00	158
4-Ethyltoluene	ND		310		ug/m3 Air			02/03/15 01:00	158
Hexachlorobutadiene	ND		3400		ug/m3 Air			02/03/15 01:00	158
2-Hexanone	ND		260		ug/m3 Air			02/03/15 01:00	158
Methylene Chloride	ND		220		ug/m3 Air			02/03/15 01:00	158
4-Methyl-2-pentanone (MIBK)	ND		260		ug/m3 Air			02/03/15 01:00	158
Styrene	ND		270		ug/m3 Air			02/03/15 01:00	158
1,1,2,2-Tetrachloroethane	ND		430		ug/m3 Air			02/03/15 01:00	158
<b>Tetrachloroethene</b>	<b>21000</b>		430		ug/m3 Air			02/03/15 01:00	158
<b>Toluene</b>	<b>240</b>		240		ug/m3 Air			02/03/15 01:00	158
1,2,4-Trichlorobenzene	ND		2300		ug/m3 Air			02/03/15 01:00	158
1,1,1-Trichloroethane	ND		260		ug/m3 Air			02/03/15 01:00	158
1,1,2-Trichloroethane	ND		340		ug/m3 Air			02/03/15 01:00	158
<b>Trichloroethene</b>	<b>860</b>		340		ug/m3 Air			02/03/15 01:00	158
Trichlorofluoromethane	ND		360		ug/m3 Air			02/03/15 01:00	158
1,1,2-Trichloro-1,1,2,2-trifluoroethane	ND		480		ug/m3 Air			02/03/15 01:00	158
1,2,4-Trimethylbenzene	ND		620		ug/m3 Air			02/03/15 01:00	158
1,3,5-Trimethylbenzene	ND		310		ug/m3 Air			02/03/15 01:00	158
Vinyl acetate	ND		450		ug/m3 Air			02/03/15 01:00	158

TestAmerica Portland



# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Client Sample ID: SVE South Pre Carbon**

**Date Collected: 01/26/15 09:31**

**Date Received: 01/26/15 13:20**

**Lab Sample ID: 250-24108-1**

**Matrix: Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		160		ug/m3 Air			02/03/15 01:00	158
m,p-Xylene	ND		550		ug/m3 Air			02/03/15 01:00	158
o-Xylene	ND		270		ug/m3 Air			02/03/15 01:00	158
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		70 - 130					02/03/15 01:00	158
1,2-Dichloroethane-d4 (Surr)	116		70 - 130					02/03/15 01:00	158
Toluene-d8 (Surr)	104		70 - 130					02/03/15 01:00	158

**Client Sample ID: SVE South Post Carbon**

**Date Collected: 01/26/15 09:41**

**Date Received: 01/26/15 13:20**

**Lab Sample ID: 250-24108-2**

**Matrix: Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	650		320		ppb v/v			02/03/15 01:43	64.5
Benzene	ND		26		ppb v/v			02/03/15 01:43	64.5
Benzyl chloride	ND		52		ppb v/v			02/03/15 01:43	64.5
Bromodichloromethane	ND		19		ppb v/v			02/03/15 01:43	64.5
Bromoform	ND		26		ppb v/v			02/03/15 01:43	64.5
Bromomethane	ND		52		ppb v/v			02/03/15 01:43	64.5
2-Butanone (MEK)	ND		52		ppb v/v			02/03/15 01:43	64.5
Carbon disulfide	ND		52		ppb v/v			02/03/15 01:43	64.5
Carbon tetrachloride	ND		52		ppb v/v			02/03/15 01:43	64.5
Chlorobenzene	ND		19		ppb v/v			02/03/15 01:43	64.5
Dibromochloromethane	ND		26		ppb v/v			02/03/15 01:43	64.5
Chloroethane	ND		52		ppb v/v			02/03/15 01:43	64.5
Chloroform	ND		19		ppb v/v			02/03/15 01:43	64.5
Chloromethane	ND *		52		ppb v/v			02/03/15 01:43	64.5
1,2-Dibromoethane (EDB)	ND		52		ppb v/v			02/03/15 01:43	64.5
1,2-Dichlorobenzene	ND		26		ppb v/v			02/03/15 01:43	64.5
1,3-Dichlorobenzene	ND		26		ppb v/v			02/03/15 01:43	64.5
1,4-Dichlorobenzene	ND		26		ppb v/v			02/03/15 01:43	64.5
Dichlorodifluoromethane	ND		26		ppb v/v			02/03/15 01:43	64.5
1,1-Dichloroethane	ND		19		ppb v/v			02/03/15 01:43	64.5
1,2-Dichloroethane	ND		52		ppb v/v			02/03/15 01:43	64.5
1,1-Dichloroethene	ND		52		ppb v/v			02/03/15 01:43	64.5
cis-1,2-Dichloroethene	ND		26		ppb v/v			02/03/15 01:43	64.5
trans-1,2-Dichloroethene	ND		26		ppb v/v			02/03/15 01:43	64.5
1,2-Dichloropropane	ND		26		ppb v/v			02/03/15 01:43	64.5
cis-1,3-Dichloropropene	ND		26		ppb v/v			02/03/15 01:43	64.5
trans-1,3-Dichloropropene	ND		26		ppb v/v			02/03/15 01:43	64.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		26		ppb v/v			02/03/15 01:43	64.5
Ethylbenzene	ND		26		ppb v/v			02/03/15 01:43	64.5
4-Ethyltoluene	ND		26		ppb v/v			02/03/15 01:43	64.5
Hexachlorobutadiene	ND		130		ppb v/v			02/03/15 01:43	64.5
2-Hexanone	ND		26		ppb v/v			02/03/15 01:43	64.5
Methylene Chloride	ND		26		ppb v/v			02/03/15 01:43	64.5
4-Methyl-2-pentanone (MIBK)	ND		26		ppb v/v			02/03/15 01:43	64.5
Styrene	ND		26		ppb v/v			02/03/15 01:43	64.5
1,1,2,2-Tetrachloroethane	ND		26		ppb v/v			02/03/15 01:43	64.5
Tetrachloroethene	ND		26		ppb v/v			02/03/15 01:43	64.5

TestAmerica Portland

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Client Sample ID: SVE South Post Carbon**

**Lab Sample ID: 250-24108-2**

**Date Collected: 01/26/15 09:41**

**Matrix: Air**

**Date Received: 01/26/15 13:20**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Toluene</b>	<b>51</b>		26		ppb v/v			02/03/15 01:43	64.5
1,2,4-Trichlorobenzene	ND		130		ppb v/v			02/03/15 01:43	64.5
1,1,1-Trichloroethane	ND		19		ppb v/v			02/03/15 01:43	64.5
1,1,2-Trichloroethane	ND		26		ppb v/v			02/03/15 01:43	64.5
Trichloroethene	ND		26		ppb v/v			02/03/15 01:43	64.5
Trichlorofluoromethane	ND		26		ppb v/v			02/03/15 01:43	64.5
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		26		ppb v/v			02/03/15 01:43	64.5
1,2,4-Trimethylbenzene	ND		52		ppb v/v			02/03/15 01:43	64.5
1,3,5-Trimethylbenzene	ND		26		ppb v/v			02/03/15 01:43	64.5
Vinyl acetate	ND		52		ppb v/v			02/03/15 01:43	64.5
Vinyl chloride	ND		26		ppb v/v			02/03/15 01:43	64.5
m,p-Xylene	ND		52		ppb v/v			02/03/15 01:43	64.5
o-Xylene	ND		26		ppb v/v			02/03/15 01:43	64.5
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>1500</b>		770		ug/m3 Air			02/03/15 01:43	64.5
Benzene	ND		82		ug/m3 Air			02/03/15 01:43	64.5
Benzyl chloride	ND		270		ug/m3 Air			02/03/15 01:43	64.5
Bromodichloromethane	ND		130		ug/m3 Air			02/03/15 01:43	64.5
Bromoform	ND		270		ug/m3 Air			02/03/15 01:43	64.5
Bromomethane	ND		200		ug/m3 Air			02/03/15 01:43	64.5
2-Butanone (MEK)	ND		150		ug/m3 Air			02/03/15 01:43	64.5
Carbon disulfide	ND		160		ug/m3 Air			02/03/15 01:43	64.5
Carbon tetrachloride	ND		320		ug/m3 Air			02/03/15 01:43	64.5
Chlorobenzene	ND		89		ug/m3 Air			02/03/15 01:43	64.5
Dibromochloromethane	ND		220		ug/m3 Air			02/03/15 01:43	64.5
Chloroethane	ND		140		ug/m3 Air			02/03/15 01:43	64.5
Chloroform	ND		94		ug/m3 Air			02/03/15 01:43	64.5
Chloromethane	ND *		110		ug/m3 Air			02/03/15 01:43	64.5
1,2-Dibromoethane (EDB)	ND		400		ug/m3 Air			02/03/15 01:43	64.5
1,2-Dichlorobenzene	ND		160		ug/m3 Air			02/03/15 01:43	64.5
1,3-Dichlorobenzene	ND		160		ug/m3 Air			02/03/15 01:43	64.5
1,4-Dichlorobenzene	ND		160		ug/m3 Air			02/03/15 01:43	64.5
Dichlorodifluoromethane	ND		130		ug/m3 Air			02/03/15 01:43	64.5
1,1-Dichloroethane	ND		78		ug/m3 Air			02/03/15 01:43	64.5
1,2-Dichloroethane	ND		210		ug/m3 Air			02/03/15 01:43	64.5
1,1-Dichloroethene	ND		200		ug/m3 Air			02/03/15 01:43	64.5
cis-1,2-Dichloroethene	ND		100		ug/m3 Air			02/03/15 01:43	64.5
trans-1,2-Dichloroethene	ND		100		ug/m3 Air			02/03/15 01:43	64.5
1,2-Dichloropropane	ND		120		ug/m3 Air			02/03/15 01:43	64.5
cis-1,3-Dichloropropene	ND		120		ug/m3 Air			02/03/15 01:43	64.5
trans-1,3-Dichloropropene	ND		120		ug/m3 Air			02/03/15 01:43	64.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		180		ug/m3 Air			02/03/15 01:43	64.5
Ethylbenzene	ND		110		ug/m3 Air			02/03/15 01:43	64.5
4-Ethyltoluene	ND		130		ug/m3 Air			02/03/15 01:43	64.5
Hexachlorobutadiene	ND		1400		ug/m3 Air			02/03/15 01:43	64.5
2-Hexanone	ND		110		ug/m3 Air			02/03/15 01:43	64.5
Methylene Chloride	ND		90		ug/m3 Air			02/03/15 01:43	64.5
4-Methyl-2-pentanone (MIBK)	ND		110		ug/m3 Air			02/03/15 01:43	64.5
Styrene	ND		110		ug/m3 Air			02/03/15 01:43	64.5

TestAmerica Portland

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Client Sample ID: SVE South Post Carbon**

**Date Collected: 01/26/15 09:41**

**Date Received: 01/26/15 13:20**

**Lab Sample ID: 250-24108-2**

**Matrix: Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		180		ug/m3 Air			02/03/15 01:43	64.5
Tetrachloroethene	ND		170		ug/m3 Air			02/03/15 01:43	64.5
<b>Toluene</b>	<b>190</b>		97		ug/m3 Air			02/03/15 01:43	64.5
1,2,4-Trichlorobenzene	ND		960		ug/m3 Air			02/03/15 01:43	64.5
1,1,1-Trichloroethane	ND		110		ug/m3 Air			02/03/15 01:43	64.5
1,1,2-Trichloroethane	ND		140		ug/m3 Air			02/03/15 01:43	64.5
Trichloroethene	ND		140		ug/m3 Air			02/03/15 01:43	64.5
Trichlorofluoromethane	ND		140		ug/m3 Air			02/03/15 01:43	64.5
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		200		ug/m3 Air			02/03/15 01:43	64.5
1,2,4-Trimethylbenzene	ND		250		ug/m3 Air			02/03/15 01:43	64.5
1,3,5-Trimethylbenzene	ND		130		ug/m3 Air			02/03/15 01:43	64.5
Vinyl acetate	ND		180		ug/m3 Air			02/03/15 01:43	64.5
Vinyl chloride	ND		66		ug/m3 Air			02/03/15 01:43	64.5
m,p-Xylene	ND		220		ug/m3 Air			02/03/15 01:43	64.5
o-Xylene	ND		110		ug/m3 Air			02/03/15 01:43	64.5
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
4-Bromofluorobenzene (Surr)	93		70 - 130					02/03/15 01:43	64.5
1,2-Dichloroethane-d4 (Surr)	117		70 - 130					02/03/15 01:43	64.5
Toluene-d8 (Surr)	103		70 - 130					02/03/15 01:43	64.5

**Client Sample ID: SVE North**

**Date Collected: 01/26/15 10:01**

**Date Received: 01/26/15 13:20**

**Lab Sample ID: 250-24108-3**

**Matrix: Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		49		ppb v/v			02/03/15 02:24	9.78
Benzene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Benzyl chloride	ND		7.8		ppb v/v			02/03/15 02:24	9.78
Bromodichloromethane	ND		2.9		ppb v/v			02/03/15 02:24	9.78
Bromoform	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Bromomethane	ND		7.8		ppb v/v			02/03/15 02:24	9.78
2-Butanone (MEK)	ND		7.8		ppb v/v			02/03/15 02:24	9.78
Carbon disulfide	ND		7.8		ppb v/v			02/03/15 02:24	9.78
Carbon tetrachloride	ND		7.8		ppb v/v			02/03/15 02:24	9.78
Chlorobenzene	ND		2.9		ppb v/v			02/03/15 02:24	9.78
Dibromochloromethane	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Chloroethane	ND		7.8		ppb v/v			02/03/15 02:24	9.78
Chloroform	ND		2.9		ppb v/v			02/03/15 02:24	9.78
Chloromethane	ND *		7.8		ppb v/v			02/03/15 02:24	9.78
1,2-Dibromoethane (EDB)	ND		7.8		ppb v/v			02/03/15 02:24	9.78
1,2-Dichlorobenzene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,3-Dichlorobenzene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,4-Dichlorobenzene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Dichlorodifluoromethane	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,1-Dichloroethane	ND		2.9		ppb v/v			02/03/15 02:24	9.78
1,2-Dichloroethane	ND		7.8		ppb v/v			02/03/15 02:24	9.78
1,1-Dichloroethene	ND		7.8		ppb v/v			02/03/15 02:24	9.78
cis-1,2-Dichloroethene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
trans-1,2-Dichloroethene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,2-Dichloropropane	ND		3.9		ppb v/v			02/03/15 02:24	9.78

TestAmerica Portland

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Client Sample ID: SVE North**  
**Date Collected: 01/26/15 10:01**  
**Date Received: 01/26/15 13:20**

**Lab Sample ID: 250-24108-3**  
**Matrix: Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
trans-1,3-Dichloropropene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Ethylbenzene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
4-Ethyltoluene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Hexachlorobutadiene	ND		20		ppb v/v			02/03/15 02:24	9.78
2-Hexanone	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Methylene Chloride	ND		3.9		ppb v/v			02/03/15 02:24	9.78
4-Methyl-2-pentanone (MIBK)	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Styrene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,1,2,2-Tetrachloroethane	ND		3.9		ppb v/v			02/03/15 02:24	9.78
<b>Tetrachloroethene</b>	<b>230</b>		3.9		ppb v/v			02/03/15 02:24	9.78
Toluene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,2,4-Trichlorobenzene	ND		20		ppb v/v			02/03/15 02:24	9.78
<b>1,1,1-Trichloroethane</b>	<b>3.0</b>		2.9		ppb v/v			02/03/15 02:24	9.78
1,1,2-Trichloroethane	ND		3.9		ppb v/v			02/03/15 02:24	9.78
<b>Trichloroethene</b>	<b>25</b>		3.9		ppb v/v			02/03/15 02:24	9.78
Trichlorofluoromethane	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.9		ppb v/v			02/03/15 02:24	9.78
1,2,4-Trimethylbenzene	ND		7.8		ppb v/v			02/03/15 02:24	9.78
1,3,5-Trimethylbenzene	ND		3.9		ppb v/v			02/03/15 02:24	9.78
Vinyl acetate	ND		7.8		ppb v/v			02/03/15 02:24	9.78
Vinyl chloride	ND		3.9		ppb v/v			02/03/15 02:24	9.78
m,p-Xylene	ND		7.8		ppb v/v			02/03/15 02:24	9.78
o-Xylene	ND		3.9		ppb v/v			02/03/15 02:24	9.78

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		120		ug/m3 Air			02/03/15 02:24	9.78
Benzene	ND		12		ug/m3 Air			02/03/15 02:24	9.78
Benzyl chloride	ND		41		ug/m3 Air			02/03/15 02:24	9.78
Bromodichloromethane	ND		20		ug/m3 Air			02/03/15 02:24	9.78
Bromoform	ND		40		ug/m3 Air			02/03/15 02:24	9.78
Bromomethane	ND		30		ug/m3 Air			02/03/15 02:24	9.78
2-Butanone (MEK)	ND		23		ug/m3 Air			02/03/15 02:24	9.78
Carbon disulfide	ND		24		ug/m3 Air			02/03/15 02:24	9.78
Carbon tetrachloride	ND		49		ug/m3 Air			02/03/15 02:24	9.78
Chlorobenzene	ND		14		ug/m3 Air			02/03/15 02:24	9.78
Dibromochloromethane	ND		33		ug/m3 Air			02/03/15 02:24	9.78
Chloroethane	ND		21		ug/m3 Air			02/03/15 02:24	9.78
Chloroform	ND		14		ug/m3 Air			02/03/15 02:24	9.78
Chloromethane	ND	*	16		ug/m3 Air			02/03/15 02:24	9.78
1,2-Dibromoethane (EDB)	ND		60		ug/m3 Air			02/03/15 02:24	9.78
1,2-Dichlorobenzene	ND		24		ug/m3 Air			02/03/15 02:24	9.78
1,3-Dichlorobenzene	ND		24		ug/m3 Air			02/03/15 02:24	9.78
1,4-Dichlorobenzene	ND		24		ug/m3 Air			02/03/15 02:24	9.78
Dichlorodifluoromethane	ND		19		ug/m3 Air			02/03/15 02:24	9.78
1,1-Dichloroethane	ND		12		ug/m3 Air			02/03/15 02:24	9.78
1,2-Dichloroethane	ND		32		ug/m3 Air			02/03/15 02:24	9.78
1,1-Dichloroethene	ND		31		ug/m3 Air			02/03/15 02:24	9.78
cis-1,2-Dichloroethene	ND		16		ug/m3 Air			02/03/15 02:24	9.78

TestAmerica Portland

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Client Sample ID: SVE North**  
**Date Collected: 01/26/15 10:01**  
**Date Received: 01/26/15 13:20**

**Lab Sample ID: 250-24108-3**  
**Matrix: Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	ND		16		ug/m3 Air			02/03/15 02:24	9.78
1,2-Dichloropropane	ND		18		ug/m3 Air			02/03/15 02:24	9.78
cis-1,3-Dichloropropene	ND		18		ug/m3 Air			02/03/15 02:24	9.78
trans-1,3-Dichloropropene	ND		18		ug/m3 Air			02/03/15 02:24	9.78
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		27		ug/m3 Air			02/03/15 02:24	9.78
Ethylbenzene	ND		17		ug/m3 Air			02/03/15 02:24	9.78
4-Ethyltoluene	ND		19		ug/m3 Air			02/03/15 02:24	9.78
Hexachlorobutadiene	ND		210		ug/m3 Air			02/03/15 02:24	9.78
2-Hexanone	ND		16		ug/m3 Air			02/03/15 02:24	9.78
Methylene Chloride	ND		14		ug/m3 Air			02/03/15 02:24	9.78
4-Methyl-2-pentanone (MIBK)	ND		16		ug/m3 Air			02/03/15 02:24	9.78
Styrene	ND		17		ug/m3 Air			02/03/15 02:24	9.78
1,1,2,2-Tetrachloroethane	ND		27		ug/m3 Air			02/03/15 02:24	9.78
<b>Tetrachloroethene</b>	<b>1500</b>		27		ug/m3 Air			02/03/15 02:24	9.78
Toluene	ND		15		ug/m3 Air			02/03/15 02:24	9.78
1,2,4-Trichlorobenzene	ND		150		ug/m3 Air			02/03/15 02:24	9.78
<b>1,1,1-Trichloroethane</b>	<b>16</b>		16		ug/m3 Air			02/03/15 02:24	9.78
1,1,2-Trichloroethane	ND		21		ug/m3 Air			02/03/15 02:24	9.78
<b>Trichloroethene</b>	<b>130</b>		21		ug/m3 Air			02/03/15 02:24	9.78
Trichlorofluoromethane	ND		22		ug/m3 Air			02/03/15 02:24	9.78
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		30		ug/m3 Air			02/03/15 02:24	9.78
1,2,4-Trimethylbenzene	ND		38		ug/m3 Air			02/03/15 02:24	9.78
1,3,5-Trimethylbenzene	ND		19		ug/m3 Air			02/03/15 02:24	9.78
Vinyl acetate	ND		28		ug/m3 Air			02/03/15 02:24	9.78
Vinyl chloride	ND		10		ug/m3 Air			02/03/15 02:24	9.78
m,p-Xylene	ND		34		ug/m3 Air			02/03/15 02:24	9.78
o-Xylene	ND		17		ug/m3 Air			02/03/15 02:24	9.78
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130					02/03/15 02:24	9.78
1,2-Dichloroethane-d4 (Surr)	117		70 - 130					02/03/15 02:24	9.78
Toluene-d8 (Surr)	100		70 - 130					02/03/15 02:24	9.78

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

**Lab Sample ID: MB 320-64517/9**

**Matrix: Air**

**Analysis Batch: 64517**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			02/02/15 18:41	1
Benzene	ND		0.40		ppb v/v			02/02/15 18:41	1
Benzyl chloride	ND		0.80		ppb v/v			02/02/15 18:41	1
Bromodichloromethane	ND		0.30		ppb v/v			02/02/15 18:41	1
Bromoform	ND		0.40		ppb v/v			02/02/15 18:41	1
Bromomethane	ND		0.80		ppb v/v			02/02/15 18:41	1
2-Butanone (MEK)	ND		0.80		ppb v/v			02/02/15 18:41	1
Carbon disulfide	ND		0.80		ppb v/v			02/02/15 18:41	1
Carbon tetrachloride	ND		0.80		ppb v/v			02/02/15 18:41	1
Chlorobenzene	ND		0.30		ppb v/v			02/02/15 18:41	1
Dibromochloromethane	ND		0.40		ppb v/v			02/02/15 18:41	1
Chloroethane	ND		0.80		ppb v/v			02/02/15 18:41	1
Chloroform	ND		0.30		ppb v/v			02/02/15 18:41	1
Chloromethane	ND		0.80		ppb v/v			02/02/15 18:41	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			02/02/15 18:41	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			02/02/15 18:41	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			02/02/15 18:41	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			02/02/15 18:41	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			02/02/15 18:41	1
1,1-Dichloroethane	ND		0.30		ppb v/v			02/02/15 18:41	1
1,2-Dichloroethane	ND		0.80		ppb v/v			02/02/15 18:41	1
1,1-Dichloroethene	ND		0.80		ppb v/v			02/02/15 18:41	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			02/02/15 18:41	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			02/02/15 18:41	1
1,2-Dichloropropane	ND		0.40		ppb v/v			02/02/15 18:41	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			02/02/15 18:41	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			02/02/15 18:41	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			02/02/15 18:41	1
Ethylbenzene	ND		0.40		ppb v/v			02/02/15 18:41	1
4-Ethyltoluene	ND		0.40		ppb v/v			02/02/15 18:41	1
Hexachlorobutadiene	ND		2.0		ppb v/v			02/02/15 18:41	1
2-Hexanone	ND		0.40		ppb v/v			02/02/15 18:41	1
Methylene Chloride	ND		0.40		ppb v/v			02/02/15 18:41	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			02/02/15 18:41	1
Styrene	ND		0.40		ppb v/v			02/02/15 18:41	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			02/02/15 18:41	1
Tetrachloroethene	ND		0.40		ppb v/v			02/02/15 18:41	1
Toluene	ND		0.40		ppb v/v			02/02/15 18:41	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			02/02/15 18:41	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			02/02/15 18:41	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			02/02/15 18:41	1
Trichloroethene	ND		0.40		ppb v/v			02/02/15 18:41	1
Trichlorofluoromethane	ND		0.40		ppb v/v			02/02/15 18:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			02/02/15 18:41	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			02/02/15 18:41	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			02/02/15 18:41	1
Vinyl acetate	ND		0.80		ppb v/v			02/02/15 18:41	1
Vinyl chloride	ND		0.40		ppb v/v			02/02/15 18:41	1

TestAmerica Portland

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 320-64517/9

Matrix: Air

Analysis Batch: 64517

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			02/02/15 18:41	1
o-Xylene	ND		0.40		ppb v/v			02/02/15 18:41	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			02/02/15 18:41	1
Benzene	ND		1.3		ug/m3 Air			02/02/15 18:41	1
Benzyl chloride	ND		4.1		ug/m3 Air			02/02/15 18:41	1
Bromodichloromethane	ND		2.0		ug/m3 Air			02/02/15 18:41	1
Bromoform	ND		4.1		ug/m3 Air			02/02/15 18:41	1
Bromomethane	ND		3.1		ug/m3 Air			02/02/15 18:41	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			02/02/15 18:41	1
Carbon disulfide	ND		2.5		ug/m3 Air			02/02/15 18:41	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			02/02/15 18:41	1
Chlorobenzene	ND		1.4		ug/m3 Air			02/02/15 18:41	1
Dibromochloromethane	ND		3.4		ug/m3 Air			02/02/15 18:41	1
Chloroethane	ND		2.1		ug/m3 Air			02/02/15 18:41	1
Chloroform	ND		1.5		ug/m3 Air			02/02/15 18:41	1
Chloromethane	ND		1.7		ug/m3 Air			02/02/15 18:41	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			02/02/15 18:41	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			02/02/15 18:41	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			02/02/15 18:41	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			02/02/15 18:41	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			02/02/15 18:41	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			02/02/15 18:41	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			02/02/15 18:41	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			02/02/15 18:41	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/02/15 18:41	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/02/15 18:41	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			02/02/15 18:41	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/02/15 18:41	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/02/15 18:41	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			02/02/15 18:41	1
Ethylbenzene	ND		1.7		ug/m3 Air			02/02/15 18:41	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			02/02/15 18:41	1
Hexachlorobutadiene	ND		21		ug/m3 Air			02/02/15 18:41	1
2-Hexanone	ND		1.6		ug/m3 Air			02/02/15 18:41	1
Methylene Chloride	ND		1.4		ug/m3 Air			02/02/15 18:41	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			02/02/15 18:41	1
Styrene	ND		1.7		ug/m3 Air			02/02/15 18:41	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			02/02/15 18:41	1
Tetrachloroethene	ND		2.7		ug/m3 Air			02/02/15 18:41	1
Toluene	ND		1.5		ug/m3 Air			02/02/15 18:41	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			02/02/15 18:41	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			02/02/15 18:41	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			02/02/15 18:41	1
Trichloroethene	ND		2.1		ug/m3 Air			02/02/15 18:41	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			02/02/15 18:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			02/02/15 18:41	1

TestAmerica Portland

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-64517/9**

**Matrix: Air**

**Analysis Batch: 64517**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			02/02/15 18:41	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			02/02/15 18:41	1
Vinyl acetate	ND		2.8		ug/m3 Air			02/02/15 18:41	1
Vinyl chloride	ND		1.0		ug/m3 Air			02/02/15 18:41	1
m,p-Xylene	ND		3.5		ug/m3 Air			02/02/15 18:41	1
o-Xylene	ND		1.7		ug/m3 Air			02/02/15 18:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		70 - 130		02/02/15 18:41	1
1,2-Dichloroethane-d4 (Surr)	120		70 - 130		02/02/15 18:41	1
Toluene-d8 (Surr)	101		70 - 130		02/02/15 18:41	1

**Lab Sample ID: LCS 320-64517/4**

**Matrix: Air**

**Analysis Batch: 64517**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	19.7		ppb v/v		98	71 - 131
Benzene	20.0	17.5		ppb v/v		87	68 - 128
Benzyl chloride	20.0	15.4		ppb v/v		77	58 - 120
Bromodichloromethane	20.0	17.4		ppb v/v		87	65 - 130
Bromoform	20.0	17.1		ppb v/v		85	64 - 144
Bromomethane	20.0	21.2		ppb v/v		106	70 - 131
2-Butanone (MEK)	20.0	17.4		ppb v/v		87	71 - 131
Carbon disulfide	20.0	19.0		ppb v/v		95	63 - 123
Carbon tetrachloride	20.0	16.8		ppb v/v		84	67 - 127
Chlorobenzene	20.0	17.6		ppb v/v		88	70 - 132
Dibromochloromethane	20.0	17.3		ppb v/v		87	68 - 128
Chloroethane	20.0	22.6		ppb v/v		113	70 - 131
Chloroform	20.0	18.1		ppb v/v		91	69 - 129
Chloromethane	20.0	26.0	*	ppb v/v		130	67 - 127
1,2-Dibromoethane (EDB)	20.0	17.6		ppb v/v		88	68 - 131
1,2-Dichlorobenzene	20.0	17.5		ppb v/v		88	73 - 143
1,3-Dichlorobenzene	20.0	17.6		ppb v/v		88	77 - 136
1,4-Dichlorobenzene	20.0	17.6		ppb v/v		88	73 - 143
Dichlorodifluoromethane	20.0	22.0		ppb v/v		110	69 - 129
1,1-Dichloroethane	20.0	19.8		ppb v/v		99	65 - 125
1,2-Dichloroethane	20.0	19.7		ppb v/v		99	71 - 131
1,1-Dichloroethene	20.0	18.3		ppb v/v		91	53 - 128
cis-1,2-Dichloroethene	20.0	17.8		ppb v/v		89	68 - 128
trans-1,2-Dichloroethene	20.0	19.7		ppb v/v		98	70 - 130
1,2-Dichloropropane	20.0	18.7		ppb v/v		94	74 - 128
cis-1,3-Dichloropropene	20.0	19.8		ppb v/v		99	78 - 132
trans-1,3-Dichloropropene	20.0	17.1		ppb v/v		86	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.6		ppb v/v		93	64 - 124
Ethylbenzene	20.0	16.8		ppb v/v		84	76 - 136
4-Ethyltoluene	20.0	15.6		ppb v/v		78	62 - 136

TestAmerica Portland



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-64517/4

Matrix: Air

Analysis Batch: 64517

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	17.1		ppb v/v		85	42 - 150
2-Hexanone	20.0	17.6		ppb v/v		88	70 - 128
Methylene Chloride	20.0	20.0		ppb v/v		100	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	20.4		ppb v/v		102	73 - 133
Styrene	20.0	18.2		ppb v/v		91	76 - 144
1,1,2,2-Tetrachloroethane	20.0	18.6		ppb v/v		93	75 - 135
Tetrachloroethene	20.0	16.1		ppb v/v		80	56 - 138
Toluene	20.0	17.1		ppb v/v		85	71 - 132
1,2,4-Trichlorobenzene	20.0	18.0		ppb v/v		90	59 - 150
1,1,1-Trichloroethane	20.0	17.9		ppb v/v		90	65 - 124
1,1,2-Trichloroethane	20.0	18.2		ppb v/v		91	71 - 131
Trichloroethene	20.0	16.4		ppb v/v		82	64 - 127
Trichlorofluoromethane	20.0	18.7		ppb v/v		94	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	15.7		ppb v/v		79	50 - 132
1,2,4-Trimethylbenzene	20.0	15.4		ppb v/v		77	61 - 145
1,3,5-Trimethylbenzene	20.0	16.5		ppb v/v		83	65 - 136
Vinyl acetate	20.0	22.0		ppb v/v		110	77 - 134
Vinyl chloride	20.0	23.9		ppb v/v		120	69 - 129
m,p-Xylene	40.0	32.8		ppb v/v		82	75 - 138
o-Xylene	20.0	16.1		ppb v/v		81	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	46.7		ug/m3 Air		98	71 - 131
Benzene	64	55.8		ug/m3 Air		87	68 - 128
Benzyl chloride	100	79.9		ug/m3 Air		77	58 - 120
Bromodichloromethane	130	117		ug/m3 Air		87	65 - 130
Bromoform	210	177		ug/m3 Air		85	64 - 144
Bromomethane	78	82.4		ug/m3 Air		106	70 - 131
2-Butanone (MEK)	59	51.4		ug/m3 Air		87	71 - 131
Carbon disulfide	62	59.1		ug/m3 Air		95	63 - 123
Carbon tetrachloride	130	106		ug/m3 Air		84	67 - 127
Chlorobenzene	92	81.1		ug/m3 Air		88	70 - 132
Dibromochloromethane	170	147		ug/m3 Air		87	68 - 128
Chloroethane	53	59.6		ug/m3 Air		113	70 - 131
Chloroform	98	88.4		ug/m3 Air		91	69 - 129
Chloromethane	41	53.7	*	ug/m3 Air		130	67 - 127
1,2-Dibromoethane (EDB)	150	136		ug/m3 Air		88	68 - 131
1,2-Dichlorobenzene	120	105		ug/m3 Air		88	73 - 143
1,3-Dichlorobenzene	120	106		ug/m3 Air		88	77 - 136
1,4-Dichlorobenzene	120	106		ug/m3 Air		88	73 - 143
Dichlorodifluoromethane	99	109		ug/m3 Air		110	69 - 129
1,1-Dichloroethane	81	80.0		ug/m3 Air		99	65 - 125
1,2-Dichloroethane	81	79.9		ug/m3 Air		99	71 - 131
1,1-Dichloroethene	79	72.5		ug/m3 Air		91	53 - 128
cis-1,2-Dichloroethene	79	70.5		ug/m3 Air		89	68 - 128
trans-1,2-Dichloroethene	79	77.9		ug/m3 Air		98	70 - 130
1,2-Dichloropropane	92	86.6		ug/m3 Air		94	74 - 128

TestAmerica Portland

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-64517/4

Matrix: Air

Analysis Batch: 64517

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	89.7		ug/m3 Air		99	78 - 132
trans-1,3-Dichloropropene	91	77.7		ug/m3 Air		86	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	130		ug/m3 Air		93	64 - 124
Ethylbenzene	87	73.1		ug/m3 Air		84	76 - 136
4-Ethyltoluene	98	76.7		ug/m3 Air		78	62 - 136
Hexachlorobutadiene	210	182		ug/m3 Air		85	42 - 150
2-Hexanone	82	72.0		ug/m3 Air		88	70 - 128
Methylene Chloride	69	69.4		ug/m3 Air		100	65 - 125
4-Methyl-2-pentanone (MIBK)	82	83.7		ug/m3 Air		102	73 - 133
Styrene	85	77.6		ug/m3 Air		91	76 - 144
1,1,2,2-Tetrachloroethane	140	128		ug/m3 Air		93	75 - 135
Tetrachloroethene	140	109		ug/m3 Air		80	56 - 138
Toluene	75	64.4		ug/m3 Air		85	71 - 132
1,2,4-Trichlorobenzene	150	133		ug/m3 Air		90	59 - 150
1,1,1-Trichloroethane	110	97.9		ug/m3 Air		90	65 - 124
1,1,2-Trichloroethane	110	99.2		ug/m3 Air		91	71 - 131
Trichloroethene	110	88.4		ug/m3 Air		82	64 - 127
Trichlorofluoromethane	110	105		ug/m3 Air		94	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	120		ug/m3 Air		79	50 - 132
1,2,4-Trimethylbenzene	98	75.6		ug/m3 Air		77	61 - 145
1,3,5-Trimethylbenzene	98	81.2		ug/m3 Air		83	65 - 136
Vinyl acetate	70	77.3		ug/m3 Air		110	77 - 134
Vinyl chloride	51	61.1		ug/m3 Air		120	69 - 129
m,p-Xylene	170	142		ug/m3 Air		82	75 - 138
o-Xylene	87	70.0		ug/m3 Air		81	77 - 132

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		70 - 130
1,2-Dichloroethane-d4 (Surr)	115		70 - 130
Toluene-d8 (Surr)	103		70 - 130

# Certification Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-012	12-26-15
California	State Program	9	2597	09-30-15
Oregon	NELAP	10	OR100021	01-09-16
USDA	Federal		P330-11-00092	04-17-17
Washington	State Program	10	C586	06-23-15

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-16
Alaska (UST)	State Program	10	UST-055	12-18-15
Arizona	State Program	9	AZ0708	08-11-15
Arkansas DEQ	State Program	6	88-0691	06-17-15
California	State Program	9	2897	01-31-16
Colorado	State Program	8	N/A	08-31-15
Connecticut	State Program	1	PH-0691	06-30-15
Florida	NELAP	4	E87570	06-30-15
Hawaii	State Program	9	N/A	01-29-16
Illinois	NELAP	5	200060	03-17-16
Kansas	NELAP	7	E-10375	10-31-15
Louisiana	NELAP	6	30612	06-30-15
Michigan	State Program	5	9947	01-31-15 *
Nevada	State Program	9	CA44	07-31-15
New Jersey	NELAP	2	CA005	06-30-15
New York	NELAP	2	11666	04-01-15
Oregon	NELAP	10	CA200005	01-29-16
Oregon	NELAP Secondary AB	10	E87570	06-30-15
Pennsylvania	NELAP	3	9947	03-31-15
Texas	NELAP	6	T104704399-08-TX	05-31-15
US Fish & Wildlife	Federal		LE148388-0	02-28-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-15
Washington	State Program	10	C581	05-05-15
West Virginia (DW)	State Program	3	9930C	12-31-14 *
Wyoming	State Program	8	8TMS-Q	01-29-15 *

\* Certification renewal pending - certification considered valid.

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 250-24108-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



TestAmerica Sacramento  
880 Riverside Parkway

West Sacramento, CA 95605  
phone 916.374.4378 fax 916.372.1059

Canister Samples Chain of Custody

TestAmerica Laboratories, Inc. assumes no liability with respect to  
250-24108 Chain of Custody



TestAmerica Laboratories, Inc.

Client Contact Information:		Project Manager: <u>Stephanie Salisbur</u>		Samples Collected By: <u>J. Matthecheck</u>		COC No: <u>1</u> of <u>1</u> COCs										
Company Name: <u>Apex Companies</u>		Phone: <u>503 924 4700 x 125</u>		Other (Please specify in notes section)		For Lab Use Only:										
Address: <u>3015 SW 1st Av.</u>		Email: <u>SBOSZE@APEX.COS.COM</u>		Landfill Gas		Walk-in Client:										
City/State/Zip: <u>Portland, OR, 97201</u>		Site Contact: <u>-</u>		Soil Gas		Lab Sampling:										
Phone: <u>503 924 4704</u>		TA Contact: <u>-</u>		Ambient Air		Job / SDG No.:										
FAX: <u>-</u>		Analysis Turnaround Time		Indoor Air		(See below for add'l items)										
Project Name: <u>NUSTAR VANCOUVER 03M</u>		Standard (Specific): <u>X</u>		Sample Type		Sample Specific Notes:										
Site/Location: <u>NUSTAR VANCOUVER</u>		Rush (Specify):		Other (Please specify in notes section)												
P O # <u>-</u>				TO-3												
Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15 (Med / Std / Low / SIM)	EPA 30C	EPA 25C / 25.3	ASTM D-1946 / 1945 / 3588	EPA 15/16	MA-PH	Temperature (Fahrenheit)		
														Interior	Ambient	
<u>SVE South PRE Carbon</u>	<u>1/26/15</u>	<u>0930</u>	<u>0931</u>	<u>-30</u>	<u>-3</u>	<u>-</u>	<u>0531</u>	<u>X</u>								
<u>SVE South Post Carbon</u>	<u>1/26/15</u>	<u>0940</u>	<u>0941</u>	<u>-30</u>	<u>-3</u>	<u>-</u>	<u>0307</u>	<u>X</u>								
<u>SVE North</u>	<u>1/26/15</u>	<u>1000</u>	<u>1001</u>	<u>-30</u>	<u>-4</u>	<u>-</u>	<u>0566</u>	<u>X</u>								
Special Instructions/QC Requirements & Comments:																
<u>Email results to : SBOSZE@APEX.COS.COM</u>																
Samples Shipped by:		Date / Time:		Samples Received by:		Date / Time:		Received by:		Concussion:		Date / Time:		Date / Time:		
				<u>Stephanie Salisbur</u>		<u>1/26/15 / 1300</u>		<u>Stephanie Salisbur</u>				<u>1/26/15 / 1300</u>		<u>J. Matthecheck</u>		
Samples Relinquished by:		Date / Time:		Relinquished by:		Date / Time:		Relinquished by:		Date / Time:		Date / Time:		Date / Time:		
Lab Use Only:		Shipper Name:		Shipper Name:		Shipper Name:		Shipper Name:		Shipper Name:		Shipper Name:		Shipper Name:		



## Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 250-24108-1

SDG Number:

**Login Number: 24108**

**List Number: 1**

**Creator: Svabik-Seror, Philip M**

**List Source: TestAmerica Portland**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Thermal preservation not required.
Cooler Temperature is acceptable.	N/A	
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 containers received 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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 250-24108-1

SDG Number:

**Login Number: 24108**

**List Number: 2**

**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

**List Creation: 01/28/15 02:30 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
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?	N/A	
There are no discrepancies between the containers received 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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	







JOB # **250-24108**  
Sample # **2**

Client/Project:		VFR ID:	
Canister Serial #:	34000307	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING		PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)		29.8		JMT
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)		14.01	01/29/15	AO
FINAL PRESSURE (PSIA)		25.32	01/29/15	AO
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.81			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.81		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors						
	Date	Instr.	File #			
Canister DF = <b>1.81</b>	<b>2/2/2015</b>	<b>ATMS2</b>	<b>FINAL DF</b>	<b>X</b>	<b>0.7142857</b>	<b>X</b>
			<b>64.54573264</b>		<b>250</b>	
					<b>350</b>	
					<b>50</b>	
					<b>1000</b>	
					<b>20</b>	
Canister DF = <b>1.81</b>			<b>FINAL DF</b>	<b>X</b>	<b>#DIV/0!</b>	<b>X</b>
			<b>#DIV/0!</b>			
					<b>1</b>	
Canister DF = <b>1.81</b>			<b>FINAL DF</b>	<b>X</b>	<b>#DIV/0!</b>	<b>X</b>
			<b>#DIV/0!</b>			
					<b>1</b>	



JOB # **250-24108**  
Sample # **3**

Client/Project:		VFR ID:	
Canister Serial #:	34000566	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

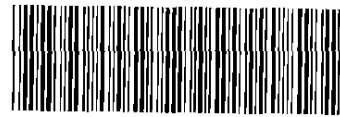
FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	14.22	01/29/15	AO	
FINAL PRESSURE (PSIA)	25.03	01/29/15	AO	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	1.76			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.76		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors									
	Date	Instr.	File #						
Canister DF =	1.76	X	Load DF =	5.5555556	X	Bag DF =	1	FINAL DF	9.778871699
			LVf (mLs)	250		BVf (mLs)			
			LVi (mLs)	45		Bvi (mLs)			
Canister DF =	1.76	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	#DIV/0!
			LVf (mLs)			BVf (mLs)			
			LVi (mLs)			Bvi (mLs)			
Canister DF =	1.76	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	#DIV/0!
			LVf (mLs)			BVf (mLs)			
			LVi (mLs)			Bvi (mLs)			





320-10850 Chain of Custody

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento  
Canister QC Certification

GL

Certification Type: TO-15 SCAN

Date Cleaned/Batch ID 12/11/14 320-10850

Date of QC 12/17/14

Data File Number M571217B

CANISTER ID NUMBERS

<u>34000367</u>	<u>34001336 *</u>	_____
1395	0271	_____
1538	0069	_____
0307	8428	_____
0529	_____	_____
0526	_____	_____
0392	_____	_____
0531	_____	_____

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

[Signature]  
1<sup>st</sup> level Reviewed By:

12/18/14  
Date:

[Signature]  
2nd level Reviewed By:

12/22/14  
Date:



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10850-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34001336 Lab Sample ID: 320-10850-9  
 Matrix: Air Lab File ID: MS7121713.d  
 Analysis Method: TO-15 Date Collected: 12/11/2014 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 12/18/2014 01:04  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 60955 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10850-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34001336 Lab Sample ID: 320-10850-9  
 Matrix: Air Lab File ID: MS7121713.d  
 Analysis Method: TO-15 Date Collected: 12/11/2014 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 12/18/2014 01:04  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 60955 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	0.11	J	0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10850-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34001336 Lab Sample ID: 320-10850-9  
 Matrix: Air Lab File ID: MS7121713.d  
 Analysis Method: TO-15 Date Collected: 12/11/2014 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 12/18/2014 01:04  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 60955 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	92		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	95		70-130
2037-26-5	Toluene-d8 (Surr)	104		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS7\20141217-18173.b\MS7121713.d  
 Lims ID: 320-10850-A-9 Lab Sample ID: 320-10850-9  
 Client ID: 34001336  
 Sample Type: Client  
 Inject. Date: 18-Dec-2014 01:04:30 ALS Bottle#: 11 Worklist Smp#: 13  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-10850-A-9  
 Misc. Info.: Can Cert 500ml  
 Operator ID: GG Instrument ID: ATMS7  
 Method: \\SACCHROM\ChromData\ATMS7\20141217-18173.b\TO15\_ATMS7N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 18-Dec-2014 10:40:59 Calib Date: 17-Dec-2014 09:43:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS7\20141216-18130.b\MS7121627.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK026

First Level Reviewer: ortizam Date: 18-Dec-2014 10:40:59

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.659	11.665	-0.006	94	71800	4.00	
* 2 1,4-Difluorobenzene	114	13.770	13.788	-0.018	96	293932	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.486	20.504	-0.018	92	239082	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.833	12.845	-0.012	98	127333	3.79	
\$ 5 Toluene-d8 (Surr)	100	17.116	17.134	-0.018	96	178677	4.16	
\$ 6 4-Bromofluorobenzene (Surr	95	23.090	23.102	-0.012	87	172000	3.69	
32 Acetone	43	6.987	6.932	0.055	95	6571	0.1171	
69 1,4-Dioxane	88	15.309	15.303	0.006	33	2244	0.1128	

Reagents:

VASUISIM\_00141 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS7\20141217-18173.b\MS7121713.d

Injection Date: 18-Dec-2014 01:04:30

Instrument ID: ATMS7

Operator ID: GG

Lims ID: 320-10850-A-9

Lab Sample ID: 320-10850-9

Worklist Smp#: 13

Client ID: 34001336

Purge Vol: 5.000 mL

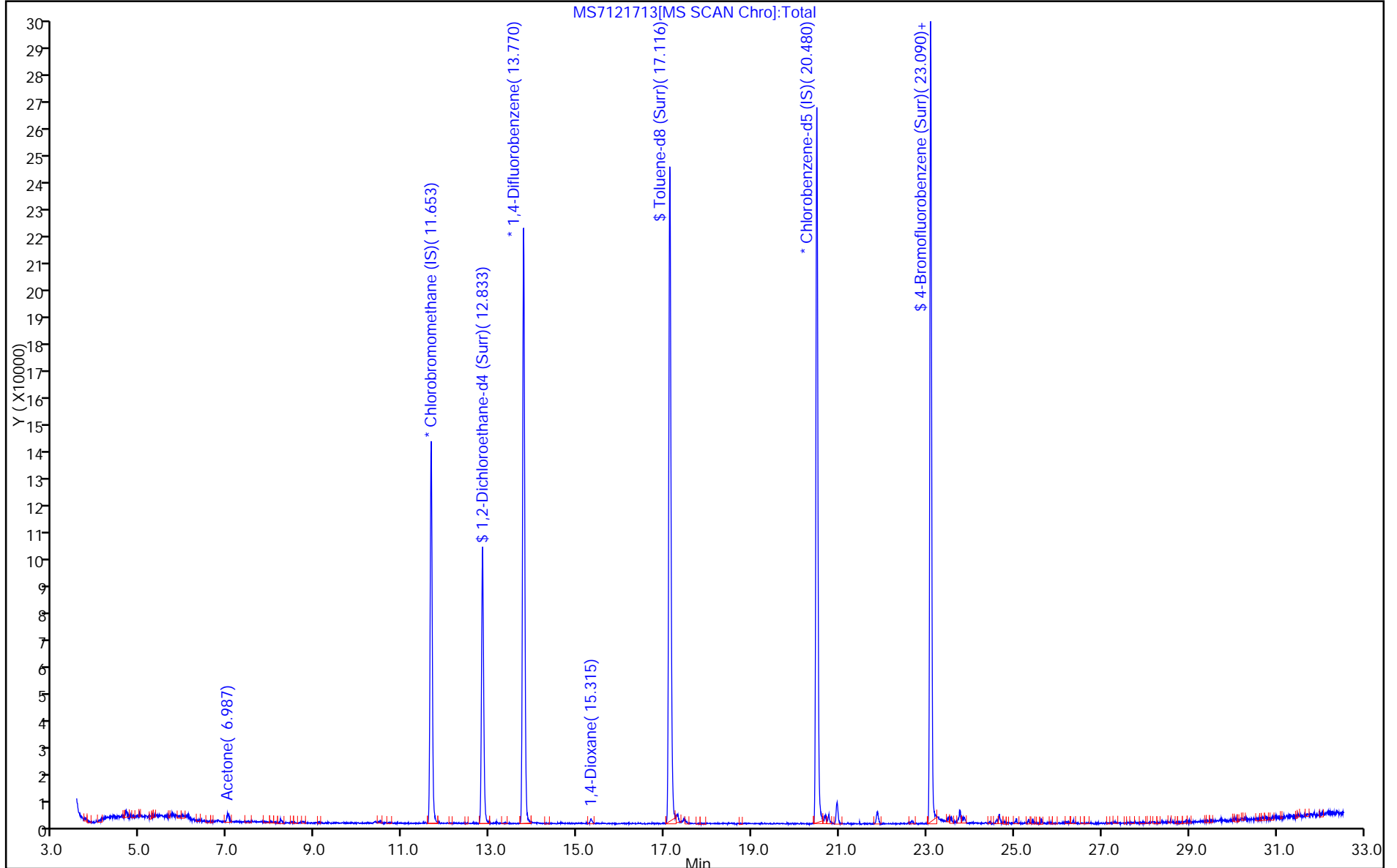
Dil. Factor: 1.0000

ALS Bottle#: 11

Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)





TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20141217-18173.b\MS7121713.d

Injection Date: 18-Dec-2014 01:04:30

Instrument ID: ATMS7

Lims ID: 320-10850-A-9

Lab Sample ID: 320-10850-9

Client ID: 34001336

Operator ID: GG

ALS Bottle#: 11 Worklist Smp#: 13

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

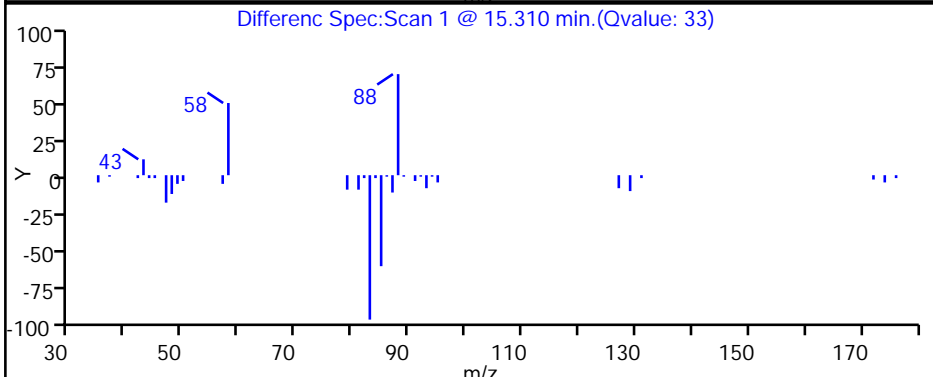
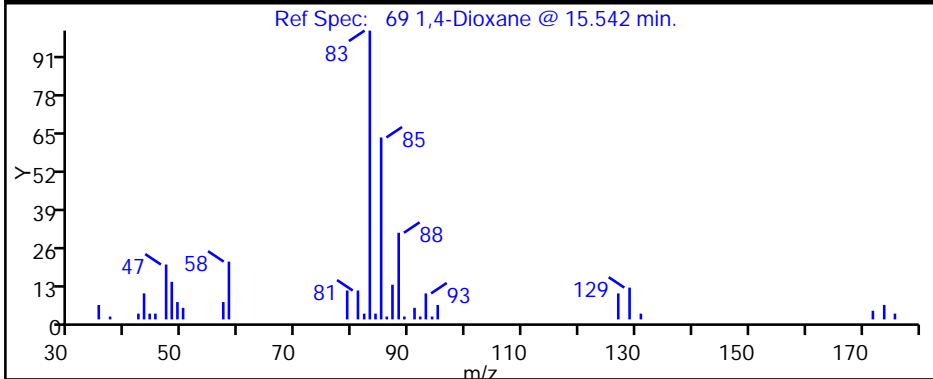
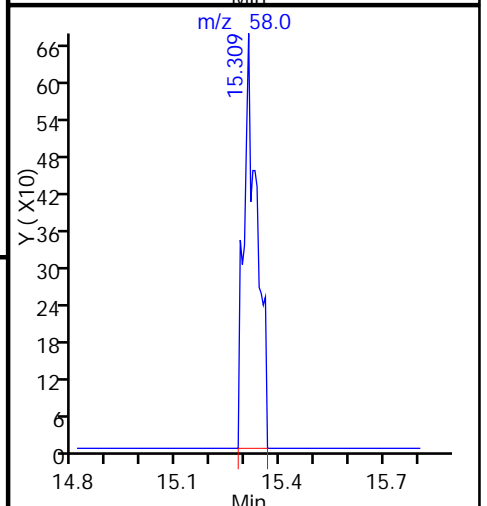
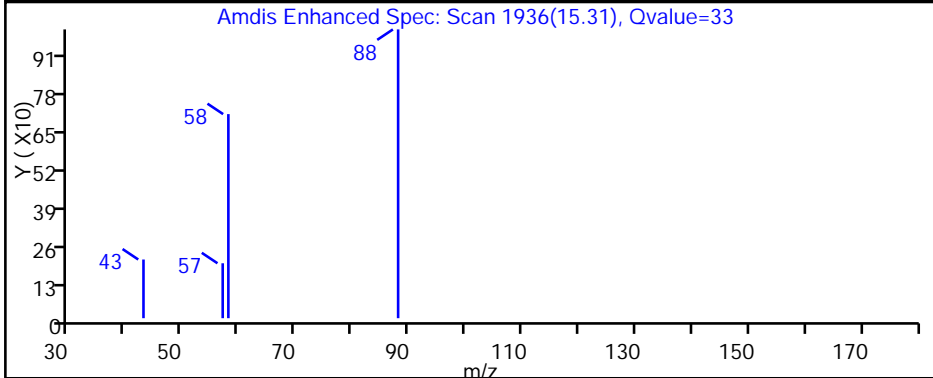
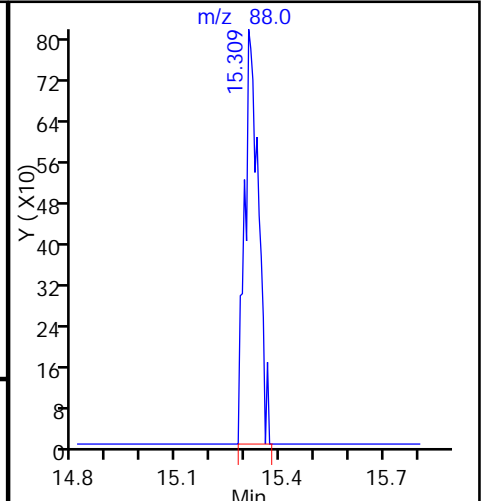
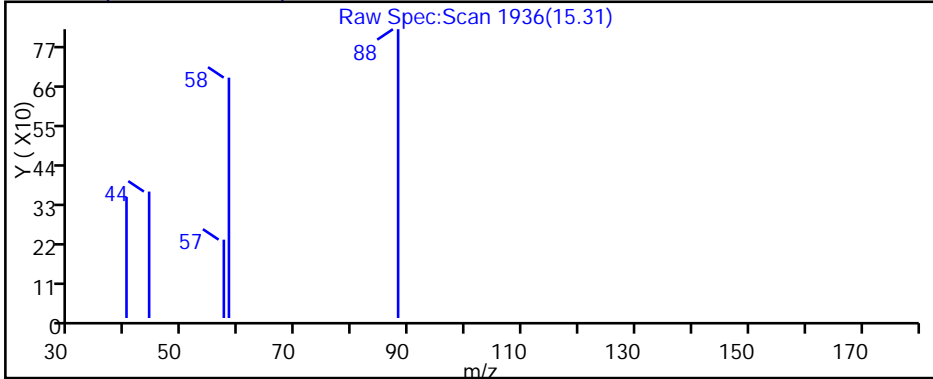
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

69 1,4-Dioxane, CAS: 123-91-1



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-11846-1  
TestAmerica Sample Delivery Group: Nustar Vapor Testing  
Client Project/Site: NuStar Vancouver O&M

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
3/20/2015 4:17:48 PM

Sarah Murphy, Project Manager I  
(916)373-5600  
[sarah.murphy@testamericainc.com](mailto:sarah.murphy@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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

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

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## Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

---

**Job ID: 320-11846-1**

---

**Laboratory: TestAmerica Sacramento**

**Narrative**

---

**Job Narrative**  
**320-11846-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 2/27/2015 9:50 AM; the samples arrived in good condition..

**Air - GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
 SDG: Nustar Vapor Testing

## Client Sample ID: SVE SOUTH PRECARBON

Lab Sample ID: 320-11846-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	66		50		ppb v/v	124		TO-15	Total/NA
Tetrachloroethene	2600		50		ppb v/v	124		TO-15	Total/NA
Toluene	73		50		ppb v/v	124		TO-15	Total/NA
Trichloroethene	120		50		ppb v/v	124		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	260		200		ug/m3 Air	124		TO-15	Total/NA
Tetrachloroethene	18000		340		ug/m3 Air	124		TO-15	Total/NA
Toluene	280		190		ug/m3 Air	124		TO-15	Total/NA
Trichloroethene	660		270		ug/m3 Air	124		TO-15	Total/NA

## Client Sample ID: SVE SOUTH POSTCARBON

Lab Sample ID: 320-11846-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	0.52		0.40		ppb v/v	1		TO-15	Total/NA
Methylene Chloride	0.91		0.40		ppb v/v	1		TO-15	Total/NA
Vinyl chloride	0.99		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	2.6		2.0		ug/m3 Air	1		TO-15	Total/NA
Methylene Chloride	3.2		1.4		ug/m3 Air	1		TO-15	Total/NA
Vinyl chloride	2.5		1.0		ug/m3 Air	1		TO-15	Total/NA

## Client Sample ID: SVE NORTH

Lab Sample ID: 320-11846-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	0.48		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	4.7		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	2.4		2.0		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	32		2.7		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
 SDG: Nustar Vapor Testing

**Client Sample ID: SVE SOUTH PRECARBON**

**Lab Sample ID: 320-11846-1**

Date Collected: 02/26/15 11:50

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		620		ppb v/v			03/12/15 00:07	124
Benzene	ND		50		ppb v/v			03/12/15 00:07	124
Benzyl chloride	ND		99		ppb v/v			03/12/15 00:07	124
Bromodichloromethane	ND		37		ppb v/v			03/12/15 00:07	124
Bromoform	ND		50		ppb v/v			03/12/15 00:07	124
Bromomethane	ND		99		ppb v/v			03/12/15 00:07	124
2-Butanone (MEK)	ND		99		ppb v/v			03/12/15 00:07	124
Carbon disulfide	ND		99		ppb v/v			03/12/15 00:07	124
Carbon tetrachloride	ND		99		ppb v/v			03/12/15 00:07	124
Chlorobenzene	ND		37		ppb v/v			03/12/15 00:07	124
Dibromochloromethane	ND		50		ppb v/v			03/12/15 00:07	124
Chloroethane	ND		99		ppb v/v			03/12/15 00:07	124
Chloroform	ND		37		ppb v/v			03/12/15 00:07	124
Chloromethane	ND		99		ppb v/v			03/12/15 00:07	124
1,2-Dibromoethane (EDB)	ND		99		ppb v/v			03/12/15 00:07	124
1,2-Dichlorobenzene	ND		50		ppb v/v			03/12/15 00:07	124
1,3-Dichlorobenzene	ND		50		ppb v/v			03/12/15 00:07	124
1,4-Dichlorobenzene	ND		50		ppb v/v			03/12/15 00:07	124
Dichlorodifluoromethane	ND		50		ppb v/v			03/12/15 00:07	124
1,1-Dichloroethane	ND		37		ppb v/v			03/12/15 00:07	124
1,2-Dichloroethane	ND		99		ppb v/v			03/12/15 00:07	124
1,1-Dichloroethene	ND		99		ppb v/v			03/12/15 00:07	124
<b>cis-1,2-Dichloroethene</b>	<b>66</b>		50		ppb v/v			03/12/15 00:07	124
trans-1,2-Dichloroethene	ND		50		ppb v/v			03/12/15 00:07	124
1,2-Dichloropropane	ND		50		ppb v/v			03/12/15 00:07	124
cis-1,3-Dichloropropene	ND		50		ppb v/v			03/12/15 00:07	124
trans-1,3-Dichloropropene	ND		50		ppb v/v			03/12/15 00:07	124
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		50		ppb v/v			03/12/15 00:07	124
Ethylbenzene	ND		50		ppb v/v			03/12/15 00:07	124
4-Ethyltoluene	ND		50		ppb v/v			03/12/15 00:07	124
Hexachlorobutadiene	ND		250		ppb v/v			03/12/15 00:07	124
2-Hexanone	ND		50		ppb v/v			03/12/15 00:07	124
Methylene Chloride	ND		50		ppb v/v			03/12/15 00:07	124
4-Methyl-2-pentanone (MIBK)	ND		50		ppb v/v			03/12/15 00:07	124
Styrene	ND		50		ppb v/v			03/12/15 00:07	124
1,1,2,2-Tetrachloroethane	ND		50		ppb v/v			03/12/15 00:07	124
<b>Tetrachloroethene</b>	<b>2600</b>		50		ppb v/v			03/12/15 00:07	124
<b>Toluene</b>	<b>73</b>		50		ppb v/v			03/12/15 00:07	124
1,2,4-Trichlorobenzene	ND		250		ppb v/v			03/12/15 00:07	124
1,1,1-Trichloroethane	ND		37		ppb v/v			03/12/15 00:07	124
1,1,2-Trichloroethane	ND		50		ppb v/v			03/12/15 00:07	124
<b>Trichloroethene</b>	<b>120</b>		50		ppb v/v			03/12/15 00:07	124
Trichlorofluoromethane	ND		50		ppb v/v			03/12/15 00:07	124
1,1,2-Trichloro-1,1,2,2-trifluoroethane	ND		50		ppb v/v			03/12/15 00:07	124
1,2,4-Trimethylbenzene	ND		99		ppb v/v			03/12/15 00:07	124
1,3,5-Trimethylbenzene	ND		50		ppb v/v			03/12/15 00:07	124
Vinyl acetate	ND		99		ppb v/v			03/12/15 00:07	124
Vinyl chloride	ND		50		ppb v/v			03/12/15 00:07	124

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

**Client Sample ID: SVE SOUTH PRECARBON**

**Lab Sample ID: 320-11846-1**

Date Collected: 02/26/15 11:50

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		99		ppb v/v			03/12/15 00:07	124
o-Xylene	ND		50		ppb v/v			03/12/15 00:07	124
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		1500		ug/m3 Air			03/12/15 00:07	124
Benzene	ND		160		ug/m3 Air			03/12/15 00:07	124
Benzyl chloride	ND		510		ug/m3 Air			03/12/15 00:07	124
Bromodichloromethane	ND		250		ug/m3 Air			03/12/15 00:07	124
Bromoform	ND		510		ug/m3 Air			03/12/15 00:07	124
Bromomethane	ND		390		ug/m3 Air			03/12/15 00:07	124
2-Butanone (MEK)	ND		290		ug/m3 Air			03/12/15 00:07	124
Carbon disulfide	ND		310		ug/m3 Air			03/12/15 00:07	124
Carbon tetrachloride	ND		620		ug/m3 Air			03/12/15 00:07	124
Chlorobenzene	ND		170		ug/m3 Air			03/12/15 00:07	124
Dibromochloromethane	ND		420		ug/m3 Air			03/12/15 00:07	124
Chloroethane	ND		260		ug/m3 Air			03/12/15 00:07	124
Chloroform	ND		180		ug/m3 Air			03/12/15 00:07	124
Chloromethane	ND		200		ug/m3 Air			03/12/15 00:07	124
1,2-Dibromoethane (EDB)	ND		760		ug/m3 Air			03/12/15 00:07	124
1,2-Dichlorobenzene	ND		300		ug/m3 Air			03/12/15 00:07	124
1,3-Dichlorobenzene	ND		300		ug/m3 Air			03/12/15 00:07	124
1,4-Dichlorobenzene	ND		300		ug/m3 Air			03/12/15 00:07	124
Dichlorodifluoromethane	ND		250		ug/m3 Air			03/12/15 00:07	124
1,1-Dichloroethane	ND		150		ug/m3 Air			03/12/15 00:07	124
1,2-Dichloroethane	ND		400		ug/m3 Air			03/12/15 00:07	124
1,1-Dichloroethene	ND		390		ug/m3 Air			03/12/15 00:07	124
<b>cis-1,2-Dichloroethene</b>	<b>260</b>		200		ug/m3 Air			03/12/15 00:07	124
trans-1,2-Dichloroethene	ND		200		ug/m3 Air			03/12/15 00:07	124
1,2-Dichloropropane	ND		230		ug/m3 Air			03/12/15 00:07	124
cis-1,3-Dichloropropene	ND		230		ug/m3 Air			03/12/15 00:07	124
trans-1,3-Dichloropropene	ND		230		ug/m3 Air			03/12/15 00:07	124
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		350		ug/m3 Air			03/12/15 00:07	124
Ethylbenzene	ND		220		ug/m3 Air			03/12/15 00:07	124
4-Ethyltoluene	ND		240		ug/m3 Air			03/12/15 00:07	124
Hexachlorobutadiene	ND		2600		ug/m3 Air			03/12/15 00:07	124
2-Hexanone	ND		200		ug/m3 Air			03/12/15 00:07	124
Methylene Chloride	ND		170		ug/m3 Air			03/12/15 00:07	124
4-Methyl-2-pentanone (MIBK)	ND		200		ug/m3 Air			03/12/15 00:07	124
Styrene	ND		210		ug/m3 Air			03/12/15 00:07	124
1,1,2,2-Tetrachloroethane	ND		340		ug/m3 Air			03/12/15 00:07	124
<b>Tetrachloroethene</b>	<b>18000</b>		340		ug/m3 Air			03/12/15 00:07	124
<b>Toluene</b>	<b>280</b>		190		ug/m3 Air			03/12/15 00:07	124
1,2,4-Trichlorobenzene	ND		1800		ug/m3 Air			03/12/15 00:07	124
1,1,1-Trichloroethane	ND		200		ug/m3 Air			03/12/15 00:07	124
1,1,2-Trichloroethane	ND		270		ug/m3 Air			03/12/15 00:07	124
<b>Trichloroethene</b>	<b>660</b>		270		ug/m3 Air			03/12/15 00:07	124
Trichlorofluoromethane	ND		280		ug/m3 Air			03/12/15 00:07	124
1,1,2-Trichloro-1,1,2,2-trifluoroethane	ND		380		ug/m3 Air			03/12/15 00:07	124
1,2,4-Trimethylbenzene	ND		490		ug/m3 Air			03/12/15 00:07	124



# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Client Sample ID: SVE SOUTH PRECARBON

Lab Sample ID: 320-11846-1

Date Collected: 02/26/15 11:50

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		240		ug/m3 Air			03/12/15 00:07	124
Vinyl acetate	ND		350		ug/m3 Air			03/12/15 00:07	124
Vinyl chloride	ND		130		ug/m3 Air			03/12/15 00:07	124
m,p-Xylene	ND		430		ug/m3 Air			03/12/15 00:07	124
o-Xylene	ND		220		ug/m3 Air			03/12/15 00:07	124
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		70 - 130					03/12/15 00:07	124
1,2-Dichloroethane-d4 (Surr)	90		70 - 130					03/12/15 00:07	124
Toluene-d8 (Surr)	98		70 - 130					03/12/15 00:07	124

## Client Sample ID: SVE SOUTH POSTCARBON

Lab Sample ID: 320-11846-2

Date Collected: 02/26/15 12:05

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			03/11/15 00:20	1
Benzene	ND		0.40		ppb v/v			03/11/15 00:20	1
Benzyl chloride	ND		0.80		ppb v/v			03/11/15 00:20	1
Bromodichloromethane	ND		0.30		ppb v/v			03/11/15 00:20	1
Bromoform	ND		0.40		ppb v/v			03/11/15 00:20	1
Bromomethane	ND		0.80		ppb v/v			03/11/15 00:20	1
2-Butanone (MEK)	ND		0.80		ppb v/v			03/11/15 00:20	1
Carbon disulfide	ND		0.80		ppb v/v			03/11/15 00:20	1
Carbon tetrachloride	ND		0.80		ppb v/v			03/11/15 00:20	1
Chlorobenzene	ND		0.30		ppb v/v			03/11/15 00:20	1
Dibromochloromethane	ND		0.40		ppb v/v			03/11/15 00:20	1
Chloroethane	ND		0.80		ppb v/v			03/11/15 00:20	1
Chloroform	ND		0.30		ppb v/v			03/11/15 00:20	1
Chloromethane	ND		0.80		ppb v/v			03/11/15 00:20	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			03/11/15 00:20	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 00:20	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 00:20	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 00:20	1
Dichlorodifluoromethane	0.52		0.40		ppb v/v			03/11/15 00:20	1
1,1-Dichloroethane	ND		0.30		ppb v/v			03/11/15 00:20	1
1,2-Dichloroethane	ND		0.80		ppb v/v			03/11/15 00:20	1
1,1-Dichloroethene	ND		0.80		ppb v/v			03/11/15 00:20	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			03/11/15 00:20	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			03/11/15 00:20	1
1,2-Dichloropropane	ND		0.40		ppb v/v			03/11/15 00:20	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			03/11/15 00:20	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			03/11/15 00:20	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			03/11/15 00:20	1
Ethylbenzene	ND		0.40		ppb v/v			03/11/15 00:20	1
4-Ethyltoluene	ND		0.40		ppb v/v			03/11/15 00:20	1
Hexachlorobutadiene	ND		2.0		ppb v/v			03/11/15 00:20	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
 SDG: Nustar Vapor Testing

**Client Sample ID: SVE SOUTH POSTCARBON**

**Lab Sample ID: 320-11846-2**

Date Collected: 02/26/15 12:05

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		0.40		ppb v/v			03/11/15 00:20	1
<b>Methylene Chloride</b>	<b>0.91</b>		0.40		ppb v/v			03/11/15 00:20	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			03/11/15 00:20	1
Styrene	ND		0.40		ppb v/v			03/11/15 00:20	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			03/11/15 00:20	1
Tetrachloroethene	ND		0.40		ppb v/v			03/11/15 00:20	1
Toluene	ND		0.40		ppb v/v			03/11/15 00:20	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			03/11/15 00:20	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			03/11/15 00:20	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			03/11/15 00:20	1
Trichloroethene	ND		0.40		ppb v/v			03/11/15 00:20	1
Trichlorofluoromethane	ND		0.40		ppb v/v			03/11/15 00:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			03/11/15 00:20	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			03/11/15 00:20	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			03/11/15 00:20	1
Vinyl acetate	ND		0.80		ppb v/v			03/11/15 00:20	1
<b>Vinyl chloride</b>	<b>0.99</b>		0.40		ppb v/v			03/11/15 00:20	1
m,p-Xylene	ND		0.80		ppb v/v			03/11/15 00:20	1
o-Xylene	ND		0.40		ppb v/v			03/11/15 00:20	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			03/11/15 00:20	1
Benzene	ND		1.3		ug/m3 Air			03/11/15 00:20	1
Benzyl chloride	ND		4.1		ug/m3 Air			03/11/15 00:20	1
Bromodichloromethane	ND		2.0		ug/m3 Air			03/11/15 00:20	1
Bromoform	ND		4.1		ug/m3 Air			03/11/15 00:20	1
Bromomethane	ND		3.1		ug/m3 Air			03/11/15 00:20	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			03/11/15 00:20	1
Carbon disulfide	ND		2.5		ug/m3 Air			03/11/15 00:20	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			03/11/15 00:20	1
Chlorobenzene	ND		1.4		ug/m3 Air			03/11/15 00:20	1
Dibromochloromethane	ND		3.4		ug/m3 Air			03/11/15 00:20	1
Chloroethane	ND		2.1		ug/m3 Air			03/11/15 00:20	1
Chloroform	ND		1.5		ug/m3 Air			03/11/15 00:20	1
Chloromethane	ND		1.7		ug/m3 Air			03/11/15 00:20	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			03/11/15 00:20	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 00:20	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 00:20	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 00:20	1
<b>Dichlorodifluoromethane</b>	<b>2.6</b>		2.0		ug/m3 Air			03/11/15 00:20	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			03/11/15 00:20	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			03/11/15 00:20	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			03/11/15 00:20	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/11/15 00:20	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/11/15 00:20	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			03/11/15 00:20	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/11/15 00:20	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/11/15 00:20	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			03/11/15 00:20	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

**Client Sample ID: SVE SOUTH POSTCARBON**

**Lab Sample ID: 320-11846-2**

Date Collected: 02/26/15 12:05

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		1.7		ug/m3 Air			03/11/15 00:20	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			03/11/15 00:20	1
Hexachlorobutadiene	ND		21		ug/m3 Air			03/11/15 00:20	1
2-Hexanone	ND		1.6		ug/m3 Air			03/11/15 00:20	1
<b>Methylene Chloride</b>	<b>3.2</b>		1.4		ug/m3 Air			03/11/15 00:20	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			03/11/15 00:20	1
Styrene	ND		1.7		ug/m3 Air			03/11/15 00:20	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			03/11/15 00:20	1
Tetrachloroethene	ND		2.7		ug/m3 Air			03/11/15 00:20	1
Toluene	ND		1.5		ug/m3 Air			03/11/15 00:20	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			03/11/15 00:20	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			03/11/15 00:20	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			03/11/15 00:20	1
Trichloroethene	ND		2.1		ug/m3 Air			03/11/15 00:20	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			03/11/15 00:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			03/11/15 00:20	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			03/11/15 00:20	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			03/11/15 00:20	1
Vinyl acetate	ND		2.8		ug/m3 Air			03/11/15 00:20	1
<b>Vinyl chloride</b>	<b>2.5</b>		1.0		ug/m3 Air			03/11/15 00:20	1
m,p-Xylene	ND		3.5		ug/m3 Air			03/11/15 00:20	1
o-Xylene	ND		1.7		ug/m3 Air			03/11/15 00:20	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
4-Bromofluorobenzene (Surr)	95		70 - 130					03/11/15 00:20	1
1,2-Dichloroethane-d4 (Surr)	89		70 - 130					03/11/15 00:20	1
Toluene-d8 (Surr)	98		70 - 130					03/11/15 00:20	1

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-11846-3**

Date Collected: 02/26/15 12:15

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			03/11/15 01:16	1
Benzene	ND		0.40		ppb v/v			03/11/15 01:16	1
Benzyl chloride	ND		0.80		ppb v/v			03/11/15 01:16	1
Bromodichloromethane	ND		0.30		ppb v/v			03/11/15 01:16	1
Bromoform	ND		0.40		ppb v/v			03/11/15 01:16	1
Bromomethane	ND		0.80		ppb v/v			03/11/15 01:16	1
2-Butanone (MEK)	ND		0.80		ppb v/v			03/11/15 01:16	1
Carbon disulfide	ND		0.80		ppb v/v			03/11/15 01:16	1
Carbon tetrachloride	ND		0.80		ppb v/v			03/11/15 01:16	1
Chlorobenzene	ND		0.30		ppb v/v			03/11/15 01:16	1
Dibromochloromethane	ND		0.40		ppb v/v			03/11/15 01:16	1
Chloroethane	ND		0.80		ppb v/v			03/11/15 01:16	1
Chloroform	ND		0.30		ppb v/v			03/11/15 01:16	1
Chloromethane	ND		0.80		ppb v/v			03/11/15 01:16	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-11846-3**

Date Collected: 02/26/15 12:15

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			03/11/15 01:16	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 01:16	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 01:16	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 01:16	1
<b>Dichlorodifluoromethane</b>	<b>0.48</b>		0.40		ppb v/v			03/11/15 01:16	1
1,1-Dichloroethane	ND		0.30		ppb v/v			03/11/15 01:16	1
1,2-Dichloroethane	ND		0.80		ppb v/v			03/11/15 01:16	1
1,1-Dichloroethene	ND		0.80		ppb v/v			03/11/15 01:16	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			03/11/15 01:16	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			03/11/15 01:16	1
1,2-Dichloropropane	ND		0.40		ppb v/v			03/11/15 01:16	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			03/11/15 01:16	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			03/11/15 01:16	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			03/11/15 01:16	1
Ethylbenzene	ND		0.40		ppb v/v			03/11/15 01:16	1
4-Ethyltoluene	ND		0.40		ppb v/v			03/11/15 01:16	1
Hexachlorobutadiene	ND		2.0		ppb v/v			03/11/15 01:16	1
2-Hexanone	ND		0.40		ppb v/v			03/11/15 01:16	1
Methylene Chloride	ND		0.40		ppb v/v			03/11/15 01:16	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			03/11/15 01:16	1
Styrene	ND		0.40		ppb v/v			03/11/15 01:16	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			03/11/15 01:16	1
<b>Tetrachloroethene</b>	<b>4.7</b>		0.40		ppb v/v			03/11/15 01:16	1
Toluene	ND		0.40		ppb v/v			03/11/15 01:16	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			03/11/15 01:16	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			03/11/15 01:16	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			03/11/15 01:16	1
Trichloroethene	ND		0.40		ppb v/v			03/11/15 01:16	1
Trichlorofluoromethane	ND		0.40		ppb v/v			03/11/15 01:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			03/11/15 01:16	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			03/11/15 01:16	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			03/11/15 01:16	1
Vinyl acetate	ND		0.80		ppb v/v			03/11/15 01:16	1
Vinyl chloride	ND		0.40		ppb v/v			03/11/15 01:16	1
m,p-Xylene	ND		0.80		ppb v/v			03/11/15 01:16	1
o-Xylene	ND		0.40		ppb v/v			03/11/15 01:16	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			03/11/15 01:16	1
Benzene	ND		1.3		ug/m3 Air			03/11/15 01:16	1
Benzyl chloride	ND		4.1		ug/m3 Air			03/11/15 01:16	1
Bromodichloromethane	ND		2.0		ug/m3 Air			03/11/15 01:16	1
Bromoform	ND		4.1		ug/m3 Air			03/11/15 01:16	1
Bromomethane	ND		3.1		ug/m3 Air			03/11/15 01:16	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			03/11/15 01:16	1
Carbon disulfide	ND		2.5		ug/m3 Air			03/11/15 01:16	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			03/11/15 01:16	1
Chlorobenzene	ND		1.4		ug/m3 Air			03/11/15 01:16	1
Dibromochloromethane	ND		3.4		ug/m3 Air			03/11/15 01:16	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-11846-3**

Date Collected: 02/26/15 12:15

Matrix: Air

Date Received: 02/27/15 09:50

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		2.1		ug/m3 Air			03/11/15 01:16	1
Chloroform	ND		1.5		ug/m3 Air			03/11/15 01:16	1
Chloromethane	ND		1.7		ug/m3 Air			03/11/15 01:16	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			03/11/15 01:16	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 01:16	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 01:16	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 01:16	1
<b>Dichlorodifluoromethane</b>	<b>2.4</b>		2.0		ug/m3 Air			03/11/15 01:16	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			03/11/15 01:16	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			03/11/15 01:16	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			03/11/15 01:16	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/11/15 01:16	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/11/15 01:16	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			03/11/15 01:16	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/11/15 01:16	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/11/15 01:16	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			03/11/15 01:16	1
Ethylbenzene	ND		1.7		ug/m3 Air			03/11/15 01:16	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			03/11/15 01:16	1
Hexachlorobutadiene	ND		21		ug/m3 Air			03/11/15 01:16	1
2-Hexanone	ND		1.6		ug/m3 Air			03/11/15 01:16	1
Methylene Chloride	ND		1.4		ug/m3 Air			03/11/15 01:16	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			03/11/15 01:16	1
Styrene	ND		1.7		ug/m3 Air			03/11/15 01:16	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			03/11/15 01:16	1
<b>Tetrachloroethene</b>	<b>32</b>		2.7		ug/m3 Air			03/11/15 01:16	1
Toluene	ND		1.5		ug/m3 Air			03/11/15 01:16	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			03/11/15 01:16	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			03/11/15 01:16	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			03/11/15 01:16	1
Trichloroethene	ND		2.1		ug/m3 Air			03/11/15 01:16	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			03/11/15 01:16	1
1,1,2-Trichloro-1,1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			03/11/15 01:16	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			03/11/15 01:16	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			03/11/15 01:16	1
Vinyl acetate	ND		2.8		ug/m3 Air			03/11/15 01:16	1
Vinyl chloride	ND		1.0		ug/m3 Air			03/11/15 01:16	1
m,p-Xylene	ND		3.5		ug/m3 Air			03/11/15 01:16	1
o-Xylene	ND		1.7		ug/m3 Air			03/11/15 01:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130					03/11/15 01:16	1
1,2-Dichloroethane-d4 (Surr)	91		70 - 130					03/11/15 01:16	1
Toluene-d8 (Surr)	97		70 - 130					03/11/15 01:16	1

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	12DCE	TOL
		(70-130)	(70-130)	(70-130)
320-11846-1	SVE SOUTH PRECARBON	96	90	98
320-11846-2	SVE SOUTH POSTCARBON	95	89	98
320-11846-3	SVE NORTH	94	91	97
LCS 320-67756/3	Lab Control Sample	106	99	102
LCS 320-67935/3	Lab Control Sample	101	102	105
LCSD 320-67756/4	Lab Control Sample Dup	109	100	101
LCSD 320-67935/4	Lab Control Sample Dup	102	101	100
MB 320-67756/6	Method Blank	94	89	100
MB 320-67935/6	Method Blank	96	91	101

### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)  
12DCE = 1,2-Dichloroethane-d4 (Surr)  
TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

**Lab Sample ID: MB 320-67756/6**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			03/10/15 19:47	1
Benzene	ND		0.40		ppb v/v			03/10/15 19:47	1
Benzyl chloride	ND		0.80		ppb v/v			03/10/15 19:47	1
Bromodichloromethane	ND		0.30		ppb v/v			03/10/15 19:47	1
Bromoform	ND		0.40		ppb v/v			03/10/15 19:47	1
Bromomethane	ND		0.80		ppb v/v			03/10/15 19:47	1
2-Butanone (MEK)	ND		0.80		ppb v/v			03/10/15 19:47	1
Carbon disulfide	ND		0.80		ppb v/v			03/10/15 19:47	1
Carbon tetrachloride	ND		0.80		ppb v/v			03/10/15 19:47	1
Chlorobenzene	ND		0.30		ppb v/v			03/10/15 19:47	1
Dibromochloromethane	ND		0.40		ppb v/v			03/10/15 19:47	1
Chloroethane	ND		0.80		ppb v/v			03/10/15 19:47	1
Chloroform	ND		0.30		ppb v/v			03/10/15 19:47	1
Chloromethane	ND		0.80		ppb v/v			03/10/15 19:47	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			03/10/15 19:47	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			03/10/15 19:47	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			03/10/15 19:47	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			03/10/15 19:47	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			03/10/15 19:47	1
1,1-Dichloroethane	ND		0.30		ppb v/v			03/10/15 19:47	1
1,2-Dichloroethane	ND		0.80		ppb v/v			03/10/15 19:47	1
1,1-Dichloroethene	ND		0.80		ppb v/v			03/10/15 19:47	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			03/10/15 19:47	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			03/10/15 19:47	1
1,2-Dichloropropane	ND		0.40		ppb v/v			03/10/15 19:47	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			03/10/15 19:47	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			03/10/15 19:47	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			03/10/15 19:47	1
Ethylbenzene	ND		0.40		ppb v/v			03/10/15 19:47	1
4-Ethyltoluene	ND		0.40		ppb v/v			03/10/15 19:47	1
Hexachlorobutadiene	ND		2.0		ppb v/v			03/10/15 19:47	1
2-Hexanone	ND		0.40		ppb v/v			03/10/15 19:47	1
Methylene Chloride	ND		0.40		ppb v/v			03/10/15 19:47	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			03/10/15 19:47	1
Styrene	ND		0.40		ppb v/v			03/10/15 19:47	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			03/10/15 19:47	1
Tetrachloroethene	ND		0.40		ppb v/v			03/10/15 19:47	1
Toluene	ND		0.40		ppb v/v			03/10/15 19:47	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			03/10/15 19:47	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			03/10/15 19:47	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			03/10/15 19:47	1
Trichloroethene	ND		0.40		ppb v/v			03/10/15 19:47	1
Trichlorofluoromethane	ND		0.40		ppb v/v			03/10/15 19:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			03/10/15 19:47	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			03/10/15 19:47	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			03/10/15 19:47	1
Vinyl acetate	ND		0.80		ppb v/v			03/10/15 19:47	1
Vinyl chloride	ND		0.40		ppb v/v			03/10/15 19:47	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-67756/6**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			03/10/15 19:47	1
o-Xylene	ND		0.40		ppb v/v			03/10/15 19:47	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			03/10/15 19:47	1
Benzene	ND		1.3		ug/m3 Air			03/10/15 19:47	1
Benzyl chloride	ND		4.1		ug/m3 Air			03/10/15 19:47	1
Bromodichloromethane	ND		2.0		ug/m3 Air			03/10/15 19:47	1
Bromoform	ND		4.1		ug/m3 Air			03/10/15 19:47	1
Bromomethane	ND		3.1		ug/m3 Air			03/10/15 19:47	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			03/10/15 19:47	1
Carbon disulfide	ND		2.5		ug/m3 Air			03/10/15 19:47	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			03/10/15 19:47	1
Chlorobenzene	ND		1.4		ug/m3 Air			03/10/15 19:47	1
Dibromochloromethane	ND		3.4		ug/m3 Air			03/10/15 19:47	1
Chloroethane	ND		2.1		ug/m3 Air			03/10/15 19:47	1
Chloroform	ND		1.5		ug/m3 Air			03/10/15 19:47	1
Chloromethane	ND		1.7		ug/m3 Air			03/10/15 19:47	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			03/10/15 19:47	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			03/10/15 19:47	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			03/10/15 19:47	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			03/10/15 19:47	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			03/10/15 19:47	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			03/10/15 19:47	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			03/10/15 19:47	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			03/10/15 19:47	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/10/15 19:47	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/10/15 19:47	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			03/10/15 19:47	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/10/15 19:47	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/10/15 19:47	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			03/10/15 19:47	1
Ethylbenzene	ND		1.7		ug/m3 Air			03/10/15 19:47	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			03/10/15 19:47	1
Hexachlorobutadiene	ND		21		ug/m3 Air			03/10/15 19:47	1
2-Hexanone	ND		1.6		ug/m3 Air			03/10/15 19:47	1
Methylene Chloride	ND		1.4		ug/m3 Air			03/10/15 19:47	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			03/10/15 19:47	1
Styrene	ND		1.7		ug/m3 Air			03/10/15 19:47	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			03/10/15 19:47	1
Tetrachloroethene	ND		2.7		ug/m3 Air			03/10/15 19:47	1
Toluene	ND		1.5		ug/m3 Air			03/10/15 19:47	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			03/10/15 19:47	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			03/10/15 19:47	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			03/10/15 19:47	1
Trichloroethene	ND		2.1		ug/m3 Air			03/10/15 19:47	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			03/10/15 19:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			03/10/15 19:47	1

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-67756/6**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			03/10/15 19:47	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			03/10/15 19:47	1
Vinyl acetate	ND		2.8		ug/m3 Air			03/10/15 19:47	1
Vinyl chloride	ND		1.0		ug/m3 Air			03/10/15 19:47	1
m,p-Xylene	ND		3.5		ug/m3 Air			03/10/15 19:47	1
o-Xylene	ND		1.7		ug/m3 Air			03/10/15 19:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130		03/10/15 19:47	1
1,2-Dichloroethane-d4 (Surr)	89		70 - 130		03/10/15 19:47	1
Toluene-d8 (Surr)	100		70 - 130		03/10/15 19:47	1

**Lab Sample ID: LCS 320-67756/3**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.7		ppb v/v		89	71 - 131
Benzene	20.0	19.4		ppb v/v		97	68 - 128
Benzyl chloride	20.0	18.3		ppb v/v		91	58 - 120
Bromodichloromethane	20.0	18.7		ppb v/v		93	65 - 130
Bromoform	20.0	22.8		ppb v/v		114	64 - 144
Bromomethane	20.0	20.2		ppb v/v		101	70 - 131
2-Butanone (MEK)	20.0	19.9		ppb v/v		100	71 - 131
Carbon disulfide	20.0	17.6		ppb v/v		88	63 - 123
Carbon tetrachloride	20.0	19.5		ppb v/v		98	67 - 127
Chlorobenzene	20.0	21.0		ppb v/v		105	70 - 132
Dibromochloromethane	20.0	20.8		ppb v/v		104	68 - 128
Chloroethane	20.0	18.6		ppb v/v		93	70 - 131
Chloroform	20.0	18.5		ppb v/v		92	69 - 129
Chloromethane	20.0	19.1		ppb v/v		96	67 - 127
1,2-Dibromoethane (EDB)	20.0	20.9		ppb v/v		104	68 - 131
1,2-Dichlorobenzene	20.0	22.5		ppb v/v		112	73 - 143
1,3-Dichlorobenzene	20.0	22.4		ppb v/v		112	77 - 136
1,4-Dichlorobenzene	20.0	22.8		ppb v/v		114	73 - 143
Dichlorodifluoromethane	20.0	18.4		ppb v/v		92	69 - 129
1,1-Dichloroethane	20.0	17.9		ppb v/v		90	65 - 125
1,2-Dichloroethane	20.0	18.8		ppb v/v		94	71 - 131
1,1-Dichloroethene	20.0	16.6		ppb v/v		83	53 - 128
cis-1,2-Dichloroethene	20.0	19.3		ppb v/v		96	68 - 128
trans-1,2-Dichloroethene	20.0	17.8		ppb v/v		89	70 - 130
1,2-Dichloropropane	20.0	19.6		ppb v/v		98	74 - 128
cis-1,3-Dichloropropene	20.0	22.0		ppb v/v		110	78 - 132
trans-1,3-Dichloropropene	20.0	18.7		ppb v/v		93	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.8		ppb v/v		94	64 - 124
Ethylbenzene	20.0	21.1		ppb v/v		106	76 - 136
4-Ethyltoluene	20.0	21.3		ppb v/v		107	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-67756/3**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec. Limits
	Added	Result	Qualifier				
Hexachlorobutadiene	20.0	19.7		ppb v/v		98	42 - 150
2-Hexanone	20.0	21.5		ppb v/v		107	70 - 128
Methylene Chloride	20.0	17.2		ppb v/v		86	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	21.4		ppb v/v		107	73 - 133
Styrene	20.0	23.2		ppb v/v		116	76 - 144
1,1,1,2-Tetrachloroethane	20.0	22.6		ppb v/v		113	75 - 135
Tetrachloroethene	20.0	20.8		ppb v/v		104	56 - 138
Toluene	20.0	20.8		ppb v/v		104	71 - 132
1,2,4-Trichlorobenzene	20.0	20.2		ppb v/v		101	59 - 150
1,1,1-Trichloroethane	20.0	18.4		ppb v/v		92	65 - 124
1,1,2-Trichloroethane	20.0	20.1		ppb v/v		100	71 - 131
Trichloroethene	20.0	20.2		ppb v/v		101	64 - 127
Trichlorofluoromethane	20.0	19.0		ppb v/v		95	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.0		ppb v/v		85	50 - 132
1,2,4-Trimethylbenzene	20.0	23.4		ppb v/v		117	61 - 145
1,3,5-Trimethylbenzene	20.0	22.3		ppb v/v		111	65 - 136
Vinyl acetate	20.0	21.0		ppb v/v		105	77 - 134
Vinyl chloride	20.0	19.2		ppb v/v		96	69 - 129
m,p-Xylene	40.0	42.8		ppb v/v		107	75 - 138
o-Xylene	20.0	21.8		ppb v/v		109	77 - 132
Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec. Limits
	Added	Result	Qualifier				
Acetone	48	42.1		ug/m3 Air		89	71 - 131
Benzene	64	62.0		ug/m3 Air		97	68 - 128
Benzyl chloride	100	94.7		ug/m3 Air		91	58 - 120
Bromodichloromethane	130	125		ug/m3 Air		93	65 - 130
Bromoform	210	236		ug/m3 Air		114	64 - 144
Bromomethane	78	78.6		ug/m3 Air		101	70 - 131
2-Butanone (MEK)	59	58.7		ug/m3 Air		100	71 - 131
Carbon disulfide	62	54.9		ug/m3 Air		88	63 - 123
Carbon tetrachloride	130	123		ug/m3 Air		98	67 - 127
Chlorobenzene	92	96.5		ug/m3 Air		105	70 - 132
Dibromochloromethane	170	178		ug/m3 Air		104	68 - 128
Chloroethane	53	49.2		ug/m3 Air		93	70 - 131
Chloroform	98	90.1		ug/m3 Air		92	69 - 129
Chloromethane	41	39.5		ug/m3 Air		96	67 - 127
1,2-Dibromoethane (EDB)	150	161		ug/m3 Air		104	68 - 131
1,2-Dichlorobenzene	120	135		ug/m3 Air		112	73 - 143
1,3-Dichlorobenzene	120	135		ug/m3 Air		112	77 - 136
1,4-Dichlorobenzene	120	137		ug/m3 Air		114	73 - 143
Dichlorodifluoromethane	99	91.0		ug/m3 Air		92	69 - 129
1,1-Dichloroethane	81	72.6		ug/m3 Air		90	65 - 125
1,2-Dichloroethane	81	76.2		ug/m3 Air		94	71 - 131
1,1-Dichloroethene	79	65.7		ug/m3 Air		83	53 - 128
cis-1,2-Dichloroethene	79	76.3		ug/m3 Air		96	68 - 128
trans-1,2-Dichloroethene	79	70.5		ug/m3 Air		89	70 - 130
1,2-Dichloropropane	92	90.6		ug/m3 Air		98	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-67756/3**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
cis-1,3-Dichloropropene	91	99.6		ug/m3 Air		110	78 - 132	
trans-1,3-Dichloropropene	91	84.7		ug/m3 Air		93	56 - 136	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	132		ug/m3 Air		94	64 - 124	
Ethylbenzene	87	91.7		ug/m3 Air		106	76 - 136	
4-Ethyltoluene	98	105		ug/m3 Air		107	62 - 136	
Hexachlorobutadiene	210	210		ug/m3 Air		98	42 - 150	
2-Hexanone	82	88.1		ug/m3 Air		107	70 - 128	
Methylene Chloride	69	59.7		ug/m3 Air		86	65 - 125	
4-Methyl-2-pentanone (MIBK)	82	87.5		ug/m3 Air		107	73 - 133	
Styrene	85	99.0		ug/m3 Air		116	76 - 144	
1,1,2,2-Tetrachloroethane	140	155		ug/m3 Air		113	75 - 135	
Tetrachloroethene	140	141		ug/m3 Air		104	56 - 138	
Toluene	75	78.4		ug/m3 Air		104	71 - 132	
1,2,4-Trichlorobenzene	150	150		ug/m3 Air		101	59 - 150	
1,1,1-Trichloroethane	110	101		ug/m3 Air		92	65 - 124	
1,1,2-Trichloroethane	110	110		ug/m3 Air		100	71 - 131	
Trichloroethene	110	109		ug/m3 Air		101	64 - 127	
Trichlorofluoromethane	110	107		ug/m3 Air		95	68 - 128	
1,1,2-Trichloro-1,2,2-trifluoroethane	150	130		ug/m3 Air		85	50 - 132	
1,2,4-Trimethylbenzene	98	115		ug/m3 Air		117	61 - 145	
1,3,5-Trimethylbenzene	98	109		ug/m3 Air		111	65 - 136	
Vinyl acetate	70	74.0		ug/m3 Air		105	77 - 134	
Vinyl chloride	51	49.0		ug/m3 Air		96	69 - 129	
m,p-Xylene	170	186		ug/m3 Air		107	75 - 138	
o-Xylene	87	94.8		ug/m3 Air		109	77 - 132	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	106		70 - 130
1,2-Dichloroethane-d4 (Surr)	99		70 - 130
Toluene-d8 (Surr)	102		70 - 130

**Lab Sample ID: LCSD 320-67756/4**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits		RPD	Limit
Acetone	20.0	17.2		ppb v/v		86	71 - 131	3	25	
Benzene	20.0	18.7		ppb v/v		94	68 - 128	4	25	
Benzyl chloride	20.0	18.3		ppb v/v		92	58 - 120	0	25	
Bromodichloromethane	20.0	18.3		ppb v/v		91	65 - 130	2	25	
Bromoform	20.0	23.0		ppb v/v		115	64 - 144	1	25	
Bromomethane	20.0	18.6		ppb v/v		93	70 - 131	8	25	
2-Butanone (MEK)	20.0	19.3		ppb v/v		97	71 - 131	3	25	
Carbon disulfide	20.0	17.1		ppb v/v		85	63 - 123	3	25	
Carbon tetrachloride	20.0	19.1		ppb v/v		95	67 - 127	2	25	
Chlorobenzene	20.0	21.2		ppb v/v		106	70 - 132	1	25	

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-67756/4**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	RPD	Limit
	Added	Result	Qualifier			%Rec	Limits			
Dibromochloromethane	20.0	20.6		ppb v/v		103	68 - 128	1		25
Chloroethane	20.0	18.2		ppb v/v		91	70 - 131	2		25
Chloroform	20.0	17.8		ppb v/v		89	69 - 129	4		25
Chloromethane	20.0	19.6		ppb v/v		98	67 - 127	2		25
1,2-Dibromoethane (EDB)	20.0	20.8		ppb v/v		104	68 - 131	0		25
1,2-Dichlorobenzene	20.0	22.7		ppb v/v		113	73 - 143	1		25
1,3-Dichlorobenzene	20.0	22.6		ppb v/v		113	77 - 136	1		25
1,4-Dichlorobenzene	20.0	22.9		ppb v/v		115	73 - 143	1		25
Dichlorodifluoromethane	20.0	18.1		ppb v/v		91	69 - 129	1		25
1,1-Dichloroethane	20.0	17.3		ppb v/v		86	65 - 125	4		25
1,2-Dichloroethane	20.0	18.3		ppb v/v		91	71 - 131	3		25
1,1-Dichloroethene	20.0	16.1		ppb v/v		81	53 - 128	3		25
cis-1,2-Dichloroethene	20.0	18.6		ppb v/v		93	68 - 128	3		25
trans-1,2-Dichloroethene	20.0	17.4		ppb v/v		87	70 - 130	2		25
1,2-Dichloropropane	20.0	19.2		ppb v/v		96	74 - 128	2		25
cis-1,3-Dichloropropene	20.0	21.6		ppb v/v		108	78 - 132	2		25
trans-1,3-Dichloropropene	20.0	18.5		ppb v/v		93	56 - 136	1		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.1		ppb v/v		91	64 - 124	4		25
Ethylbenzene	20.0	21.4		ppb v/v		107	76 - 136	1		25
4-Ethyltoluene	20.0	21.5		ppb v/v		107	62 - 136	1		25
Hexachlorobutadiene	20.0	20.2		ppb v/v		101	42 - 150	3		25
2-Hexanone	20.0	21.6		ppb v/v		108	70 - 128	1		25
Methylene Chloride	20.0	16.4		ppb v/v		82	65 - 125	5		25
4-Methyl-2-pentanone (MIBK)	20.0	20.8		ppb v/v		104	73 - 133	2		25
Styrene	20.0	23.3		ppb v/v		117	76 - 144	0		25
1,1,1,2-Tetrachloroethane	20.0	22.5		ppb v/v		113	75 - 135	0		25
Tetrachloroethene	20.0	20.7		ppb v/v		104	56 - 138	1		25
Toluene	20.0	20.6		ppb v/v		103	71 - 132	1		25
1,2,4-Trichlorobenzene	20.0	21.0		ppb v/v		105	59 - 150	4		25
1,1,1-Trichloroethane	20.0	17.8		ppb v/v		89	65 - 124	3		25
1,1,2-Trichloroethane	20.0	20.0		ppb v/v		100	71 - 131	1		25
Trichloroethene	20.0	19.9		ppb v/v		99	64 - 127	2		25
Trichlorofluoromethane	20.0	18.6		ppb v/v		93	68 - 128	3		25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.6		ppb v/v		83	50 - 132	3		25
1,2,4-Trimethylbenzene	20.0	23.7		ppb v/v		119	61 - 145	2		25
1,3,5-Trimethylbenzene	20.0	22.2		ppb v/v		111	65 - 136	0		25
Vinyl acetate	20.0	19.9		ppb v/v		99	77 - 134	6		25
Vinyl chloride	20.0	18.9		ppb v/v		94	69 - 129	2		25
m,p-Xylene	40.0	43.3		ppb v/v		108	75 - 138	1		25
o-Xylene	20.0	22.0		ppb v/v		110	77 - 132	1		25
Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	RPD	Limit
	Added	Result	Qualifier			%Rec	Limits			
Acetone	48	41.0		ug/m3 Air		86	71 - 131	3		25
Benzene	64	59.8		ug/m3 Air		94	68 - 128	4		25
Benzyl chloride	100	94.9		ug/m3 Air		92	58 - 120	0		25
Bromodichloromethane	130	123		ug/m3 Air		91	65 - 130	2		25
Bromoform	210	238		ug/m3 Air		115	64 - 144	1		25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-67756/4**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Added	Result	Qualifier				Limits		Limit
Bromomethane	78	72.3		ug/m3 Air		93	70 - 131	8	25
2-Butanone (MEK)	59	57.0		ug/m3 Air		97	71 - 131	3	25
Carbon disulfide	62	53.1		ug/m3 Air		85	63 - 123	3	25
Carbon tetrachloride	130	120		ug/m3 Air		95	67 - 127	2	25
Chlorobenzene	92	97.5		ug/m3 Air		106	70 - 132	1	25
Dibromochloromethane	170	176		ug/m3 Air		103	68 - 128	1	25
Chloroethane	53	48.1		ug/m3 Air		91	70 - 131	2	25
Chloroform	98	86.8		ug/m3 Air		89	69 - 129	4	25
Chloromethane	41	40.4		ug/m3 Air		98	67 - 127	2	25
1,2-Dibromoethane (EDB)	150	160		ug/m3 Air		104	68 - 131	0	25
1,2-Dichlorobenzene	120	136		ug/m3 Air		113	73 - 143	1	25
1,3-Dichlorobenzene	120	136		ug/m3 Air		113	77 - 136	1	25
1,4-Dichlorobenzene	120	138		ug/m3 Air		115	73 - 143	1	25
Dichlorodifluoromethane	99	89.7		ug/m3 Air		91	69 - 129	1	25
1,1-Dichloroethane	81	69.8		ug/m3 Air		86	65 - 125	4	25
1,2-Dichloroethane	81	74.0		ug/m3 Air		91	71 - 131	3	25
1,1-Dichloroethene	79	64.0		ug/m3 Air		81	53 - 128	3	25
cis-1,2-Dichloroethene	79	73.9		ug/m3 Air		93	68 - 128	3	25
trans-1,2-Dichloroethene	79	68.9		ug/m3 Air		87	70 - 130	2	25
1,2-Dichloropropane	92	88.5		ug/m3 Air		96	74 - 128	2	25
cis-1,3-Dichloropropene	91	98.0		ug/m3 Air		108	78 - 132	2	25
trans-1,3-Dichloropropene	91	84.0		ug/m3 Air		93	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	127		ug/m3 Air		91	64 - 124	4	25
Ethylbenzene	87	92.7		ug/m3 Air		107	76 - 136	1	25
4-Ethyltoluene	98	106		ug/m3 Air		107	62 - 136	1	25
Hexachlorobutadiene	210	216		ug/m3 Air		101	42 - 150	3	25
2-Hexanone	82	88.6		ug/m3 Air		108	70 - 128	1	25
Methylene Chloride	69	56.8		ug/m3 Air		82	65 - 125	5	25
4-Methyl-2-pentanone (MIBK)	82	85.4		ug/m3 Air		104	73 - 133	2	25
Styrene	85	99.3		ug/m3 Air		117	76 - 144	0	25
1,1,2,2-Tetrachloroethane	140	155		ug/m3 Air		113	75 - 135	0	25
Tetrachloroethene	140	140		ug/m3 Air		104	56 - 138	1	25
Toluene	75	77.5		ug/m3 Air		103	71 - 132	1	25
1,2,4-Trichlorobenzene	150	156		ug/m3 Air		105	59 - 150	4	25
1,1,1-Trichloroethane	110	97.4		ug/m3 Air		89	65 - 124	3	25
1,1,2-Trichloroethane	110	109		ug/m3 Air		100	71 - 131	1	25
Trichloroethene	110	107		ug/m3 Air		99	64 - 127	2	25
Trichlorofluoromethane	110	104		ug/m3 Air		93	68 - 128	3	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	127		ug/m3 Air		83	50 - 132	3	25
1,2,4-Trimethylbenzene	98	117		ug/m3 Air		119	61 - 145	2	25
1,3,5-Trimethylbenzene	98	109		ug/m3 Air		111	65 - 136	0	25
Vinyl acetate	70	70.1		ug/m3 Air		99	77 - 134	6	25
Vinyl chloride	51	48.2		ug/m3 Air		94	69 - 129	2	25
m,p-Xylene	170	188		ug/m3 Air		108	75 - 138	1	25
o-Xylene	87	95.7		ug/m3 Air		110	77 - 132	1	25

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-67756/4**

**Matrix: Air**

**Analysis Batch: 67756**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	109		70 - 130
1,2-Dichloroethane-d4 (Surr)	100		70 - 130
Toluene-d8 (Surr)	101		70 - 130

**Lab Sample ID: MB 320-67935/6**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		5.0		ppb v/v			03/11/15 21:25	1
Benzene	ND		0.40		ppb v/v			03/11/15 21:25	1
Benzyl chloride	ND		0.80		ppb v/v			03/11/15 21:25	1
Bromodichloromethane	ND		0.30		ppb v/v			03/11/15 21:25	1
Bromoform	ND		0.40		ppb v/v			03/11/15 21:25	1
Bromomethane	ND		0.80		ppb v/v			03/11/15 21:25	1
2-Butanone (MEK)	ND		0.80		ppb v/v			03/11/15 21:25	1
Carbon disulfide	ND		0.80		ppb v/v			03/11/15 21:25	1
Carbon tetrachloride	ND		0.80		ppb v/v			03/11/15 21:25	1
Chlorobenzene	ND		0.30		ppb v/v			03/11/15 21:25	1
Dibromochloromethane	ND		0.40		ppb v/v			03/11/15 21:25	1
Chloroethane	ND		0.80		ppb v/v			03/11/15 21:25	1
Chloroform	ND		0.30		ppb v/v			03/11/15 21:25	1
Chloromethane	ND		0.80		ppb v/v			03/11/15 21:25	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			03/11/15 21:25	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 21:25	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 21:25	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			03/11/15 21:25	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			03/11/15 21:25	1
1,1-Dichloroethane	ND		0.30		ppb v/v			03/11/15 21:25	1
1,2-Dichloroethane	ND		0.80		ppb v/v			03/11/15 21:25	1
1,1-Dichloroethene	ND		0.80		ppb v/v			03/11/15 21:25	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			03/11/15 21:25	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			03/11/15 21:25	1
1,2-Dichloropropane	ND		0.40		ppb v/v			03/11/15 21:25	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			03/11/15 21:25	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			03/11/15 21:25	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			03/11/15 21:25	1
Ethylbenzene	ND		0.40		ppb v/v			03/11/15 21:25	1
4-Ethyltoluene	ND		0.40		ppb v/v			03/11/15 21:25	1
Hexachlorobutadiene	ND		2.0		ppb v/v			03/11/15 21:25	1
2-Hexanone	ND		0.40		ppb v/v			03/11/15 21:25	1
Methylene Chloride	ND		0.40		ppb v/v			03/11/15 21:25	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			03/11/15 21:25	1
Styrene	ND		0.40		ppb v/v			03/11/15 21:25	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			03/11/15 21:25	1
Tetrachloroethene	ND		0.40		ppb v/v			03/11/15 21:25	1
Toluene	ND		0.40		ppb v/v			03/11/15 21:25	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			03/11/15 21:25	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 320-67935/6

Matrix: Air

Analysis Batch: 67935

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30		ppb v/v			03/11/15 21:25	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			03/11/15 21:25	1
Trichloroethene	ND		0.40		ppb v/v			03/11/15 21:25	1
Trichlorofluoromethane	ND		0.40		ppb v/v			03/11/15 21:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			03/11/15 21:25	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			03/11/15 21:25	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			03/11/15 21:25	1
Vinyl acetate	ND		0.80		ppb v/v			03/11/15 21:25	1
Vinyl chloride	ND		0.40		ppb v/v			03/11/15 21:25	1
m,p-Xylene	ND		0.80		ppb v/v			03/11/15 21:25	1
o-Xylene	ND		0.40		ppb v/v			03/11/15 21:25	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			03/11/15 21:25	1
Benzene	ND		1.3		ug/m3 Air			03/11/15 21:25	1
Benzyl chloride	ND		4.1		ug/m3 Air			03/11/15 21:25	1
Bromodichloromethane	ND		2.0		ug/m3 Air			03/11/15 21:25	1
Bromoform	ND		4.1		ug/m3 Air			03/11/15 21:25	1
Bromomethane	ND		3.1		ug/m3 Air			03/11/15 21:25	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			03/11/15 21:25	1
Carbon disulfide	ND		2.5		ug/m3 Air			03/11/15 21:25	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			03/11/15 21:25	1
Chlorobenzene	ND		1.4		ug/m3 Air			03/11/15 21:25	1
Dibromochloromethane	ND		3.4		ug/m3 Air			03/11/15 21:25	1
Chloroethane	ND		2.1		ug/m3 Air			03/11/15 21:25	1
Chloroform	ND		1.5		ug/m3 Air			03/11/15 21:25	1
Chloromethane	ND		1.7		ug/m3 Air			03/11/15 21:25	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			03/11/15 21:25	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 21:25	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 21:25	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			03/11/15 21:25	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			03/11/15 21:25	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			03/11/15 21:25	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			03/11/15 21:25	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			03/11/15 21:25	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/11/15 21:25	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/11/15 21:25	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			03/11/15 21:25	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/11/15 21:25	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/11/15 21:25	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			03/11/15 21:25	1
Ethylbenzene	ND		1.7		ug/m3 Air			03/11/15 21:25	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			03/11/15 21:25	1
Hexachlorobutadiene	ND		21		ug/m3 Air			03/11/15 21:25	1
2-Hexanone	ND		1.6		ug/m3 Air			03/11/15 21:25	1
Methylene Chloride	ND		1.4		ug/m3 Air			03/11/15 21:25	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			03/11/15 21:25	1
Styrene	ND		1.7		ug/m3 Air			03/11/15 21:25	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-67935/6**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			03/11/15 21:25	1
Tetrachloroethene	ND		2.7		ug/m3 Air			03/11/15 21:25	1
Toluene	ND		1.5		ug/m3 Air			03/11/15 21:25	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			03/11/15 21:25	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			03/11/15 21:25	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			03/11/15 21:25	1
Trichloroethene	ND		2.1		ug/m3 Air			03/11/15 21:25	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			03/11/15 21:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			03/11/15 21:25	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			03/11/15 21:25	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			03/11/15 21:25	1
Vinyl acetate	ND		2.8		ug/m3 Air			03/11/15 21:25	1
Vinyl chloride	ND		1.0		ug/m3 Air			03/11/15 21:25	1
m,p-Xylene	ND		3.5		ug/m3 Air			03/11/15 21:25	1
o-Xylene	ND		1.7		ug/m3 Air			03/11/15 21:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		70 - 130		03/11/15 21:25	1
1,2-Dichloroethane-d4 (Surr)	91		70 - 130		03/11/15 21:25	1
Toluene-d8 (Surr)	101		70 - 130		03/11/15 21:25	1

**Lab Sample ID: LCS 320-67935/3**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.7		ppb v/v		88	71 - 131
Benzene	20.0	19.3		ppb v/v		96	68 - 128
Benzyl chloride	20.0	17.3		ppb v/v		87	58 - 120
Bromodichloromethane	20.0	19.1		ppb v/v		95	65 - 130
Bromoform	20.0	22.5		ppb v/v		112	64 - 144
Bromomethane	20.0	21.4		ppb v/v		107	70 - 131
2-Butanone (MEK)	20.0	19.8		ppb v/v		99	71 - 131
Carbon disulfide	20.0	18.5		ppb v/v		93	63 - 123
Carbon tetrachloride	20.0	20.1		ppb v/v		100	67 - 127
Chlorobenzene	20.0	20.0		ppb v/v		100	70 - 132
Dibromochloromethane	20.0	19.9		ppb v/v		99	68 - 128
Chloroethane	20.0	16.7		ppb v/v		84	70 - 131
Chloroform	20.0	18.7		ppb v/v		94	69 - 129
Chloromethane	20.0	21.7		ppb v/v		109	67 - 127
1,2-Dibromoethane (EDB)	20.0	19.9		ppb v/v		100	68 - 131
1,2-Dichlorobenzene	20.0	21.3		ppb v/v		106	73 - 143
1,3-Dichlorobenzene	20.0	21.6		ppb v/v		108	77 - 136
1,4-Dichlorobenzene	20.0	21.8		ppb v/v		109	73 - 143
Dichlorodifluoromethane	20.0	20.7		ppb v/v		104	69 - 129
1,1-Dichloroethane	20.0	18.4		ppb v/v		92	65 - 125
1,2-Dichloroethane	20.0	19.2		ppb v/v		96	71 - 131
1,1-Dichloroethene	20.0	17.6		ppb v/v		88	53 - 128

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-67935/3**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec. Limits
	Added	Result	Qualifier				
cis-1,2-Dichloroethene	20.0	19.7		ppb v/v		99	68 - 128
trans-1,2-Dichloroethene	20.0	18.8		ppb v/v		94	70 - 130
1,2-Dichloropropane	20.0	19.8		ppb v/v		99	74 - 128
cis-1,3-Dichloropropene	20.0	21.9		ppb v/v		110	78 - 132
trans-1,3-Dichloropropene	20.0	17.5		ppb v/v		87	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.6		ppb v/v		103	64 - 124
Ethylbenzene	20.0	20.1		ppb v/v		101	76 - 136
4-Ethyltoluene	20.0	20.3		ppb v/v		102	62 - 136
Hexachlorobutadiene	20.0	18.0		ppb v/v		90	42 - 150
2-Hexanone	20.0	20.0		ppb v/v		100	70 - 128
Methylene Chloride	20.0	17.4		ppb v/v		87	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	20.8		ppb v/v		104	73 - 133
Styrene	20.0	22.4		ppb v/v		112	76 - 144
1,1,2,2-Tetrachloroethane	20.0	21.4		ppb v/v		107	75 - 135
Tetrachloroethene	20.0	19.9		ppb v/v		100	56 - 138
Toluene	20.0	20.8		ppb v/v		104	71 - 132
1,2,4-Trichlorobenzene	20.0	17.8		ppb v/v		89	59 - 150
1,1,1-Trichloroethane	20.0	19.0		ppb v/v		95	65 - 124
1,1,2-Trichloroethane	20.0	18.8		ppb v/v		94	71 - 131
Trichloroethene	20.0	20.5		ppb v/v		103	64 - 127
Trichlorofluoromethane	20.0	20.7		ppb v/v		103	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.0		ppb v/v		90	50 - 132
1,2,4-Trimethylbenzene	20.0	22.0		ppb v/v		110	61 - 145
1,3,5-Trimethylbenzene	20.0	21.4		ppb v/v		107	65 - 136
Vinyl acetate	20.0	20.6		ppb v/v		103	77 - 134
Vinyl chloride	20.0	20.8		ppb v/v		104	69 - 129
m,p-Xylene	40.0	41.0		ppb v/v		102	75 - 138
o-Xylene	20.0	21.1		ppb v/v		105	77 - 132
Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec. Limits
	Added	Result	Qualifier				
Acetone	48	42.0		ug/m3 Air		88	71 - 131
Benzene	64	61.5		ug/m3 Air		96	68 - 128
Benzyl chloride	100	89.6		ug/m3 Air		87	58 - 120
Bromodichloromethane	130	128		ug/m3 Air		95	65 - 130
Bromoform	210	232		ug/m3 Air		112	64 - 144
Bromomethane	78	83.0		ug/m3 Air		107	70 - 131
2-Butanone (MEK)	59	58.5		ug/m3 Air		99	71 - 131
Carbon disulfide	62	57.6		ug/m3 Air		93	63 - 123
Carbon tetrachloride	130	126		ug/m3 Air		100	67 - 127
Chlorobenzene	92	92.0		ug/m3 Air		100	70 - 132
Dibromochloromethane	170	169		ug/m3 Air		99	68 - 128
Chloroethane	53	44.1		ug/m3 Air		84	70 - 131
Chloroform	98	91.5		ug/m3 Air		94	69 - 129
Chloromethane	41	44.9		ug/m3 Air		109	67 - 127
1,2-Dibromoethane (EDB)	150	153		ug/m3 Air		100	68 - 131
1,2-Dichlorobenzene	120	128		ug/m3 Air		106	73 - 143
1,3-Dichlorobenzene	120	130		ug/m3 Air		108	77 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-67935/3**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	120	131		ug/m3 Air		109	73 - 143
Dichlorodifluoromethane	99	102		ug/m3 Air		104	69 - 129
1,1-Dichloroethane	81	74.6		ug/m3 Air		92	65 - 125
1,2-Dichloroethane	81	77.8		ug/m3 Air		96	71 - 131
1,1-Dichloroethene	79	69.6		ug/m3 Air		88	53 - 128
cis-1,2-Dichloroethene	79	78.2		ug/m3 Air		99	68 - 128
trans-1,2-Dichloroethene	79	74.4		ug/m3 Air		94	70 - 130
1,2-Dichloropropane	92	91.6		ug/m3 Air		99	74 - 128
cis-1,3-Dichloropropene	91	99.5		ug/m3 Air		110	78 - 132
trans-1,3-Dichloropropene	91	79.3		ug/m3 Air		87	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	144		ug/m3 Air		103	64 - 124
Ethylbenzene	87	87.4		ug/m3 Air		101	76 - 136
4-Ethyltoluene	98	99.9		ug/m3 Air		102	62 - 136
Hexachlorobutadiene	210	191		ug/m3 Air		90	42 - 150
2-Hexanone	82	82.0		ug/m3 Air		100	70 - 128
Methylene Chloride	69	60.5		ug/m3 Air		87	65 - 125
4-Methyl-2-pentanone (MIBK)	82	85.3		ug/m3 Air		104	73 - 133
Styrene	85	95.3		ug/m3 Air		112	76 - 144
1,1,2,2-Tetrachloroethane	140	147		ug/m3 Air		107	75 - 135
Tetrachloroethene	140	135		ug/m3 Air		100	56 - 138
Toluene	75	78.4		ug/m3 Air		104	71 - 132
1,2,4-Trichlorobenzene	150	132		ug/m3 Air		89	59 - 150
1,1,1-Trichloroethane	110	104		ug/m3 Air		95	65 - 124
1,1,2-Trichloroethane	110	103		ug/m3 Air		94	71 - 131
Trichloroethene	110	110		ug/m3 Air		103	64 - 127
Trichlorofluoromethane	110	116		ug/m3 Air		103	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	138		ug/m3 Air		90	50 - 132
1,2,4-Trimethylbenzene	98	108		ug/m3 Air		110	61 - 145
1,3,5-Trimethylbenzene	98	105		ug/m3 Air		107	65 - 136
Vinyl acetate	70	72.4		ug/m3 Air		103	77 - 134
Vinyl chloride	51	53.2		ug/m3 Air		104	69 - 129
m,p-Xylene	170	178		ug/m3 Air		102	75 - 138
o-Xylene	87	91.5		ug/m3 Air		105	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		70 - 130
1,2-Dichloroethane-d4 (Surr)	102		70 - 130
Toluene-d8 (Surr)	105		70 - 130

**Lab Sample ID: LCSD 320-67935/4**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	17.0		ppb v/v		85	71 - 131	4	25
Benzene	20.0	19.4		ppb v/v		97	68 - 128	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-67935/4**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.	RPD	RPD	Limit
							Limits			
Benzyl chloride	20.0	18.3		ppb v/v		91	58 - 120	6	25	
Bromodichloromethane	20.0	19.0		ppb v/v		95	65 - 130	0	25	
Bromoform	20.0	23.7		ppb v/v		118	64 - 144	5	25	
Bromomethane	20.0	21.5		ppb v/v		107	70 - 131	0	25	
2-Butanone (MEK)	20.0	19.5		ppb v/v		98	71 - 131	1	25	
Carbon disulfide	20.0	18.2		ppb v/v		91	63 - 123	2	25	
Carbon tetrachloride	20.0	20.3		ppb v/v		101	67 - 127	1	25	
Chlorobenzene	20.0	21.2		ppb v/v		106	70 - 132	6	25	
Dibromochloromethane	20.0	20.8		ppb v/v		104	68 - 128	5	25	
Chloroethane	20.0	16.3		ppb v/v		82	70 - 131	2	25	
Chloroform	20.0	18.4		ppb v/v		92	69 - 129	2	25	
Chloromethane	20.0	21.3		ppb v/v		106	67 - 127	2	25	
1,2-Dibromoethane (EDB)	20.0	20.8		ppb v/v		104	68 - 131	4	25	
1,2-Dichlorobenzene	20.0	22.6		ppb v/v		113	73 - 143	6	25	
1,3-Dichlorobenzene	20.0	22.7		ppb v/v		113	77 - 136	5	25	
1,4-Dichlorobenzene	20.0	23.1		ppb v/v		115	73 - 143	6	25	
Dichlorodifluoromethane	20.0	20.4		ppb v/v		102	69 - 129	2	25	
1,1-Dichloroethane	20.0	18.0		ppb v/v		90	65 - 125	3	25	
1,2-Dichloroethane	20.0	19.3		ppb v/v		96	71 - 131	0	25	
1,1-Dichloroethene	20.0	16.9		ppb v/v		85	53 - 128	4	25	
cis-1,2-Dichloroethene	20.0	19.2		ppb v/v		96	68 - 128	2	25	
trans-1,2-Dichloroethene	20.0	18.4		ppb v/v		92	70 - 130	2	25	
1,2-Dichloropropane	20.0	20.0		ppb v/v		100	74 - 128	1	25	
cis-1,3-Dichloropropene	20.0	22.2		ppb v/v		111	78 - 132	1	25	
trans-1,3-Dichloropropene	20.0	18.3		ppb v/v		92	56 - 136	5	25	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.1		ppb v/v		100	64 - 124	3	25	
Ethylbenzene	20.0	21.5		ppb v/v		107	76 - 136	6	25	
4-Ethyltoluene	20.0	21.4		ppb v/v		107	62 - 136	5	25	
Hexachlorobutadiene	20.0	20.5		ppb v/v		103	42 - 150	13	25	
2-Hexanone	20.0	20.8		ppb v/v		104	70 - 128	4	25	
Methylene Chloride	20.0	16.7		ppb v/v		84	65 - 125	4	25	
4-Methyl-2-pentanone (MIBK)	20.0	20.7		ppb v/v		103	73 - 133	1	25	
Styrene	20.0	23.6		ppb v/v		118	76 - 144	5	25	
1,1,2,2-Tetrachloroethane	20.0	22.5		ppb v/v		112	75 - 135	5	25	
Tetrachloroethene	20.0	21.1		ppb v/v		105	56 - 138	6	25	
Toluene	20.0	21.3		ppb v/v		106	71 - 132	2	25	
1,2,4-Trichlorobenzene	20.0	20.5		ppb v/v		102	59 - 150	14	25	
1,1,1-Trichloroethane	20.0	18.6		ppb v/v		93	65 - 124	2	25	
1,1,2-Trichloroethane	20.0	19.8		ppb v/v		99	71 - 131	5	25	
Trichloroethene	20.0	20.5		ppb v/v		103	64 - 127	0	25	
Trichlorofluoromethane	20.0	20.0		ppb v/v		100	68 - 128	3	25	
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.4		ppb v/v		87	50 - 132	3	25	
1,2,4-Trimethylbenzene	20.0	23.9		ppb v/v		119	61 - 145	8	25	
1,3,5-Trimethylbenzene	20.0	22.0		ppb v/v		110	65 - 136	3	25	
Vinyl acetate	20.0	20.0		ppb v/v		100	77 - 134	3	25	
Vinyl chloride	20.0	20.5		ppb v/v		103	69 - 129	1	25	
m,p-Xylene	40.0	43.6		ppb v/v		109	75 - 138	6	25	

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-67935/4**

**Matrix: Air**

**Analysis Batch: 67935**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Added	Result	Qualifier				Limits		
o-Xylene	20.0	22.3		ppb v/v		111	77 - 132	6	25
Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	Limit
Added	Result	Qualifier	Limits						
Acetone	48	40.3		ug/m3 Air		85	71 - 131	4	25
Benzene	64	61.9		ug/m3 Air		97	68 - 128	1	25
Benzyl chloride	100	94.7		ug/m3 Air		91	58 - 120	6	25
Bromodichloromethane	130	127		ug/m3 Air		95	65 - 130	0	25
Bromoform	210	245		ug/m3 Air		118	64 - 144	5	25
Bromomethane	78	83.3		ug/m3 Air		107	70 - 131	0	25
2-Butanone (MEK)	59	57.6		ug/m3 Air		98	71 - 131	1	25
Carbon disulfide	62	56.5		ug/m3 Air		91	63 - 123	2	25
Carbon tetrachloride	130	128		ug/m3 Air		101	67 - 127	1	25
Chlorobenzene	92	97.5		ug/m3 Air		106	70 - 132	6	25
Dibromochloromethane	170	177		ug/m3 Air		104	68 - 128	5	25
Chloroethane	53	43.1		ug/m3 Air		82	70 - 131	2	25
Chloroform	98	89.9		ug/m3 Air		92	69 - 129	2	25
Chloromethane	41	43.9		ug/m3 Air		106	67 - 127	2	25
1,2-Dibromoethane (EDB)	150	160		ug/m3 Air		104	68 - 131	4	25
1,2-Dichlorobenzene	120	136		ug/m3 Air		113	73 - 143	6	25
1,3-Dichlorobenzene	120	136		ug/m3 Air		113	77 - 136	5	25
1,4-Dichlorobenzene	120	139		ug/m3 Air		115	73 - 143	6	25
Dichlorodifluoromethane	99	101		ug/m3 Air		102	69 - 129	2	25
1,1-Dichloroethane	81	72.7		ug/m3 Air		90	65 - 125	3	25
1,2-Dichloroethane	81	78.0		ug/m3 Air		96	71 - 131	0	25
1,1-Dichloroethene	79	67.1		ug/m3 Air		85	53 - 128	4	25
cis-1,2-Dichloroethene	79	76.3		ug/m3 Air		96	68 - 128	2	25
trans-1,2-Dichloroethene	79	72.9		ug/m3 Air		92	70 - 130	2	25
1,2-Dichloropropane	92	92.6		ug/m3 Air		100	74 - 128	1	25
cis-1,3-Dichloropropene	91	101		ug/m3 Air		111	78 - 132	1	25
trans-1,3-Dichloropropene	91	83.2		ug/m3 Air		92	56 - 136	5	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	140		ug/m3 Air		100	64 - 124	3	25
Ethylbenzene	87	93.3		ug/m3 Air		107	76 - 136	6	25
4-Ethyltoluene	98	105		ug/m3 Air		107	62 - 136	5	25
Hexachlorobutadiene	210	219		ug/m3 Air		103	42 - 150	13	25
2-Hexanone	82	85.4		ug/m3 Air		104	70 - 128	4	25
Methylene Chloride	69	58.2		ug/m3 Air		84	65 - 125	4	25
4-Methyl-2-pentanone (MIBK)	82	84.8		ug/m3 Air		103	73 - 133	1	25
Styrene	85	100		ug/m3 Air		118	76 - 144	5	25
1,1,1,2-Tetrachloroethane	140	154		ug/m3 Air		112	75 - 135	5	25
Tetrachloroethene	140	143		ug/m3 Air		105	56 - 138	6	25
Toluene	75	80.1		ug/m3 Air		106	71 - 132	2	25
1,2,4-Trichlorobenzene	150	152		ug/m3 Air		102	59 - 150	14	25
1,1,1-Trichloroethane	110	101		ug/m3 Air		93	65 - 124	2	25
1,1,2-Trichloroethane	110	108		ug/m3 Air		99	71 - 131	5	25
Trichloroethene	110	110		ug/m3 Air		103	64 - 127	0	25
Trichlorofluoromethane	110	113		ug/m3 Air		100	68 - 128	3	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	133		ug/m3 Air		87	50 - 132	3	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
 SDG: Nustar Vapor Testing

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-67935/4

Matrix: Air

Analysis Batch: 67935

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Added	Result	Qualifier				Limits		
1,2,4-Trimethylbenzene	98	117		ug/m3 Air		119	61 - 145	8	25
1,3,5-Trimethylbenzene	98	108		ug/m3 Air		110	65 - 136	3	25
Vinyl acetate	70	70.4		ug/m3 Air		100	77 - 134	3	25
Vinyl chloride	51	52.4		ug/m3 Air		103	69 - 129	1	25
m,p-Xylene	170	189		ug/m3 Air		109	75 - 138	6	25
o-Xylene	87	96.7		ug/m3 Air		111	77 - 132	6	25

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	102		70 - 130
1,2-Dichloroethane-d4 (Surr)	101		70 - 130
Toluene-d8 (Surr)	100		70 - 130

# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

## Air - GC/MS VOA

### Analysis Batch: 67756

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-11846-2	SVE SOUTH POSTCARBON	Total/NA	Air	TO-15	
320-11846-3	SVE NORTH	Total/NA	Air	TO-15	
LCS 320-67756/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-67756/4	Lab Control Sample Dup	Total/NA	Air	TO-15	
MB 320-67756/6	Method Blank	Total/NA	Air	TO-15	

### Analysis Batch: 67935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-11846-1	SVE SOUTH PRECARBON	Total/NA	Air	TO-15	
LCS 320-67935/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-67935/4	Lab Control Sample Dup	Total/NA	Air	TO-15	
MB 320-67935/6	Method Blank	Total/NA	Air	TO-15	

# Lab Chronicle

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
 SDG: Nustar Vapor Testing

## Client Sample ID: SVE SOUTH PRECARBON

Lab Sample ID: 320-11846-1

Date Collected: 02/26/15 11:50

Matrix: Air

Date Received: 02/27/15 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		124	4 mL	250 mL	67935	03/12/15 00:07	TAD	TAL SAC

## Client Sample ID: SVE SOUTH POSTCARBON

Lab Sample ID: 320-11846-2

Date Collected: 02/26/15 12:05

Matrix: Air

Date Received: 02/27/15 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	507 mL	250 mL	67756	03/11/15 00:20	TAD	TAL SAC

## Client Sample ID: SVE NORTH

Lab Sample ID: 320-11846-3

Date Collected: 02/26/15 12:15

Matrix: Air

Date Received: 02/27/15 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	540 mL	250 mL	67756	03/11/15 01:16	TAD	TAL SAC

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
 SDG: Nustar Vapor Testing

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-16
Alaska (UST)	State Program	10	UST-055	12-18-15
Arizona	State Program	9	AZ0708	08-11-15
Arkansas DEQ	State Program	6	88-0691	06-17-15
California	State Program	9	2897	01-31-16
Colorado	State Program	8	N/A	08-31-15
Connecticut	State Program	1	PH-0691	06-30-15
Florida	NELAP	4	E87570	06-30-15
Hawaii	State Program	9	N/A	01-29-16
Illinois	NELAP	5	200060	03-17-16
Kansas	NELAP	7	E-10375	10-31-15
Louisiana	NELAP	6	30612	06-30-15
Michigan	State Program	5	9947	01-31-16
Nevada	State Program	9	CA44	07-31-15
New Jersey	NELAP	2	CA005	06-30-15
New York	NELAP	2	11666	04-01-15
Oregon	NELAP	10	CA200005	01-29-16
Oregon	NELAP Secondary AB	10	E87570	06-30-15
Pennsylvania	NELAP	3	9947	03-31-15
Texas	NELAP	6	T104704399-08-TX	05-31-15
US Fish & Wildlife	Federal		LE148388-0	02-28-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-16
Washington	State Program	10	C581	05-05-15
West Virginia (DW)	State Program	3	9930C	12-31-15
Wyoming	State Program	8	8TMS-Q	01-29-16

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-012	12-26-15
California	State Program	9	2597	09-30-15
Oregon	NELAP	10	OR100021	01-09-16
USDA	Federal		P330-11-00092	04-17-17
Washington	State Program	10	C586	06-23-15



# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver O&M

TestAmerica Job ID: 320-11846-1  
SDG: Nustar Vapor Testing

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-11846-1	SVE SOUTH PRECARBON	Air	02/26/15 11:50	02/27/15 09:50
320-11846-2	SVE SOUTH POSTCARBON	Air	02/26/15 12:05	02/27/15 09:50
320-11846-3	SVE NORTH	Air	02/26/15 12:15	02/27/15 09:50

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TestAmerica Sacramento  
880 Riverside Parkway

West Sacramento, CA 95605  
phone 916.374.4378 fax 916.372.1059

Client Contact Information

Company Name: **Apex Companies**  
Address: **3015 9th St Ave**  
City/State/Zip: **Portland OR 97201**  
Phone: **503-924-4704**  
FAX:  
Project Name: **NuStar Vancouver OTM**  
Site/Location: **NuStar Vancouver**  
P O #

Project Manager: **Stephanie Salisbury**  
Phone: **503-924-4704**  
Email: **sboozee@a.pexcocom**  
Site Contact:  
TA Contact:  
Analysis Turnaround Time  
Standard (Specific): **X**  
Rush (Specificity):

Samples Collected By: **C. Luk**

COC No: **1** of **1** COCs

For Lab Use Only:  
Walk-in Client:  
Lab Sampling:  
Job / SDG No.:  
(See below for Add'l Items)

Other (Please specify in notes section)  
TO-3  
EPA 15/16  
ASTM D-1946 / 1945 / 3688  
EPA 26C / 26.3  
EPA 3C  
MA-APH  
TO-15 (Med / Std / Low / SIM)

Landfill Gas  
Soil Gas  
Ambient Air  
Indoor Air  
Sample Type

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)	Canister in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	Sample Specific Notes:	
								Other (Please specify in notes section)	Landfill Gas
SVE South Precarbon	2/26/15	1145	1150	-30	-5	-	0442	X	SVE gas
SVE South Post carbon	2/26/15	1200	1205	-30	-5	-	0025	X	SVE gas
SVE North	2/26/15	1210	1215	-30	-10	-	1346	X	SVE gas

Email results to:  
**sboozee@a.pexcocom**



320-11846 Chain of Custody

Special Instructions/QC Requirements & Comments:

Samples Shipped by:	Date / Time:	Samples Received by:
<i>[Signature]</i>	2/26/15 1423	<i>[Signature]</i>
Relinquished by: <i>[Signature]</i>	Date / Time: 2/26/15 1500	Received by: <i>[Signature]</i>
Lab Use Only: Shipper Name:	Opened by:	Condition:



JOB # 320-11846  
 Sample # 1

Client/Project:	VFR ID:		
Canister Serial #: 34000442	Duration:	<input type="checkbox"/> Hrs	<input type="checkbox"/> Min
Cleaning Job:	Flow:		mL/min
Client ID:	Initials:		
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	12.56	03/02/15	EP	
FINAL PRESSURE (PSIA)	24.97	03/02/15	EP	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	1.99			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.99		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
		Date	Instr.	File #						
Canister DF =	1.99	X	Load DF =	1	X	Bag DF =	500	=	FINAL DF	994.0286624
			LVf (mLs)	250		BVf (mLs)	1000			
			LVi (mLs)	250		Bvi (mLs)	2			
<hr/>										
Canister DF =	1.99	X	Load DF =	1.25	X	Bag DF =	50	=	FINAL DF	124.2535828
			LVf (mLs)	250		BVf (mLs)	1000			
			LVi (mLs)	200		Bvi (mLs)	20			
<hr/>										
Canister DF =	1.99	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			Bvi (mLs)				



JOB # **320-11846**  
Sample # **2**

Client/Project:		VFR ID:	
Canister Serial #:	34000025	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	12.33	03/02/15	EP	
FINAL PRESSURE (PSIA)	25.04	03/02/15	EP	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	2.03			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.03		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors						
	Date	Instr.	File #			
Canister DF = <b>2.03</b>	<b>X</b>	Load DF = <b>0.4930966</b>	<b>X</b>	Bag DF = <b>1</b>	=	<b>FINAL DF 1.001390109</b>
		LVf (mLs) <b>250</b>		BVf (mLs)		
		LVi (mLs) <b>507</b>		Bvi (mLs)		
Canister DF = <b>2.03</b>	<b>X</b>	Load DF = <b>#DIV/0!</b>	<b>X</b>	Bag DF = <b>1</b>	=	<b>FINAL DF #DIV/0!</b>
		LVf (mLs)		BVf (mLs)		
		LVi (mLs)		Bvi (mLs)		
Canister DF = <b>2.03</b>	<b>X</b>	Load DF = <b>#DIV/0!</b>	<b>X</b>	Bag DF = <b>1</b>	=	<b>FINAL DF #DIV/0!</b>
		LVf (mLs)		BVf (mLs)		
		LVi (mLs)		Bvi (mLs)		



JOB # **320-11846**  
Sample # **3**

Client/Project:		VFR ID:	
Canister Serial #:	34001346	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	11.55	03/02/15	EP	
FINAL PRESSURE (PSIA)	25.00	03/02/15	EP	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	2.16			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.16		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
	Date	Instr.	File #							
Canister DF =	2.16	X	Load DF =	0.462963	X	Bag DF =	1	=	FINAL DF	1.002084335
			LVf (mLs)	250		BVf (mLs)				
			LVi (mLs)	540		BVi (mLs)				
Canister DF =	2.16	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				
Canister DF =	2.16	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				



## Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-11846-1

SDG Number: Nustar Vapor Testing

**Login Number: 11846**

**List Number: 1**

**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
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 containers received 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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





320-11368 Chain of Custody

# TestAmerica



THE LEADER IN ENVIRONMENTAL TESTING

## Canister QC Certification

Certification Type: TO-15 SCAN

Date Cleaned/Batch ID 1/21/15 320-11368

Date of QC 2/4/15

Data File Number MJ1020413

### CANISTER ID NUMBERS

<u>34000243</u>	<u>34000714</u>	
<u>0176</u>	<u>0827</u>	
<u>0465</u>	<u>0698 *</u>	
<u>0205</u>	<u>0025</u>	
<u>0442</u>		
<u>1524</u>		
<u>1128</u>		
<u>0471</u>		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

\* INDICATES THE CAN OR CANS WHICH WERE SCREENED.

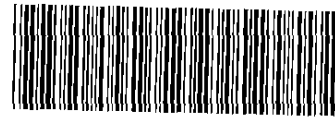
[Signature]  
1<sup>st</sup> level Reviewed By:

2/5/15  
Date:

[Signature]  
2nd level Reviewed By:

2/9/15  
Date:





Canister QC Certification

Certification Type: 70-15 SCAN

Date Cleaned/Batch ID 1/29/15 320-11484

Date of QC 2/4/15

Data File Number M51020415

CANISTER ID NUMBERS

<u>34000310</u>	<u>34000141</u>	
<u>1302 *</u>	<u>0018</u>	
<u>1129</u>	<u>0128</u>	
<u>1197</u>	<u>0794</u>	
<u>0493</u>		
<u>1346</u>		
<u>1131</u>		
<u>1306</u>		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

[Signature]  
 1<sup>st</sup> level Reviewed By:

2/5/15  
 Date:

[Signature]  
 2nd level Reviewed By:

2/9/15  
 Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11368-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000698 Lab Sample ID: 320-11368-11  
 Matrix: Air Lab File ID: MS1020413.d  
 Analysis Method: TO-15 Date Collected: 01/21/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 02/05/2015 02:39  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 64809 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11368-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000698 Lab Sample ID: 320-11368-11  
 Matrix: Air Lab File ID: MS1020413.d  
 Analysis Method: TO-15 Date Collected: 01/21/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 02/05/2015 02:39  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 64809 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11368-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000698 Lab Sample ID: 320-11368-11  
 Matrix: Air Lab File ID: MS1020413.d  
 Analysis Method: TO-15 Date Collected: 01/21/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 02/05/2015 02:39  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 64809 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	94		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	112		70-130
2037-26-5	Toluene-d8 (Surr)	100		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\MS1020413.d  
 Lims ID: 320-11368-A-11 Lab Sample ID: 320-11368-11  
 Client ID: 34000698  
 Sample Type: Client  
 Inject. Date: 05-Feb-2015 02:39:30 ALS Bottle#: 10 Worklist Smp#: 10  
 Purge Vol: 250.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-11368-11  
 Operator ID: AO Instrument ID: ATMS1  
 Method: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\TO15\_ATMS1scan.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 05-Feb-2015 09:36:14 Calib Date: 04-Feb-2015 19:21:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\MS1020405.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK052

First Level Reviewer: ortizam

Date: 05-Feb-2015 09:42:10

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.796	11.790	0.006	93	14974	4.00	
* 2 1,4-Difluorobenzene	114	13.942	13.936	0.006	98	59430	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.618	20.618	0.000	93	52406	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.991	12.985	0.006	96	33991	4.49	
\$ 5 Toluene-d8 (Surr)	100	17.338	17.338	0.000	97	37893	4.02	
\$ 6 4-Bromofluorobenzene (Surr	174	23.172	23.166	0.006	90	28942	3.76	

**Reagents:**

VASUISIM\_00140 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\MS1020413.d

Injection Date: 05-Feb-2015 02:39:30

Instrument ID: ATMS1

Operator ID: AO

Lims ID: 320-11368-A-11

Lab Sample ID: 320-11368-11

Worklist Smp#: 10

Client ID: 34000698

Purge Vol: 250.000 mL

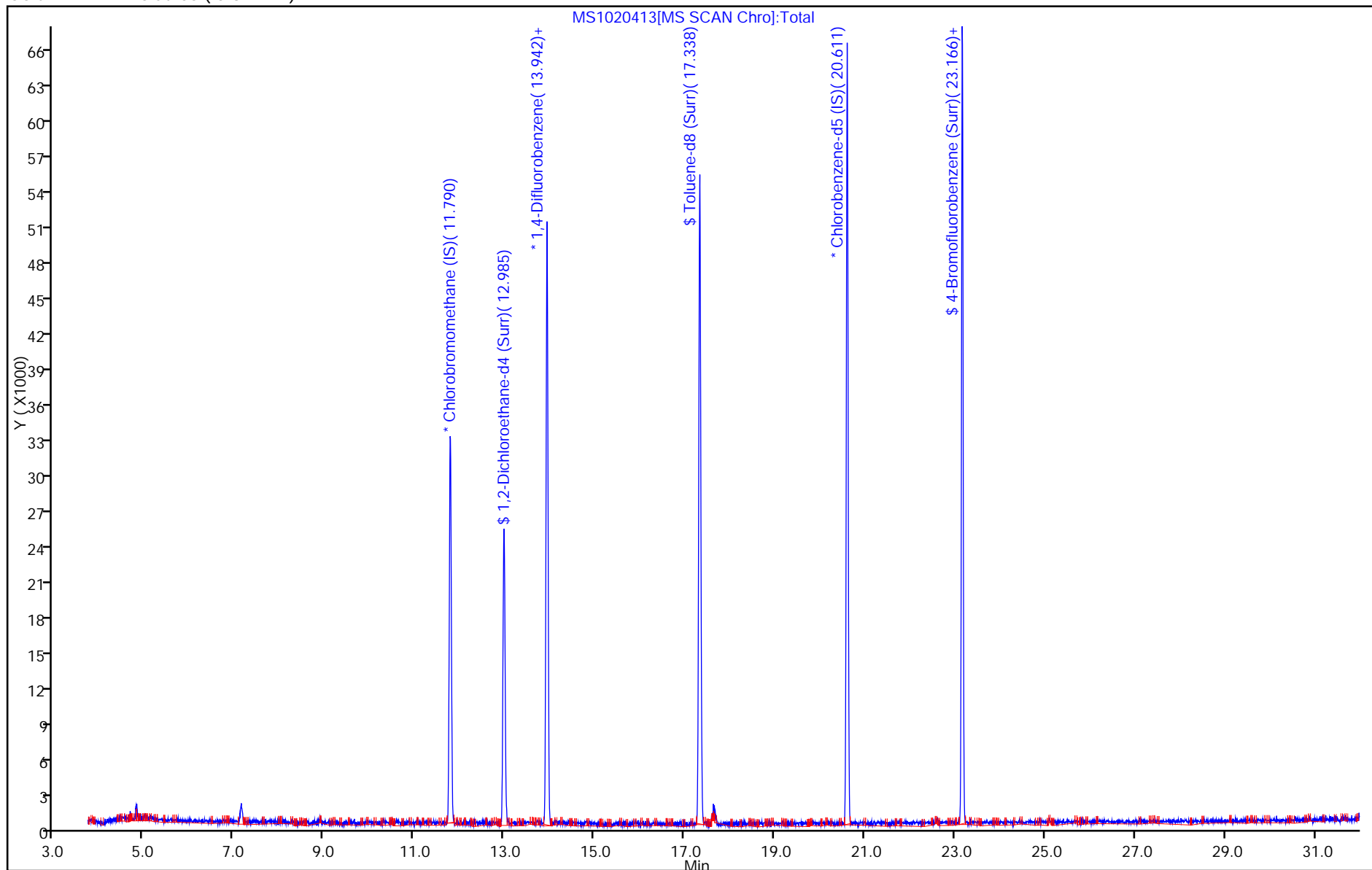
Dil. Factor: 1.0000

ALS Bottle#: 10

Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11484-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34001302 Lab Sample ID: 320-11484-2  
 Matrix: Air Lab File ID: MS1020415.d  
 Analysis Method: TO-15 Date Collected: 01/29/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 02/05/2015 04:34  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 64809 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11484-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34001302 Lab Sample ID: 320-11484-2  
 Matrix: Air Lab File ID: MS1020415.d  
 Analysis Method: TO-15 Date Collected: 01/29/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 02/05/2015 04:34  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 64809 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11484-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34001302 Lab Sample ID: 320-11484-2  
 Matrix: Air Lab File ID: MS1020415.d  
 Analysis Method: TO-15 Date Collected: 01/29/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 02/05/2015 04:34  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 64809 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	94		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	114		70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\MS1020415.d  
 Lims ID: 320-11484-A-2 Lab Sample ID: 320-11484-2  
 Client ID: 34001302  
 Sample Type: Client  
 Inject. Date: 05-Feb-2015 04:34:30 ALS Bottle#: 12 Worklist Smp#: 12  
 Purge Vol: 250.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-11484-2  
 Operator ID: AO Instrument ID: ATMS1  
 Method: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\TO15\_ATMS1scan.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 05-Feb-2015 09:53:58 Calib Date: 04-Feb-2015 19:21:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\MS1020405.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK052

First Level Reviewer: ortizam Date: 05-Feb-2015 10:06:57

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.790	11.790	0.000	92	14532	4.00	
* 2 1,4-Difluorobenzene	114	13.942	13.936	0.006	97	58602	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.612	20.618	-0.006	93	52016	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.979	12.985	-0.006	96	33568	4.57	
\$ 5 Toluene-d8 (Surr)	100	17.332	17.338	-0.006	97	36751	3.95	
\$ 6 4-Bromofluorobenzene (Surr	174	23.172	23.166	0.006	90	28721	3.76	

Reagents:

VASUISIM\_00140 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS1\20150205-19231.b\MMS1020415.d

Injection Date: 05-Feb-2015 04:34:30

Instrument ID: ATMS1

Operator ID: AO

Lims ID: 320-11484-A-2

Lab Sample ID: 320-11484-2

Worklist Smp#: 12

Client ID: 34001302

Purge Vol: 250.000 mL

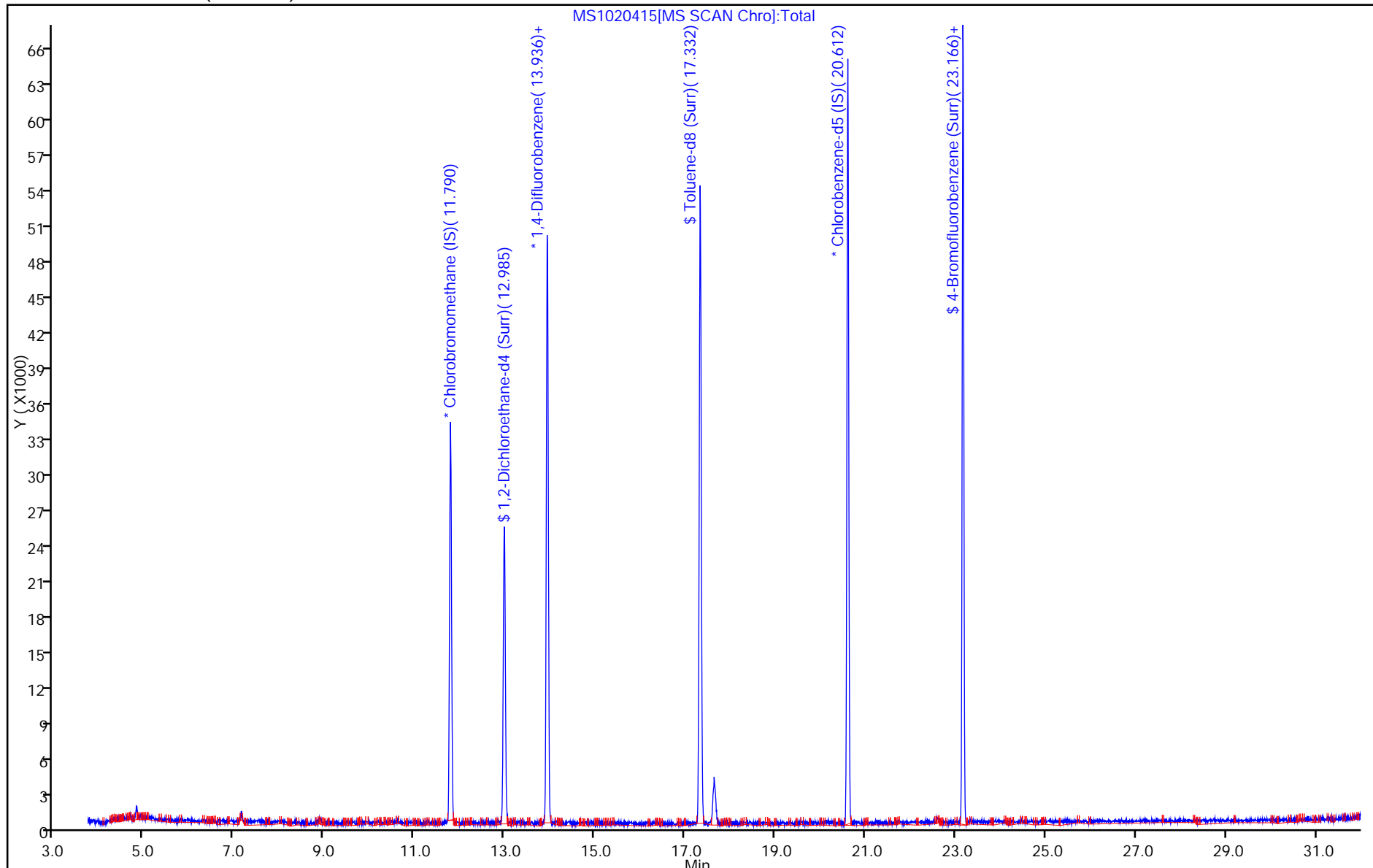
Dil. Factor: 1.0000

ALS Bottle#: 12

Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-12340-1

Client Project/Site: NuStar Vapor Testing- Vancouver SVE

For:

Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
4/8/2015 3:48:57 PM

Sarah Murphy, Project Manager I  
(916)373-5600  
[sarah.murphy@testamericainc.com](mailto:sarah.murphy@testamericainc.com)



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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

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

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## Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

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**Job ID: 320-12340-1**

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**Laboratory: TestAmerica Sacramento**

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**Narrative**

**Job Narrative**  
**320-12340-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 4/1/2015 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

**Air - GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Client Sample ID: SVE SOUTH PRECARBON

Lab Sample ID: 320-12340-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	1200		250		ppb v/v	50		TO-15	Total/NA
Carbon disulfide	89		40		ppb v/v	50		TO-15	Total/NA
cis-1,2-Dichloroethene	50		20		ppb v/v	50		TO-15	Total/NA
Methylene Chloride	47		20		ppb v/v	50		TO-15	Total/NA
Tetrachloroethene	2500		20		ppb v/v	50		TO-15	Total/NA
Toluene	47		20		ppb v/v	50		TO-15	Total/NA
Trichloroethene	110		20		ppb v/v	50		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	2900		590		ug/m3 Air	50		TO-15	Total/NA
Carbon disulfide	280		120		ug/m3 Air	50		TO-15	Total/NA
cis-1,2-Dichloroethene	200		79		ug/m3 Air	50		TO-15	Total/NA
Methylene Chloride	160		69		ug/m3 Air	50		TO-15	Total/NA
Tetrachloroethene	17000		140		ug/m3 Air	50		TO-15	Total/NA
Toluene	180		75		ug/m3 Air	50		TO-15	Total/NA
Trichloroethene	570		110		ug/m3 Air	50		TO-15	Total/NA

## Client Sample ID: SVE SOUTH POSTCARBON

Lab Sample ID: 320-12340-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK)	0.86		0.80		ppb v/v	1		TO-15	Total/NA
Carbon disulfide	1.4		0.80		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.48		0.40		ppb v/v	1		TO-15	Total/NA
Methylene Chloride	0.79		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	0.72		0.40		ppb v/v	1		TO-15	Total/NA
Trichloroethene	9.5		0.40		ppb v/v	1		TO-15	Total/NA
Vinyl chloride	0.99		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK)	2.5		2.4		ug/m3 Air	1		TO-15	Total/NA
Carbon disulfide	4.3		2.5		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.4		2.0		ug/m3 Air	1		TO-15	Total/NA
Methylene Chloride	2.8		1.4		ug/m3 Air	1		TO-15	Total/NA
Toluene	2.7		1.5		ug/m3 Air	1		TO-15	Total/NA
Trichloroethene	51		2.1		ug/m3 Air	1		TO-15	Total/NA
Vinyl chloride	2.5		1.0		ug/m3 Air	1		TO-15	Total/NA

## Client Sample ID: SVE NORTH

Lab Sample ID: 320-12340-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.4		1.2		ppb v/v	3.03		TO-15	Total/NA
1,1,1-Trichloroethane	2.7		0.91		ppb v/v	3.03		TO-15	Total/NA
Trichloroethene	25		1.2		ppb v/v	3.03		TO-15	Total/NA
Tetrachloroethene - DL	250		3.6		ppb v/v	9.09		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9.5		4.8		ug/m3 Air	3.03		TO-15	Total/NA
1,1,1-Trichloroethane	15		5.0		ug/m3 Air	3.03		TO-15	Total/NA
Trichloroethene	130		6.5		ug/m3 Air	3.03		TO-15	Total/NA
Tetrachloroethene - DL	1700		25		ug/m3 Air	9.09		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento



# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

**Client Sample ID: SVE SOUTH PRECARBON**

**Lab Sample ID: 320-12340-1**

Date Collected: 03/30/15 13:00

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>1200</b>		250		ppb v/v			04/08/15 03:15	50
Benzene	ND		20		ppb v/v			04/08/15 03:15	50
Benzyl chloride	ND		40		ppb v/v			04/08/15 03:15	50
Bromodichloromethane	ND		15		ppb v/v			04/08/15 03:15	50
Bromoform	ND		20		ppb v/v			04/08/15 03:15	50
Bromomethane	ND		40		ppb v/v			04/08/15 03:15	50
2-Butanone (MEK)	ND		40		ppb v/v			04/08/15 03:15	50
<b>Carbon disulfide</b>	<b>89</b>		40		ppb v/v			04/08/15 03:15	50
Carbon tetrachloride	ND		40		ppb v/v			04/08/15 03:15	50
Chlorobenzene	ND		15		ppb v/v			04/08/15 03:15	50
Dibromochloromethane	ND		20		ppb v/v			04/08/15 03:15	50
Chloroethane	ND		40		ppb v/v			04/08/15 03:15	50
Chloroform	ND		15		ppb v/v			04/08/15 03:15	50
Chloromethane	ND		40		ppb v/v			04/08/15 03:15	50
1,2-Dibromoethane (EDB)	ND		40		ppb v/v			04/08/15 03:15	50
1,2-Dichlorobenzene	ND		20		ppb v/v			04/08/15 03:15	50
1,3-Dichlorobenzene	ND		20		ppb v/v			04/08/15 03:15	50
1,4-Dichlorobenzene	ND		20		ppb v/v			04/08/15 03:15	50
Dichlorodifluoromethane	ND		20		ppb v/v			04/08/15 03:15	50
1,1-Dichloroethane	ND		15		ppb v/v			04/08/15 03:15	50
1,2-Dichloroethane	ND		40		ppb v/v			04/08/15 03:15	50
1,1-Dichloroethene	ND		40		ppb v/v			04/08/15 03:15	50
<b>cis-1,2-Dichloroethene</b>	<b>50</b>		20		ppb v/v			04/08/15 03:15	50
trans-1,2-Dichloroethene	ND		20		ppb v/v			04/08/15 03:15	50
1,2-Dichloropropane	ND		20		ppb v/v			04/08/15 03:15	50
cis-1,3-Dichloropropene	ND		20		ppb v/v			04/08/15 03:15	50
trans-1,3-Dichloropropene	ND		20		ppb v/v			04/08/15 03:15	50
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		20		ppb v/v			04/08/15 03:15	50
Ethylbenzene	ND		20		ppb v/v			04/08/15 03:15	50
4-Ethyltoluene	ND		20		ppb v/v			04/08/15 03:15	50
Hexachlorobutadiene	ND		100		ppb v/v			04/08/15 03:15	50
2-Hexanone	ND		20		ppb v/v			04/08/15 03:15	50
<b>Methylene Chloride</b>	<b>47</b>		20		ppb v/v			04/08/15 03:15	50
4-Methyl-2-pentanone (MIBK)	ND		20		ppb v/v			04/08/15 03:15	50
Styrene	ND		20		ppb v/v			04/08/15 03:15	50
1,1,2,2-Tetrachloroethane	ND		20		ppb v/v			04/08/15 03:15	50
<b>Tetrachloroethene</b>	<b>2500</b>		20		ppb v/v			04/08/15 03:15	50
<b>Toluene</b>	<b>47</b>		20		ppb v/v			04/08/15 03:15	50
1,2,4-Trichlorobenzene	ND		100		ppb v/v			04/08/15 03:15	50
1,1,1-Trichloroethane	ND		15		ppb v/v			04/08/15 03:15	50
1,1,2-Trichloroethane	ND		20		ppb v/v			04/08/15 03:15	50
<b>Trichloroethene</b>	<b>110</b>		20		ppb v/v			04/08/15 03:15	50
Trichlorofluoromethane	ND		20		ppb v/v			04/08/15 03:15	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20		ppb v/v			04/08/15 03:15	50
1,2,4-Trimethylbenzene	ND		40		ppb v/v			04/08/15 03:15	50
1,3,5-Trimethylbenzene	ND		20		ppb v/v			04/08/15 03:15	50
Vinyl acetate	ND		40		ppb v/v			04/08/15 03:15	50
Vinyl chloride	ND		20		ppb v/v			04/08/15 03:15	50

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

**Client Sample ID: SVE SOUTH PRECARBON**

**Lab Sample ID: 320-12340-1**

Date Collected: 03/30/15 13:00

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		40		ppb v/v			04/08/15 03:15	50
o-Xylene	ND		20		ppb v/v			04/08/15 03:15	50
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>2900</b>		590		ug/m3 Air			04/08/15 03:15	50
Benzene	ND		64		ug/m3 Air			04/08/15 03:15	50
Benzyl chloride	ND		210		ug/m3 Air			04/08/15 03:15	50
Bromodichloromethane	ND		100		ug/m3 Air			04/08/15 03:15	50
Bromoform	ND		210		ug/m3 Air			04/08/15 03:15	50
Bromomethane	ND		160		ug/m3 Air			04/08/15 03:15	50
2-Butanone (MEK)	ND		120		ug/m3 Air			04/08/15 03:15	50
<b>Carbon disulfide</b>	<b>280</b>		120		ug/m3 Air			04/08/15 03:15	50
Carbon tetrachloride	ND		250		ug/m3 Air			04/08/15 03:15	50
Chlorobenzene	ND		69		ug/m3 Air			04/08/15 03:15	50
Dibromochloromethane	ND		170		ug/m3 Air			04/08/15 03:15	50
Chloroethane	ND		110		ug/m3 Air			04/08/15 03:15	50
Chloroform	ND		73		ug/m3 Air			04/08/15 03:15	50
Chloromethane	ND		83		ug/m3 Air			04/08/15 03:15	50
1,2-Dibromoethane (EDB)	ND		310		ug/m3 Air			04/08/15 03:15	50
1,2-Dichlorobenzene	ND		120		ug/m3 Air			04/08/15 03:15	50
1,3-Dichlorobenzene	ND		120		ug/m3 Air			04/08/15 03:15	50
1,4-Dichlorobenzene	ND		120		ug/m3 Air			04/08/15 03:15	50
Dichlorodifluoromethane	ND		99		ug/m3 Air			04/08/15 03:15	50
1,1-Dichloroethane	ND		61		ug/m3 Air			04/08/15 03:15	50
1,2-Dichloroethane	ND		160		ug/m3 Air			04/08/15 03:15	50
1,1-Dichloroethene	ND		160		ug/m3 Air			04/08/15 03:15	50
<b>cis-1,2-Dichloroethene</b>	<b>200</b>		79		ug/m3 Air			04/08/15 03:15	50
trans-1,2-Dichloroethene	ND		79		ug/m3 Air			04/08/15 03:15	50
1,2-Dichloropropane	ND		92		ug/m3 Air			04/08/15 03:15	50
cis-1,3-Dichloropropene	ND		91		ug/m3 Air			04/08/15 03:15	50
trans-1,3-Dichloropropene	ND		91		ug/m3 Air			04/08/15 03:15	50
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		140		ug/m3 Air			04/08/15 03:15	50
Ethylbenzene	ND		87		ug/m3 Air			04/08/15 03:15	50
4-Ethyltoluene	ND		98		ug/m3 Air			04/08/15 03:15	50
Hexachlorobutadiene	ND		1100		ug/m3 Air			04/08/15 03:15	50
2-Hexanone	ND		82		ug/m3 Air			04/08/15 03:15	50
<b>Methylene Chloride</b>	<b>160</b>		69		ug/m3 Air			04/08/15 03:15	50
4-Methyl-2-pentanone (MIBK)	ND		82		ug/m3 Air			04/08/15 03:15	50
Styrene	ND		85		ug/m3 Air			04/08/15 03:15	50
1,1,2,2-Tetrachloroethane	ND		140		ug/m3 Air			04/08/15 03:15	50
<b>Tetrachloroethene</b>	<b>17000</b>		140		ug/m3 Air			04/08/15 03:15	50
<b>Toluene</b>	<b>180</b>		75		ug/m3 Air			04/08/15 03:15	50
1,2,4-Trichlorobenzene	ND		740		ug/m3 Air			04/08/15 03:15	50
1,1,1-Trichloroethane	ND		82		ug/m3 Air			04/08/15 03:15	50
1,1,2-Trichloroethane	ND		110		ug/m3 Air			04/08/15 03:15	50
<b>Trichloroethene</b>	<b>570</b>		110		ug/m3 Air			04/08/15 03:15	50
Trichlorofluoromethane	ND		110		ug/m3 Air			04/08/15 03:15	50
1,1,2-Trichloro-1,1,2,2-trifluoroethane	ND		150		ug/m3 Air			04/08/15 03:15	50
1,2,4-Trimethylbenzene	ND		200		ug/m3 Air			04/08/15 03:15	50

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Client Sample ID: SVE SOUTH PRECARBON

Lab Sample ID: 320-12340-1

Date Collected: 03/30/15 13:00

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		98		ug/m3 Air			04/08/15 03:15	50
Vinyl acetate	ND		140		ug/m3 Air			04/08/15 03:15	50
Vinyl chloride	ND		51		ug/m3 Air			04/08/15 03:15	50
m,p-Xylene	ND		170		ug/m3 Air			04/08/15 03:15	50
o-Xylene	ND		87		ug/m3 Air			04/08/15 03:15	50
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
4-Bromofluorobenzene (Surr)	94		70 - 130					04/08/15 03:15	50
1,2-Dichloroethane-d4 (Surr)	91		70 - 130					04/08/15 03:15	50
Toluene-d8 (Surr)	98		70 - 130					04/08/15 03:15	50

## Client Sample ID: SVE SOUTH POSTCARBON

Lab Sample ID: 320-12340-2

Date Collected: 03/30/15 13:01

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			04/08/15 04:11	1
Benzene	ND		0.40		ppb v/v			04/08/15 04:11	1
Benzyl chloride	ND		0.80		ppb v/v			04/08/15 04:11	1
Bromodichloromethane	ND		0.30		ppb v/v			04/08/15 04:11	1
Bromoform	ND		0.40		ppb v/v			04/08/15 04:11	1
Bromomethane	ND		0.80		ppb v/v			04/08/15 04:11	1
<b>2-Butanone (MEK)</b>	<b>0.86</b>		0.80		ppb v/v			04/08/15 04:11	1
<b>Carbon disulfide</b>	<b>1.4</b>		0.80		ppb v/v			04/08/15 04:11	1
Carbon tetrachloride	ND		0.80		ppb v/v			04/08/15 04:11	1
Chlorobenzene	ND		0.30		ppb v/v			04/08/15 04:11	1
Dibromochloromethane	ND		0.40		ppb v/v			04/08/15 04:11	1
Chloroethane	ND		0.80		ppb v/v			04/08/15 04:11	1
Chloroform	ND		0.30		ppb v/v			04/08/15 04:11	1
Chloromethane	ND		0.80		ppb v/v			04/08/15 04:11	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			04/08/15 04:11	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			04/08/15 04:11	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			04/08/15 04:11	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			04/08/15 04:11	1
<b>Dichlorodifluoromethane</b>	<b>0.48</b>		0.40		ppb v/v			04/08/15 04:11	1
1,1-Dichloroethane	ND		0.30		ppb v/v			04/08/15 04:11	1
1,2-Dichloroethane	ND		0.80		ppb v/v			04/08/15 04:11	1
1,1-Dichloroethene	ND		0.80		ppb v/v			04/08/15 04:11	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			04/08/15 04:11	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			04/08/15 04:11	1
1,2-Dichloropropane	ND		0.40		ppb v/v			04/08/15 04:11	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			04/08/15 04:11	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			04/08/15 04:11	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			04/08/15 04:11	1
Ethylbenzene	ND		0.40		ppb v/v			04/08/15 04:11	1
4-Ethyltoluene	ND		0.40		ppb v/v			04/08/15 04:11	1
Hexachlorobutadiene	ND		2.0		ppb v/v			04/08/15 04:11	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

**Client Sample ID: SVE SOUTH POSTCARBON**

**Lab Sample ID: 320-12340-2**

Date Collected: 03/30/15 13:01

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		0.40		ppb v/v			04/08/15 04:11	1
<b>Methylene Chloride</b>	<b>0.79</b>		0.40		ppb v/v			04/08/15 04:11	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			04/08/15 04:11	1
Styrene	ND		0.40		ppb v/v			04/08/15 04:11	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			04/08/15 04:11	1
Tetrachloroethene	ND		0.40		ppb v/v			04/08/15 04:11	1
<b>Toluene</b>	<b>0.72</b>		0.40		ppb v/v			04/08/15 04:11	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			04/08/15 04:11	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			04/08/15 04:11	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			04/08/15 04:11	1
<b>Trichloroethene</b>	<b>9.5</b>		0.40		ppb v/v			04/08/15 04:11	1
Trichlorofluoromethane	ND		0.40		ppb v/v			04/08/15 04:11	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			04/08/15 04:11	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			04/08/15 04:11	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			04/08/15 04:11	1
Vinyl acetate	ND		0.80		ppb v/v			04/08/15 04:11	1
<b>Vinyl chloride</b>	<b>0.99</b>		0.40		ppb v/v			04/08/15 04:11	1
m,p-Xylene	ND		0.80		ppb v/v			04/08/15 04:11	1
o-Xylene	ND		0.40		ppb v/v			04/08/15 04:11	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			04/08/15 04:11	1
Benzene	ND		1.3		ug/m3 Air			04/08/15 04:11	1
Benzyl chloride	ND		4.1		ug/m3 Air			04/08/15 04:11	1
Bromodichloromethane	ND		2.0		ug/m3 Air			04/08/15 04:11	1
Bromoform	ND		4.1		ug/m3 Air			04/08/15 04:11	1
Bromomethane	ND		3.1		ug/m3 Air			04/08/15 04:11	1
<b>2-Butanone (MEK)</b>	<b>2.5</b>		2.4		ug/m3 Air			04/08/15 04:11	1
<b>Carbon disulfide</b>	<b>4.3</b>		2.5		ug/m3 Air			04/08/15 04:11	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			04/08/15 04:11	1
Chlorobenzene	ND		1.4		ug/m3 Air			04/08/15 04:11	1
Dibromochloromethane	ND		3.4		ug/m3 Air			04/08/15 04:11	1
Chloroethane	ND		2.1		ug/m3 Air			04/08/15 04:11	1
Chloroform	ND		1.5		ug/m3 Air			04/08/15 04:11	1
Chloromethane	ND		1.7		ug/m3 Air			04/08/15 04:11	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			04/08/15 04:11	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			04/08/15 04:11	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			04/08/15 04:11	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			04/08/15 04:11	1
<b>Dichlorodifluoromethane</b>	<b>2.4</b>		2.0		ug/m3 Air			04/08/15 04:11	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			04/08/15 04:11	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			04/08/15 04:11	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			04/08/15 04:11	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/08/15 04:11	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/08/15 04:11	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			04/08/15 04:11	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/08/15 04:11	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/08/15 04:11	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			04/08/15 04:11	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

**Client Sample ID: SVE SOUTH POSTCARBON**

**Lab Sample ID: 320-12340-2**

Date Collected: 03/30/15 13:01

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		1.7		ug/m3 Air			04/08/15 04:11	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			04/08/15 04:11	1
Hexachlorobutadiene	ND		21		ug/m3 Air			04/08/15 04:11	1
2-Hexanone	ND		1.6		ug/m3 Air			04/08/15 04:11	1
<b>Methylene Chloride</b>	<b>2.8</b>		1.4		ug/m3 Air			04/08/15 04:11	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			04/08/15 04:11	1
Styrene	ND		1.7		ug/m3 Air			04/08/15 04:11	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			04/08/15 04:11	1
Tetrachloroethene	ND		2.7		ug/m3 Air			04/08/15 04:11	1
<b>Toluene</b>	<b>2.7</b>		1.5		ug/m3 Air			04/08/15 04:11	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			04/08/15 04:11	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			04/08/15 04:11	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			04/08/15 04:11	1
<b>Trichloroethene</b>	<b>51</b>		2.1		ug/m3 Air			04/08/15 04:11	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			04/08/15 04:11	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			04/08/15 04:11	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			04/08/15 04:11	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			04/08/15 04:11	1
Vinyl acetate	ND		2.8		ug/m3 Air			04/08/15 04:11	1
<b>Vinyl chloride</b>	<b>2.5</b>		1.0		ug/m3 Air			04/08/15 04:11	1
m,p-Xylene	ND		3.5		ug/m3 Air			04/08/15 04:11	1
o-Xylene	ND		1.7		ug/m3 Air			04/08/15 04:11	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
4-Bromofluorobenzene (Surr)	91		70 - 130					04/08/15 04:11	1
1,2-Dichloroethane-d4 (Surr)	92		70 - 130					04/08/15 04:11	1
Toluene-d8 (Surr)	102		70 - 130					04/08/15 04:11	1

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-12340-3**

Date Collected: 03/30/15 13:10

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		15		ppb v/v			04/08/15 05:04	3.03
Benzene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Benzyl chloride	ND		2.4		ppb v/v			04/08/15 05:04	3.03
Bromodichloromethane	ND		0.91		ppb v/v			04/08/15 05:04	3.03
Bromoform	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Bromomethane	ND		2.4		ppb v/v			04/08/15 05:04	3.03
2-Butanone (MEK)	ND		2.4		ppb v/v			04/08/15 05:04	3.03
Carbon disulfide	ND		2.4		ppb v/v			04/08/15 05:04	3.03
Carbon tetrachloride	ND		2.4		ppb v/v			04/08/15 05:04	3.03
Chlorobenzene	ND		0.91		ppb v/v			04/08/15 05:04	3.03
Dibromochloromethane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Chloroethane	ND		2.4		ppb v/v			04/08/15 05:04	3.03
Chloroform	ND		0.91		ppb v/v			04/08/15 05:04	3.03
Chloromethane	ND		2.4		ppb v/v			04/08/15 05:04	3.03

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-12340-3**

Date Collected: 03/30/15 13:10

Matrix: Air

Date Received: 04/01/15 09:45

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		2.4		ppb v/v			04/08/15 05:04	3.03
1,2-Dichlorobenzene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,3-Dichlorobenzene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,4-Dichlorobenzene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Dichlorodifluoromethane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,1-Dichloroethane	ND		0.91		ppb v/v			04/08/15 05:04	3.03
1,2-Dichloroethane	ND		2.4		ppb v/v			04/08/15 05:04	3.03
1,1-Dichloroethene	ND		2.4		ppb v/v			04/08/15 05:04	3.03
<b>cis-1,2-Dichloroethene</b>	<b>2.4</b>		1.2		ppb v/v			04/08/15 05:04	3.03
trans-1,2-Dichloroethene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,2-Dichloropropane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
cis-1,3-Dichloropropene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
trans-1,3-Dichloropropene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Ethylbenzene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
4-Ethyltoluene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Hexachlorobutadiene	ND		6.1		ppb v/v			04/08/15 05:04	3.03
2-Hexanone	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Methylene Chloride	ND		1.2		ppb v/v			04/08/15 05:04	3.03
4-Methyl-2-pentanone (MIBK)	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Styrene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,1,2,2-Tetrachloroethane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Toluene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,2,4-Trichlorobenzene	ND		6.1		ppb v/v			04/08/15 05:04	3.03
<b>1,1,1-Trichloroethane</b>	<b>2.7</b>		0.91		ppb v/v			04/08/15 05:04	3.03
1,1,2-Trichloroethane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
<b>Trichloroethene</b>	<b>25</b>		1.2		ppb v/v			04/08/15 05:04	3.03
Trichlorofluoromethane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.2		ppb v/v			04/08/15 05:04	3.03
1,2,4-Trimethylbenzene	ND		2.4		ppb v/v			04/08/15 05:04	3.03
1,3,5-Trimethylbenzene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Vinyl acetate	ND		2.4		ppb v/v			04/08/15 05:04	3.03
Vinyl chloride	ND		1.2		ppb v/v			04/08/15 05:04	3.03
m,p-Xylene	ND		2.4		ppb v/v			04/08/15 05:04	3.03
o-Xylene	ND		1.2		ppb v/v			04/08/15 05:04	3.03
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		36		ug/m3 Air			04/08/15 05:04	3.03
Benzene	ND		3.9		ug/m3 Air			04/08/15 05:04	3.03
Benzyl chloride	ND		13		ug/m3 Air			04/08/15 05:04	3.03
Bromodichloromethane	ND		6.1		ug/m3 Air			04/08/15 05:04	3.03
Bromoform	ND		13		ug/m3 Air			04/08/15 05:04	3.03
Bromomethane	ND		9.4		ug/m3 Air			04/08/15 05:04	3.03
2-Butanone (MEK)	ND		7.1		ug/m3 Air			04/08/15 05:04	3.03
Carbon disulfide	ND		7.5		ug/m3 Air			04/08/15 05:04	3.03
Carbon tetrachloride	ND		15		ug/m3 Air			04/08/15 05:04	3.03
Chlorobenzene	ND		4.2		ug/m3 Air			04/08/15 05:04	3.03
Dibromochloromethane	ND		10		ug/m3 Air			04/08/15 05:04	3.03
Chloroethane	ND		6.4		ug/m3 Air			04/08/15 05:04	3.03

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-12340-3**

**Date Collected: 03/30/15 13:10**

**Matrix: Air**

**Date Received: 04/01/15 09:45**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		4.4		ug/m3 Air			04/08/15 05:04	3.03
Chloromethane	ND		5.0		ug/m3 Air			04/08/15 05:04	3.03
1,2-Dibromoethane (EDB)	ND		19		ug/m3 Air			04/08/15 05:04	3.03
1,2-Dichlorobenzene	ND		7.3		ug/m3 Air			04/08/15 05:04	3.03
1,3-Dichlorobenzene	ND		7.3		ug/m3 Air			04/08/15 05:04	3.03
1,4-Dichlorobenzene	ND		7.3		ug/m3 Air			04/08/15 05:04	3.03
Dichlorodifluoromethane	ND		6.0		ug/m3 Air			04/08/15 05:04	3.03
1,1-Dichloroethane	ND		3.7		ug/m3 Air			04/08/15 05:04	3.03
1,2-Dichloroethane	ND		9.8		ug/m3 Air			04/08/15 05:04	3.03
1,1-Dichloroethene	ND		9.6		ug/m3 Air			04/08/15 05:04	3.03
<b>cis-1,2-Dichloroethene</b>	<b>9.5</b>		4.8		ug/m3 Air			04/08/15 05:04	3.03
trans-1,2-Dichloroethene	ND		4.8		ug/m3 Air			04/08/15 05:04	3.03
1,2-Dichloropropane	ND		5.6		ug/m3 Air			04/08/15 05:04	3.03
cis-1,3-Dichloropropene	ND		5.5		ug/m3 Air			04/08/15 05:04	3.03
trans-1,3-Dichloropropene	ND		5.5		ug/m3 Air			04/08/15 05:04	3.03
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		8.5		ug/m3 Air			04/08/15 05:04	3.03
Ethylbenzene	ND		5.3		ug/m3 Air			04/08/15 05:04	3.03
4-Ethyltoluene	ND		6.0		ug/m3 Air			04/08/15 05:04	3.03
Hexachlorobutadiene	ND		65		ug/m3 Air			04/08/15 05:04	3.03
2-Hexanone	ND		5.0		ug/m3 Air			04/08/15 05:04	3.03
Methylene Chloride	ND		4.2		ug/m3 Air			04/08/15 05:04	3.03
4-Methyl-2-pentanone (MIBK)	ND		5.0		ug/m3 Air			04/08/15 05:04	3.03
Styrene	ND		5.2		ug/m3 Air			04/08/15 05:04	3.03
1,1,2,2-Tetrachloroethane	ND		8.3		ug/m3 Air			04/08/15 05:04	3.03
Toluene	ND		4.6		ug/m3 Air			04/08/15 05:04	3.03
1,2,4-Trichlorobenzene	ND		45		ug/m3 Air			04/08/15 05:04	3.03
<b>1,1,1-Trichloroethane</b>	<b>15</b>		5.0		ug/m3 Air			04/08/15 05:04	3.03
1,1,2-Trichloroethane	ND		6.6		ug/m3 Air			04/08/15 05:04	3.03
<b>Trichloroethene</b>	<b>130</b>		6.5		ug/m3 Air			04/08/15 05:04	3.03
Trichlorofluoromethane	ND		6.8		ug/m3 Air			04/08/15 05:04	3.03
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		9.3		ug/m3 Air			04/08/15 05:04	3.03
1,2,4-Trimethylbenzene	ND		12		ug/m3 Air			04/08/15 05:04	3.03
1,3,5-Trimethylbenzene	ND		6.0		ug/m3 Air			04/08/15 05:04	3.03
Vinyl acetate	ND		8.5		ug/m3 Air			04/08/15 05:04	3.03
Vinyl chloride	ND		3.1		ug/m3 Air			04/08/15 05:04	3.03
m,p-Xylene	ND		11		ug/m3 Air			04/08/15 05:04	3.03
o-Xylene	ND		5.3		ug/m3 Air			04/08/15 05:04	3.03

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		70 - 130		04/08/15 05:04	3.03
1,2-Dichloroethane-d4 (Surr)	92		70 - 130		04/08/15 05:04	3.03
Toluene-d8 (Surr)	104		70 - 130		04/08/15 05:04	3.03

**Method: TO-15 - Volatile Organic Compounds in Ambient Air - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Tetrachloroethene</b>	<b>250</b>		3.6		ppb v/v			04/08/15 08:01	9.09
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Tetrachloroethene</b>	<b>1700</b>		25		ug/m3 Air			04/08/15 08:01	9.09

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-12340-3**

**Date Collected: 03/30/15 13:10**

**Matrix: Air**

**Date Received: 04/01/15 09:45**

**Sample Container: Summa Canister 6L**

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
4-Bromofluorobenzene (Surr)	88		70 - 130		04/08/15 08:01	9.09
1,2-Dichloroethane-d4 (Surr)	93		70 - 130		04/08/15 08:01	9.09
Toluene-d8 (Surr)	104		70 - 130		04/08/15 08:01	9.09



# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	12DCE	TOL
		(70-130)	(70-130)	(70-130)
320-12340-1	SVE SOUTH PRECARBON	94	91	98
320-12340-2	SVE SOUTH POSTCARBON	91	92	102
320-12340-3	SVE NORTH	89	92	104
320-12340-3 - DL	SVE NORTH	88	93	104
LCS 320-70472/4	Lab Control Sample	98	102	106
LCSD 320-70472/5	Lab Control Sample Dup	99	101	103
MB 320-70472/7	Method Blank	90	93	101

#### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)  
12DCE = 1,2-Dichloroethane-d4 (Surr)  
TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

**Lab Sample ID: MB 320-70472/7**

**Matrix: Air**

**Analysis Batch: 70472**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			04/07/15 16:13	1
Benzene	ND		0.40		ppb v/v			04/07/15 16:13	1
Benzyl chloride	ND		0.80		ppb v/v			04/07/15 16:13	1
Bromodichloromethane	ND		0.30		ppb v/v			04/07/15 16:13	1
Bromoform	ND		0.40		ppb v/v			04/07/15 16:13	1
Bromomethane	ND		0.80		ppb v/v			04/07/15 16:13	1
2-Butanone (MEK)	ND		0.80		ppb v/v			04/07/15 16:13	1
Carbon disulfide	ND		0.80		ppb v/v			04/07/15 16:13	1
Carbon tetrachloride	ND		0.80		ppb v/v			04/07/15 16:13	1
Chlorobenzene	ND		0.30		ppb v/v			04/07/15 16:13	1
Dibromochloromethane	ND		0.40		ppb v/v			04/07/15 16:13	1
Chloroethane	ND		0.80		ppb v/v			04/07/15 16:13	1
Chloroform	ND		0.30		ppb v/v			04/07/15 16:13	1
Chloromethane	ND		0.80		ppb v/v			04/07/15 16:13	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			04/07/15 16:13	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			04/07/15 16:13	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			04/07/15 16:13	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			04/07/15 16:13	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			04/07/15 16:13	1
1,1-Dichloroethane	ND		0.30		ppb v/v			04/07/15 16:13	1
1,2-Dichloroethane	ND		0.80		ppb v/v			04/07/15 16:13	1
1,1-Dichloroethene	ND		0.80		ppb v/v			04/07/15 16:13	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			04/07/15 16:13	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			04/07/15 16:13	1
1,2-Dichloropropane	ND		0.40		ppb v/v			04/07/15 16:13	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			04/07/15 16:13	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			04/07/15 16:13	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			04/07/15 16:13	1
Ethylbenzene	ND		0.40		ppb v/v			04/07/15 16:13	1
4-Ethyltoluene	ND		0.40		ppb v/v			04/07/15 16:13	1
Hexachlorobutadiene	ND		2.0		ppb v/v			04/07/15 16:13	1
2-Hexanone	ND		0.40		ppb v/v			04/07/15 16:13	1
Methylene Chloride	ND		0.40		ppb v/v			04/07/15 16:13	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			04/07/15 16:13	1
Styrene	ND		0.40		ppb v/v			04/07/15 16:13	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			04/07/15 16:13	1
Tetrachloroethene	ND		0.40		ppb v/v			04/07/15 16:13	1
Toluene	ND		0.40		ppb v/v			04/07/15 16:13	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			04/07/15 16:13	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			04/07/15 16:13	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			04/07/15 16:13	1
Trichloroethene	ND		0.40		ppb v/v			04/07/15 16:13	1
Trichlorofluoromethane	ND		0.40		ppb v/v			04/07/15 16:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			04/07/15 16:13	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			04/07/15 16:13	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			04/07/15 16:13	1
Vinyl acetate	ND		0.80		ppb v/v			04/07/15 16:13	1
Vinyl chloride	ND		0.40		ppb v/v			04/07/15 16:13	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 320-70472/7

Matrix: Air

Analysis Batch: 70472

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			04/07/15 16:13	1
o-Xylene	ND		0.40		ppb v/v			04/07/15 16:13	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			04/07/15 16:13	1
Benzene	ND		1.3		ug/m3 Air			04/07/15 16:13	1
Benzyl chloride	ND		4.1		ug/m3 Air			04/07/15 16:13	1
Bromodichloromethane	ND		2.0		ug/m3 Air			04/07/15 16:13	1
Bromoform	ND		4.1		ug/m3 Air			04/07/15 16:13	1
Bromomethane	ND		3.1		ug/m3 Air			04/07/15 16:13	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			04/07/15 16:13	1
Carbon disulfide	ND		2.5		ug/m3 Air			04/07/15 16:13	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			04/07/15 16:13	1
Chlorobenzene	ND		1.4		ug/m3 Air			04/07/15 16:13	1
Dibromochloromethane	ND		3.4		ug/m3 Air			04/07/15 16:13	1
Chloroethane	ND		2.1		ug/m3 Air			04/07/15 16:13	1
Chloroform	ND		1.5		ug/m3 Air			04/07/15 16:13	1
Chloromethane	ND		1.7		ug/m3 Air			04/07/15 16:13	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			04/07/15 16:13	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			04/07/15 16:13	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			04/07/15 16:13	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			04/07/15 16:13	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			04/07/15 16:13	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			04/07/15 16:13	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			04/07/15 16:13	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			04/07/15 16:13	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/07/15 16:13	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/07/15 16:13	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			04/07/15 16:13	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/07/15 16:13	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/07/15 16:13	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			04/07/15 16:13	1
Ethylbenzene	ND		1.7		ug/m3 Air			04/07/15 16:13	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			04/07/15 16:13	1
Hexachlorobutadiene	ND		21		ug/m3 Air			04/07/15 16:13	1
2-Hexanone	ND		1.6		ug/m3 Air			04/07/15 16:13	1
Methylene Chloride	ND		1.4		ug/m3 Air			04/07/15 16:13	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			04/07/15 16:13	1
Styrene	ND		1.7		ug/m3 Air			04/07/15 16:13	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			04/07/15 16:13	1
Tetrachloroethene	ND		2.7		ug/m3 Air			04/07/15 16:13	1
Toluene	ND		1.5		ug/m3 Air			04/07/15 16:13	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			04/07/15 16:13	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			04/07/15 16:13	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			04/07/15 16:13	1
Trichloroethene	ND		2.1		ug/m3 Air			04/07/15 16:13	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			04/07/15 16:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			04/07/15 16:13	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-70472/7**

**Matrix: Air**

**Analysis Batch: 70472**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			04/07/15 16:13	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			04/07/15 16:13	1
Vinyl acetate	ND		2.8		ug/m3 Air			04/07/15 16:13	1
Vinyl chloride	ND		1.0		ug/m3 Air			04/07/15 16:13	1
m,p-Xylene	ND		3.5		ug/m3 Air			04/07/15 16:13	1
o-Xylene	ND		1.7		ug/m3 Air			04/07/15 16:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		70 - 130		04/07/15 16:13	1
1,2-Dichloroethane-d4 (Surr)	93		70 - 130		04/07/15 16:13	1
Toluene-d8 (Surr)	101		70 - 130		04/07/15 16:13	1

**Lab Sample ID: LCS 320-70472/4**

**Matrix: Air**

**Analysis Batch: 70472**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	15.6		ppb v/v		78	71 - 131
Benzene	20.0	17.0		ppb v/v		85	68 - 128
Benzyl chloride	20.0	18.9		ppb v/v		94	58 - 120
Bromodichloromethane	20.0	18.0		ppb v/v		90	65 - 130
Bromoform	20.0	20.1		ppb v/v		101	64 - 144
Bromomethane	20.0	18.7		ppb v/v		93	70 - 131
2-Butanone (MEK)	20.0	17.5		ppb v/v		87	71 - 131
Carbon disulfide	20.0	15.3		ppb v/v		77	63 - 123
Carbon tetrachloride	20.0	15.8		ppb v/v		79	67 - 127
Chlorobenzene	20.0	19.2		ppb v/v		96	70 - 132
Dibromochloromethane	20.0	17.8		ppb v/v		89	68 - 128
Chloroethane	20.0	20.2		ppb v/v		101	70 - 131
Chloroform	20.0	16.8		ppb v/v		84	69 - 129
Chloromethane	20.0	18.1		ppb v/v		90	67 - 127
1,2-Dibromoethane (EDB)	20.0	17.6		ppb v/v		88	68 - 131
1,2-Dichlorobenzene	20.0	20.9		ppb v/v		104	73 - 143
1,3-Dichlorobenzene	20.0	21.4		ppb v/v		107	77 - 136
1,4-Dichlorobenzene	20.0	22.2		ppb v/v		111	73 - 143
Dichlorodifluoromethane	20.0	17.5		ppb v/v		87	69 - 129
1,1-Dichloroethane	20.0	16.1		ppb v/v		81	65 - 125
1,2-Dichloroethane	20.0	17.2		ppb v/v		86	71 - 131
1,1-Dichloroethene	20.0	14.7		ppb v/v		73	53 - 128
cis-1,2-Dichloroethene	20.0	16.5		ppb v/v		82	68 - 128
trans-1,2-Dichloroethene	20.0	15.9		ppb v/v		80	70 - 130
1,2-Dichloropropane	20.0	18.3		ppb v/v		92	74 - 128
cis-1,3-Dichloropropene	20.0	19.7		ppb v/v		98	78 - 132
trans-1,3-Dichloropropene	20.0	15.2		ppb v/v		76	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	17.6		ppb v/v		88	64 - 124
Ethylbenzene	20.0	19.1		ppb v/v		95	76 - 136
4-Ethyltoluene	20.0	18.6		ppb v/v		93	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-70472/4**

**Matrix: Air**

**Analysis Batch: 70472**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	15.9		ppb v/v		80	42 - 150
2-Hexanone	20.0	17.7		ppb v/v		88	70 - 128
Methylene Chloride	20.0	14.8		ppb v/v		74	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	17.8		ppb v/v		89	73 - 133
Styrene	20.0	20.5		ppb v/v		103	76 - 144
1,1,2,2-Tetrachloroethane	20.0	19.3		ppb v/v		97	75 - 135
Tetrachloroethene	20.0	17.3		ppb v/v		86	56 - 138
Toluene	20.0	19.0		ppb v/v		95	71 - 132
1,2,4-Trichlorobenzene	20.0	18.9		ppb v/v		94	59 - 150
1,1,1-Trichloroethane	20.0	16.7		ppb v/v		83	65 - 124
1,1,2-Trichloroethane	20.0	17.3		ppb v/v		87	71 - 131
Trichloroethene	20.0	17.9		ppb v/v		90	64 - 127
Trichlorofluoromethane	20.0	17.1		ppb v/v		86	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	15.3		ppb v/v		76	50 - 132
1,2,4-Trimethylbenzene	20.0	19.8		ppb v/v		99	61 - 145
1,3,5-Trimethylbenzene	20.0	18.7		ppb v/v		94	65 - 136
Vinyl acetate	20.0	17.5		ppb v/v		88	77 - 134
Vinyl chloride	20.0	20.0		ppb v/v		100	69 - 129
m,p-Xylene	40.0	39.6		ppb v/v		99	75 - 138
o-Xylene	20.0	19.6		ppb v/v		98	77 - 132
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	37.1		ug/m3 Air		78	71 - 131
Benzene	64	54.4		ug/m3 Air		85	68 - 128
Benzyl chloride	100	97.7		ug/m3 Air		94	58 - 120
Bromodichloromethane	130	120		ug/m3 Air		90	65 - 130
Bromoform	210	208		ug/m3 Air		101	64 - 144
Bromomethane	78	72.5		ug/m3 Air		93	70 - 131
2-Butanone (MEK)	59	51.5		ug/m3 Air		87	71 - 131
Carbon disulfide	62	47.7		ug/m3 Air		77	63 - 123
Carbon tetrachloride	130	99.6		ug/m3 Air		79	67 - 127
Chlorobenzene	92	88.3		ug/m3 Air		96	70 - 132
Dibromochloromethane	170	152		ug/m3 Air		89	68 - 128
Chloroethane	53	53.4		ug/m3 Air		101	70 - 131
Chloroform	98	81.8		ug/m3 Air		84	69 - 129
Chloromethane	41	37.3		ug/m3 Air		90	67 - 127
1,2-Dibromoethane (EDB)	150	135		ug/m3 Air		88	68 - 131
1,2-Dichlorobenzene	120	126		ug/m3 Air		104	73 - 143
1,3-Dichlorobenzene	120	129		ug/m3 Air		107	77 - 136
1,4-Dichlorobenzene	120	133		ug/m3 Air		111	73 - 143
Dichlorodifluoromethane	99	86.5		ug/m3 Air		87	69 - 129
1,1-Dichloroethane	81	65.3		ug/m3 Air		81	65 - 125
1,2-Dichloroethane	81	69.8		ug/m3 Air		86	71 - 131
1,1-Dichloroethene	79	58.2		ug/m3 Air		73	53 - 128
cis-1,2-Dichloroethene	79	65.3		ug/m3 Air		82	68 - 128
trans-1,2-Dichloroethene	79	63.2		ug/m3 Air		80	70 - 130
1,2-Dichloropropane	92	84.6		ug/m3 Air		92	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-70472/4**

**Matrix: Air**

**Analysis Batch: 70472**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	89.3		ug/m3 Air		98	78 - 132
trans-1,3-Dichloropropene	91	69.1		ug/m3 Air		76	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	123		ug/m3 Air		88	64 - 124
Ethylbenzene	87	82.8		ug/m3 Air		95	76 - 136
4-Ethyltoluene	98	91.2		ug/m3 Air		93	62 - 136
Hexachlorobutadiene	210	170		ug/m3 Air		80	42 - 150
2-Hexanone	82	72.3		ug/m3 Air		88	70 - 128
Methylene Chloride	69	51.3		ug/m3 Air		74	65 - 125
4-Methyl-2-pentanone (MIBK)	82	73.0		ug/m3 Air		89	73 - 133
Styrene	85	87.5		ug/m3 Air		103	76 - 144
1,1,2,2-Tetrachloroethane	140	133		ug/m3 Air		97	75 - 135
Tetrachloroethene	140	117		ug/m3 Air		86	56 - 138
Toluene	75	71.6		ug/m3 Air		95	71 - 132
1,2,4-Trichlorobenzene	150	140		ug/m3 Air		94	59 - 150
1,1,1-Trichloroethane	110	91.0		ug/m3 Air		83	65 - 124
1,1,2-Trichloroethane	110	94.6		ug/m3 Air		87	71 - 131
Trichloroethene	110	96.4		ug/m3 Air		90	64 - 127
Trichlorofluoromethane	110	96.3		ug/m3 Air		86	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	117		ug/m3 Air		76	50 - 132
1,2,4-Trimethylbenzene	98	97.5		ug/m3 Air		99	61 - 145
1,3,5-Trimethylbenzene	98	92.1		ug/m3 Air		94	65 - 136
Vinyl acetate	70	61.7		ug/m3 Air		88	77 - 134
Vinyl chloride	51	51.1		ug/m3 Air		100	69 - 129
m,p-Xylene	170	172		ug/m3 Air		99	75 - 138
o-Xylene	87	84.9		ug/m3 Air		98	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		70 - 130
1,2-Dichloroethane-d4 (Surr)	102		70 - 130
Toluene-d8 (Surr)	106		70 - 130

**Lab Sample ID: LCSD 320-70472/5**

**Matrix: Air**

**Analysis Batch: 70472**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	15.8		ppb v/v		79	71 - 131	1	25
Benzene	20.0	17.4		ppb v/v		87	68 - 128	2	25
Benzyl chloride	20.0	19.9		ppb v/v		100	58 - 120	5	25
Bromodichloromethane	20.0	18.0		ppb v/v		90	65 - 130	0	25
Bromoform	20.0	21.2		ppb v/v		106	64 - 144	5	25
Bromomethane	20.0	19.0		ppb v/v		95	70 - 131	2	25
2-Butanone (MEK)	20.0	17.7		ppb v/v		88	71 - 131	1	25
Carbon disulfide	20.0	15.7		ppb v/v		79	63 - 123	2	25
Carbon tetrachloride	20.0	16.2		ppb v/v		81	67 - 127	2	25
Chlorobenzene	20.0	20.2		ppb v/v		101	70 - 132	5	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-70472/5**

**Matrix: Air**

**Analysis Batch: 70472**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Added	Result	Qualifier				Limits		Limit
Dibromochloromethane	20.0	18.9		ppb v/v		95	68 - 128	6	25
Chloroethane	20.0	20.1		ppb v/v		101	70 - 131	0	25
Chloroform	20.0	16.9		ppb v/v		85	69 - 129	1	25
Chloromethane	20.0	18.5		ppb v/v		92	67 - 127	2	25
1,2-Dibromoethane (EDB)	20.0	18.7		ppb v/v		94	68 - 131	6	25
1,2-Dichlorobenzene	20.0	22.2		ppb v/v		111	73 - 143	6	25
1,3-Dichlorobenzene	20.0	22.7		ppb v/v		114	77 - 136	6	25
1,4-Dichlorobenzene	20.0	23.4		ppb v/v		117	73 - 143	5	25
Dichlorodifluoromethane	20.0	17.8		ppb v/v		89	69 - 129	2	25
1,1-Dichloroethane	20.0	16.4		ppb v/v		82	65 - 125	1	25
1,2-Dichloroethane	20.0	17.5		ppb v/v		87	71 - 131	1	25
1,1-Dichloroethene	20.0	14.9		ppb v/v		74	53 - 128	1	25
cis-1,2-Dichloroethene	20.0	16.7		ppb v/v		84	68 - 128	1	25
trans-1,2-Dichloroethene	20.0	16.2		ppb v/v		81	70 - 130	2	25
1,2-Dichloropropane	20.0	18.4		ppb v/v		92	74 - 128	0	25
cis-1,3-Dichloropropene	20.0	19.8		ppb v/v		99	78 - 132	1	25
trans-1,3-Dichloropropene	20.0	16.2		ppb v/v		81	56 - 136	6	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.0		ppb v/v		90	64 - 124	2	25
Ethylbenzene	20.0	20.1		ppb v/v		100	76 - 136	5	25
4-Ethyltoluene	20.0	19.5		ppb v/v		98	62 - 136	5	25
Hexachlorobutadiene	20.0	17.6		ppb v/v		88	42 - 150	10	25
2-Hexanone	20.0	18.7		ppb v/v		93	70 - 128	6	25
Methylene Chloride	20.0	15.0		ppb v/v		75	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	20.0	17.8		ppb v/v		89	73 - 133	0	25
Styrene	20.0	21.6		ppb v/v		108	76 - 144	5	25
1,1,1,2-Tetrachloroethane	20.0	20.3		ppb v/v		101	75 - 135	5	25
Tetrachloroethene	20.0	18.3		ppb v/v		92	56 - 138	6	25
Toluene	20.0	19.0		ppb v/v		95	71 - 132	0	25
1,2,4-Trichlorobenzene	20.0	20.9		ppb v/v		104	59 - 150	10	25
1,1,1-Trichloroethane	20.0	16.8		ppb v/v		84	65 - 124	1	25
1,1,2-Trichloroethane	20.0	18.6		ppb v/v		93	71 - 131	7	25
Trichloroethene	20.0	18.3		ppb v/v		91	64 - 127	2	25
Trichlorofluoromethane	20.0	17.5		ppb v/v		87	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	15.6		ppb v/v		78	50 - 132	2	25
1,2,4-Trimethylbenzene	20.0	20.8		ppb v/v		104	61 - 145	5	25
1,3,5-Trimethylbenzene	20.0	19.7		ppb v/v		99	65 - 136	5	25
Vinyl acetate	20.0	17.6		ppb v/v		88	77 - 134	1	25
Vinyl chloride	20.0	20.3		ppb v/v		102	69 - 129	2	25
m,p-Xylene	40.0	41.7		ppb v/v		104	75 - 138	5	25
o-Xylene	20.0	20.5		ppb v/v		103	77 - 132	5	25
Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Added	Result	Qualifier				Limits		Limit
Acetone	48	37.5		ug/m3 Air		79	71 - 131	1	25
Benzene	64	55.6		ug/m3 Air		87	68 - 128	2	25
Benzyl chloride	100	103		ug/m3 Air		100	58 - 120	5	25
Bromodichloromethane	130	121		ug/m3 Air		90	65 - 130	0	25
Bromoform	210	219		ug/m3 Air		106	64 - 144	5	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-70472/5

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 70472

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Added	Result	Qualifier				Limits		
Bromomethane	78	73.8		ug/m3 Air		95	70 - 131	2	25
2-Butanone (MEK)	59	52.2		ug/m3 Air		88	71 - 131	1	25
Carbon disulfide	62	48.9		ug/m3 Air		79	63 - 123	2	25
Carbon tetrachloride	130	102		ug/m3 Air		81	67 - 127	2	25
Chlorobenzene	92	93.0		ug/m3 Air		101	70 - 132	5	25
Dibromochloromethane	170	161		ug/m3 Air		95	68 - 128	6	25
Chloroethane	53	53.1		ug/m3 Air		101	70 - 131	0	25
Chloroform	98	82.5		ug/m3 Air		85	69 - 129	1	25
Chloromethane	41	38.2		ug/m3 Air		92	67 - 127	2	25
1,2-Dibromoethane (EDB)	150	144		ug/m3 Air		94	68 - 131	6	25
1,2-Dichlorobenzene	120	134		ug/m3 Air		111	73 - 143	6	25
1,3-Dichlorobenzene	120	137		ug/m3 Air		114	77 - 136	6	25
1,4-Dichlorobenzene	120	141		ug/m3 Air		117	73 - 143	5	25
Dichlorodifluoromethane	99	87.8		ug/m3 Air		89	69 - 129	2	25
1,1-Dichloroethane	81	66.3		ug/m3 Air		82	65 - 125	1	25
1,2-Dichloroethane	81	70.8		ug/m3 Air		87	71 - 131	1	25
1,1-Dichloroethene	79	58.9		ug/m3 Air		74	53 - 128	1	25
cis-1,2-Dichloroethene	79	66.3		ug/m3 Air		84	68 - 128	1	25
trans-1,2-Dichloroethene	79	64.4		ug/m3 Air		81	70 - 130	2	25
1,2-Dichloropropane	92	85.0		ug/m3 Air		92	74 - 128	0	25
cis-1,3-Dichloropropene	91	89.8		ug/m3 Air		99	78 - 132	1	25
trans-1,3-Dichloropropene	91	73.5		ug/m3 Air		81	56 - 136	6	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	126		ug/m3 Air		90	64 - 124	2	25
Ethylbenzene	87	87.2		ug/m3 Air		100	76 - 136	5	25
4-Ethyltoluene	98	95.9		ug/m3 Air		98	62 - 136	5	25
Hexachlorobutadiene	210	188		ug/m3 Air		88	42 - 150	10	25
2-Hexanone	82	76.6		ug/m3 Air		93	70 - 128	6	25
Methylene Chloride	69	52.0		ug/m3 Air		75	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	82	73.0		ug/m3 Air		89	73 - 133	0	25
Styrene	85	91.9		ug/m3 Air		108	76 - 144	5	25
1,1,2,2-Tetrachloroethane	140	139		ug/m3 Air		101	75 - 135	5	25
Tetrachloroethene	140	124		ug/m3 Air		92	56 - 138	6	25
Toluene	75	71.7		ug/m3 Air		95	71 - 132	0	25
1,2,4-Trichlorobenzene	150	155		ug/m3 Air		104	59 - 150	10	25
1,1,1-Trichloroethane	110	91.7		ug/m3 Air		84	65 - 124	1	25
1,1,2-Trichloroethane	110	101		ug/m3 Air		93	71 - 131	7	25
Trichloroethene	110	98.2		ug/m3 Air		91	64 - 127	2	25
Trichlorofluoromethane	110	98.1		ug/m3 Air		87	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	120		ug/m3 Air		78	50 - 132	2	25
1,2,4-Trimethylbenzene	98	102		ug/m3 Air		104	61 - 145	5	25
1,3,5-Trimethylbenzene	98	97.1		ug/m3 Air		99	65 - 136	5	25
Vinyl acetate	70	62.0		ug/m3 Air		88	77 - 134	1	25
Vinyl chloride	51	51.9		ug/m3 Air		102	69 - 129	2	25
m,p-Xylene	170	181		ug/m3 Air		104	75 - 138	5	25
o-Xylene	87	89.2		ug/m3 Air		103	77 - 132	5	25

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-70472/5

Matrix: Air

Analysis Batch: 70472

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	99		70 - 130
1,2-Dichloroethane-d4 (Surr)	101		70 - 130
Toluene-d8 (Surr)	103		70 - 130

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# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Air - GC/MS VOA

### Analysis Batch: 70472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-12340-1	SVE SOUTH PRECARBON	Total/NA	Air	TO-15	
320-12340-2	SVE SOUTH POSTCARBON	Total/NA	Air	TO-15	
320-12340-3	SVE NORTH	Total/NA	Air	TO-15	
320-12340-3 - DL	SVE NORTH	Total/NA	Air	TO-15	
LCS 320-70472/4	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-70472/5	Lab Control Sample Dup	Total/NA	Air	TO-15	
MB 320-70472/7	Method Blank	Total/NA	Air	TO-15	

# Lab Chronicle

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Client Sample ID: SVE SOUTH PRECARBON

Lab Sample ID: 320-12340-1

Date Collected: 03/30/15 13:00

Matrix: Air

Date Received: 04/01/15 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		50	9 mL	250 mL	70472	04/08/15 03:15	TAD	TAL SAC

## Client Sample ID: SVE SOUTH POSTCARBON

Lab Sample ID: 320-12340-2

Date Collected: 03/30/15 13:01

Matrix: Air

Date Received: 04/01/15 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	482 mL	250 mL	70472	04/08/15 04:11	TAD	TAL SAC

## Client Sample ID: SVE NORTH

Lab Sample ID: 320-12340-3

Date Collected: 03/30/15 13:10

Matrix: Air

Date Received: 04/01/15 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		3.03	180 mL	250 mL	70472	04/08/15 05:04	TAD	TAL SAC
Total/NA	Analysis	TO-15	DL	9.09	60 mL	250 mL	70472	04/08/15 08:01	TAD	TAL SAC

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-16
Alaska (UST)	State Program	10	UST-055	12-18-15
Arizona	State Program	9	AZ0708	08-11-15
Arkansas DEQ	State Program	6	88-0691	06-17-15
California	State Program	9	2897	01-31-16
Colorado	State Program	8	N/A	08-31-15
Connecticut	State Program	1	PH-0691	06-30-15
Florida	NELAP	4	E87570	06-30-15
Hawaii	State Program	9	N/A	01-29-16
Illinois	NELAP	5	200060	03-17-16
Kansas	NELAP	7	E-10375	10-31-15
Louisiana	NELAP	6	30612	06-30-15
Michigan	State Program	5	9947	01-31-16
Nevada	State Program	9	CA44	07-31-15
New Jersey	NELAP	2	CA005	06-30-15
New York	NELAP	2	11666	04-01-16
Oregon	NELAP	10	CA200005	01-29-16
Oregon	NELAP Secondary AB	10	E87570	06-30-15
Pennsylvania	NELAP	3	9947	03-31-16
Texas	NELAP	6	T104704399-08-TX	05-31-15
US Fish & Wildlife	Federal		LE148388-0	02-28-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-16
Washington	State Program	10	C581	05-05-15
West Virginia (DW)	State Program	3	9930C	12-31-15
Wyoming	State Program	8	8TMS-Q	01-29-16

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-012	12-26-15
California	State Program	9	2597	09-30-15
Oregon	NELAP	10	OR100021	01-09-16
USDA	Federal		P330-11-00092	04-17-17
Washington	State Program	10	C586	06-23-15

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing- Vancouver SVE

TestAmerica Job ID: 320-12340-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-12340-1	SVE SOUTH PRECARBON	Air	03/30/15 13:00	04/01/15 09:45
320-12340-2	SVE SOUTH POSTCARBON	Air	03/30/15 13:01	04/01/15 09:45
320-12340-3	SVE NORTH	Air	03/30/15 13:10	04/01/15 09:45

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West Sacramento, CA 95605  
Phone 916 374-4378 Fax 916 372-1058

## Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information  
Project Name: **Mustar Vancouver SVE**  
Site/Location: **Mustar Vancouver**  
P.O.#:  
Project Name: **Nustar Vancouver SVE**  
Site/Location: **Mustar Vancouver**  
P.O.#:  
Company Name: **Apex Companies**  
Address: **3015 SW 1st Av.**  
City/State/Zip: **Portland OR, 97201**  
Phone: **503 924 4704**  
FAX: **-**  
Site Contact: **-**  
TA Contact: **-**  
Analysis Turnaround Time:  
Standard (Specific): **X**  
Rush (Specify):

Project Manager: **Stephanie Salisbury**  
Phone: **503 924 4704 X 1925**  
Email: **SSalisbury@ApexCOS.com**

Project Name: **Nustar Vancouver SVE**  
Site/Location: **Mustar Vancouver**  
P.O.#:

Project Name: **Nustar Vancouver SVE**  
Site/Location: **Mustar Vancouver**  
P.O.#:

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15 (Med / Std / Low / SIM)		MA-APH	EPA 30	EPA 25C / 25.3	ASTM D-1946 / 1945 / 3588	EPA 15/16	TO-3	Other (Please specify in notes section)	Sample Type	Sample Specific Notes:						
								TO-15 (Med / Std / Low / SIM)	Other (Please specify in notes section)									Landfill Gas	Soil Gas	Ambient Air	Indoor Air	Other (Please specify in notes section)		
SVE South pre Carbon	3/30/15	1300	1301	-30	-3	-	3400789	X								X	SVE System gas							
SVE South post carbon	3/30/15	1301	1302	-36	-6	-	3400945	X								X	"							
SVE North	3/30/15	1310	1311	-30	-5	-	3400124	X								X	"							



Special Instructions/QC Requirements & Comments:  
**Please email results to: Ssalisbury@apexcos.com**

Samples Shipped by:	Date / Time:	Samples Received by:	Date / Time:
Samples Relinquished by: <b>Joel Matkecheel</b>	Date / Time: <b>3/31/15 1020</b>	Received by: <i>[Signature]</i>	Date / Time: <b>3/31/15 1020</b>
Relinquished by: <b>Clara A. Johnson CTAP</b>	Date / Time: <b>3/31/15 1300</b>	Received by: <i>[Signature]</i>	Date / Time: <b>4/15 9:5</b>
Lab Use Only: <b>Shipper Name: CTAP</b>	Opened by:	Condition:	

JOB # 320-12340  
 Sample # 1

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Client/Project:		VFR ID:		
Canister Serial #:	34000789	Duration:		<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING		PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)		29.8		JMT
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)		14.09	04/02/15	AO
FINAL PRESSURE (PSIA)		25.34	04/02/15	AO
Pressurization Gas:	<input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.80			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.80		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors						
		Date	Instr.	File #		
Canister DF = 1.80		4/7/2015	ATMS7	FINAL DF		
X	Load DF = 0.5555556			=	49.95662803	
	LVf (mLs) 250				50	
	LVi (mLs) 450				1000	
					20	
<hr/>						
Canister DF = 1.80				FINAL DF		
X	Load DF = #DIV/0!			=	#DIV/0!	
	LVf (mLs)				1	
	LVi (mLs)					
<hr/>						
Canister DF = 1.80				FINAL DF		
X	Load DF = #DIV/0!			=	#DIV/0!	
	LVf (mLs)				1	
	LVi (mLs)					



JOB # **320-12340**  
Sample # **2**

Client/Project:		VFR ID:	
Canister Serial #:	34000895	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	13.21	04/02/15	AO	
FINAL PRESSURE (PSIA)	25.48	04/02/15	AO	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	1.93			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.93		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors						
	Date	Instr.	File #			
Canister DF = <b>1.93</b>	<b>4/7/2015</b>	<b>ATMS7</b>	<b>FINAL DF</b>	<b>X</b>	<b>1</b>	<b>= 1.000436611</b>
					Load DF = <b>0.5186722</b>	
					LVf (mLs) <b>250</b>	
					LVi (mLs) <b>482</b>	
					BVf (mLs)	
					Bvi (mLs)	
Canister DF = <b>1.93</b>			<b>FINAL DF</b>	<b>X</b>	<b>1</b>	<b>= #DIV/0!</b>
					Load DF = <b>#DIV/0!</b>	
					LVf (mLs)	
					LVi (mLs)	
					BVf (mLs)	
					Bvi (mLs)	
Canister DF = <b>1.93</b>			<b>FINAL DF</b>	<b>X</b>	<b>1</b>	<b>= #DIV/0!</b>
					Load DF = <b>#DIV/0!</b>	
					LVf (mLs)	
					LVi (mLs)	
					BVf (mLs)	
					Bvi (mLs)	



JOB # **320-12340**  
Sample # **3**

Client/Project:		VFR ID:	
Canister Serial #:	34001124	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	11.73	04/02/15	AO	
FINAL PRESSURE (PSIA)	25.60	04/02/15	AO	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	2.18			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.18		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors							
	Date	Instr.	File #				
Canister DF = <b>2.18</b> X	4/7/2015	ATMS7		=	FINAL DF	<b>3.031164156</b>	
	Load DF = <b>1.3888889</b> X						Bag DF = <b>1</b>
	LVf (mLs) <b>250</b>						BVf (mLs)
	LVi (mLs) <b>180</b>						Bvi (mLs)
Canister DF = <b>2.18</b> X	4/8/2015	MS7		=	FINAL DF	<b>9.093492469</b>	
	Load DF = <b>4.1666667</b> X						Bag DF = <b>1</b>
	LVf (mLs) <b>250</b>						BVf (mLs)
	LVi (mLs) <b>60</b>						Bvi (mLs)
Canister DF = <b>2.18</b> X				=	FINAL DF	<b>#DIV/0!</b>	
	Load DF = <b>#DIV/0!</b> X						Bag DF = <b>1</b>
	LVf (mLs)						BVf (mLs)
	LVi (mLs)						Bvi (mLs)



## Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-12340-1

**Login Number: 12340**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Sadler, Jeremy**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	
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 containers received 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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Canister QC Certification

Certification Type: TD-15 SCAN

Date Cleaned/Batch ID 2/26/15 320-11866

Date of QC 3/10/15

Data File Number MS7031011

CANISTER ID NUMBERS

<u>34001528</u>	<u>34001257</u>	
<u>0090</u>	<u>↓ 0876 *</u>	
<u>0895</u>	<u>8212</u>	
<u>0588</u>	<u>8430</u>	
<u>0789</u>		
<u>1437</u>		
<u>0991</u>		
<u>↓ 1124</u>		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

45 For TD  
 1<sup>st</sup> level Reviewed By:

3/12/15  
 Date:

[Signature]  
 2nd level Reviewed By:

3/12/15  
 Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11866-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000876 Lab Sample ID: 320-11866-10  
 Matrix: Air Lab File ID: MS7031011.d  
 Analysis Method: TO-15 Date Collected: 02/26/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 03/10/2015 21:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 67756 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.21	J B	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11866-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000876 Lab Sample ID: 320-11866-10  
 Matrix: Air Lab File ID: MS7031011.d  
 Analysis Method: TO-15 Date Collected: 02/26/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 03/10/2015 21:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 67756 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	0.064	J B	0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	0.083	J B	0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	0.084	J B	0.40	0.059
100-42-5	Styrene	0.081	J B	0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-11866-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000876 Lab Sample ID: 320-11866-10  
 Matrix: Air Lab File ID: MS7031011.d  
 Analysis Method: TO-15 Date Collected: 02/26/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 03/10/2015 21:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 67756 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	0.31	J	0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	0.19	J B	0.80	0.10
95-47-6	o-Xylene	0.087	J B	0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	90		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	89		70-130
2037-26-5	Toluene-d8 (Surr)	97		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d  
 Lims ID: 320-11866-A-10 Lab Sample ID: 320-11866-10  
 Client ID: 34000876  
 Sample Type: Client  
 Inject. Date: 10-Mar-2015 21:37:30 ALS Bottle#: 6 Worklist Smp#: 24  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-11866-A-10  
 Misc. Info.: 500mL concert  
 Operator ID: GG Instrument ID: ATMS7  
 Method: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\TO15\_ATMS7N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 11-Mar-2015 05:46:48 Calib Date: 10-Mar-2015 10:58:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS7\20150309-20000.b\MS7030922.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK031

First Level Reviewer: duncant

Date: 11-Mar-2015 05:46:48

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.584	11.578	0.006	97	28695	4.00	
* 2 1,4-Difluorobenzene	114	13.737	13.725	0.012	95	131307	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.405	20.393	0.012	88	126417	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.782	12.770	0.012	99	45243	3.57	
\$ 5 Toluene-d8 (Surr)	100	17.108	17.096	0.012	98	87178	3.88	
\$ 6 4-Bromofluorobenzene (Surr	95	22.972	22.966	0.006	93	81878	3.61	
32 Acetone	43	6.784	6.735	0.049	94	4010	0.2126	
65 Trichloroethene	130	14.486	14.474	0.012	95	5079	0.3149	
73 n-Octane	43	17.187	17.169	0.018	1	3289	0.0828	
86 Ethylbenzene	91	20.679	20.661	0.018	92	3544	0.0636	
87 m-Xylene & p-Xylene	91	20.867	20.849	0.018	97	8561	0.1950	
88 o-Xylene	91	21.756	21.750	0.006	94	3834	0.0874	
89 Styrene	104	21.798	21.780	0.018	88	2443	0.0806	
92 Isopropylbenzene	120	22.553	22.547	0.006	94	1067	0.0673	
93 1,1,2,2-Tetrachloroethane	83	22.747	22.741	0.006	1	1217	0.0433	
99 N-Propylbenzene	91	23.404	23.386	0.018	97	6032	0.0840	
102 4-Ethyltoluene	120	23.648	23.630	0.018	97	2836	0.1566	
104 1,3,5-Trimethylbenzene	120	23.733	23.727	0.006	31	2155	0.0886	
105 Alpha Methyl Styrene	118	24.317	24.305	0.012	73	1209	0.0510	
106 tert-Butylbenzene	91	24.457	24.457	0.000	94	2253	0.0603	
107 1,2,4-Trimethylbenzene	120	24.536	24.518	0.018	88	912	0.0414	
108 sec-Butylbenzene	105	24.907	24.901	0.006	96	4448	0.0609	
109 4-Isopropyltoluene	119	25.205	25.187	0.018	1	2795	0.0447	
110 1,3-Dichlorobenzene	146	25.290	25.272	0.018	74	2008	0.0622	
111 1,4-Dichlorobenzene	146	25.485	25.473	0.012	7	1868	0.0594	
116 1,2-Dichlorobenzene	146	26.209	26.197	0.012	94	2565	0.0834	
119 1,2,4-Trichlorobenzene	180	29.555	29.518	0.037	1	608	0.0240	
120 Hexachlorobutadiene	225	29.895	29.883	0.012	82	1261	0.0430	
121 Naphthalene	128	30.023	29.956	0.067	1	3269	0.0519	



Reagents:

VASUISIM\_00152

Amount Added: 50.00

Units: mL

Run Reagent

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- 15
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- 17

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Operator ID: GG

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Worklist Smp#: 24

Client ID: 34000876

Purge Vol: 5.000 mL

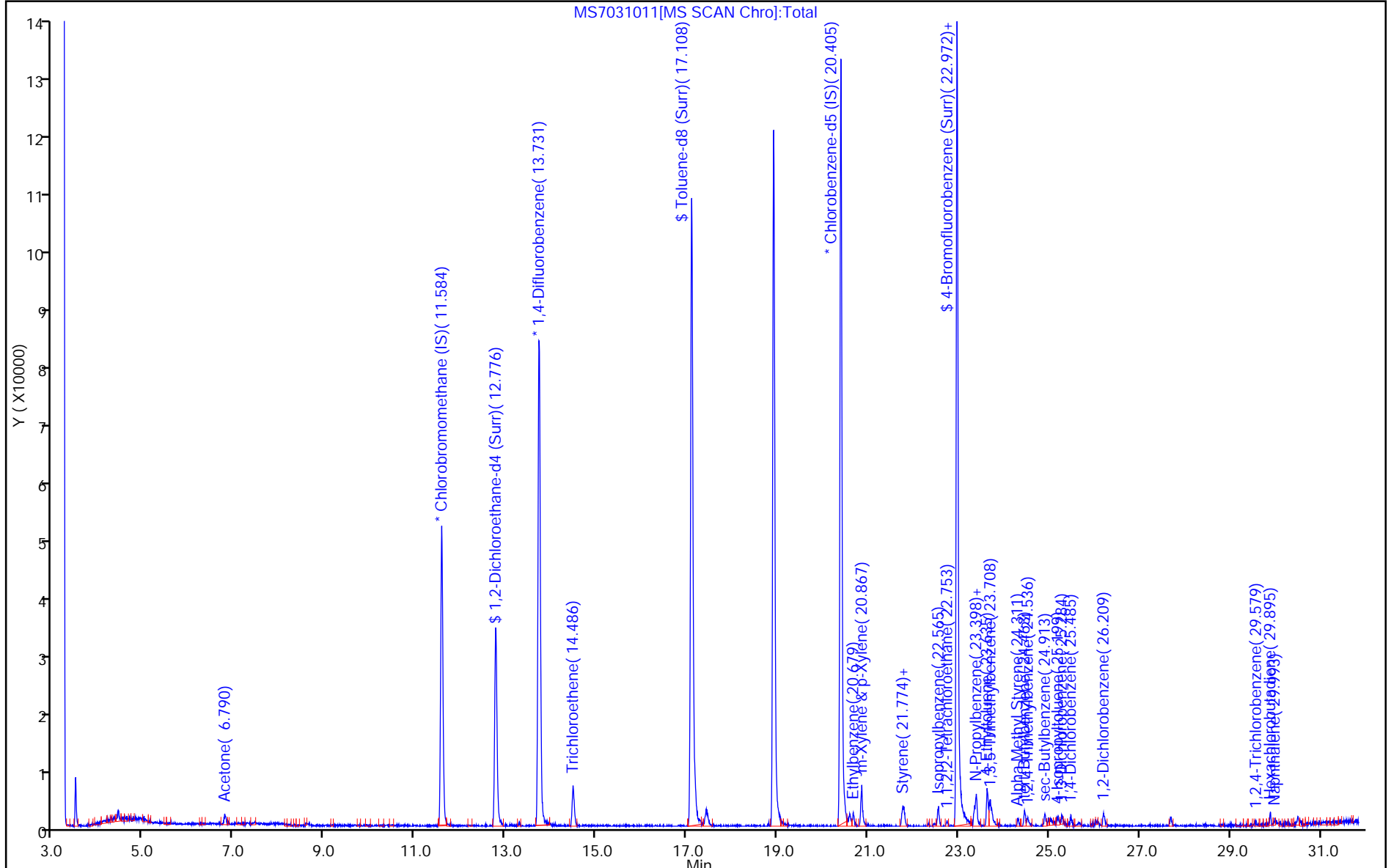
Dil. Factor: 1.0000

ALS Bottle#: 6

Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

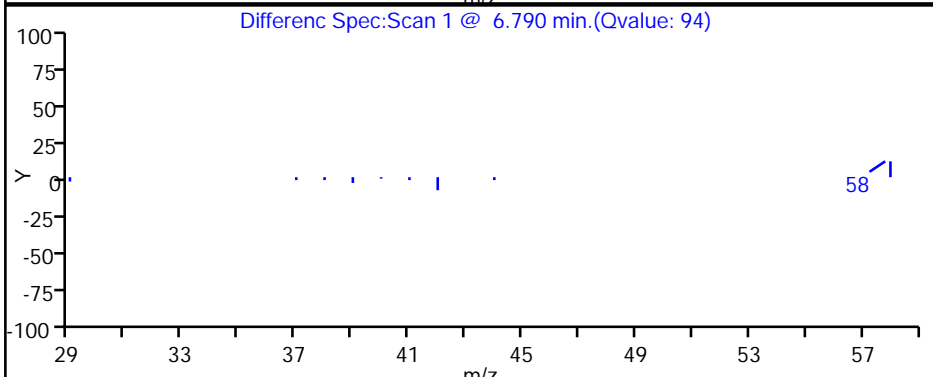
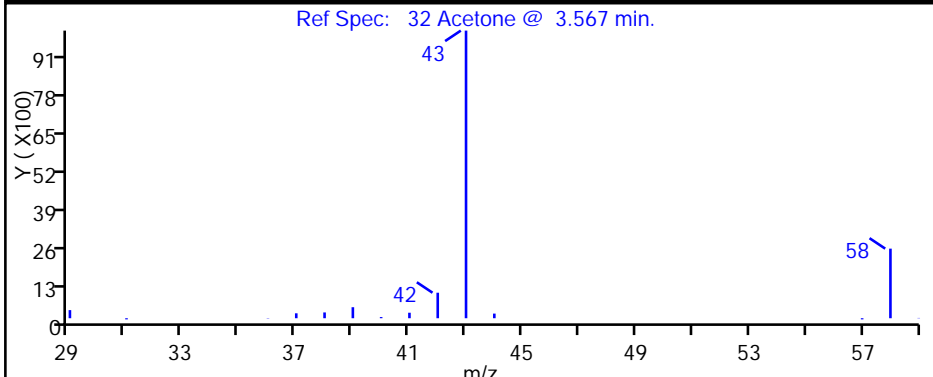
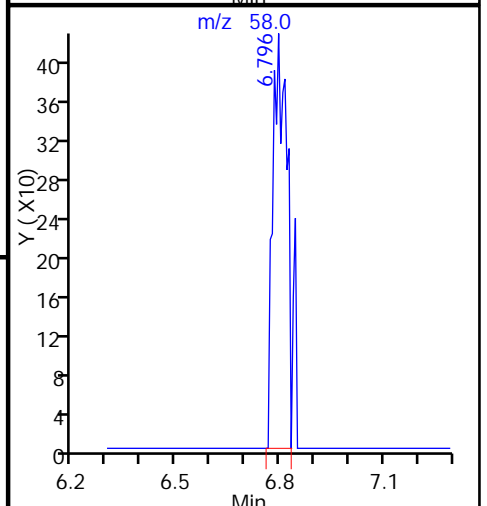
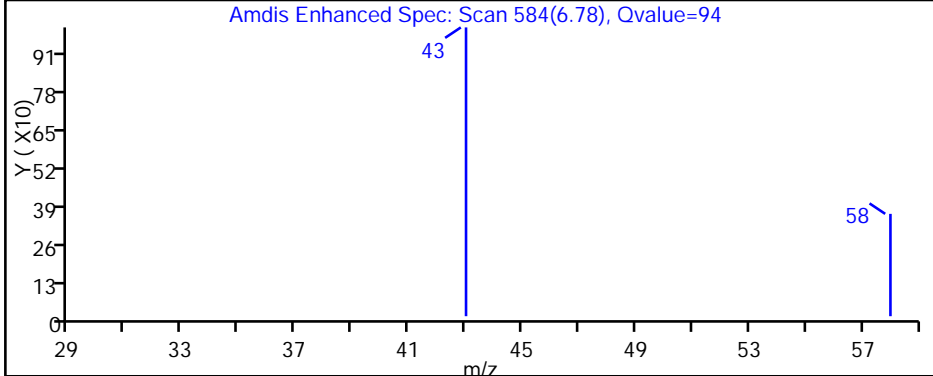
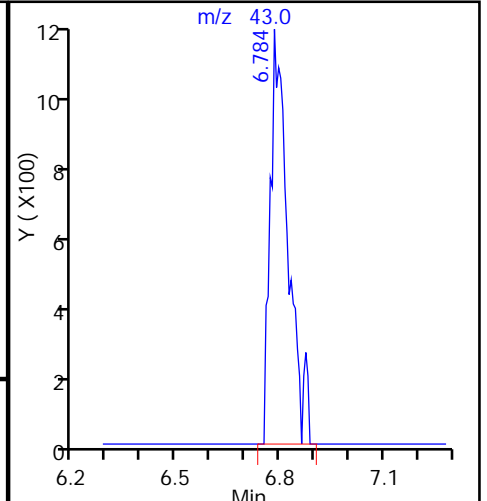
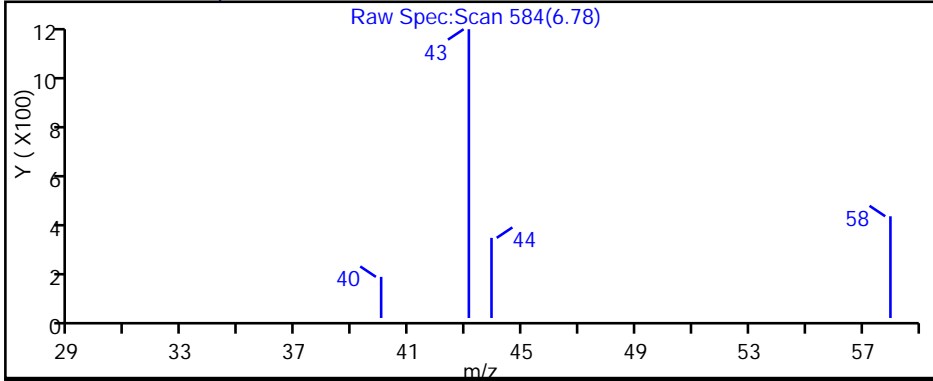
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

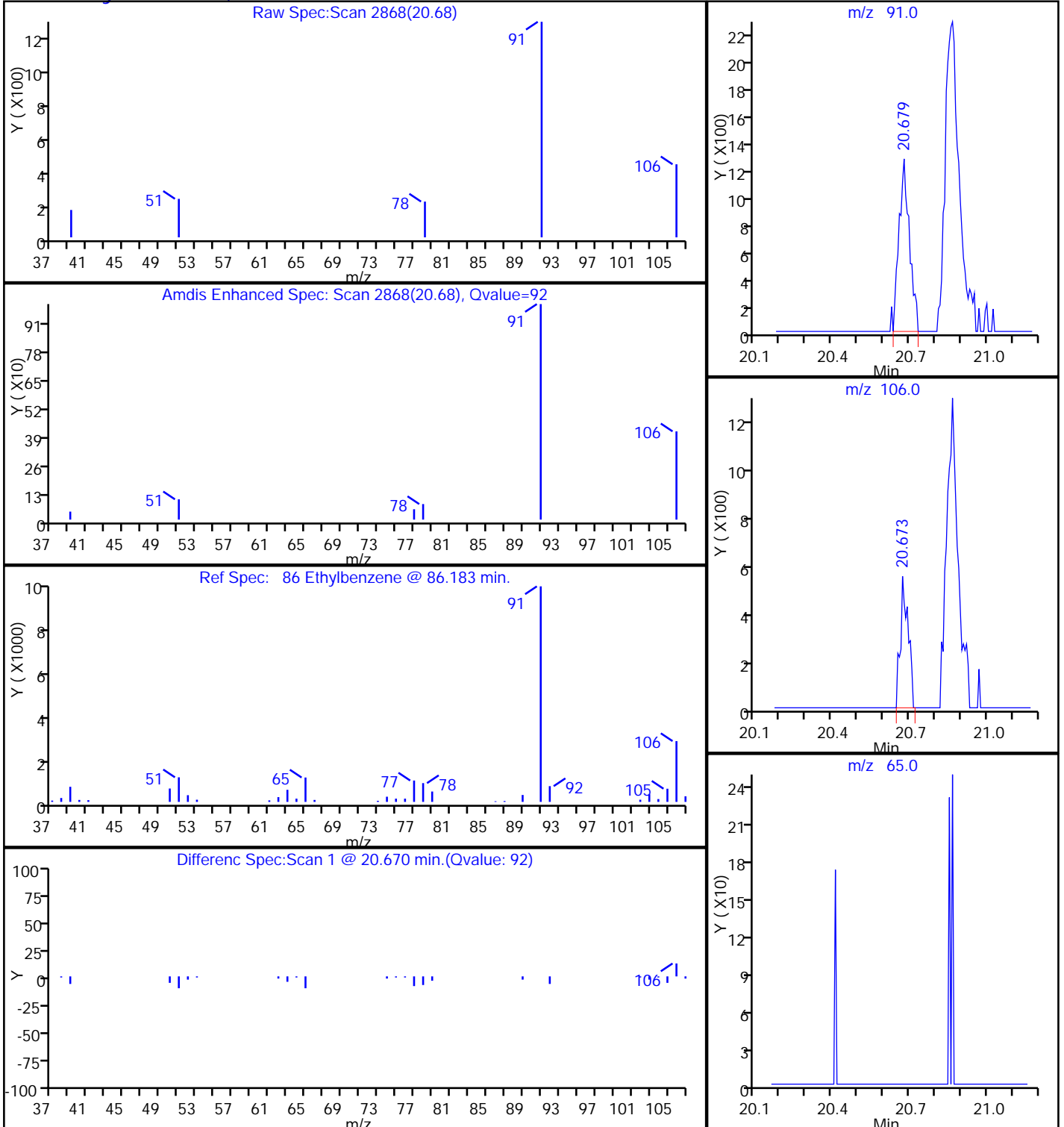
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

86 Ethylbenzene, CAS: 100-41-4



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

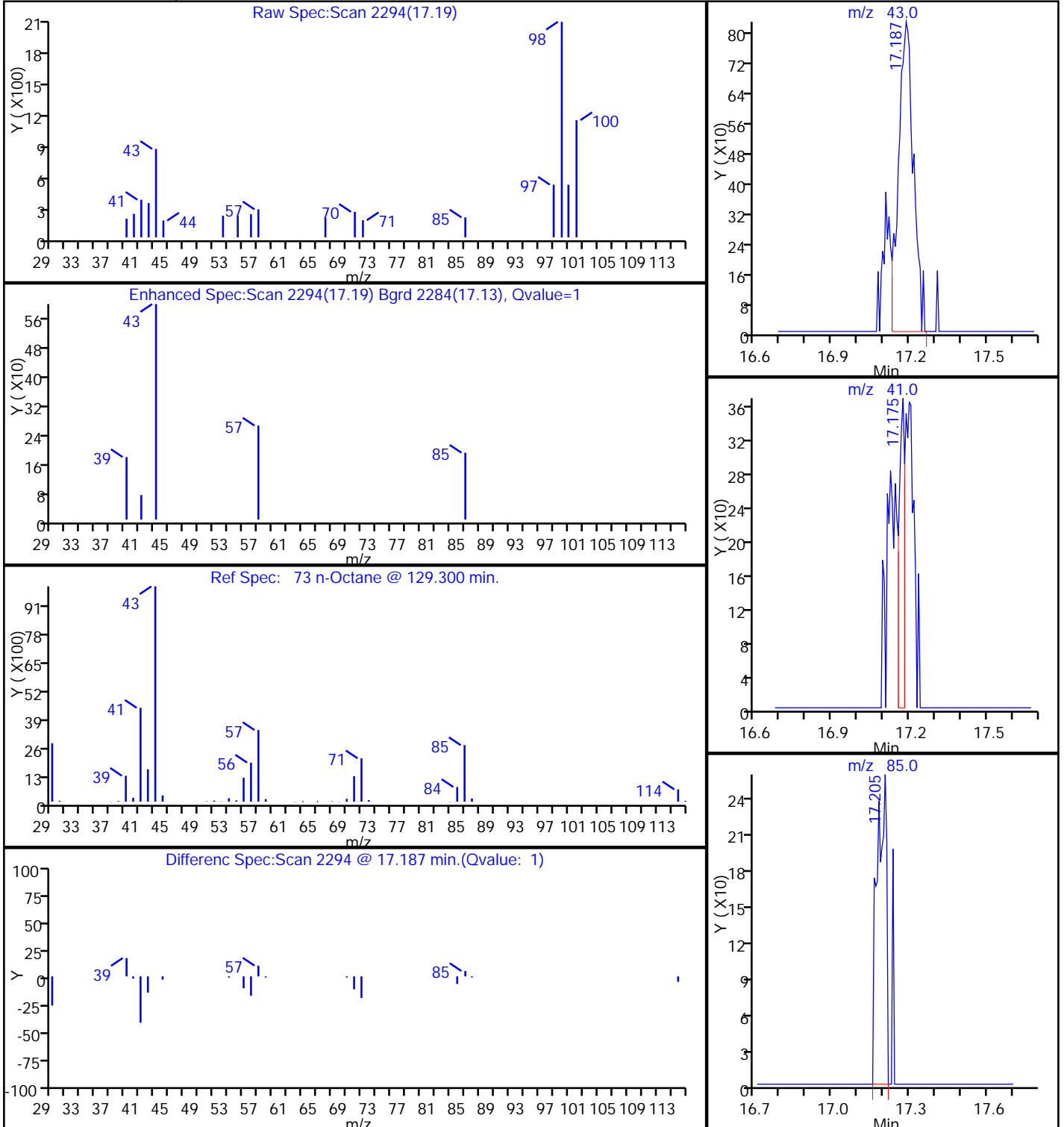
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

73 n-Octane, CAS: 111-65-9



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

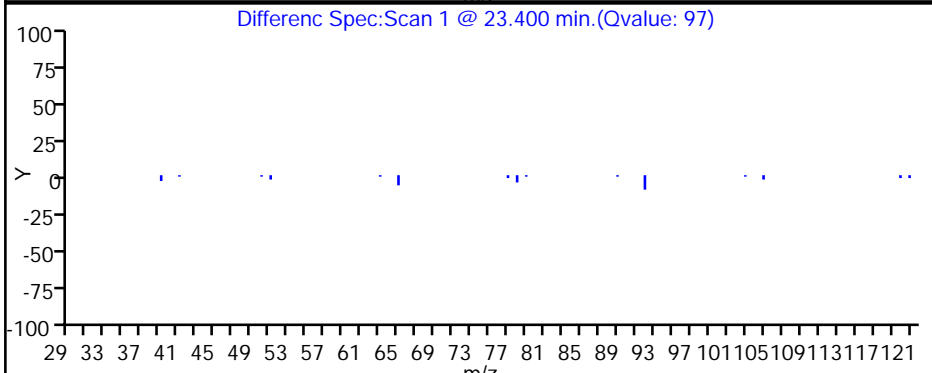
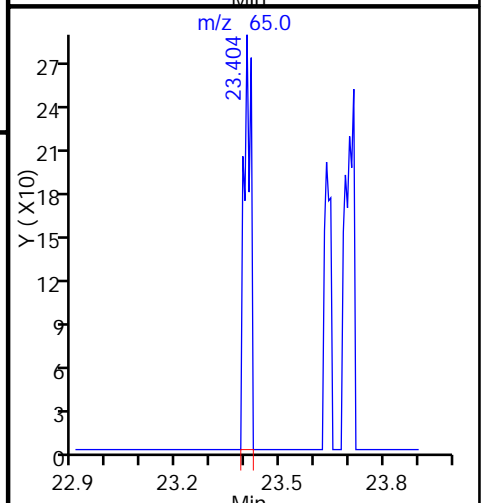
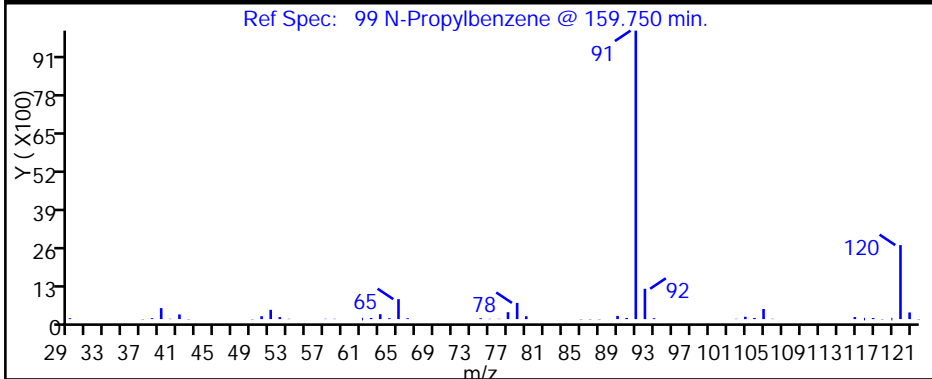
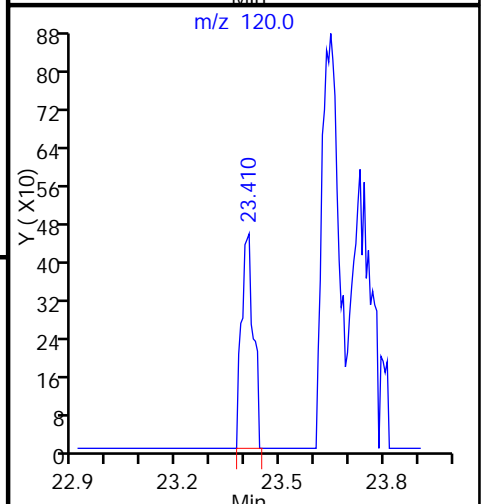
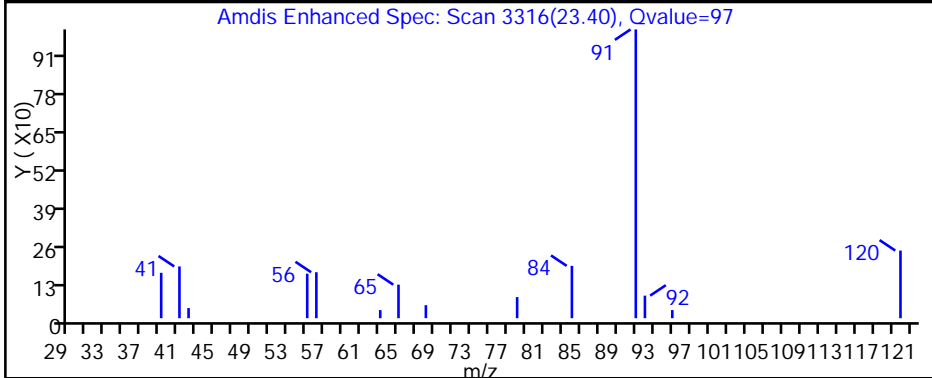
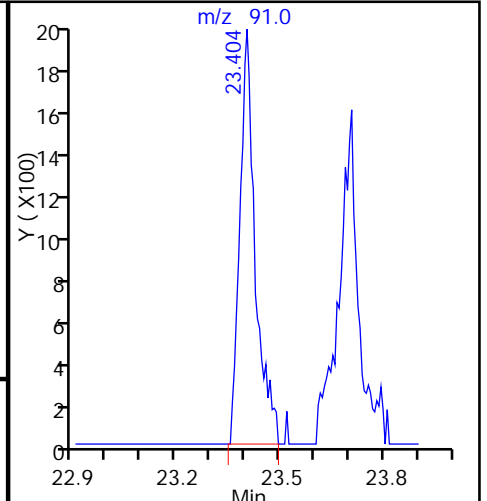
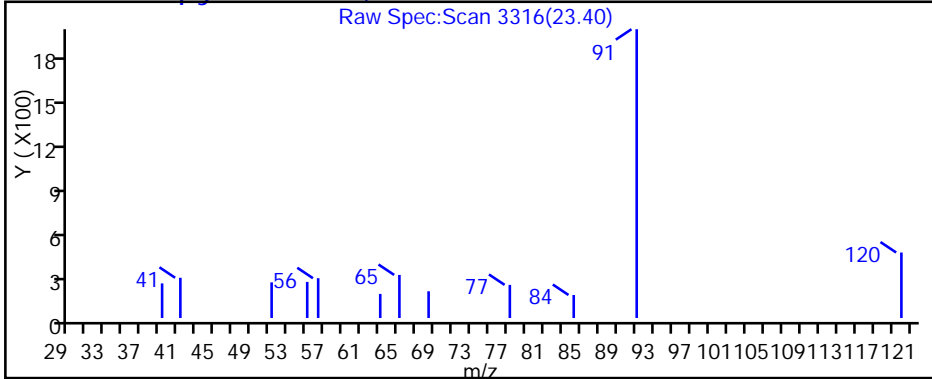
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

99 N-Propylbenzene, CAS: 103-65-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

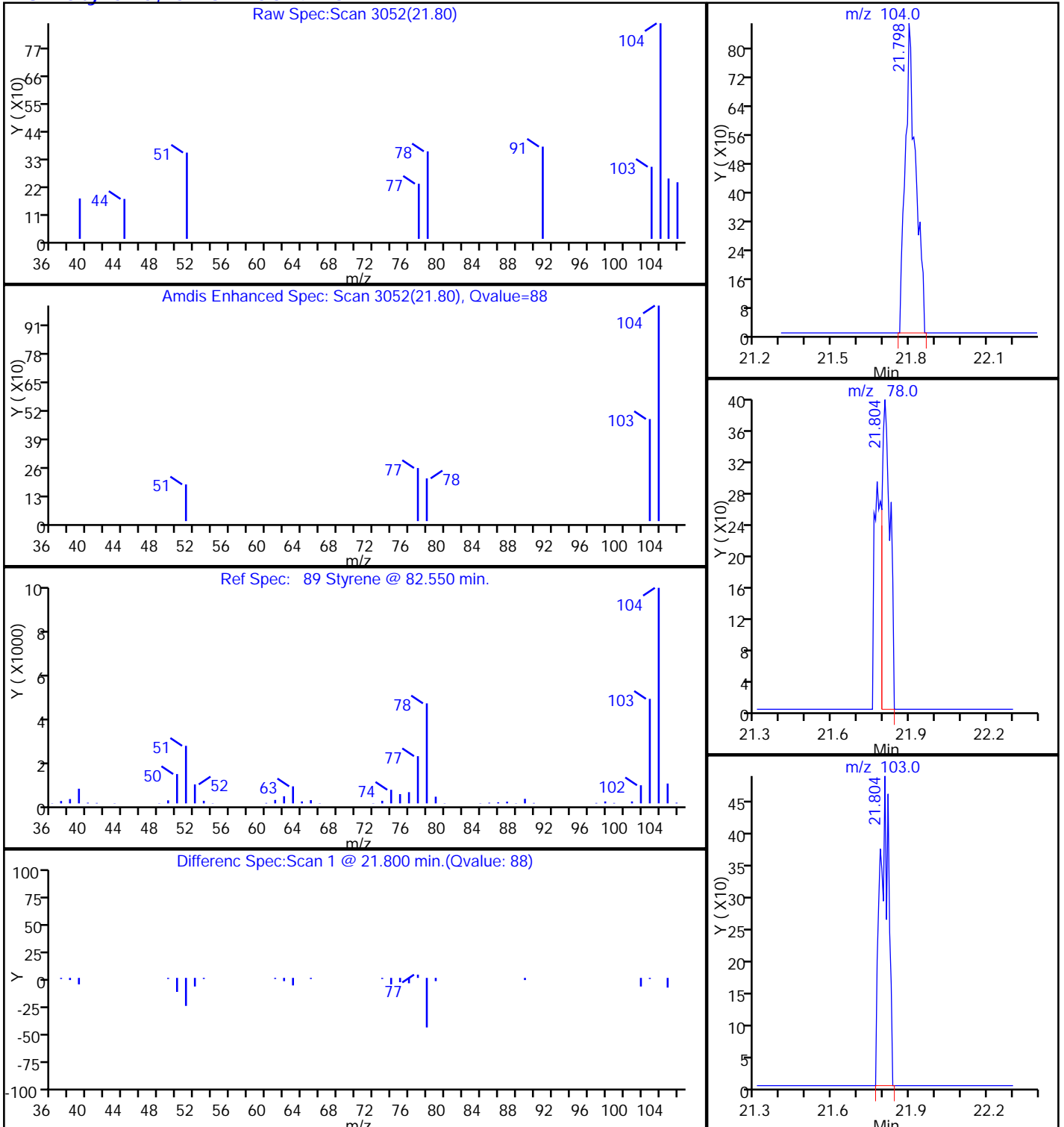
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

89 Styrene, CAS: 100-42-5



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

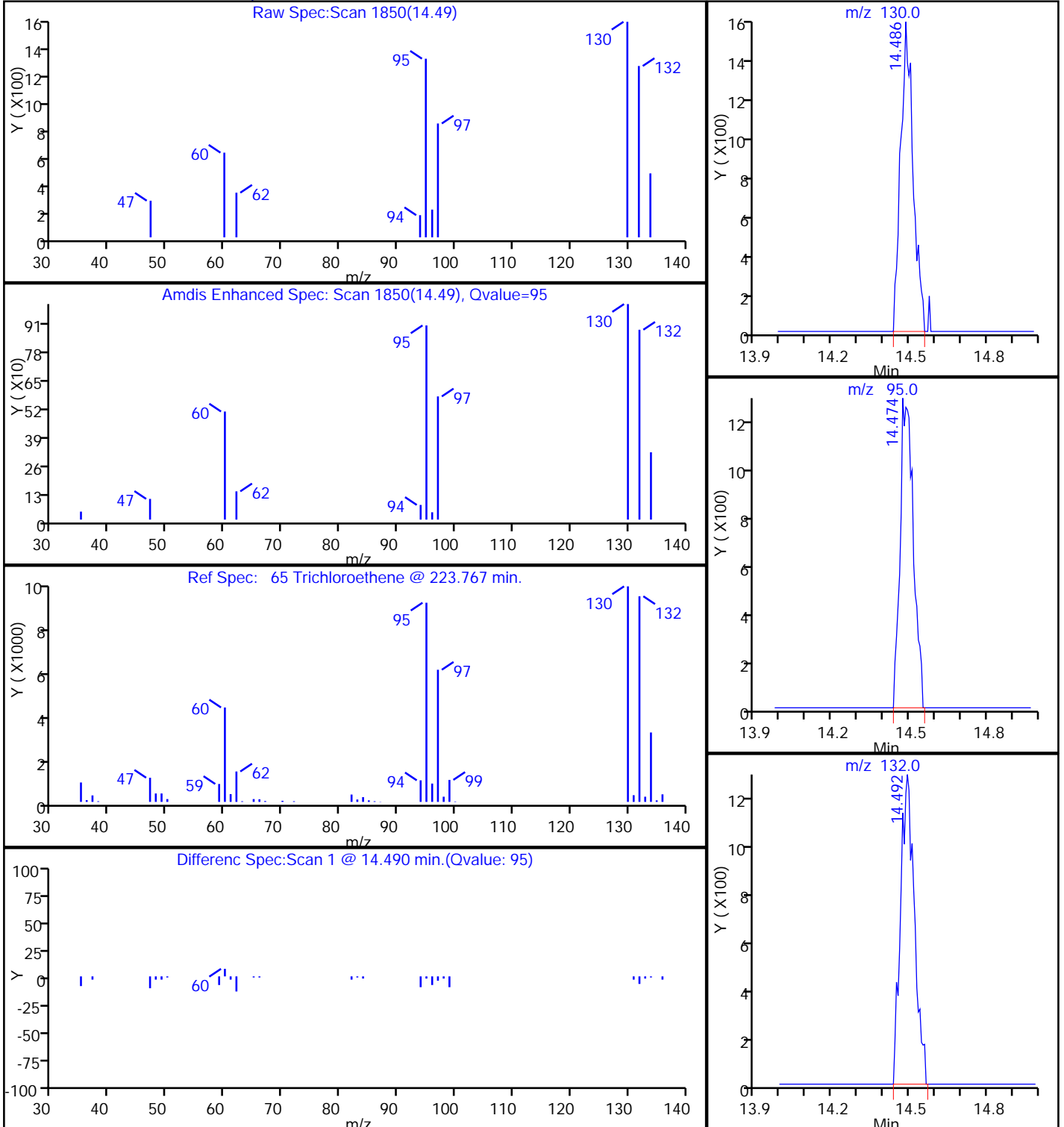
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

65 Trichloroethene, CAS: 79-01-6





TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

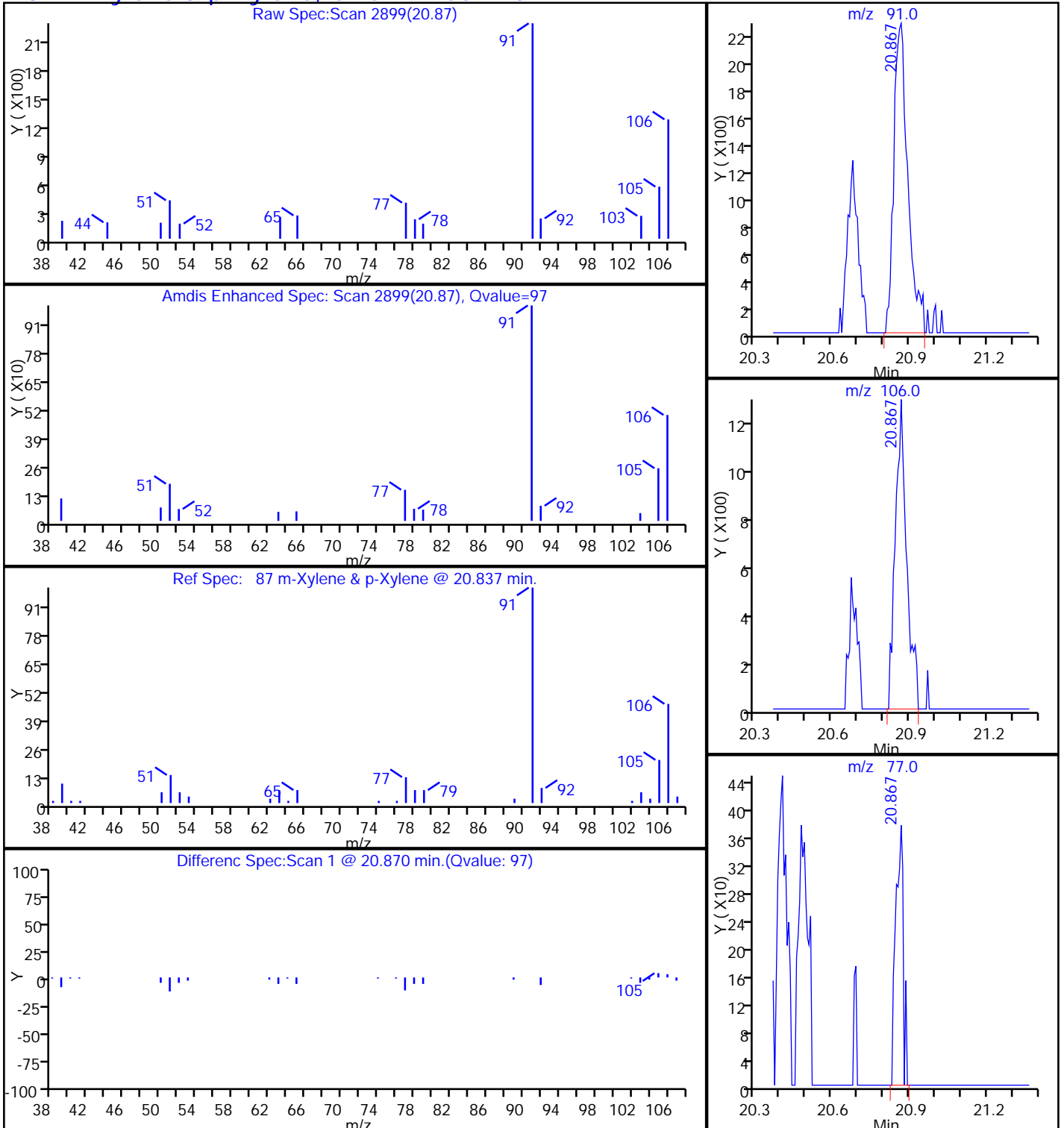
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

87 m-Xylene & p-Xylene, CAS: 179601-23-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150310-20053.b\MS7031011.d

Injection Date: 10-Mar-2015 21:37:30

Instrument ID: ATMS7

Lims ID: 320-11866-A-10

Lab Sample ID: 320-11866-10

Client ID: 34000876

Operator ID: GG

ALS Bottle#: 6 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

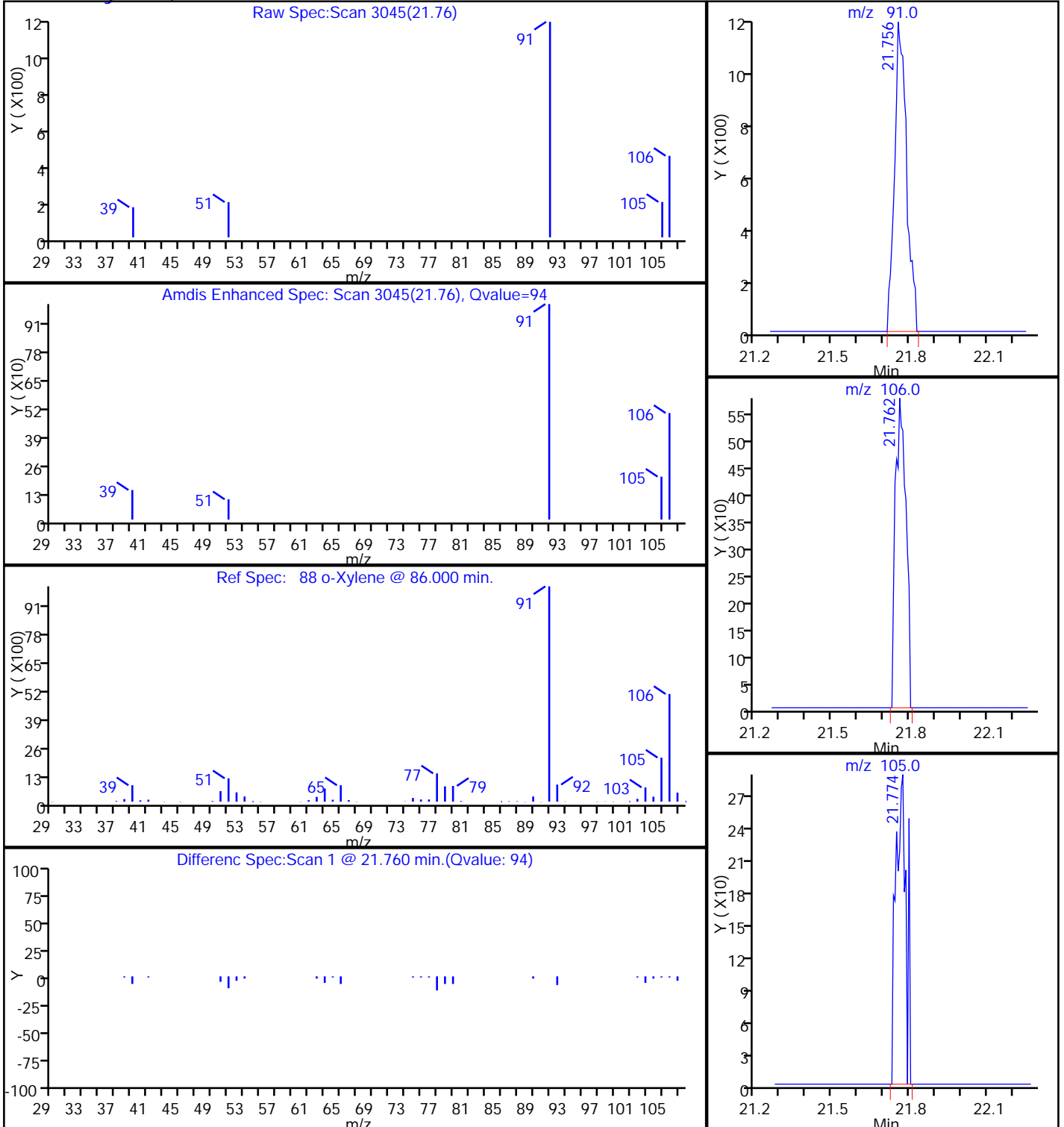
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

88 o-Xylene, CAS: 95-47-6



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-12724-1  
Client Project/Site: NuStar Vapor Testing

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
5/7/2015 2:01:02 PM

Sarah Murphy, Project Manager I  
(253)922-2310  
[sarah.murphy@testamericainc.com](mailto:sarah.murphy@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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

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

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

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## Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

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**Job ID: 320-12724-1**

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**Laboratory: TestAmerica Sacramento**

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**Narrative**

**Job Narrative**  
320-12724-1

**Comments**

No additional comments.

**Receipt**

The samples were received on 4/28/2015 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

**Air - GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Client Sample ID: SVE S PRE CARBON

Lab Sample ID: 320-12724-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	43		12		ppb v/v	30.6		TO-15	Total/NA
Tetrachloroethene	790		12		ppb v/v	30.6		TO-15	Total/NA
Trichloroethene	76		12		ppb v/v	30.6		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	170		49		ug/m3 Air	30.6		TO-15	Total/NA
Tetrachloroethene	5400		83		ug/m3 Air	30.6		TO-15	Total/NA
Trichloroethene	410		66		ug/m3 Air	30.6		TO-15	Total/NA

## Client Sample ID: SVE S POST CARBON

Lab Sample ID: 320-12724-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	97		2.0		ppb v/v	5.1		TO-15	Total/NA
Trichloroethene	3.5		2.0		ppb v/v	5.1		TO-15	Total/NA
m,p-Xylene	4.2		4.1		ppb v/v	5.1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	660		14		ug/m3 Air	5.1		TO-15	Total/NA
Trichloroethene	19		11		ug/m3 Air	5.1		TO-15	Total/NA
m,p-Xylene	18		18		ug/m3 Air	5.1		TO-15	Total/NA

## Client Sample ID: SVE N

Lab Sample ID: 320-12724-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	81		2.1		ppb v/v	5.2		TO-15	Total/NA
Trichloroethene	9.4		2.1		ppb v/v	5.2		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	550		14		ug/m3 Air	5.2		TO-15	Total/NA
Trichloroethene	50		11		ug/m3 Air	5.2		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

**Client Sample ID: SVE S PRE CARBON**

**Lab Sample ID: 320-12724-1**

Date Collected: 04/24/15 03:30

Matrix: Air

Date Received: 04/28/15 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		150		ppb v/v			05/02/15 04:46	30.6
Benzene	ND		12		ppb v/v			05/02/15 04:46	30.6
Benzyl chloride	ND		24		ppb v/v			05/02/15 04:46	30.6
Bromodichloromethane	ND		9.2		ppb v/v			05/02/15 04:46	30.6
Bromoform	ND		12		ppb v/v			05/02/15 04:46	30.6
Bromomethane	ND		24		ppb v/v			05/02/15 04:46	30.6
2-Butanone (MEK)	ND		24		ppb v/v			05/02/15 04:46	30.6
Carbon disulfide	ND		24		ppb v/v			05/02/15 04:46	30.6
Carbon tetrachloride	ND		24		ppb v/v			05/02/15 04:46	30.6
Chlorobenzene	ND		9.2		ppb v/v			05/02/15 04:46	30.6
Dibromochloromethane	ND		12		ppb v/v			05/02/15 04:46	30.6
Chloroethane	ND		24		ppb v/v			05/02/15 04:46	30.6
Chloroform	ND		9.2		ppb v/v			05/02/15 04:46	30.6
Chloromethane	ND		24		ppb v/v			05/02/15 04:46	30.6
1,2-Dibromoethane (EDB)	ND		24		ppb v/v			05/02/15 04:46	30.6
1,2-Dichlorobenzene	ND		12		ppb v/v			05/02/15 04:46	30.6
1,3-Dichlorobenzene	ND		12		ppb v/v			05/02/15 04:46	30.6
1,4-Dichlorobenzene	ND		12		ppb v/v			05/02/15 04:46	30.6
Dichlorodifluoromethane	ND		12		ppb v/v			05/02/15 04:46	30.6
1,1-Dichloroethane	ND		9.2		ppb v/v			05/02/15 04:46	30.6
1,2-Dichloroethane	ND		24		ppb v/v			05/02/15 04:46	30.6
1,1-Dichloroethene	ND		24		ppb v/v			05/02/15 04:46	30.6
<b>cis-1,2-Dichloroethene</b>	<b>43</b>		12		ppb v/v			05/02/15 04:46	30.6
trans-1,2-Dichloroethene	ND		12		ppb v/v			05/02/15 04:46	30.6
1,2-Dichloropropane	ND		12		ppb v/v			05/02/15 04:46	30.6
cis-1,3-Dichloropropene	ND		12		ppb v/v			05/02/15 04:46	30.6
trans-1,3-Dichloropropene	ND		12		ppb v/v			05/02/15 04:46	30.6
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		12		ppb v/v			05/02/15 04:46	30.6
Ethylbenzene	ND		12		ppb v/v			05/02/15 04:46	30.6
4-Ethyltoluene	ND		12		ppb v/v			05/02/15 04:46	30.6
Hexachlorobutadiene	ND		61		ppb v/v			05/02/15 04:46	30.6
2-Hexanone	ND		12		ppb v/v			05/02/15 04:46	30.6
Methylene Chloride	ND		12		ppb v/v			05/02/15 04:46	30.6
4-Methyl-2-pentanone (MIBK)	ND		12		ppb v/v			05/02/15 04:46	30.6
Styrene	ND		12		ppb v/v			05/02/15 04:46	30.6
1,1,2,2-Tetrachloroethane	ND		12		ppb v/v			05/02/15 04:46	30.6
<b>Tetrachloroethene</b>	<b>790</b>		12		ppb v/v			05/02/15 04:46	30.6
Toluene	ND		12		ppb v/v			05/02/15 04:46	30.6
1,2,4-Trichlorobenzene	ND		61		ppb v/v			05/02/15 04:46	30.6
1,1,1-Trichloroethane	ND		9.2		ppb v/v			05/02/15 04:46	30.6
1,1,2-Trichloroethane	ND		12		ppb v/v			05/02/15 04:46	30.6
<b>Trichloroethene</b>	<b>76</b>		12		ppb v/v			05/02/15 04:46	30.6
Trichlorofluoromethane	ND		12		ppb v/v			05/02/15 04:46	30.6
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		12		ppb v/v			05/02/15 04:46	30.6
1,2,4-Trimethylbenzene	ND		24		ppb v/v			05/02/15 04:46	30.6
1,3,5-Trimethylbenzene	ND		12		ppb v/v			05/02/15 04:46	30.6
Vinyl acetate	ND		24		ppb v/v			05/02/15 04:46	30.6
Vinyl chloride	ND		12		ppb v/v			05/02/15 04:46	30.6

TestAmerica Sacramento



# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

**Client Sample ID: SVE S PRE CARBON**

**Lab Sample ID: 320-12724-1**

Date Collected: 04/24/15 03:30

Matrix: Air

Date Received: 04/28/15 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		24		ppb v/v			05/02/15 04:46	30.6
o-Xylene	ND		12		ppb v/v			05/02/15 04:46	30.6
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		360		ug/m3 Air			05/02/15 04:46	30.6
Benzene	ND		39		ug/m3 Air			05/02/15 04:46	30.6
Benzyl chloride	ND		130		ug/m3 Air			05/02/15 04:46	30.6
Bromodichloromethane	ND		62		ug/m3 Air			05/02/15 04:46	30.6
Bromoform	ND		130		ug/m3 Air			05/02/15 04:46	30.6
Bromomethane	ND		95		ug/m3 Air			05/02/15 04:46	30.6
2-Butanone (MEK)	ND		72		ug/m3 Air			05/02/15 04:46	30.6
Carbon disulfide	ND		76		ug/m3 Air			05/02/15 04:46	30.6
Carbon tetrachloride	ND		150		ug/m3 Air			05/02/15 04:46	30.6
Chlorobenzene	ND		42		ug/m3 Air			05/02/15 04:46	30.6
Dibromochloromethane	ND		100		ug/m3 Air			05/02/15 04:46	30.6
Chloroethane	ND		65		ug/m3 Air			05/02/15 04:46	30.6
Chloroform	ND		45		ug/m3 Air			05/02/15 04:46	30.6
Chloromethane	ND		51		ug/m3 Air			05/02/15 04:46	30.6
1,2-Dibromoethane (EDB)	ND		190		ug/m3 Air			05/02/15 04:46	30.6
1,2-Dichlorobenzene	ND		74		ug/m3 Air			05/02/15 04:46	30.6
1,3-Dichlorobenzene	ND		74		ug/m3 Air			05/02/15 04:46	30.6
1,4-Dichlorobenzene	ND		74		ug/m3 Air			05/02/15 04:46	30.6
Dichlorodifluoromethane	ND		61		ug/m3 Air			05/02/15 04:46	30.6
1,1-Dichloroethane	ND		37		ug/m3 Air			05/02/15 04:46	30.6
1,2-Dichloroethane	ND		99		ug/m3 Air			05/02/15 04:46	30.6
1,1-Dichloroethene	ND		97		ug/m3 Air			05/02/15 04:46	30.6
<b>cis-1,2-Dichloroethene</b>	<b>170</b>		49		ug/m3 Air			05/02/15 04:46	30.6
trans-1,2-Dichloroethene	ND		49		ug/m3 Air			05/02/15 04:46	30.6
1,2-Dichloropropane	ND		57		ug/m3 Air			05/02/15 04:46	30.6
cis-1,3-Dichloropropene	ND		56		ug/m3 Air			05/02/15 04:46	30.6
trans-1,3-Dichloropropene	ND		56		ug/m3 Air			05/02/15 04:46	30.6
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		86		ug/m3 Air			05/02/15 04:46	30.6
Ethylbenzene	ND		53		ug/m3 Air			05/02/15 04:46	30.6
4-Ethyltoluene	ND		60		ug/m3 Air			05/02/15 04:46	30.6
Hexachlorobutadiene	ND		650		ug/m3 Air			05/02/15 04:46	30.6
2-Hexanone	ND		50		ug/m3 Air			05/02/15 04:46	30.6
Methylene Chloride	ND		43		ug/m3 Air			05/02/15 04:46	30.6
4-Methyl-2-pentanone (MIBK)	ND		50		ug/m3 Air			05/02/15 04:46	30.6
Styrene	ND		52		ug/m3 Air			05/02/15 04:46	30.6
1,1,2,2-Tetrachloroethane	ND		84		ug/m3 Air			05/02/15 04:46	30.6
<b>Tetrachloroethene</b>	<b>5400</b>		83		ug/m3 Air			05/02/15 04:46	30.6
Toluene	ND		46		ug/m3 Air			05/02/15 04:46	30.6
1,2,4-Trichlorobenzene	ND		450		ug/m3 Air			05/02/15 04:46	30.6
1,1,1-Trichloroethane	ND		50		ug/m3 Air			05/02/15 04:46	30.6
1,1,2-Trichloroethane	ND		67		ug/m3 Air			05/02/15 04:46	30.6
<b>Trichloroethene</b>	<b>410</b>		66		ug/m3 Air			05/02/15 04:46	30.6
Trichlorofluoromethane	ND		69		ug/m3 Air			05/02/15 04:46	30.6
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		94		ug/m3 Air			05/02/15 04:46	30.6
1,2,4-Trimethylbenzene	ND		120		ug/m3 Air			05/02/15 04:46	30.6

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Client Sample ID: SVE S PRE CARBON

Lab Sample ID: 320-12724-1

Date Collected: 04/24/15 03:30

Matrix: Air

Date Received: 04/28/15 09:30

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		60		ug/m3 Air			05/02/15 04:46	30.6
Vinyl acetate	ND		86		ug/m3 Air			05/02/15 04:46	30.6
Vinyl chloride	ND		31		ug/m3 Air			05/02/15 04:46	30.6
m,p-Xylene	ND		110		ug/m3 Air			05/02/15 04:46	30.6
o-Xylene	ND		53		ug/m3 Air			05/02/15 04:46	30.6
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		70 - 130					05/02/15 04:46	30.6
1,2-Dichloroethane-d4 (Surr)	94		70 - 130					05/02/15 04:46	30.6
Toluene-d8 (Surr)	103		70 - 130					05/02/15 04:46	30.6

## Client Sample ID: SVE S POST CARBON

Lab Sample ID: 320-12724-2

Date Collected: 04/24/15 03:40

Matrix: Air

Date Received: 04/28/15 09:30

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		26		ppb v/v			05/02/15 05:38	5.1
Benzene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Benzyl chloride	ND		4.1		ppb v/v			05/02/15 05:38	5.1
Bromodichloromethane	ND		1.5		ppb v/v			05/02/15 05:38	5.1
Bromoform	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Bromomethane	ND		4.1		ppb v/v			05/02/15 05:38	5.1
2-Butanone (MEK)	ND		4.1		ppb v/v			05/02/15 05:38	5.1
Carbon disulfide	ND		4.1		ppb v/v			05/02/15 05:38	5.1
Carbon tetrachloride	ND		4.1		ppb v/v			05/02/15 05:38	5.1
Chlorobenzene	ND		1.5		ppb v/v			05/02/15 05:38	5.1
Dibromochloromethane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Chloroethane	ND		4.1		ppb v/v			05/02/15 05:38	5.1
Chloroform	ND		1.5		ppb v/v			05/02/15 05:38	5.1
Chloromethane	ND		4.1		ppb v/v			05/02/15 05:38	5.1
1,2-Dibromoethane (EDB)	ND		4.1		ppb v/v			05/02/15 05:38	5.1
1,2-Dichlorobenzene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,3-Dichlorobenzene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,4-Dichlorobenzene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Dichlorodifluoromethane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,1-Dichloroethane	ND		1.5		ppb v/v			05/02/15 05:38	5.1
1,2-Dichloroethane	ND		4.1		ppb v/v			05/02/15 05:38	5.1
1,1-Dichloroethene	ND		4.1		ppb v/v			05/02/15 05:38	5.1
cis-1,2-Dichloroethene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
trans-1,2-Dichloroethene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,2-Dichloropropane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
cis-1,3-Dichloropropene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
trans-1,3-Dichloropropene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Ethylbenzene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
4-Ethyltoluene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Hexachlorobutadiene	ND		10		ppb v/v			05/02/15 05:38	5.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

**Client Sample ID: SVE S POST CARBON**

**Lab Sample ID: 320-12724-2**

Date Collected: 04/24/15 03:40

Matrix: Air

Date Received: 04/28/15 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Methylene Chloride	ND		2.0		ppb v/v			05/02/15 05:38	5.1
4-Methyl-2-pentanone (MIBK)	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Styrene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,1,2,2-Tetrachloroethane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
<b>Tetrachloroethene</b>	<b>97</b>		2.0		ppb v/v			05/02/15 05:38	5.1
Toluene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,2,4-Trichlorobenzene	ND		10		ppb v/v			05/02/15 05:38	5.1
1,1,1-Trichloroethane	ND		1.5		ppb v/v			05/02/15 05:38	5.1
1,1,2-Trichloroethane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
<b>Trichloroethene</b>	<b>3.5</b>		2.0		ppb v/v			05/02/15 05:38	5.1
Trichlorofluoromethane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0		ppb v/v			05/02/15 05:38	5.1
1,2,4-Trimethylbenzene	ND		4.1		ppb v/v			05/02/15 05:38	5.1
1,3,5-Trimethylbenzene	ND		2.0		ppb v/v			05/02/15 05:38	5.1
Vinyl acetate	ND		4.1		ppb v/v			05/02/15 05:38	5.1
Vinyl chloride	ND		2.0		ppb v/v			05/02/15 05:38	5.1
<b>m,p-Xylene</b>	<b>4.2</b>		4.1		ppb v/v			05/02/15 05:38	5.1
o-Xylene	ND		2.0		ppb v/v			05/02/15 05:38	5.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		61		ug/m3 Air			05/02/15 05:38	5.1
Benzene	ND		6.5		ug/m3 Air			05/02/15 05:38	5.1
Benzyl chloride	ND		21		ug/m3 Air			05/02/15 05:38	5.1
Bromodichloromethane	ND		10		ug/m3 Air			05/02/15 05:38	5.1
Bromoform	ND		21		ug/m3 Air			05/02/15 05:38	5.1
Bromomethane	ND		16		ug/m3 Air			05/02/15 05:38	5.1
2-Butanone (MEK)	ND		12		ug/m3 Air			05/02/15 05:38	5.1
Carbon disulfide	ND		13		ug/m3 Air			05/02/15 05:38	5.1
Carbon tetrachloride	ND		26		ug/m3 Air			05/02/15 05:38	5.1
Chlorobenzene	ND		7.0		ug/m3 Air			05/02/15 05:38	5.1
Dibromochloromethane	ND		17		ug/m3 Air			05/02/15 05:38	5.1
Chloroethane	ND		11		ug/m3 Air			05/02/15 05:38	5.1
Chloroform	ND		7.5		ug/m3 Air			05/02/15 05:38	5.1
Chloromethane	ND		8.4		ug/m3 Air			05/02/15 05:38	5.1
1,2-Dibromoethane (EDB)	ND		31		ug/m3 Air			05/02/15 05:38	5.1
1,2-Dichlorobenzene	ND		12		ug/m3 Air			05/02/15 05:38	5.1
1,3-Dichlorobenzene	ND		12		ug/m3 Air			05/02/15 05:38	5.1
1,4-Dichlorobenzene	ND		12		ug/m3 Air			05/02/15 05:38	5.1
Dichlorodifluoromethane	ND		10		ug/m3 Air			05/02/15 05:38	5.1
1,1-Dichloroethane	ND		6.2		ug/m3 Air			05/02/15 05:38	5.1
1,2-Dichloroethane	ND		17		ug/m3 Air			05/02/15 05:38	5.1
1,1-Dichloroethene	ND		16		ug/m3 Air			05/02/15 05:38	5.1
cis-1,2-Dichloroethene	ND		8.1		ug/m3 Air			05/02/15 05:38	5.1
trans-1,2-Dichloroethene	ND		8.1		ug/m3 Air			05/02/15 05:38	5.1
1,2-Dichloropropane	ND		9.4		ug/m3 Air			05/02/15 05:38	5.1
cis-1,3-Dichloropropene	ND		9.3		ug/m3 Air			05/02/15 05:38	5.1
trans-1,3-Dichloropropene	ND		9.3		ug/m3 Air			05/02/15 05:38	5.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		14		ug/m3 Air			05/02/15 05:38	5.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

**Client Sample ID: SVE S POST CARBON**

**Lab Sample ID: 320-12724-2**

Date Collected: 04/24/15 03:40

Matrix: Air

Date Received: 04/28/15 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		8.9		ug/m3 Air			05/02/15 05:38	5.1
4-Ethyltoluene	ND		10		ug/m3 Air			05/02/15 05:38	5.1
Hexachlorobutadiene	ND		110		ug/m3 Air			05/02/15 05:38	5.1
2-Hexanone	ND		8.4		ug/m3 Air			05/02/15 05:38	5.1
Methylene Chloride	ND		7.1		ug/m3 Air			05/02/15 05:38	5.1
4-Methyl-2-pentanone (MIBK)	ND		8.4		ug/m3 Air			05/02/15 05:38	5.1
Styrene	ND		8.7		ug/m3 Air			05/02/15 05:38	5.1
1,1,2,2-Tetrachloroethane	ND		14		ug/m3 Air			05/02/15 05:38	5.1
<b>Tetrachloroethene</b>	<b>660</b>		14		ug/m3 Air			05/02/15 05:38	5.1
Toluene	ND		7.7		ug/m3 Air			05/02/15 05:38	5.1
1,2,4-Trichlorobenzene	ND		76		ug/m3 Air			05/02/15 05:38	5.1
1,1,1-Trichloroethane	ND		8.3		ug/m3 Air			05/02/15 05:38	5.1
1,1,2-Trichloroethane	ND		11		ug/m3 Air			05/02/15 05:38	5.1
<b>Trichloroethene</b>	<b>19</b>		11		ug/m3 Air			05/02/15 05:38	5.1
Trichlorofluoromethane	ND		11		ug/m3 Air			05/02/15 05:38	5.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		16		ug/m3 Air			05/02/15 05:38	5.1
1,2,4-Trimethylbenzene	ND		20		ug/m3 Air			05/02/15 05:38	5.1
1,3,5-Trimethylbenzene	ND		10		ug/m3 Air			05/02/15 05:38	5.1
Vinyl acetate	ND		14		ug/m3 Air			05/02/15 05:38	5.1
Vinyl chloride	ND		5.2		ug/m3 Air			05/02/15 05:38	5.1
<b>m,p-Xylene</b>	<b>18</b>		18		ug/m3 Air			05/02/15 05:38	5.1
o-Xylene	ND		8.9		ug/m3 Air			05/02/15 05:38	5.1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		70 - 130					05/02/15 05:38	5.1
1,2-Dichloroethane-d4 (Surr)	94		70 - 130					05/02/15 05:38	5.1
Toluene-d8 (Surr)	104		70 - 130					05/02/15 05:38	5.1

**Client Sample ID: SVE N**

**Lab Sample ID: 320-12724-3**

Date Collected: 04/24/15 04:10

Matrix: Air

Date Received: 04/28/15 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		26		ppb v/v			05/02/15 06:30	5.2
Benzene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Benzyl chloride	ND		4.2		ppb v/v			05/02/15 06:30	5.2
Bromodichloromethane	ND		1.6		ppb v/v			05/02/15 06:30	5.2
Bromoform	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Bromomethane	ND		4.2		ppb v/v			05/02/15 06:30	5.2
2-Butanone (MEK)	ND		4.2		ppb v/v			05/02/15 06:30	5.2
Carbon disulfide	ND		4.2		ppb v/v			05/02/15 06:30	5.2
Carbon tetrachloride	ND		4.2		ppb v/v			05/02/15 06:30	5.2
Chlorobenzene	ND		1.6		ppb v/v			05/02/15 06:30	5.2
Dibromochloromethane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Chloroethane	ND		4.2		ppb v/v			05/02/15 06:30	5.2
Chloroform	ND		1.6		ppb v/v			05/02/15 06:30	5.2
Chloromethane	ND		4.2		ppb v/v			05/02/15 06:30	5.2

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

**Client Sample ID: SVE N**

**Lab Sample ID: 320-12724-3**

**Date Collected: 04/24/15 04:10**

**Matrix: Air**

**Date Received: 04/28/15 09:30**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		4.2		ppb v/v			05/02/15 06:30	5.2
1,2-Dichlorobenzene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,3-Dichlorobenzene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,4-Dichlorobenzene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Dichlorodifluoromethane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,1-Dichloroethane	ND		1.6		ppb v/v			05/02/15 06:30	5.2
1,2-Dichloroethane	ND		4.2		ppb v/v			05/02/15 06:30	5.2
1,1-Dichloroethene	ND		4.2		ppb v/v			05/02/15 06:30	5.2
cis-1,2-Dichloroethene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
trans-1,2-Dichloroethene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,2-Dichloropropane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
cis-1,3-Dichloropropene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
trans-1,3-Dichloropropene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Ethylbenzene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
4-Ethyltoluene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Hexachlorobutadiene	ND		10		ppb v/v			05/02/15 06:30	5.2
2-Hexanone	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Methylene Chloride	ND		2.1		ppb v/v			05/02/15 06:30	5.2
4-Methyl-2-pentanone (MIBK)	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Styrene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,1,2,2-Tetrachloroethane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
<b>Tetrachloroethene</b>	<b>81</b>		2.1		ppb v/v			05/02/15 06:30	5.2
Toluene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,2,4-Trichlorobenzene	ND		10		ppb v/v			05/02/15 06:30	5.2
1,1,1-Trichloroethane	ND		1.6		ppb v/v			05/02/15 06:30	5.2
1,1,2-Trichloroethane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
<b>Trichloroethene</b>	<b>9.4</b>		2.1		ppb v/v			05/02/15 06:30	5.2
Trichlorofluoromethane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.1		ppb v/v			05/02/15 06:30	5.2
1,2,4-Trimethylbenzene	ND		4.2		ppb v/v			05/02/15 06:30	5.2
1,3,5-Trimethylbenzene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Vinyl acetate	ND		4.2		ppb v/v			05/02/15 06:30	5.2
Vinyl chloride	ND		2.1		ppb v/v			05/02/15 06:30	5.2
m,p-Xylene	ND		4.2		ppb v/v			05/02/15 06:30	5.2
o-Xylene	ND		2.1		ppb v/v			05/02/15 06:30	5.2
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		62		ug/m3 Air			05/02/15 06:30	5.2
Benzene	ND		6.6		ug/m3 Air			05/02/15 06:30	5.2
Benzyl chloride	ND		22		ug/m3 Air			05/02/15 06:30	5.2
Bromodichloromethane	ND		10		ug/m3 Air			05/02/15 06:30	5.2
Bromoform	ND		22		ug/m3 Air			05/02/15 06:30	5.2
Bromomethane	ND		16		ug/m3 Air			05/02/15 06:30	5.2
2-Butanone (MEK)	ND		12		ug/m3 Air			05/02/15 06:30	5.2
Carbon disulfide	ND		13		ug/m3 Air			05/02/15 06:30	5.2
Carbon tetrachloride	ND		26		ug/m3 Air			05/02/15 06:30	5.2
Chlorobenzene	ND		7.2		ug/m3 Air			05/02/15 06:30	5.2
Dibromochloromethane	ND		18		ug/m3 Air			05/02/15 06:30	5.2

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

**Client Sample ID: SVE N**

**Lab Sample ID: 320-12724-3**

**Date Collected: 04/24/15 04:10**

**Matrix: Air**

**Date Received: 04/28/15 09:30**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		11		ug/m3 Air			05/02/15 06:30	5.2
Chloroform	ND		7.6		ug/m3 Air			05/02/15 06:30	5.2
Chloromethane	ND		8.6		ug/m3 Air			05/02/15 06:30	5.2
1,2-Dibromoethane (EDB)	ND		32		ug/m3 Air			05/02/15 06:30	5.2
1,2-Dichlorobenzene	ND		13		ug/m3 Air			05/02/15 06:30	5.2
1,3-Dichlorobenzene	ND		13		ug/m3 Air			05/02/15 06:30	5.2
1,4-Dichlorobenzene	ND		13		ug/m3 Air			05/02/15 06:30	5.2
Dichlorodifluoromethane	ND		10		ug/m3 Air			05/02/15 06:30	5.2
1,1-Dichloroethane	ND		6.3		ug/m3 Air			05/02/15 06:30	5.2
1,2-Dichloroethane	ND		17		ug/m3 Air			05/02/15 06:30	5.2
1,1-Dichloroethene	ND		16		ug/m3 Air			05/02/15 06:30	5.2
cis-1,2-Dichloroethene	ND		8.2		ug/m3 Air			05/02/15 06:30	5.2
trans-1,2-Dichloroethene	ND		8.2		ug/m3 Air			05/02/15 06:30	5.2
1,2-Dichloropropane	ND		9.6		ug/m3 Air			05/02/15 06:30	5.2
cis-1,3-Dichloropropene	ND		9.4		ug/m3 Air			05/02/15 06:30	5.2
trans-1,3-Dichloropropene	ND		9.4		ug/m3 Air			05/02/15 06:30	5.2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		15		ug/m3 Air			05/02/15 06:30	5.2
Ethylbenzene	ND		9.0		ug/m3 Air			05/02/15 06:30	5.2
4-Ethyltoluene	ND		10		ug/m3 Air			05/02/15 06:30	5.2
Hexachlorobutadiene	ND		110		ug/m3 Air			05/02/15 06:30	5.2
2-Hexanone	ND		8.5		ug/m3 Air			05/02/15 06:30	5.2
Methylene Chloride	ND		7.2		ug/m3 Air			05/02/15 06:30	5.2
4-Methyl-2-pentanone (MIBK)	ND		8.5		ug/m3 Air			05/02/15 06:30	5.2
Styrene	ND		8.9		ug/m3 Air			05/02/15 06:30	5.2
1,1,2,2-Tetrachloroethane	ND		14		ug/m3 Air			05/02/15 06:30	5.2
<b>Tetrachloroethene</b>	<b>550</b>		14		ug/m3 Air			05/02/15 06:30	5.2
Toluene	ND		7.8		ug/m3 Air			05/02/15 06:30	5.2
1,2,4-Trichlorobenzene	ND		77		ug/m3 Air			05/02/15 06:30	5.2
1,1,1-Trichloroethane	ND		8.5		ug/m3 Air			05/02/15 06:30	5.2
1,1,2-Trichloroethane	ND		11		ug/m3 Air			05/02/15 06:30	5.2
<b>Trichloroethene</b>	<b>50</b>		11		ug/m3 Air			05/02/15 06:30	5.2
Trichlorofluoromethane	ND		12		ug/m3 Air			05/02/15 06:30	5.2
1,1,2-Trichloro-1,1,2,2-trifluoroethane	ND		16		ug/m3 Air			05/02/15 06:30	5.2
1,2,4-Trimethylbenzene	ND		20		ug/m3 Air			05/02/15 06:30	5.2
1,3,5-Trimethylbenzene	ND		10		ug/m3 Air			05/02/15 06:30	5.2
Vinyl acetate	ND		15		ug/m3 Air			05/02/15 06:30	5.2
Vinyl chloride	ND		5.3		ug/m3 Air			05/02/15 06:30	5.2
m,p-Xylene	ND		18		ug/m3 Air			05/02/15 06:30	5.2
o-Xylene	ND		9.0		ug/m3 Air			05/02/15 06:30	5.2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130					05/02/15 06:30	5.2
1,2-Dichloroethane-d4 (Surr)	92		70 - 130					05/02/15 06:30	5.2
Toluene-d8 (Surr)	106		70 - 130					05/02/15 06:30	5.2

TestAmerica Sacramento

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	12DCE	TOL
		(70-130)	(70-130)	(70-130)
320-12724-1	SVE S PRE CARBON	93	94	103
320-12724-2	SVE S POST CARBON	95	94	104
320-12724-3	SVE N	97	92	106
LCS 320-72769/3	Lab Control Sample	108	104	105
MB 320-72769/7	Method Blank	94	92	102

### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

**Lab Sample ID: MB 320-72769/7**

**Matrix: Air**

**Analysis Batch: 72769**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			05/01/15 20:07	1
Benzene	ND		0.40		ppb v/v			05/01/15 20:07	1
Benzyl chloride	ND		0.80		ppb v/v			05/01/15 20:07	1
Bromodichloromethane	ND		0.30		ppb v/v			05/01/15 20:07	1
Bromoform	ND		0.40		ppb v/v			05/01/15 20:07	1
Bromomethane	ND		0.80		ppb v/v			05/01/15 20:07	1
2-Butanone (MEK)	ND		0.80		ppb v/v			05/01/15 20:07	1
Carbon disulfide	ND		0.80		ppb v/v			05/01/15 20:07	1
Carbon tetrachloride	ND		0.80		ppb v/v			05/01/15 20:07	1
Chlorobenzene	ND		0.30		ppb v/v			05/01/15 20:07	1
Dibromochloromethane	ND		0.40		ppb v/v			05/01/15 20:07	1
Chloroethane	ND		0.80		ppb v/v			05/01/15 20:07	1
Chloroform	ND		0.30		ppb v/v			05/01/15 20:07	1
Chloromethane	ND		0.80		ppb v/v			05/01/15 20:07	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			05/01/15 20:07	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			05/01/15 20:07	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			05/01/15 20:07	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			05/01/15 20:07	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			05/01/15 20:07	1
1,1-Dichloroethane	ND		0.30		ppb v/v			05/01/15 20:07	1
1,2-Dichloroethane	ND		0.80		ppb v/v			05/01/15 20:07	1
1,1-Dichloroethene	ND		0.80		ppb v/v			05/01/15 20:07	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			05/01/15 20:07	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			05/01/15 20:07	1
1,2-Dichloropropane	ND		0.40		ppb v/v			05/01/15 20:07	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			05/01/15 20:07	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			05/01/15 20:07	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			05/01/15 20:07	1
Ethylbenzene	ND		0.40		ppb v/v			05/01/15 20:07	1
4-Ethyltoluene	ND		0.40		ppb v/v			05/01/15 20:07	1
Hexachlorobutadiene	ND		2.0		ppb v/v			05/01/15 20:07	1
2-Hexanone	ND		0.40		ppb v/v			05/01/15 20:07	1
Methylene Chloride	ND		0.40		ppb v/v			05/01/15 20:07	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			05/01/15 20:07	1
Styrene	ND		0.40		ppb v/v			05/01/15 20:07	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			05/01/15 20:07	1
Tetrachloroethene	ND		0.40		ppb v/v			05/01/15 20:07	1
Toluene	ND		0.40		ppb v/v			05/01/15 20:07	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			05/01/15 20:07	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			05/01/15 20:07	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			05/01/15 20:07	1
Trichloroethene	ND		0.40		ppb v/v			05/01/15 20:07	1
Trichlorofluoromethane	ND		0.40		ppb v/v			05/01/15 20:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			05/01/15 20:07	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			05/01/15 20:07	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			05/01/15 20:07	1
Vinyl acetate	ND		0.80		ppb v/v			05/01/15 20:07	1
Vinyl chloride	ND		0.40		ppb v/v			05/01/15 20:07	1

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 320-72769/7

Matrix: Air

Analysis Batch: 72769

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			05/01/15 20:07	1
o-Xylene	ND		0.40		ppb v/v			05/01/15 20:07	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			05/01/15 20:07	1
Benzene	ND		1.3		ug/m3 Air			05/01/15 20:07	1
Benzyl chloride	ND		4.1		ug/m3 Air			05/01/15 20:07	1
Bromodichloromethane	ND		2.0		ug/m3 Air			05/01/15 20:07	1
Bromoform	ND		4.1		ug/m3 Air			05/01/15 20:07	1
Bromomethane	ND		3.1		ug/m3 Air			05/01/15 20:07	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			05/01/15 20:07	1
Carbon disulfide	ND		2.5		ug/m3 Air			05/01/15 20:07	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			05/01/15 20:07	1
Chlorobenzene	ND		1.4		ug/m3 Air			05/01/15 20:07	1
Dibromochloromethane	ND		3.4		ug/m3 Air			05/01/15 20:07	1
Chloroethane	ND		2.1		ug/m3 Air			05/01/15 20:07	1
Chloroform	ND		1.5		ug/m3 Air			05/01/15 20:07	1
Chloromethane	ND		1.7		ug/m3 Air			05/01/15 20:07	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			05/01/15 20:07	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			05/01/15 20:07	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			05/01/15 20:07	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			05/01/15 20:07	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			05/01/15 20:07	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			05/01/15 20:07	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			05/01/15 20:07	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			05/01/15 20:07	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/01/15 20:07	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/01/15 20:07	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			05/01/15 20:07	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/01/15 20:07	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/01/15 20:07	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			05/01/15 20:07	1
Ethylbenzene	ND		1.7		ug/m3 Air			05/01/15 20:07	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			05/01/15 20:07	1
Hexachlorobutadiene	ND		21		ug/m3 Air			05/01/15 20:07	1
2-Hexanone	ND		1.6		ug/m3 Air			05/01/15 20:07	1
Methylene Chloride	ND		1.4		ug/m3 Air			05/01/15 20:07	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			05/01/15 20:07	1
Styrene	ND		1.7		ug/m3 Air			05/01/15 20:07	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			05/01/15 20:07	1
Tetrachloroethene	ND		2.7		ug/m3 Air			05/01/15 20:07	1
Toluene	ND		1.5		ug/m3 Air			05/01/15 20:07	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			05/01/15 20:07	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			05/01/15 20:07	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			05/01/15 20:07	1
Trichloroethene	ND		2.1		ug/m3 Air			05/01/15 20:07	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			05/01/15 20:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			05/01/15 20:07	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-72769/7**

**Matrix: Air**

**Analysis Batch: 72769**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			05/01/15 20:07	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			05/01/15 20:07	1
Vinyl acetate	ND		2.8		ug/m3 Air			05/01/15 20:07	1
Vinyl chloride	ND		1.0		ug/m3 Air			05/01/15 20:07	1
m,p-Xylene	ND		3.5		ug/m3 Air			05/01/15 20:07	1
o-Xylene	ND		1.7		ug/m3 Air			05/01/15 20:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130		05/01/15 20:07	1
1,2-Dichloroethane-d4 (Surr)	92		70 - 130		05/01/15 20:07	1
Toluene-d8 (Surr)	102		70 - 130		05/01/15 20:07	1

**Lab Sample ID: LCS 320-72769/3**

**Matrix: Air**

**Analysis Batch: 72769**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	15.6		ppb v/v		78	71 - 131
Benzene	20.0	18.0		ppb v/v		90	68 - 128
Benzyl chloride	20.0	16.2		ppb v/v		81	58 - 120
Bromodichloromethane	20.0	19.9		ppb v/v		100	65 - 130
Bromoform	20.0	23.7		ppb v/v		118	64 - 144
Bromomethane	20.0	19.3		ppb v/v		96	70 - 131
2-Butanone (MEK)	20.0	18.9		ppb v/v		95	71 - 131
Carbon disulfide	20.0	16.5		ppb v/v		83	63 - 123
Carbon tetrachloride	20.0	21.2		ppb v/v		106	67 - 127
Chlorobenzene	20.0	21.0		ppb v/v		105	70 - 132
Dibromochloromethane	20.0	21.0		ppb v/v		105	68 - 128
Chloroethane	20.0	15.2		ppb v/v		76	70 - 131
Chloroform	20.0	18.1		ppb v/v		90	69 - 129
Chloromethane	20.0	15.9		ppb v/v		79	67 - 127
1,2-Dibromoethane (EDB)	20.0	20.0		ppb v/v		100	68 - 131
1,2-Dichlorobenzene	20.0	22.7		ppb v/v		113	73 - 143
1,3-Dichlorobenzene	20.0	23.4		ppb v/v		117	77 - 136
1,4-Dichlorobenzene	20.0	24.3		ppb v/v		122	73 - 143
Dichlorodifluoromethane	20.0	19.1		ppb v/v		95	69 - 129
1,1-Dichloroethane	20.0	17.0		ppb v/v		85	65 - 125
1,2-Dichloroethane	20.0	18.5		ppb v/v		93	71 - 131
1,1-Dichloroethene	20.0	15.6		ppb v/v		78	53 - 128
cis-1,2-Dichloroethene	20.0	17.6		ppb v/v		88	68 - 128
trans-1,2-Dichloroethene	20.0	17.0		ppb v/v		85	70 - 130
1,2-Dichloropropane	20.0	20.6		ppb v/v		103	74 - 128
cis-1,3-Dichloropropene	20.0	22.3		ppb v/v		111	78 - 132
trans-1,3-Dichloropropene	20.0	18.2		ppb v/v		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.3		ppb v/v		92	64 - 124
Ethylbenzene	20.0	21.7		ppb v/v		109	76 - 136
4-Ethyltoluene	20.0	20.3		ppb v/v		101	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-72769/3**

**Matrix: Air**

**Analysis Batch: 72769**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	17.4		ppb v/v		87	42 - 150
2-Hexanone	20.0	20.1		ppb v/v		100	70 - 128
Methylene Chloride	20.0	15.0		ppb v/v		75	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	19.2		ppb v/v		96	73 - 133
Styrene	20.0	24.1		ppb v/v		121	76 - 144
1,1,1,2-Tetrachloroethane	20.0	20.4		ppb v/v		102	75 - 135
Tetrachloroethene	20.0	19.7		ppb v/v		99	56 - 138
Toluene	20.0	21.2		ppb v/v		106	71 - 132
1,2,4-Trichlorobenzene	20.0	20.5		ppb v/v		102	59 - 150
1,1,1-Trichloroethane	20.0	19.0		ppb v/v		95	65 - 124
1,1,2-Trichloroethane	20.0	19.5		ppb v/v		98	71 - 131
Trichloroethene	20.0	19.0		ppb v/v		95	64 - 127
Trichlorofluoromethane	20.0	18.7		ppb v/v		93	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.2		ppb v/v		81	50 - 132
1,2,4-Trimethylbenzene	20.0	21.4		ppb v/v		107	61 - 145
1,3,5-Trimethylbenzene	20.0	20.7		ppb v/v		104	65 - 136
Vinyl acetate	20.0	19.5		ppb v/v		98	77 - 134
Vinyl chloride	20.0	19.0		ppb v/v		95	69 - 129
m,p-Xylene	40.0	44.9		ppb v/v		112	75 - 138
o-Xylene	20.0	22.8		ppb v/v		114	77 - 132
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	37.2		ug/m3 Air		78	71 - 131
Benzene	64	57.5		ug/m3 Air		90	68 - 128
Benzyl chloride	100	84.0		ug/m3 Air		81	58 - 120
Bromodichloromethane	130	133		ug/m3 Air		100	65 - 130
Bromoform	210	244		ug/m3 Air		118	64 - 144
Bromomethane	78	74.8		ug/m3 Air		96	70 - 131
2-Butanone (MEK)	59	55.8		ug/m3 Air		95	71 - 131
Carbon disulfide	62	51.5		ug/m3 Air		83	63 - 123
Carbon tetrachloride	130	133		ug/m3 Air		106	67 - 127
Chlorobenzene	92	96.8		ug/m3 Air		105	70 - 132
Dibromochloromethane	170	179		ug/m3 Air		105	68 - 128
Chloroethane	53	40.2		ug/m3 Air		76	70 - 131
Chloroform	98	88.2		ug/m3 Air		90	69 - 129
Chloromethane	41	32.8		ug/m3 Air		79	67 - 127
1,2-Dibromoethane (EDB)	150	153		ug/m3 Air		100	68 - 131
1,2-Dichlorobenzene	120	136		ug/m3 Air		113	73 - 143
1,3-Dichlorobenzene	120	141		ug/m3 Air		117	77 - 136
1,4-Dichlorobenzene	120	146		ug/m3 Air		122	73 - 143
Dichlorodifluoromethane	99	94.3		ug/m3 Air		95	69 - 129
1,1-Dichloroethane	81	68.9		ug/m3 Air		85	65 - 125
1,2-Dichloroethane	81	75.0		ug/m3 Air		93	71 - 131
1,1-Dichloroethene	79	62.0		ug/m3 Air		78	53 - 128
cis-1,2-Dichloroethene	79	69.9		ug/m3 Air		88	68 - 128
trans-1,2-Dichloroethene	79	67.5		ug/m3 Air		85	70 - 130
1,2-Dichloropropane	92	95.2		ug/m3 Air		103	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-72769/3**

**Matrix: Air**

**Analysis Batch: 72769**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	101		ug/m3 Air		111	78 - 132
trans-1,3-Dichloropropene	91	82.8		ug/m3 Air		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	128		ug/m3 Air		92	64 - 124
Ethylbenzene	87	94.4		ug/m3 Air		109	76 - 136
4-Ethyltoluene	98	99.7		ug/m3 Air		101	62 - 136
Hexachlorobutadiene	210	186		ug/m3 Air		87	42 - 150
2-Hexanone	82	82.2		ug/m3 Air		100	70 - 128
Methylene Chloride	69	52.0		ug/m3 Air		75	65 - 125
4-Methyl-2-pentanone (MIBK)	82	78.6		ug/m3 Air		96	73 - 133
Styrene	85	103		ug/m3 Air		121	76 - 144
1,1,1,2-Tetrachloroethane	140	140		ug/m3 Air		102	75 - 135
Tetrachloroethene	140	134		ug/m3 Air		99	56 - 138
Toluene	75	79.7		ug/m3 Air		106	71 - 132
1,2,4-Trichlorobenzene	150	152		ug/m3 Air		102	59 - 150
1,1,1-Trichloroethane	110	104		ug/m3 Air		95	65 - 124
1,1,2-Trichloroethane	110	106		ug/m3 Air		98	71 - 131
Trichloroethene	110	102		ug/m3 Air		95	64 - 127
Trichlorofluoromethane	110	105		ug/m3 Air		93	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	125		ug/m3 Air		81	50 - 132
1,2,4-Trimethylbenzene	98	105		ug/m3 Air		107	61 - 145
1,3,5-Trimethylbenzene	98	102		ug/m3 Air		104	65 - 136
Vinyl acetate	70	68.7		ug/m3 Air		98	77 - 134
Vinyl chloride	51	48.6		ug/m3 Air		95	69 - 129
m,p-Xylene	170	195		ug/m3 Air		112	75 - 138
o-Xylene	87	99.1		ug/m3 Air		114	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	108		70 - 130
1,2-Dichloroethane-d4 (Surr)	104		70 - 130
Toluene-d8 (Surr)	105		70 - 130

# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Air - GC/MS VOA

### Analysis Batch: 72769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-12724-1	SVE S PRE CARBON	Total/NA	Air	TO-15	
320-12724-2	SVE S POST CARBON	Total/NA	Air	TO-15	
320-12724-3	SVE N	Total/NA	Air	TO-15	
LCS 320-72769/3	Lab Control Sample	Total/NA	Air	TO-15	
MB 320-72769/7	Method Blank	Total/NA	Air	TO-15	

# Lab Chronicle

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Client Sample ID: SVE S PRE CARBON

Lab Sample ID: 320-12724-1

Date Collected: 04/24/15 03:30

Matrix: Air

Date Received: 04/28/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		30.6	20 mL	250 mL	72769	05/02/15 04:46	TAD	TAL SAC

## Client Sample ID: SVE S POST CARBON

Lab Sample ID: 320-12724-2

Date Collected: 04/24/15 03:40

Matrix: Air

Date Received: 04/28/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		5.1	100 mL	250 mL	72769	05/02/15 05:38	TAD	TAL SAC

## Client Sample ID: SVE N

Lab Sample ID: 320-12724-3

Date Collected: 04/24/15 04:10

Matrix: Air

Date Received: 04/28/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		5.2	100 mL	250 mL	72769	05/02/15 06:30	TAD	TAL SAC

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-16
Alaska (UST)	State Program	10	UST-055	12-18-15
Arizona	State Program	9	AZ0708	08-11-15
Arkansas DEQ	State Program	6	88-0691	06-17-15
California	State Program	9	2897	01-31-16
Colorado	State Program	8	N/A	08-31-15
Connecticut	State Program	1	PH-0691	06-30-15
Florida	NELAP	4	E87570	06-30-15
Hawaii	State Program	9	N/A	01-29-16
Illinois	NELAP	5	200060	03-17-16
Kansas	NELAP	7	E-10375	10-31-15
Louisiana	NELAP	6	30612	06-30-15
Michigan	State Program	5	9947	01-31-16
Nevada	State Program	9	CA44	07-31-15
New Jersey	NELAP	2	CA005	06-30-15
New York	NELAP	2	11666	04-01-16
Oregon	NELAP	10	CA200005	01-29-16
Oregon	NELAP Secondary AB	10	E87570	06-30-15
Pennsylvania	NELAP	3	9947	03-31-16
Texas	NELAP	6	T104704399-08-TX	05-31-16
US Fish & Wildlife	Federal		LE148388-0	02-28-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-16
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-15
Wyoming	State Program	8	8TMS-Q	01-29-16

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-012	12-26-15
California	State Program	9	2597	09-30-15
Oregon	NELAP	10	OR100021	01-09-16
USDA	Federal		P330-11-00092	04-17-17
Washington	State Program	10	C586	06-23-15

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-12724-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

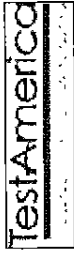
TestAmerica Job ID: 320-12724-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-12724-1	SVE S PRE CARBON	Air	04/24/15 03:30	04/28/15 09:30
320-12724-2	SVE S POST CARBON	Air	04/24/15 03:40	04/28/15 09:30
320-12724-3	SVE N	Air	04/24/15 04:10	04/28/15 09:30


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**TestAmerica Los Angeles**  
 3585 Cadillac, Suite A  
 Costa Mesa, CA 92626  
 Phone 714-258-8610 Fax 714-258-0921

# Canister Samples Chain of Custody Record



*TestAmerica Laboratories, Inc assumes no liability with respect to the collection and shipment of these samples*

Client Contact Information		Project Manager: Stephanie Salisbury		1 of 1 COCs																					
Company: Apex Companies		Phone: 503-924-4704 x1925		Samples Collected By: Mike Stevens																					
Address: 3015 SW 1st Ave		Email: S.Salisbury@apexcos.com																							
City/State/Zip: Portland, 97201		Site Contact:																							
Phone: 503-924-4704 x 1925		LAB Contact:																							
FAX: 503-924-4707		Analysis Turnaround Time																							
Project Name: NuStar Vancouver Interim Action		Standard (Specify) X																							
Site: NuStar Vancouver		Rush (Specify)																							
PO # 1126-20 Task 2																									
Sample Identification																									
Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID																				
4/24/2015	330	331	-30	-1	None -grab 84000820																				
4/24/2015	340	341	-30	-1	None -grab 34000389																				
4/24/2015	410	411	-30	-1	None -grab 34001359																				
<table border="1"> <tr> <th colspan="2">Temperature (Fahrenheit)</th> </tr> <tr> <td>Interior</td> <td></td> </tr> <tr> <td>Ambient</td> <td></td> </tr> <tr> <td>Start</td> <td></td> </tr> <tr> <td>Stop</td> <td></td> </tr> <tr> <th colspan="2">Pressure (inches of Hg)</th> </tr> <tr> <td>Interior</td> <td></td> </tr> <tr> <td>Ambient</td> <td></td> </tr> <tr> <td>Start</td> <td></td> </tr> <tr> <td>Stop</td> <td></td> </tr> </table>						Temperature (Fahrenheit)		Interior		Ambient		Start		Stop		Pressure (inches of Hg)		Interior		Ambient		Start		Stop	
Temperature (Fahrenheit)																									
Interior																									
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Pressure (inches of Hg)																									
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 <p>320-12724 Chain of Custody</p>																									
<b>Special Instructions/QC Requirements &amp; Comments:</b> <b>Sample Type: Soil Vapor Extraction System Effluent</b>																									
Samples Shipped by:		Date/Time: 4/27/15 / 1550		Samples Received by: (Signature) 4/27/15 1250 (TAP)																					
Samples Relinquished by: (Signature)		Date/Time: 4/27/15 1500 (TAP)		Received by: (Signature) 4/28/15 1930																					
Relinquished by:		Date/Time:		Received by:																					
Lab Use Only		Shipper Name:		Opened by: Condition:																					

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JOB # 320-12724  
 Sample # 1

Client/Project:		VFR ID:	
Canister Serial #:	34000820	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	9.64	05/01/15	KY	
FINAL PRESSURE (PSIA)	23.62	05/01/15	KY	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	2.45			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.45		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors							
	Date	Instr.	File #				
Canister DF = <span style="border: 1px solid black; padding: 2px;">2.45</span> X	5/1/2015	MS7		=	FINAL DF	<span style="border: 1px solid black; padding: 2px;">30.62759336</span>	
	Load DF = <span style="border: 1px solid black; padding: 2px;">12.5</span> X						Bag DF = <span style="border: 1px solid black; padding: 2px;">1</span>
	LVf (mLs) <span style="border: 1px solid black; padding: 2px;">250</span>						BVf (mLs) <span style="border: 1px solid black; padding: 2px;"></span>
	LVi (mLs) <span style="border: 1px solid black; padding: 2px;">20</span>						BVi (mLs) <span style="border: 1px solid black; padding: 2px;"></span>
Canister DF = <span style="border: 1px solid black; padding: 2px;">2.45</span> X				=	FINAL DF	<span style="border: 1px solid black; padding: 2px;">#DIV/0!</span>	
	Load DF = <span style="border: 1px solid black; padding: 2px;">#DIV/0!</span> X						Bag DF = <span style="border: 1px solid black; padding: 2px;">1</span>
	LVf (mLs) <span style="border: 1px solid black; padding: 2px;"></span>						BVf (mLs) <span style="border: 1px solid black; padding: 2px;"></span>
	LVi (mLs) <span style="border: 1px solid black; padding: 2px;"></span>						BVi (mLs) <span style="border: 1px solid black; padding: 2px;"></span>
Canister DF = <span style="border: 1px solid black; padding: 2px;">2.45</span> X				=	FINAL DF	<span style="border: 1px solid black; padding: 2px;">#DIV/0!</span>	
	Load DF = <span style="border: 1px solid black; padding: 2px;">#DIV/0!</span> X						Bag DF = <span style="border: 1px solid black; padding: 2px;">1</span>
	LVf (mLs) <span style="border: 1px solid black; padding: 2px;"></span>						BVf (mLs) <span style="border: 1px solid black; padding: 2px;"></span>
	LVi (mLs) <span style="border: 1px solid black; padding: 2px;"></span>						BVi (mLs) <span style="border: 1px solid black; padding: 2px;"></span>

JOB # **320-12724**  
 Sample # **2**

Client/Project:		VFR ID:	
Canister Serial #:	34000389	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING		PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)		29.8		JMT
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)		11.63	05/01/15	KY
FINAL PRESSURE (PSIA)		23.74	05/01/15	KY
Pressurization Gas:	<input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	2.04			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.04		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
				Date	Instr.	File #				
Canister DF =	2.04	X	Load DF =	2.5	X	Bag DF =	1	=	FINAL DF	5.103181427
			LVf (mLs)	250		BVf (mLs)				
			LVi (mLs)	100		BVi (mLs)				
<hr/>										
				Date	Instr.	File #				
Canister DF =	2.04	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				
<hr/>										
				Date	Instr.	File #				
Canister DF =	2.04	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				

JOB # **320-12724**  
Sample # **3**

Client/Project:		VFR ID:	
Canister Serial #:	34001359	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	11.38	05/01/15	KY	
FINAL PRESSURE (PSIA)	23.68	05/01/15	KY	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	2.08			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.08		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
Canister DF =	2.08	X	Load DF =	2.5	X	Bag DF =	1	=	FINAL DF	5.202108963
			LVf (mLs)	250		BVf (mLs)				
			LVi (mLs)	100		BVi (mLs)				
Canister DF =	2.08	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				
Canister DF =	2.08	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				



## Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-12724-1

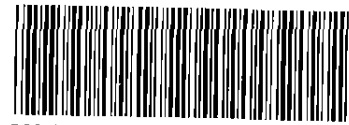
**Login Number: 12724**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Sadler, Jeremy**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	
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 containers received 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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Certification Type: TD-15 SCAN

Date Cleaned/Batch ID 3/19/15 320-12279

Date of QC 3/30/15

Data File Number M51033011

CANISTER ID NUMBERS

<u>7521</u>	<u>7866</u>	_____
<u>34001359</u>	<u>8150</u>	_____
<u>0820</u>	<u>7840</u>	_____
<u>1571</u>	<u>8296</u>	_____
<u>1391</u>	_____	_____
<u>0389</u>	_____	_____
<u>2028</u>	_____	_____
<u>0612*</u>	_____	_____

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

[Signature]  
 1<sup>st</sup> level Reviewed By:

3/31/15  
 Date:

[Signature]  
 2nd level Reviewed By:

4/1/15  
 Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12279-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000612 Lab Sample ID: 320-12279-8  
 Matrix: Air Lab File ID: MS1033011.d  
 Analysis Method: TO-15 Date Collected: 03/19/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 03/31/2015 00:24  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 69814 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.42	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12279-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000612 Lab Sample ID: 320-12279-8  
 Matrix: Air Lab File ID: MS1033011.d  
 Analysis Method: TO-15 Date Collected: 03/19/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 03/31/2015 00:24  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 69814 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12279-1  
 SDG No.: 6L SCAN Batch  
 Client Sample ID: 34000612 Lab Sample ID: 320-12279-8  
 Matrix: Air Lab File ID: MS1033011.d  
 Analysis Method: TO-15 Date Collected: 03/19/2015 00:00  
 Sample wt/vol: 500(mL) Date Analyzed: 03/31/2015 00:24  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32(mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 69814 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	0.10	J	0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	102		70-130
2037-26-5	Toluene-d8 (Surr)	105		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS1\20150330-20638.b\MS1033011.d  
 Lims ID: 320-12279-A-8 Lab Sample ID: 320-12279-8  
 Client ID: 34000612  
 Sample Type: Client  
 Inject. Date: 31-Mar-2015 00:24:30 ALS Bottle#: 7 Worklist Smp#: 9  
 Purge Vol: 250.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12279-A-8  
 Misc. Info.: 500ML  
 Operator ID: AJS Instrument ID: ATMS1  
 Method: \\SACCHROM\ChromData\ATMS1\20150330-20638.b\TO15\_ATMS1scan.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 31-Mar-2015 10:19:03 Calib Date: 30-Mar-2015 19:11:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS1\20150330-20638.b\MS1033005.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK047

First Level Reviewer: ortizam

Date: 31-Mar-2015 10:20:00

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.784	11.784	0.000	88	25676	4.00	
* 2 1,4-Difluorobenzene	114	13.905	13.899	0.006	95	82118	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.587	20.587	0.000	89	77062	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.954	12.954	0.000	96	42492	4.09	
\$ 5 Toluene-d8 (Surr)	100	17.301	17.307	-0.006	97	50541	4.19	
\$ 6 4-Bromofluorobenzene (Surr	174	23.154	23.154	0.000	92	48988	3.81	
31 Acetone	43	7.120	7.108	0.012	97	7704	0.4159	
54 2-Butanone (MEK)	43	10.778	10.778	0.000	29	1618	0.1107	
97 Ethylbenzene	91	20.855	20.849	0.006	1	749	0.0198	
98 m-Xylene & p-Xylene	91	21.038	21.032	0.006	91	2825	0.1002	
101 o-Xylene	91	21.947	21.934	0.013	1	1115	0.0482	
107 N-Propylbenzene	91	23.568	23.568	0.000	1	510	0.0102	
127 Naphthalene	128	30.140	30.152	-0.012	1	548	0.0163	

**Reagents:**

VASUISIM\_00156 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS1\20150330-20638.b\MS1033011.d

Injection Date: 31-Mar-2015 00:24:30

Instrument ID: ATMS1

Operator ID: AJS

Lims ID: 320-12279-A-8

Lab Sample ID: 320-12279-8

Worklist Smp#: 9

Client ID: 34000612

Purge Vol: 250.000 mL

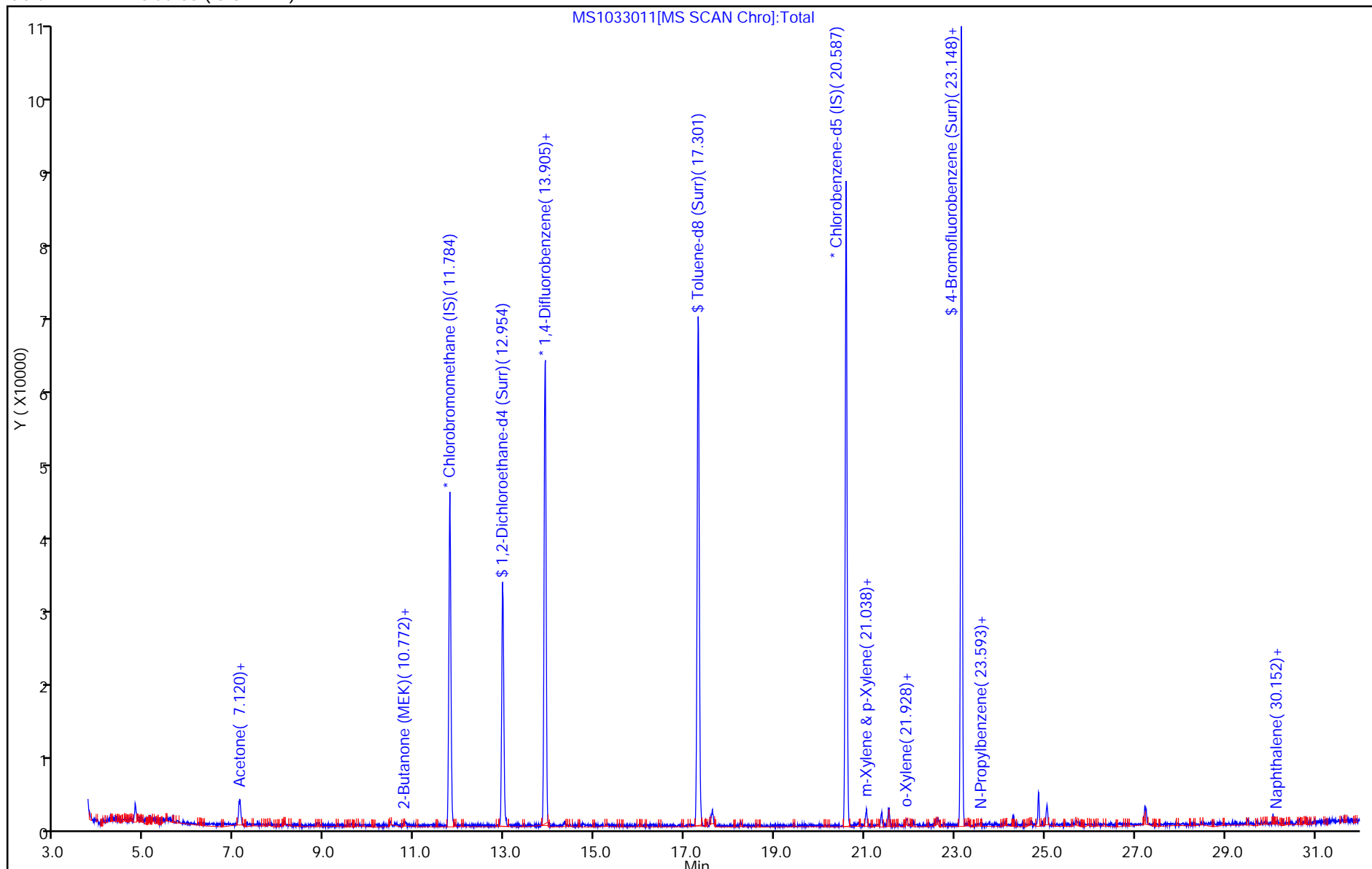
Dil. Factor: 1.0000

ALS Bottle#: 7

Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS1\20150330-20638.b\MS1033011.d

Injection Date: 31-Mar-2015 00:24:30

Instrument ID: ATMS1

Lims ID: 320-12279-A-8

Lab Sample ID: 320-12279-8

Client ID: 34000612

Operator ID: AJS

ALS Bottle#: 7 Worklist Smp#: 9

Purge Vol: 250.000 mL

Dil. Factor: 1.0000

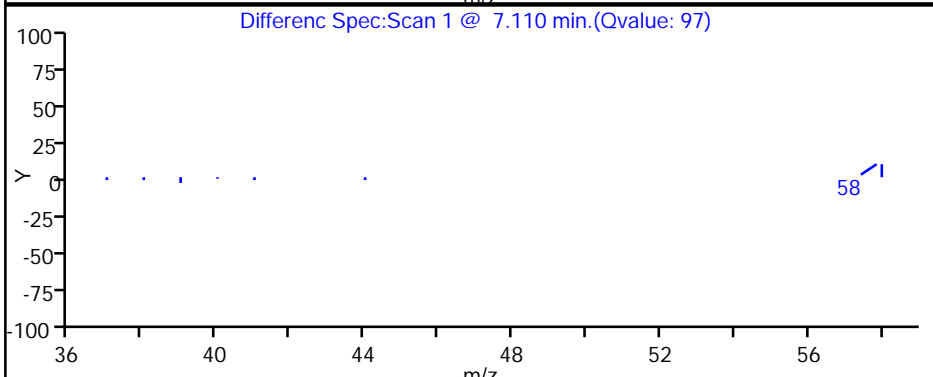
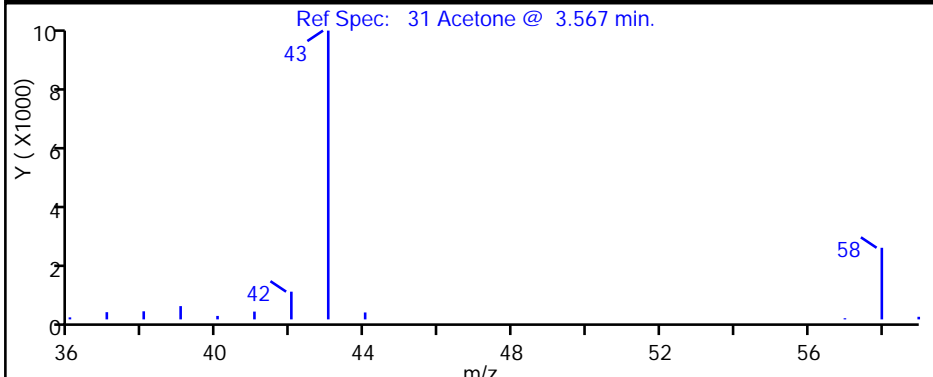
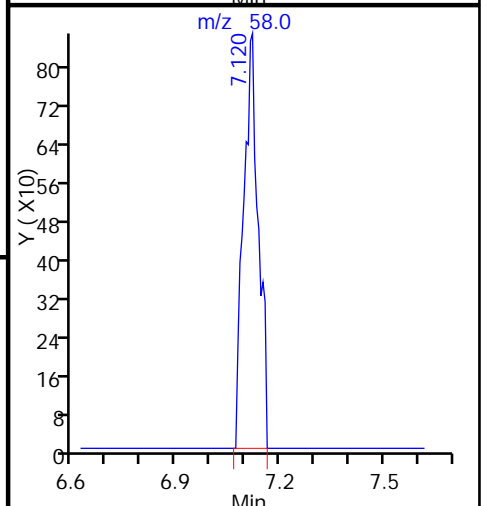
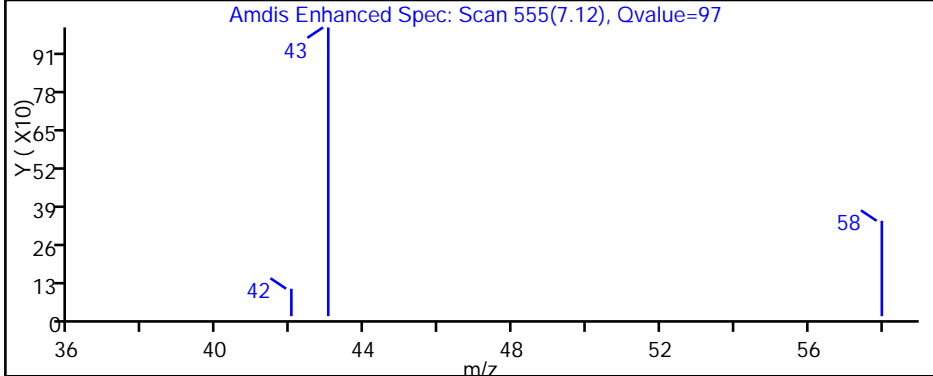
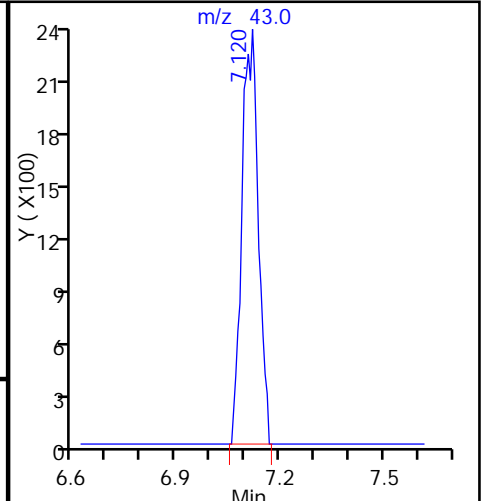
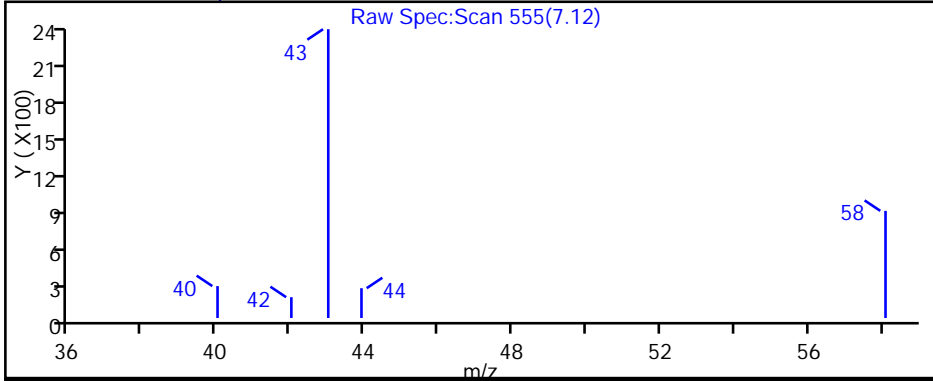
Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS1\20150330-20638.b\MS1033011.d

Injection Date: 31-Mar-2015 00:24:30

Instrument ID: ATMS1

Lims ID: 320-12279-A-8

Lab Sample ID: 320-12279-8

Client ID: 34000612

Operator ID: AJS

ALS Bottle#: 7

Worklist Smp#: 9

Purge Vol: 250.000 mL

Dil. Factor: 1.0000

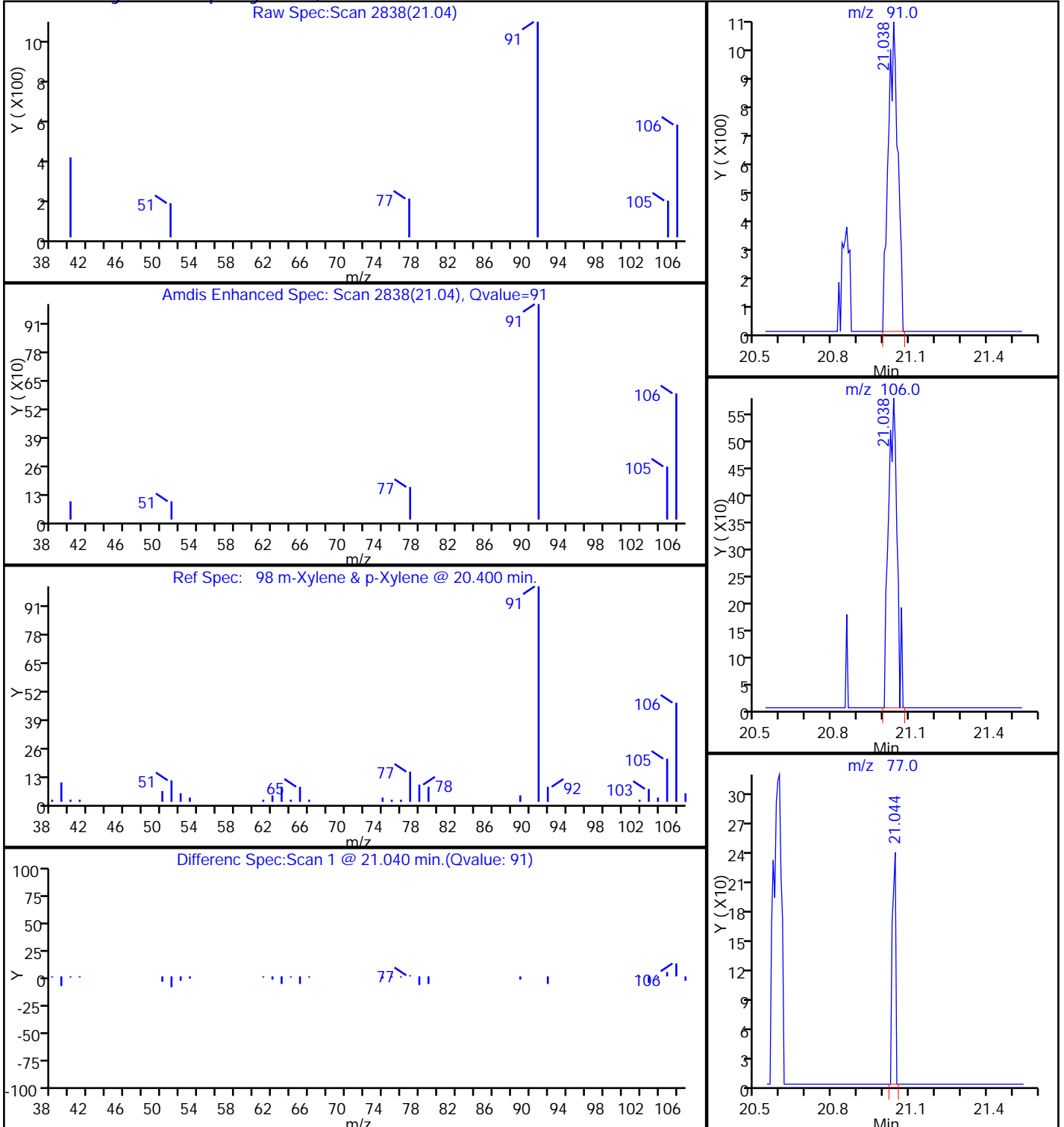
Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

98 m-Xylene & p-Xylene, CAS: 179601-23-1



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-13050-1  
Client Project/Site: NuStar Vapor Testing

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
5/29/2015 11:46:29 AM

Sarah Murphy, Project Manager I  
(253)922-2310  
[sarah.murphy@testamericainc.com](mailto:sarah.murphy@testamericainc.com)



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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

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

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

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

---

**Job ID: 320-13050-1**

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**Laboratory: TestAmerica Sacramento**

---

**Narrative**

**Job Narrative  
320-13050-1**

**Receipt**

The sample was received on 5/18/2015 10:10 AM; the sample arrived in good condition, properly preserved and, where required, on ice.

**Air - GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

**Client Sample ID: SVE North**

**Lab Sample ID: 320-13050-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	0.50		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	2.5		2.0		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

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# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

**Client Sample ID: SVE North**

**Lab Sample ID: 320-13050-1**

**Date Collected: 05/14/15 14:31**

**Matrix: Air**

**Date Received: 05/18/15 15:10**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			05/20/15 23:57	1
Benzene	ND		0.40		ppb v/v			05/20/15 23:57	1
Benzyl chloride	ND		0.80		ppb v/v			05/20/15 23:57	1
Bromodichloromethane	ND		0.30		ppb v/v			05/20/15 23:57	1
Bromoform	ND		0.40		ppb v/v			05/20/15 23:57	1
Bromomethane	ND		0.80		ppb v/v			05/20/15 23:57	1
2-Butanone (MEK)	ND		0.80		ppb v/v			05/20/15 23:57	1
Carbon disulfide	ND		0.80		ppb v/v			05/20/15 23:57	1
Carbon tetrachloride	ND		0.80		ppb v/v			05/20/15 23:57	1
Chlorobenzene	ND		0.30		ppb v/v			05/20/15 23:57	1
Dibromochloromethane	ND		0.40		ppb v/v			05/20/15 23:57	1
Chloroethane	ND		0.80		ppb v/v			05/20/15 23:57	1
Chloroform	ND		0.30		ppb v/v			05/20/15 23:57	1
Chloromethane	ND		0.80		ppb v/v			05/20/15 23:57	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			05/20/15 23:57	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			05/20/15 23:57	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			05/20/15 23:57	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			05/20/15 23:57	1
<b>Dichlorodifluoromethane</b>	<b>0.50</b>		0.40		ppb v/v			05/20/15 23:57	1
1,1-Dichloroethane	ND		0.30		ppb v/v			05/20/15 23:57	1
1,2-Dichloroethane	ND		0.80		ppb v/v			05/20/15 23:57	1
1,1-Dichloroethene	ND		0.80		ppb v/v			05/20/15 23:57	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			05/20/15 23:57	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			05/20/15 23:57	1
1,2-Dichloropropane	ND		0.40		ppb v/v			05/20/15 23:57	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			05/20/15 23:57	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			05/20/15 23:57	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			05/20/15 23:57	1
Ethylbenzene	ND		0.40		ppb v/v			05/20/15 23:57	1
4-Ethyltoluene	ND		0.40		ppb v/v			05/20/15 23:57	1
Hexachlorobutadiene	ND		2.0		ppb v/v			05/20/15 23:57	1
2-Hexanone	ND		0.40		ppb v/v			05/20/15 23:57	1
Methylene Chloride	ND		0.40		ppb v/v			05/20/15 23:57	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			05/20/15 23:57	1
Styrene	ND		0.40		ppb v/v			05/20/15 23:57	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			05/20/15 23:57	1
Tetrachloroethene	ND		0.40		ppb v/v			05/20/15 23:57	1
Toluene	ND		0.40		ppb v/v			05/20/15 23:57	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			05/20/15 23:57	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			05/20/15 23:57	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			05/20/15 23:57	1
Trichloroethene	ND		0.40		ppb v/v			05/20/15 23:57	1
Trichlorofluoromethane	ND		0.40		ppb v/v			05/20/15 23:57	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			05/20/15 23:57	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			05/20/15 23:57	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			05/20/15 23:57	1
Vinyl acetate	ND		0.80		ppb v/v			05/20/15 23:57	1
Vinyl chloride	ND		0.40		ppb v/v			05/20/15 23:57	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

**Client Sample ID: SVE North**

**Lab Sample ID: 320-13050-1**

**Date Collected: 05/14/15 14:31**

**Matrix: Air**

**Date Received: 05/18/15 15:10**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			05/20/15 23:57	1
o-Xylene	ND		0.40		ppb v/v			05/20/15 23:57	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			05/20/15 23:57	1
Benzene	ND		1.3		ug/m3 Air			05/20/15 23:57	1
Benzyl chloride	ND		4.1		ug/m3 Air			05/20/15 23:57	1
Bromodichloromethane	ND		2.0		ug/m3 Air			05/20/15 23:57	1
Bromoform	ND		4.1		ug/m3 Air			05/20/15 23:57	1
Bromomethane	ND		3.1		ug/m3 Air			05/20/15 23:57	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			05/20/15 23:57	1
Carbon disulfide	ND		2.5		ug/m3 Air			05/20/15 23:57	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			05/20/15 23:57	1
Chlorobenzene	ND		1.4		ug/m3 Air			05/20/15 23:57	1
Dibromochloromethane	ND		3.4		ug/m3 Air			05/20/15 23:57	1
Chloroethane	ND		2.1		ug/m3 Air			05/20/15 23:57	1
Chloroform	ND		1.5		ug/m3 Air			05/20/15 23:57	1
Chloromethane	ND		1.7		ug/m3 Air			05/20/15 23:57	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			05/20/15 23:57	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			05/20/15 23:57	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			05/20/15 23:57	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			05/20/15 23:57	1
<b>Dichlorodifluoromethane</b>	<b>2.5</b>		2.0		ug/m3 Air			05/20/15 23:57	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			05/20/15 23:57	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			05/20/15 23:57	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			05/20/15 23:57	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/20/15 23:57	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/20/15 23:57	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			05/20/15 23:57	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/20/15 23:57	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/20/15 23:57	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			05/20/15 23:57	1
Ethylbenzene	ND		1.7		ug/m3 Air			05/20/15 23:57	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			05/20/15 23:57	1
Hexachlorobutadiene	ND		21		ug/m3 Air			05/20/15 23:57	1
2-Hexanone	ND		1.6		ug/m3 Air			05/20/15 23:57	1
Methylene Chloride	ND		1.4		ug/m3 Air			05/20/15 23:57	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			05/20/15 23:57	1
Styrene	ND		1.7		ug/m3 Air			05/20/15 23:57	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			05/20/15 23:57	1
Tetrachloroethene	ND		2.7		ug/m3 Air			05/20/15 23:57	1
Toluene	ND		1.5		ug/m3 Air			05/20/15 23:57	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			05/20/15 23:57	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			05/20/15 23:57	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			05/20/15 23:57	1
Trichloroethene	ND		2.1		ug/m3 Air			05/20/15 23:57	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			05/20/15 23:57	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			05/20/15 23:57	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			05/20/15 23:57	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

**Client Sample ID: SVE North**

**Lab Sample ID: 320-13050-1**

**Date Collected: 05/14/15 14:31**

**Matrix: Air**

**Date Received: 05/18/15 15:10**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			05/20/15 23:57	1
Vinyl acetate	ND		2.8		ug/m3 Air			05/20/15 23:57	1
Vinyl chloride	ND		1.0		ug/m3 Air			05/20/15 23:57	1
m,p-Xylene	ND		3.5		ug/m3 Air			05/20/15 23:57	1
o-Xylene	ND		1.7		ug/m3 Air			05/20/15 23:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		70 - 130		05/20/15 23:57	1
1,2-Dichloroethane-d4 (Surr)	107		70 - 130		05/20/15 23:57	1
Toluene-d8 (Surr)	100		70 - 130		05/20/15 23:57	1

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-13050-1	SVE North	105	107	100
LCS 320-74442/4	Lab Control Sample	111	109	102
LCSD 320-74442/5	Lab Control Sample Dup	108	109	99
MB 320-74442/9	Method Blank	100	114	96

### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-74442/9

Matrix: Air

Analysis Batch: 74442

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			05/20/15 17:10	1
Benzene	ND		0.40		ppb v/v			05/20/15 17:10	1
Benzyl chloride	ND		0.80		ppb v/v			05/20/15 17:10	1
Bromodichloromethane	ND		0.30		ppb v/v			05/20/15 17:10	1
Bromoform	ND		0.40		ppb v/v			05/20/15 17:10	1
Bromomethane	ND		0.80		ppb v/v			05/20/15 17:10	1
2-Butanone (MEK)	ND		0.80		ppb v/v			05/20/15 17:10	1
Carbon disulfide	ND		0.80		ppb v/v			05/20/15 17:10	1
Carbon tetrachloride	ND		0.80		ppb v/v			05/20/15 17:10	1
Chlorobenzene	ND		0.30		ppb v/v			05/20/15 17:10	1
Dibromochloromethane	ND		0.40		ppb v/v			05/20/15 17:10	1
Chloroethane	ND		0.80		ppb v/v			05/20/15 17:10	1
Chloroform	ND		0.30		ppb v/v			05/20/15 17:10	1
Chloromethane	ND		0.80		ppb v/v			05/20/15 17:10	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			05/20/15 17:10	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			05/20/15 17:10	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			05/20/15 17:10	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			05/20/15 17:10	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			05/20/15 17:10	1
1,1-Dichloroethane	ND		0.30		ppb v/v			05/20/15 17:10	1
1,2-Dichloroethane	ND		0.80		ppb v/v			05/20/15 17:10	1
1,1-Dichloroethene	ND		0.80		ppb v/v			05/20/15 17:10	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			05/20/15 17:10	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			05/20/15 17:10	1
1,2-Dichloropropane	ND		0.40		ppb v/v			05/20/15 17:10	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			05/20/15 17:10	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			05/20/15 17:10	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			05/20/15 17:10	1
Ethylbenzene	ND		0.40		ppb v/v			05/20/15 17:10	1
4-Ethyltoluene	ND		0.40		ppb v/v			05/20/15 17:10	1
Hexachlorobutadiene	ND		2.0		ppb v/v			05/20/15 17:10	1
2-Hexanone	ND		0.40		ppb v/v			05/20/15 17:10	1
Methylene Chloride	ND		0.40		ppb v/v			05/20/15 17:10	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			05/20/15 17:10	1
Styrene	ND		0.40		ppb v/v			05/20/15 17:10	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			05/20/15 17:10	1
Tetrachloroethene	ND		0.40		ppb v/v			05/20/15 17:10	1
Toluene	ND		0.40		ppb v/v			05/20/15 17:10	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			05/20/15 17:10	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			05/20/15 17:10	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			05/20/15 17:10	1
Trichloroethene	ND		0.40		ppb v/v			05/20/15 17:10	1
Trichlorofluoromethane	ND		0.40		ppb v/v			05/20/15 17:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			05/20/15 17:10	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			05/20/15 17:10	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			05/20/15 17:10	1
Vinyl acetate	ND		0.80		ppb v/v			05/20/15 17:10	1
Vinyl chloride	ND		0.40		ppb v/v			05/20/15 17:10	1

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-74442/9**  
**Matrix: Air**  
**Analysis Batch: 74442**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
m,p-Xylene	ND		0.80		ppb v/v			05/20/15 17:10	1
o-Xylene	ND		0.40		ppb v/v			05/20/15 17:10	1
Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		12		ug/m3 Air			05/20/15 17:10	1
Benzene	ND		1.3		ug/m3 Air			05/20/15 17:10	1
Benzyl chloride	ND		4.1		ug/m3 Air			05/20/15 17:10	1
Bromodichloromethane	ND		2.0		ug/m3 Air			05/20/15 17:10	1
Bromoform	ND		4.1		ug/m3 Air			05/20/15 17:10	1
Bromomethane	ND		3.1		ug/m3 Air			05/20/15 17:10	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			05/20/15 17:10	1
Carbon disulfide	ND		2.5		ug/m3 Air			05/20/15 17:10	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			05/20/15 17:10	1
Chlorobenzene	ND		1.4		ug/m3 Air			05/20/15 17:10	1
Dibromochloromethane	ND		3.4		ug/m3 Air			05/20/15 17:10	1
Chloroethane	ND		2.1		ug/m3 Air			05/20/15 17:10	1
Chloroform	ND		1.5		ug/m3 Air			05/20/15 17:10	1
Chloromethane	ND		1.7		ug/m3 Air			05/20/15 17:10	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			05/20/15 17:10	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			05/20/15 17:10	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			05/20/15 17:10	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			05/20/15 17:10	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			05/20/15 17:10	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			05/20/15 17:10	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			05/20/15 17:10	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			05/20/15 17:10	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/20/15 17:10	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/20/15 17:10	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			05/20/15 17:10	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/20/15 17:10	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/20/15 17:10	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			05/20/15 17:10	1
Ethylbenzene	ND		1.7		ug/m3 Air			05/20/15 17:10	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			05/20/15 17:10	1
Hexachlorobutadiene	ND		21		ug/m3 Air			05/20/15 17:10	1
2-Hexanone	ND		1.6		ug/m3 Air			05/20/15 17:10	1
Methylene Chloride	ND		1.4		ug/m3 Air			05/20/15 17:10	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			05/20/15 17:10	1
Styrene	ND		1.7		ug/m3 Air			05/20/15 17:10	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			05/20/15 17:10	1
Tetrachloroethene	ND		2.7		ug/m3 Air			05/20/15 17:10	1
Toluene	ND		1.5		ug/m3 Air			05/20/15 17:10	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			05/20/15 17:10	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			05/20/15 17:10	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			05/20/15 17:10	1
Trichloroethene	ND		2.1		ug/m3 Air			05/20/15 17:10	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			05/20/15 17:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			05/20/15 17:10	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-74442/9**  
**Matrix: Air**  
**Analysis Batch: 74442**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			05/20/15 17:10	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			05/20/15 17:10	1
Vinyl acetate	ND		2.8		ug/m3 Air			05/20/15 17:10	1
Vinyl chloride	ND		1.0		ug/m3 Air			05/20/15 17:10	1
m,p-Xylene	ND		3.5		ug/m3 Air			05/20/15 17:10	1
o-Xylene	ND		1.7		ug/m3 Air			05/20/15 17:10	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		70 - 130					05/20/15 17:10	1
1,2-Dichloroethane-d4 (Surr)	114		70 - 130					05/20/15 17:10	1
Toluene-d8 (Surr)	96		70 - 130					05/20/15 17:10	1

**Lab Sample ID: LCS 320-74442/4**  
**Matrix: Air**  
**Analysis Batch: 74442**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	19.8		ppb v/v		99	71 - 131
Benzene	20.0	17.7		ppb v/v		89	68 - 128
Benzyl chloride	20.0	19.2		ppb v/v		96	58 - 120
Bromodichloromethane	20.0	21.1		ppb v/v		106	65 - 130
Bromoform	20.0	23.7		ppb v/v		119	64 - 144
Bromomethane	20.0	19.2		ppb v/v		96	70 - 131
2-Butanone (MEK)	20.0	16.5		ppb v/v		82	71 - 131
Carbon disulfide	20.0	16.1		ppb v/v		80	63 - 123
Carbon tetrachloride	20.0	22.9		ppb v/v		115	67 - 127
Chlorobenzene	20.0	20.7		ppb v/v		103	70 - 132
Dibromochloromethane	20.0	22.4		ppb v/v		112	68 - 128
Chloroethane	20.0	18.7		ppb v/v		93	70 - 131
Chloroform	20.0	19.2		ppb v/v		96	69 - 129
Chloromethane	20.0	20.5		ppb v/v		103	67 - 127
1,2-Dibromoethane (EDB)	20.0	21.2		ppb v/v		106	68 - 131
1,2-Dichlorobenzene	20.0	24.0		ppb v/v		120	73 - 143
1,3-Dichlorobenzene	20.0	24.4		ppb v/v		122	77 - 136
1,4-Dichlorobenzene	20.0	24.4		ppb v/v		122	73 - 143
Dichlorodifluoromethane	20.0	20.2		ppb v/v		101	69 - 129
1,1-Dichloroethane	20.0	18.3		ppb v/v		92	65 - 125
1,2-Dichloroethane	20.0	24.2		ppb v/v		121	71 - 131
1,1-Dichloroethene	20.0	17.4		ppb v/v		87	53 - 128
cis-1,2-Dichloroethene	20.0	17.9		ppb v/v		89	68 - 128
trans-1,2-Dichloroethene	20.0	19.5		ppb v/v		97	70 - 130
1,2-Dichloropropane	20.0	22.9		ppb v/v		115	74 - 128
cis-1,3-Dichloropropene	20.0	21.0		ppb v/v		105	78 - 132
trans-1,3-Dichloropropene	20.0	19.7		ppb v/v		98	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.4		ppb v/v		92	64 - 124
Ethylbenzene	20.0	21.2		ppb v/v		106	76 - 136
4-Ethyltoluene	20.0	21.4		ppb v/v		107	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-74442/4

Matrix: Air

Analysis Batch: 74442

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	25.6		ppb v/v		128	42 - 150
2-Hexanone	20.0	19.7		ppb v/v		98	70 - 128
Methylene Chloride	20.0	18.4		ppb v/v		92	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	20.4		ppb v/v		102	73 - 133
Styrene	20.0	22.6		ppb v/v		113	76 - 144
1,1,2,2-Tetrachloroethane	20.0	19.4		ppb v/v		97	75 - 135
Tetrachloroethene	20.0	21.4		ppb v/v		107	56 - 138
Toluene	20.0	20.5		ppb v/v		102	71 - 132
1,2,4-Trichlorobenzene	20.0	24.6		ppb v/v		123	59 - 150
1,1,1-Trichloroethane	20.0	21.2		ppb v/v		106	65 - 124
1,1,2-Trichloroethane	20.0	20.1		ppb v/v		101	71 - 131
Trichloroethene	20.0	20.5		ppb v/v		102	64 - 127
Trichlorofluoromethane	20.0	21.8		ppb v/v		109	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.9		ppb v/v		84	50 - 132
1,2,4-Trimethylbenzene	20.0	21.5		ppb v/v		107	61 - 145
1,3,5-Trimethylbenzene	20.0	21.8		ppb v/v		109	65 - 136
Vinyl acetate	20.0	22.3		ppb v/v		111	77 - 134
Vinyl chloride	20.0	18.5		ppb v/v		93	69 - 129
m,p-Xylene	40.0	43.8		ppb v/v		109	75 - 138
o-Xylene	20.0	21.8		ppb v/v		109	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	47.0		ug/m3 Air		99	71 - 131
Benzene	64	56.6		ug/m3 Air		89	68 - 128
Benzyl chloride	100	99.5		ug/m3 Air		96	58 - 120
Bromodichloromethane	130	142		ug/m3 Air		106	65 - 130
Bromoform	210	245		ug/m3 Air		119	64 - 144
Bromomethane	78	74.5		ug/m3 Air		96	70 - 131
2-Butanone (MEK)	59	48.6		ug/m3 Air		82	71 - 131
Carbon disulfide	62	50.1		ug/m3 Air		80	63 - 123
Carbon tetrachloride	130	144		ug/m3 Air		115	67 - 127
Chlorobenzene	92	95.2		ug/m3 Air		103	70 - 132
Dibromochloromethane	170	191		ug/m3 Air		112	68 - 128
Chloroethane	53	49.2		ug/m3 Air		93	70 - 131
Chloroform	98	93.6		ug/m3 Air		96	69 - 129
Chloromethane	41	42.4		ug/m3 Air		103	67 - 127
1,2-Dibromoethane (EDB)	150	163		ug/m3 Air		106	68 - 131
1,2-Dichlorobenzene	120	144		ug/m3 Air		120	73 - 143
1,3-Dichlorobenzene	120	146		ug/m3 Air		122	77 - 136
1,4-Dichlorobenzene	120	147		ug/m3 Air		122	73 - 143
Dichlorodifluoromethane	99	99.7		ug/m3 Air		101	69 - 129
1,1-Dichloroethane	81	74.2		ug/m3 Air		92	65 - 125
1,2-Dichloroethane	81	97.9		ug/m3 Air		121	71 - 131
1,1-Dichloroethene	79	69.1		ug/m3 Air		87	53 - 128
cis-1,2-Dichloroethene	79	70.9		ug/m3 Air		89	68 - 128
trans-1,2-Dichloroethene	79	77.3		ug/m3 Air		97	70 - 130
1,2-Dichloropropane	92	106		ug/m3 Air		115	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-74442/4**

**Matrix: Air**

**Analysis Batch: 74442**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	95.5		ug/m3 Air		105	78 - 132
trans-1,3-Dichloropropene	91	89.3		ug/m3 Air		98	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	128		ug/m3 Air		92	64 - 124
Ethylbenzene	87	92.2		ug/m3 Air		106	76 - 136
4-Ethyltoluene	98	105		ug/m3 Air		107	62 - 136
Hexachlorobutadiene	210	273		ug/m3 Air		128	42 - 150
2-Hexanone	82	80.7		ug/m3 Air		98	70 - 128
Methylene Chloride	69	63.9		ug/m3 Air		92	65 - 125
4-Methyl-2-pentanone (MIBK)	82	83.7		ug/m3 Air		102	73 - 133
Styrene	85	96.2		ug/m3 Air		113	76 - 144
1,1,2,2-Tetrachloroethane	140	133		ug/m3 Air		97	75 - 135
Tetrachloroethene	140	145		ug/m3 Air		107	56 - 138
Toluene	75	77.1		ug/m3 Air		102	71 - 132
1,2,4-Trichlorobenzene	150	182		ug/m3 Air		123	59 - 150
1,1,1-Trichloroethane	110	116		ug/m3 Air		106	65 - 124
1,1,2-Trichloroethane	110	110		ug/m3 Air		101	71 - 131
Trichloroethene	110	110		ug/m3 Air		102	64 - 127
Trichlorofluoromethane	110	123		ug/m3 Air		109	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	129		ug/m3 Air		84	50 - 132
1,2,4-Trimethylbenzene	98	106		ug/m3 Air		107	61 - 145
1,3,5-Trimethylbenzene	98	107		ug/m3 Air		109	65 - 136
Vinyl acetate	70	78.4		ug/m3 Air		111	77 - 134
Vinyl chloride	51	47.4		ug/m3 Air		93	69 - 129
m,p-Xylene	170	190		ug/m3 Air		109	75 - 138
o-Xylene	87	94.8		ug/m3 Air		109	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	111		70 - 130
1,2-Dichloroethane-d4 (Surr)	109		70 - 130
Toluene-d8 (Surr)	102		70 - 130

**Lab Sample ID: LCSD 320-74442/5**

**Matrix: Air**

**Analysis Batch: 74442**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	19.7		ppb v/v		98	71 - 131	0	25
Benzene	20.0	17.4		ppb v/v		87	68 - 128	2	25
Benzyl chloride	20.0	18.8		ppb v/v		94	58 - 120	2	25
Bromodichloromethane	20.0	20.7		ppb v/v		104	65 - 130	2	25
Bromoform	20.0	23.4		ppb v/v		117	64 - 144	1	25
Bromomethane	20.0	19.3		ppb v/v		97	70 - 131	1	25
2-Butanone (MEK)	20.0	16.1		ppb v/v		81	71 - 131	2	25
Carbon disulfide	20.0	16.2		ppb v/v		81	63 - 123	1	25
Carbon tetrachloride	20.0	22.3		ppb v/v		111	67 - 127	3	25
Chlorobenzene	20.0	20.5		ppb v/v		103	70 - 132	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-74442/5

Matrix: Air

Analysis Batch: 74442

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	22.3		ppb v/v		111	68 - 128	1	25
Chloroethane	20.0	19.0		ppb v/v		95	70 - 131	2	25
Chloroform	20.0	19.2		ppb v/v		96	69 - 129	0	25
Chloromethane	20.0	21.2		ppb v/v		106	67 - 127	3	25
1,2-Dibromoethane (EDB)	20.0	21.2		ppb v/v		106	68 - 131	0	25
1,2-Dichlorobenzene	20.0	23.4		ppb v/v		117	73 - 143	3	25
1,3-Dichlorobenzene	20.0	23.8		ppb v/v		119	77 - 136	2	25
1,4-Dichlorobenzene	20.0	23.9		ppb v/v		120	73 - 143	2	25
Dichlorodifluoromethane	20.0	20.9		ppb v/v		105	69 - 129	4	25
1,1-Dichloroethane	20.0	18.4		ppb v/v		92	65 - 125	0	25
1,2-Dichloroethane	20.0	23.6		ppb v/v		118	71 - 131	2	25
1,1-Dichloroethene	20.0	17.4		ppb v/v		87	53 - 128	0	25
cis-1,2-Dichloroethene	20.0	17.9		ppb v/v		90	68 - 128	0	25
trans-1,2-Dichloroethene	20.0	19.4		ppb v/v		97	70 - 130	0	25
1,2-Dichloropropane	20.0	22.4		ppb v/v		112	74 - 128	2	25
cis-1,3-Dichloropropene	20.0	20.6		ppb v/v		103	78 - 132	2	25
trans-1,3-Dichloropropene	20.0	19.4		ppb v/v		97	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.8		ppb v/v		99	64 - 124	7	25
Ethylbenzene	20.0	21.0		ppb v/v		105	76 - 136	1	25
4-Ethyltoluene	20.0	20.7		ppb v/v		104	62 - 136	3	25
Hexachlorobutadiene	20.0	25.3		ppb v/v		127	42 - 150	1	25
2-Hexanone	20.0	19.5		ppb v/v		98	70 - 128	1	25
Methylene Chloride	20.0	18.5		ppb v/v		93	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	20.0	19.7		ppb v/v		99	73 - 133	4	25
Styrene	20.0	22.1		ppb v/v		111	76 - 144	2	25
1,1,2,2-Tetrachloroethane	20.0	19.1		ppb v/v		96	75 - 135	1	25
Tetrachloroethene	20.0	21.2		ppb v/v		106	56 - 138	1	25
Toluene	20.0	20.1		ppb v/v		100	71 - 132	2	25
1,2,4-Trichlorobenzene	20.0	24.1		ppb v/v		121	59 - 150	2	25
1,1,1-Trichloroethane	20.0	21.0		ppb v/v		105	65 - 124	1	25
1,1,2-Trichloroethane	20.0	19.9		ppb v/v		99	71 - 131	1	25
Trichloroethene	20.0	20.2		ppb v/v		101	64 - 127	1	25
Trichlorofluoromethane	20.0	21.6		ppb v/v		108	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.0		ppb v/v		85	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	24.5		ppb v/v		122	61 - 145	13	25
1,3,5-Trimethylbenzene	20.0	21.4		ppb v/v		107	65 - 136	2	25
Vinyl acetate	20.0	22.0		ppb v/v		110	77 - 134	1	25
Vinyl chloride	20.0	18.9		ppb v/v		95	69 - 129	2	25
m,p-Xylene	40.0	43.1		ppb v/v		108	75 - 138	2	25
o-Xylene	20.0	21.4		ppb v/v		107	77 - 132	2	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	46.8		ug/m3 Air		98	71 - 131	0	25
Benzene	64	55.5		ug/m3 Air		87	68 - 128	2	25
Benzyl chloride	100	97.4		ug/m3 Air		94	58 - 120	2	25
Bromodichloromethane	130	139		ug/m3 Air		104	65 - 130	2	25
Bromoform	210	242		ug/m3 Air		117	64 - 144	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-74442/5

Matrix: Air

Analysis Batch: 74442

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	75.1		ug/m3 Air		97	70 - 131	1	25
2-Butanone (MEK)	59	47.6		ug/m3 Air		81	71 - 131	2	25
Carbon disulfide	62	50.6		ug/m3 Air		81	63 - 123	1	25
Carbon tetrachloride	130	140		ug/m3 Air		111	67 - 127	3	25
Chlorobenzene	92	94.6		ug/m3 Air		103	70 - 132	1	25
Dibromochloromethane	170	190		ug/m3 Air		111	68 - 128	1	25
Chloroethane	53	50.2		ug/m3 Air		95	70 - 131	2	25
Chloroform	98	93.7		ug/m3 Air		96	69 - 129	0	25
Chloromethane	41	43.7		ug/m3 Air		106	67 - 127	3	25
1,2-Dibromoethane (EDB)	150	163		ug/m3 Air		106	68 - 131	0	25
1,2-Dichlorobenzene	120	140		ug/m3 Air		117	73 - 143	3	25
1,3-Dichlorobenzene	120	143		ug/m3 Air		119	77 - 136	2	25
1,4-Dichlorobenzene	120	144		ug/m3 Air		120	73 - 143	2	25
Dichlorodifluoromethane	99	103		ug/m3 Air		105	69 - 129	4	25
1,1-Dichloroethane	81	74.5		ug/m3 Air		92	65 - 125	0	25
1,2-Dichloroethane	81	95.5		ug/m3 Air		118	71 - 131	2	25
1,1-Dichloroethene	79	69.2		ug/m3 Air		87	53 - 128	0	25
cis-1,2-Dichloroethene	79	71.1		ug/m3 Air		90	68 - 128	0	25
trans-1,2-Dichloroethene	79	77.1		ug/m3 Air		97	70 - 130	0	25
1,2-Dichloropropane	92	103		ug/m3 Air		112	74 - 128	2	25
cis-1,3-Dichloropropene	91	93.3		ug/m3 Air		103	78 - 132	2	25
trans-1,3-Dichloropropene	91	87.9		ug/m3 Air		97	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	138		ug/m3 Air		99	64 - 124	7	25
Ethylbenzene	87	91.1		ug/m3 Air		105	76 - 136	1	25
4-Ethyltoluene	98	102		ug/m3 Air		104	62 - 136	3	25
Hexachlorobutadiene	210	270		ug/m3 Air		127	42 - 150	1	25
2-Hexanone	82	80.1		ug/m3 Air		98	70 - 128	1	25
Methylene Chloride	69	64.4		ug/m3 Air		93	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	82	80.8		ug/m3 Air		99	73 - 133	4	25
Styrene	85	94.3		ug/m3 Air		111	76 - 144	2	25
1,1,2,2-Tetrachloroethane	140	131		ug/m3 Air		96	75 - 135	1	25
Tetrachloroethene	140	144		ug/m3 Air		106	56 - 138	1	25
Toluene	75	75.7		ug/m3 Air		100	71 - 132	2	25
1,2,4-Trichlorobenzene	150	179		ug/m3 Air		121	59 - 150	2	25
1,1,1-Trichloroethane	110	115		ug/m3 Air		105	65 - 124	1	25
1,1,2-Trichloroethane	110	108		ug/m3 Air		99	71 - 131	1	25
Trichloroethene	110	109		ug/m3 Air		101	64 - 127	1	25
Trichlorofluoromethane	110	121		ug/m3 Air		108	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	130		ug/m3 Air		85	50 - 132	1	25
1,2,4-Trimethylbenzene	98	120		ug/m3 Air		122	61 - 145	13	25
1,3,5-Trimethylbenzene	98	105		ug/m3 Air		107	65 - 136	2	25
Vinyl acetate	70	77.4		ug/m3 Air		110	77 - 134	1	25
Vinyl chloride	51	48.4		ug/m3 Air		95	69 - 129	2	25
m,p-Xylene	170	187		ug/m3 Air		108	75 - 138	2	25
o-Xylene	87	93.0		ug/m3 Air		107	77 - 132	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-74442/5

Matrix: Air

Analysis Batch: 74442

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	108		70 - 130
1,2-Dichloroethane-d4 (Surr)	109		70 - 130
Toluene-d8 (Surr)	99		70 - 130

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# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Air - GC/MS VOA

### Analysis Batch: 74442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-13050-1	SVE North	Total/NA	Air	TO-15	
LCS 320-74442/4	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-74442/5	Lab Control Sample Dup	Total/NA	Air	TO-15	
MB 320-74442/9	Method Blank	Total/NA	Air	TO-15	

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# Lab Chronicle

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

**Client Sample ID: SVE North**

**Lab Sample ID: 320-13050-1**

**Date Collected: 05/14/15 14:31**

**Matrix: Air**

**Date Received: 05/18/15 15:10**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	480 mL	250 mL	74442	05/20/15 23:57	SRS	TAL SAC

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Certification Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-16
Alaska (UST)	State Program	10	UST-055	12-18-15
Arizona	State Program	9	AZ0708	08-11-15
Arkansas DEQ	State Program	6	88-0691	06-17-15
California	State Program	9	2897	01-31-16
Colorado	State Program	8	N/A	08-31-15
Connecticut	State Program	1	PH-0691	06-30-15
Florida	NELAP	4	E87570	06-30-15
Hawaii	State Program	9	N/A	01-29-16
Illinois	NELAP	5	200060	03-17-16
Kansas	NELAP	7	E-10375	10-31-15
Louisiana	NELAP	6	30612	06-30-15
Michigan	State Program	5	9947	01-31-16
Nevada	State Program	9	CA44	07-31-15
New Jersey	NELAP	2	CA005	06-30-15
New York	NELAP	2	11666	04-01-16
Oregon	NELAP	10	CA200005	01-29-16
Oregon	NELAP Secondary AB	10	E87570	06-30-15
Pennsylvania	NELAP	3	9947	03-31-16
Texas	NELAP	6	T104704399-08-TX	05-31-16
US Fish & Wildlife	Federal		LE148388-0	02-28-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-16
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-15
Wyoming	State Program	8	8TMS-Q	01-29-16

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-012	12-26-15
California	State Program	9	2597	09-30-15
Oregon	NELAP	10	OR100021	01-09-16
USDA	Federal		P330-11-00092	04-17-17
Washington	State Program	10	C586	06-23-15

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

- 1
- 2
- 3
- 4
- 5
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- 7
- 8
- 9
- 10
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- 13
- 14
- 15
- 16
- 17

# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13050-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-13050-1	SVE North	Air	05/14/15 14:31	05/18/15 15:10

---

- 1
- 2
- 3
- 4
- 5
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- 7
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- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

TestAmerica Sacramento  
880 Riverside Parkway

West Sacramento, CA 95605  
phone 916.374.4378 fax 916.372.1059

Client Contact Information

Company Name: Apex Companies  
Address: 3015 SW 1st Ave  
City/State/Zip: Portland OR, 97201  
Phone: 503 924 4704  
FAX: \_\_\_\_\_

Project Name: Nusta Vancouver  
Site/Location: Nusta Vancouver  
PO #: 1126-17-003

Project Manager: Stephanie Salisbury  
Phone: 503 924 4704  
Email: SSalisbury@apexcos.com  
Site Contact: \_\_\_\_\_  
TA Contact: \_\_\_\_\_

Analysis Turnaround Time  
Standard (Specific): X  
Rush (Specify): \_\_\_\_\_

Sample Identification

SUE NORTH

Sample Date(s)

5/14/15 1430 1431

Time Start

1430 1431

Time Stop

1431

Canister Vacuum in Field, 'Hg (Start)'

-30

Canister Vacuum in Field, 'Hg (Stop)'

-4

Flow Controller ID

-

Canister ID

340085 X

Project Manager: Stephanie Salisbury

Samples Collected By: Joel Mathebeck

Project Manager: Stephanie Salisbury

Samples Collected By: Joel Mathebeck

COC No:

1 of 1 COCs

For Lab Use Only:  
Walk-in Client  
Lab Sampling

Job / SDG No.

(See below for Add'l Items)

Sample Specific Notes:

TO-15



320-13050 Chain of Custody

Temperature (Fahrenheit)

Start Interior

Ambient

Stop

Temperature (Fahrenheit)

Start Interior

Ambient

Stop

Special Instructions/QC Requirements & Comments:

Repeat lab results to: SSalisbury@apexcos.com

Samples Shipped by: Joel Mathebeck

Date / Time:

Samples Relinquished by: Joel Mathebeck

Date / Time: 5/14/15

Samples Received by:

Received by: Joel Mathebeck

Date / Time: 5/15/15 1050

Relinquished by:

Date / Time: 5/15/15 1150

Date / Time: 5/15/15 1150

Received by: Monica Johnson

Date / Time: 5/15/15 1150

Lab Use Only: \_\_\_\_\_

Shipper Name:

Condition:

Condition:

5/15/15 1700

[Signature]

TestAmerica  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples

Form No. CA-C-WI-003, Rev. 1, dated 05/10/2013

JOB # **320-13050**  
 Sample # **1**

1  
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17

Client/Project:		VFR ID:	
Canister Serial #:	3400	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING		PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)				JMT
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)		12.39	05/19/15	AO
FINAL PRESSURE (PSIA)		23.84	05/19/15	AO
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.92			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.92		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
Canister DF =	1.92	X	Load DF =	0.5208333	X	Bag DF =	1	=	FINAL DF	1.002152273
			LVf (mLs)	250		BVf (mLs)				
			LVi (mLs)	480		BVi (mLs)				
Canister DF =	1.92	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				
Canister DF =	1.92	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				

## Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-13050-1

**Login Number: 13050**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Nelson, Kym D**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	Thermal preservation not required.
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 containers received 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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Certification Type

TO-15 SCAN

Date Cleaned/Batch ID

4/9/15 320-12495

Date of QC

4/28/15; 4/29/15

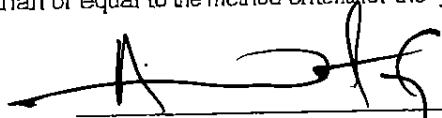


320-12495 Chain of Custody

72356  
22628

Canister ID	Filename	Canister ID	Filename
34000183	M51042816		
0338			
0274			
0785			
0392			
1083	M51042818		
0855	↓ 20		
0011	↓ 19		
2034	M55042920		
0239	↓ 21		
0255	↓ 22		
7826	↓ 23		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

  
1<sup>st</sup> level Reviewed By:

4/30/15  
Date:

  
2nd level Reviewed By:

5/14/15  
Date:



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000183 Lab Sample ID: 320-12495-1  
 Matrix: Air Lab File ID: MS1042816.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 02:31  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	1.5	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000183 Lab Sample ID: 320-12495-1  
 Matrix: Air Lab File ID: MS1042816.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 02:31  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000183 Lab Sample ID: 320-12495-1  
 Matrix: Air Lab File ID: MS1042816.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 02:31  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	88		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	106		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042816.d  
 Lims ID: 320-12495-A-1 Lab Sample ID: 320-12495-1  
 Client ID: 34000183  
 Sample Type: Client  
 Inject. Date: 29-Apr-2015 02:31:30 ALS Bottle#: 12 Worklist Smp#: 16  
 Purge Vol: 250.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-1  
 Operator ID: AO Instrument ID: ATMS1  
 Method: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\TO15\_ATMS1scan.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 29-Apr-2015 07:08:42 Calib Date: 28-Apr-2015 13:10:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042803.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam

Date: 29-Apr-2015 09:11:17

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.778	11.784	-0.006	82	15207	4.00	
* 2 1,4-Difluorobenzene	114	13.893	13.893	0.000	95	49563	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.587	20.581	0.006	88	44950	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.954	12.954	0.000	98	27647	4.24	
\$ 5 Toluene-d8 (Surr)	100	17.301	17.301	0.000	97	28545	4.08	
\$ 6 4-Bromofluorobenzene (Surr	174	23.148	23.148	0.000	91	26901	3.53	
31 Acetone	43	7.096	7.108	-0.012	70	8732	1.45	
54 2-Butanone (MEK)	43	10.784	10.766	0.018	29	382	0.0654	

**Reagents:**

VASUISIM\_00166 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042816.d

Injection Date: 29-Apr-2015 02:31:30

Instrument ID: ATMS1

Operator ID: AO

Lims ID: 320-12495-A-1

Lab Sample ID: 320-12495-1

Worklist Smp#: 16

Client ID: 34000183

Purge Vol: 250.000 mL

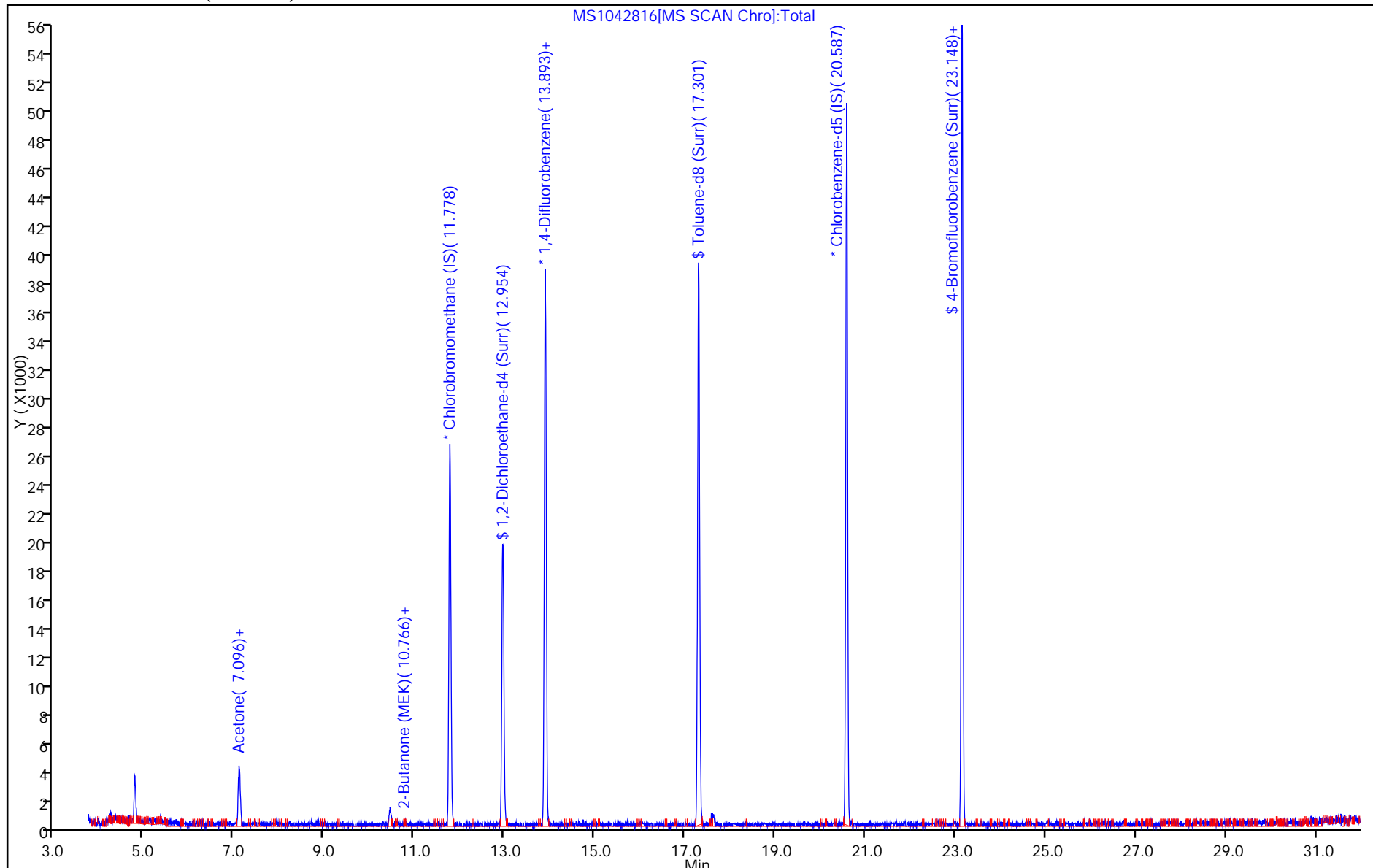
Dil. Factor: 1.0000

ALS Bottle#: 12

Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042816.d

Injection Date: 29-Apr-2015 02:31:30

Instrument ID: ATMS1

Lims ID: 320-12495-A-1

Lab Sample ID: 320-12495-1

Client ID: 34000183

Operator ID: AO

ALS Bottle#: 12 Worklist Smp#: 16

Purge Vol: 250.000 mL

Dil. Factor: 1.0000

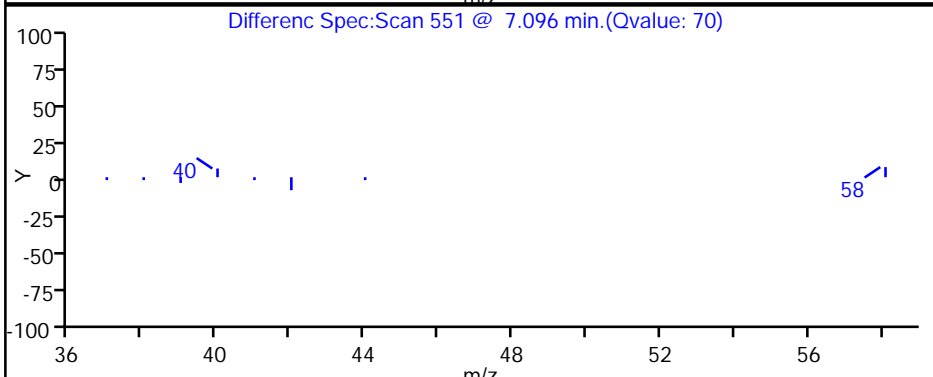
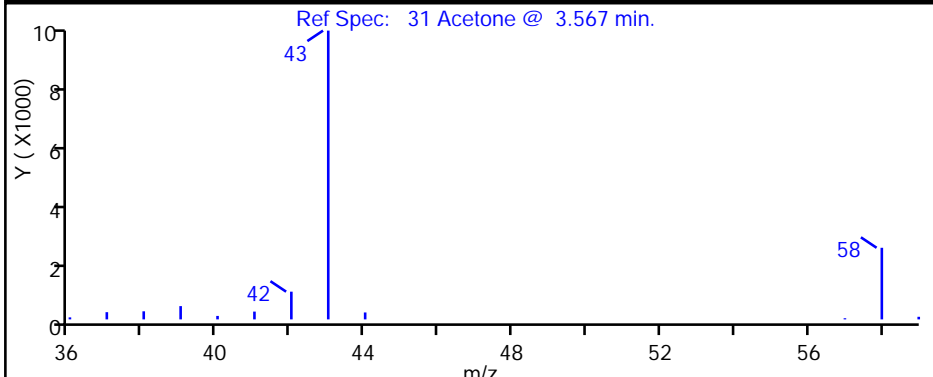
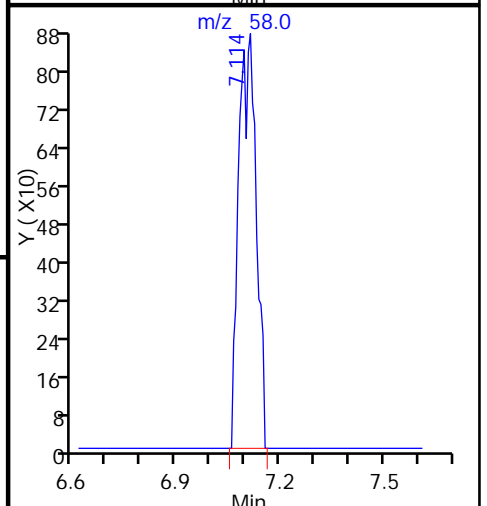
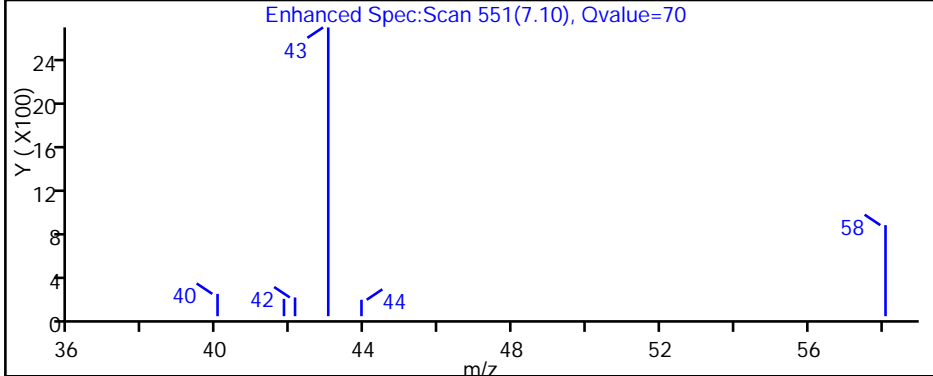
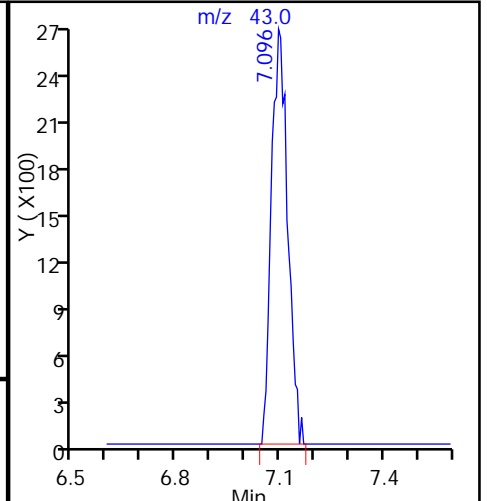
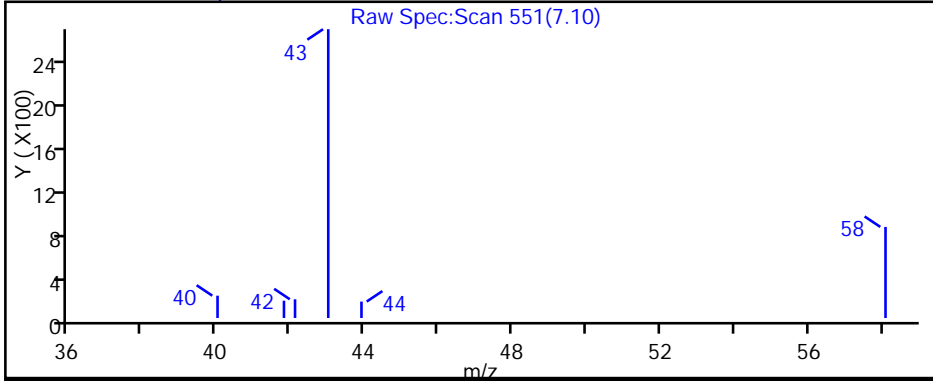
Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001083 Lab Sample ID: 320-12495-6  
 Matrix: Air Lab File ID: MS1042818.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 04:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	1.1	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001083 Lab Sample ID: 320-12495-6  
 Matrix: Air Lab File ID: MS1042818.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 04:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001083 Lab Sample ID: 320-12495-6  
 Matrix: Air Lab File ID: MS1042818.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 04:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	92		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	105		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042818.d  
 Lims ID: 320-12495-A-6 Lab Sample ID: 320-12495-6  
 Client ID: 34001083  
 Sample Type: Client  
 Inject. Date: 29-Apr-2015 04:19:30 ALS Bottle#: 14 Worklist Smp#: 18  
 Purge Vol: 250.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-6  
 Operator ID: AO Instrument ID: ATMS1  
 Method: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\TO15\_ATMS1scan.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 29-Apr-2015 09:39:43 Calib Date: 28-Apr-2015 13:10:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042803.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam

Date: 29-Apr-2015 09:41:18

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.778	11.784	-0.006	82	18416	4.00	
* 2 1,4-Difluorobenzene	114	13.899	13.893	0.006	95	61316	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.587	20.581	0.006	89	54745	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.961	12.961	0.007	95	33169	4.21	
\$ 5 Toluene-d8 (Surr)	100	17.301	17.301	0.000	97	35809	4.14	
\$ 6 4-Bromofluorobenzene (Surr	174	23.154	23.148	0.006	93	34005	3.66	
31 Acetone	43	7.096	7.108	-0.012	98	8162	1.12	

**Reagents:**

VASUISIM\_00166 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042818.d

Injection Date: 29-Apr-2015 04:19:30

Instrument ID: ATMS1

Operator ID: AO

Lims ID: 320-12495-A-6

Lab Sample ID: 320-12495-6

Worklist Smp#: 18

Client ID: 34001083

Purge Vol: 250.000 mL

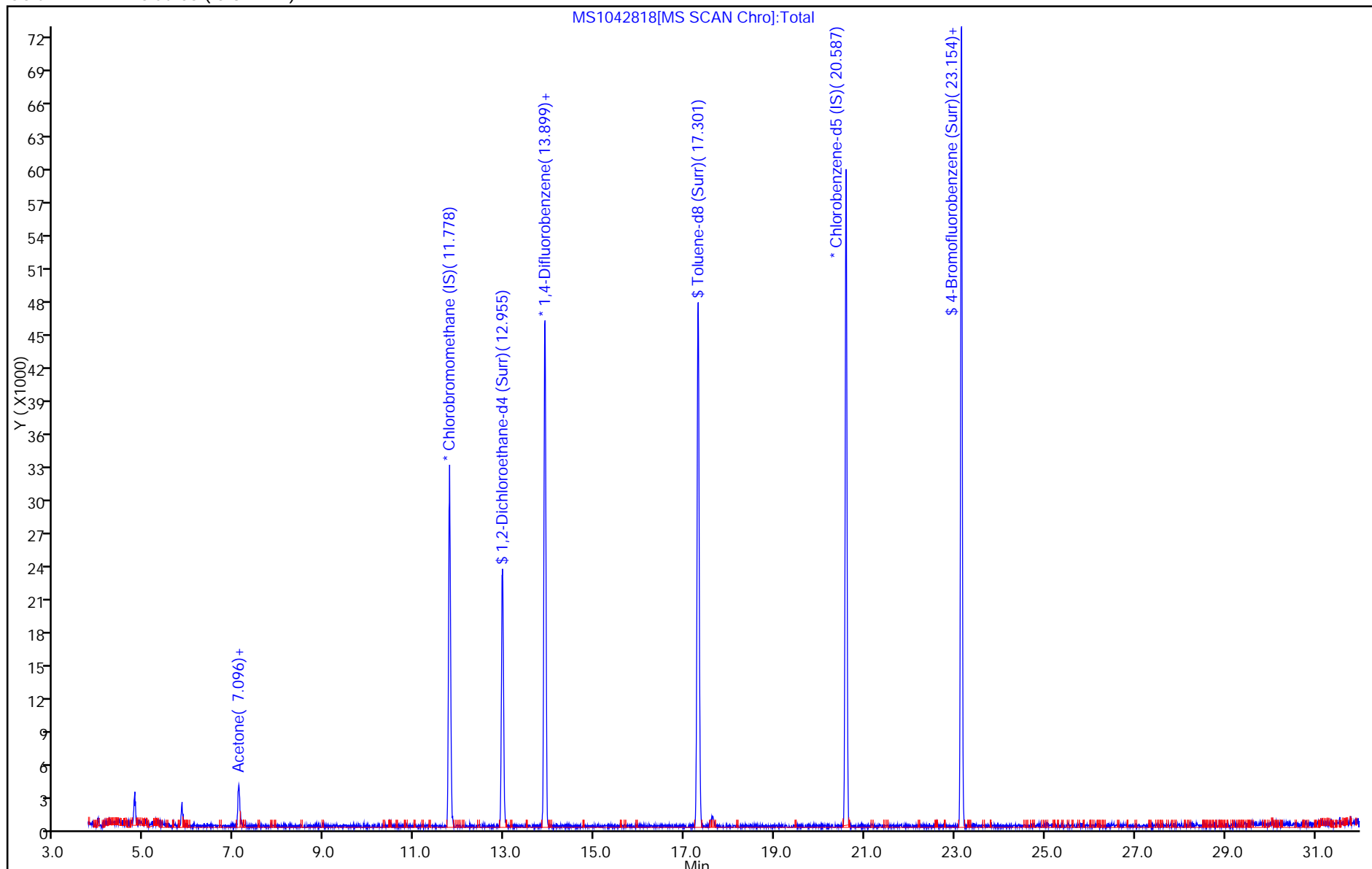
Dil. Factor: 1.0000

ALS Bottle#: 14

Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042818.d

Injection Date: 29-Apr-2015 04:19:30

Instrument ID: ATMS1

Lims ID: 320-12495-A-6

Lab Sample ID: 320-12495-6

Client ID: 34001083

Operator ID: AO

ALS Bottle#: 14

Worklist Smp#: 18

Purge Vol: 250.000 mL

Dil. Factor: 1.0000

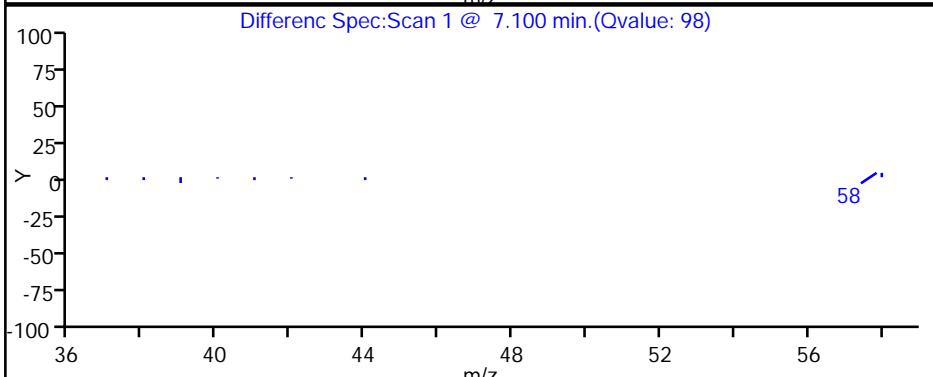
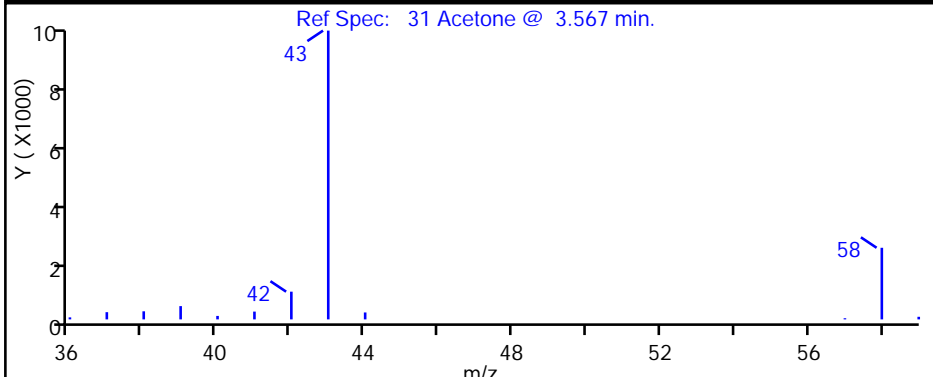
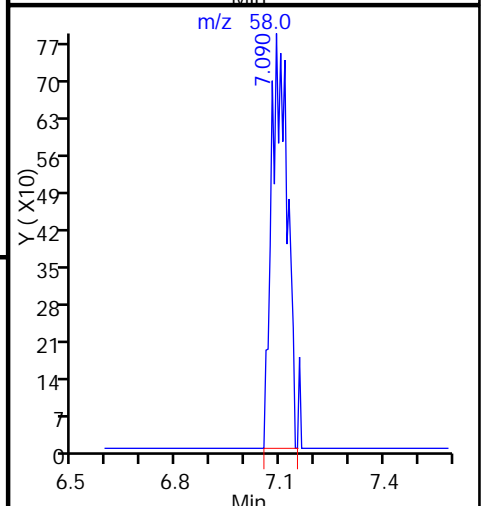
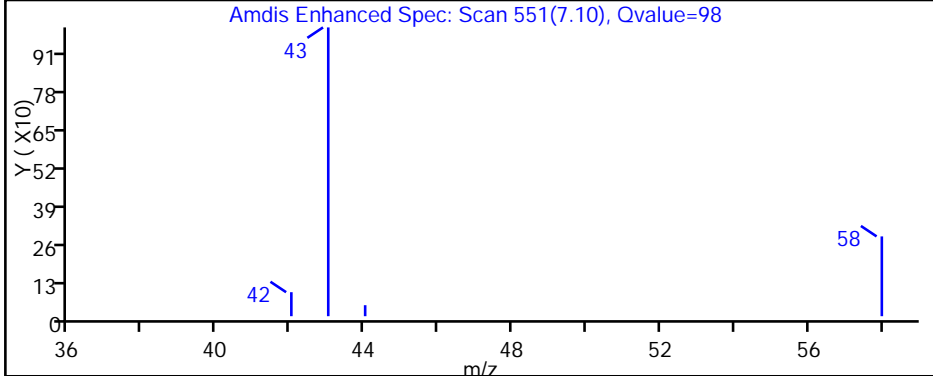
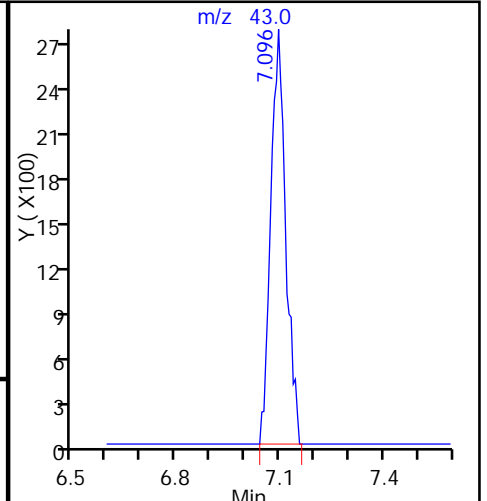
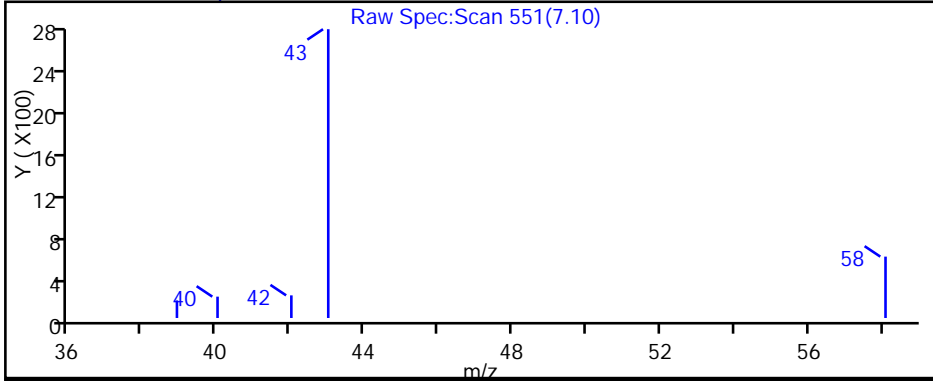
Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000855 Lab Sample ID: 320-12495-7  
 Matrix: Air Lab File ID: MS1042820.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 06:05  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.85	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	0.27	J	0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000855 Lab Sample ID: 320-12495-7  
 Matrix: Air Lab File ID: MS1042820.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 06:05  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000855 Lab Sample ID: 320-12495-7  
 Matrix: Air Lab File ID: MS1042820.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 06:05  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	92		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042820.d  
 Lims ID: 320-12495-A-7 Lab Sample ID: 320-12495-7  
 Client ID: 34000855  
 Sample Type: Client  
 Inject. Date: 29-Apr-2015 06:05:30 ALS Bottle#: 16 Worklist Smp#: 20  
 Purge Vol: 250.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-7  
 Operator ID: AO Instrument ID: ATMS1  
 Method: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\TO15\_ATMS1scan.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 29-Apr-2015 07:08:42 Calib Date: 28-Apr-2015 13:10:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042803.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam

Date:

29-Apr-2015 09:11:52

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.778	11.784	-0.006	80	16055	4.00	
* 2 1,4-Difluorobenzene	114	13.900	13.893	0.007	96	51258	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.587	20.581	0.006	89	45633	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.955	12.954	0.001	98	28559	4.15	
\$ 5 Toluene-d8 (Surr)	100	17.307	17.301	0.006	97	29602	4.09	
\$ 6 4-Bromofluorobenzene (Surr	174	23.154	23.148	0.006	91	28566	3.69	
31 Acetone	43	7.108	7.108	0.000	51	5411	0.8529	
48 Carbon disulfide	76	8.401	8.407	-0.006	62	3154	0.2706	
54 2-Butanone (MEK)	43	10.778	10.766	0.012	29	670	0.1086	

**Reagents:**

VASUISIM\_00166

Amount Added: 50.00

Units: mL

Run Reagent



Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042820.d

Injection Date: 29-Apr-2015 06:05:30

Instrument ID: ATMS1

Operator ID: AO

Lims ID: 320-12495-A-7

Lab Sample ID: 320-12495-7

Worklist Smp#: 20

Client ID: 34000855

Purge Vol: 250.000 mL

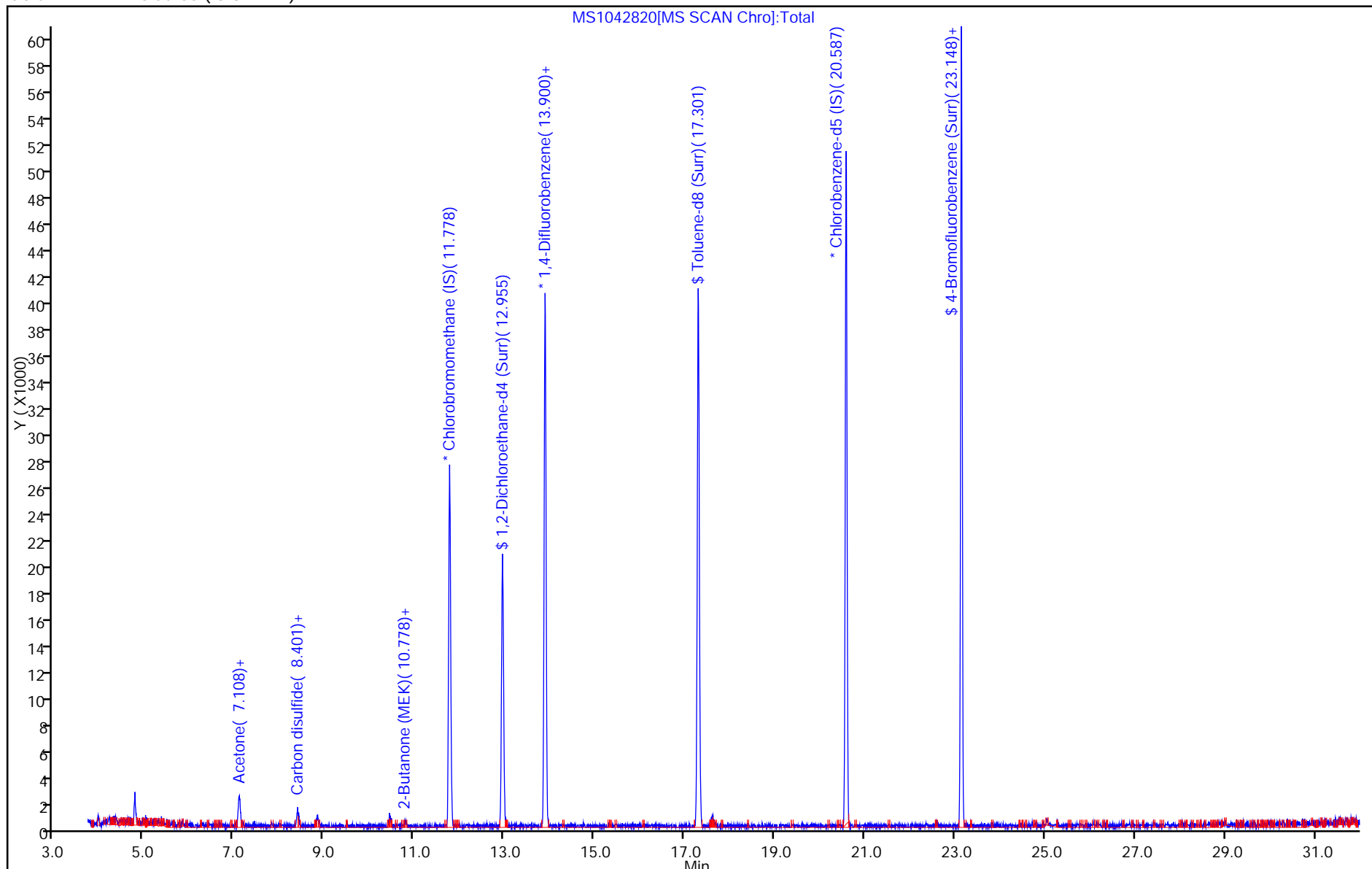
Dil. Factor: 1.0000

ALS Bottle#: 16

Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042820.d

Injection Date: 29-Apr-2015 06:05:30

Instrument ID: ATMS1

Lims ID: 320-12495-A-7

Lab Sample ID: 320-12495-7

Client ID: 34000855

Operator ID: AO

ALS Bottle#: 16

Worklist Smp#: 20

Purge Vol: 250.000 mL

Dil. Factor: 1.0000

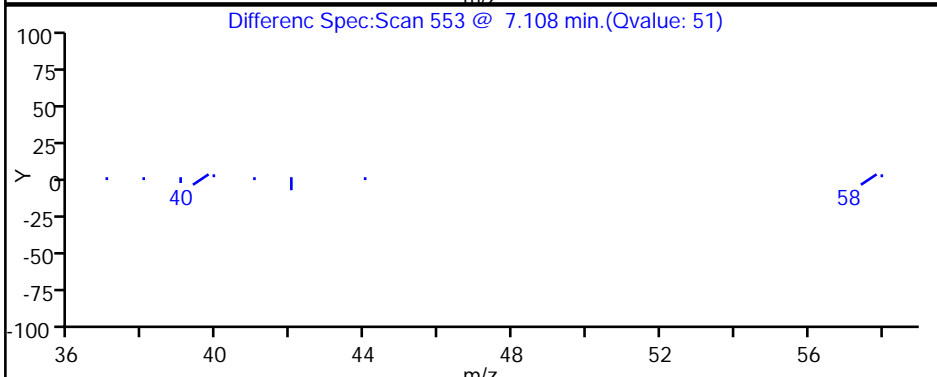
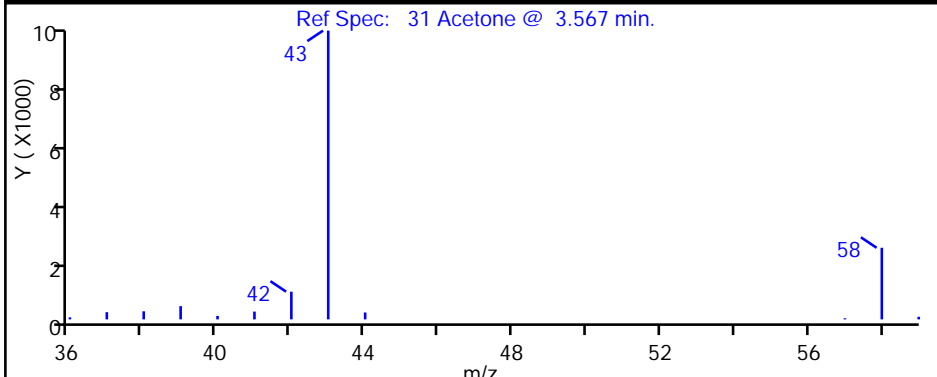
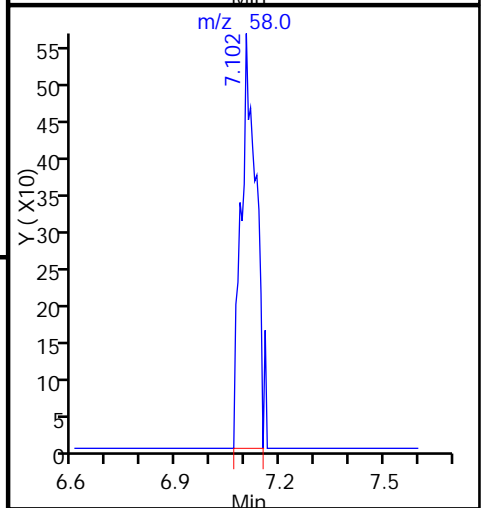
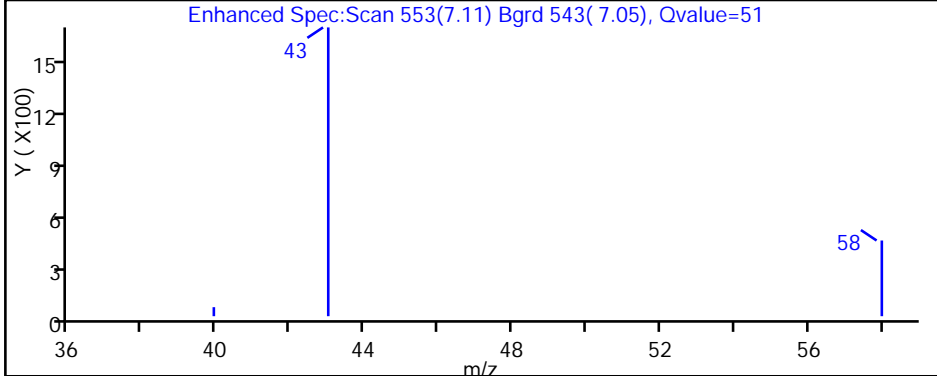
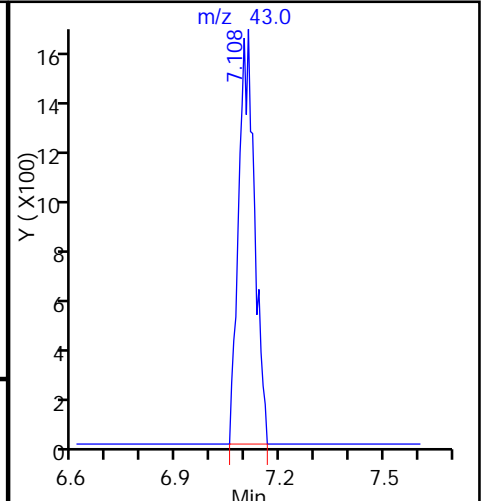
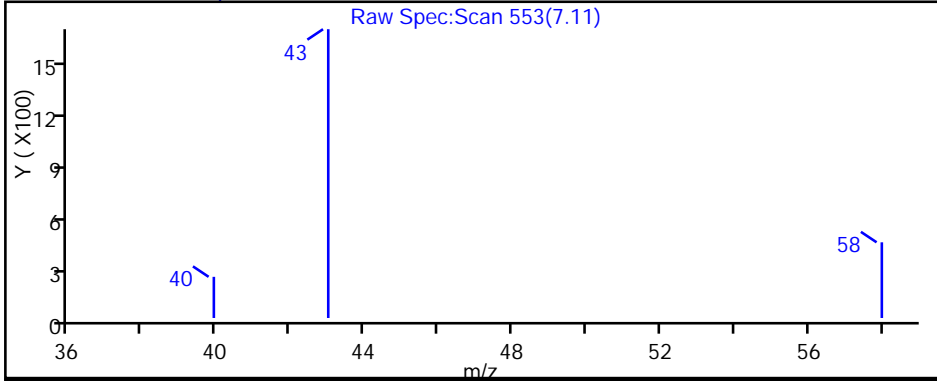
Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042820.d

Injection Date: 29-Apr-2015 06:05:30

Instrument ID: ATMS1

Lims ID: 320-12495-A-7

Lab Sample ID: 320-12495-7

Client ID: 34000855

Operator ID: AO

ALS Bottle#: 16

Worklist Smp#: 20

Purge Vol: 250.000 mL

Dil. Factor: 1.0000

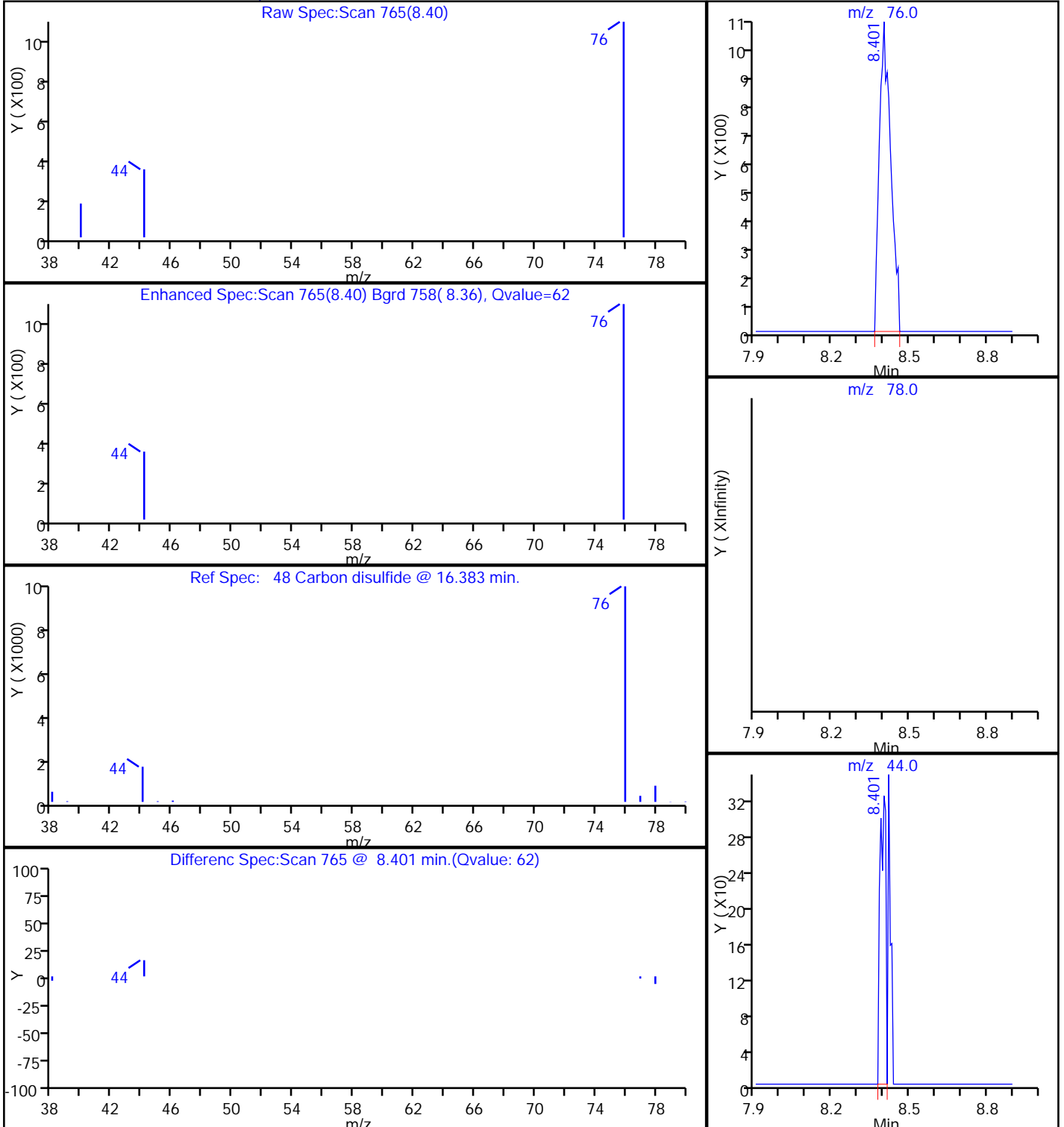
Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

48 Carbon disulfide, CAS: 75-15-0



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000011 Lab Sample ID: 320-12495-8  
 Matrix: Air Lab File ID: MS1042819.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 05:12  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.48	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000011 Lab Sample ID: 320-12495-8  
 Matrix: Air Lab File ID: MS1042819.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 05:12  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000011 Lab Sample ID: 320-12495-8  
 Matrix: Air Lab File ID: MS1042819.d  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/29/2015 05:12  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72356 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	87		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		70-130
2037-26-5	Toluene-d8 (Surr)	100		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042819.d  
 Lims ID: 320-12495-A-8 Lab Sample ID: 320-12495-8  
 Client ID: 34000011  
 Sample Type: Client  
 Inject. Date: 29-Apr-2015 05:12:30 ALS Bottle#: 15 Worklist Smp#: 19  
 Purge Vol: 250.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-8  
 Operator ID: AO Instrument ID: ATMS1  
 Method: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\TO15\_ATMS1scan.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 29-Apr-2015 07:08:42 Calib Date: 28-Apr-2015 13:10:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042803.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam

Date: 29-Apr-2015 09:11:47

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.778	11.784	-0.006	82	15782	4.00	
* 2 1,4-Difluorobenzene	114	13.900	13.893	0.007	96	49827	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.581	20.581	0.000	88	43992	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.949	12.954	-0.005	98	28136	4.16	
\$ 5 Toluene-d8 (Surr)	100	17.301	17.301	0.000	97	28046	3.99	
\$ 6 4-Bromofluorobenzene (Surr	174	23.142	23.148	-0.006	90	26022	3.49	
31 Acetone	43	7.102	7.108	-0.006	51	3004	0.4817	

Reagents:

VASUISIM\_00166 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042819.d

Injection Date: 29-Apr-2015 05:12:30

Instrument ID: ATMS1

Operator ID: AO

Lims ID: 320-12495-A-8

Lab Sample ID: 320-12495-8

Worklist Smp#: 19

Client ID: 34000011

Purge Vol: 250.000 mL

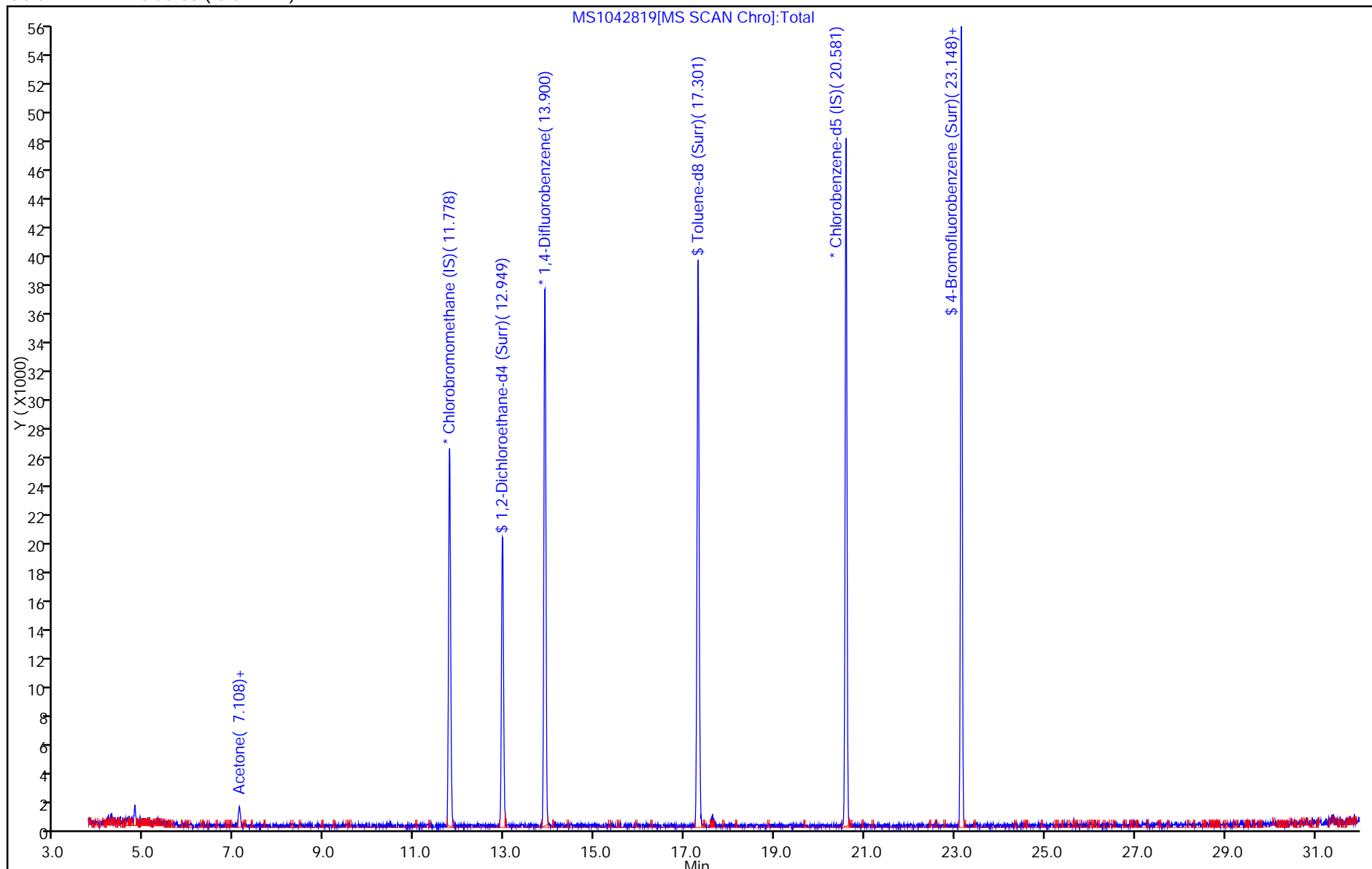
Dil. Factor: 1.0000

ALS Bottle#: 15

Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)





TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS1\20150428-21374.b\MS1042819.d

Injection Date: 29-Apr-2015 05:12:30

Instrument ID: ATMS1

Lims ID: 320-12495-A-8

Lab Sample ID: 320-12495-8

Client ID: 34000011

Operator ID: AO

ALS Bottle#: 15 Worklist Smp#: 19

Purge Vol: 250.000 mL

Dil. Factor: 1.0000

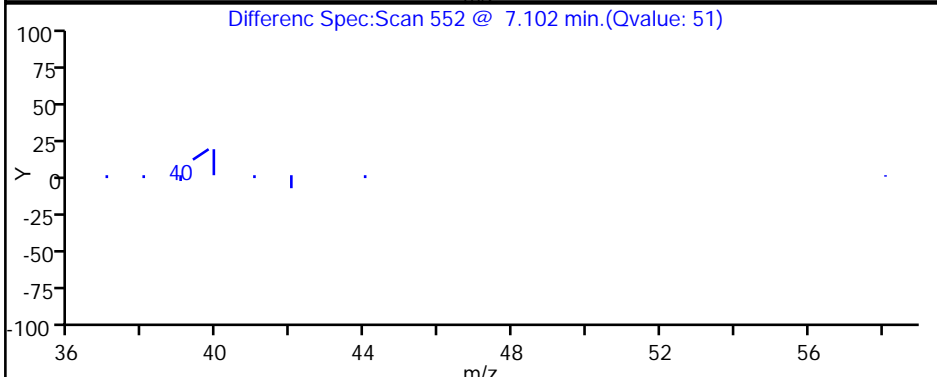
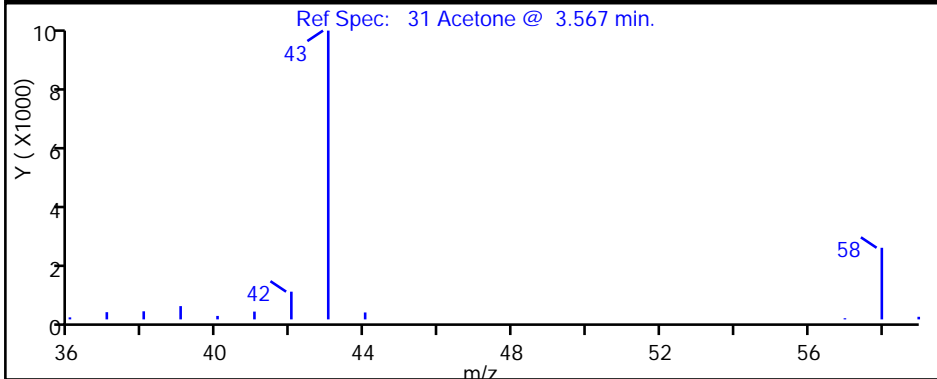
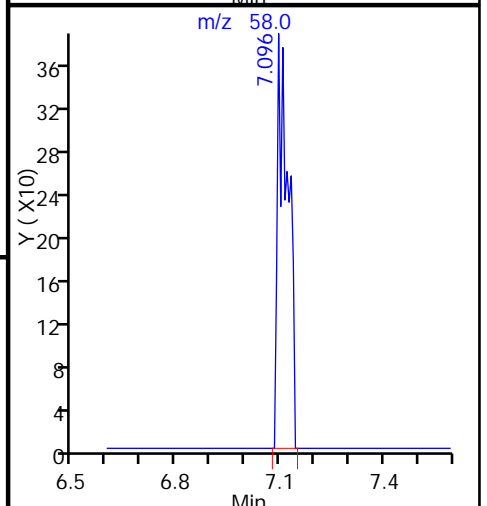
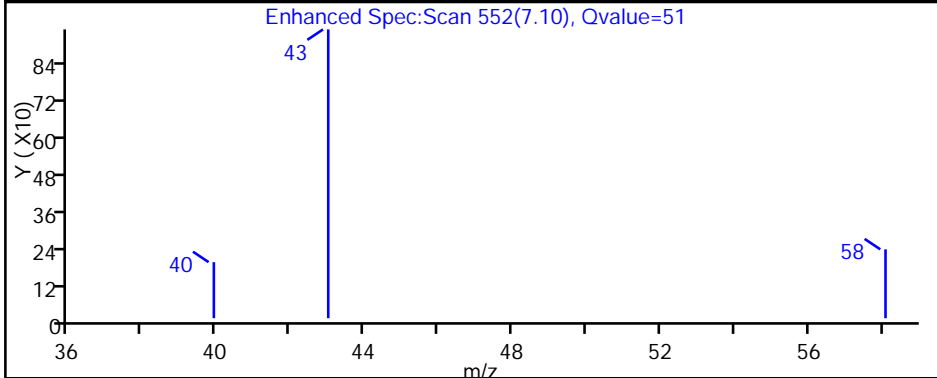
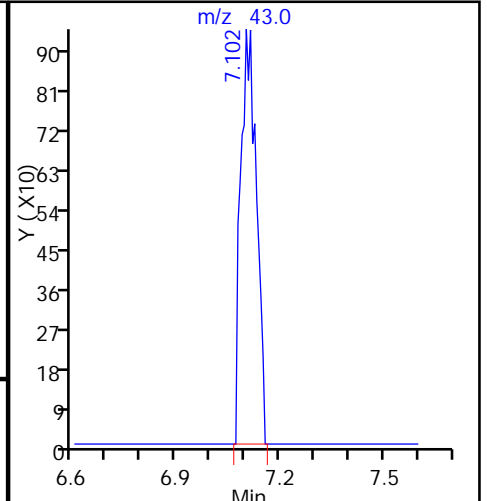
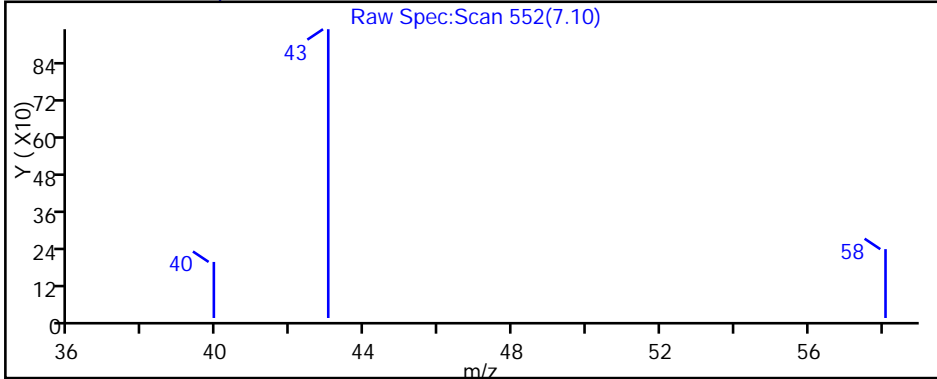
Method: TO15\_ATMS1scan

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34002034 Lab Sample ID: 320-12495-9  
 Matrix: Air Lab File ID: MS5042920.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 03:47  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	1.1	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	0.22	J	0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34002034 Lab Sample ID: 320-12495-9  
 Matrix: Air Lab File ID: MS5042920.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 03:47  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34002034 Lab Sample ID: 320-12495-9  
 Matrix: Air Lab File ID: MS5042920.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 03:47  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	99		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	107		70-130
2037-26-5	Toluene-d8 (Surr)	104		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042920.D  
 Lims ID: 320-12495-A-9 Lab Sample ID: 320-12495-9  
 Client ID: 34002034  
 Sample Type: Client  
 Inject. Date: 30-Apr-2015 03:47:30 ALS Bottle#: 11 Worklist Smp#: 11  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-9  
 Misc. Info.: 500ML500ML  
 Operator ID: AJS Instrument ID: ATMS5  
 Method: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\TO15\_ATMS5SCAN.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 30-Apr-2015 09:33:45 Calib Date: 29-Apr-2015 20:40:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042912.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam

Date: 30-Apr-2015 09:33:02

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.857	11.857	0.000	97	31100	2.00	
* 2 1,4-Difluorobenzene	114	13.956	13.950	0.006	92	120460	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.520	20.514	0.006	83	103577	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.013	13.019	-0.006	95	33657	2.14	
\$ 5 Toluene-d8 (Surr)	100	17.284	17.278	0.006	92	76998	2.09	
\$ 6 4-Bromofluorobenzene (Surr	95	23.051	23.051	0.000	92	59769	1.97	
11 Propene	41	4.119	4.119	0.000	16	267	0.0286	
17 Butane	43	4.794	4.800	-0.006	1	521	0.0365	
32 Acetone	43	7.264	7.283	-0.018	96	30936	1.06	
48 2-Butanone (MEK)	72	10.896	10.890	0.006	95	1544	0.2176	
63 Benzene	78	13.348	13.342	0.006	79	1783	0.0364	
121 Naphthalene	128	29.998	30.005	-0.007	1	2047	0.0282	

**Reagents:**

VASUISIM\_00170

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042920.D

Injection Date: 30-Apr-2015 03:47:30

Instrument ID: ATMS5

Operator ID: AJS

Lims ID: 320-12495-A-9

Lab Sample ID: 320-12495-9

Worklist Smp#: 11

Client ID: 34002034

Purge Vol: 500.000 mL

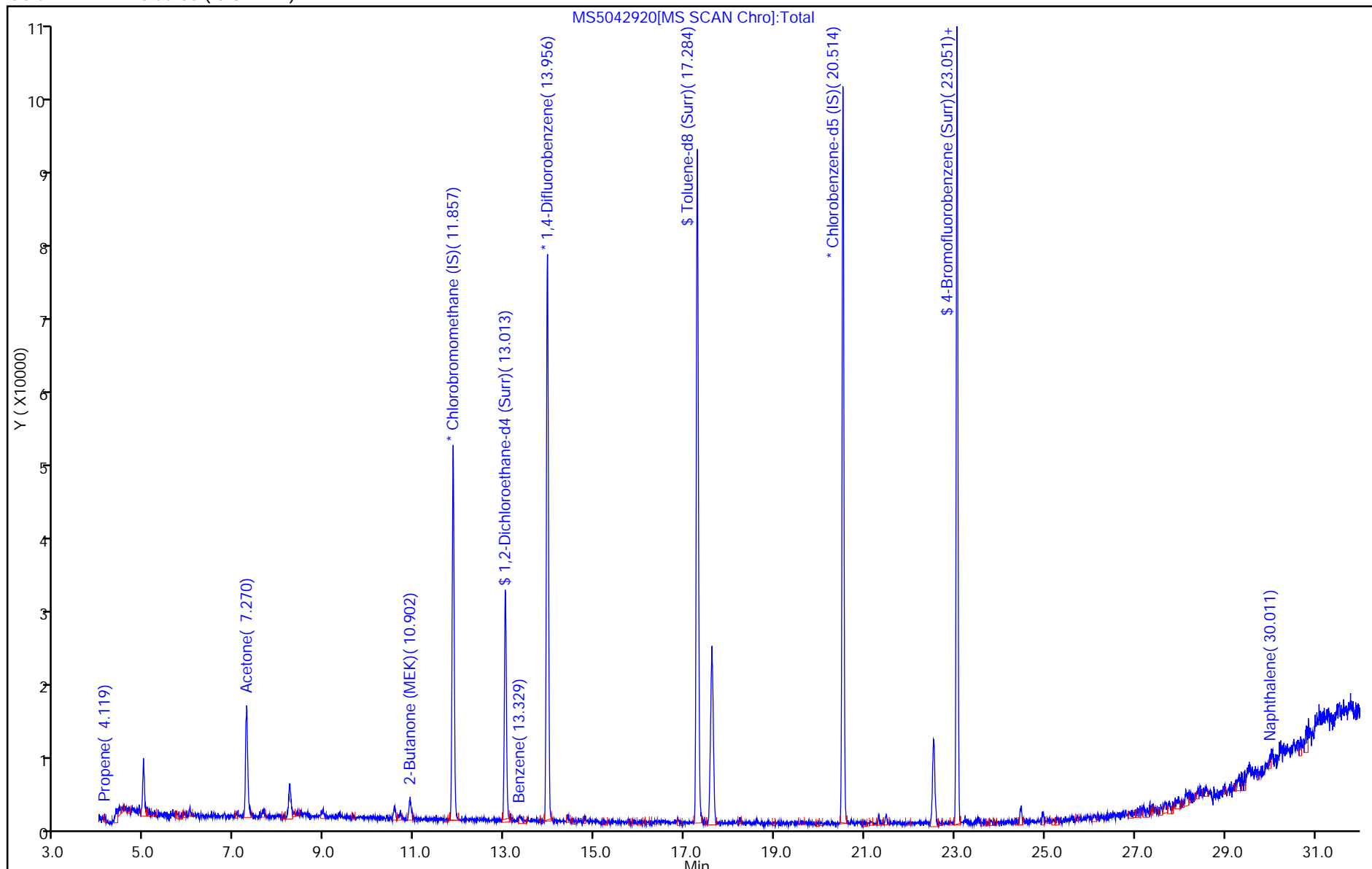
Dil. Factor: 1.0000

ALS Bottle#: 11

Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042920.D

Injection Date: 30-Apr-2015 03:47:30

Instrument ID: ATMS5

Lims ID: 320-12495-A-9

Lab Sample ID: 320-12495-9

Client ID: 34002034

Operator ID: AJS

ALS Bottle#: 11 Worklist Smp#: 11

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

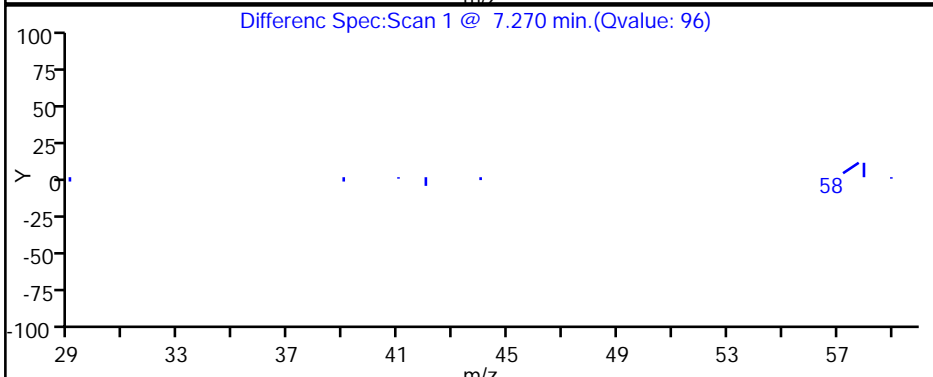
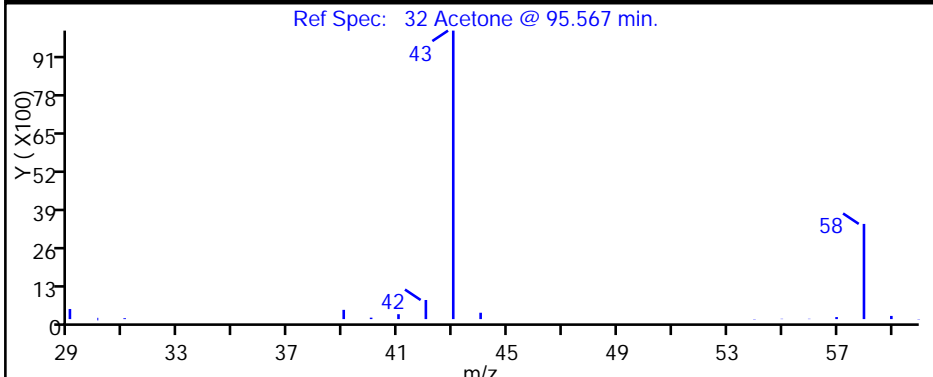
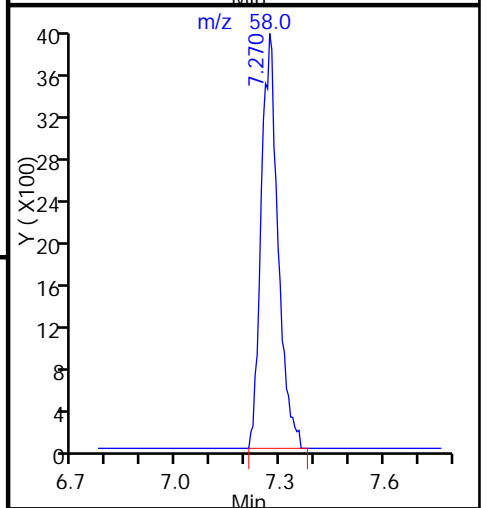
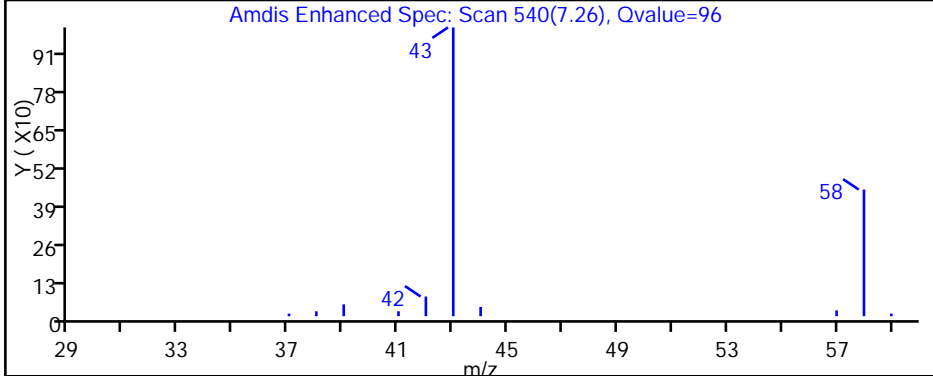
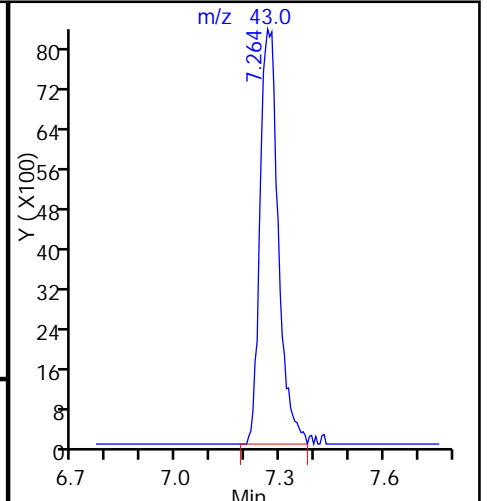
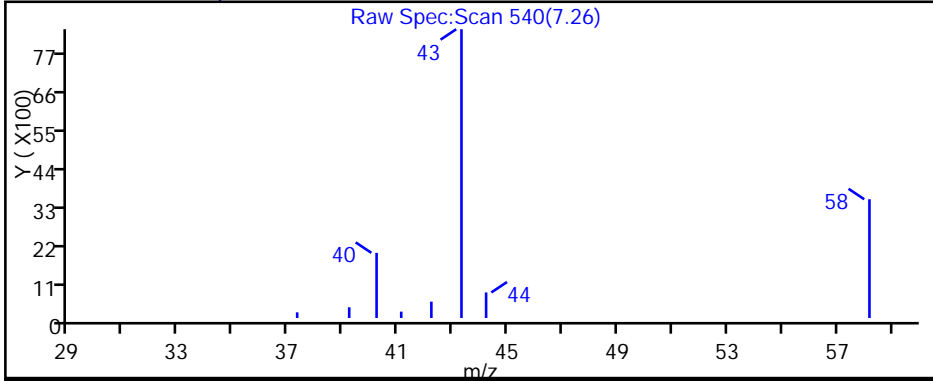
Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042920.D

Injection Date: 30-Apr-2015 03:47:30

Instrument ID: ATMS5

Lims ID: 320-12495-A-9

Lab Sample ID: 320-12495-9

Client ID: 34002034

Operator ID: AJS

ALS Bottle#: 11

Worklist Smp#: 11

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

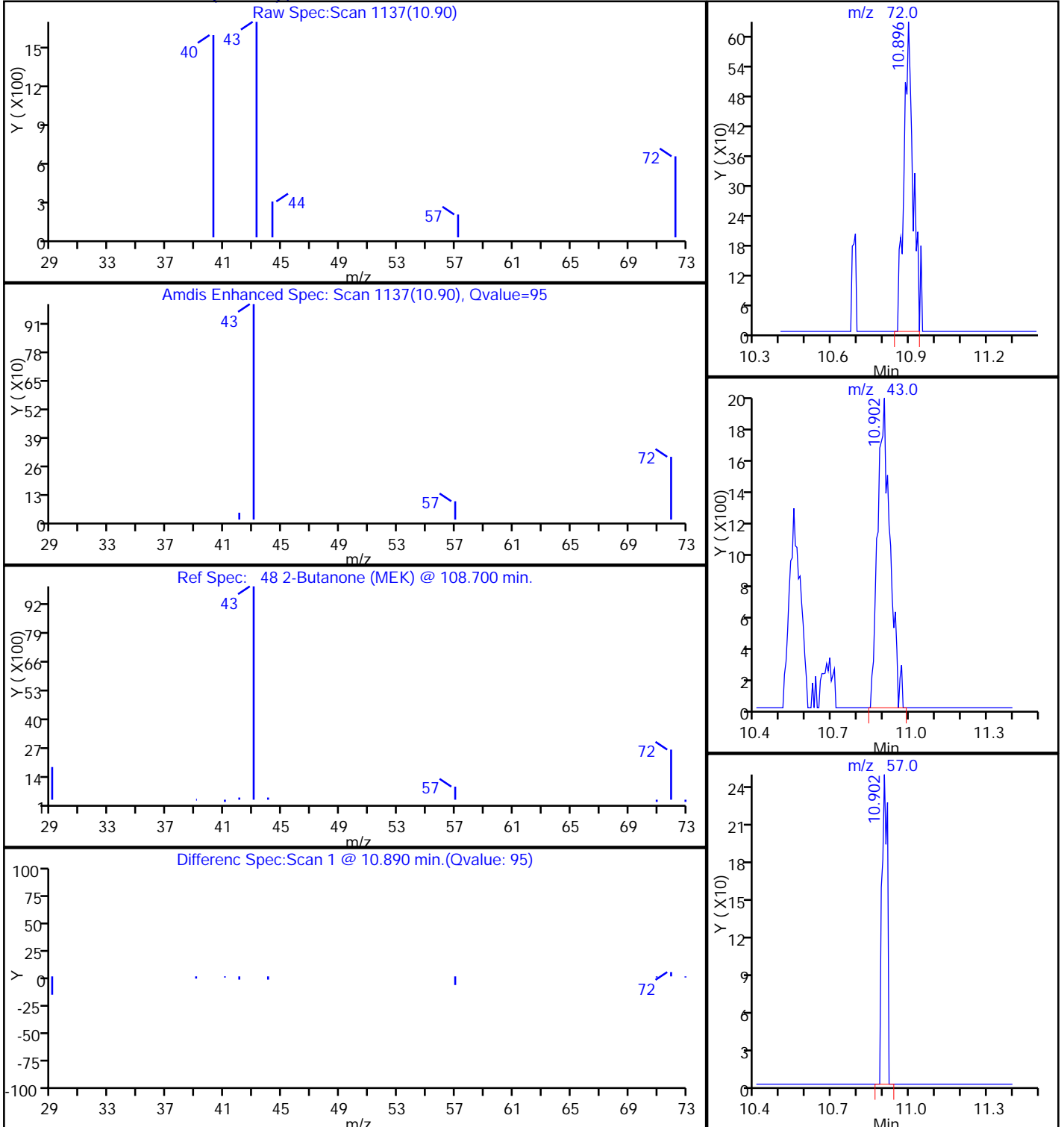
Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

48 2-Butanone (MEK), CAS: 78-93-3





FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000239 Lab Sample ID: 320-12495-10  
 Matrix: Air Lab File ID: MS5042921.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 04:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000239 Lab Sample ID: 320-12495-10  
 Matrix: Air Lab File ID: MS5042921.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 04:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000239 Lab Sample ID: 320-12495-10  
 Matrix: Air Lab File ID: MS5042921.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 04:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	96		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	107		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042921.D  
 Lims ID: 320-12495-A-10 Lab Sample ID: 320-12495-10  
 Client ID: 34000239  
 Sample Type: Client  
 Inject. Date: 30-Apr-2015 04:40:30 ALS Bottle#: 12 Worklist Smp#: 12  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-10  
 Misc. Info.: 500ML500ML  
 Operator ID: AJS Instrument ID: ATMS5  
 Method: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\TO15\_ATMS5SCAN.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 30-Apr-2015 09:34:11 Calib Date: 29-Apr-2015 20:40:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042912.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam Date: 30-Apr-2015 09:34:11

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.857	11.857	0.000	97	28716	2.00	
* 2 1,4-Difluorobenzene	114	13.950	13.950	0.000	93	112574	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.514	20.514	0.000	83	100353	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.013	13.019	-0.006	94	31381	2.13	
\$ 5 Toluene-d8 (Surr)	100	17.278	17.278	0.000	92	71202	2.06	
\$ 6 4-Bromofluorobenzene (Surr	95	23.051	23.051	0.000	92	56272	1.92	
17 Butane	43	4.788	4.800	-0.012	1	375	0.0284	
32 Acetone	43	7.289	7.283	0.007	96	3823	0.1422	
63 Benzene	78	13.330	13.342	-0.012	1	1092	0.0238	

Reagents:

VASUISIM\_00170 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042921.D

Injection Date: 30-Apr-2015 04:40:30

Instrument ID: ATMS5

Operator ID: AJS

Lims ID: 320-12495-A-10

Lab Sample ID: 320-12495-10

Worklist Smp#: 12

Client ID: 34000239

Purge Vol: 500.000 mL

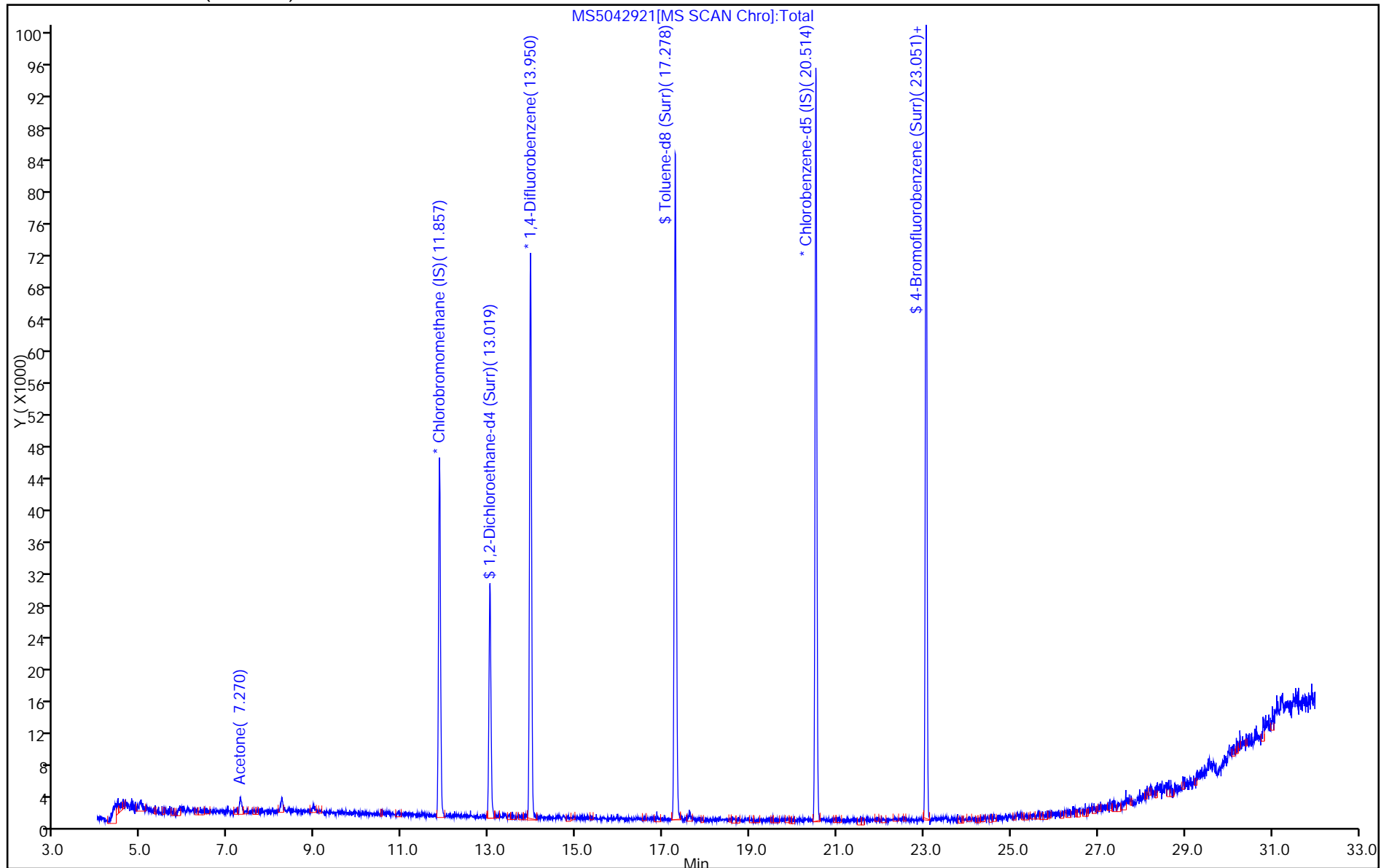
Dil. Factor: 1.0000

ALS Bottle#: 12

Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000255 Lab Sample ID: 320-12495-11  
 Matrix: Air Lab File ID: MS5042922.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 05:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.47	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000255 Lab Sample ID: 320-12495-11  
 Matrix: Air Lab File ID: MS5042922.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 05:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.23	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000255 Lab Sample ID: 320-12495-11  
 Matrix: Air Lab File ID: MS5042922.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 05:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	108		70-130
2037-26-5	Toluene-d8 (Surr)	105		70-130



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042922.D  
 Lims ID: 320-12495-A-11 Lab Sample ID: 320-12495-11  
 Client ID: 34000255  
 Sample Type: Client  
 Inject. Date: 30-Apr-2015 05:37:30 ALS Bottle#: 13 Worklist Smp#: 13  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-11  
 Misc. Info.: 500ML  
 Operator ID: AJS Instrument ID: ATMS5  
 Method: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\TO15\_ATMS5SCAN.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 30-Apr-2015 09:34:33 Calib Date: 29-Apr-2015 20:40:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042912.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam Date: 30-Apr-2015 09:34:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.863	11.857	0.006	96	30451	2.00	
* 2 1,4-Difluorobenzene	114	13.956	13.950	0.006	92	114749	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.514	20.514	0.000	84	101314	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.013	13.019	-0.006	95	32407	2.16	
\$ 5 Toluene-d8 (Surr)	100	17.284	17.278	0.006	93	73685	2.10	
\$ 6 4-Bromofluorobenzene (Surr	95	23.051	23.051	0.000	91	59966	2.02	
11 Propene	41	4.125	4.119	0.006	86	454	0.0497	
17 Butane	43	4.794	4.800	-0.006	1	360	0.0257	
32 Acetone	43	7.270	7.283	-0.012	92	13348	0.4681	
39 Methylene Chloride	49	8.499	8.493	0.006	91	3704	0.2286	
58 Isooctane	57	9.637	9.637	0.000	31	1376	0.0601	
48 2-Butanone (MEK)	72	10.896	10.890	0.006	94	930	0.1339	
63 Benzene	78	13.330	13.342	-0.012	1	1275	0.0273	

Reagents:

VASUISIM\_00170 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042922.D

Injection Date: 30-Apr-2015 05:37:30

Instrument ID: ATMS5

Operator ID: AJS

Lims ID: 320-12495-A-11

Lab Sample ID: 320-12495-11

Worklist Smp#: 13

Client ID: 34000255

Purge Vol: 500.000 mL

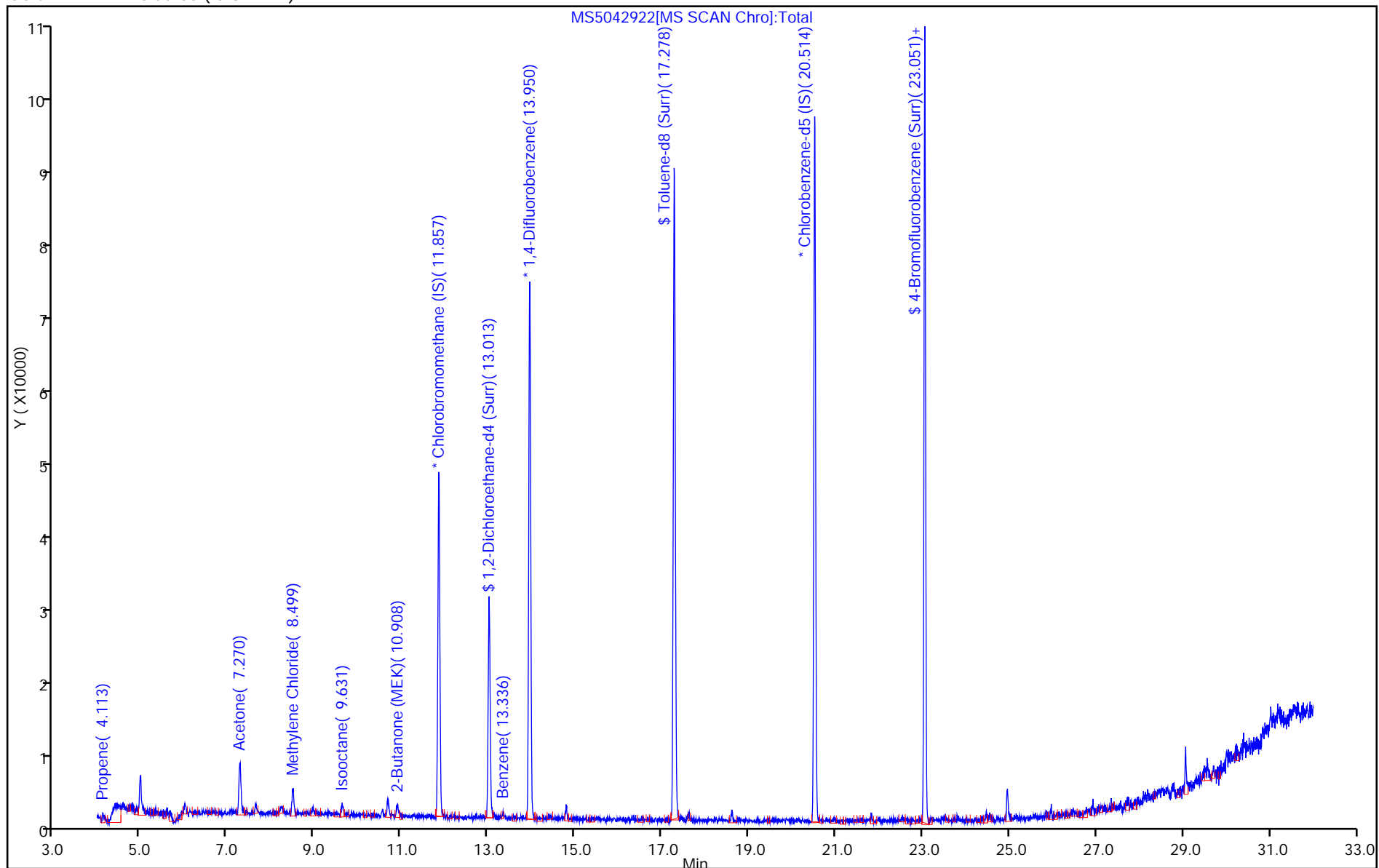
Dil. Factor: 1.0000

ALS Bottle#: 13

Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042922.D

Injection Date: 30-Apr-2015 05:37:30

Instrument ID: ATMS5

Lims ID: 320-12495-A-11

Lab Sample ID: 320-12495-11

Client ID: 34000255

Operator ID: AJS

ALS Bottle#: 13 Worklist Smp#: 13

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

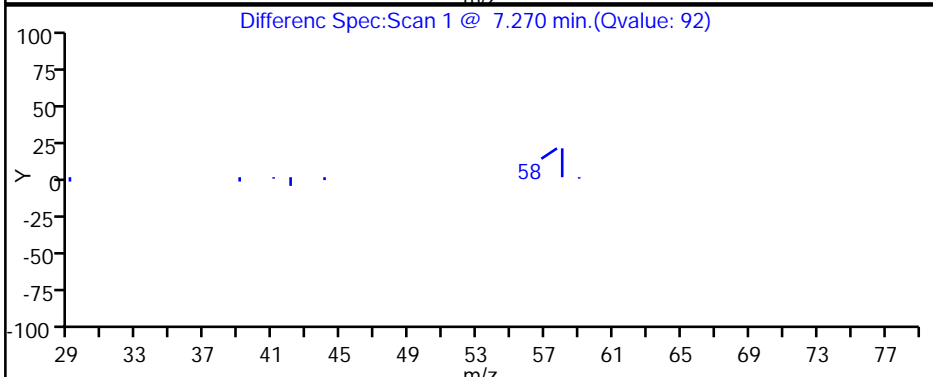
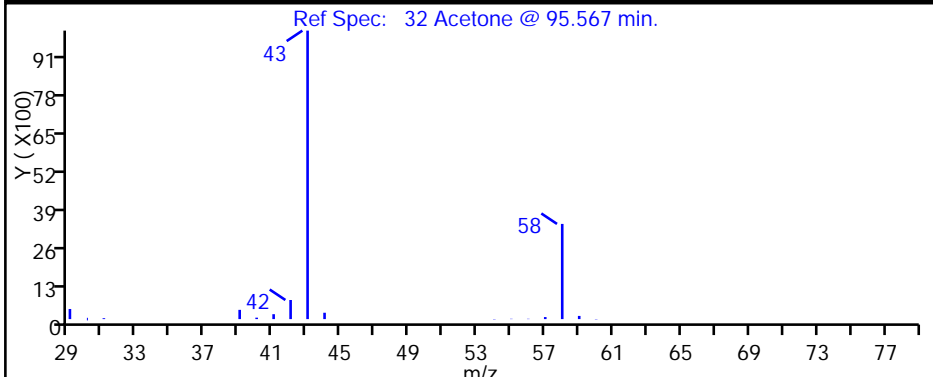
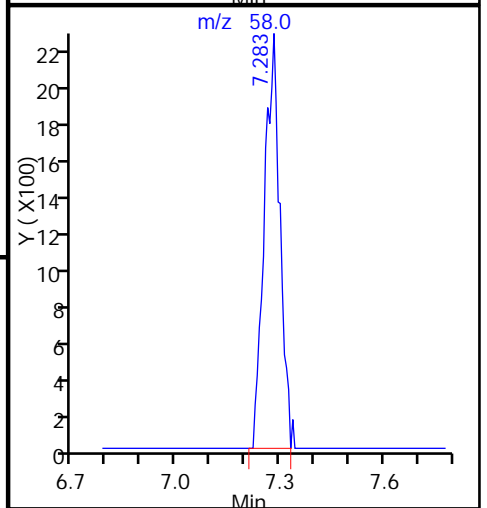
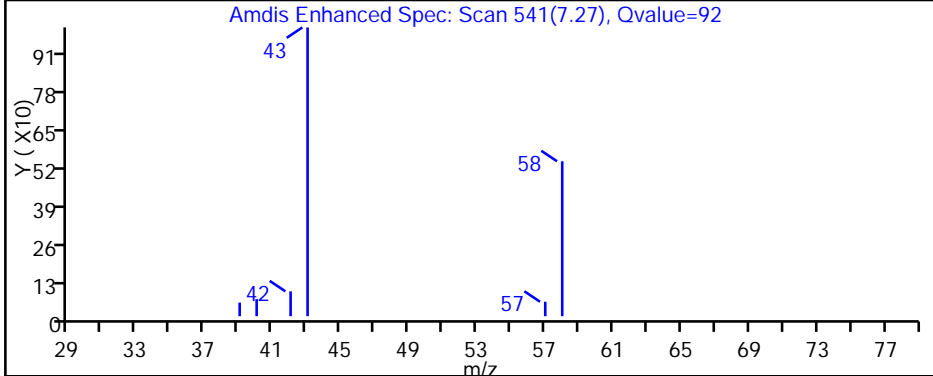
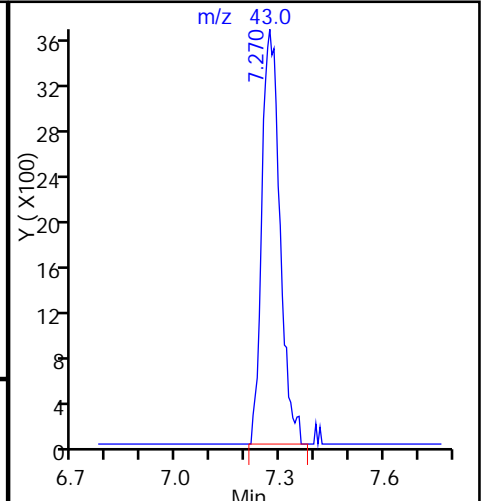
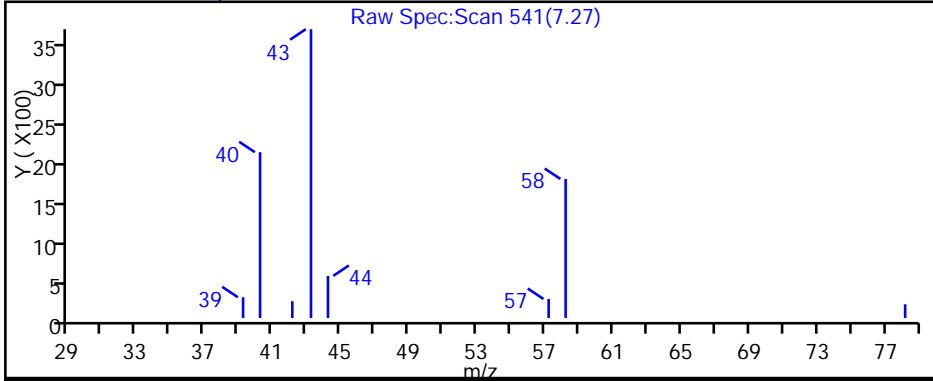
Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042922.D

Injection Date: 30-Apr-2015 05:37:30

Instrument ID: ATMS5

Lims ID: 320-12495-A-11

Lab Sample ID: 320-12495-11

Client ID: 34000255

Operator ID: AJS

ALS Bottle#: 13

Worklist Smp#: 13

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

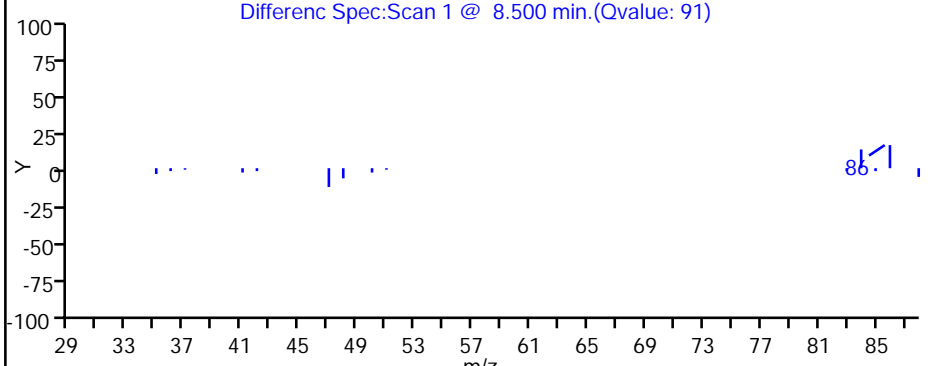
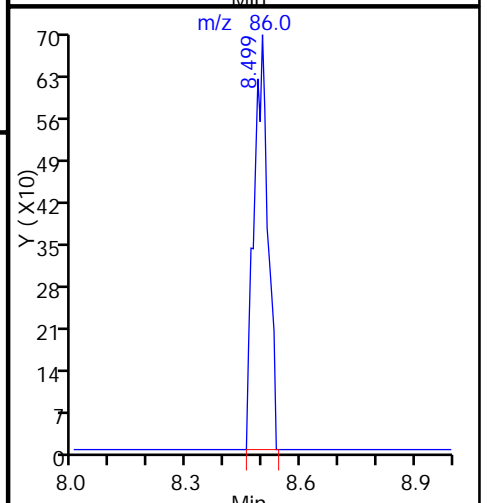
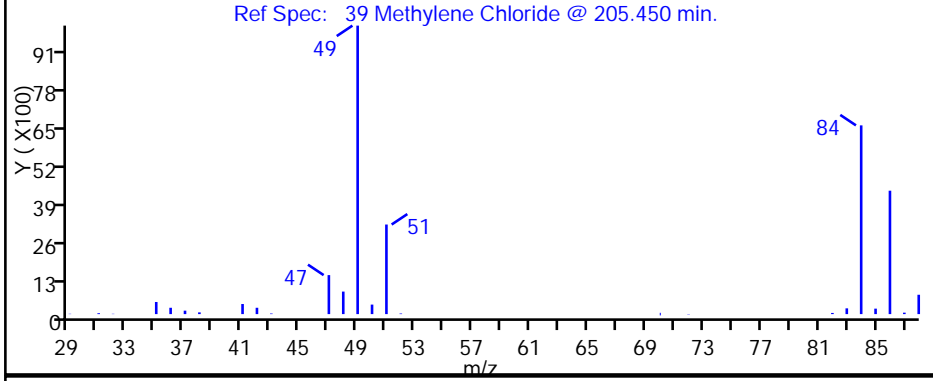
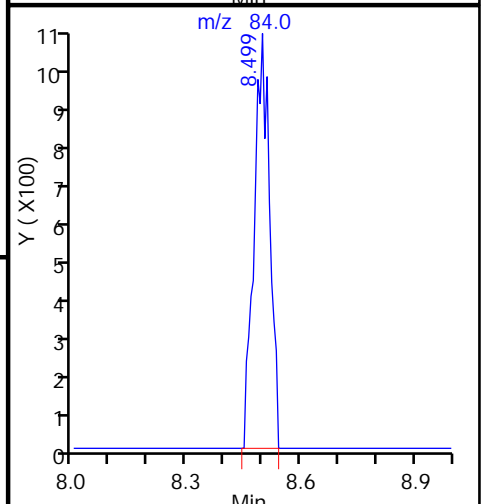
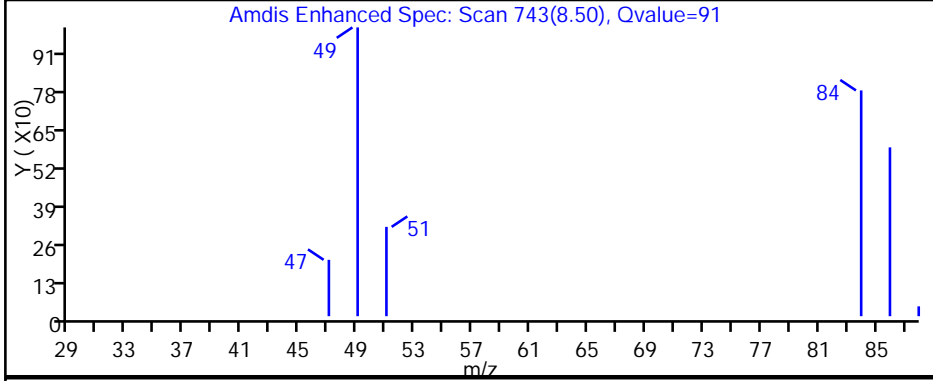
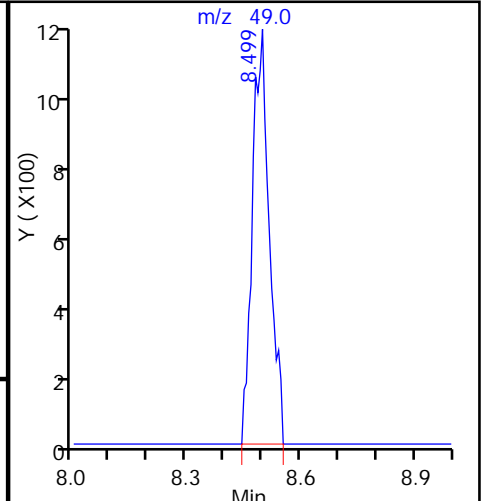
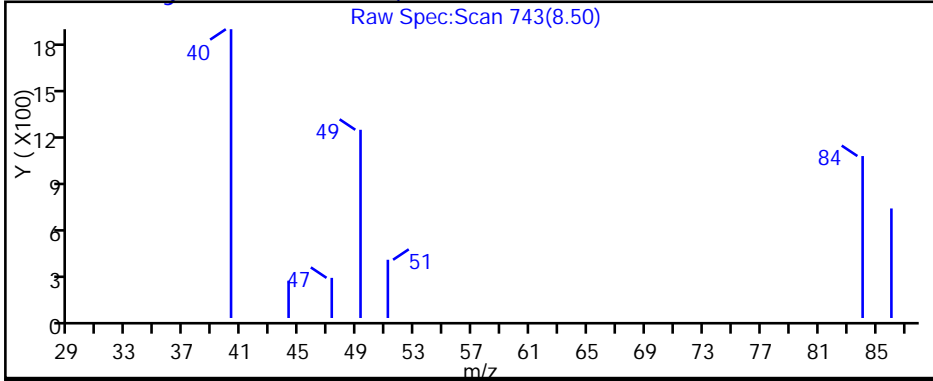
Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

39 Methylene Chloride, CAS: 75-09-2



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 7826 Lab Sample ID: 320-12495-12  
 Matrix: Air Lab File ID: MS5042923.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 06:32  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 7826 Lab Sample ID: 320-12495-12  
 Matrix: Air Lab File ID: MS5042923.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 06:32  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12495-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 7826 Lab Sample ID: 320-12495-12  
 Matrix: Air Lab File ID: MS5042923.D  
 Analysis Method: TO-15 Date Collected: 04/09/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 04/30/2015 06:32  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 72578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	107		70-130
2037-26-5	Toluene-d8 (Surr)	104		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042923.D  
 Lims ID: 320-12495-A-12 Lab Sample ID: 320-12495-12  
 Client ID: 7826  
 Sample Type: Client  
 Inject. Date: 30-Apr-2015 06:32:30 ALS Bottle#: 14 Worklist Smp#: 14  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12495-A-12  
 Misc. Info.: 500ML500ML  
 Operator ID: AJS Instrument ID: ATMS5  
 Method: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\TO15\_ATMS5SCAN.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 30-Apr-2015 09:34:49 Calib Date: 29-Apr-2015 20:40:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042912.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK034

First Level Reviewer: ortizam

Date: 30-Apr-2015 09:34:49

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.863	11.857	0.006	98	28363	2.00	
* 2 1,4-Difluorobenzene	114	13.950	13.950	0.000	93	113862	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.520	20.514	0.006	83	97534	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.019	13.019	0.000	95	31993	2.15	
\$ 5 Toluene-d8 (Surr)	100	17.278	17.278	0.000	94	72285	2.07	
\$ 6 4-Bromofluorobenzene (Surr	95	23.051	23.051	0.000	92	53984	1.89	
32 Acetone	43	7.276	7.283	-0.006	89	2946	0.1109	

**Reagents:**

VASUISIM\_00170 Amount Added: 50.00 Units: mL Run Reagent



Data File: \\SACCHROM\ChromData\ATMS5\20150429-21425.b\MS5042923.D

Injection Date: 30-Apr-2015 06:32:30

Instrument ID: ATMS5

Operator ID: AJS

Lims ID: 320-12495-A-12

Lab Sample ID: 320-12495-12

Worklist Smp#: 14

Client ID: 7826

Purge Vol: 500.000 mL

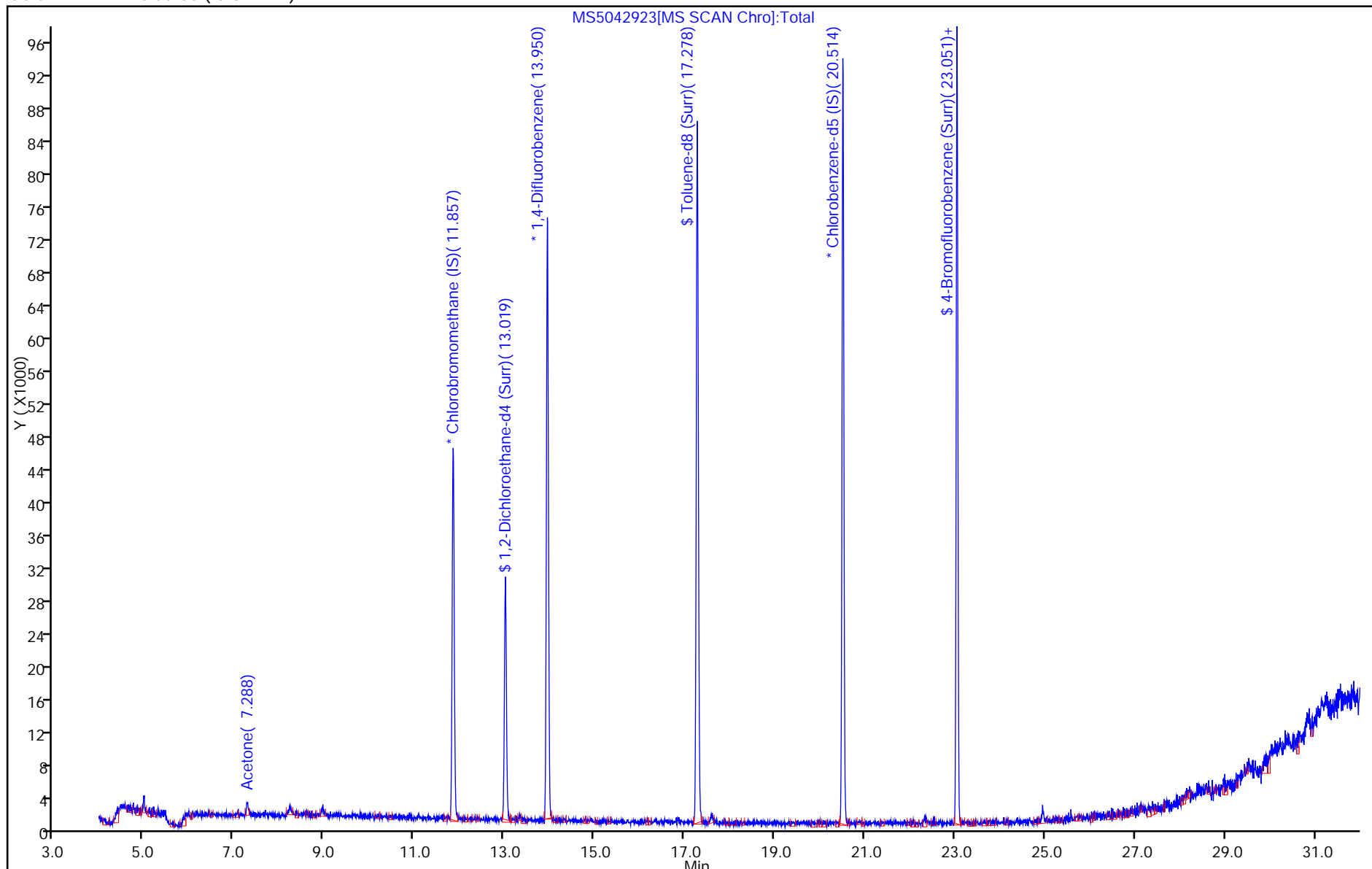
Dil. Factor: 1.0000

ALS Bottle#: 14

Method: TO15\_ATMS5SCAN

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



<b>Invoice/Credit No.</b>	32112531	<b>Invoice Date</b>	May 29, 2015
<b>Terms</b>	See Below	<b>Federal Tax ID</b>	23-2919996
<b>Remit to</b>	TestAmerica Laboratories, Inc. PO BOX 204290, Dallas, TX 75320-4290		

<b>Bill to:</b>
Apex Companies LLC Attn: Accounts Payable 3015 SW 1st Avenue Portland, OR 97201

<b>Ship to:</b>
Apex Companies LLC 3015 SW 1st Avenue Portland, OR 97201

<b>P.O. Number</b>	<b>W.O. Number</b>	<b>Contract Number</b>	<b>Work Ordered by</b>
1126-17.003			Stephanie Salisbury
<b>Job Description</b>	<b>Site Name</b>	<b>SDG Number</b>	<b>Invoice Contact</b>
See below			Stephanie Salisbury

Job No.	Job Description	Receipt Date	Quantity	Unit Price	Amount
	Method/Test Description				
J13050-1	NuStar Vapor Testing	05/18/2015			
	TO-15 - EPA TO-15 Scan, Standard List		1.00	225.00	225.00
	Summa Canister Rental		1.00	25.00	25.00

<b>Project Number</b>	<b>Client Number</b>	<b>Project Manager</b>	<b>Subtotal</b>	<b>\$250.00</b>
25000159	1410881	Sarah Murphy		
<b>Latest Sample Receipt Date</b>	<b>Latest Report Date</b>	<b>Phone Number</b>	<b>Total</b>	<b>\$250.00</b>
05/18/2015	05/29/2015	(916) 373-5600		

For proper credit, please include invoice number on all remittance.

TestAmerica Sacramento - 880 Riverside Parkway, West Sacramento, CA 95605

TestAmerica Sacramento  
880 Riverside Parkway


West Sacramento, CA 95605  
phone 916 374 4378 fax 916.372.1059

### Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

<b>Client Contact Information</b> Company Name: <u>Apex Companies</u> Address: <u>5015 5th St Ave</u> City/State/Zip: <u>Portland OR, 97201</u> Phone: <u>5039244704</u> FAX: _____ Project Name: <u>Nustar Vancouver</u> Site/Location: <u>Nustar Vancouver</u> PO # <u>1106-17-003</u>		<b>Project Manager: Stephanie Salisbury</b> Phone: <u>5039244704</u> Email: <u>SSalisbury@apexcos.com</u> Site Contact: _____ TA Contact: _____ Analysis Turnaround Time: _____ Standard (Specific): <u>X</u> Rush (Specify): _____		<b>Project Manager: Stephanie Salisbury</b> Samples Collected By: <u>Joel Mattheck</u>		COC No: _____ of _____ COCs For Lab Use Only: Walk-in Client _____ Lab Sampling _____ Job / SDIG No. _____ (See below for Add'l Items)							
<b>Sample Identification</b>  <u>SUE North</u>	Sample Date(s) <u>5/14/15 1430 1431</u>	Time Start <u>1430</u>	Time Stop <u>1431</u>	Canister Vacuum Field, 'Hg (Start)' <u>-36</u>	Canister Vacuum in Field, 'Hg (Stop)' <u>-4</u>	Flow Controller ID <u>3140085</u>	Canister ID <u>X</u>	TO-15 (Med / Std / Low / SIM)	MA-APH EPA 3C EPA 26C / 25.3 ASTM D-1946 / 1946 / 3588 EPA 15/16 TO-3	Other (Please specify in notes section)	Sample Type	Indoor Air Ambient Air Soil Gas Landfill Gas Other (Please specify in notes section)	Sample Specific Notes:  <u>To-15</u>
	<div style="text-align: center;">             320-13050 Chain of Custody         </div>												
<b>Special Instructions/QC Requirements &amp; Comments:</b> <u>Report lab results to: SSalisbury@apexcos.com</u>													
<b>Samples Shipped by:</b> <u>Joel Mattheck</u>		<b>Date / Time:</b> _____		<b>Samples Received by:</b> _____		<b>Date / Time:</b> <u>5/15/15 1050</u>		<b>Received by:</b> <u>M.E. RIF</u>		<b>Date / Time:</b> <u>5/15/15 1150</u>		<b>Received by:</b> <u>Joel Mattheck</u>	
<b>Samples Relinquished by:</b> <u>Joel Mattheck</u>		<b>Date / Time:</b> <u>5/14/15</u>		<b>Samples Relinquished by:</b> _____		<b>Date / Time:</b> _____		<b>Relinquished by:</b> _____		<b>Date / Time:</b> _____		<b>Relinquished by:</b> _____	
<b>Relinquished by:</b> _____		<b>Date / Time:</b> _____		<b>Relinquished by:</b> _____		<b>Date / Time:</b> _____		<b>Relinquished by:</b> _____		<b>Date / Time:</b> _____		<b>Relinquished by:</b> _____	
<b>Lab Use Only</b>		<b>Shipper Name:</b> _____		<b>Opened by:</b> _____		<b>Date:</b> <u>5/15/15 1700</u>		<b>Condition:</b> _____		<b>Received by:</b> _____		<b>Date / Time:</b> _____	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-13252-1  
Client Project/Site: NuStar Vapor Testing

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
6/8/2015 4:06:02 PM

Sarah Murphy, Project Manager I  
(253)922-2310  
[sarah.murphy@testamericainc.com](mailto:sarah.murphy@testamericainc.com)



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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

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

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

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

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**Job ID: 320-13252-1**

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**Laboratory: TestAmerica Sacramento**

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**Narrative**

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**Job Narrative  
320-13252-1**

**Receipt**

The samples were received on 6/1/2015 9:00 AM; the samples arrived in good condition.

**Air - GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Client Sample ID: SVE NORTH

## Lab Sample ID: 320-13252-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	19		12		ppb v/v	2.3		TO-15	Total/NA
2-Butanone (MEK)	6.4		1.8		ppb v/v	2.3		TO-15	Total/NA
Chloromethane	2.1		1.8		ppb v/v	2.3		TO-15	Total/NA
1,3-Dichlorobenzene	2.0		0.92		ppb v/v	2.3		TO-15	Total/NA
4-Ethyltoluene	0.95		0.92		ppb v/v	2.3		TO-15	Total/NA
2-Hexanone	0.92		0.92		ppb v/v	2.3		TO-15	Total/NA
4-Methyl-2-pentanone (MIBK)	1.7		0.92		ppb v/v	2.3		TO-15	Total/NA
Tetrachloroethene	52		0.92		ppb v/v	2.3		TO-15	Total/NA
Toluene	0.95		0.92		ppb v/v	2.3		TO-15	Total/NA
Trichloroethene	1.5		0.92		ppb v/v	2.3		TO-15	Total/NA
1,2,4-Trimethylbenzene	3.0		1.8		ppb v/v	2.3		TO-15	Total/NA
1,3,5-Trimethylbenzene	1.0		0.92		ppb v/v	2.3		TO-15	Total/NA
m,p-Xylene	3.6		1.8		ppb v/v	2.3		TO-15	Total/NA
o-Xylene	1.7		0.92		ppb v/v	2.3		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	46		27		ug/m3 Air	2.3		TO-15	Total/NA
2-Butanone (MEK)	19		5.4		ug/m3 Air	2.3		TO-15	Total/NA
Chloromethane	4.3		3.8		ug/m3 Air	2.3		TO-15	Total/NA
1,3-Dichlorobenzene	12		5.5		ug/m3 Air	2.3		TO-15	Total/NA
4-Ethyltoluene	4.7		4.5		ug/m3 Air	2.3		TO-15	Total/NA
2-Hexanone	3.8		3.8		ug/m3 Air	2.3		TO-15	Total/NA
4-Methyl-2-pentanone (MIBK)	6.9		3.8		ug/m3 Air	2.3		TO-15	Total/NA
Tetrachloroethene	360		6.2		ug/m3 Air	2.3		TO-15	Total/NA
Toluene	3.6		3.5		ug/m3 Air	2.3		TO-15	Total/NA
Trichloroethene	8.0		4.9		ug/m3 Air	2.3		TO-15	Total/NA
1,2,4-Trimethylbenzene	15		9.0		ug/m3 Air	2.3		TO-15	Total/NA
1,3,5-Trimethylbenzene	4.9		4.5		ug/m3 Air	2.3		TO-15	Total/NA
m,p-Xylene	16		8.0		ug/m3 Air	2.3		TO-15	Total/NA
o-Xylene	7.5		4.0		ug/m3 Air	2.3		TO-15	Total/NA

## Client Sample ID: SVE SOUTH POST CARBON

## Lab Sample ID: 320-13252-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	95		1.6		ppb v/v	4		TO-15	Total/NA
Trichloroethene	3.0		1.6		ppb v/v	4		TO-15	Total/NA
m,p-Xylene	3.5		3.2		ppb v/v	4		TO-15	Total/NA
o-Xylene	1.6		1.6		ppb v/v	4		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	650		11		ug/m3 Air	4		TO-15	Total/NA
Trichloroethene	16		8.6		ug/m3 Air	4		TO-15	Total/NA
m,p-Xylene	15		14		ug/m3 Air	4		TO-15	Total/NA
o-Xylene	7.1		6.9		ug/m3 Air	4		TO-15	Total/NA

## Client Sample ID: SVE SOUTH PRE CARBON

## Lab Sample ID: 320-13252-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	36		20		ppb v/v	49.6		TO-15	Total/NA
Methylene Chloride	26		20		ppb v/v	49.6		TO-15	Total/NA
Tetrachloroethene	1200		20		ppb v/v	49.6		TO-15	Total/NA
Toluene	64		20		ppb v/v	49.6		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento



# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

**Client Sample ID: SVE SOUTH PRE CARBON (Continued)**

**Lab Sample ID: 320-13252-3**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	85		20		ppb v/v	49.6		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	140		79		ug/m3 Air	49.6		TO-15	Total/NA
Methylene Chloride	92		69		ug/m3 Air	49.6		TO-15	Total/NA
Tetrachloroethene	8000		130		ug/m3 Air	49.6		TO-15	Total/NA
Toluene	240		75		ug/m3 Air	49.6		TO-15	Total/NA
Trichloroethene	460		110		ug/m3 Air	49.6		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-13252-1**

**Date Collected: 05/28/15 17:22**

**Matrix: Air**

**Date Received: 06/01/15 09:00**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>19</b>		12		ppb v/v			06/05/15 03:53	2.3
Benzene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
Benzyl chloride	ND		1.8		ppb v/v			06/05/15 03:53	2.3
Bromodichloromethane	ND		0.69		ppb v/v			06/05/15 03:53	2.3
Bromoform	ND		0.92		ppb v/v			06/05/15 03:53	2.3
Bromomethane	ND		1.8		ppb v/v			06/05/15 03:53	2.3
<b>2-Butanone (MEK)</b>	<b>6.4</b>		1.8		ppb v/v			06/05/15 03:53	2.3
Carbon disulfide	ND		1.8		ppb v/v			06/05/15 03:53	2.3
Carbon tetrachloride	ND		1.8		ppb v/v			06/05/15 03:53	2.3
Chlorobenzene	ND		0.69		ppb v/v			06/05/15 03:53	2.3
Dibromochloromethane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
Chloroethane	ND		1.8		ppb v/v			06/05/15 03:53	2.3
Chloroform	ND		0.69		ppb v/v			06/05/15 03:53	2.3
<b>Chloromethane</b>	<b>2.1</b>		1.8		ppb v/v			06/05/15 03:53	2.3
1,2-Dibromoethane (EDB)	ND		1.8		ppb v/v			06/05/15 03:53	2.3
1,2-Dichlorobenzene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
<b>1,3-Dichlorobenzene</b>	<b>2.0</b>		0.92		ppb v/v			06/05/15 03:53	2.3
1,4-Dichlorobenzene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
Dichlorodifluoromethane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
1,1-Dichloroethane	ND		0.69		ppb v/v			06/05/15 03:53	2.3
1,2-Dichloroethane	ND		1.8		ppb v/v			06/05/15 03:53	2.3
1,1-Dichloroethene	ND		1.8		ppb v/v			06/05/15 03:53	2.3
cis-1,2-Dichloroethene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
trans-1,2-Dichloroethene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
1,2-Dichloropropane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
cis-1,3-Dichloropropene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
trans-1,3-Dichloropropene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
Ethylbenzene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
<b>4-Ethyltoluene</b>	<b>0.95</b>		0.92		ppb v/v			06/05/15 03:53	2.3
Hexachlorobutadiene	ND		4.6		ppb v/v			06/05/15 03:53	2.3
<b>2-Hexanone</b>	<b>0.92</b>		0.92		ppb v/v			06/05/15 03:53	2.3
Methylene Chloride	ND		0.92		ppb v/v			06/05/15 03:53	2.3
<b>4-Methyl-2-pentanone (MIBK)</b>	<b>1.7</b>		0.92		ppb v/v			06/05/15 03:53	2.3
Styrene	ND		0.92		ppb v/v			06/05/15 03:53	2.3
1,1,2,2-Tetrachloroethane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
<b>Tetrachloroethene</b>	<b>52</b>		0.92		ppb v/v			06/05/15 03:53	2.3
<b>Toluene</b>	<b>0.95</b>		0.92		ppb v/v			06/05/15 03:53	2.3
1,2,4-Trichlorobenzene	ND		4.6		ppb v/v			06/05/15 03:53	2.3
1,1,1-Trichloroethane	ND		0.69		ppb v/v			06/05/15 03:53	2.3
1,1,2-Trichloroethane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
<b>Trichloroethene</b>	<b>1.5</b>		0.92		ppb v/v			06/05/15 03:53	2.3
Trichlorofluoromethane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.92		ppb v/v			06/05/15 03:53	2.3
<b>1,2,4-Trimethylbenzene</b>	<b>3.0</b>		1.8		ppb v/v			06/05/15 03:53	2.3
<b>1,3,5-Trimethylbenzene</b>	<b>1.0</b>		0.92		ppb v/v			06/05/15 03:53	2.3
Vinyl acetate	ND		1.8		ppb v/v			06/05/15 03:53	2.3
Vinyl chloride	ND		0.92		ppb v/v			06/05/15 03:53	2.3

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

**Client Sample ID: SVE NORTH**

**Lab Sample ID: 320-13252-1**

Date Collected: 05/28/15 17:22

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>m,p-Xylene</b>	<b>3.6</b>		1.8		ppb v/v			06/05/15 03:53	2.3
<b>o-Xylene</b>	<b>1.7</b>		0.92		ppb v/v			06/05/15 03:53	2.3
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>46</b>		27		ug/m3 Air			06/05/15 03:53	2.3
Benzene	ND		2.9		ug/m3 Air			06/05/15 03:53	2.3
Benzyl chloride	ND		9.5		ug/m3 Air			06/05/15 03:53	2.3
Bromodichloromethane	ND		4.6		ug/m3 Air			06/05/15 03:53	2.3
Bromoform	ND		9.5		ug/m3 Air			06/05/15 03:53	2.3
Bromomethane	ND		7.1		ug/m3 Air			06/05/15 03:53	2.3
<b>2-Butanone (MEK)</b>	<b>19</b>		5.4		ug/m3 Air			06/05/15 03:53	2.3
Carbon disulfide	ND		5.7		ug/m3 Air			06/05/15 03:53	2.3
Carbon tetrachloride	ND		12		ug/m3 Air			06/05/15 03:53	2.3
Chlorobenzene	ND		3.2		ug/m3 Air			06/05/15 03:53	2.3
Dibromochloromethane	ND		7.8		ug/m3 Air			06/05/15 03:53	2.3
Chloroethane	ND		4.9		ug/m3 Air			06/05/15 03:53	2.3
Chloroform	ND		3.4		ug/m3 Air			06/05/15 03:53	2.3
<b>Chloromethane</b>	<b>4.3</b>		3.8		ug/m3 Air			06/05/15 03:53	2.3
1,2-Dibromoethane (EDB)	ND		14		ug/m3 Air			06/05/15 03:53	2.3
1,2-Dichlorobenzene	ND		5.5		ug/m3 Air			06/05/15 03:53	2.3
<b>1,3-Dichlorobenzene</b>	<b>12</b>		5.5		ug/m3 Air			06/05/15 03:53	2.3
1,4-Dichlorobenzene	ND		5.5		ug/m3 Air			06/05/15 03:53	2.3
Dichlorodifluoromethane	ND		4.5		ug/m3 Air			06/05/15 03:53	2.3
1,1-Dichloroethane	ND		2.8		ug/m3 Air			06/05/15 03:53	2.3
1,2-Dichloroethane	ND		7.4		ug/m3 Air			06/05/15 03:53	2.3
1,1-Dichloroethene	ND		7.3		ug/m3 Air			06/05/15 03:53	2.3
cis-1,2-Dichloroethene	ND		3.6		ug/m3 Air			06/05/15 03:53	2.3
trans-1,2-Dichloroethene	ND		3.6		ug/m3 Air			06/05/15 03:53	2.3
1,2-Dichloropropane	ND		4.3		ug/m3 Air			06/05/15 03:53	2.3
cis-1,3-Dichloropropene	ND		4.2		ug/m3 Air			06/05/15 03:53	2.3
trans-1,3-Dichloropropene	ND		4.2		ug/m3 Air			06/05/15 03:53	2.3
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		6.4		ug/m3 Air			06/05/15 03:53	2.3
Ethylbenzene	ND		4.0		ug/m3 Air			06/05/15 03:53	2.3
<b>4-Ethyltoluene</b>	<b>4.7</b>		4.5		ug/m3 Air			06/05/15 03:53	2.3
Hexachlorobutadiene	ND		49		ug/m3 Air			06/05/15 03:53	2.3
<b>2-Hexanone</b>	<b>3.8</b>		3.8		ug/m3 Air			06/05/15 03:53	2.3
Methylene Chloride	ND		3.2		ug/m3 Air			06/05/15 03:53	2.3
<b>4-Methyl-2-pentanone (MIBK)</b>	<b>6.9</b>		3.8		ug/m3 Air			06/05/15 03:53	2.3
Styrene	ND		3.9		ug/m3 Air			06/05/15 03:53	2.3
1,1,2,2-Tetrachloroethane	ND		6.3		ug/m3 Air			06/05/15 03:53	2.3
<b>Tetrachloroethene</b>	<b>360</b>		6.2		ug/m3 Air			06/05/15 03:53	2.3
<b>Toluene</b>	<b>3.6</b>		3.5		ug/m3 Air			06/05/15 03:53	2.3
1,2,4-Trichlorobenzene	ND		34		ug/m3 Air			06/05/15 03:53	2.3
1,1,1-Trichloroethane	ND		3.8		ug/m3 Air			06/05/15 03:53	2.3
1,1,2-Trichloroethane	ND		5.0		ug/m3 Air			06/05/15 03:53	2.3
<b>Trichloroethene</b>	<b>8.0</b>		4.9		ug/m3 Air			06/05/15 03:53	2.3
Trichlorofluoromethane	ND		5.2		ug/m3 Air			06/05/15 03:53	2.3
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		7.1		ug/m3 Air			06/05/15 03:53	2.3
<b>1,2,4-Trimethylbenzene</b>	<b>15</b>		9.0		ug/m3 Air			06/05/15 03:53	2.3

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Client Sample ID: SVE NORTH

Lab Sample ID: 320-13252-1

Date Collected: 05/28/15 17:22

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,3,5-Trimethylbenzene</b>	<b>4.9</b>		4.5		ug/m3 Air			06/05/15 03:53	2.3
Vinyl acetate	ND		6.5		ug/m3 Air			06/05/15 03:53	2.3
Vinyl chloride	ND		2.4		ug/m3 Air			06/05/15 03:53	2.3
<b>m,p-Xylene</b>	<b>16</b>		8.0		ug/m3 Air			06/05/15 03:53	2.3
<b>o-Xylene</b>	<b>7.5</b>		4.0		ug/m3 Air			06/05/15 03:53	2.3
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		70 - 130					06/05/15 03:53	2.3
1,2-Dichloroethane-d4 (Surr)	100		70 - 130					06/05/15 03:53	2.3
Toluene-d8 (Surr)	97		70 - 130					06/05/15 03:53	2.3

## Client Sample ID: SVE SOUTH POST CARBON

Lab Sample ID: 320-13252-2

Date Collected: 05/28/15 16:51

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

### Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		20		ppb v/v			06/05/15 04:47	4
Benzene	ND		1.6		ppb v/v			06/05/15 04:47	4
Benzyl chloride	ND		3.2		ppb v/v			06/05/15 04:47	4
Bromodichloromethane	ND		1.2		ppb v/v			06/05/15 04:47	4
Bromoform	ND		1.6		ppb v/v			06/05/15 04:47	4
Bromomethane	ND		3.2		ppb v/v			06/05/15 04:47	4
2-Butanone (MEK)	ND		3.2		ppb v/v			06/05/15 04:47	4
Carbon disulfide	ND		3.2		ppb v/v			06/05/15 04:47	4
Carbon tetrachloride	ND		3.2		ppb v/v			06/05/15 04:47	4
Chlorobenzene	ND		1.2		ppb v/v			06/05/15 04:47	4
Dibromochloromethane	ND		1.6		ppb v/v			06/05/15 04:47	4
Chloroethane	ND		3.2		ppb v/v			06/05/15 04:47	4
Chloroform	ND		1.2		ppb v/v			06/05/15 04:47	4
Chloromethane	ND		3.2		ppb v/v			06/05/15 04:47	4
1,2-Dibromoethane (EDB)	ND		3.2		ppb v/v			06/05/15 04:47	4
1,2-Dichlorobenzene	ND		1.6		ppb v/v			06/05/15 04:47	4
1,3-Dichlorobenzene	ND		1.6		ppb v/v			06/05/15 04:47	4
1,4-Dichlorobenzene	ND		1.6		ppb v/v			06/05/15 04:47	4
Dichlorodifluoromethane	ND		1.6		ppb v/v			06/05/15 04:47	4
1,1-Dichloroethane	ND		1.2		ppb v/v			06/05/15 04:47	4
1,2-Dichloroethane	ND		3.2		ppb v/v			06/05/15 04:47	4
1,1-Dichloroethene	ND		3.2		ppb v/v			06/05/15 04:47	4
cis-1,2-Dichloroethene	ND		1.6		ppb v/v			06/05/15 04:47	4
trans-1,2-Dichloroethene	ND		1.6		ppb v/v			06/05/15 04:47	4
1,2-Dichloropropane	ND		1.6		ppb v/v			06/05/15 04:47	4
cis-1,3-Dichloropropene	ND		1.6		ppb v/v			06/05/15 04:47	4
trans-1,3-Dichloropropene	ND		1.6		ppb v/v			06/05/15 04:47	4
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		1.6		ppb v/v			06/05/15 04:47	4
Ethylbenzene	ND		1.6		ppb v/v			06/05/15 04:47	4
4-Ethyltoluene	ND		1.6		ppb v/v			06/05/15 04:47	4
Hexachlorobutadiene	ND		8.0		ppb v/v			06/05/15 04:47	4

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

**Client Sample ID: SVE SOUTH POST CARBON**

**Lab Sample ID: 320-13252-2**

Date Collected: 05/28/15 16:51

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		1.6		ppb v/v			06/05/15 04:47	4
Methylene Chloride	ND		1.6		ppb v/v			06/05/15 04:47	4
4-Methyl-2-pentanone (MIBK)	ND		1.6		ppb v/v			06/05/15 04:47	4
Styrene	ND		1.6		ppb v/v			06/05/15 04:47	4
1,1,2,2-Tetrachloroethane	ND		1.6		ppb v/v			06/05/15 04:47	4
<b>Tetrachloroethene</b>	<b>95</b>		1.6		ppb v/v			06/05/15 04:47	4
Toluene	ND		1.6		ppb v/v			06/05/15 04:47	4
1,2,4-Trichlorobenzene	ND		8.0		ppb v/v			06/05/15 04:47	4
1,1,1-Trichloroethane	ND		1.2		ppb v/v			06/05/15 04:47	4
1,1,2-Trichloroethane	ND		1.6		ppb v/v			06/05/15 04:47	4
<b>Trichloroethene</b>	<b>3.0</b>		1.6		ppb v/v			06/05/15 04:47	4
Trichlorofluoromethane	ND		1.6		ppb v/v			06/05/15 04:47	4
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.6		ppb v/v			06/05/15 04:47	4
1,2,4-Trimethylbenzene	ND		3.2		ppb v/v			06/05/15 04:47	4
1,3,5-Trimethylbenzene	ND		1.6		ppb v/v			06/05/15 04:47	4
Vinyl acetate	ND		3.2		ppb v/v			06/05/15 04:47	4
Vinyl chloride	ND		1.6		ppb v/v			06/05/15 04:47	4
<b>m,p-Xylene</b>	<b>3.5</b>		3.2		ppb v/v			06/05/15 04:47	4
<b>o-Xylene</b>	<b>1.6</b>		1.6		ppb v/v			06/05/15 04:47	4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		48		ug/m3 Air			06/05/15 04:47	4
Benzene	ND		5.1		ug/m3 Air			06/05/15 04:47	4
Benzyl chloride	ND		17		ug/m3 Air			06/05/15 04:47	4
Bromodichloromethane	ND		8.0		ug/m3 Air			06/05/15 04:47	4
Bromoform	ND		17		ug/m3 Air			06/05/15 04:47	4
Bromomethane	ND		12		ug/m3 Air			06/05/15 04:47	4
2-Butanone (MEK)	ND		9.4		ug/m3 Air			06/05/15 04:47	4
Carbon disulfide	ND		10		ug/m3 Air			06/05/15 04:47	4
Carbon tetrachloride	ND		20		ug/m3 Air			06/05/15 04:47	4
Chlorobenzene	ND		5.5		ug/m3 Air			06/05/15 04:47	4
Dibromochloromethane	ND		14		ug/m3 Air			06/05/15 04:47	4
Chloroethane	ND		8.4		ug/m3 Air			06/05/15 04:47	4
Chloroform	ND		5.9		ug/m3 Air			06/05/15 04:47	4
Chloromethane	ND		6.6		ug/m3 Air			06/05/15 04:47	4
1,2-Dibromoethane (EDB)	ND		25		ug/m3 Air			06/05/15 04:47	4
1,2-Dichlorobenzene	ND		9.6		ug/m3 Air			06/05/15 04:47	4
1,3-Dichlorobenzene	ND		9.6		ug/m3 Air			06/05/15 04:47	4
1,4-Dichlorobenzene	ND		9.6		ug/m3 Air			06/05/15 04:47	4
Dichlorodifluoromethane	ND		7.9		ug/m3 Air			06/05/15 04:47	4
1,1-Dichloroethane	ND		4.9		ug/m3 Air			06/05/15 04:47	4
1,2-Dichloroethane	ND		13		ug/m3 Air			06/05/15 04:47	4
1,1-Dichloroethene	ND		13		ug/m3 Air			06/05/15 04:47	4
cis-1,2-Dichloroethene	ND		6.3		ug/m3 Air			06/05/15 04:47	4
trans-1,2-Dichloroethene	ND		6.3		ug/m3 Air			06/05/15 04:47	4
1,2-Dichloropropane	ND		7.4		ug/m3 Air			06/05/15 04:47	4
cis-1,3-Dichloropropene	ND		7.3		ug/m3 Air			06/05/15 04:47	4
trans-1,3-Dichloropropene	ND		7.3		ug/m3 Air			06/05/15 04:47	4
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		11		ug/m3 Air			06/05/15 04:47	4

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

**Client Sample ID: SVE SOUTH POST CARBON**

**Lab Sample ID: 320-13252-2**

Date Collected: 05/28/15 16:51

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		6.9		ug/m3 Air			06/05/15 04:47	4
4-Ethyltoluene	ND		7.9		ug/m3 Air			06/05/15 04:47	4
Hexachlorobutadiene	ND		85		ug/m3 Air			06/05/15 04:47	4
2-Hexanone	ND		6.6		ug/m3 Air			06/05/15 04:47	4
Methylene Chloride	ND		5.6		ug/m3 Air			06/05/15 04:47	4
4-Methyl-2-pentanone (MIBK)	ND		6.6		ug/m3 Air			06/05/15 04:47	4
Styrene	ND		6.8		ug/m3 Air			06/05/15 04:47	4
1,1,2,2-Tetrachloroethane	ND		11		ug/m3 Air			06/05/15 04:47	4
<b>Tetrachloroethene</b>	<b>650</b>		11		ug/m3 Air			06/05/15 04:47	4
Toluene	ND		6.0		ug/m3 Air			06/05/15 04:47	4
1,2,4-Trichlorobenzene	ND		59		ug/m3 Air			06/05/15 04:47	4
1,1,1-Trichloroethane	ND		6.5		ug/m3 Air			06/05/15 04:47	4
1,1,2-Trichloroethane	ND		8.7		ug/m3 Air			06/05/15 04:47	4
<b>Trichloroethene</b>	<b>16</b>		8.6		ug/m3 Air			06/05/15 04:47	4
Trichlorofluoromethane	ND		9.0		ug/m3 Air			06/05/15 04:47	4
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		12		ug/m3 Air			06/05/15 04:47	4
1,2,4-Trimethylbenzene	ND		16		ug/m3 Air			06/05/15 04:47	4
1,3,5-Trimethylbenzene	ND		7.9		ug/m3 Air			06/05/15 04:47	4
Vinyl acetate	ND		11		ug/m3 Air			06/05/15 04:47	4
Vinyl chloride	ND		4.1		ug/m3 Air			06/05/15 04:47	4
<b>m,p-Xylene</b>	<b>15</b>		14		ug/m3 Air			06/05/15 04:47	4
<b>o-Xylene</b>	<b>7.1</b>		6.9		ug/m3 Air			06/05/15 04:47	4
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		70 - 130					06/05/15 04:47	4
1,2-Dichloroethane-d4 (Surr)	101		70 - 130					06/05/15 04:47	4
Toluene-d8 (Surr)	100		70 - 130					06/05/15 04:47	4

**Client Sample ID: SVE SOUTH PRE CARBON**

**Lab Sample ID: 320-13252-3**

Date Collected: 05/28/15 16:42

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		250		ppb v/v			06/05/15 11:08	49.6
Benzene	ND		20		ppb v/v			06/05/15 11:08	49.6
Benzyl chloride	ND		40		ppb v/v			06/05/15 11:08	49.6
Bromodichloromethane	ND		15		ppb v/v			06/05/15 11:08	49.6
Bromoform	ND		20		ppb v/v			06/05/15 11:08	49.6
Bromomethane	ND		40		ppb v/v			06/05/15 11:08	49.6
2-Butanone (MEK)	ND		40		ppb v/v			06/05/15 11:08	49.6
Carbon disulfide	ND		40		ppb v/v			06/05/15 11:08	49.6
Carbon tetrachloride	ND		40		ppb v/v			06/05/15 11:08	49.6
Chlorobenzene	ND		15		ppb v/v			06/05/15 11:08	49.6
Dibromochloromethane	ND		20		ppb v/v			06/05/15 11:08	49.6
Chloroethane	ND		40		ppb v/v			06/05/15 11:08	49.6
Chloroform	ND		15		ppb v/v			06/05/15 11:08	49.6
Chloromethane	ND		40		ppb v/v			06/05/15 11:08	49.6

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

**Client Sample ID: SVE SOUTH PRE CARBON**

**Lab Sample ID: 320-13252-3**

Date Collected: 05/28/15 16:42

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		40		ppb v/v			06/05/15 11:08	49.6
1,2-Dichlorobenzene	ND		20		ppb v/v			06/05/15 11:08	49.6
1,3-Dichlorobenzene	ND		20		ppb v/v			06/05/15 11:08	49.6
1,4-Dichlorobenzene	ND		20		ppb v/v			06/05/15 11:08	49.6
Dichlorodifluoromethane	ND		20		ppb v/v			06/05/15 11:08	49.6
1,1-Dichloroethane	ND		15		ppb v/v			06/05/15 11:08	49.6
1,2-Dichloroethane	ND		40		ppb v/v			06/05/15 11:08	49.6
1,1-Dichloroethene	ND		40		ppb v/v			06/05/15 11:08	49.6
<b>cis-1,2-Dichloroethene</b>	<b>36</b>		20		ppb v/v			06/05/15 11:08	49.6
trans-1,2-Dichloroethene	ND		20		ppb v/v			06/05/15 11:08	49.6
1,2-Dichloropropane	ND		20		ppb v/v			06/05/15 11:08	49.6
cis-1,3-Dichloropropene	ND		20		ppb v/v			06/05/15 11:08	49.6
trans-1,3-Dichloropropene	ND		20		ppb v/v			06/05/15 11:08	49.6
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		20		ppb v/v			06/05/15 11:08	49.6
Ethylbenzene	ND		20		ppb v/v			06/05/15 11:08	49.6
4-Ethyltoluene	ND		20		ppb v/v			06/05/15 11:08	49.6
Hexachlorobutadiene	ND		99		ppb v/v			06/05/15 11:08	49.6
2-Hexanone	ND		20		ppb v/v			06/05/15 11:08	49.6
<b>Methylene Chloride</b>	<b>26</b>		20		ppb v/v			06/05/15 11:08	49.6
4-Methyl-2-pentanone (MIBK)	ND		20		ppb v/v			06/05/15 11:08	49.6
Styrene	ND		20		ppb v/v			06/05/15 11:08	49.6
1,1,2,2-Tetrachloroethane	ND		20		ppb v/v			06/05/15 11:08	49.6
<b>Tetrachloroethene</b>	<b>1200</b>		20		ppb v/v			06/05/15 11:08	49.6
<b>Toluene</b>	<b>64</b>		20		ppb v/v			06/05/15 11:08	49.6
1,2,4-Trichlorobenzene	ND		99		ppb v/v			06/05/15 11:08	49.6
1,1,1-Trichloroethane	ND		15		ppb v/v			06/05/15 11:08	49.6
1,1,2-Trichloroethane	ND		20		ppb v/v			06/05/15 11:08	49.6
<b>Trichloroethene</b>	<b>85</b>		20		ppb v/v			06/05/15 11:08	49.6
Trichlorofluoromethane	ND		20		ppb v/v			06/05/15 11:08	49.6
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20		ppb v/v			06/05/15 11:08	49.6
1,2,4-Trimethylbenzene	ND		40		ppb v/v			06/05/15 11:08	49.6
1,3,5-Trimethylbenzene	ND		20		ppb v/v			06/05/15 11:08	49.6
Vinyl acetate	ND		40		ppb v/v			06/05/15 11:08	49.6
Vinyl chloride	ND		20		ppb v/v			06/05/15 11:08	49.6
m,p-Xylene	ND		40		ppb v/v			06/05/15 11:08	49.6
o-Xylene	ND		20		ppb v/v			06/05/15 11:08	49.6
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		590		ug/m3 Air			06/05/15 11:08	49.6
Benzene	ND		63		ug/m3 Air			06/05/15 11:08	49.6
Benzyl chloride	ND		210		ug/m3 Air			06/05/15 11:08	49.6
Bromodichloromethane	ND		100		ug/m3 Air			06/05/15 11:08	49.6
Bromoform	ND		210		ug/m3 Air			06/05/15 11:08	49.6
Bromomethane	ND		150		ug/m3 Air			06/05/15 11:08	49.6
2-Butanone (MEK)	ND		120		ug/m3 Air			06/05/15 11:08	49.6
Carbon disulfide	ND		120		ug/m3 Air			06/05/15 11:08	49.6
Carbon tetrachloride	ND		250		ug/m3 Air			06/05/15 11:08	49.6
Chlorobenzene	ND		69		ug/m3 Air			06/05/15 11:08	49.6
Dibromochloromethane	ND		170		ug/m3 Air			06/05/15 11:08	49.6

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

**Client Sample ID: SVE SOUTH PRE CARBON**

**Lab Sample ID: 320-13252-3**

Date Collected: 05/28/15 16:42

Matrix: Air

Date Received: 06/01/15 09:00

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		100		ug/m3 Air			06/05/15 11:08	49.6
Chloroform	ND		73		ug/m3 Air			06/05/15 11:08	49.6
Chloromethane	ND		82		ug/m3 Air			06/05/15 11:08	49.6
1,2-Dibromoethane (EDB)	ND		300		ug/m3 Air			06/05/15 11:08	49.6
1,2-Dichlorobenzene	ND		120		ug/m3 Air			06/05/15 11:08	49.6
1,3-Dichlorobenzene	ND		120		ug/m3 Air			06/05/15 11:08	49.6
1,4-Dichlorobenzene	ND		120		ug/m3 Air			06/05/15 11:08	49.6
Dichlorodifluoromethane	ND		98		ug/m3 Air			06/05/15 11:08	49.6
1,1-Dichloroethane	ND		60		ug/m3 Air			06/05/15 11:08	49.6
1,2-Dichloroethane	ND		160		ug/m3 Air			06/05/15 11:08	49.6
1,1-Dichloroethene	ND		160		ug/m3 Air			06/05/15 11:08	49.6
<b>cis-1,2-Dichloroethene</b>	<b>140</b>		79		ug/m3 Air			06/05/15 11:08	49.6
trans-1,2-Dichloroethene	ND		79		ug/m3 Air			06/05/15 11:08	49.6
1,2-Dichloropropane	ND		92		ug/m3 Air			06/05/15 11:08	49.6
cis-1,3-Dichloropropene	ND		90		ug/m3 Air			06/05/15 11:08	49.6
trans-1,3-Dichloropropene	ND		90		ug/m3 Air			06/05/15 11:08	49.6
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		140		ug/m3 Air			06/05/15 11:08	49.6
Ethylbenzene	ND		86		ug/m3 Air			06/05/15 11:08	49.6
4-Ethyltoluene	ND		98		ug/m3 Air			06/05/15 11:08	49.6
Hexachlorobutadiene	ND		1100		ug/m3 Air			06/05/15 11:08	49.6
2-Hexanone	ND		81		ug/m3 Air			06/05/15 11:08	49.6
<b>Methylene Chloride</b>	<b>92</b>		69		ug/m3 Air			06/05/15 11:08	49.6
4-Methyl-2-pentanone (MIBK)	ND		81		ug/m3 Air			06/05/15 11:08	49.6
Styrene	ND		85		ug/m3 Air			06/05/15 11:08	49.6
1,1,2,2-Tetrachloroethane	ND		140		ug/m3 Air			06/05/15 11:08	49.6
<b>Tetrachloroethene</b>	<b>8000</b>		130		ug/m3 Air			06/05/15 11:08	49.6
<b>Toluene</b>	<b>240</b>		75		ug/m3 Air			06/05/15 11:08	49.6
1,2,4-Trichlorobenzene	ND		740		ug/m3 Air			06/05/15 11:08	49.6
1,1,1-Trichloroethane	ND		81		ug/m3 Air			06/05/15 11:08	49.6
1,1,2-Trichloroethane	ND		110		ug/m3 Air			06/05/15 11:08	49.6
<b>Trichloroethene</b>	<b>460</b>		110		ug/m3 Air			06/05/15 11:08	49.6
Trichlorofluoromethane	ND		110		ug/m3 Air			06/05/15 11:08	49.6
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		150		ug/m3 Air			06/05/15 11:08	49.6
1,2,4-Trimethylbenzene	ND		200		ug/m3 Air			06/05/15 11:08	49.6
1,3,5-Trimethylbenzene	ND		98		ug/m3 Air			06/05/15 11:08	49.6
Vinyl acetate	ND		140		ug/m3 Air			06/05/15 11:08	49.6
Vinyl chloride	ND		51		ug/m3 Air			06/05/15 11:08	49.6
m,p-Xylene	ND		170		ug/m3 Air			06/05/15 11:08	49.6
o-Xylene	ND		86		ug/m3 Air			06/05/15 11:08	49.6
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		70 - 130					06/05/15 11:08	49.6
1,2-Dichloroethane-d4 (Surr)	102		70 - 130					06/05/15 11:08	49.6
Toluene-d8 (Surr)	100		70 - 130					06/05/15 11:08	49.6



# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-13252-1	SVE NORTH	102	100	97
320-13252-2	SVE SOUTH POST CARBON	96	101	100
320-13252-3	SVE SOUTH PRE CARBON	103	102	100
LCS 320-75777/3	Lab Control Sample	109	113	96
LCSD 320-75777/4	Lab Control Sample Dup	109	111	100
MB 320-75777/6	Method Blank	89	99	96

### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-75777/6

Matrix: Air

Analysis Batch: 75777

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			06/04/15 17:10	1
Benzene	ND		0.40		ppb v/v			06/04/15 17:10	1
Benzyl chloride	ND		0.80		ppb v/v			06/04/15 17:10	1
Bromodichloromethane	ND		0.30		ppb v/v			06/04/15 17:10	1
Bromoform	ND		0.40		ppb v/v			06/04/15 17:10	1
Bromomethane	ND		0.80		ppb v/v			06/04/15 17:10	1
2-Butanone (MEK)	ND		0.80		ppb v/v			06/04/15 17:10	1
Carbon disulfide	ND		0.80		ppb v/v			06/04/15 17:10	1
Carbon tetrachloride	ND		0.80		ppb v/v			06/04/15 17:10	1
Chlorobenzene	ND		0.30		ppb v/v			06/04/15 17:10	1
Dibromochloromethane	ND		0.40		ppb v/v			06/04/15 17:10	1
Chloroethane	ND		0.80		ppb v/v			06/04/15 17:10	1
Chloroform	ND		0.30		ppb v/v			06/04/15 17:10	1
Chloromethane	ND		0.80		ppb v/v			06/04/15 17:10	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			06/04/15 17:10	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			06/04/15 17:10	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			06/04/15 17:10	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			06/04/15 17:10	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			06/04/15 17:10	1
1,1-Dichloroethane	ND		0.30		ppb v/v			06/04/15 17:10	1
1,2-Dichloroethane	ND		0.80		ppb v/v			06/04/15 17:10	1
1,1-Dichloroethene	ND		0.80		ppb v/v			06/04/15 17:10	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			06/04/15 17:10	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			06/04/15 17:10	1
1,2-Dichloropropane	ND		0.40		ppb v/v			06/04/15 17:10	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			06/04/15 17:10	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			06/04/15 17:10	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			06/04/15 17:10	1
Ethylbenzene	ND		0.40		ppb v/v			06/04/15 17:10	1
4-Ethyltoluene	ND		0.40		ppb v/v			06/04/15 17:10	1
Hexachlorobutadiene	ND		2.0		ppb v/v			06/04/15 17:10	1
2-Hexanone	ND		0.40		ppb v/v			06/04/15 17:10	1
Methylene Chloride	ND		0.40		ppb v/v			06/04/15 17:10	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			06/04/15 17:10	1
Styrene	ND		0.40		ppb v/v			06/04/15 17:10	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			06/04/15 17:10	1
Tetrachloroethene	ND		0.40		ppb v/v			06/04/15 17:10	1
Toluene	ND		0.40		ppb v/v			06/04/15 17:10	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			06/04/15 17:10	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			06/04/15 17:10	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			06/04/15 17:10	1
Trichloroethene	ND		0.40		ppb v/v			06/04/15 17:10	1
Trichlorofluoromethane	ND		0.40		ppb v/v			06/04/15 17:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			06/04/15 17:10	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			06/04/15 17:10	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			06/04/15 17:10	1
Vinyl acetate	ND		0.80		ppb v/v			06/04/15 17:10	1
Vinyl chloride	ND		0.40		ppb v/v			06/04/15 17:10	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-75777/6**  
**Matrix: Air**  
**Analysis Batch: 75777**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			06/04/15 17:10	1
o-Xylene	ND		0.40		ppb v/v			06/04/15 17:10	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			06/04/15 17:10	1
Benzene	ND		1.3		ug/m3 Air			06/04/15 17:10	1
Benzyl chloride	ND		4.1		ug/m3 Air			06/04/15 17:10	1
Bromodichloromethane	ND		2.0		ug/m3 Air			06/04/15 17:10	1
Bromoform	ND		4.1		ug/m3 Air			06/04/15 17:10	1
Bromomethane	ND		3.1		ug/m3 Air			06/04/15 17:10	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			06/04/15 17:10	1
Carbon disulfide	ND		2.5		ug/m3 Air			06/04/15 17:10	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			06/04/15 17:10	1
Chlorobenzene	ND		1.4		ug/m3 Air			06/04/15 17:10	1
Dibromochloromethane	ND		3.4		ug/m3 Air			06/04/15 17:10	1
Chloroethane	ND		2.1		ug/m3 Air			06/04/15 17:10	1
Chloroform	ND		1.5		ug/m3 Air			06/04/15 17:10	1
Chloromethane	ND		1.7		ug/m3 Air			06/04/15 17:10	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			06/04/15 17:10	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			06/04/15 17:10	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			06/04/15 17:10	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			06/04/15 17:10	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			06/04/15 17:10	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			06/04/15 17:10	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			06/04/15 17:10	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			06/04/15 17:10	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			06/04/15 17:10	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			06/04/15 17:10	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			06/04/15 17:10	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			06/04/15 17:10	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			06/04/15 17:10	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			06/04/15 17:10	1
Ethylbenzene	ND		1.7		ug/m3 Air			06/04/15 17:10	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			06/04/15 17:10	1
Hexachlorobutadiene	ND		21		ug/m3 Air			06/04/15 17:10	1
2-Hexanone	ND		1.6		ug/m3 Air			06/04/15 17:10	1
Methylene Chloride	ND		1.4		ug/m3 Air			06/04/15 17:10	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			06/04/15 17:10	1
Styrene	ND		1.7		ug/m3 Air			06/04/15 17:10	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			06/04/15 17:10	1
Tetrachloroethene	ND		2.7		ug/m3 Air			06/04/15 17:10	1
Toluene	ND		1.5		ug/m3 Air			06/04/15 17:10	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			06/04/15 17:10	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			06/04/15 17:10	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			06/04/15 17:10	1
Trichloroethene	ND		2.1		ug/m3 Air			06/04/15 17:10	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			06/04/15 17:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			06/04/15 17:10	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-75777/6**

**Matrix: Air**

**Analysis Batch: 75777**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			06/04/15 17:10	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			06/04/15 17:10	1
Vinyl acetate	ND		2.8		ug/m3 Air			06/04/15 17:10	1
Vinyl chloride	ND		1.0		ug/m3 Air			06/04/15 17:10	1
m,p-Xylene	ND		3.5		ug/m3 Air			06/04/15 17:10	1
o-Xylene	ND		1.7		ug/m3 Air			06/04/15 17:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		70 - 130		06/04/15 17:10	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		06/04/15 17:10	1
Toluene-d8 (Surr)	96		70 - 130		06/04/15 17:10	1

**Lab Sample ID: LCS 320-75777/3**

**Matrix: Air**

**Analysis Batch: 75777**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	15.8		ppb v/v		79	71 - 131
Benzene	20.0	17.6		ppb v/v		88	68 - 128
Benzyl chloride	20.0	19.1		ppb v/v		96	58 - 120
Bromodichloromethane	20.0	20.0		ppb v/v		100	65 - 130
Bromoform	20.0	23.2		ppb v/v		116	64 - 144
Bromomethane	20.0	19.3		ppb v/v		97	70 - 131
2-Butanone (MEK)	20.0	17.6		ppb v/v		88	71 - 131
Carbon disulfide	20.0	15.7		ppb v/v		79	63 - 123
Carbon tetrachloride	20.0	21.9		ppb v/v		109	67 - 127
Chlorobenzene	20.0	20.3		ppb v/v		102	70 - 132
Dibromochloromethane	20.0	21.7		ppb v/v		108	68 - 128
Chloroethane	20.0	22.2		ppb v/v		111	70 - 131
Chloroform	20.0	18.0		ppb v/v		90	69 - 129
Chloromethane	20.0	16.6		ppb v/v		83	67 - 127
1,2-Dibromoethane (EDB)	20.0	20.4		ppb v/v		102	68 - 131
1,2-Dichlorobenzene	20.0	21.8		ppb v/v		109	73 - 143
1,3-Dichlorobenzene	20.0	22.2		ppb v/v		111	77 - 136
1,4-Dichlorobenzene	20.0	23.0		ppb v/v		115	73 - 143
Dichlorodifluoromethane	20.0	17.9		ppb v/v		90	69 - 129
1,1-Dichloroethane	20.0	16.3		ppb v/v		82	65 - 125
1,2-Dichloroethane	20.0	20.4		ppb v/v		102	71 - 131
1,1-Dichloroethene	20.0	15.6		ppb v/v		78	53 - 128
cis-1,2-Dichloroethene	20.0	16.9		ppb v/v		85	68 - 128
trans-1,2-Dichloroethene	20.0	16.7		ppb v/v		83	70 - 130
1,2-Dichloropropane	20.0	21.9		ppb v/v		109	74 - 128
cis-1,3-Dichloropropene	20.0	21.1		ppb v/v		105	78 - 132
trans-1,3-Dichloropropene	20.0	19.0		ppb v/v		95	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	17.4		ppb v/v		87	64 - 124
Ethylbenzene	20.0	20.6		ppb v/v		103	76 - 136
4-Ethyltoluene	20.0	17.6		ppb v/v		88	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-75777/3**

**Matrix: Air**

**Analysis Batch: 75777**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	21.1		ppb v/v		105	42 - 150
2-Hexanone	20.0	20.5		ppb v/v		103	70 - 128
Methylene Chloride	20.0	14.5		ppb v/v		72	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	18.1		ppb v/v		91	73 - 133
Styrene	20.0	22.3		ppb v/v		111	76 - 144
1,1,2,2-Tetrachloroethane	20.0	19.8		ppb v/v		99	75 - 135
Tetrachloroethene	20.0	19.7		ppb v/v		98	56 - 138
Toluene	20.0	18.4		ppb v/v		92	71 - 132
1,2,4-Trichlorobenzene	20.0	22.7		ppb v/v		114	59 - 150
1,1,1-Trichloroethane	20.0	18.9		ppb v/v		95	65 - 124
1,1,2-Trichloroethane	20.0	19.9		ppb v/v		100	71 - 131
Trichloroethene	20.0	18.8		ppb v/v		94	64 - 127
Trichlorofluoromethane	20.0	19.0		ppb v/v		95	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	15.7		ppb v/v		78	50 - 132
1,2,4-Trimethylbenzene	20.0	20.6		ppb v/v		103	61 - 145
1,3,5-Trimethylbenzene	20.0	19.0		ppb v/v		95	65 - 136
Vinyl acetate	20.0	18.9		ppb v/v		94	77 - 134
Vinyl chloride	20.0	17.9		ppb v/v		90	69 - 129
m,p-Xylene	40.0	42.1		ppb v/v		105	75 - 138
o-Xylene	20.0	21.4		ppb v/v		107	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	37.5		ug/m3 Air		79	71 - 131
Benzene	64	56.3		ug/m3 Air		88	68 - 128
Benzyl chloride	100	99.0		ug/m3 Air		96	58 - 120
Bromodichloromethane	130	134		ug/m3 Air		100	65 - 130
Bromoform	210	240		ug/m3 Air		116	64 - 144
Bromomethane	78	75.0		ug/m3 Air		97	70 - 131
2-Butanone (MEK)	59	51.9		ug/m3 Air		88	71 - 131
Carbon disulfide	62	48.9		ug/m3 Air		79	63 - 123
Carbon tetrachloride	130	138		ug/m3 Air		109	67 - 127
Chlorobenzene	92	93.6		ug/m3 Air		102	70 - 132
Dibromochloromethane	170	184		ug/m3 Air		108	68 - 128
Chloroethane	53	58.6		ug/m3 Air		111	70 - 131
Chloroform	98	87.7		ug/m3 Air		90	69 - 129
Chloromethane	41	34.3		ug/m3 Air		83	67 - 127
1,2-Dibromoethane (EDB)	150	157		ug/m3 Air		102	68 - 131
1,2-Dichlorobenzene	120	131		ug/m3 Air		109	73 - 143
1,3-Dichlorobenzene	120	133		ug/m3 Air		111	77 - 136
1,4-Dichlorobenzene	120	138		ug/m3 Air		115	73 - 143
Dichlorodifluoromethane	99	88.6		ug/m3 Air		90	69 - 129
1,1-Dichloroethane	81	66.1		ug/m3 Air		82	65 - 125
1,2-Dichloroethane	81	82.7		ug/m3 Air		102	71 - 131
1,1-Dichloroethene	79	61.7		ug/m3 Air		78	53 - 128
cis-1,2-Dichloroethene	79	67.2		ug/m3 Air		85	68 - 128
trans-1,2-Dichloroethene	79	66.0		ug/m3 Air		83	70 - 130
1,2-Dichloropropane	92	101		ug/m3 Air		109	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-75777/3**

**Matrix: Air**

**Analysis Batch: 75777**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	95.7		ug/m3 Air		105	78 - 132
trans-1,3-Dichloropropene	91	86.4		ug/m3 Air		95	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	122		ug/m3 Air		87	64 - 124
Ethylbenzene	87	89.4		ug/m3 Air		103	76 - 136
4-Ethyltoluene	98	86.5		ug/m3 Air		88	62 - 136
Hexachlorobutadiene	210	225		ug/m3 Air		105	42 - 150
2-Hexanone	82	84.1		ug/m3 Air		103	70 - 128
Methylene Chloride	69	50.3		ug/m3 Air		72	65 - 125
4-Methyl-2-pentanone (MIBK)	82	74.1		ug/m3 Air		91	73 - 133
Styrene	85	95.0		ug/m3 Air		111	76 - 144
1,1,2,2-Tetrachloroethane	140	136		ug/m3 Air		99	75 - 135
Tetrachloroethene	140	134		ug/m3 Air		98	56 - 138
Toluene	75	69.5		ug/m3 Air		92	71 - 132
1,2,4-Trichlorobenzene	150	169		ug/m3 Air		114	59 - 150
1,1,1-Trichloroethane	110	103		ug/m3 Air		95	65 - 124
1,1,2-Trichloroethane	110	109		ug/m3 Air		100	71 - 131
Trichloroethene	110	101		ug/m3 Air		94	64 - 127
Trichlorofluoromethane	110	107		ug/m3 Air		95	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	120		ug/m3 Air		78	50 - 132
1,2,4-Trimethylbenzene	98	101		ug/m3 Air		103	61 - 145
1,3,5-Trimethylbenzene	98	93.4		ug/m3 Air		95	65 - 136
Vinyl acetate	70	66.4		ug/m3 Air		94	77 - 134
Vinyl chloride	51	45.9		ug/m3 Air		90	69 - 129
m,p-Xylene	170	183		ug/m3 Air		105	75 - 138
o-Xylene	87	93.1		ug/m3 Air		107	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	109		70 - 130
1,2-Dichloroethane-d4 (Surr)	113		70 - 130
Toluene-d8 (Surr)	96		70 - 130

**Lab Sample ID: LCSD 320-75777/4**

**Matrix: Air**

**Analysis Batch: 75777**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	15.9		ppb v/v		80	71 - 131	1	25
Benzene	20.0	18.1		ppb v/v		90	68 - 128	2	25
Benzyl chloride	20.0	20.2		ppb v/v		101	58 - 120	5	25
Bromodichloromethane	20.0	20.8		ppb v/v		104	65 - 130	4	25
Bromoform	20.0	24.0		ppb v/v		120	64 - 144	3	25
Bromomethane	20.0	19.8		ppb v/v		99	70 - 131	3	25
2-Butanone (MEK)	20.0	18.2		ppb v/v		91	71 - 131	4	25
Carbon disulfide	20.0	16.0		ppb v/v		80	63 - 123	2	25
Carbon tetrachloride	20.0	22.4		ppb v/v		112	67 - 127	2	25
Chlorobenzene	20.0	20.8		ppb v/v		104	70 - 132	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-75777/4**  
**Matrix: Air**  
**Analysis Batch: 75777**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	21.8		ppb v/v		109	68 - 128	1	25
Chloroethane	20.0	23.0		ppb v/v		115	70 - 131	3	25
Chloroform	20.0	18.6		ppb v/v		93	69 - 129	3	25
Chloromethane	20.0	16.4		ppb v/v		82	67 - 127	1	25
1,2-Dibromoethane (EDB)	20.0	20.9		ppb v/v		104	68 - 131	2	25
1,2-Dichlorobenzene	20.0	22.5		ppb v/v		113	73 - 143	3	25
1,3-Dichlorobenzene	20.0	23.1		ppb v/v		116	77 - 136	4	25
1,4-Dichlorobenzene	20.0	23.9		ppb v/v		120	73 - 143	4	25
Dichlorodifluoromethane	20.0	18.4		ppb v/v		92	69 - 129	3	25
1,1-Dichloroethane	20.0	16.8		ppb v/v		84	65 - 125	3	25
1,2-Dichloroethane	20.0	20.9		ppb v/v		105	71 - 131	2	25
1,1-Dichloroethene	20.0	15.8		ppb v/v		79	53 - 128	2	25
cis-1,2-Dichloroethene	20.0	17.6		ppb v/v		88	68 - 128	4	25
trans-1,2-Dichloroethene	20.0	17.0		ppb v/v		85	70 - 130	2	25
1,2-Dichloropropane	20.0	22.6		ppb v/v		113	74 - 128	3	25
cis-1,3-Dichloropropene	20.0	22.1		ppb v/v		110	78 - 132	5	25
trans-1,3-Dichloropropene	20.0	19.5		ppb v/v		97	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.0		ppb v/v		90	64 - 124	3	25
Ethylbenzene	20.0	21.4		ppb v/v		107	76 - 136	4	25
4-Ethyltoluene	20.0	18.8		ppb v/v		94	62 - 136	6	25
Hexachlorobutadiene	20.0	21.8		ppb v/v		109	42 - 150	3	25
2-Hexanone	20.0	21.0		ppb v/v		105	70 - 128	2	25
Methylene Chloride	20.0	14.3		ppb v/v		71	65 - 125	2	25
4-Methyl-2-pentanone (MIBK)	20.0	18.3		ppb v/v		92	73 - 133	1	25
Styrene	20.0	23.1		ppb v/v		115	76 - 144	3	25
1,1,1,2-Tetrachloroethane	20.0	20.5		ppb v/v		102	75 - 135	3	25
Tetrachloroethene	20.0	20.0		ppb v/v		100	56 - 138	2	25
Toluene	20.0	19.6		ppb v/v		98	71 - 132	6	25
1,2,4-Trichlorobenzene	20.0	24.0		ppb v/v		120	59 - 150	5	25
1,1,1-Trichloroethane	20.0	19.7		ppb v/v		98	65 - 124	4	25
1,1,2-Trichloroethane	20.0	20.1		ppb v/v		101	71 - 131	1	25
Trichloroethene	20.0	19.6		ppb v/v		98	64 - 127	4	25
Trichlorofluoromethane	20.0	19.5		ppb v/v		97	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	15.9		ppb v/v		80	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	21.7		ppb v/v		109	61 - 145	5	25
1,3,5-Trimethylbenzene	20.0	19.7		ppb v/v		98	65 - 136	3	25
Vinyl acetate	20.0	18.7		ppb v/v		94	77 - 134	1	25
Vinyl chloride	20.0	18.5		ppb v/v		93	69 - 129	3	25
m,p-Xylene	40.0	43.9		ppb v/v		110	75 - 138	4	25
o-Xylene	20.0	22.3		ppb v/v		111	77 - 132	4	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	37.8		ug/m3 Air		80	71 - 131	1	25
Benzene	64	57.7		ug/m3 Air		90	68 - 128	2	25
Benzyl chloride	100	105		ug/m3 Air		101	58 - 120	5	25
Bromodichloromethane	130	140		ug/m3 Air		104	65 - 130	4	25
Bromoform	210	248		ug/m3 Air		120	64 - 144	3	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-75777/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 75777

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	76.9		ug/m3 Air		99	70 - 131	3	25
2-Butanone (MEK)	59	53.8		ug/m3 Air		91	71 - 131	4	25
Carbon disulfide	62	49.9		ug/m3 Air		80	63 - 123	2	25
Carbon tetrachloride	130	141		ug/m3 Air		112	67 - 127	2	25
Chlorobenzene	92	95.5		ug/m3 Air		104	70 - 132	2	25
Dibromochloromethane	170	186		ug/m3 Air		109	68 - 128	1	25
Chloroethane	53	60.6		ug/m3 Air		115	70 - 131	3	25
Chloroform	98	90.6		ug/m3 Air		93	69 - 129	3	25
Chloromethane	41	34.0		ug/m3 Air		82	67 - 127	1	25
1,2-Dibromoethane (EDB)	150	160		ug/m3 Air		104	68 - 131	2	25
1,2-Dichlorobenzene	120	135		ug/m3 Air		113	73 - 143	3	25
1,3-Dichlorobenzene	120	139		ug/m3 Air		116	77 - 136	4	25
1,4-Dichlorobenzene	120	144		ug/m3 Air		120	73 - 143	4	25
Dichlorodifluoromethane	99	90.9		ug/m3 Air		92	69 - 129	3	25
1,1-Dichloroethane	81	68.0		ug/m3 Air		84	65 - 125	3	25
1,2-Dichloroethane	81	84.6		ug/m3 Air		105	71 - 131	2	25
1,1-Dichloroethene	79	62.8		ug/m3 Air		79	53 - 128	2	25
cis-1,2-Dichloroethene	79	69.7		ug/m3 Air		88	68 - 128	4	25
trans-1,2-Dichloroethene	79	67.4		ug/m3 Air		85	70 - 130	2	25
1,2-Dichloropropane	92	104		ug/m3 Air		113	74 - 128	3	25
cis-1,3-Dichloropropene	91	100		ug/m3 Air		110	78 - 132	5	25
trans-1,3-Dichloropropene	91	88.4		ug/m3 Air		97	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	126		ug/m3 Air		90	64 - 124	3	25
Ethylbenzene	87	92.8		ug/m3 Air		107	76 - 136	4	25
4-Ethyltoluene	98	92.2		ug/m3 Air		94	62 - 136	6	25
Hexachlorobutadiene	210	232		ug/m3 Air		109	42 - 150	3	25
2-Hexanone	82	86.1		ug/m3 Air		105	70 - 128	2	25
Methylene Chloride	69	49.5		ug/m3 Air		71	65 - 125	2	25
4-Methyl-2-pentanone (MIBK)	82	75.1		ug/m3 Air		92	73 - 133	1	25
Styrene	85	98.3		ug/m3 Air		115	76 - 144	3	25
1,1,2,2-Tetrachloroethane	140	141		ug/m3 Air		102	75 - 135	3	25
Tetrachloroethene	140	136		ug/m3 Air		100	56 - 138	2	25
Toluene	75	73.9		ug/m3 Air		98	71 - 132	6	25
1,2,4-Trichlorobenzene	150	178		ug/m3 Air		120	59 - 150	5	25
1,1,1-Trichloroethane	110	107		ug/m3 Air		98	65 - 124	4	25
1,1,2-Trichloroethane	110	110		ug/m3 Air		101	71 - 131	1	25
Trichloroethene	110	105		ug/m3 Air		98	64 - 127	4	25
Trichlorofluoromethane	110	109		ug/m3 Air		97	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	122		ug/m3 Air		80	50 - 132	1	25
1,2,4-Trimethylbenzene	98	107		ug/m3 Air		109	61 - 145	5	25
1,3,5-Trimethylbenzene	98	96.8		ug/m3 Air		98	65 - 136	3	25
Vinyl acetate	70	65.9		ug/m3 Air		94	77 - 134	1	25
Vinyl chloride	51	47.3		ug/m3 Air		93	69 - 129	3	25
m,p-Xylene	170	191		ug/m3 Air		110	75 - 138	4	25
o-Xylene	87	96.6		ug/m3 Air		111	77 - 132	4	25

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-75777/4

Matrix: Air

Analysis Batch: 75777

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	109		70 - 130
1,2-Dichloroethane-d4 (Surr)	111		70 - 130
Toluene-d8 (Surr)	100		70 - 130

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# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Air - GC/MS VOA

### Analysis Batch: 75777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-13252-1	SVE NORTH	Total/NA	Air	TO-15	
320-13252-2	SVE SOUTH POST CARBON	Total/NA	Air	TO-15	
320-13252-3	SVE SOUTH PRE CARBON	Total/NA	Air	TO-15	
LCS 320-75777/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-75777/4	Lab Control Sample Dup	Total/NA	Air	TO-15	
MB 320-75777/6	Method Blank	Total/NA	Air	TO-15	

# Lab Chronicle

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Client Sample ID: SVE NORTH

Date Collected: 05/28/15 17:22

Date Received: 06/01/15 09:00

## Lab Sample ID: 320-13252-1

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		2.3	250 mL	250 mL	75777	06/05/15 03:53	HL1	TAL SAC

## Client Sample ID: SVE SOUTH POST CARBON

Date Collected: 05/28/15 16:51

Date Received: 06/01/15 09:00

## Lab Sample ID: 320-13252-2

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		4	125 mL	250 mL	75777	06/05/15 04:47	HL1	TAL SAC

## Client Sample ID: SVE SOUTH PRE CARBON

Date Collected: 05/28/15 16:42

Date Received: 06/01/15 09:00

## Lab Sample ID: 320-13252-3

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		49.6	10 mL	250 mL	75777	06/05/15 11:08	HL1	TAL SAC

### Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-16
Alaska (UST)	State Program	10	UST-055	12-18-15
Arizona	State Program	9	AZ0708	08-11-15
Arkansas DEQ	State Program	6	88-0691	06-17-15
California	State Program	9	2897	01-31-16
Colorado	State Program	8	N/A	08-31-15
Connecticut	State Program	1	PH-0691	06-30-15 *
Florida	NELAP	4	E87570	06-30-15 *
Hawaii	State Program	9	N/A	01-29-16
Illinois	NELAP	5	200060	03-17-16
Kansas	NELAP	7	E-10375	10-31-15
Louisiana	NELAP	6	30612	06-30-15 *
Michigan	State Program	5	9947	01-31-16
Nevada	State Program	9	CA44	07-31-15
New Jersey	NELAP	2	CA005	06-30-15 *
New York	NELAP	2	11666	04-01-16
Oregon	NELAP	10	CA200005	01-29-16
Oregon	NELAP Secondary AB	10	E87570	06-30-15
Pennsylvania	NELAP	3	9947	03-31-16
Texas	NELAP	6	T104704399-08-TX	05-31-16
US Fish & Wildlife	Federal		LE148388-0	02-28-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-16
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-15
Wyoming	State Program	8	8TMS-Q	01-29-16

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-012	12-26-15
California	State Program	9	2597	09-30-15
Oregon	NELAP	10	OR100021	01-09-16
USDA	Federal		P330-11-00092	04-17-17
Washington	State Program	10	C586	06-23-15

\* Certification renewal pending - certification considered valid.

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-13252-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-13252-1	SVE NORTH	Air	05/28/15 17:22	06/01/15 09:00
320-13252-2	SVE SOUTH POST CARBON	Air	05/28/15 16:51	06/01/15 09:00
320-13252-3	SVE SOUTH PRE CARBON	Air	05/28/15 16:42	06/01/15 09:00

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JOB # **320-13252**  
Sample # **2**

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Client/Project:		VFR ID:	
Canister Serial #:	34001346	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING		PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)				JMT
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)		11.39	06/03/15	KY
FINAL PRESSURE (PSIA)		22.79	06/03/15	KY
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	2.00			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.00		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
Canister DF =	2.00	X	Load DF =	2	X	Bag DF =	1	=	FINAL DF	4.001755926
			LVf (mLs)	250		BVf (mLs)				
			LVi (mLs)	125		Bvi (mLs)				
Canister DF =	2.00	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			Bvi (mLs)				
Canister DF =	2.00	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			Bvi (mLs)				

JOB # **320-13252**  
Sample # **3**

1  
2  
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Client/Project:		VFR ID:	
Canister Serial #:	7821	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING		PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)				JMT
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)		11.47	06/03/15	KY
FINAL PRESSURE (PSIA)		22.76	06/03/15	KY
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.98			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.98		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
Canister DF =	1.98	X	Load DF =	1.25	X	Bag DF =	20	=	FINAL DF	49.60767219
			LVf (mLs)	250		BVf (mLs)	1000			
			LVi (mLs)	200		Bvi (mLs)	50			
Canister DF =	1.98	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			Bvi (mLs)				
Canister DF =	1.98	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			Bvi (mLs)				

# Login Sample Receipt Checklist

Client: Apex Companies LLC

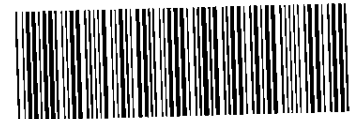
Job Number: 320-13252-1

**Login Number: 13252**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
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 containers received 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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





Canister QC Certification

Certification Type: TO-15 SCAN

Date Cleaned/Batch ID 4/21/15 320-12837

Date of QC 5/7/15

Data File Number M5705717

CANISTER ID NUMBERS

<u>34000442</u>	<u>34000774</u>	_____
<u>1153*</u>	<u>8102</u>	_____
<u>1257</u>	<u>8448</u>	_____
<u>1372</u>	<u>7821</u>	_____
<u>1346</u>	_____	_____
<u>1445</u>	_____	_____
<u>1489</u>	_____	_____
<u>0080</u>	_____	_____

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

[Signature]  
 1<sup>st</sup> level Reviewed By:

5/8/15  
 Date:

[Signature]  
 2nd level Reviewed By:

5/14/15  
 Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-12837-1</u>
SDG No.: <u>6L SCAN batch</u>	
Client Sample ID: <u>34001153</u>	Lab Sample ID: <u>320-12837-2</u>
Matrix: <u>Air</u>	Lab File ID: <u>MS7050717.d</u>
Analysis Method: <u>TO-15</u>	Date Collected: <u>04/21/2015 00:00</u>
Sample wt/vol: <u>500 (mL)</u>	Date Analyzed: <u>05/08/2015 00:27</u>
Soil Aliquot Vol: _____	Dilution Factor: <u>1</u>
Soil Extract Vol.: _____	GC Column: <u>RTX-Volatiles</u> ID: <u>0.32 (mm)</u>
% Moisture: _____	Level: (low/med) <u>Low</u>
Analysis Batch No.: <u>73284</u>	Units: <u>ppb v/v</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.48	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	0.19	J	0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	0.089	J	0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-12837-1</u>
SDG No.: <u>6L SCAN batch</u>	
Client Sample ID: <u>34001153</u>	Lab Sample ID: <u>320-12837-2</u>
Matrix: <u>Air</u>	Lab File ID: <u>MS7050717.d</u>
Analysis Method: <u>TO-15</u>	Date Collected: <u>04/21/2015 00:00</u>
Sample wt/vol: <u>500 (mL)</u>	Date Analyzed: <u>05/08/2015 00:27</u>
Soil Aliquot Vol: _____	Dilution Factor: <u>1</u>
Soil Extract Vol.: _____	GC Column: <u>RTX-Volatiles</u> ID: <u>0.32 (mm)</u>
% Moisture: _____	Level: (low/med) <u>Low</u>
Analysis Batch No.: <u>73284</u>	Units: <u>ppb v/v</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.28	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-12837-1  
 SDG No.: 6L SCAN batch  
 Client Sample ID: 34001153 Lab Sample ID: 320-12837-2  
 Matrix: Air Lab File ID: MS7050717.d  
 Analysis Method: TO-15 Date Collected: 04/21/2015 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 05/08/2015 00:27  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 73284 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	95		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS7\20150507-21616.b\MS7050717.d  
 Lims ID: 320-12837-A-2 Lab Sample ID: 320-12837-2  
 Client ID: 34001153  
 Sample Type: Client  
 Inject. Date: 08-May-2015 00:27:30 ALS Bottle#: 14 Worklist Smp#: 16  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-12837-A-2  
 Misc. Info.: 500 mL CAN CERT  
 Operator ID: LHS Instrument ID: ATMS7  
 Method: \\SACCHROM\ChromData\ATMS7\20150507-21616.b\TO15\_ATMS7N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 08-May-2015 11:56:15 Calib Date: 11-Apr-2015 17:25:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\SACCHROM\ChromData\ATMS7\20150410-20958.b\MS7041028.d  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK030

First Level Reviewer: ortizam

Date: 08-May-2015 13:08:11

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.384	12.415	-0.031	94	25859	4.00	
* 2 1,4-Difluorobenzene	114	14.538	14.562	-0.024	96	114100	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.230	21.248	-0.018	90	117476	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.589	13.613	-0.024	94	41383	3.80	
\$ 5 Toluene-d8 (Surr)	100	17.957	17.975	-0.018	97	79991	4.12	
\$ 6 4-Bromofluorobenzene (Surr	95	23.772	23.791	-0.019	87	78428	3.88	
11 Propene	41	3.867	3.904	-0.037	86	712	0.0911	
32 Acetone	43	7.432	7.450	-0.018	98	10566	0.4779	
39 Methylene Chloride	49	8.795	8.837	-0.042	92	4689	0.2758	
40 Carbon disulfide	76	8.843	8.886	-0.043	95	2237	0.0893	
48 2-Butanone (MEK)	72	11.344	11.338	0.006	91	251	0.0517	
109 4-Isopropyltoluene	119	25.987	25.981	0.006	93	1465	0.0227	
113 Benzyl chloride	91	26.443	26.467	-0.024	1	184	0.1900	

**Reagents:**

VACORPLC40\_00138

Amount Added: 625.00

Units: mL

VASUISIM\_00169

Amount Added: 50.00

Units: mL

Run Reagent



Data File: \\SACCHROM\ChromData\ATMS7\20150507-21616.b\MS7050717.d

Injection Date: 08-May-2015 00:27:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-12837-A-2

Lab Sample ID: 320-12837-2

Worklist Smp#: 16

Client ID: 34001153

Purge Vol: 5.000 mL

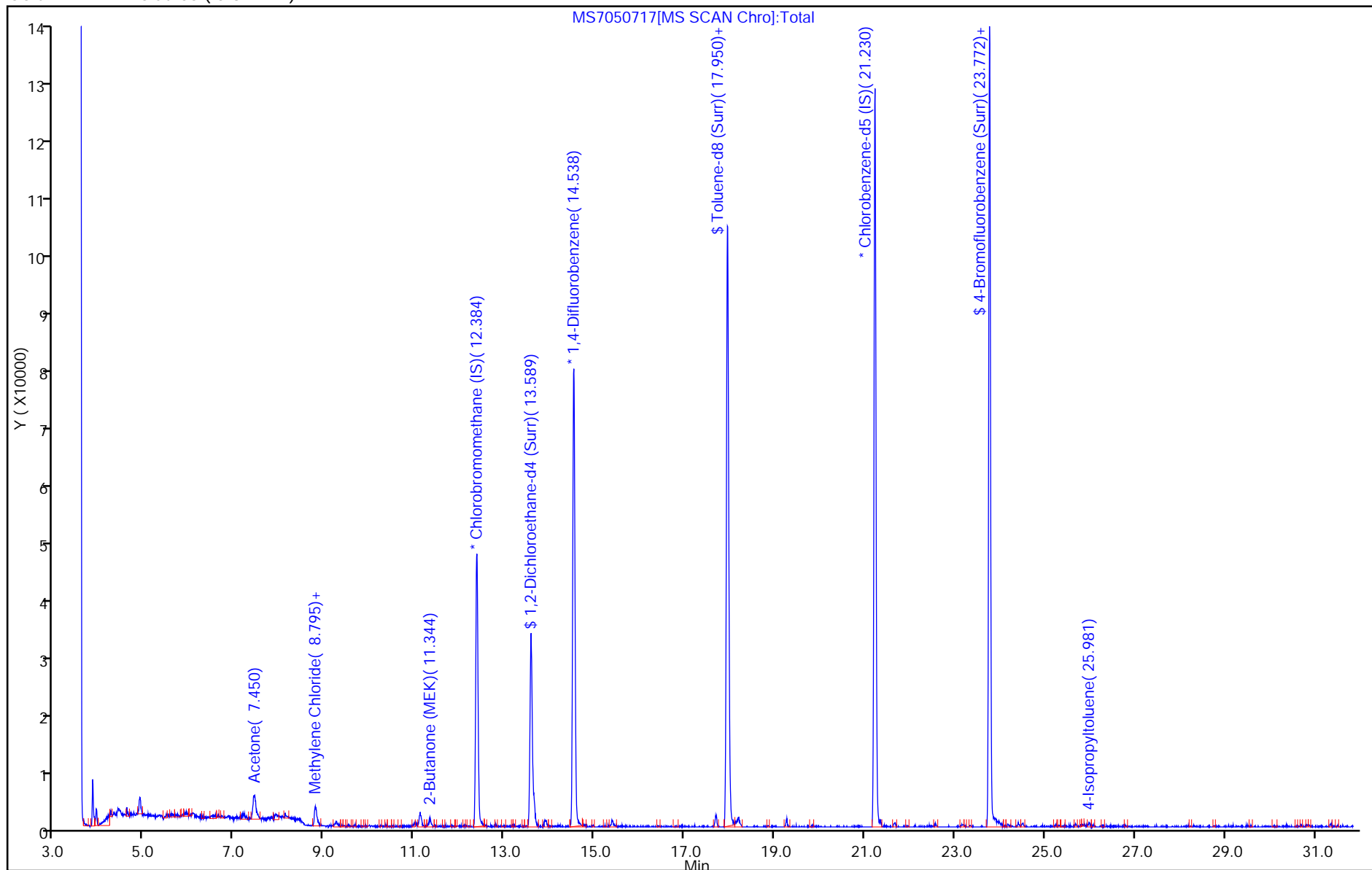
Dil. Factor: 1.0000

ALS Bottle#: 14

Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150507-21616.b\MS7050717.d

Injection Date: 08-May-2015 00:27:30

Instrument ID: ATMS7

Lims ID: 320-12837-A-2

Lab Sample ID: 320-12837-2

Client ID: 34001153

Operator ID: LHS

ALS Bottle#: 14

Worklist Smp#: 16

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

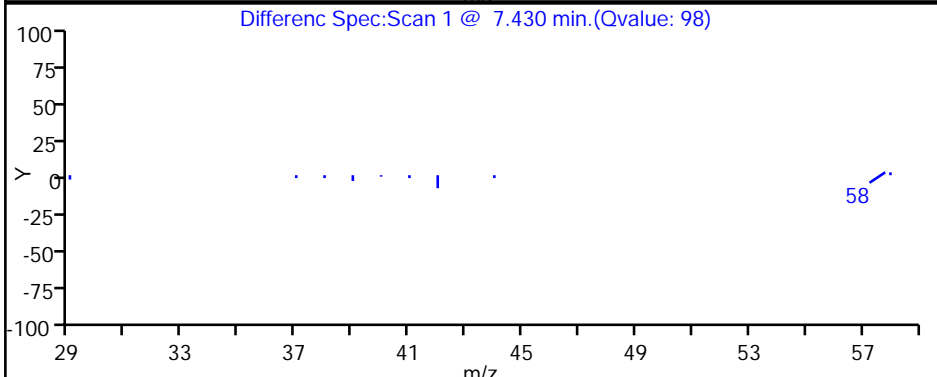
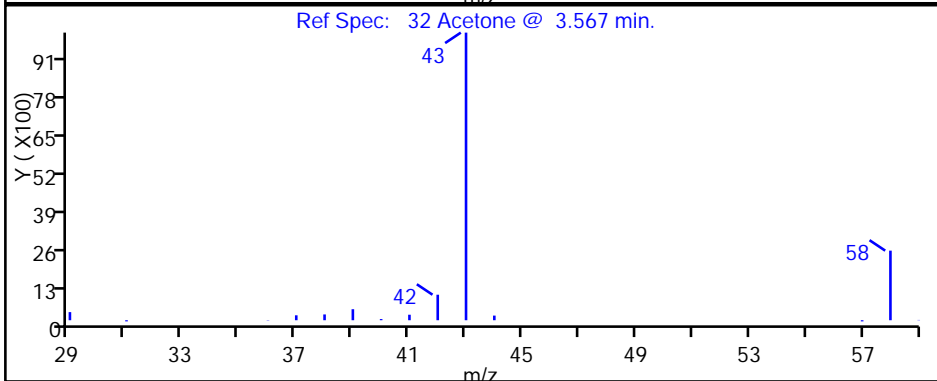
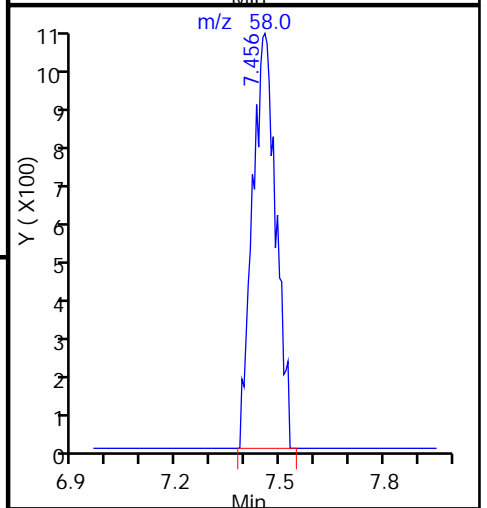
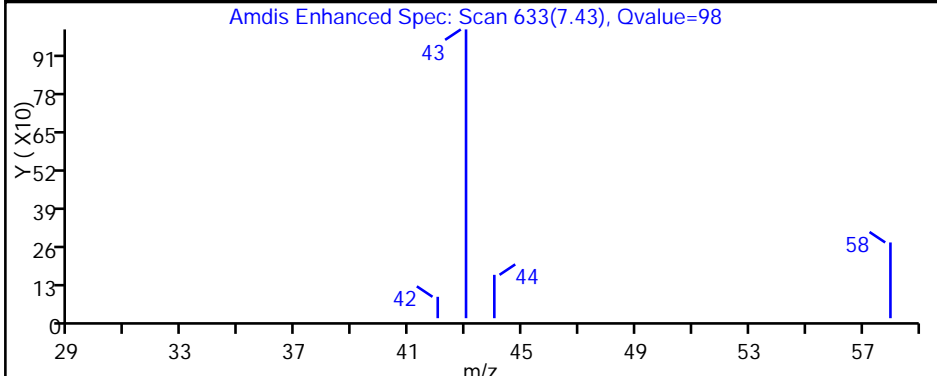
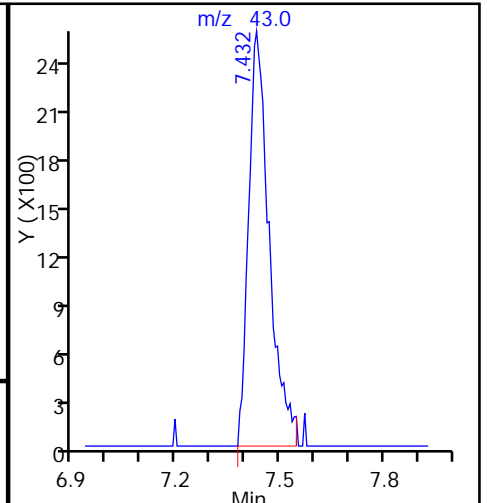
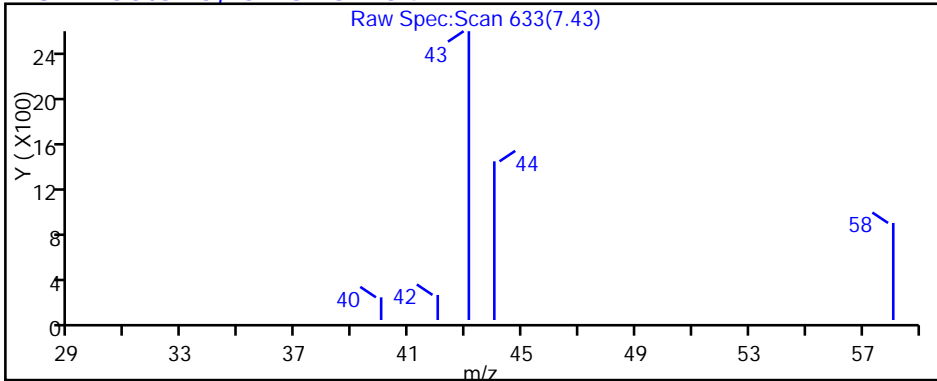
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150507-21616.b\MS7050717.d

Injection Date: 08-May-2015 00:27:30

Instrument ID: ATMS7

Lims ID: 320-12837-A-2

Lab Sample ID: 320-12837-2

Client ID: 34001153

Operator ID: LHS

ALS Bottle#: 14 Worklist Smp#: 16

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

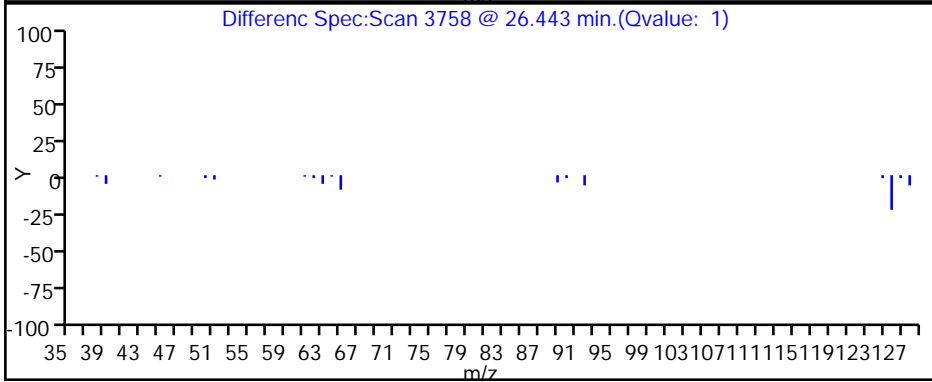
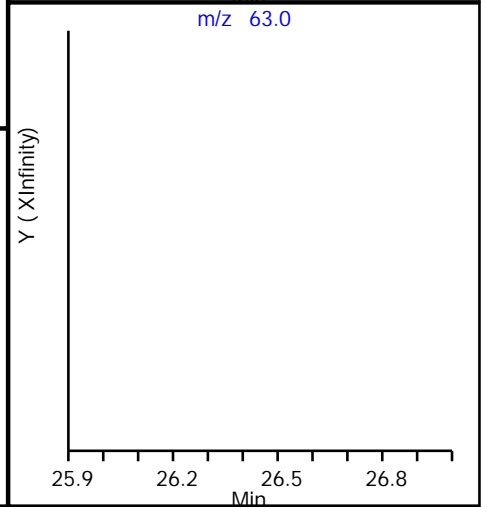
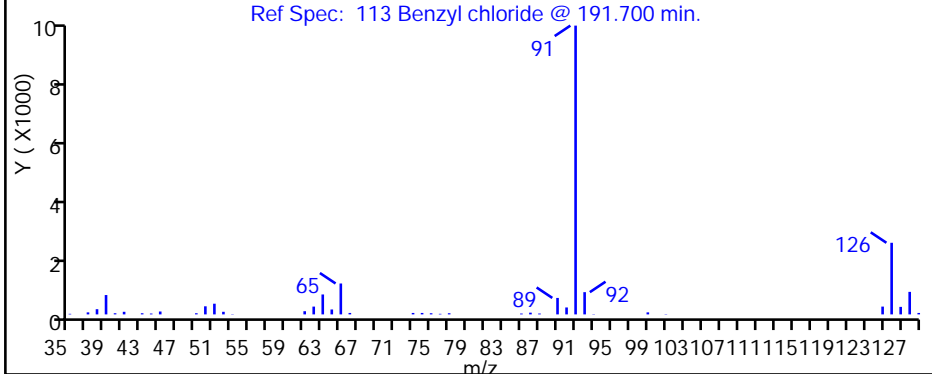
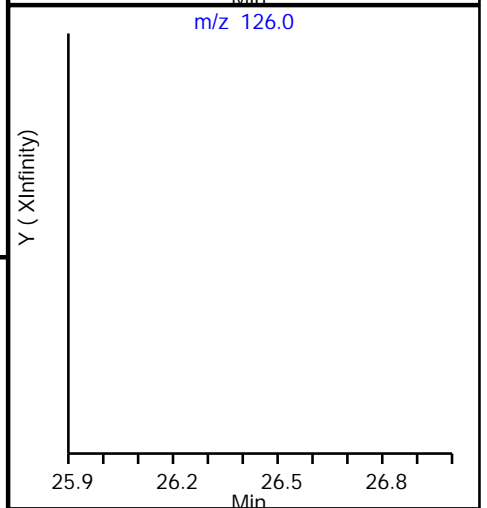
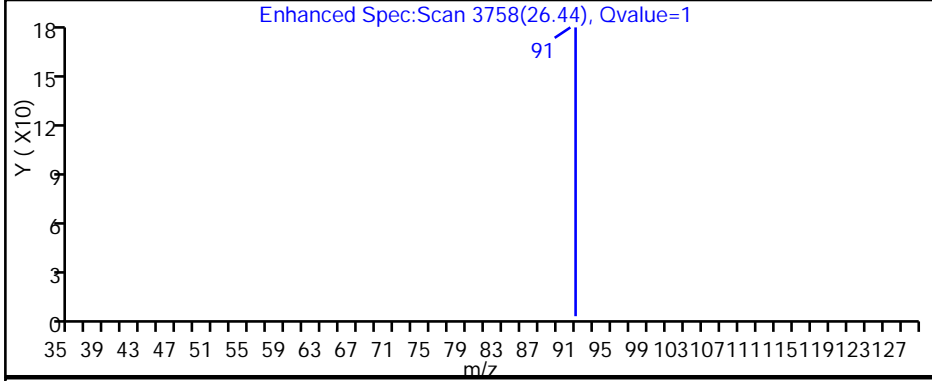
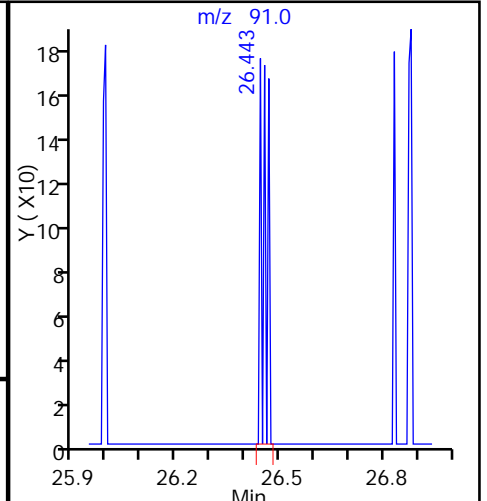
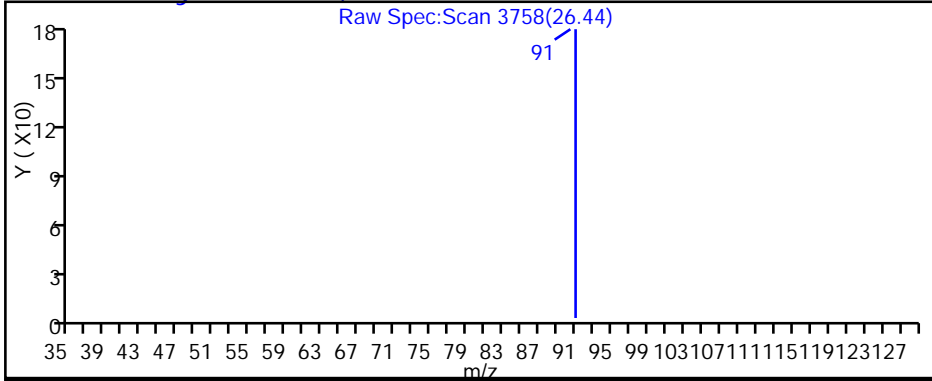
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

113 Benzyl chloride, CAS: 100-44-7



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150507-21616.b\MS7050717.d

Injection Date: 08-May-2015 00:27:30

Instrument ID: ATMS7

Lims ID: 320-12837-A-2

Lab Sample ID: 320-12837-2

Client ID: 34001153

Operator ID: LHS

ALS Bottle#: 14 Worklist Smp#: 16

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

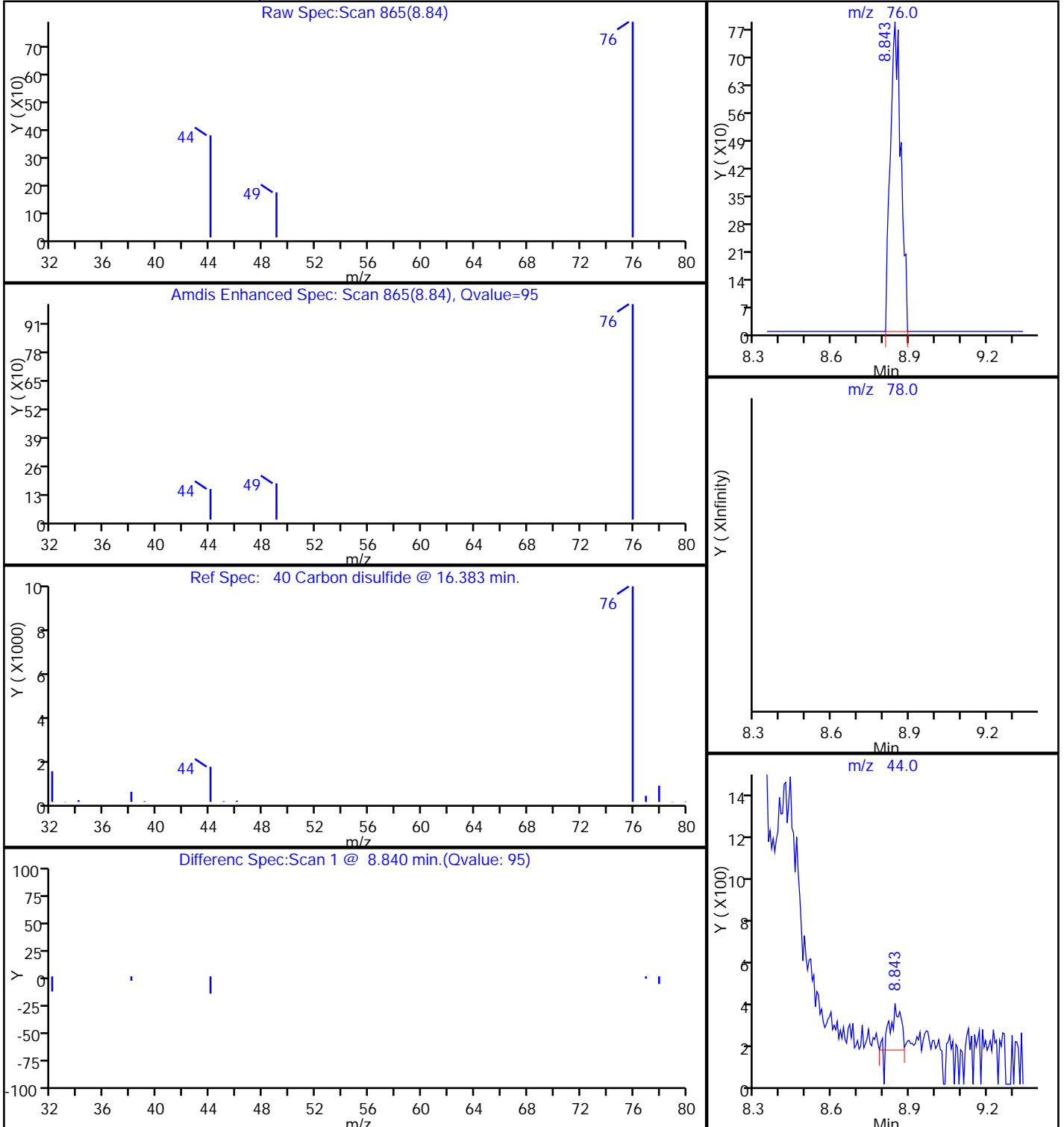
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

40 Carbon disulfide, CAS: 75-15-0



TestAmerica Sacramento

Data File: \\SACCHROM\ChromData\ATMS7\20150507-21616.b\MS7050717.d

Injection Date: 08-May-2015 00:27:30

Instrument ID: ATMS7

Lims ID: 320-12837-A-2

Lab Sample ID: 320-12837-2

Client ID: 34001153

Operator ID: LHS

ALS Bottle#: 14

Worklist Smp#: 16

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

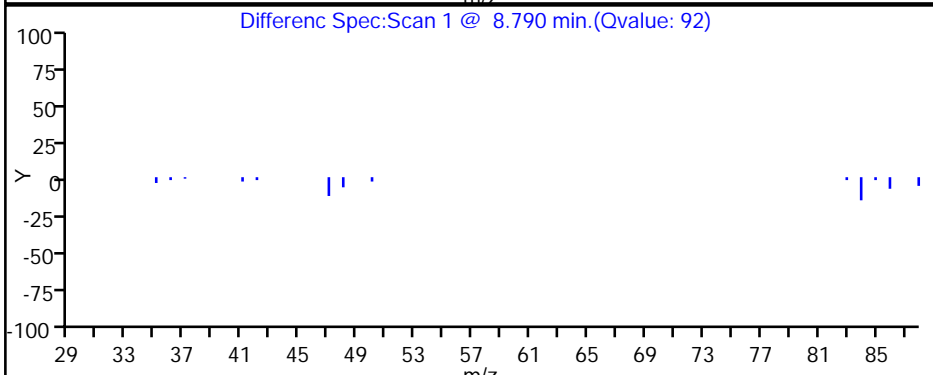
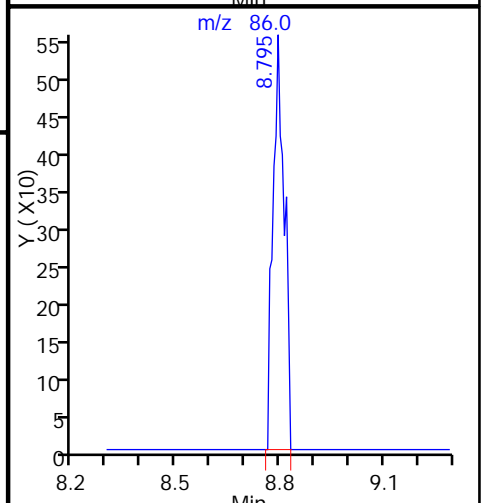
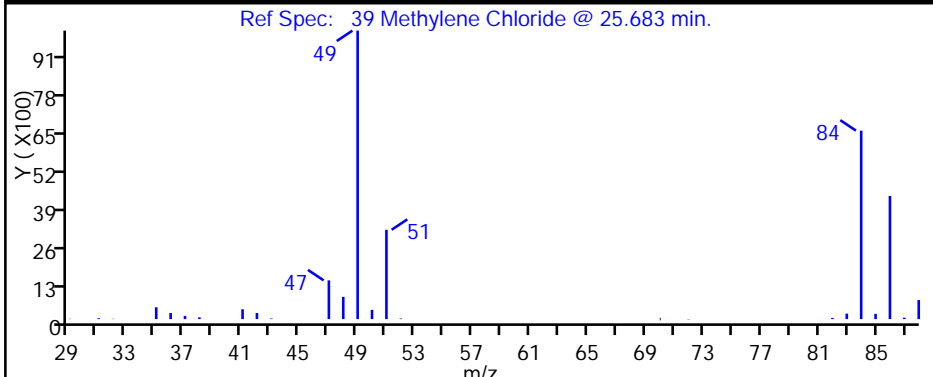
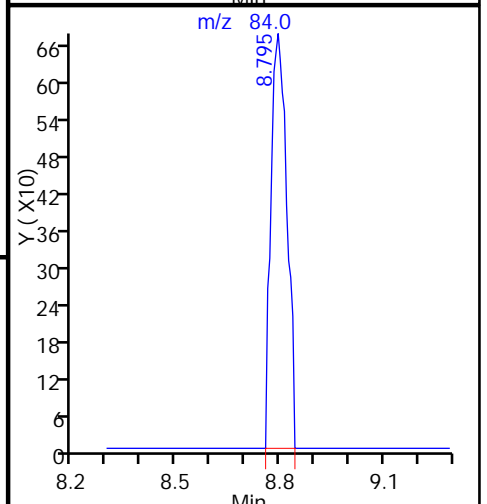
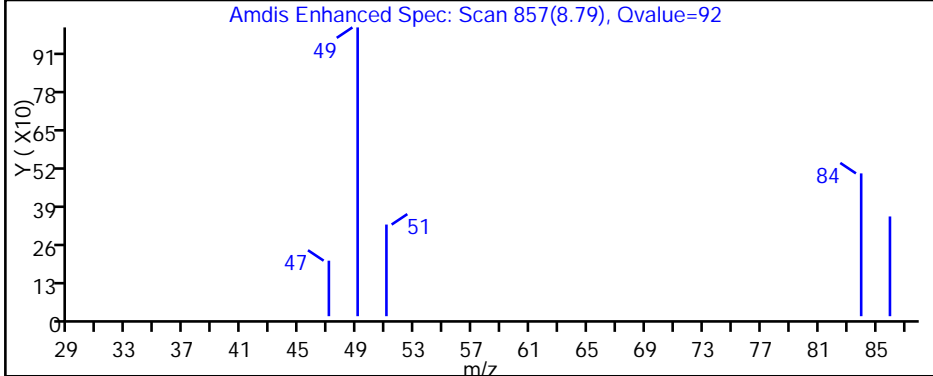
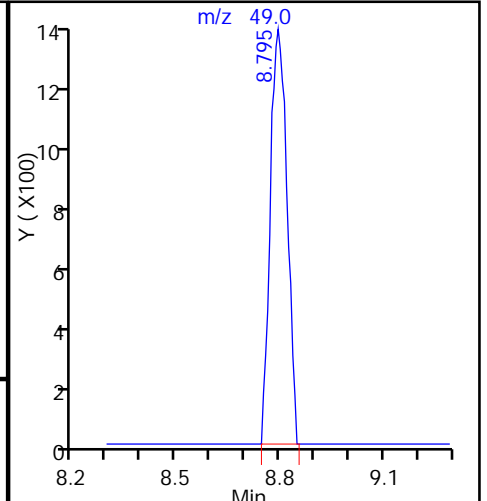
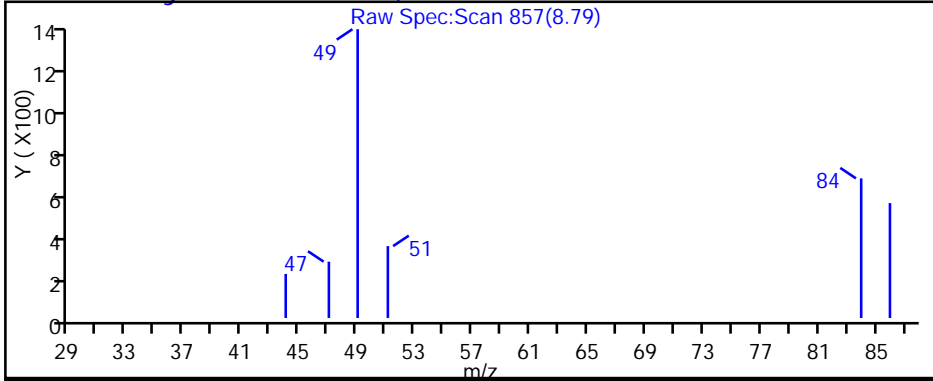
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

39 Methylene Chloride, CAS: 75-09-2

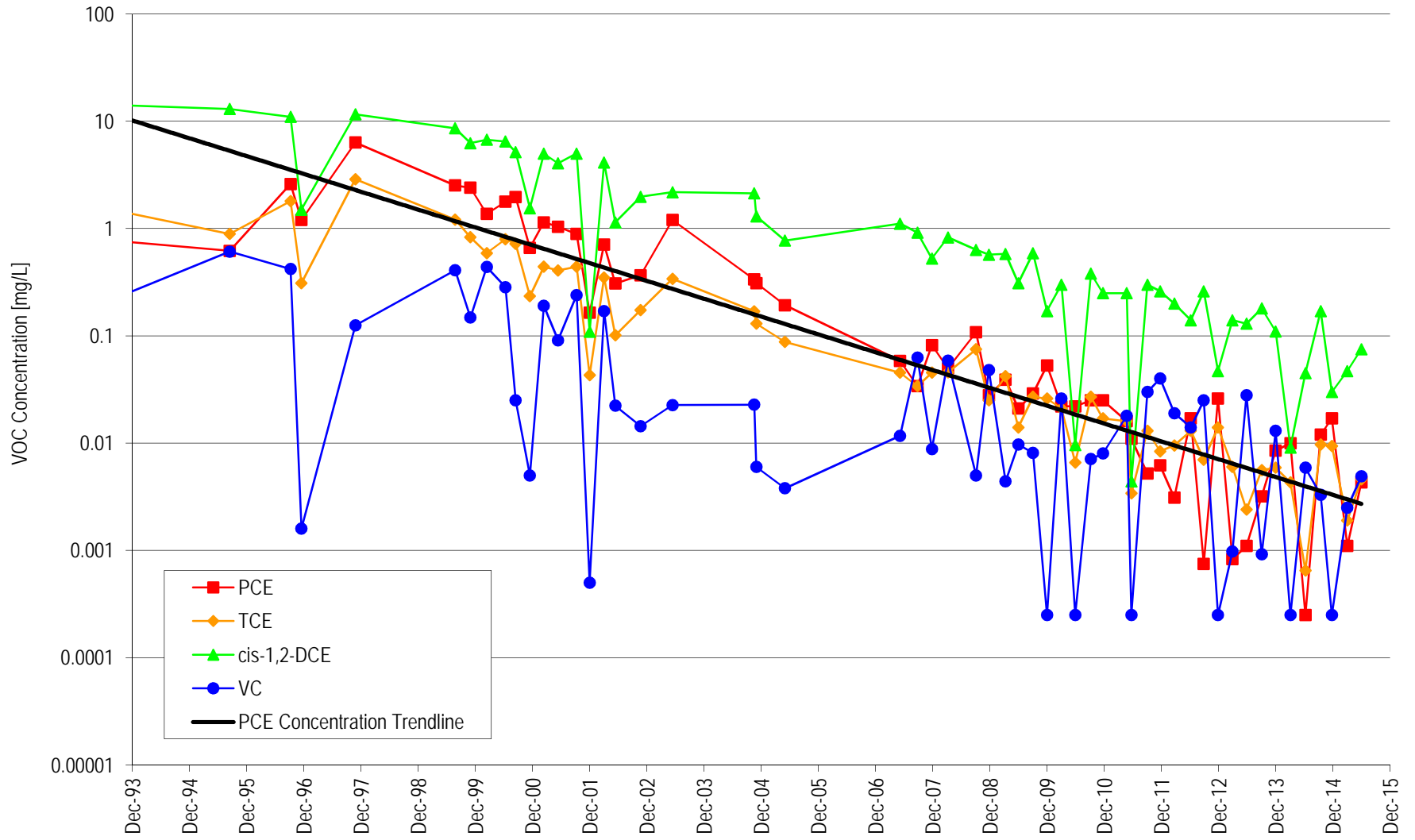


***Appendix D***

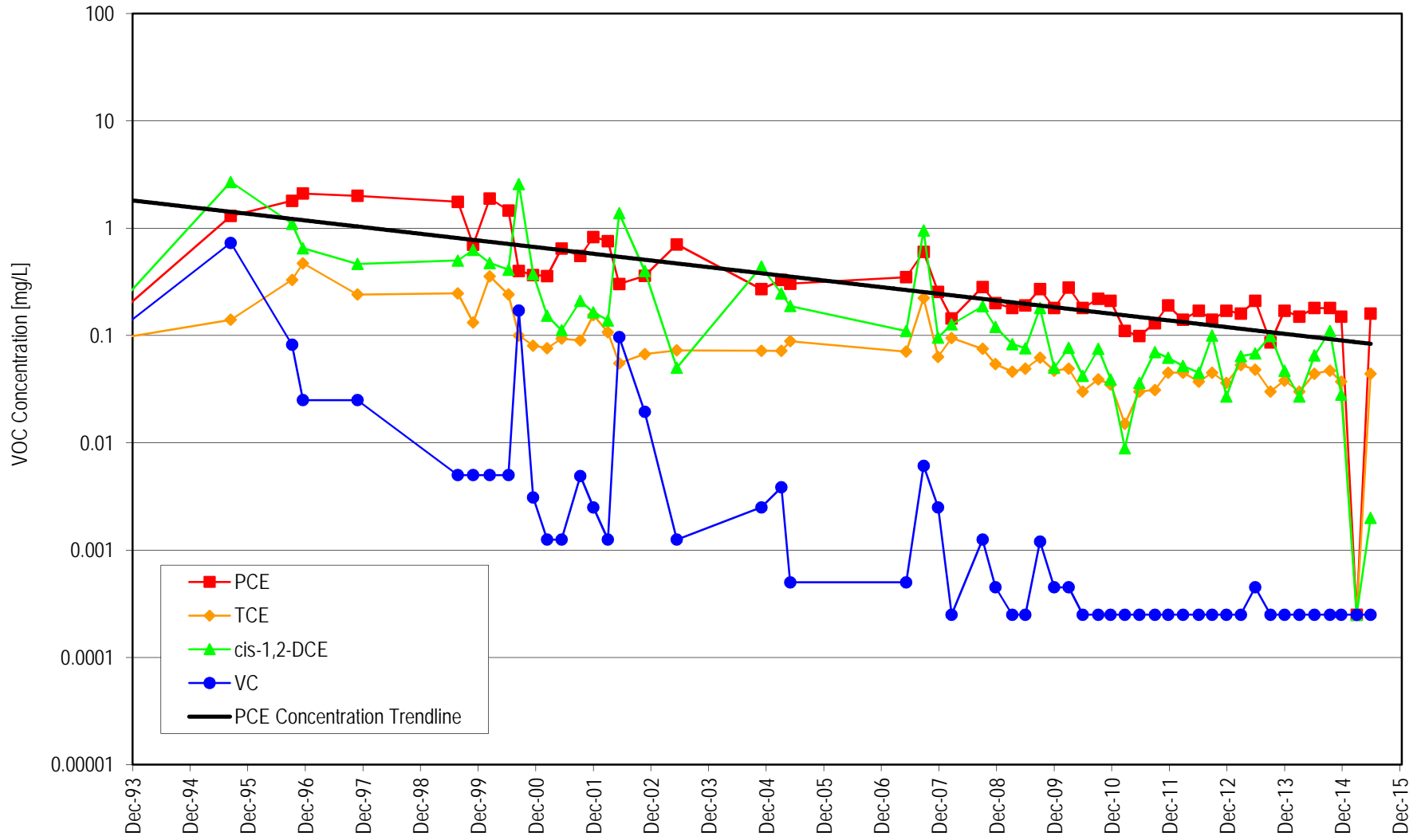
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**Concentration Trend Plots**

VOC Concentrations in MW-1

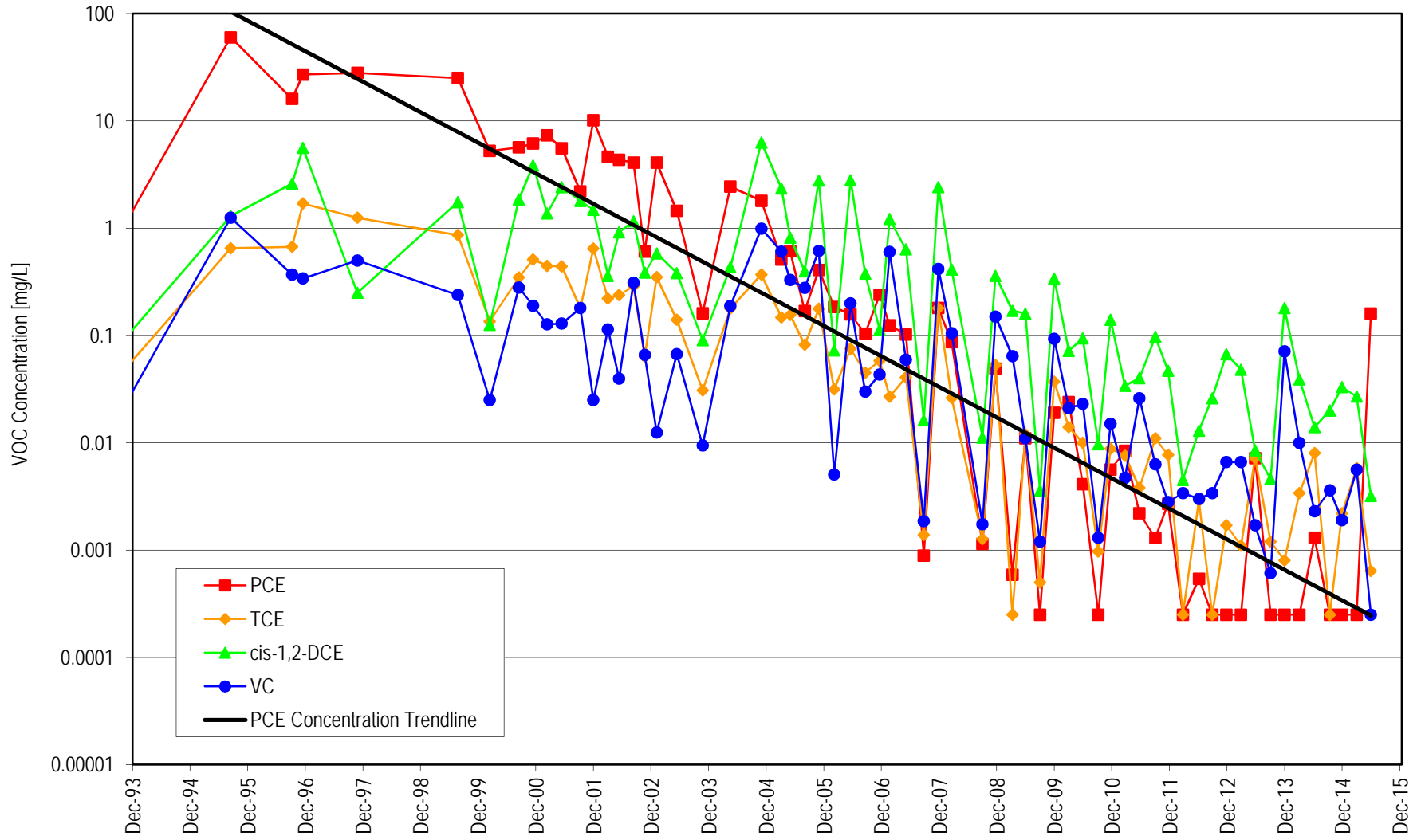


VOC Concentrations in MW-3

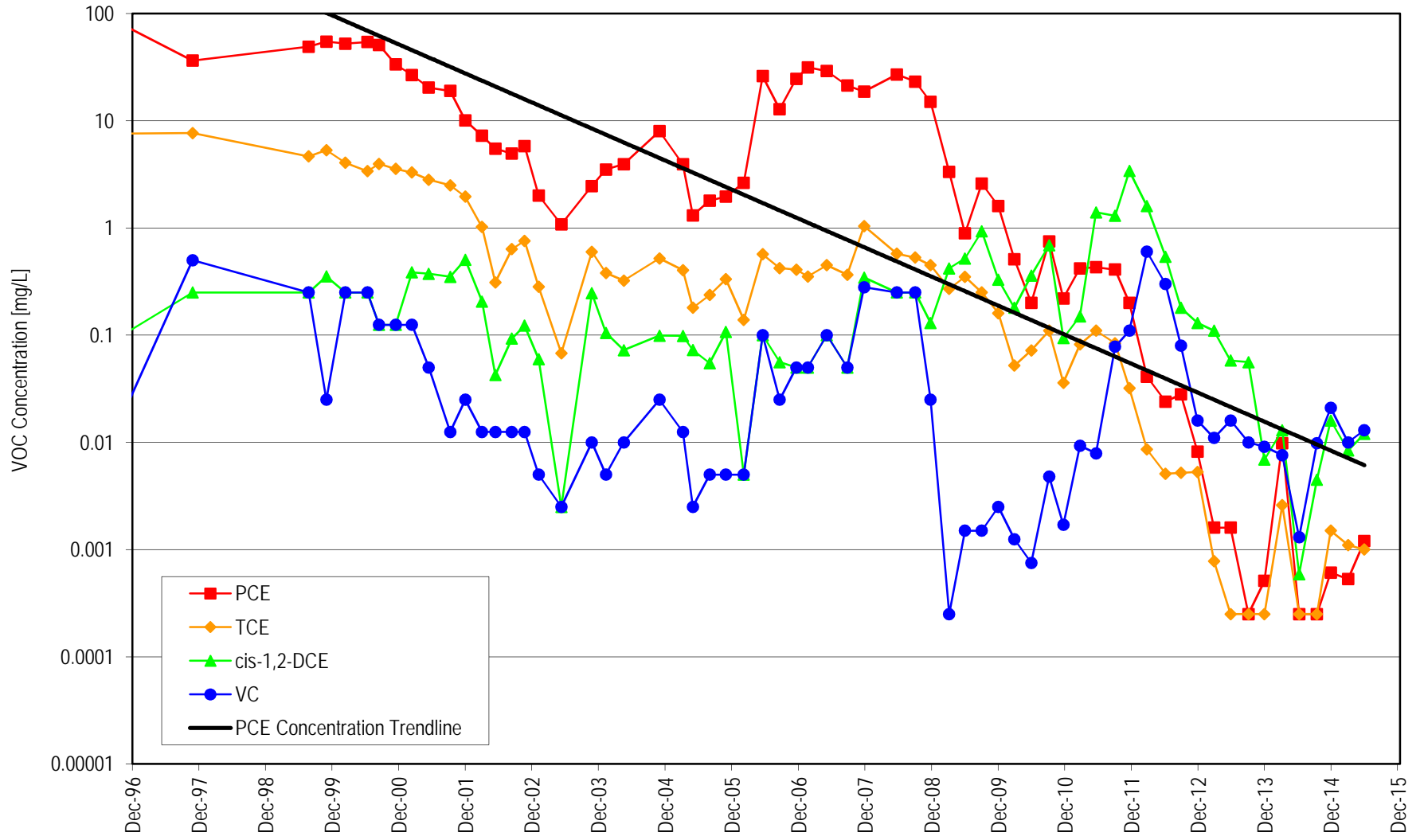




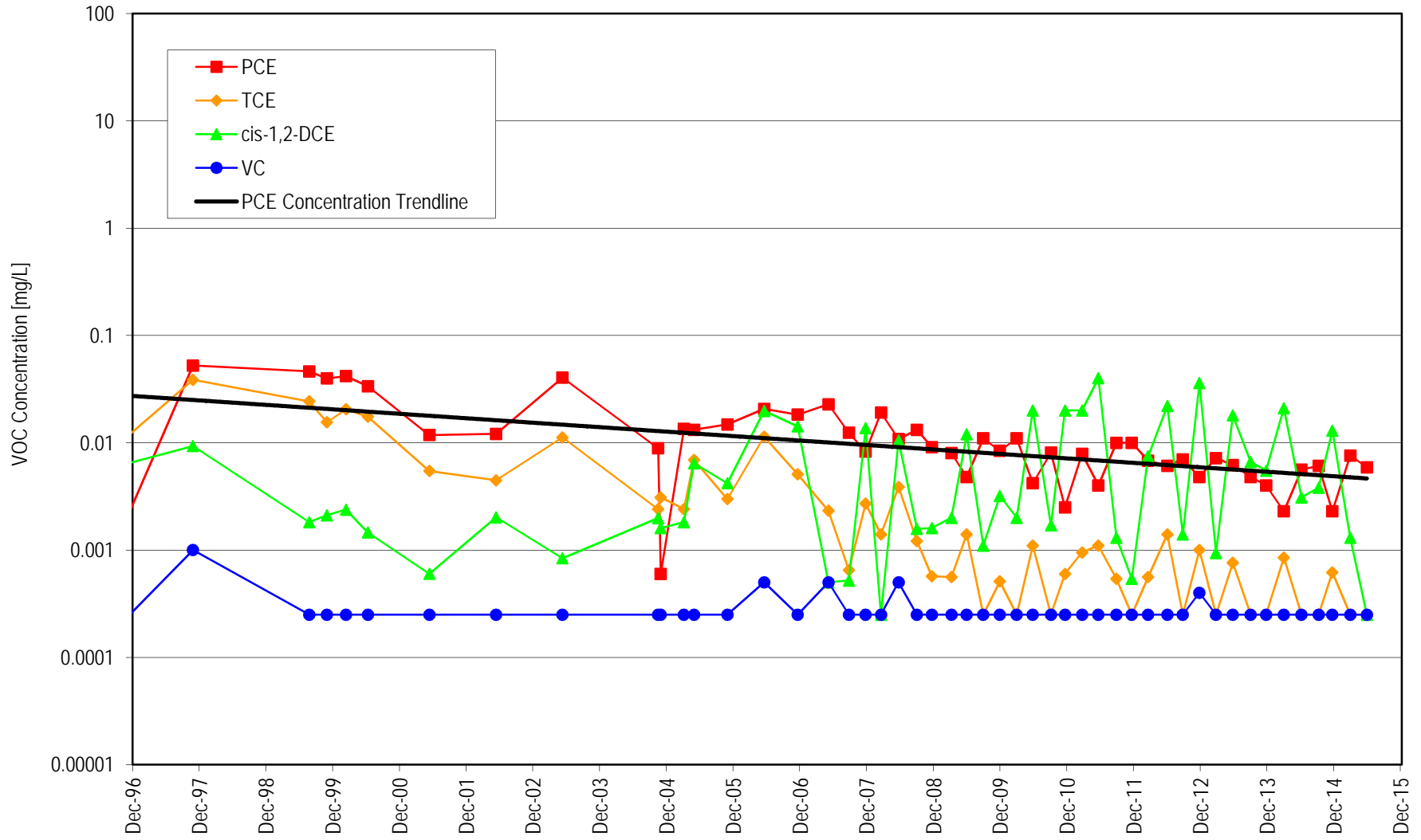
VOC Concentrations in MW-5



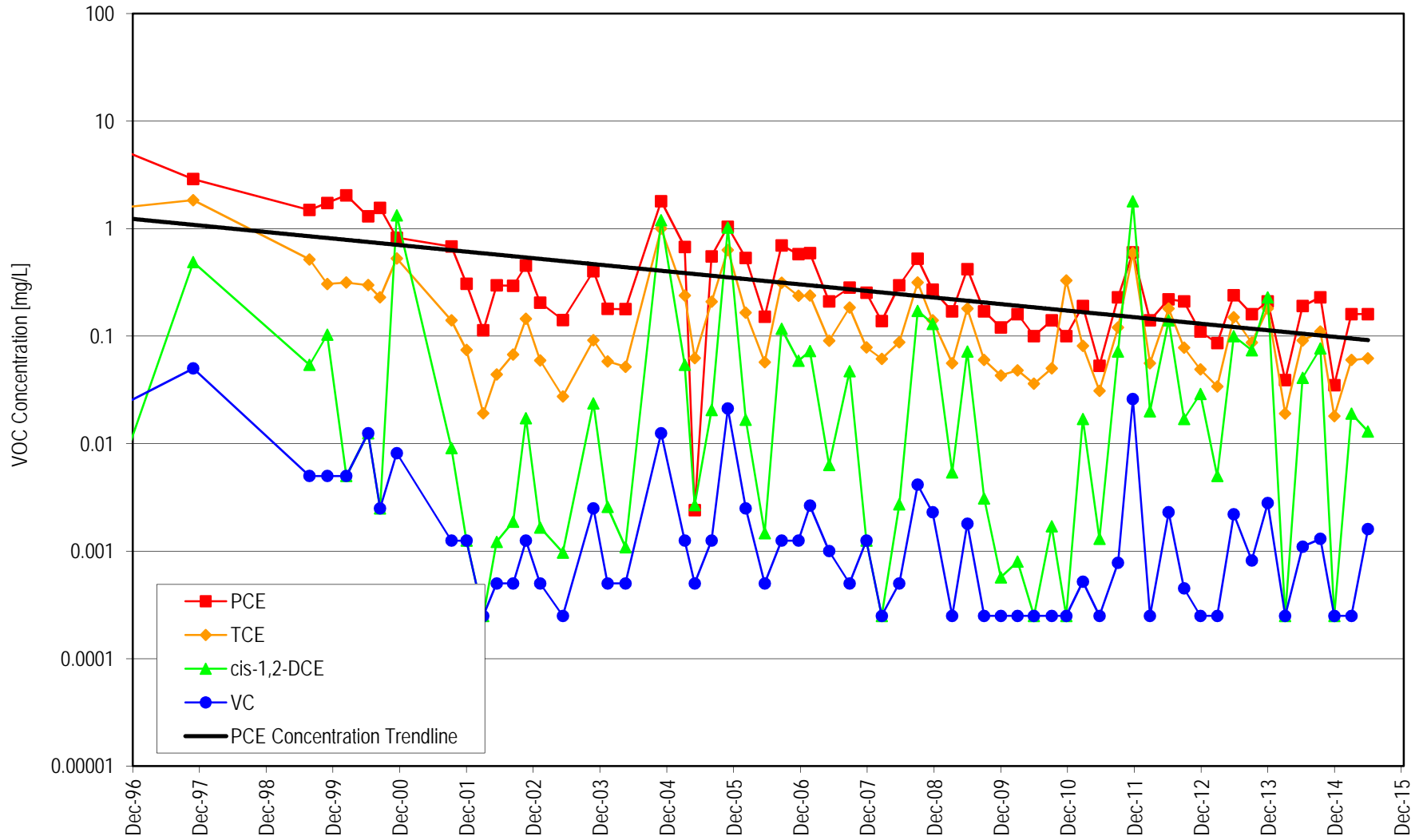
VOC Concentrations in MW-7



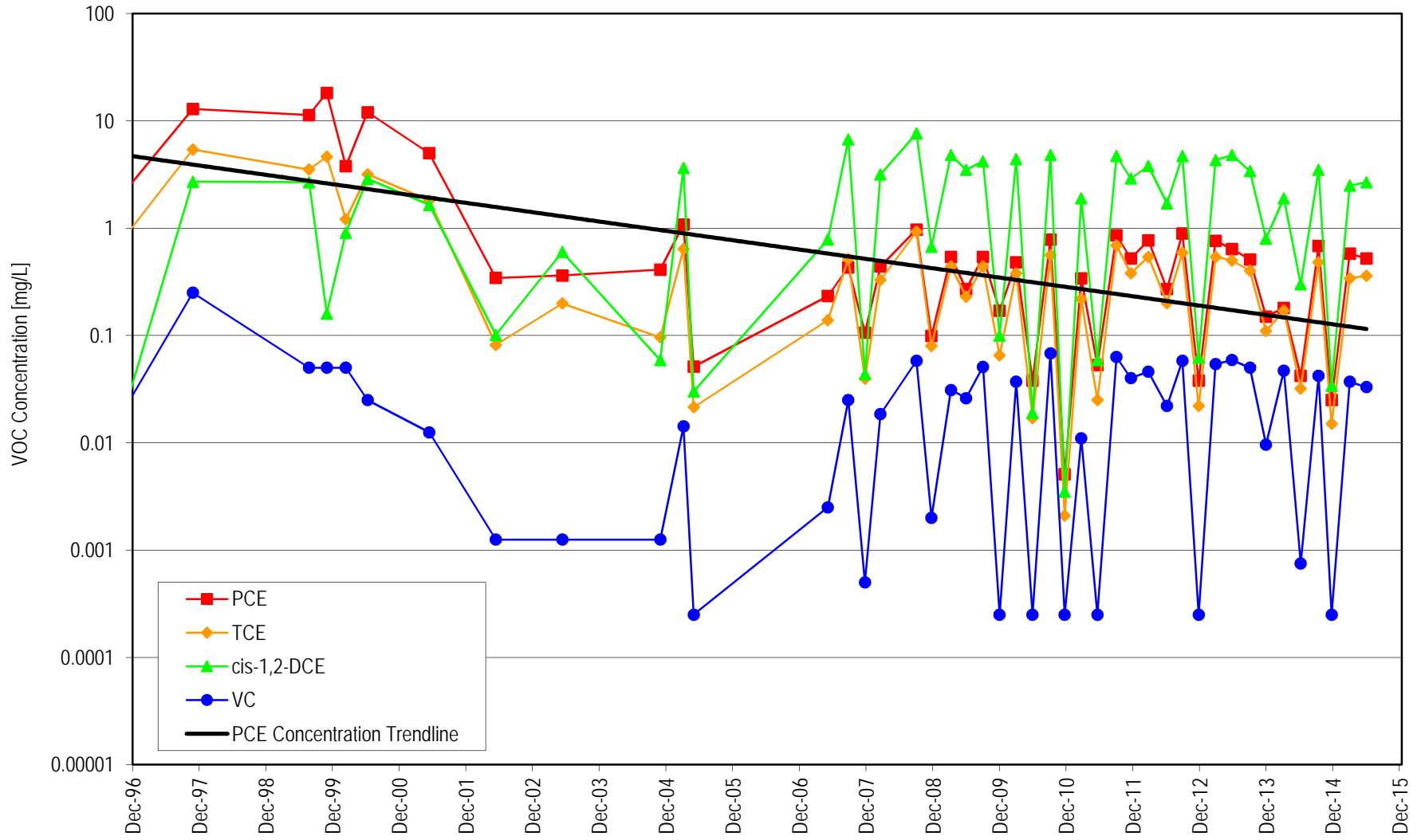
VOC Concentrations in MW-8



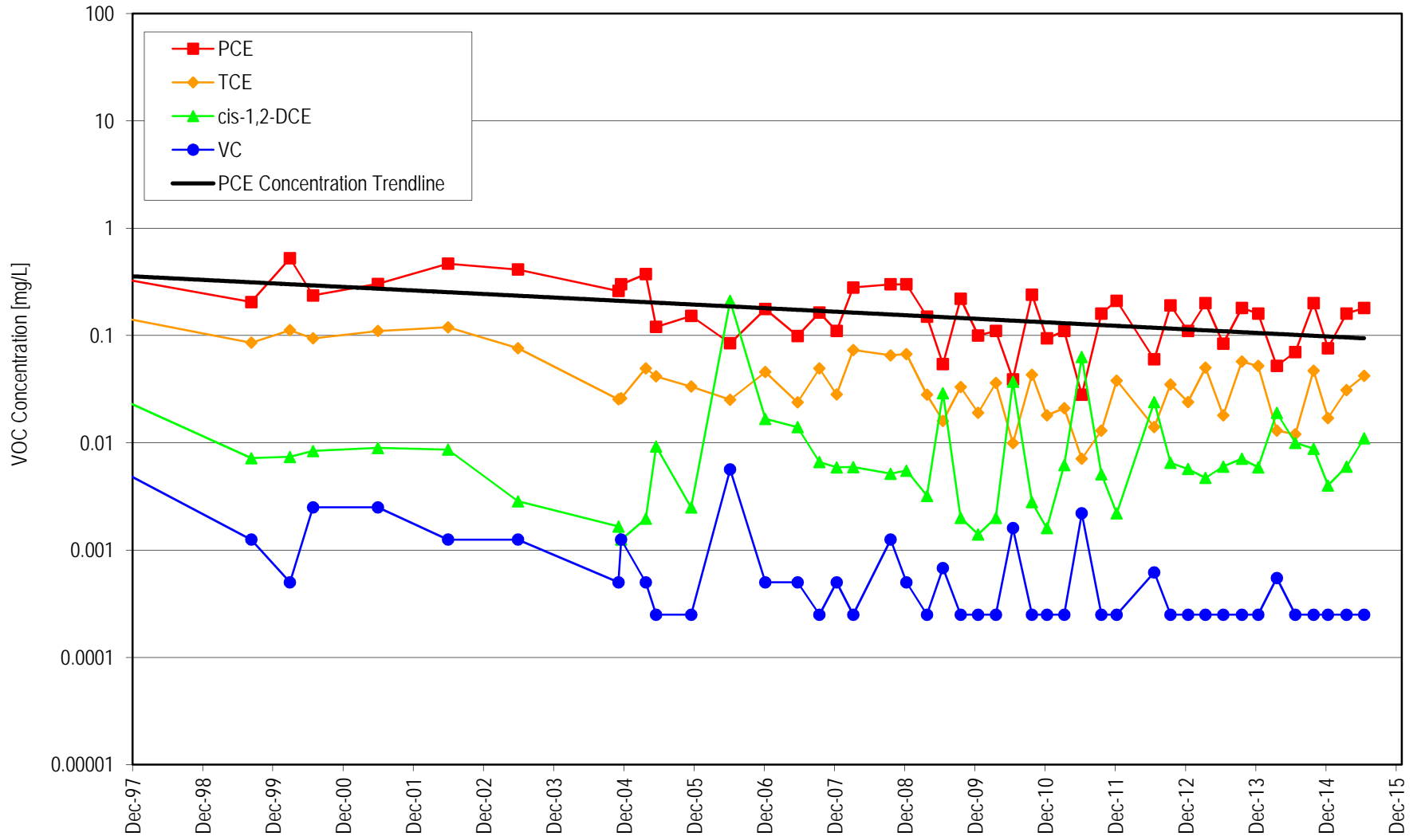
VOC Concentrations in MW-9



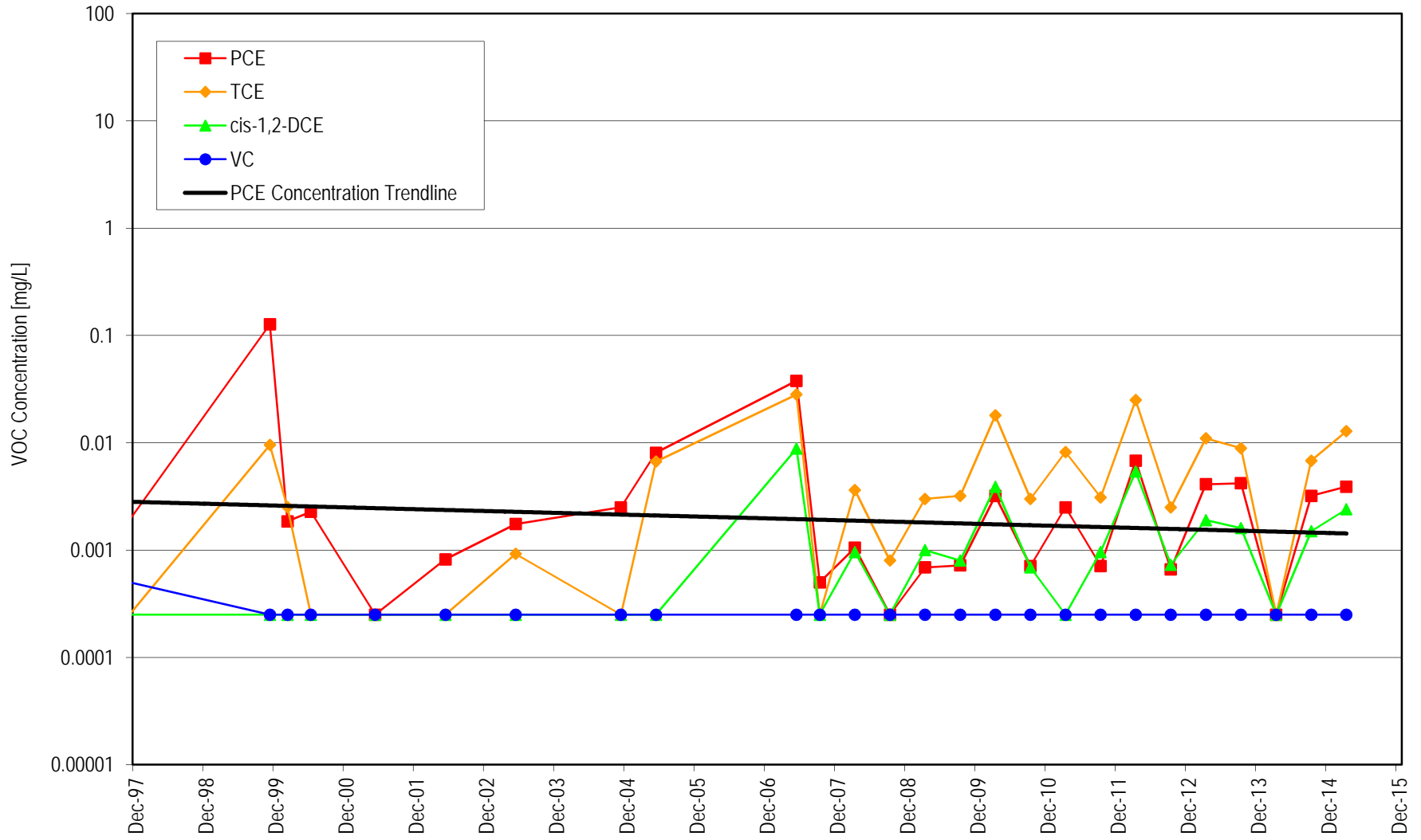
VOC Concentrations in MW-12



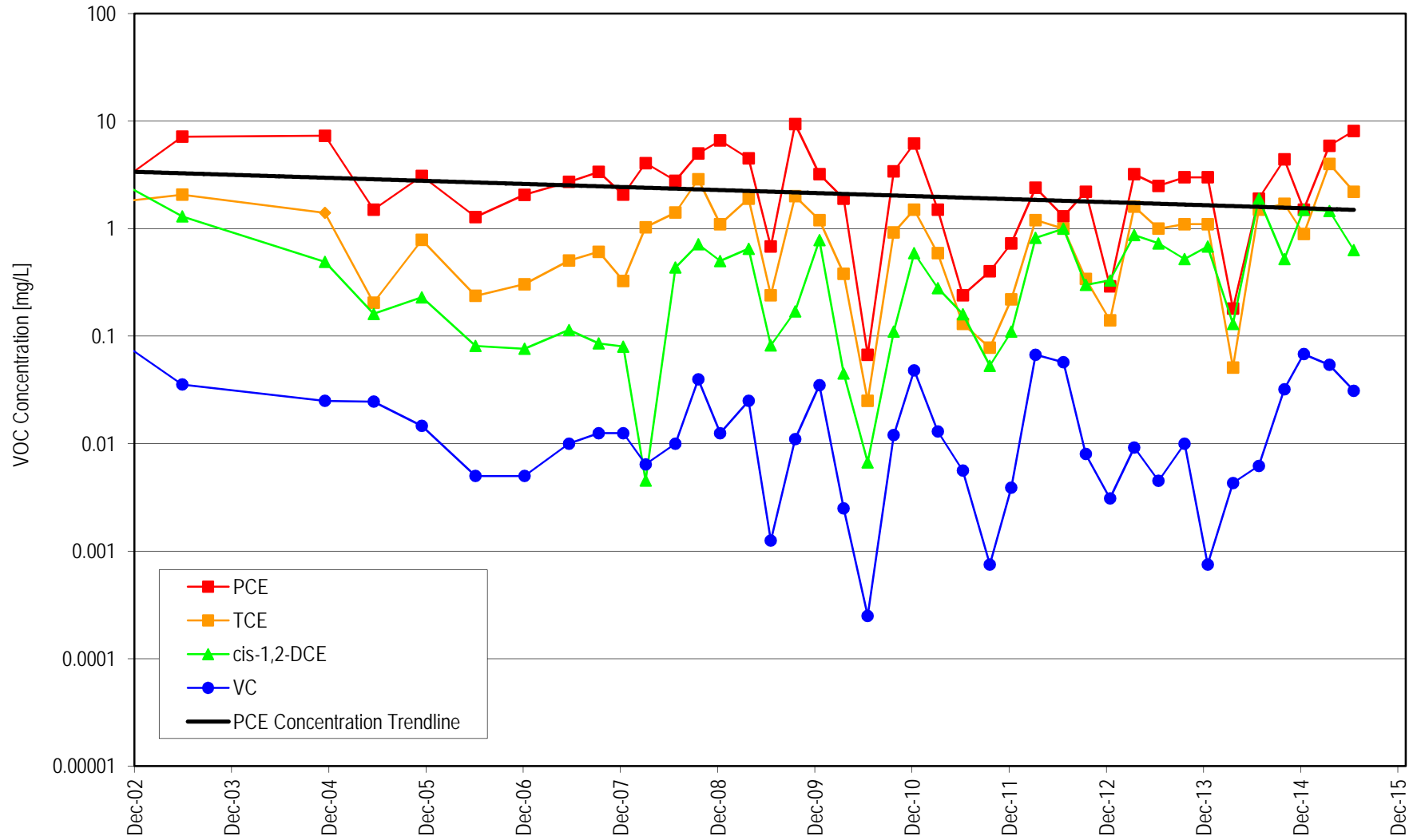
VOC Concentrations in MW-16



VOC Concentrations in MW-17

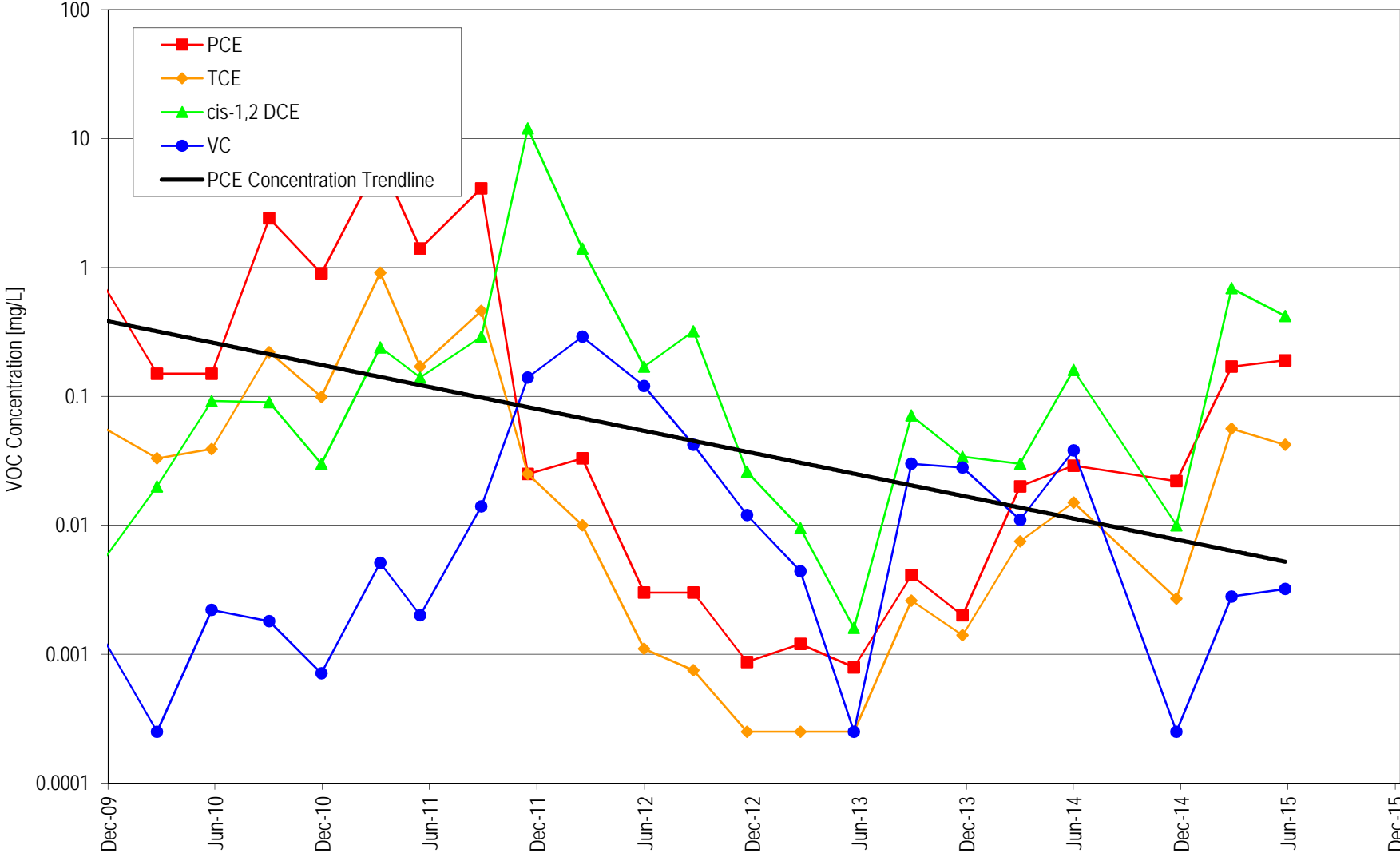


VOC Concentrations in MW-19

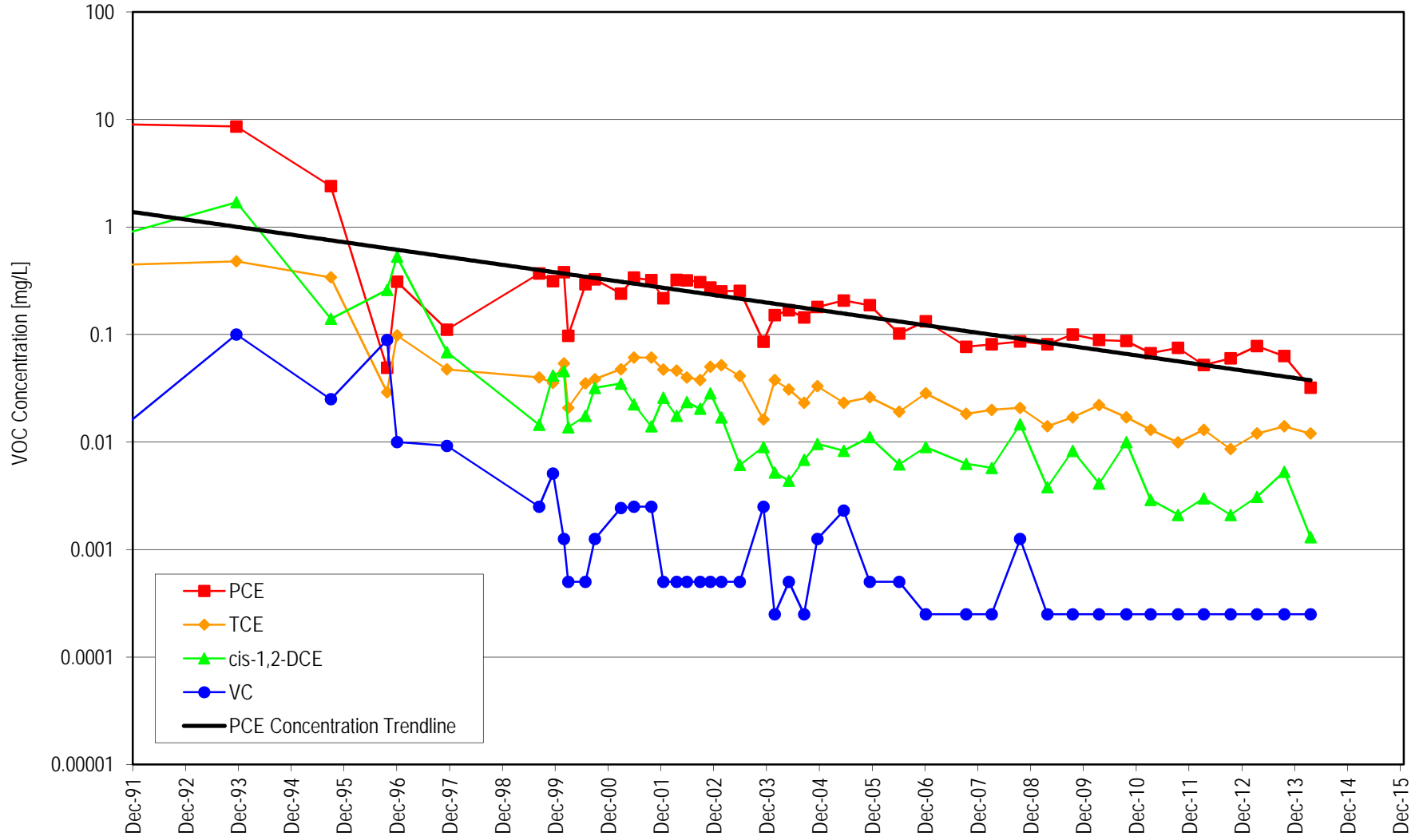




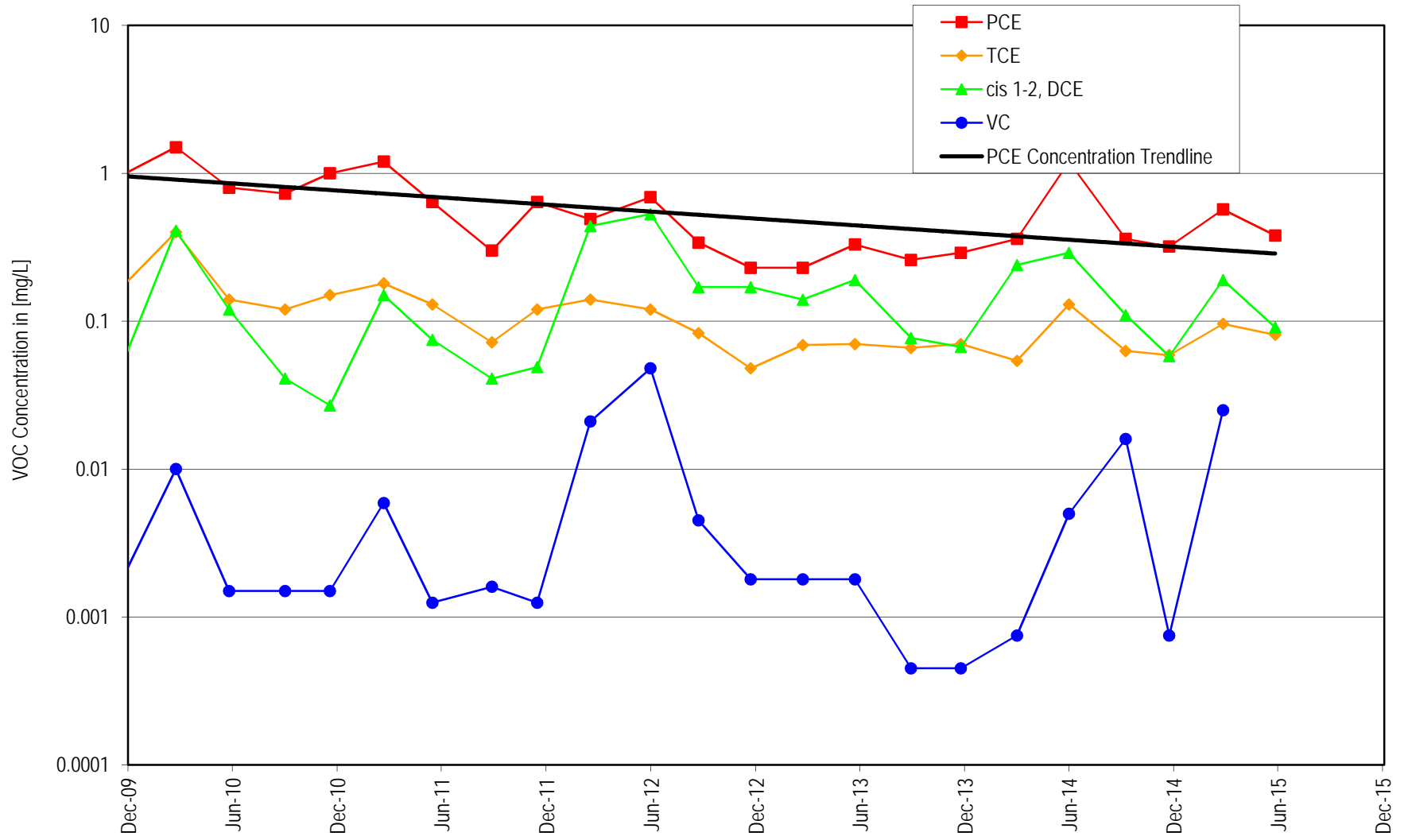
VOC Concentrations in EX



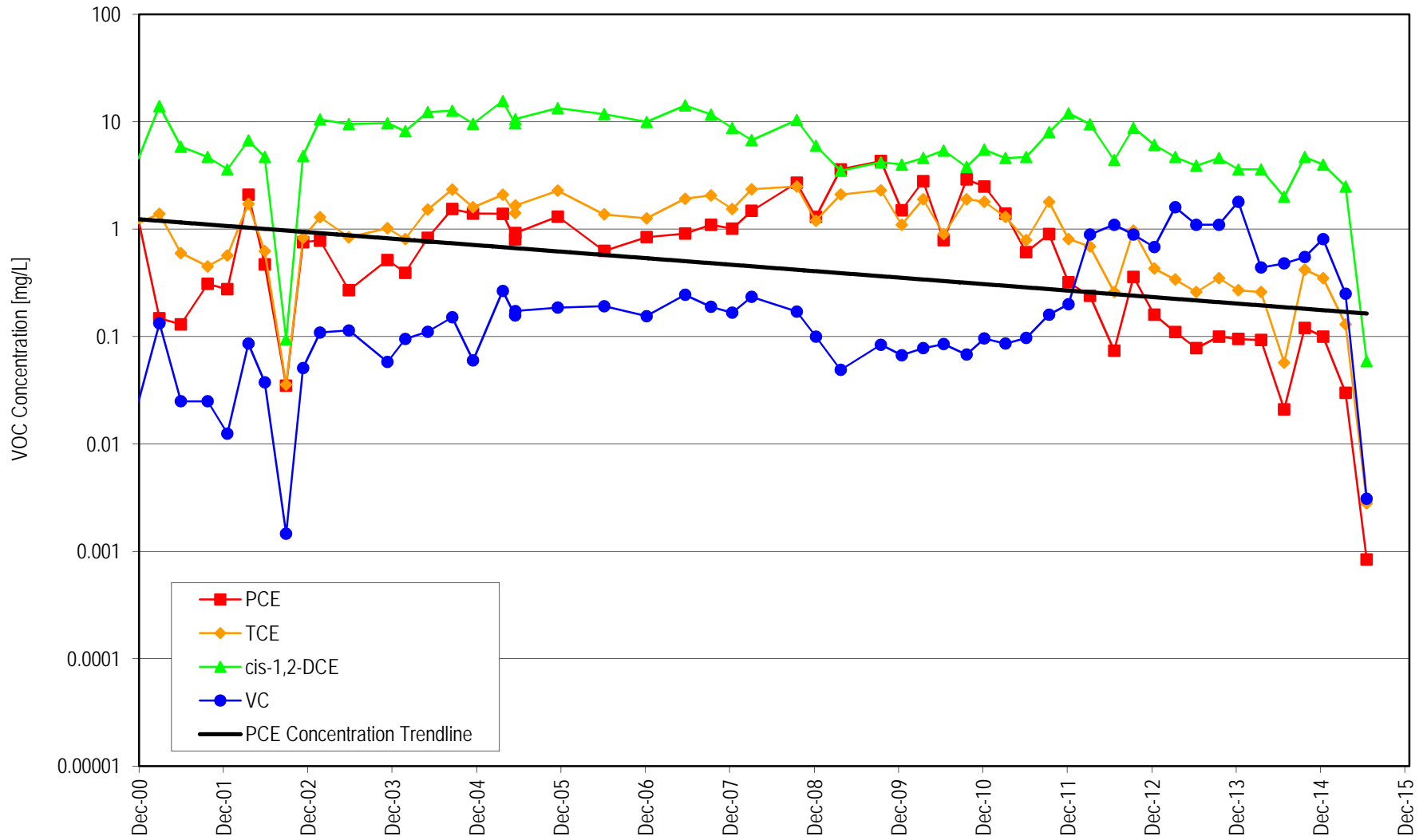
VOC Concentrations in EW-1



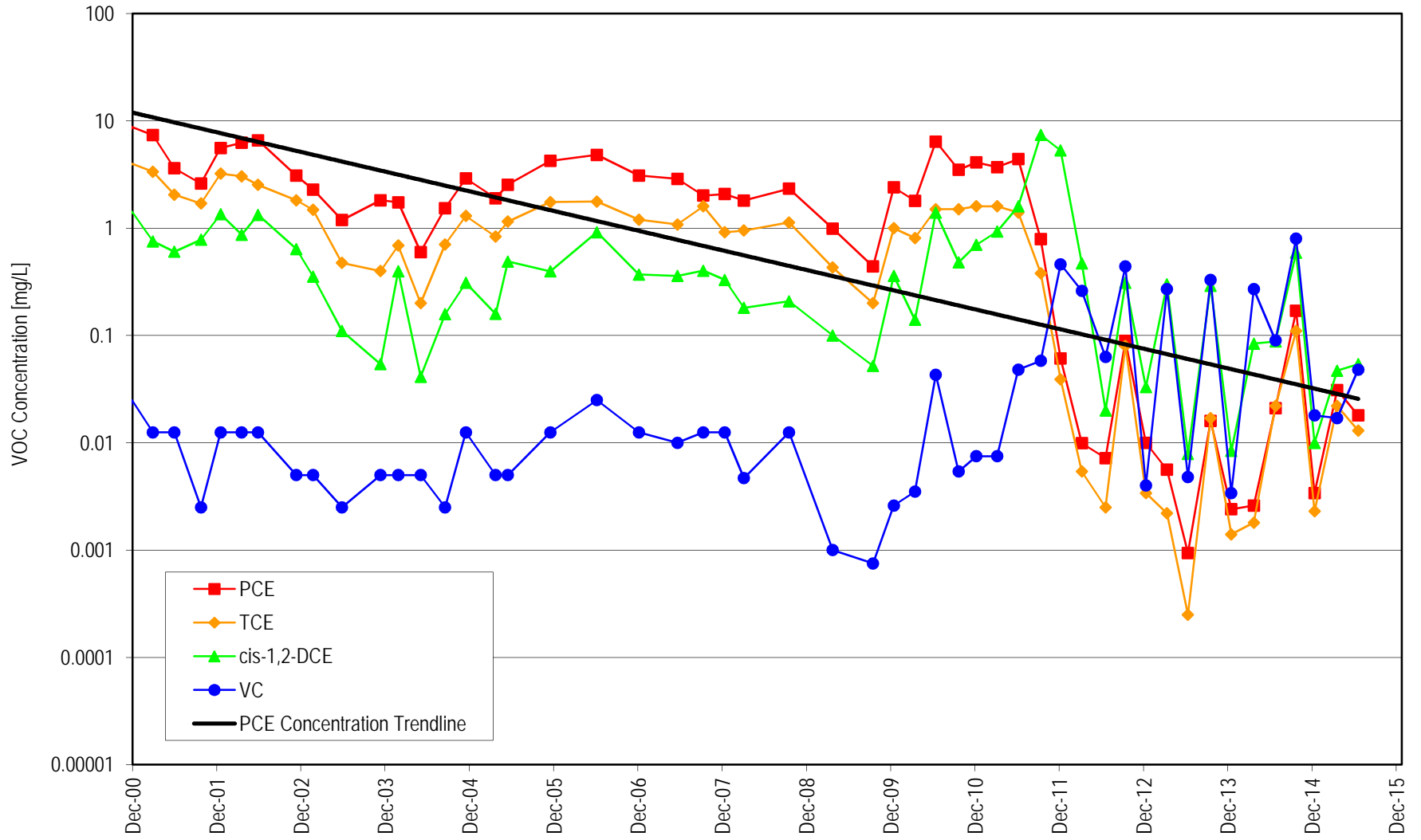
VOC Concentrations in MP-1



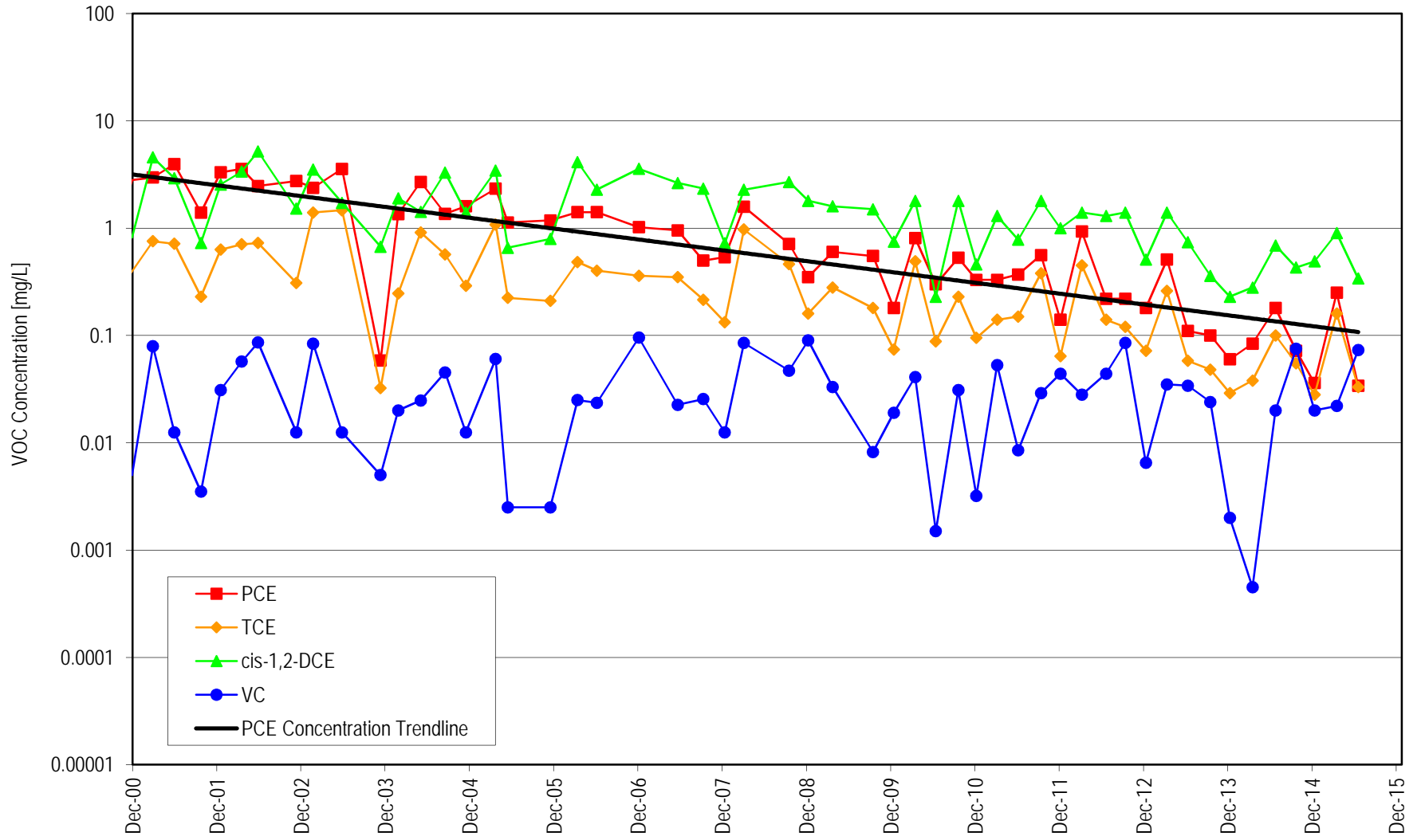
VOC Concentrations in MGMTS1-43



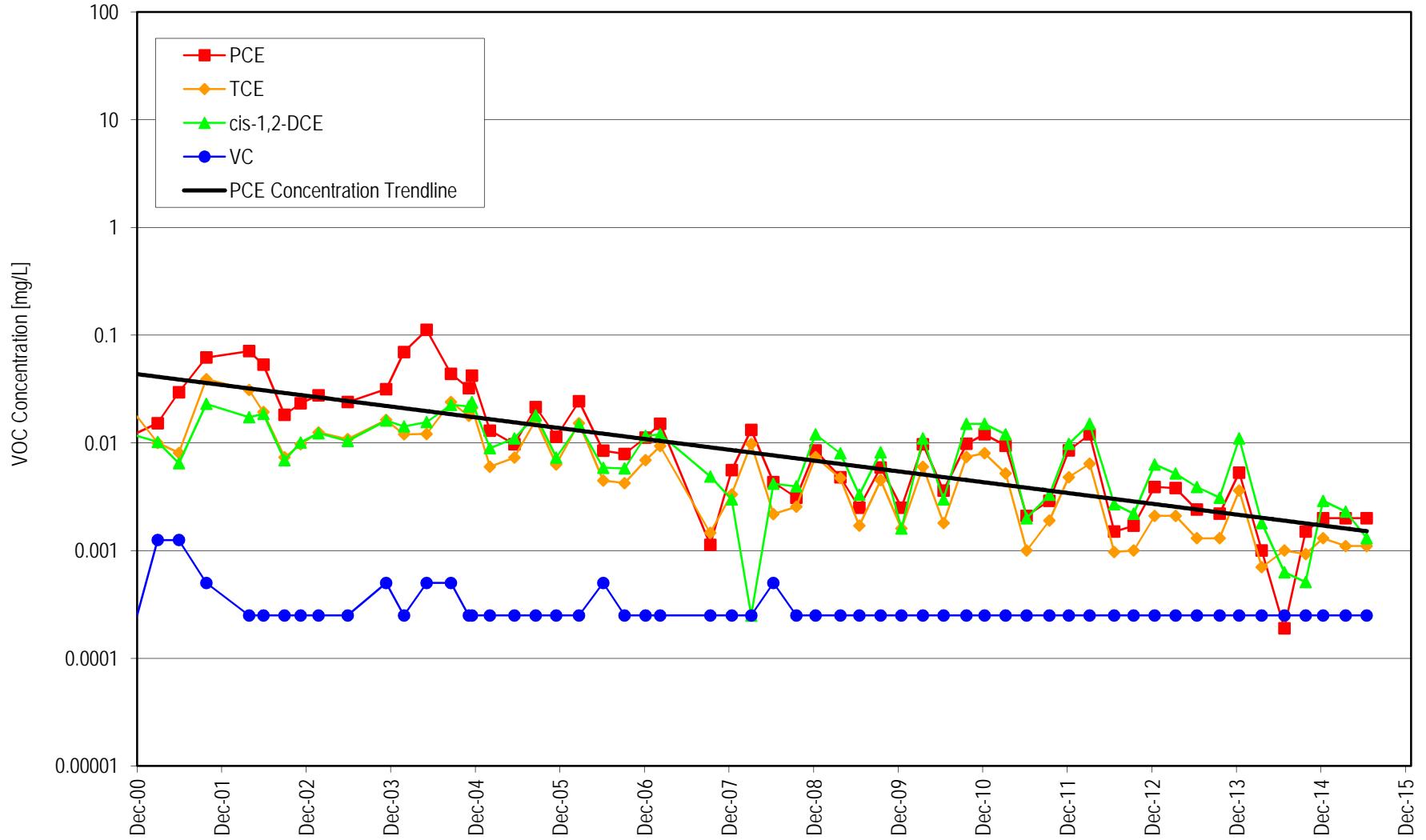
VOC Concentrations in MGMTS2-40



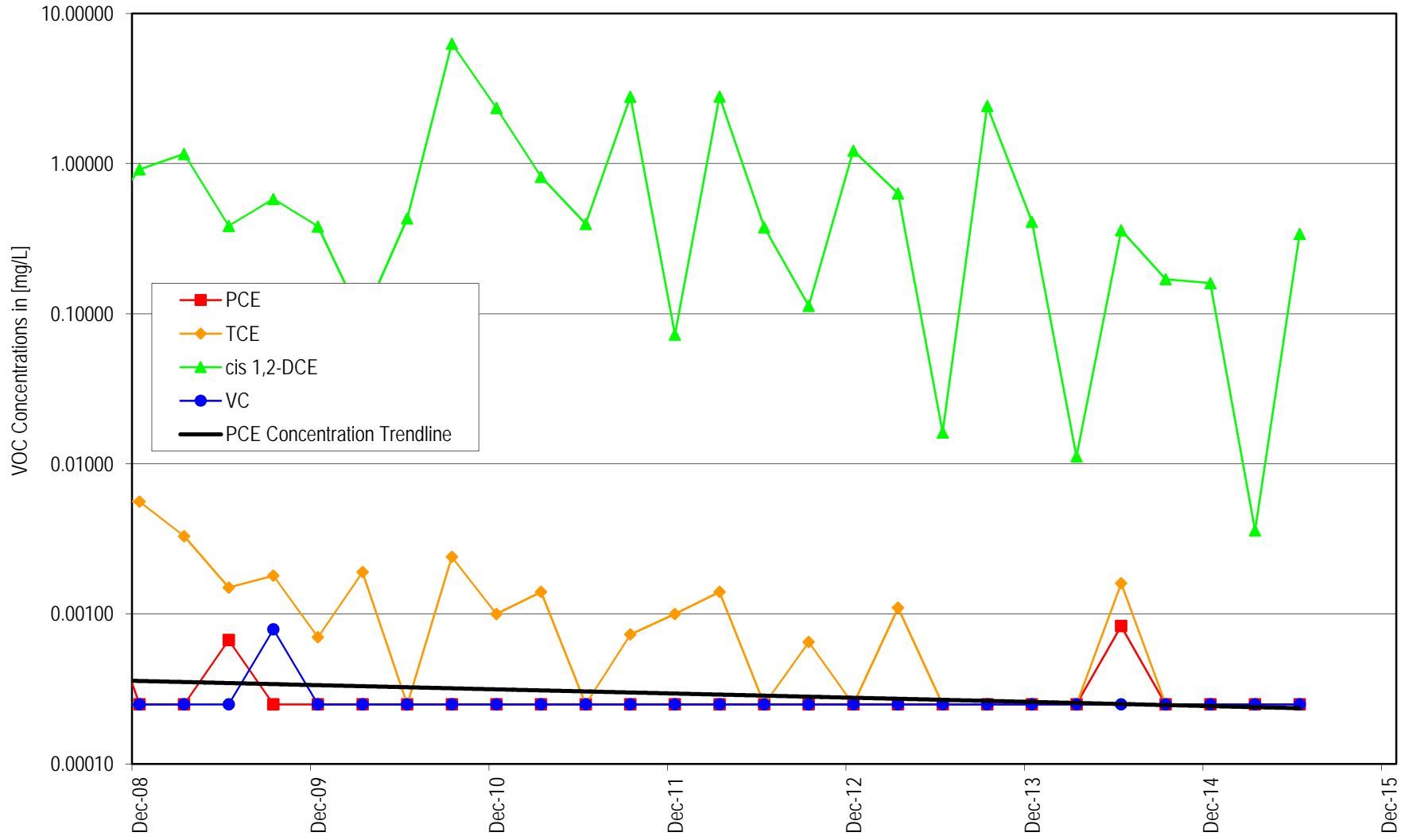
VOC Concentrations in MGMS3-40



VOC Concentrations in MW-18i

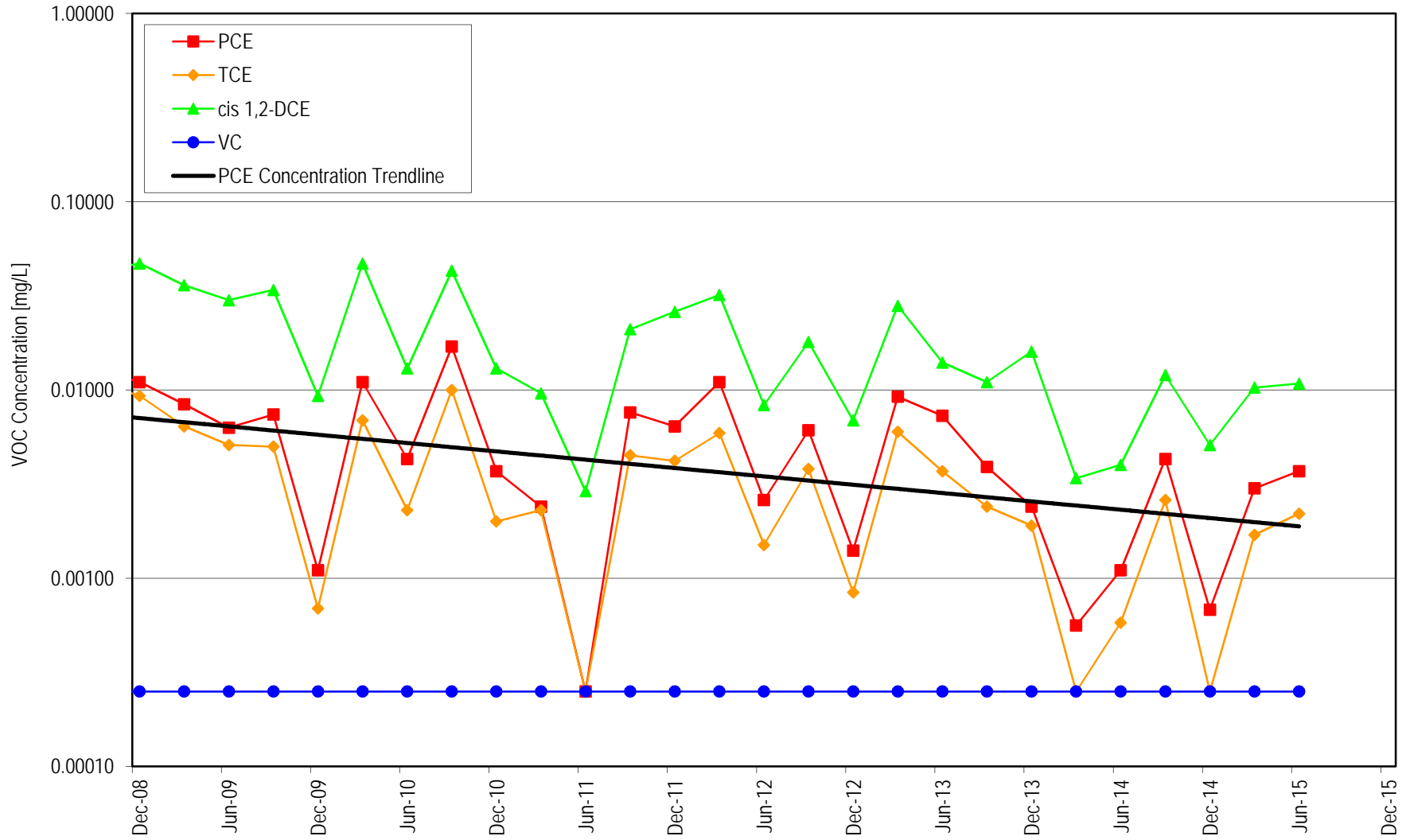


VOC Concentrations in MW-19i

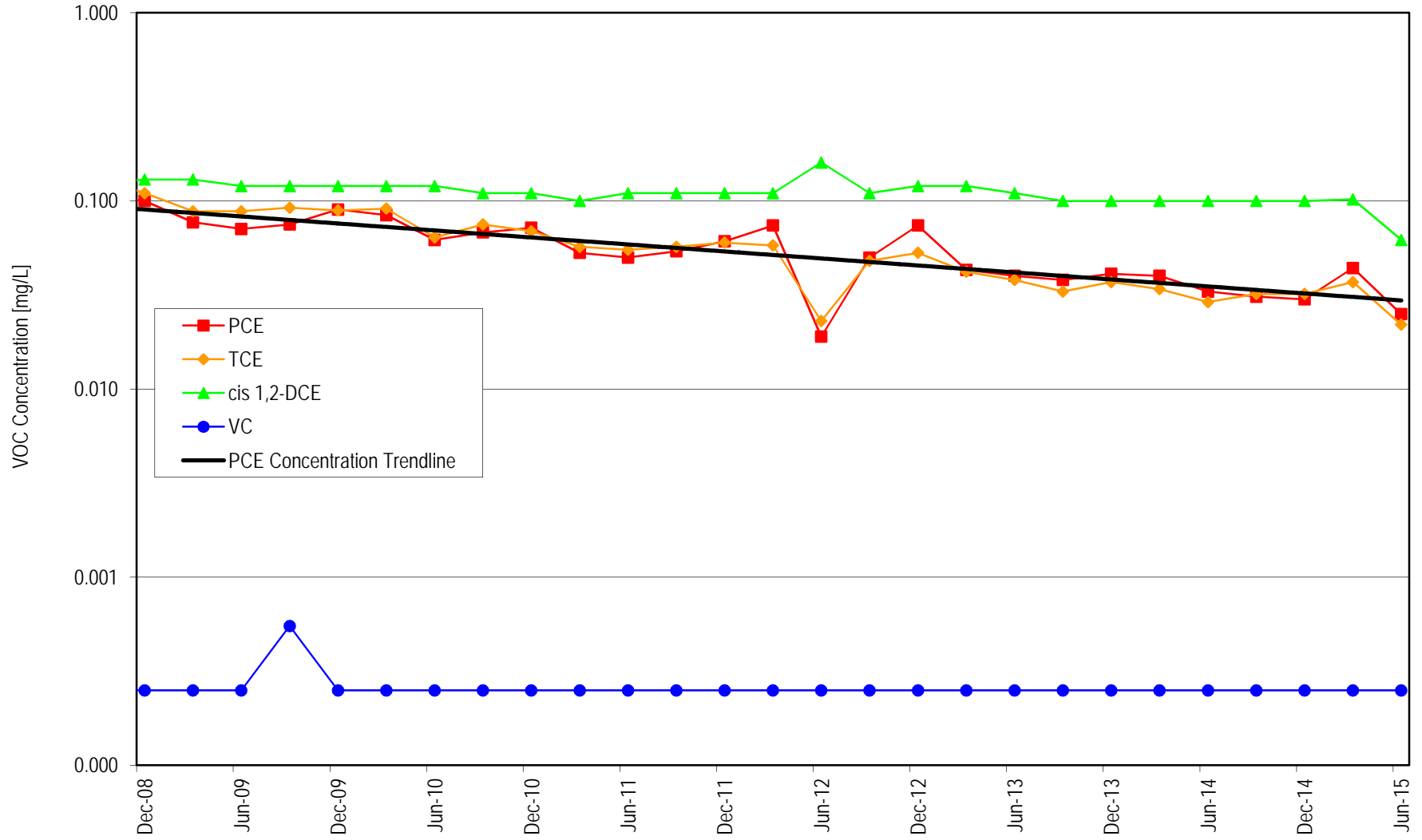




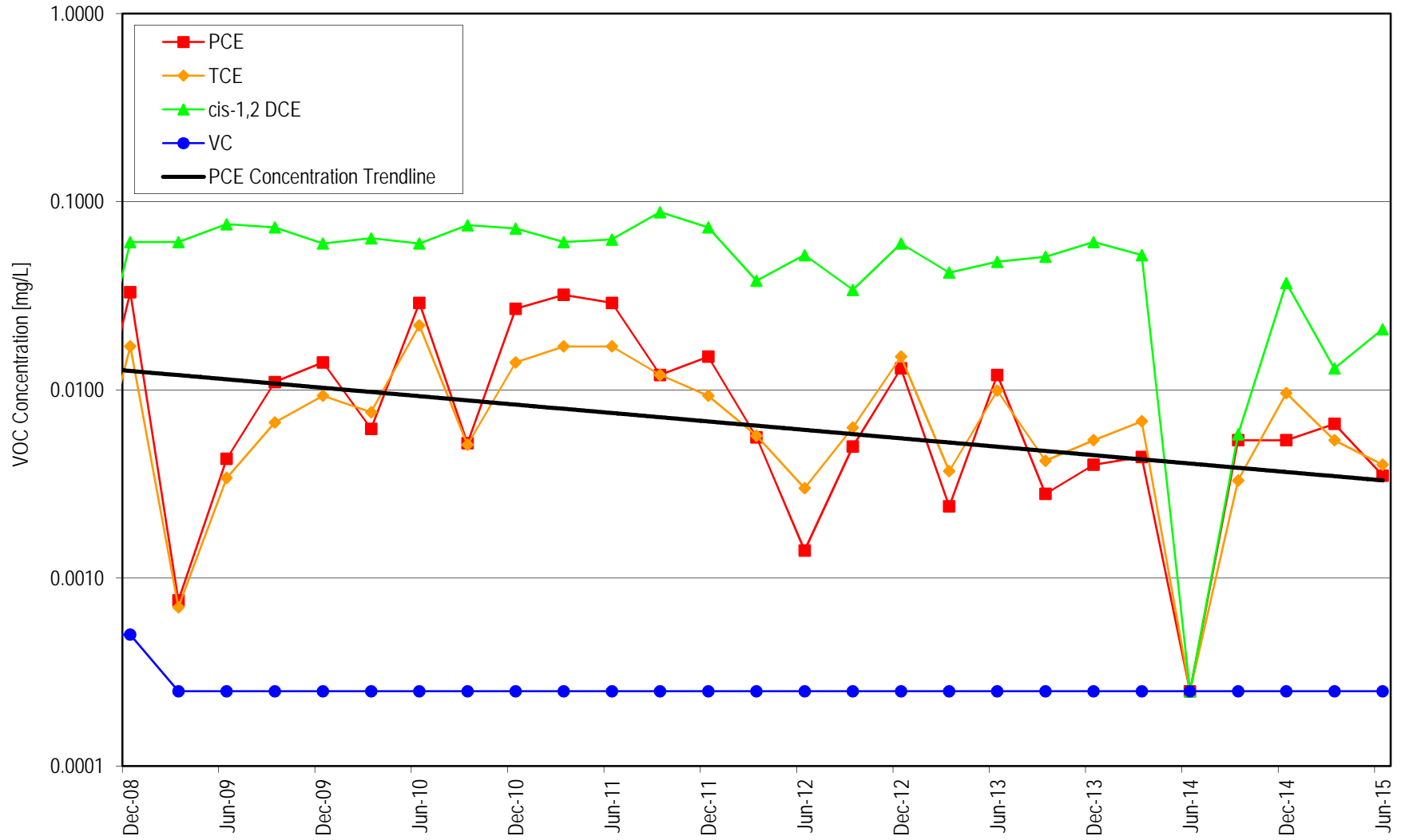
VOC Concentrations in MW-20i



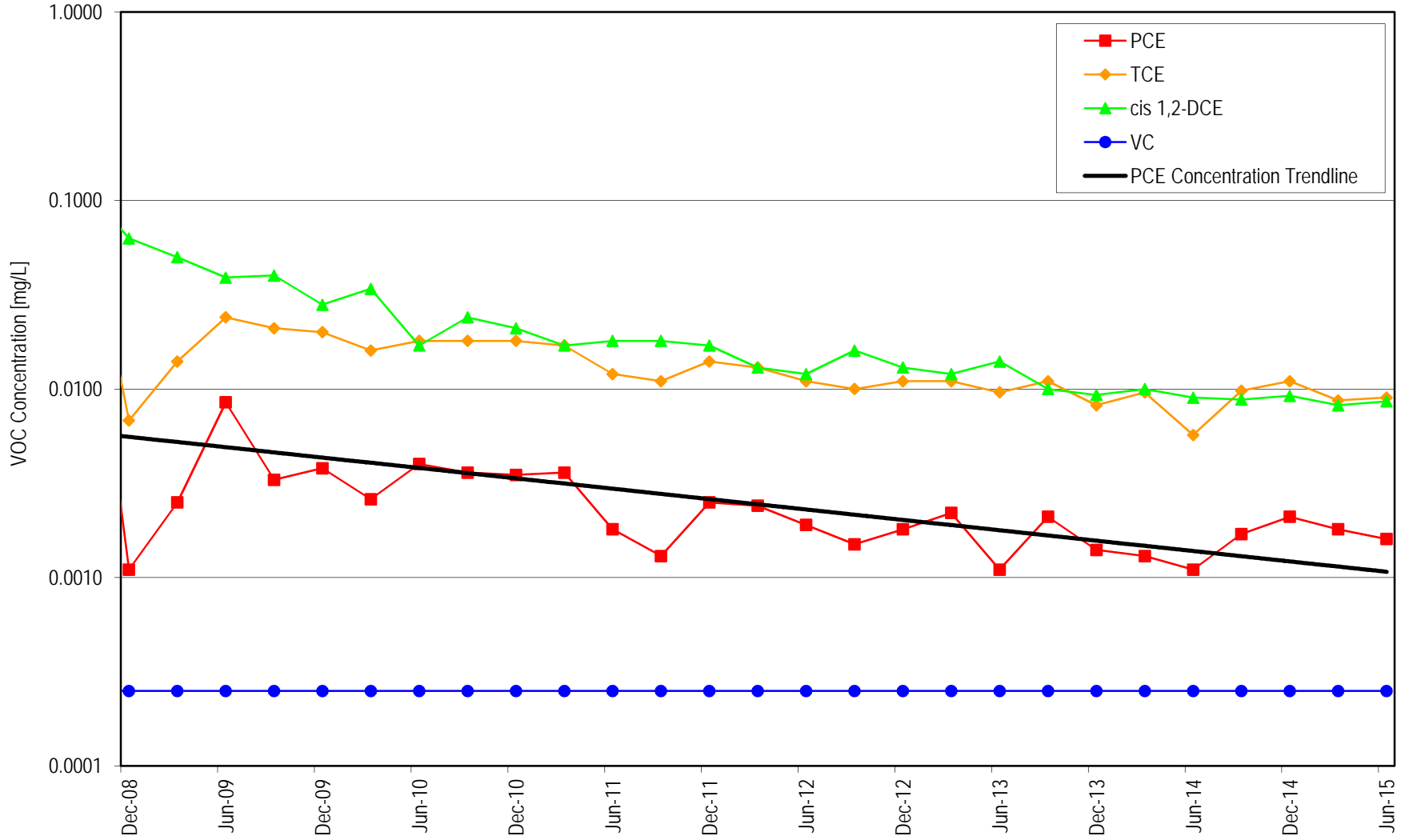
VOC Concentrations in MW-21i-40



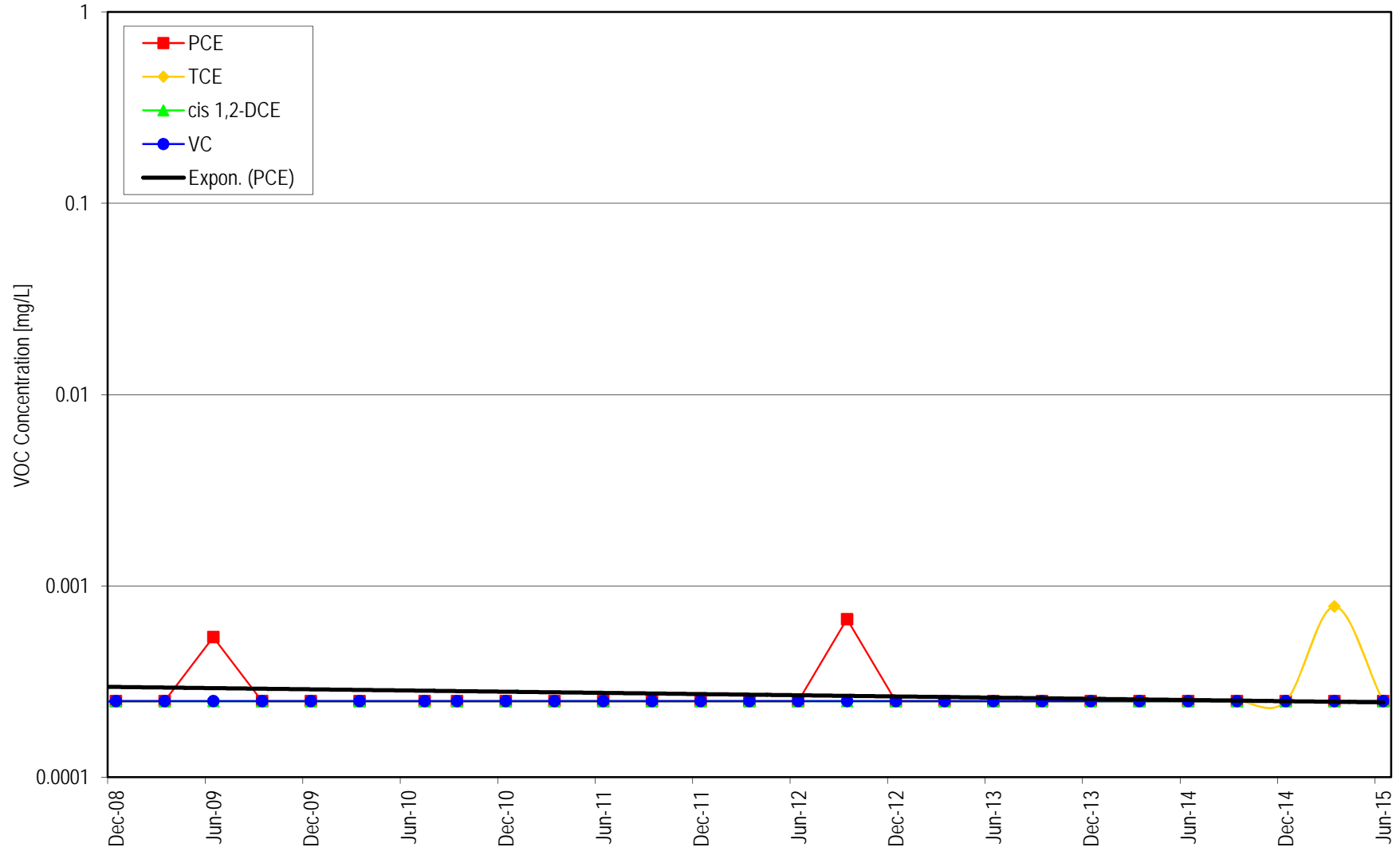
VOC Concentrations in MW-21i-105



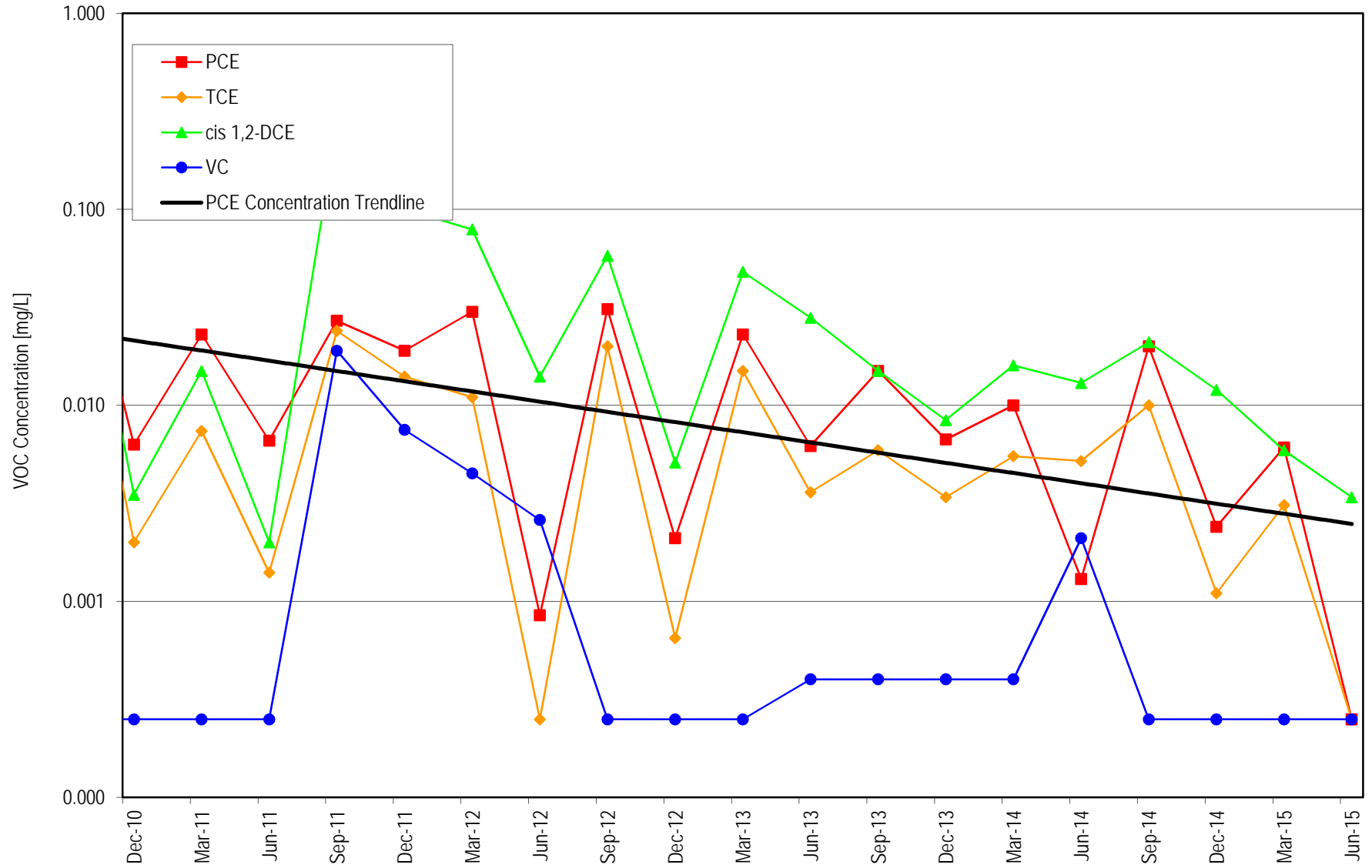
VOC Concentrations in MW-22i



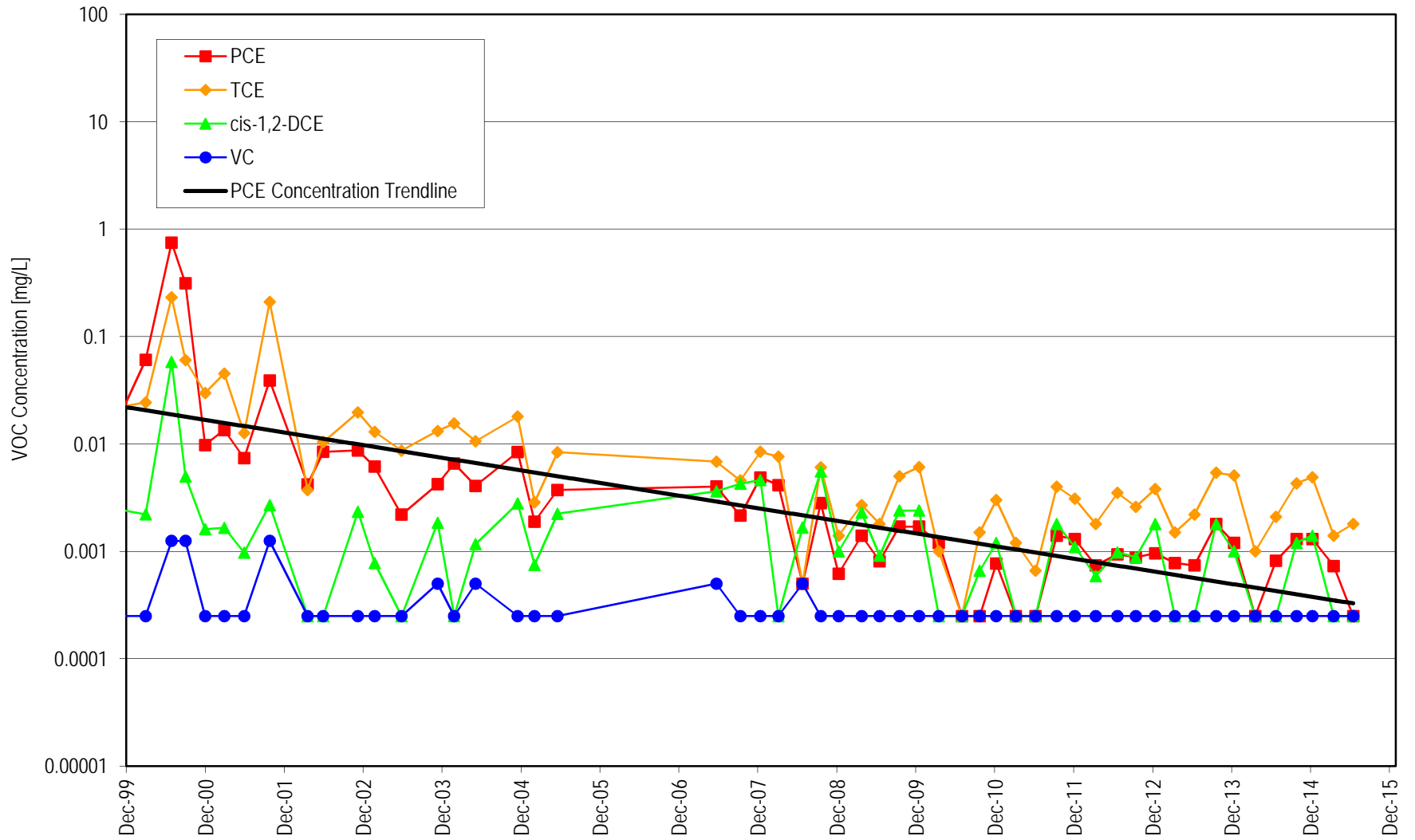
### VOC Concentrations in MW-23i



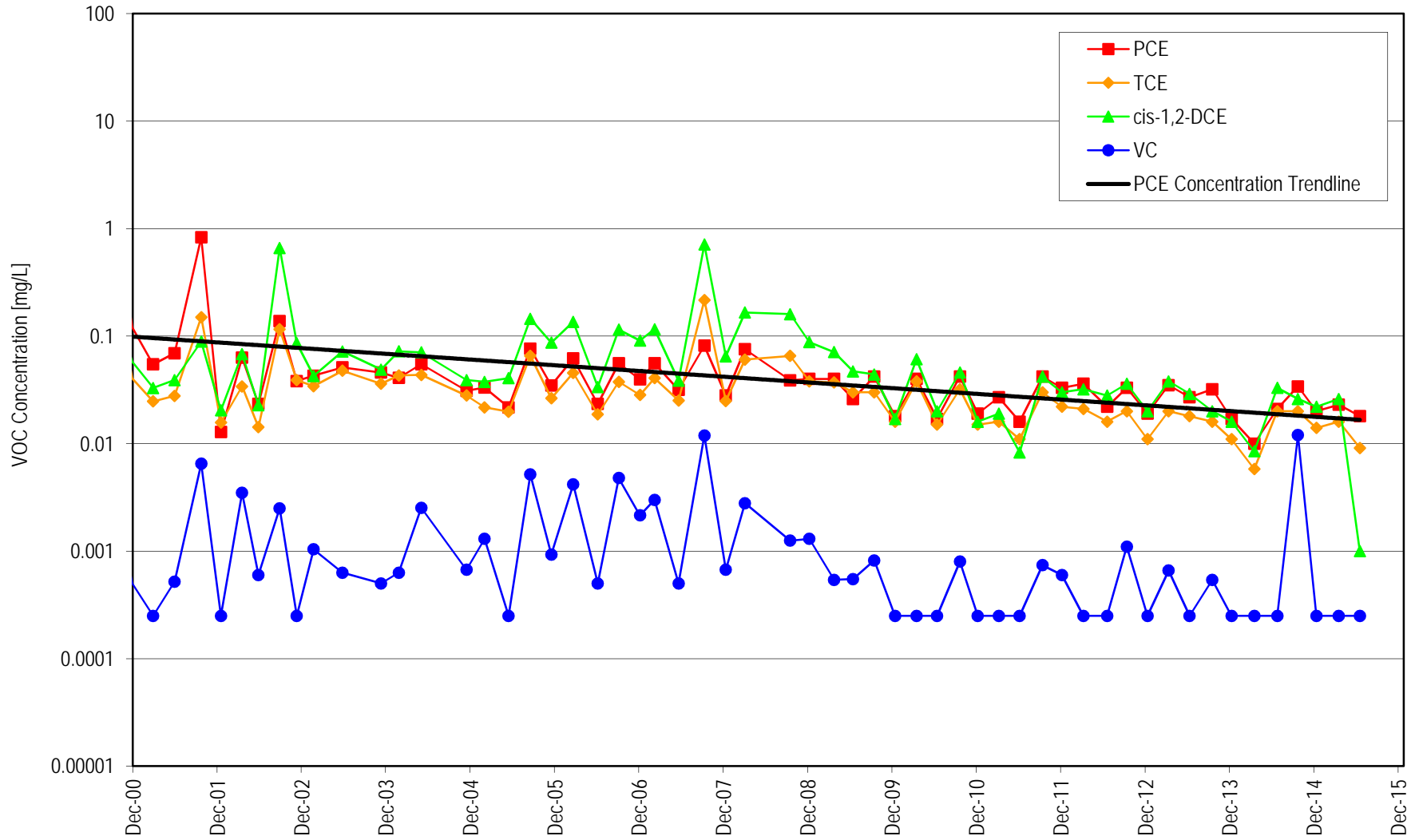
VOC Concentrations in MW-24i



# VOC Concentrations in S-1

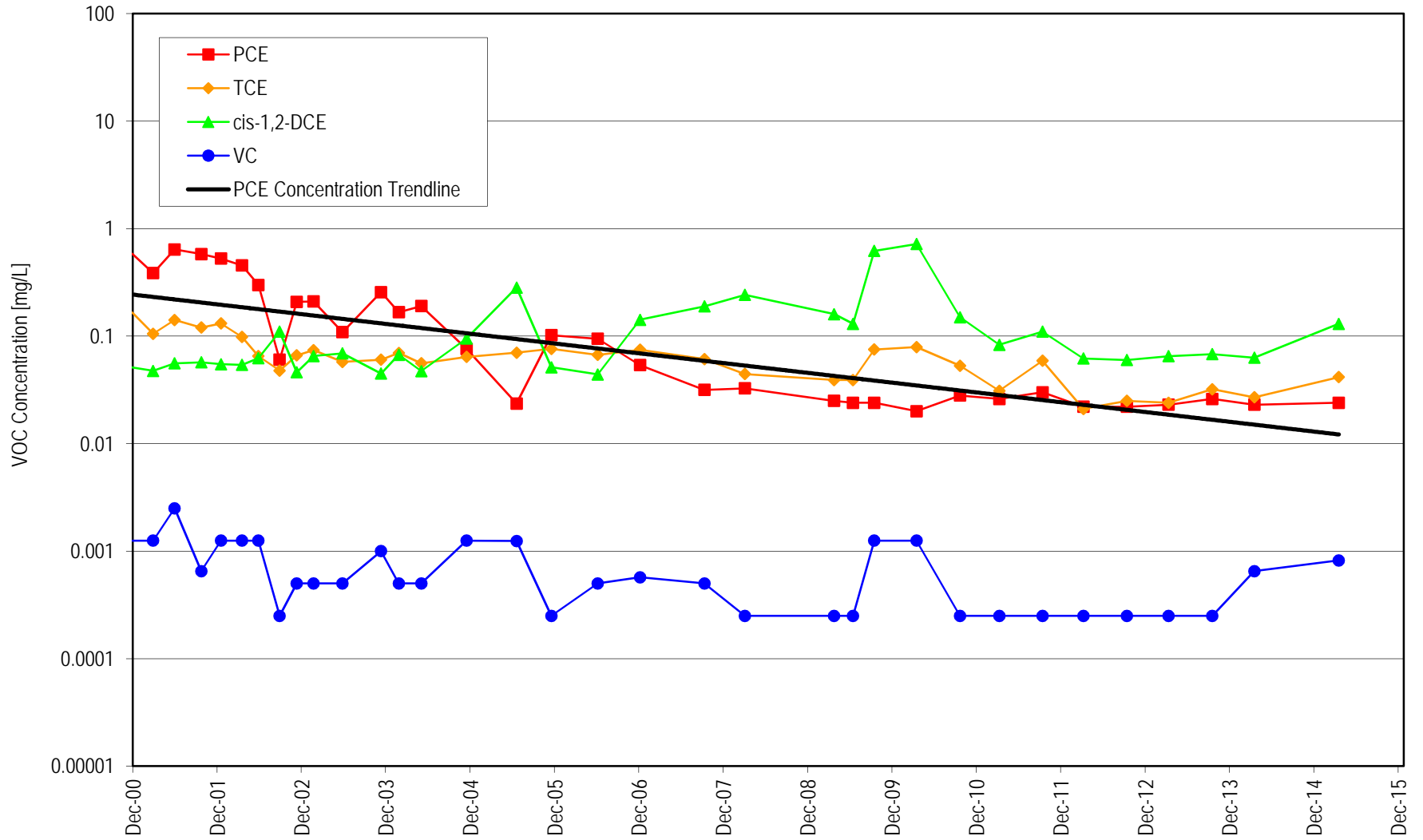


VOC Concentrations in MGMTS1-60

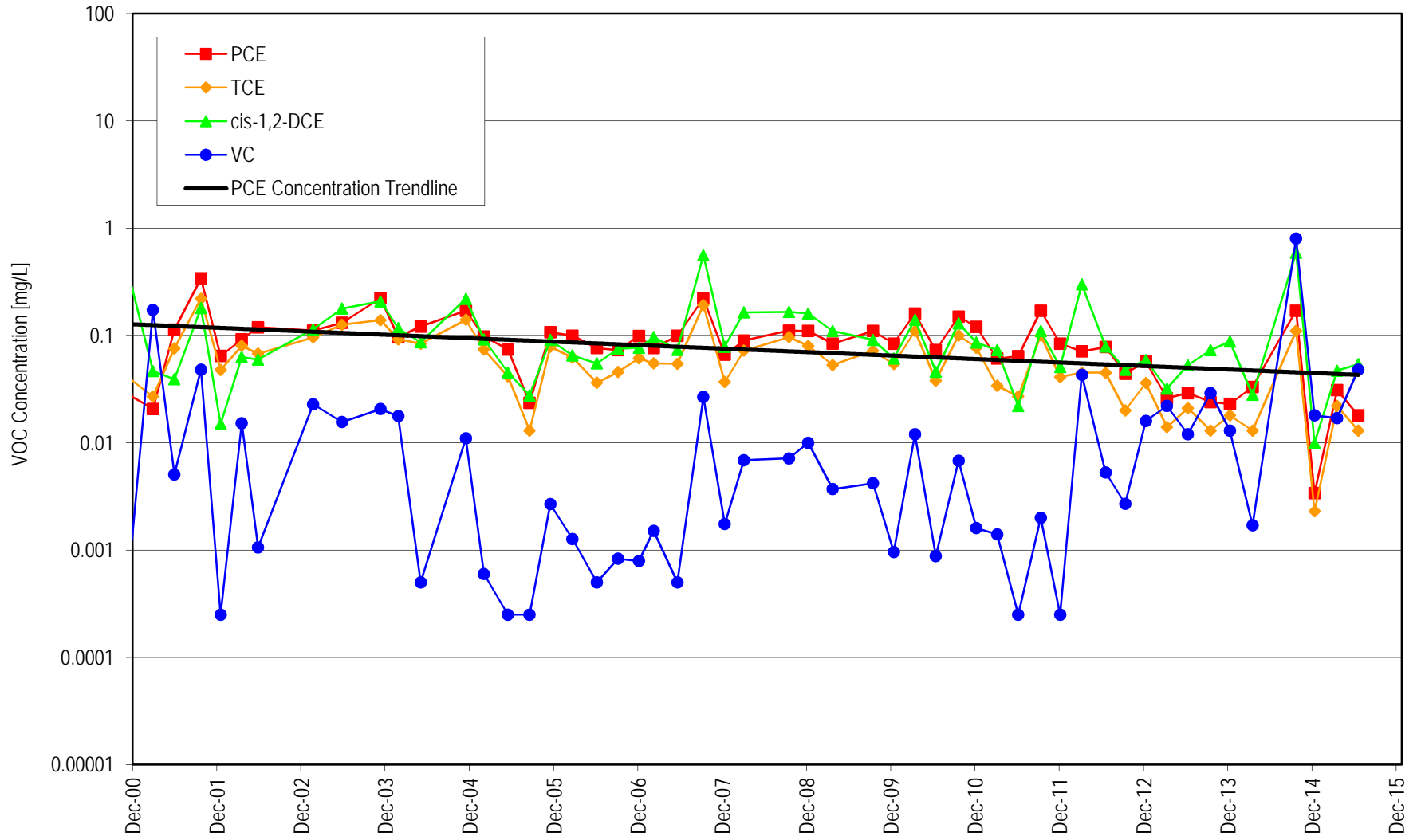




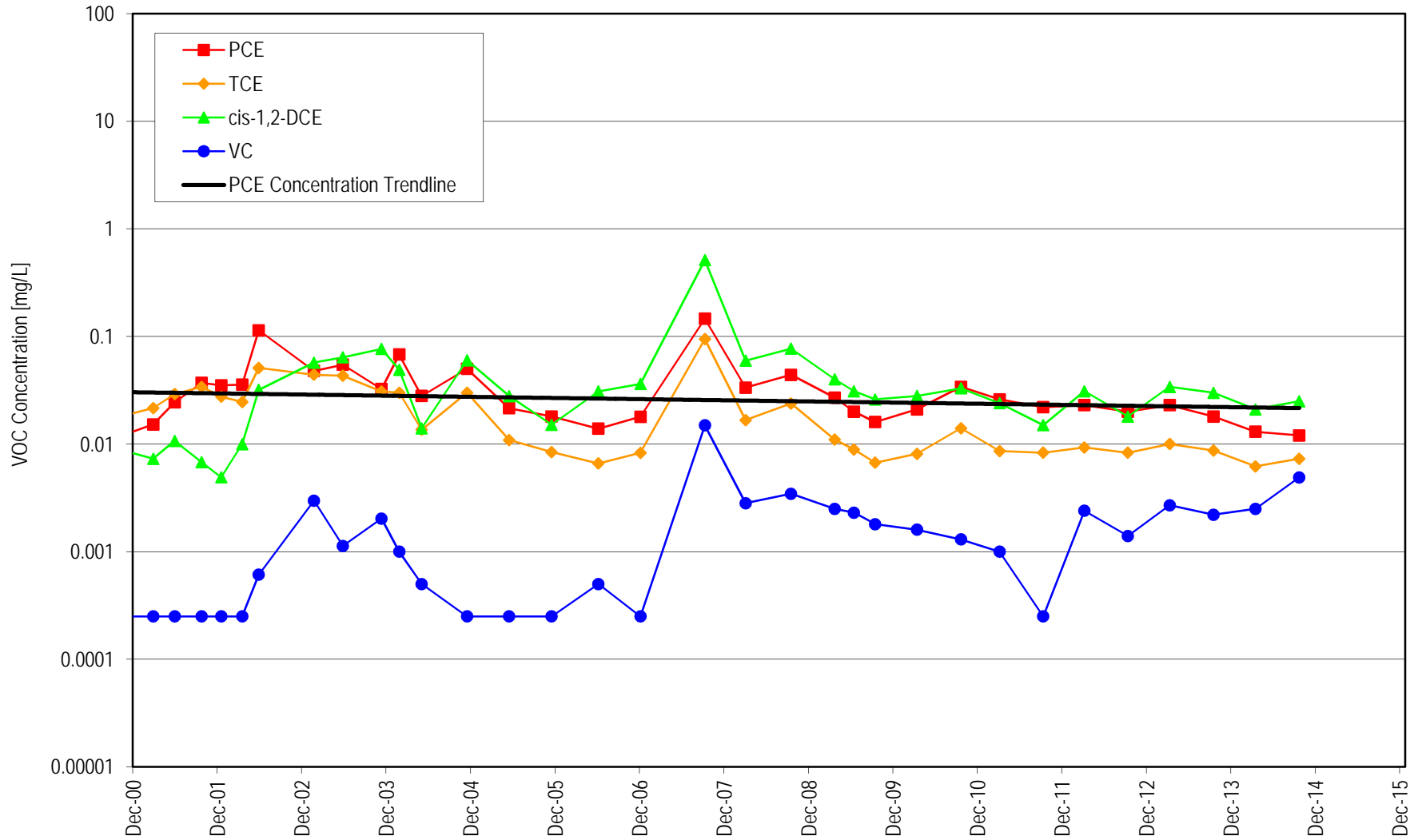
VOC Concentrations in MGMS1-110



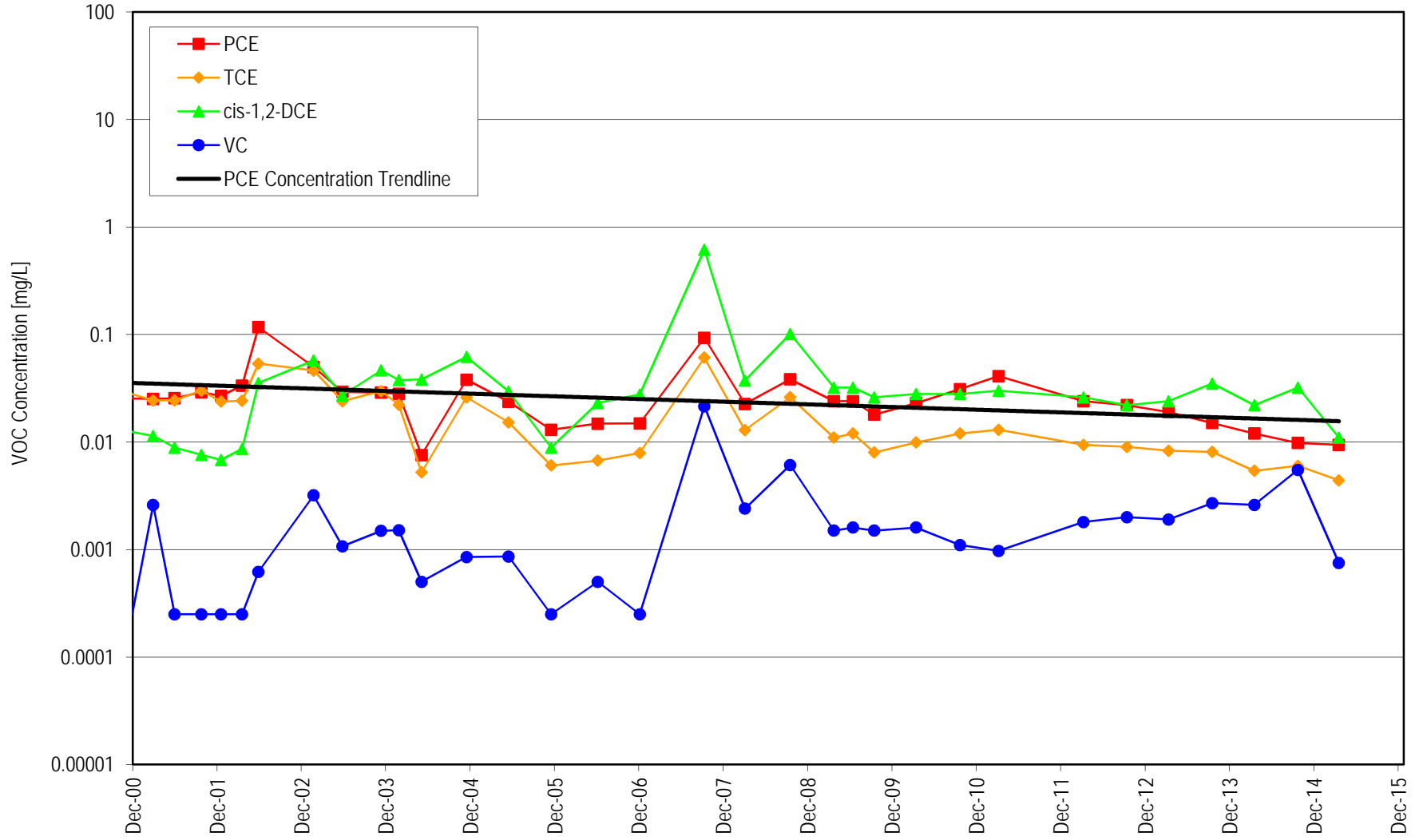
VOC Concentrations in MGMTS2-60



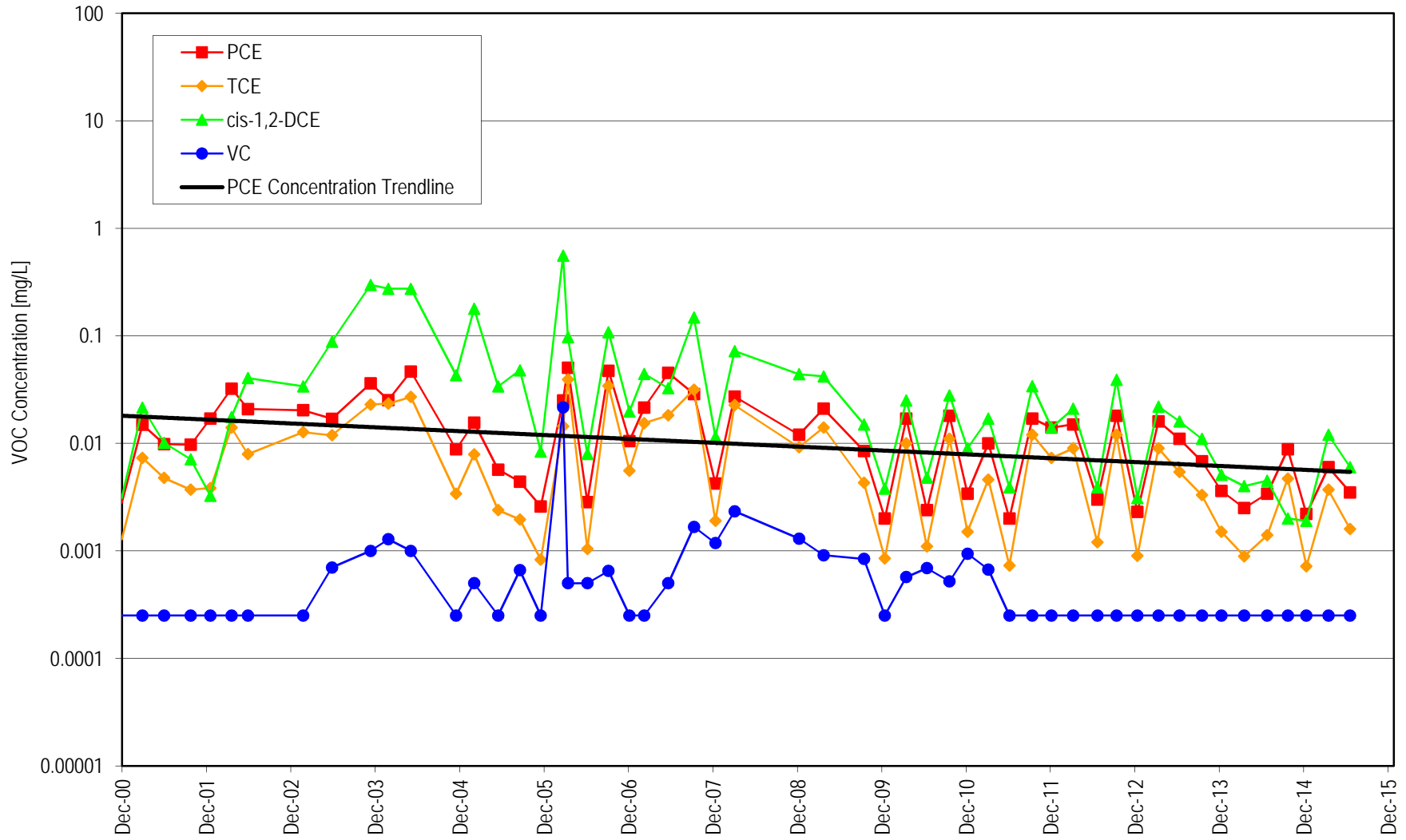
VOC Concentrations in MGMS2-110



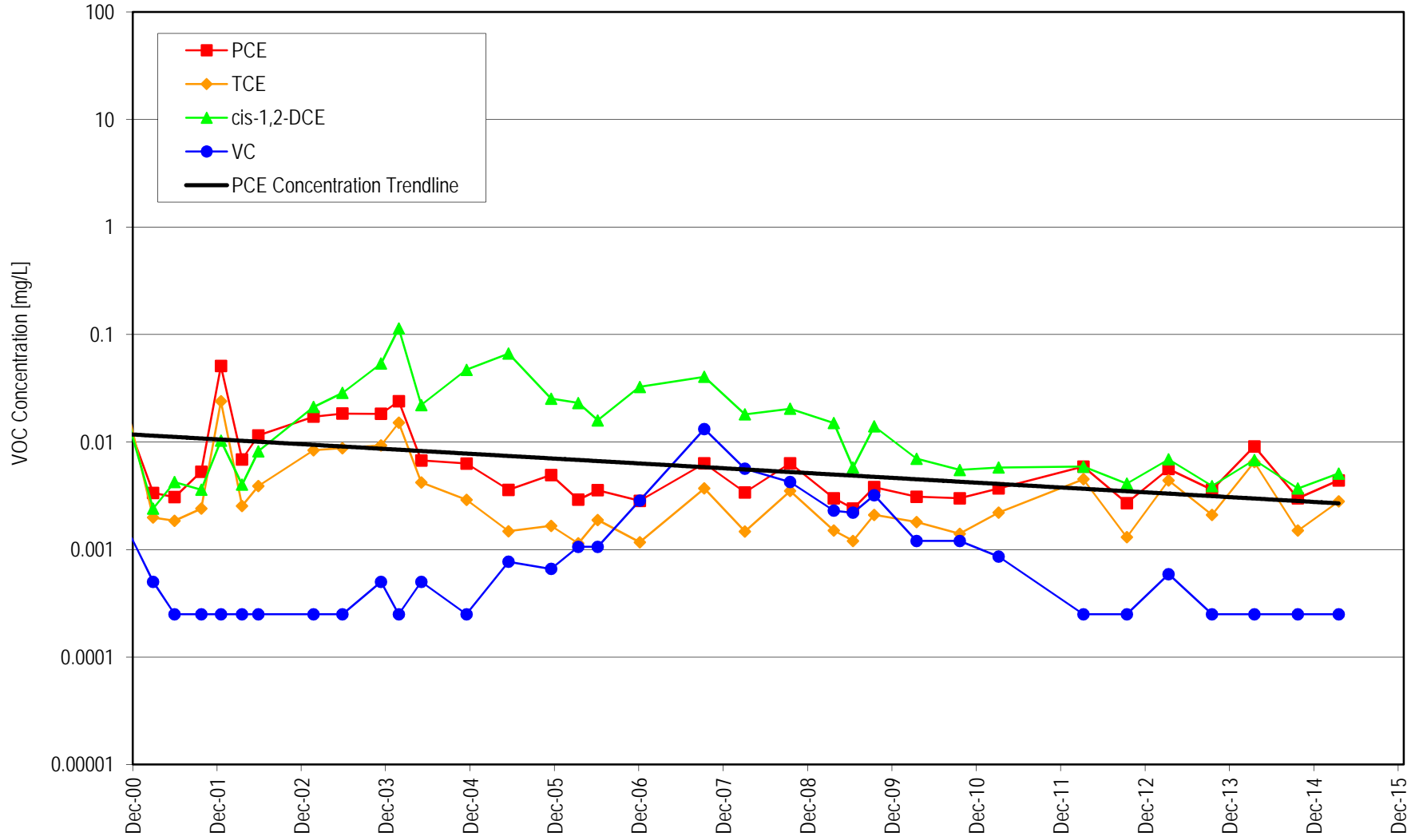
VOC Concentrations in MGMS2-132



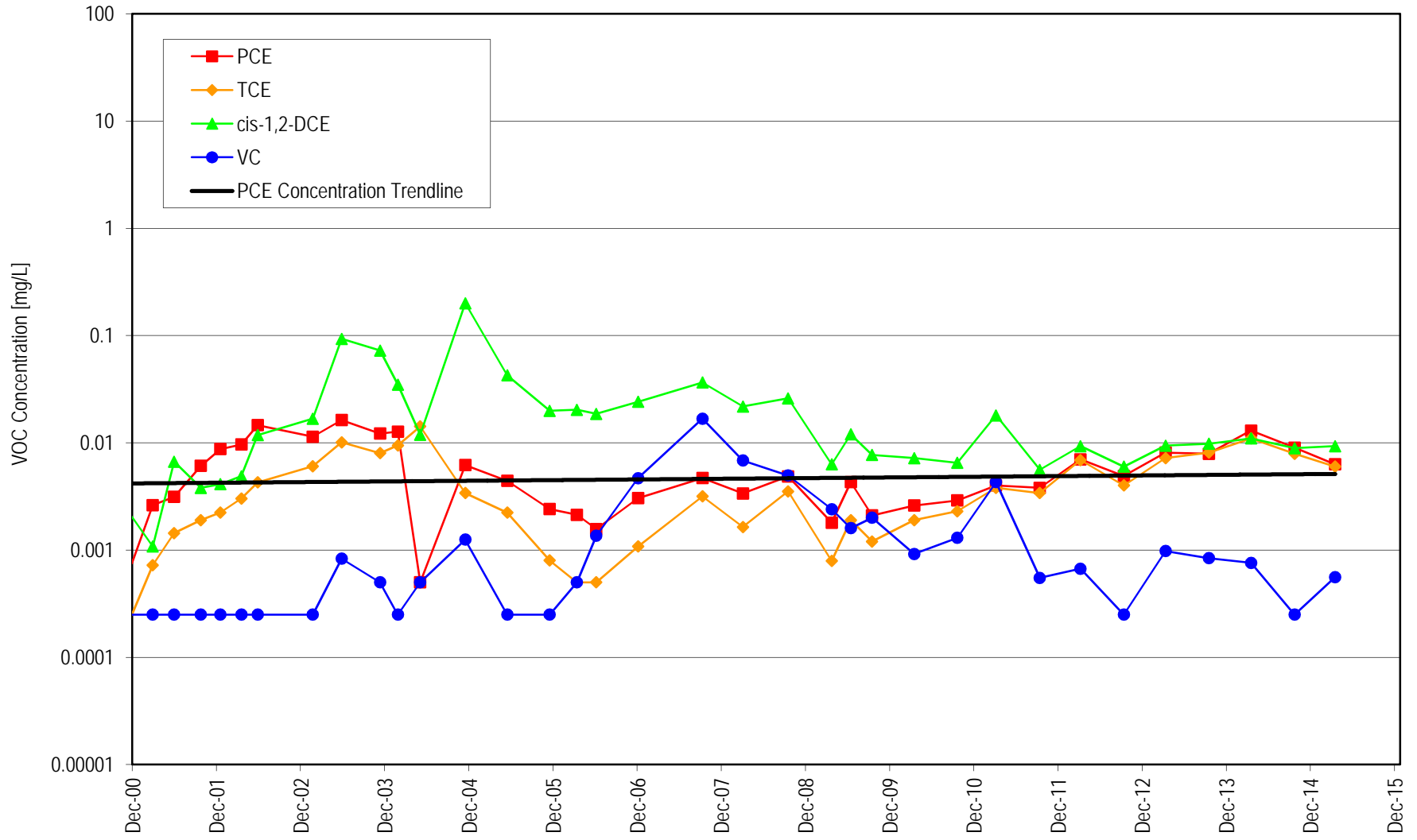
VOC Concentrations in MGMS3-60



VOC Concentrations in MGMS3-101



VOC Concentrations in MGMS3-132

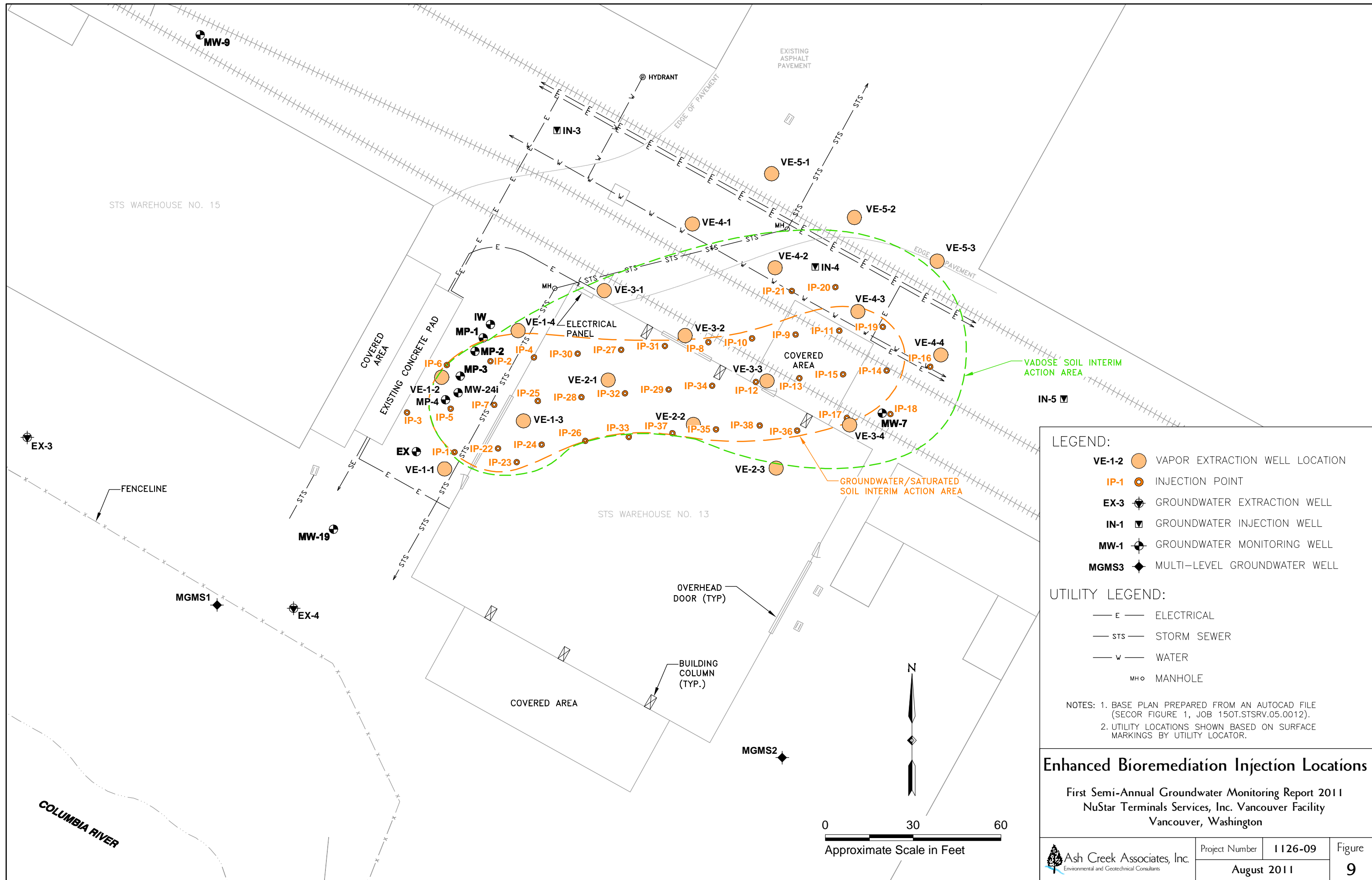


***Appendix E***

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**2008 – SVE and Bioremediation Injection Layout and  
Historical Monitoring Tables**





**LEGEND:**

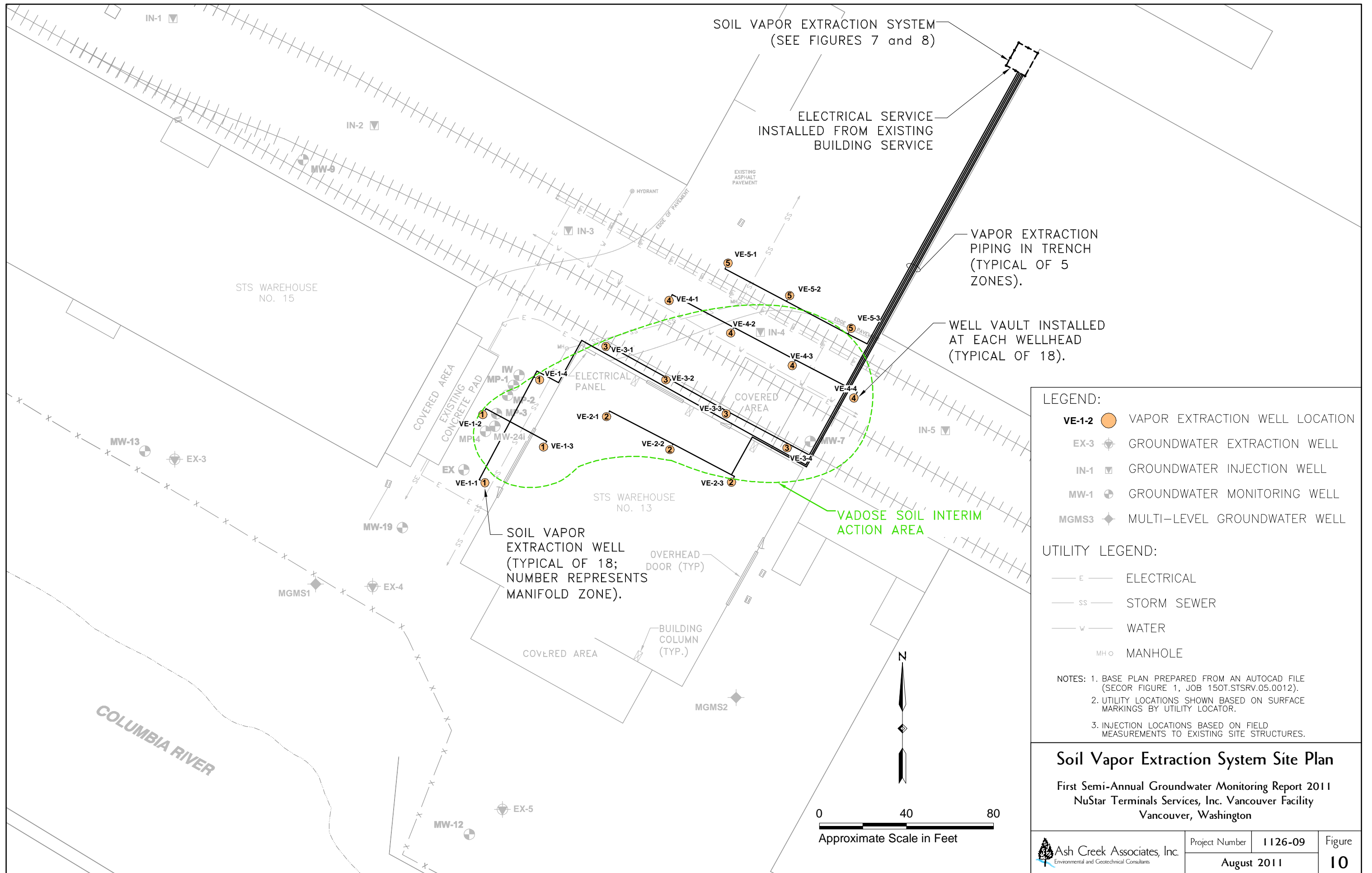
- VE-1-2 ○ VAPOR EXTRACTION WELL LOCATION
- IP-1 ○ INJECTION POINT
- EX-3 ⊕ GROUNDWATER EXTRACTION WELL
- IN-1 ▽ GROUNDWATER INJECTION WELL
- MW-1 ⊕ GROUNDWATER MONITORING WELL
- MGMS3 ◆ MULTI-LEVEL GROUNDWATER WELL

**UTILITY LEGEND:**

- E — ELECTRICAL
- STS — STORM SEWER
- W — WATER
- MH ⊕ MANHOLE

NOTES: 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).  
 2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.

**Enhanced Bioremediation Injection Locations**  
 First Semi-Annual Groundwater Monitoring Report 2011  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



**LEGEND:**

- VE-1-2** VAPOR EXTRACTION WELL LOCATION
- EX-3** GROUNDWATER EXTRACTION WELL
- IN-1** GROUNDWATER INJECTION WELL
- MW-1** GROUNDWATER MONITORING WELL
- MGMS3** MULTI-LEVEL GROUNDWATER WELL

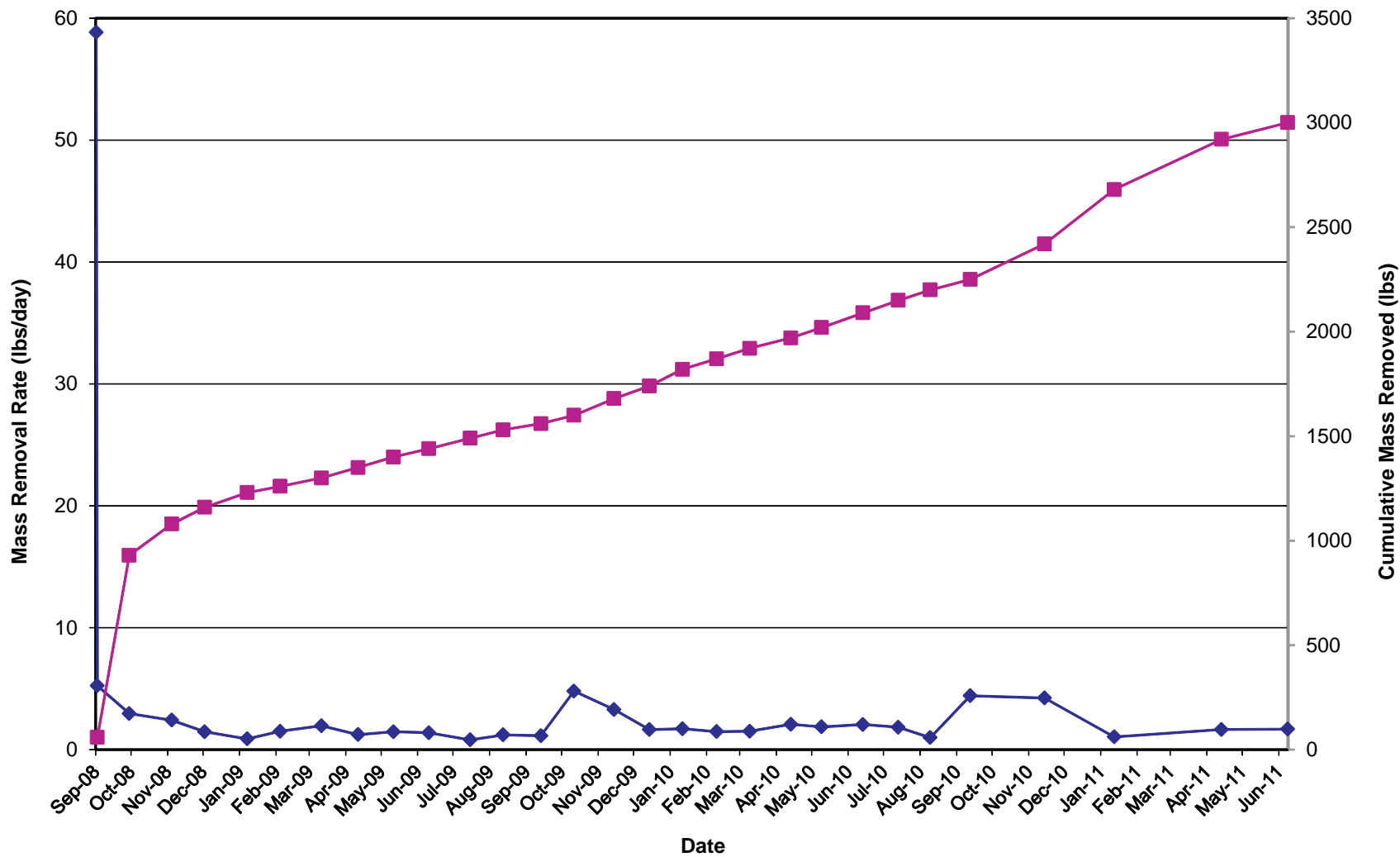
**UTILITY LEGEND:**

- ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE

**NOTES:**

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.
3. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.

**Soil Vapor Extraction System Site Plan**  
 First Semi-Annual Groundwater Monitoring Report 2011  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



**Legend:**

- ◆ Removal Rate (lbs/day)
- Cumulative Mass Removal

**2008 SVE System - VOC Mass Removal**

Second Semi-Annual Groundwater Monitoring Report 2011  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



Project Number	1126-09
January 2012	

Figure  
**11**

Table E-1  
2008 SVE System - Monitoring Results  
NuStar Vancouver Facility  
Vancouver, Washington

Date	Branch 1		Branch 2		Branch 3		Branch 4		Branch 5		Pre Carbon		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
9/18/2008	339	-14.0	932	-13.0	801	-13.0	432	-14.0	445	-15.0	623	NM	0.0	NM	0.0	NM	--
10/15/2008	81	-19.0	445	-14.0	383	-14.0	103	-18.0	112	-19.0	184.8	-33.0	186.9	NM	81.7	NM	--
10/24/2008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Carbon change-out 10/24/08
11/5/2008	4.1	-15.0	13.7	-14.0	33.1	-14.0	9.7	-16.0	19.7	-16.0	49.1	-27.0	0.3	17.0	0.0	6.0	--
11/20/2008	NA	-17.0	NA	-17.0	NA	-17.0	NA	-17.0	NA	-18.0	38.8	-30.0	1.5	16.0	2.2	NM	--
12/18/2008	1.4	-17.0	1.7	-17.0	1.8	-17.0	0.9	-18.0	3.2	-19.0	32.8	-27.0	6.0	16.0	0.0	6.0	System off 12/18/08 through 12/30/08 to replace high-float switch
1/2/2008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	System off 1/2/08 through 1/5/08 to empty knockout drum
1/23/2009	12.8	-11.0	24.2	-11.0	28.7	-11.0	10.9	-11.0	9.0	-11.0	22.6	-20	29.4	19.0	0.0	7.0	--
1/27/2009	NM	-16.0	NM	-16.0	NM	-16.0	--	--	--	--	NM	-26	NM	NM	NM	NM	Branches 4 and 5 closed
2/5/2009	NM	-17.0	NM	-17.0	NM	-17.0	--	--	--	--	NM	-25	33.2	NM	0.0	NM	--
2/20/2009	11.9	-16.0	15.2	-16.0	19.1	-16.0	--	--	--	--	17.5	-26	34.6	17.0	0.0	7.5	--
3/27/2009	3.5	-18.0	8.3	-18.0	4.9	-18.0	--	--	--	--	18.9	-28	22.6	18.5	6.2	7.2	System off through 4/3/09 in anticipation of carbon change-out
4/3/2009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Carbon change-out
4/27/2009	9.0	-18.0	16.8	-18.0	15.9	-18.0	16.9	-19.0	15.4	-20.0	25.4	-24	0.2	16	0.2	7.0	--
4/27/2009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	All branches opened for PID monitoring. After PID readings, close Branches 1 and 5. Keep Branches 2, 3, and 4 open.
5/27/2009	--	--	5.7	-18.5	5.0	-18.0	5.0	-18.0	--	--	16.3	-29.5	0.4	26	0.2	7.0	--
6/26/2009	--	--	6.6	-18.5	9.2	-18.0	1.0	-18.5	--	--	22.3	-30	10.8	15.5	0.0	6.5	--
7/31/2009	--	--	32.2	-17.0	27.8	-17.0	27.3	-18.0	--	--	20.5	-29	16.4	16.5	0.0	7.0	--
8/28/2009	--	--	35.6	-16.0	35.2	-16.0	32.0	-16.0	--	--	19.1	-28	13.8	16.0	1.1	7.1	All branches opened for PID monitoring. After PID readings, close Branches 1 and 5. Keep Branches 2, 3, and 4 open.
9/3/2009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Close branches 4 and 5. Keep Branches 1, 2, and 3 open.
09/09/09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Carbon change-out (lead carbon only)
9/29/2009	25.5	-13.5	51.6	-12.5	61.3	-12.0	--	--	--	--	148.0	-24.5	12.5	18.0	0.0	7.0	--
10/27/2009	16.6	-14.0	39.9	-14.0	30.3	-13.5	--	--	--	--	17.7	-25	9.1	18.0	0.0	7.8	--
10/27/2009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	All branches opened for PID monitoring. After PID readings, close Branches 1 and 5. Keep Branches 2, 3, and 4 open.
11/30/2009	--	--	95.4	-21.0	85.7	-22.0	59.6	-21.0	--	--	66.1	-33	5.6	17.0	0.0	6.0	System off upon arrival due to full knockout drum. Reportedly off since 11/24/09. Restarted system and let run for 15 minutes prior to monitoring.
12/30/2009	--	--	88.5	-17.0	91.7	-18.0	86.5	-18.0	--	--	50.8	-28.5	4.3	17.0	0.2	7.4	System off upon arrival due to full knockout drum. Restarted system and let run for 30 minutes prior to monitoring.

Please refer to notes at end of table.

Table E-1  
 2008 SVE System - Monitoring Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Branch 1		Branch 2		Branch 3		Branch 4		Branch 5		Pre Carbon		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
1/12/2010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	System off upon arrival due to full knockout drum. Terminal noted system off on 1/12/2010. Empty drum and restart system.
1/22/2010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Carbon change-out
1/27/2010	--	--	45.6	-22.0	49.2	-22.0	39.9	-23.0	--	--	29.0	-31.0	0.0	16.5	0.0	6.9	System off upon arrival due to full knockout drum. Restarted system and let run for 30 minutes prior to monitoring.
2/12/2010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	System off upon arrival due to full knockout drum. Terminal noted system off on 2/11/2010. Empty drum and restart system.
2/25/2010	--	--	0.0	-21.0	0.1	-22.0	0.8	-22.0	--	--	37.8	-30.0	0.5	16.0	0.0	10	--
3/25/2010	--	--	21.0	-22.0	24.9	-21.0	24.2	-20.0	--	--	16.9	-32.0	0.0	14.0	0.0	6.4	--
4/29/2010	--	--	23.0	-22.0	19.1	-22.0	20.3	-22.5	--	--	15.2	-32.0	4.5	14.5	0.0	6.7	All branches opened for PID monitoring. After PID readings, close Branches 1 and 5. Keep Branches 2, 3, and 4 open.
5/25/2010	--	--	11.8	-22.0	27.8	-22.0	23.6	-23.0	--	--	28.9	-32.0	19.3	15.0	0.0	6.5	--
6/29/2010	--	--	22.0	-21.0	22.3	-22.0	20.6	-22.0	--	--	15.0	-32.0	29.3	15.0	0.2	7.0	--
7/29/2010	--	--	26.6	-21.0	24.6	-21.0	14.9	-22.0	--	--	16.0	-33.0	13.2	15.0	1.0	6.4	All branches opened after routine monitoring for PID measurements. After PID readings, close Branches 1 and 5. Keep Branches 2, 3, and 4 open.
8/19/2010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Carbon change-out.
8/25/2010	--	--	20.6	-18.0	23.6	-18.0	19.4	-19.0	--	--	15.8	-29.0	0.0	16.0	0.0	6.2	--
9/28/2010	--	--	22.8	-20.0	18.6	-19.5	19.7	-20.0	--	--	145	-31.0	0.0	15.0	0.0	7.8	All branches opened after routine monitoring for PID measurements. After PID readings, close Branches 1 and 5. Keep Branches 2, 3, and 4 open.
10/28/2010	--	--	24.3	-22.0	0.2	-21.0	0.2	-22.0	--	--	15.1	-32.0	0.1	15.0	0.1	9.0	No samples collected.
11/30/2010	--	--	435.0	-23.0	430.0	-22.0	134.0	-23.0	--	--	269	-32.0	0.0	14.0	0.0	6.4	System off upon arrival due to full knockout drum. Duration of shutdown unknown. Drained knockout pot and restarted System.
12/21/2010	--	--	36.5	-23.5	7.1	-24.0	39.7	-23.5	--	--	264.0	-32.0	0.0	13.0	0.0	6.5	System off upon arrival due to full knockout drum. Drained knockout pot and restarted System. No samples collected.
12/29/2010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Terminal notified Ash Creek that system was down. Upon arrival, knockout drum was full. Drained knockout pot and restarted System.
1/28/2011	--	--	72.1	-22.0	90.4	-22.0	23.2	-23.0	--	--	53.9	-32.0	0.1	16.0	0.0	6.8	System off upon arrival due to full knockout drum. Drained knockout pot and restarted System.
2/28/2011	--	--	22.8	-22.5	22.3	-22.5	23.3	-22.5	--	--	13.9	-31.0	1.6	14.5	0.0	6.7	All branches opened for PID monitoring. After PID readings, close Branches 1 and 5. Keep Branches 2, 3, and 4 open. No samples collected.
4/6/2011	--	--	--	--	--	--	16.1	-37.0	12.3	-37.0	7.0	-42.0	19.4	11.0	0.0	6.1	Pre-carbon effluent sample collected with Branches 1 and 2 open only. After sample collection, leave Branches 2,3 and 4 open only.
4/29/2011	--	--	23.7	-17.0	27.0	-17.0	11.0	-17.0	--	--	14.3	-29.0	15.2	14.0	0.0	7.3	--
6/2/2011	--	--	23.6	-20.0	21.9	-20.0	22.3	-20.5	--	--	16.9	-29.0	16.1	15.0	0.8	6.4	--
6/24/2011	--	--	82.0	-20.0	NM	-20.0	11.7	-20.0	--	--	10.1	-29.0	17.7	24.0	4.2	6.2	PID reading for Branch 3 inadvertently not recorded.
7/28/2011	--	--	32.5	-16.0	39.0	-16.0	29.4	-16.0	--	--	20.3	-27.0	0.0	15.0	0.0	6.8	Changed carbon on July 26, 2011 (both vessels).

**Notes:**

1. PID readings in parts per million (ppm), calibrated to 100 ppm isobutylene.
2. Pressure readings in inches of water, measured with magnahelic gauge.
3. NM = Not measured.
4. -- = Not available; branch not in use or no measurement collected during the site visit.
5. NA = Not available; photoionization detector (PID) malfunction.

Table E-2  
 2008 SVE System - Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	Chloroform	1,3-Dichlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methanol	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,1,2-Trichloro-1,2,2-trifluoroethane	Vinyl chloride	Total Xylenes
			Concentrations in µg/m <sup>3</sup>														
Effluent - pre-Carbon	SVE_091808	9/18/2008	<5,400	<2,600	<4,500	<4,400	<4,400	<4,400	--	<3,800	1,700,000	<4,100	14,000	55,000	<8,400	<5600	<4,800
Effluent - pre-Carbon	System_In_101508 Canister 9301B	10/15/2008	<1,600	<3,800	<1,300	<1,300	<1,300	<1,300	--	<1,100	150,000	<1,200	<1,700	7,700	<2,500	<1500	<1,400
Effluent - post-Carbon	System_Out_101508 Canister 12204	10/15/2008	<410	<1,000	<340	<340	<340	<340	--	<290	60,000	<320	<460	3,200	<650	<430	<370
Carbon change-out 10/24/08																	
Effluent - pre-Carbon	063299 - Pre Carbon 112008	11/20/2008	<810	<2,000	<670	<660	<660	<660	--	<570	85,000	<620	<900	4,100	<1,300	<850	<720
Effluent - post-Carbon	12541 - Post Carbon 112008	11/20/2008	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	17	23	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Pre Carbon 121808	12/18/2008	<360	<900	<300	<300	<300	<300	--	<260	69,000	<280	530	3,400	<570	<380	<320
Effluent - post-Carbon	Post Carbon 121808	12/18/2008	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	12	<14	<7.5	16	<11	<15	<10	<8.7
Effluent - pre-Carbon	SVE Effluent Pre-Carbon	1/23/2009	<400	<980	<330	<320	<320	<320	--	<280	68,000	<310	<450	1,800	<630	<420	<350
Effluent - post-Carbon	SVE Effluent Post-Carbon	1/23/2009	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	12	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Pre Carbon 022009	2/20/2009	<270	<680	<230	<220	<220	<220	--	<200	53,000	<210	<310	2,100	<430	<290	<240
Effluent - post-Carbon	Post Carbon 022009	2/20/2009	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	15	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Pre Carbon 032709	3/27/2009	<9.8	<24	<8.1	16	190	<7.9	--	8.7	67,000	<7.5	490	2,500	<15	<10	<8.7
Effluent - post-Carbon	Post Carbon 032709	3/27/2009	12	<24	38	44	1,100	28	--	8.9	54	<7.5	7,200	19,000	34	<10	<8.7
System shutdown on 3/27/09 in anticipation of carbon change-out on 4/3/09																	
Effluent - pre-Carbon	Pre Carbon 042709	4/27/2009	<390	<950	<320	<310	<310	<310	--	<280	79,000	<300	<430	1,900	<610	<410	<340
Effluent - post-Carbon	Post Carbon 042709	4/27/2009	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	<7.0	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	PSE0888-01 - Pre Carbon 052709	5/27/2009	<280	<690	<230	<230	<230	<230	--	<200	49,000	<220	380	1,700	<440	<300	<250
Effluent - post-Carbon	PSE0888-02 - Post Carbon 052709	5/27/2009	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	9.7	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	PRE Carbon 062609	6/26/2009	<240	<600	<200	<200	<200	<200	--	<170	55,000	<190	390	2,000	<380	<260	<220
Effluent - post-Carbon	POST Carbon 062609	6/26/2009	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	8.2	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	PRECARBON 073109	7/31/2009	<46	<110	<38	<37	280	<37	--	38	47,000	<36	540	2,800	<72	<48	<41
Effluent - post-Carbon	POSTCARBON 073109	7/31/2009	<9.8	<23	<8.1	20	<7.9	<7.9	--	12	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Precarbon 082809	8/28/2009	<98	<240	<81	<79	<79	<79	--	<69	33,000	<75	300	2,100	<150	<100	<87
Effluent - post-Carbon	Post Carbon 082809	8/28/2009	<26	<65	33	38	1,100	<21	--	<19	<36	28	1,500	260	<41	<27	55
Effluent - pre-Carbon	PRECARBON 090209	9/2/2009	<240	<600	<200	<200	250	<200	<330	<170	37,000	<190	320	2,000	<380	<260	<260
Lead carbon change-out September 8, 2009. Order of lead and lag carbon switched.																	
Effluent - pre-Carbon	Precarbon 092909	9/29/2009	<220	<530	<180	<180	400	<180	<730	<150	49,000	<170	250	2,300	<340	<230	<190
Effluent - post-Carbon	Post Carbon 092909	9/29/2009	<9.8	<24	<8.1	<7.9	<7.9	<7.9	40	81	<14	8.4	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	PRECARBON 102709	10/27/2009	<98	<240	<81	<79	240	<79	<13	<69	48,000	<75	280	1,900	<150	<100	<87
Effluent - post-Carbon	POSTCARBON 102709	10/27/2009	<9.8	<24	<8.1	<7.9	14	<7.9	<1.3	8.8	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Precarbon 113009	11/30/2009	<1,300	<3,200	<1,100	<1,100	<1,100	<1,100	<170	<920	170,000	4,100	<1,400	4,000	<2,000	<1400	<1,200
Effluent - post-Carbon	Postcarbon 113009	11/30/2009	<9.8	<24	<8.1	17	110	<7.9	<1.3	7.9	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Precarbon-123009	12/30/2009	<1,600	<4,000	<1,300	<1,300	<1,300	<1,300	<220	<1,100	130,000	1,900	<1,800	3,800	<2,500	<1700	<1,400
Effluent - post-Carbon	Postcarbon-123009	12/30/2009	<9.8	<24	<8.1	22	190	<7.9	<1.3	16 B	51	<7.5	16	13	<15	<10	<8.7
Carbon change-out January 22, 2010.																	

Please refer to notes at end of table.

Table E-2  
 2008 SVE System - Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	Chloroform	1,3-Dichlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methanol	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,1,2-Trichloro-1,2,2-trifluoroethane	Vinyl chloride	Total Xylenes
			Concentrations in µg/m <sup>3</sup>														
Effluent - pre-Carbon	Pre Carbon-012710	1/27/2010	<980	<2,400	<810	<790	<790	<790	<130	<690	<b>60,000</b>	<b>1,200</b>	<1,100	<b>1,800</b>	<1,500	<1000	<870
Effluent - post-Carbon	Post Carbon-012710	1/27/2010	<9.8	<24	<8.1	<7.9	<7.9	<7.9	<1.3	<7.0	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Pre Carbon 022510	2/25/2010	<460	<1,100	<380	<370	<370	<370	<1,000	<330	<b>62,000</b>	<350	<510	<b>1,800</b>	<720	<480	<480
Effluent - post-Carbon	Post Carbon 022510	2/25/2010	<9.8	<24	<8.1	<7.9	<7.9	<7.9	<33	<6.9	<14	<7.5	<11	<b>22</b>	<15	<10	<8.7
Effluent - pre-Carbon	Pre Carbon 032510	3/25/2010	<290	<700	<240	<230	<230	<230	<38	<200	<b>49,000</b>	<220	<320	<b>1,700</b>	<450	<300	<250
Effluent - post-Carbon	Post Carbon 032510	3/25/2010	<9.8	<24	<8.1	<7.9	<7.9	<7.9	<1.3	<b>17</b>	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Pre Carbon 042910	4/29/2010	<410	<1,000	<340	<340	<340	<340	--	<290	<b>49,000</b>	<320	<460	<b>1,900</b>	<650	<430	<370
Effluent - post-Carbon	Post Carbon 042910	4/29/2010	<9.8	<b>240</b>	<8.1	<7.9	<7.9	<7.9	--	<b>8.4</b>	<14	<b>13</b>	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	PRECARBON_052510	5/25/2010	<400	<990	<330	<330	<330	<330	--	<290	<b>66,000</b>	<310	<450	<b>1,800</b>	<630	<420	<360
Effluent - post-Carbon	POSTCARBON_052510	5/25/2010	<9.8	<b>56</b>	<8.1	<7.9	<7.9	<7.9	--	<b>8.0</b>	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	PreCarbon_062910	6/29/2010	<350	<850	<290	<280	<280	<280	--	<250	<b>58,000</b>	<270	<390	<b>1,400</b>	<540	<360	<310
Effluent - post-Carbon	PostCarbon_062910	6/29/2010*	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	<b>8.3</b>	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon	Pre Carbon-072910	7/29/2010	<560	<1400	<460	<450	<450	<450	--	<400	<b>62,000</b>	<430	<620	<b>1,900</b>	--	<580	<500
Effluent - post-Carbon	Post Carbon-072910	7/29/2010	<20	<50	<b>40</b>	<b>42</b>	<b>1,700</b>	<16	--	<14	<b>140</b>	<16	<b>1,500</b>	<b>1,500</b>	--	<21	<18
Carbon change-out August 19, 2010.																	
Effluent - pre-Carbon	Pre Carbon 082510	8/25/2010	<500	<1200	<410	<400	<b>200 J</b>	<400	--	<350	<b>55,000</b>	<380	<550	<b>1,800</b>	--	<520	<440
Effluent - post-Carbon	Post Carbon 082510	8/25/2010	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	<6.9	<14	<7.5	<11	<11	--	<10	<8.7
Effluent - pre-Carbon	Pre_Carbon_092810	9/28/2010	<210	<520	<170	<170	<170	<170	--	<150	<b>29,000</b>	<160	<230	<b>1,200</b>	--	<220	<190
Effluent - post-Carbon	Post_Carbon_092810	9/28/2010	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	<b>9.2</b>	<14	<7.5	<11	<11	--	<10	<8.7
Effluent - pre-Carbon	Pre Carbon-113010	11/30/2010	<930	<2300	<770	<750	<750	<750	--	<660	<b>140,000</b>	<720	<1000	<b>2,600</b>	--	<970	<820
Effluent - post-Carbon	Post Carbon-113010	11/30/2010	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	<6.9	<14	<7.5	<11	<11	--	<10	<8.7
Effluent - pre-Carbon	Pre Carbon-012811	1/28/2011	<600	<1,500	<500	<490	<490	<490	--	<430	<b>140,000</b>	<460	<670	<b>2,900</b>	<940	<630	<540
Effluent - post-Carbon	Post Carbon-012811	1/28/2011	<9.8	<24	<8.1	<7.9	<7.9	<7.9	--	<b>14</b>	<14	<7.5	<11	<11	<15	<10	<8.7
Effluent - pre-Carbon*	Pre Carbon-040611	4/6/2011	<160	<400	<140	<130	<130	<130	--	<120	<b>26,000</b>	<130	<180	<b>630</b>	<260	<170	<150
Effluent - pre-Carbon	Pre Carbon-042911	4/29/2011	<240	<580	<200	<190	<190	<190	--	<170	<b>38,000</b>	<180	<260	<b>1,200</b>	<370	<250	<210
Effluent - post-Carbon	Post Carbon-042911	4/29/2011	<9.8	<24	<8.1	<b>21</b>	<b>150</b>	<9.1	--	<b>9.7</b>	<14	<7.5	<b>42</b>	<11	<15	<10	<8.7
Effluent - pre-Carbon	PreCarbon06242011	6/24/2011	<25	<41	<21	<54	<b>53</b>	<27	--	<24	<b>55,000</b>	<26	<b>180</b>	<b>910</b>	<52	<8.7	<30
Effluent - post-Carbon	PostCarbon06242011	6/24/2011	<b>4.4</b>	<2.4	<b>35</b>	<b>31</b>	<b>1,500</b>	<b>31</b>	--	<b>3.3</b>	<b>6,400</b>	<1.5	<b>1,500</b>	<b>11,000</b>	<b>12</b>	<b>0.96</b>	<1.7

Notes:

1. µg/m<sup>3</sup> = Micrograms per cubic meter.
  2. Samples analyzed by Modified EPA Method TO-15.
  3. Only analytes detected in at least one sample are presented in this table.
  4. -- = not analyzed
  5. B = Compound was detected in the sample at a concentration equal to or less than 5 times the concentration detected in the method blank.
  6. Acetone, bromomethane and chloromethane were detected in the 6/29/10 Postcarbon sample at concentrations slightly above reporting limits. These constituents were not added to the table as they were believed to be either laboratory contaminants (chloromethane was also detected in lab blank) or were contaminants associated with the sample tubing. None of these constituents were identified above reporting limits in the Pre-carbon sample.
  7. \* = Sample collected on April 6, 2011 was collected with Branches 1 and 2 open only and was intended to evaluate carbon treatment needs for the 2011 SVE expansion, rather than to monitor the maximum effluent concentrations from the SVE system.
- BOLD** = Indicates compound detected above method reporting limit.

Table E-3  
 2008 SVE System -VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sample Date	Post-Blower Pressure (in H <sub>2</sub> O)	Air Flow Rate <sup>(1)</sup> (cfm)	Total VOCs (mg/m <sup>3</sup> )	VOC Removal (lb/day)
9/18/2008	28.0	370	1,769	58.8
10/15/2008	33.0	370	158	5.2
11/20/2008	27.0	370	89	3.0
12/18/2008	27.0	370	73	2.4
1/23/2009	30.0	235	70	1.5
2/20/2009	29.0	180	55	0.9
3/27/2009	29.0	240	70	1.5
4/27/2009	29.0	270	81	2.0
5/27/2009	29.0	270	51	1.2
6/26/2009	25.5	285	57	1.5
7/31/2009	25.5	306	51	1.4
8/28/2009	27.0	253	35	0.8
9/29/2009	27.0	260	52	1.2
10/27/2009	29.0	252	50	1.1
11/30/2009	27.0	300	178	4.8
12/30/2009	28.0	270	136	3.3
1/27/2010	26.0	290	63	1.6
2/25/2010	26.0	300	64	1.7
3/25/2010	24.0	325	51	1.5
4/29/2010	24.0	330	51	1.5
5/25/2010	24.0	342	68	2.1
6/29/2010	24.0	350	59	1.9
7/29/2010	25.0	360	64	2.1
8/25/2010	24.0	360	57	1.8
9/28/2010	25.0	365	30	1.0
11/30/2010	23.0	345	143	4.4
1/28/2011	25.0	330	143	4.2
4/29/2011	23.0	300	39	1.1
6/24/2011	24.0	330	56	1.7
9/21/2011*	24.0	335	56	1.7

Please refer to notes at end of table.



Table E-3  
 2008 SVE System -VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Activity	VOC Removal Rate (lb/day)	Days of Operation	Approximate VOCs Removed (lbs)	Approximate Cumulative VOCs Removed (lbs)
9/17/2008	Startup				
9/18/2008	Sample	58.8	1	59	59
10/15/2008	Sample	5.2	27	866	930
11/20/2008	Sample	3.0	36	148	1080
12/18/2008	Sample	2.4	28	76	1160
1/23/2009	Sample	1.5	36	71	1230
2/20/2009	Sample	0.9	27	32	1260
3/27/2009	Sample	1.5	35	43	1300
4/27/2009	Sample	2.0	31	54	1350
5/27/2009	Sample	1.2	30	49	1400
6/26/2009	Sample	1.5	30	41	1440
7/31/2009	Sample	1.4	35	51	1490
8/28/2009	Sample	0.8	35	39	1530
9/29/2009	Sample	1.2	32	33	1560
10/27/2009	Sample	1.1	32	38	1600
11/30/2009	Sample	4.8	28	84	1680
12/30/2009	Sample	3.3	14	57	1740
1/27/2010	Sample	1.6	31	77	1820
2/25/2010	Sample	1.7	29	49	1870
3/25/2010	Sample	1.5	28	45	1920
4/29/2010	Sample	1.5	35	53	1970
5/25/2010	Sample	2.1	26	47	2020
6/29/2010	Sample	1.9	33	66	2090
7/29/2010	Sample	2.1	30	60	2150
8/25/2010	Sample	1.8	27	53	2200
9/28/2010	Sample	1.0	34	49	2250
11/30/2010	Sample	4.4	63	171	2420
1/28/2011	Sample	4.2	59	256	2680
4/29/2011	Sample	1.1	89	236	2920
6/24/2011	Sample	1.7	56	76	3000
9/21/2011	Estimate	1.7	89	149	3150

**Notes:**

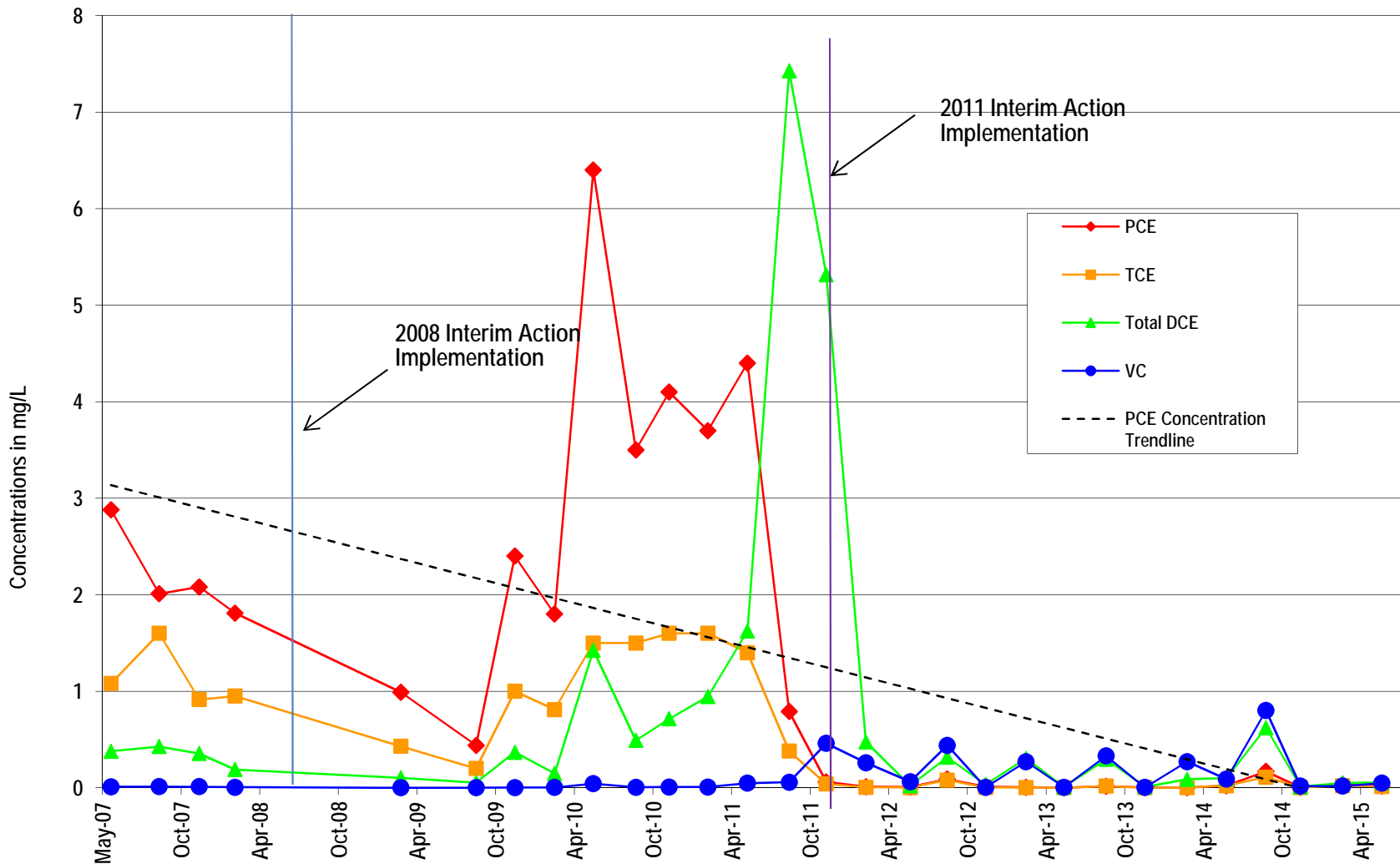
1. Air flow rate read from system gauge.
2. cfm = Cubic feet per minute.
3. mg/m<sup>3</sup> = Milligrams per cubic meter.
4. lb/day = Pounds per day.
5. lbs = Pounds.
6. \*= Sample not collected on September 21, 2011. Mass removal from 6/24/2011 through 9/21/2011 is based on analytical and operating parameters from the 6/24/2011 monitoring event.

***Appendix F***

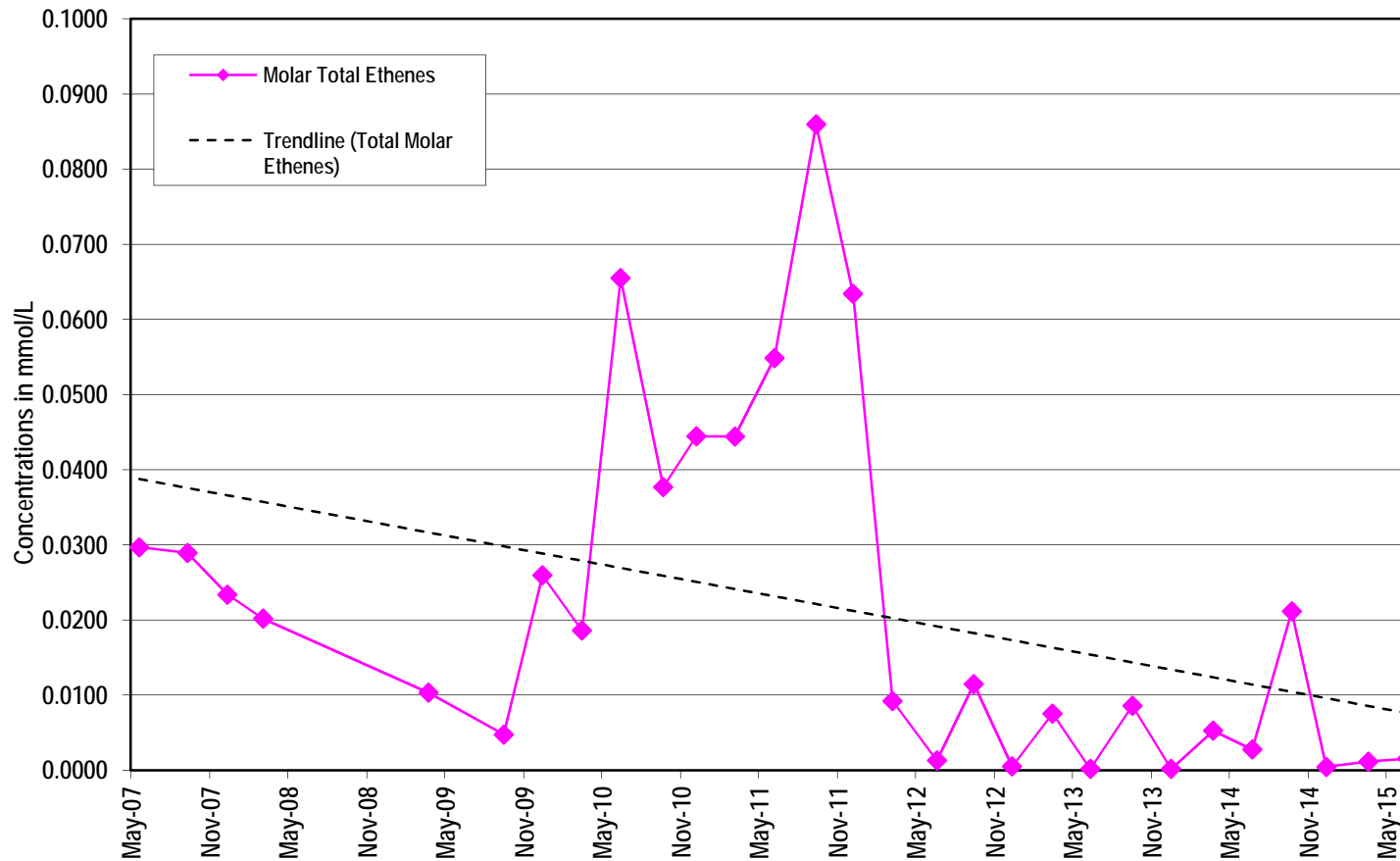
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**Molar Concentration Trend Plots – Interim Action Wells**

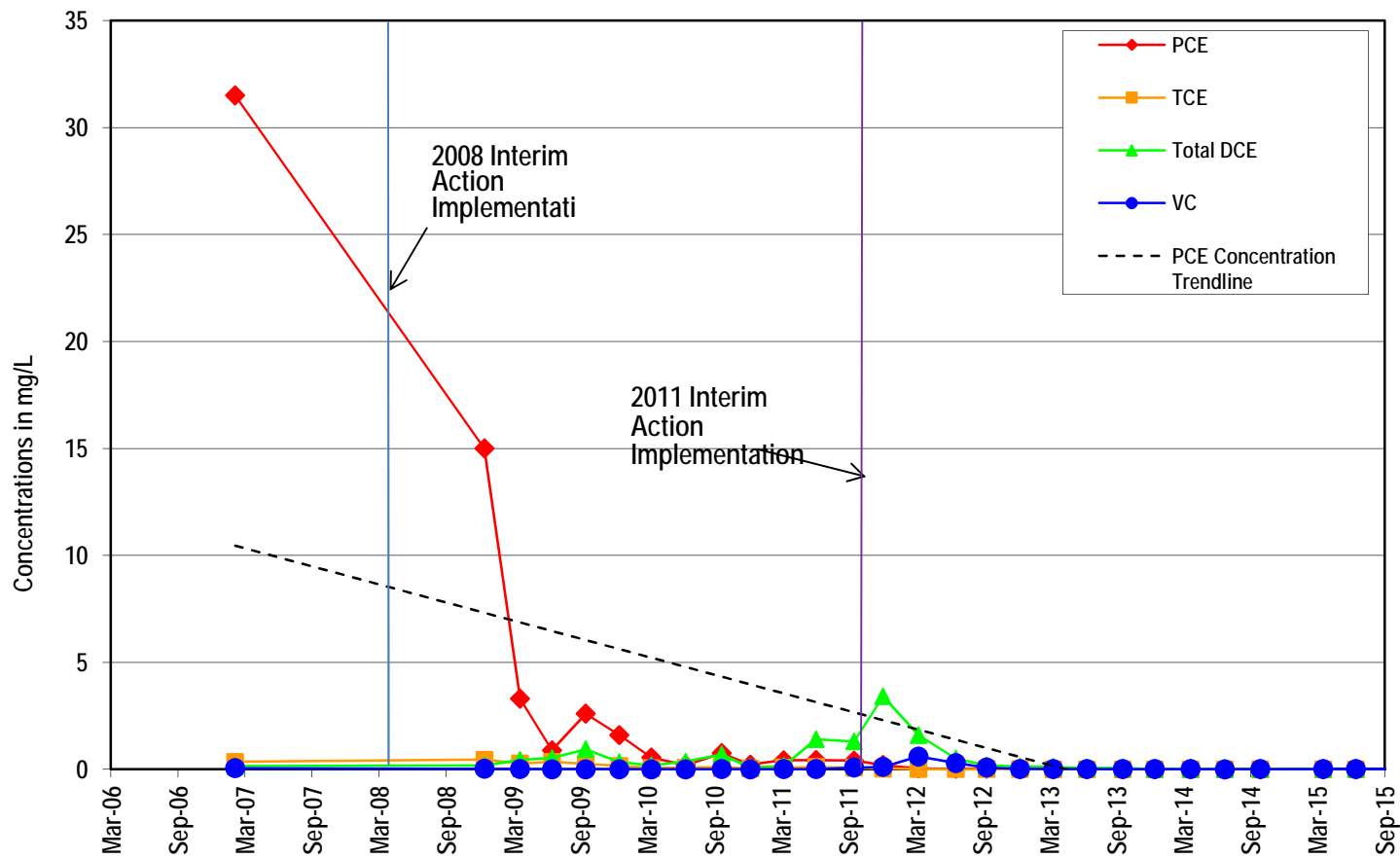
### Interim Action Area - VOC Trends: MGMS2-40



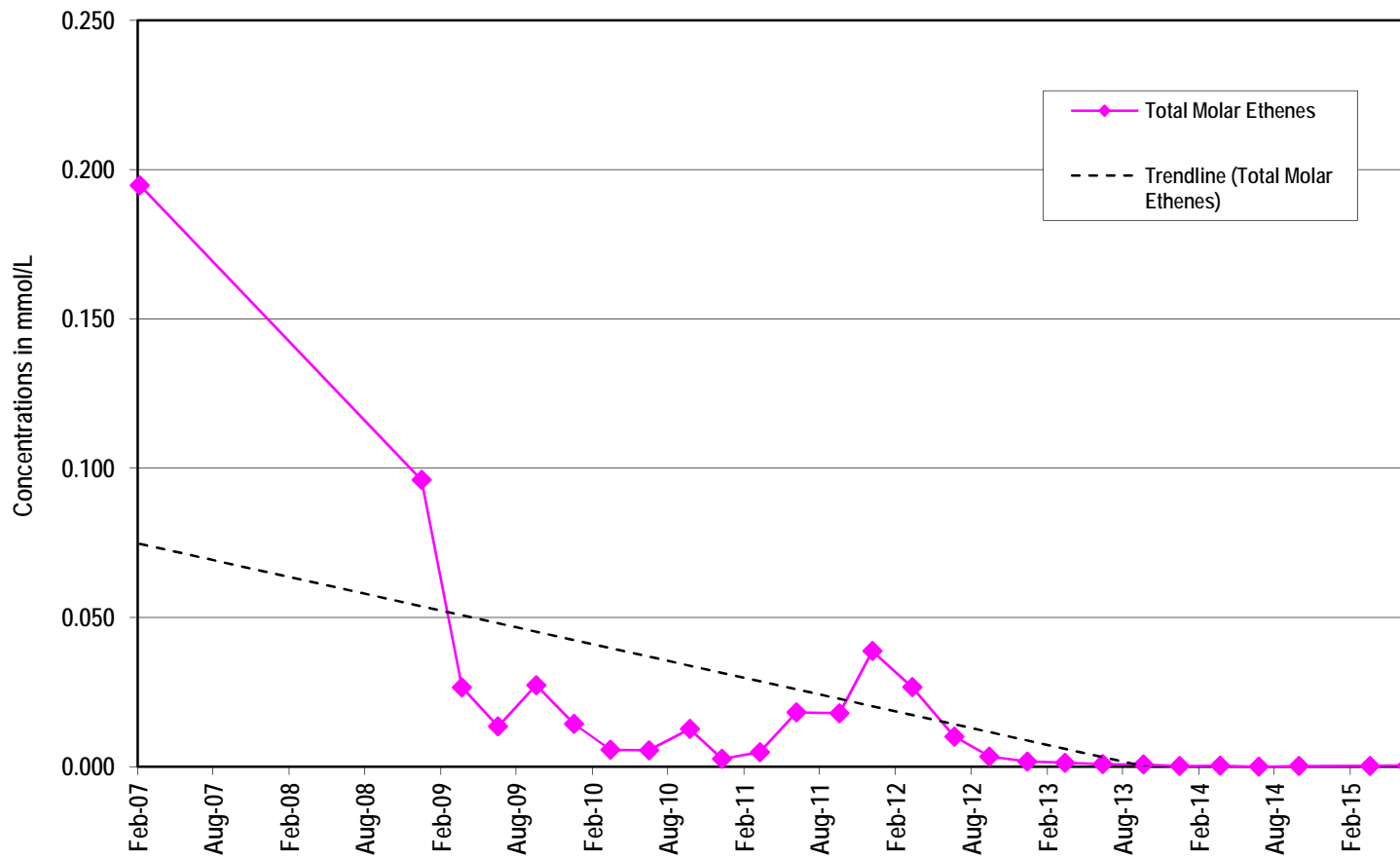
Total Molar Ethenes in MGMS2-40



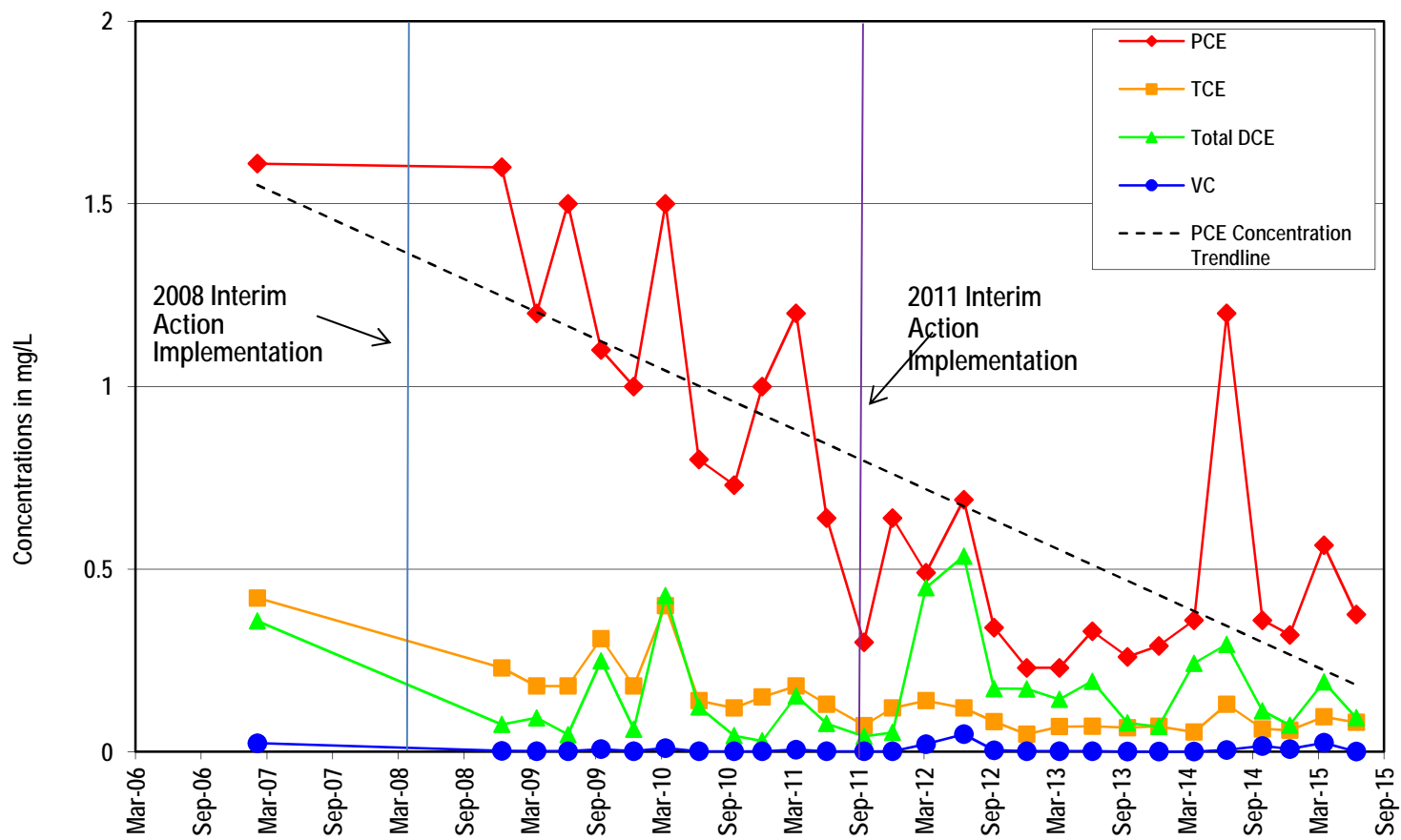
Interim Action Area - VOC Trends: MW-7



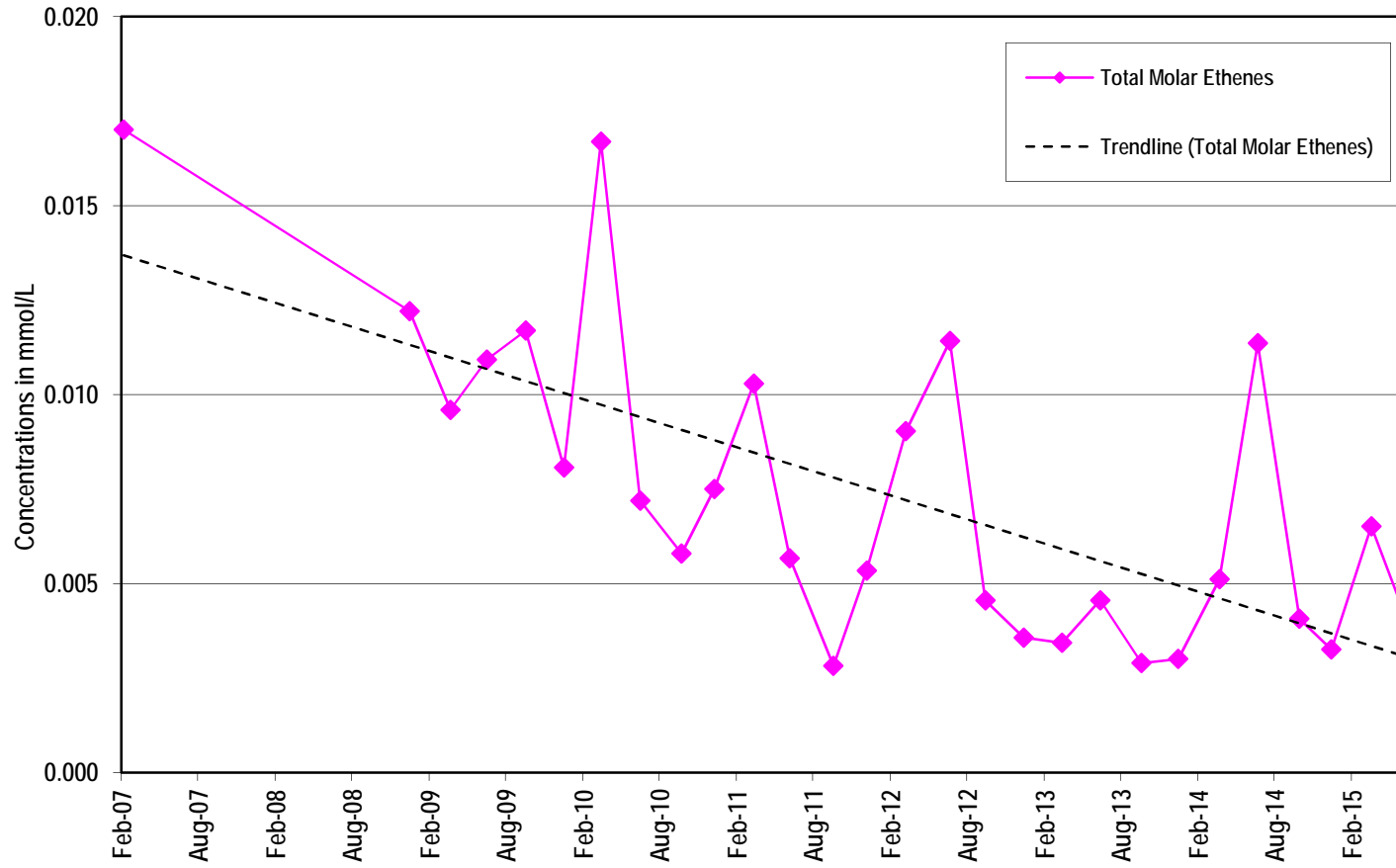
Total Molar Ethenes in MW-7



Interim Action Area - VOC Trends: MP-1

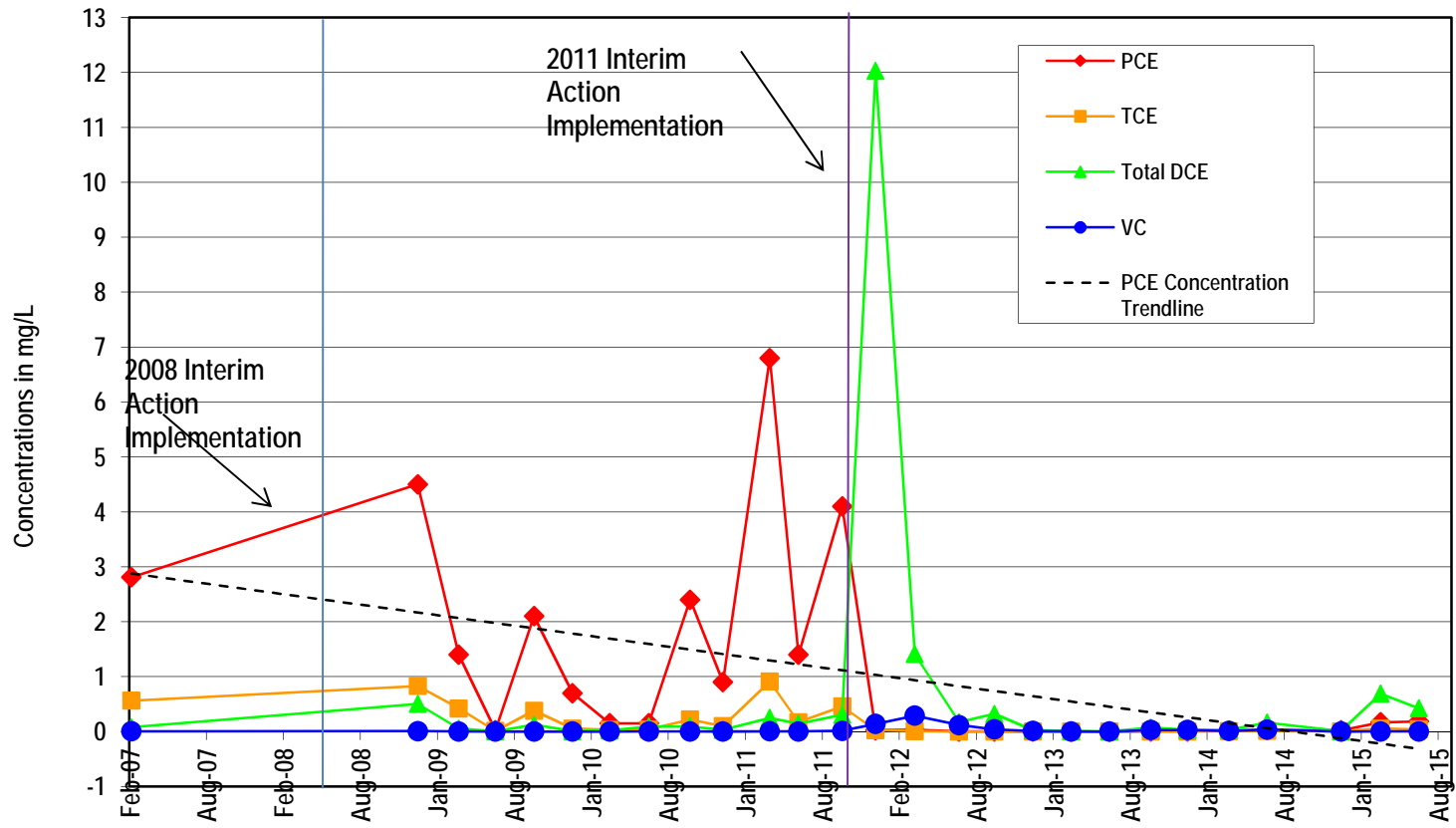


Total Molar Ethenes in MP-1





### Interim Action Area - VOC Trends: EX



Total Molar Ethenes in EX

