



July 31, 2017

Mr. Craig Rankine, Site Manager
Department of Ecology
12121 NE 99th Street, Suite 2100
Vancouver, Washington 98677

Re: Semi-Annual Groundwater Monitoring Report
January through June 2017
NuStar Vancouver Facility
Vancouver, Washington
1126-20

Dear Mr. Rankine:

Enclosed, please find the *Semi-Annual Groundwater Monitoring Report: January through June 2017*. The report was prepared on behalf of NuStar Terminals Services, Inc. (NuStar) by Apex Companies, LLC (Apex) and presents data collected from January through June 2017.

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 blue ink that reads 'Stephanie Bosze Salisbury'.

Stephanie Bosze Salisbury, L.G.
Associate Geologist

ENCLOSURE

Semi-Annual Groundwater Monitoring Report January through June 2017 (2 hard copies)

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



*Semi-Annual Groundwater
Monitoring Report
January through June 2017
NuStar Vancouver Facility
Vancouver, Washington*

Prepared for:
NuStar Terminals Services, Inc.

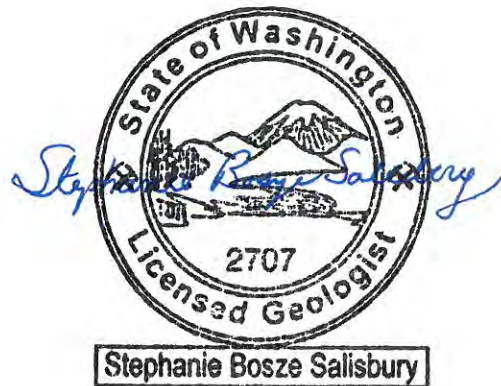
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***Semi-Annual Groundwater Monitoring Report
January through June 2017
NuStar Vancouver Facility
Vancouver, Washington***

Prepared for:
NuStar Terminals Services, Inc.

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

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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 2017. 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 address is 2565 NW Harborside Drive, Port of Vancouver, Vancouver, Washington 98660 (Latitude: N45° 38.26', Longitude: W122° 42.20'). The property is owned by the POV and leased by NuStar. Until 2006, NuStar consisted of a roughly rectangular area with nominal dimensions of 600 by 1,300 feet. In 2006, the leasehold was expanded to include additional area to the north (see Figure 2). The total area is approximately 19 acres, which includes the leasehold extent up to 2006, and the additional leased area after 2006. The NuStar facility is on the north shore of the Columbia River. Land on all other sides is industrial property also owned by the POV. The NuStar facility is located on Clark County Tax Lot Nos.: 151979-000, 502010-002, 502010-000, and a portion of 502020-000, as well as a portion of the Washington Department of Natural Resources tideland area managed by the POV.

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 2017 is summarized in Table 1.

Two monitoring events were conducted during this period: the first quarter 2017 groundwater monitoring event was conducted from March 27 through 31, 2017 and the second quarter 2017 event was conducted from June 12 through 15, 2017.

2.1 Water Level Measurements

First quarter 2017 groundwater levels were measured on March 27, 2017 and second quarter 2017 groundwater levels were measured on June 12, 2017. Monitoring well locations are shown on the Figure 2. Depth to groundwater and groundwater elevation data are summarized on Table 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, and selected off-site wells (MW-14, MW-17, MW-23i, MW-25i, MW-26, MW-30i, MW-31i, MW-F, MW-G, S-1, and S-2).

2.2 Monitoring Well Sampling and Analysis

The sampling and analysis program for first and second quarter 2017 is summarized in Table 1. Groundwater monitoring data sheets for the sampling events are included in Appendix A. For quality assurance/quality control (QA/QC), field blanks, and equipment blanks were prepared and sample duplicates were collected from wells MGMS3-40, MW-7, MW-12, and MW-19 during first quarter 2017 and wells MW-7, MW-12, and MW-19 during second quarter 2017.

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

3.0 Groundwater Elevations

Groundwater elevations and estimated elevation contours for the Shallow and Intermediate Zone wells for the second quarter 2017 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 2017 are shown on Figures 5 and 6, respectively.

3.1 First Quarter 2017

Shallow Zone. On March 27, 2017, 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 12.64 to 23.45 feet below the ground surface (bgs), and the corresponding groundwater elevations in these wells ranged from 10.89 to 18.76 feet above mean sea level (MSL; Figure 3).

During the first quarter 2017 monitoring event, gauging of the Shallow Zone wells was completed between 9:40 am and 12:09 p.m. During the time interval in which Shallow Zone monitoring wells were gauged, the water level in the adjacent Columbia River decreased by 0.066 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.

As shown on Table 2, groundwater elevations increased about ten feet on average from December 2016 to March 2017, reflecting the above average amount of precipitation experienced in the Pacific Northwest during this period. Groundwater elevations in the Shallow Zone were variable, with groundwater highs adjacent to the Columbia River and the typically observed groundwater divide was not evident. The overall groundwater

flow direction was generally towards the north with a northwestern component inland. The hydraulic gradient varied between 0.003 and 0.007 ft/ft.

Intermediate Zone. On March 27, 2017, 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 2 hours (between 11:20 a.m. and 12:49 p.m.). During the time interval in which Intermediate Zone wells were gauged, water levels in the adjacent Columbia River decreased by 0.046 feet.

The observed depths to groundwater in the Intermediate Zone wells ranged from 11.42 to 16.15 feet bgs, and groundwater elevations in these wells ranged from 18.33 to 18.57 feet above MSL (Figure 4). Similar to the shallow zone, groundwater elevations in the Intermediate Zone rose approximately 10 feet from December 2016 to March 2017 (Table 2). During the March 27, 2017 gauging event, groundwater flow was towards the northeast with a generally flat gradient of approximately 0.0003 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 15.53 feet bgs, corresponding to an elevation of 18.38 feet above MSL. A groundwater potentiometric map was not prepared for Deep Zone groundwater.

3.2 Second Quarter 2017

Shallow Zone. On June 12, 2017, 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 16.15 to 24.08 feet bgs, and groundwater elevations in these wells ranged from 12.38 to 15.59 feet above MSL (Figure 5).

During the second quarter 2017 monitoring event gauging of the Shallow Zone wells was completed between 09:08 a.m. and 11:01 a.m., with the exception of the multi-port wells which were gauged shortly thereafter. During the gauging activities, the water level in the adjacent Columbia River decreased by 0.08 feet.

Groundwater elevations were typically two to four feet lower than during the March 2017 event and, as shown on Figure 5, a northwest to southeast trending groundwater divide was observed across the property, with groundwater flow to the northeast on the northern side of the divide and toward the river on the southern side of the divide.

Intermediate Zone. During the June 12, 2017 gauging event, depth-to-groundwater measurements were collected from Intermediate Zone wells within 45 minutes (between 03:15 p.m. and 03:54 p.m.), with the exception of the multi-port wells, which were gauged earlier, and water levels in the adjacent Columbia River

decreased by 0.05 foot. The observed depths to groundwater in Intermediate Zone wells ranged from 15.55 to 20.32 feet bgs, and groundwater elevations in these wells ranged from 14.14 to 14.45 feet above MSL (Figure 6). The groundwater flow during the June gauging event was generally to the northeast with a gradient ranging between 0.0001 and 0.001 ft/ft.

Deep Zone. Depth to water in Deep Zone well MW-24d was 19.45 feet bgs, corresponding to an elevation of 14.46 feet above MSL.

4.0 Groundwater Sample Analytical Results

Complete copies of the laboratory reports for the first and second quarter 2017 groundwater monitoring events, including the quality assurance evaluation report and chain-of-custody documentation, are included in Appendix C.

4.1 First Quarter 2017

The March 2017 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 2017 are summarized in Table 3 and select VOCs are shown on Figure 7.

4.2 Second Quarter 2017

The June 2017 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 2017 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 exhibits a slightly increasing concentration trend. The concentrations in this deeper well have always been variable and relatively low (i.e. PCE ranging from 1 microgram per liter [$\mu\text{g/L}$] to 13 $\mu\text{g/L}$) and it is difficult to identify a discernable concentration trend for the well. Monitoring wells in the source area exhibit concentration decreases of over 97% for tetrachloroethene (PCE) and trichloroethene (TCE) since initiating interim actions in 2008. VOCs in monitoring wells on the periphery or outside of the source area also reflect historical decreasing trends.

5.0 Interim Action Measure Activities

Several interim actions have been implemented at the Facility, including:

- Bioremediation injections for remediation of Facility groundwater and the installation of a soil vapor extraction (SVE) system for the remediation of VOCs in vadose-zone soils in the spring/summer of 2008. These activities are herein referred to as the 2008 interim action.
- Expanding the SVE system and performing additional bioremediation injections during the summer of 2011, which is referred to herein as the 2011 interim action. The 2011 interim action included 17 additional SVE well locations (involving shallow and deeper SVE well pairs at each location) for a total of 34 wells and additional bioremediation injections in and around the 2008 interim action area (shown on Figure 9). 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.
- Performed additional bioremediation injections adjacent to the riverbank at the Facility in accordance with the *2015 Interim Action Work Plan* (Apex, 2016). This work is referred to as the 2016 interim action and an *Interim Action Summary Report* (Apex, 2017) describes the scope and preliminary results.

These interim actions and results to date are described in the following subsections.

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 by 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 2008 and 2011 bioremediation injection locations are shown on Figure 9.

The initial Facility SVE system installed in 2008, 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 11). 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 the *2011 Interim Action Work Plan* (Ash Creek, 2011; Figure 11). 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. Monitoring of the North and South Systems occurs on a monthly basis as described in Section 5.4.2.

5.3 Summary of 2016 Interim Action

NuStar and the Port of Vancouver originally submitted a joint Feasibility Study (FS) to Ecology in March 2014 (Apex and Parametrix, 2014). The FS approval process is ongoing. To avoid potential delays in groundwater treatment while working through the FS and the associated regulatory approval process, NuStar proposed to implement a portion of the recommended remedial action for the NuStar source area as an interim action. The details of the proposed interim action were submitted to Ecology in an *Interim Action Work Plan* on September 15, 2015. After a 30-day public comment period from May 12 to June 10, 2016, the work plan was approved on June 14, 2016. The interim action consisted of bioremediation injections along the southern portion of the NuStar terminal near the seawall. Per Ecology's request, the interim action also included baseline sediment and surface water sampling in the Columbia River. Additionally, enhanced bioremediation injections were implemented in an isolated area to the northwest of the NuStar terminal which has been less responsive to monitored natural attenuation than the VOCs at the NuStar terminal. The "NW Area bioremediation injections" were completed as a joint project between NuStar and the Port of Vancouver.

The NW Area injections were implemented in July 2016 and included the injection of 52,000 gallons of bioremediation oil substrate (EosPro; diluted with water) into the shallow zone groundwater through 30 boreholes in the vicinity of and between (NuStar) monitoring wells MW-14 and MW-26. Figure 10 illustrates the approximate boring locations in the "NW Area". The same substrate material was injected at the NuStar terminal in August and September 2016 and included the injection of 100,000 gallons of EosPro substrate

(diluted with water) into 72 borings along the southern portion of the NuStar facility, adjacent to the seawall. Figure 10 identifies the approximate locations of the injection borings near the NuStar seawall. In accordance with the approved *Interim Action Work Plan*, a summary of the groundwater injection and surface/water sampling activities was provided to Ecology in an *Interim Action Summary Report* on June 29, 2017 (Apex, 2017). The report included the results of the baseline surface water and sediment sampling as well as the results of two quarters of post interim action groundwater monitoring. A brief evaluation of the groundwater monitoring results from the interim action area is summarized in Section 5.4 below.

5.4 Interim Action Monitoring and Evaluation

5.4.1 Enhanced Bioremediation Injections

Groundwater samples collected from wells MP-1, MW-24i, MW-12, MW-13, MW-14, MW-19, MW-26, EX, MGMS3-40, and MGMS1-43 during the first quarter 2017 monitoring event, and from wells MP-1, MW-7, MW-24i, MW-12, EX, and MGMS2-40 during the second quarter 2017 event were analyzed for total organic carbon (TOC) by EPA Method 5310 D and ethene by EPA Method RSK-175M, to evaluate the performance of the bioremediation injections. The TOC and ethene analyses were performed by Pace Analytical.

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 2017 monitoring events. Table 4 shows the results of interim action groundwater monitoring from the February 2007 baseline event through the second quarter 2017 monitoring event. Wells MW-24i and MGMS2-40 were not located within the 2008 interim action injection area but are located within the footprint of the 2011 and 2016 interim action areas; therefore, interim action monitoring data for these wells are only presented from the second quarter 2011 baseline event through second quarter 2017. Wells MW-13, MW-14, MW-19, MW-26, MGMS-1, and MGMS-3 were not located within the 2008 or 2011 interim action areas, but are located in the 2016 interim action area; therefore, monitoring data for those wells are only presented beginning September 2016.

A discussion of reductive dechlorination of VOCs in groundwater from prior to the 2008 interim action through second quarter 2017 is provided below.

VOC Concentrations Evaluation. Bioremediation injections in the primary source area at the Facility were initiated in 2008 and expanded in 2011; bioremediation injections along the riverbank and in the NW Area were initiated in 2016; however, seven injection borings were also installed in the area of wells MP-1 and EX located on the western side of the primary source area in 2016. VOC concentrations are generally decreasing at the Facility and rebound is not occurring in the area of the 2008/2011 interim action. VOC concentrations are also decreasing in the 2016 interim action area. The following paragraphs evaluate the results to date in each of these areas.

Primary Source Area. Concentration trend plots for PCE, TCE, total dichloroethenes (DCE), and vinyl chloride (VC) in 2008/2011 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 2016. The concentration of PCE and TCE has decreased in each well, with observed reductions through June 2017 exceeding 97 percent in each of the four wells, with three of the wells exceeding 99 percent. It should be noted that well MW-7 is not in the 2016 interim action area; however, the groundwater concentrations in well MW-7 have decreased dramatically since the 2008 interim action and, to date, there is no indication of concentrations rebounding.

Another indicator of effective reduction of chlorinated ethenes is a decrease in the total molar chloroethene concentration (the 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 2017 monitoring event, the decrease in total molar concentration in the interim action monitoring wells MP-1, MW-7, EX and MGMS2-40 ranged from 87 percent in well MP-1 to over 99 percent in wells EX, and MW-7.

Riverbank Area. Wells MW-12, MW-13, MW-19, and MGMS3-40 are located within the 2016 riverbank interim action area and concentration trend plots for PCE, TCE, total DCE, and VC in these wells are provided in Appendix F. As shown on the trend plots, preliminary monitoring results from the 2016 interim action area indicate reductions in concentrations of PCE and TCE of up to two orders of magnitude at MW-12, MW-13, MW-19, and MGMS1-43 after the 2016 enhanced bioremediation injections. DCE trends are typically flat to increasing following the 2016 interim action and support that dichlorination of PCE and TCE is occurring and causing a temporary increase in DCE. Future quarterly monitoring will be utilized to further evaluate these concentration trends, both in the Shallow Zone source area as well as outside of the source area treatment zone and in Intermediate Zone groundwater.

NW Area. Wells MW-14 and MW-26 are located within the 2016 NW Area interim action area and concentration trend plots for PCE, TCE, total DCE, and VC in these wells are provided in Appendix F. The trend plots for MW-14 and MW-26 show stable to slight decreasing VOC trends and decreasing molar ethene trends, but to date have not shown a significant response to the 2016 interim action injections. Groundwater gradient is typically flat or to the north/northwest in this interim action area, and the groundwater flow may be slowing the spread of the oil substrate around wells MW-14 and MW-26.

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. While a baseline monitoring event was not intentionally conducted prior to the 2016 injection event, data are available for wells MP-1 and MW-12 for the event prior to the

injections (June 2016) and the two events concurrent with and following the injections (September and December 2016). TOC was further analyzed during the March and June 2017 events at select wells. A discussion of the TOC results is provided below.

Primary Source Area. Seven bioremediation injections were located near well MP-1 during the 2016 interim action. In well MP-1, TOC values increased by over three orders of magnitude between June and September 2016, with concentrations remaining elevated during the December 2016 event. During the March 2017 event, the TOC value remained similar to the December 2016 value at MP-1; however, in the June 2017 event, the TOC value decreased by an order of magnitude. At well EX, the TOC concentration increased by two orders of magnitude following the 2016 interim action and then decreased an order of magnitude during the June 2017 event. These results indicate utilization of the oil substrate in the dechlorination of VOCs, supporting the significant decreases in VOC concentrations observed following the 2016 bioremediation injections in this area.

Bioremediation injections were not performed near wells MW-7 or MGMS2 during the 2016 interim action. At well MW-7, TOC concentrations decreased by an order of magnitude since the June 2016 sampling event. The oil substrate around well MW-7 appears to be depleted; however, VOC concentrations have been stable. The well will continue to be monitored for possible rebound. TOC values at MGMS2-40 have been stable between 2014 and the present.

Riverbank Area. In well MW-12, TOC values increased by over 3 orders of magnitude between June and September 2016, with concentrations remaining elevated during the December 2016 monitoring event. The TOC value in March 2017 decreased by an order of magnitude from the December 2016 event and remained stable for the June 2017 event. At well MW-13, TOC concentrations were high during the September 2016 sampling event, and decreased by two orders of magnitude through the March 2017 event. At well MW-19, TOC values are low and stable, and one to two orders of magnitude below concentrations observed in wells MP-1 and MW-12. Although this well does not have a measurable increase in TOC, concentrations of PCE and TCE are decreasing at this location. At MGMS3-40, TOC concentrations increased during the September and December 2016 groundwater monitoring events, and then decreased by an order of magnitude during the March 2017 event. Concentrations of PCE and TCE are decreasing at this location.

NW Area. At wells MW-14 and MW-26, TOC values are low and stable, and one to two orders of magnitude below concentrations observed in wells MP-1 and MW-12. Concentrations have remained consistent before and after the 2016 interim action injections.

Summary of Enhanced Bioremediation Results Following the 2016 Interim Action. The 2016 groundwater interim action was implemented in July through September 2016 and included over 72 bioremediation injections across the NuStar source area and 30 bioremediation injections at the off-site Northwest Area. Since implementation, groundwater in the 2016 interim action area has been monitored for

three quarters for indicators of reductive dechlorination. The results from the first and second quarter 2017 events provide preliminary indication that enhanced reductive dechlorination is occurring at the Facility in response to the interim action, as follows:

- Observed trends in breakdown product concentrations are consistent with reductive dechlorination of chlorinated ethene compounds
- PCE and TCE concentrations in wells located within the 2016 treatment area show steady and significant decreases. DCE and VC concentrations generally increased or stayed approximately the same in these wells, supporting that dechlorination of PCE and TCE is occurring and has led to an anticipated short-term increase in the daughter product concentrations in the wells within the treatment zone.
- Total molar ethene concentrations from wells located within the 2016 treatment area have also decreased, indicating that VOC mass is being significantly reduced.
- Up to one to two order of magnitude reductions of PCE and TCE concentrations in the 2016 interim action area have been observed between the September 2016 and June 2017 monitoring events.

5.4.2 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). 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 30, February 28, March 28, April 24, and May 24 during this reporting period. North SVE System operating and analytical data are provided in Tables 5 and 6, respectively. South SVE System operating data and analytical are provided in Tables 7 and 8, respectively.

During the December 28, 2016 monitoring event, a valve on the South SVE system was observed as damaged, prohibiting the field staff from taking accurate effluent measurements and samples. The South SVE system was shut down and the part was repaired during the month of January 2017. During the January 30, 2017 monitoring event, the system was restarted and sampled; results from the sampling are included on Table 8.

During the second quarter 2017, the south SVE system was not operational because the knockout drum and associated valve were not functioning. Therefore, SVE effluent samples were not collected during this period. A replacement stainless steel knockout drum was fabricated in June 2017 and was installed on July 6, 2017.

During the May 24 monitoring event, the north SVE system was not operating because the blower motor failed. The rotor is locked and blown fuses were noted on two of the three legs. A replacement blower is required to return the North SVE system to operation. The terminal is planning modifications to the rail alignment at the Facility to accommodate modifications to one of its storage areas; part of the planned work will require the abandonment and potential relocation of several of the SVE wells in the north system. The project is anticipated to be initiated in third quarter 2017 and repair of the north SVE system will be incorporated into this work.

SVE System Mass Removal. The approximate VOC mass removed by the North and South SVE Systems through June 2017 is presented in Tables 9 and 10 and on Figures 11 and 12, respectively. The North and South Systems have removed approximately 232 and 2,886 pounds of VOCs, respectively, since startup in October 2011. Including the mass removed from the 2008 SVE System, the total mass removal by SVE at the Facility to date is approximately 6,268 pounds.

6.0 Future Activities

Quarterly groundwater monitoring for the third and fourth quarters of 2017 will be conducted in September and December, respectively. The proposed sampling will be completed in accordance with the GWMP (Ash Creek, 2008). SVE operations and maintenance will occur monthly in accordance with the schedule proposed in the *2011 Interim Action Evaluation Report* (Ash Creek, 2012) at the South SVE system only until the North SVE system is repaired.

A Draft Revised NuStar – Port of Vancouver Feasibility Study (FS) was submitted to Ecology on January 19, 2017. Comments on the FS were received from Ecology on April 12, 2017 and revisions to the FS are in discussion.

7.0 References

Apex Companies, LLC (Apex). *First Semi-Annual Groundwater Monitoring Report, January through June 2013. NuStar Vancouver Facility Vancouver, Washington.* August 14, 2013.

Apex, 2016. *2015 Interim Action Work Plan.* NuStar Vancouver Facility. Vancouver, Washington. April 15, 2016.

Apex, 2017. *Interim Action Summary Report.* NuStar Vancouver Facility. Vancouver, Washington. June 29, 2017.

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Table 1
 Groundwater Monitoring Plan: First and Second Quarters 2017
 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-31i	Intermediate	<input type="checkbox"/>	<input type="checkbox"/>
	MW-32s	Shallow	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-32i	Intermediate	<input checked="" 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 2017
 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: 2016-2017
 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)	09/26/16	28.92	3.68
	12/12/16	24.68	7.92
	03/27/17	14.17	18.43
	06/12/17	17.79	14.81
MW-2 (34.04)	09/26/16	30.52	3.52
	12/12/16	26.34	7.70
	03/27/17	16.04	18.00
	06/12/17	19.38	14.66
MW-3 (34.41)	09/26/16	30.22	4.19
	12/12/16	26.48	7.93
	03/27/17	16.77	17.64
	06/12/17	19.18	15.23
MW-5 (33.86)	09/26/16	29.50	4.36
	12/12/16	25.99	7.87
	03/27/17	16.94	16.92
	06/12/17	18.54	15.32
MW-6 (32.83)	09/26/16	28.50	4.33
	12/12/16	24.65	8.18
	03/27/17	15.10	17.73
	06/12/17	17.79	15.04
MW-7 (33.74)	09/26/16	29.20	4.54
	12/12/16	26.04	7.70
	03/27/17	16.93	16.81
	06/12/17	18.36	15.38
MW-8 (33.97)	09/26/16	28.54	5.43
	12/12/16	26.00	7.97
	03/27/17	17.60	16.37
	06/12/17	18.74	15.23
MW-9 (33.86)	09/26/16	29.27	4.59
	12/12/16	26.21	7.65
	03/27/17	17.25	16.61
	06/12/17	18.53	15.33
MW-10 (34.83)	09/26/16	29.01	5.82
	12/12/16	26.75	8.08
	03/27/17	19.44	15.39
	06/12/17	19.51	15.32

Please refer to notes at end of table.

Table 2
 Groundwater Elevation Data: 2016-2017
 NuStar Vancouver Facility
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-12 (31.43)	09/26/16	27.34	4.09
	12/12/16	23.44	7.99
	03/27/17	13.05	18.38
	06/12/17	16.55	14.88
MW-13 (33.15)	09/26/16	28.74	4.41
	12/12/16	25.38	7.77
	03/27/17	14.99	18.16
	06/12/17	17.80	15.35
MW-14 (33.81)	09/26/16	29.27	4.54
	12/12/16	26.15	7.66
	03/27/17	17.14	16.67
	06/12/17	18.51	15.30
MW-15 (39.13)	09/26/16	34.20	4.93
	12/12/16	31.75	7.38
	03/27/17	22.50	16.63
	06/12/17	24.08	15.05
MW-16 (33.05)	09/26/16	29.60	3.45
	12/14/16	24.85	8.20
	03/27/17	14.95	18.10
	06/12/17	18.60	14.45
MW-17 (32.65)	09/26/16	28.35	4.30
	12/12/16	24.76	7.89
	03/27/17	14.72	17.93
	06/12/17	17.60	15.05
MW-18i (33.40)	09/26/16	30.34	3.06
	12/12/16	25.71	7.69
	03/27/17	14.98	18.42
	06/12/17	19.15	14.25
MW-19 (33.59)	09/26/16	29.18	4.41
	12/12/16	25.91	7.68
	03/27/17	15.98	17.61
	06/12/17	18.42	15.17
MW-19i (33.62)	09/26/16	30.65	2.97
	12/12/16	25.99	7.63
	03/27/17	15.20	18.42
	06/12/17	19.42	14.20

Please refer to notes at end of table.

Table 2
 Groundwater Elevation Data: 2016-2017
 NuStar Vancouver Facility
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-20i (33.14)	09/26/16	30.13	3.01
	12/12/16	25.50	7.64
	03/27/17	14.77	18.37
	06/12/17	18.97	14.17
MW21i-40 (34.10)	09/26/16	31.11	2.99
	12/12/16	26.44	7.66
	03/27/17	15.75	18.35
	06/12/17	19.96	14.14
MW-21i-105 (33.99)	09/26/16	30.98	3.01
	12/12/16	26.31	7.68
	03/27/17	15.64	18.35
	06/12/17	19.77	14.22
MW-22i (34.39)	09/26/16	31.28	3.11
	12/12/16	26.69	7.70
	03/27/17	16.01	18.38
	06/12/17	20.19	14.20
MW-23i (33.80)	09/26/16	30.95	2.85
	12/12/16	26.17	7.63
	03/27/17	15.35	18.45
	06/12/17	19.60	14.20
MW-24i (33.47)	09/26/16	30.68	2.79
	12/12/16	26.12	7.35
	03/27/17	14.98	18.49
	06/12/17	19.26	14.21
MW-25i (33.58)	09/26/16	30.72	2.86
	12/12/16	25.92	7.66
	03/27/17	15.22	18.36
	06/12/17	19.40	14.18
MW-26 (33.73)	09/26/16	29.15	4.58
	12/12/16	26.22	7.51
	03/27/17	17.76	15.97
	06/12/17	18.40	15.33
MW-24d (33.91)	09/26/16	30.58	3.33
	12/12/16	26.04	7.87
	03/27/17	15.53	18.38
	06/12/17	19.45	14.46

Please refer to notes at end of table.

Table 2
 Groundwater Elevation Data: 2016-2017
 NuStar Vancouver Facility
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
EW-1 (31.40)	09/26/16	27.54	3.86
	12/12/16	23.40	8.00
	03/27/17	12.64	18.76
	06/12/17	16.83	14.57
<i>Secor Interim Action Pilot Study Wells</i>			
S-1 (33.24)	09/26/16	30.39	2.85
	12/12/16	25.52	7.72
	03/27/17	14.81	18.43
	06/12/17	19.03	14.21
S-2 (33.15)	09/26/16	29.59	3.56
	12/12/16	25.44	7.71
	03/27/17	14.76	18.39
	06/12/17	18.71	14.44
<i>Multi-Level Monitoring Wells</i>			
MGMS1-3 (43)* (32.86)	09/26/16	28.73	4.13
	12/12/16	22.96	9.90
	03/27/17	15.04	17.82
	06/12/17	17.91	14.95
MGMS1-2(60)* (32.86)	09/26/16	30.10	2.76
	12/12/16	23.23	9.63
	03/27/17	14.41	18.45
	06/12/17	18.48	14.38
MGMS1-1(110)* (32.86)	09/26/16	30.11	2.75
	12/12/16	23.12	9.74
	03/27/17	14.38	18.48
	06/12/17	18.48	14.38
MGMS2-4(40)* (32.59)	09/26/16	28.19	4.40
	12/12/16	24.36	8.23
	03/27/17	15.11	17.48
	06/12/17	17.00	15.59
MGMS2-3(60)* (32.59)	09/26/16	29.68	2.91
	12/12/16	24.91	7.68
	03/27/17	14.05	18.54
	06/12/17	18.14	14.45
MGMS2-2(110)* (32.59)	09/26/16	29.7	2.89
	12/12/16	24.71	7.88
	03/27/17	13.98	18.61
	06/12/17	18.15	14.44

Please refer to notes at end of table.

Table 2
 Groundwater Elevation Data: 2016-2017
 NuStar Vancouver Facility
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MGMS2-1(132)* (32.59)	09/26/16	29.65	2.94
	12/12/16	24.91	7.68
	03/27/17	14.02	18.21
	06/12/17	18.19	14.40
MGMS3-4(40)* (31.65)	09/26/16	28.42	3.23
	12/12/16	24.06	7.59
	03/27/17	15.11	16.54
	06/12/17	16.19	15.46
MGMS3-3(60)* (31.65)	09/26/16	28.92	2.73
	12/12/16	23.93	7.72
	03/27/17	13.08	18.57
	06/12/17	17.35	14.30
MGMS3-2(101)* (31.65)	09/26/16	28.91	2.74
	12/12/16	24.05	7.60
	03/27/17	13.09	18.56
	06/12/17	17.32	14.33
MGMS3-1(132)* (31.65)	09/26/16	28.93	2.72
	12/12/16	24.11	7.54
	03/27/17	13.03	18.62
	06/12/17	17.29	14.36
<i>Port of Vancouver Wells</i>			
MW-30i (29.77)	09/26/16	26.74	3.03
	12/12/16	22.13	7.64
	03/27/17	11.42	18.35
	06/12/17	15.55	14.22
MW-31i** (31.33)	09/26/16	31.36	-0.03
	12/12/16	26.84	4.49
	03/27/17	16.15	15.18
	06/12/17	20.32	11.01
MW-32s (34.34)	09/26/16	30.35	3.99
	12/14/16	26.18	8.16
	03/27/17	23.45	10.89
	06/12/17	19.44	14.90
MW-32i (34.41)	09/26/16	31.28	3.13
	12/14/16	26.50	7.91
	03/27/17	16.08	18.33
	06/12/17	20.22	14.19

Please refer to notes at end of table.

Table 2
 Groundwater Elevation Data: 2016-2017
 NuStar Vancouver Facility
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-E ** (30.64)	09/26/16	26.89	3.75
	12/12/16	Well not found;	under asphalt.
	03/27/17	14.39	16.25
	06/12/17	18.26	12.38
MW-F (33.48)	09/26/16	31.02	2.46
	12/12/16	26.43	7.05
	03/27/17	15.65	17.83
	06/12/17	19.64	13.84
MW-G (31.50)	09/26/16	29.37	2.13
	12/12/16	24.77	6.73
	03/27/17	13.92	17.58
	06/12/17	17.99	13.51

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. NM = Not measured.
5. The casing has been modified at Port of Vancouver wells MW-E and MW-31i. The TOC elevation has not yet been re-surveyed, so groundwater elevation data for these wells is likely inaccurate.

Table 3
Groundwater Analytical Results: 2016-2017
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 µg/L (ppb)														
MW-1	9/27/2016	<0.50	<2.0	<0.50	<0.50	8.6	<0.50	<0.50	25.2	<0.50	<0.50	2.3	<0.50	<0.50	3.1	23.9
	12/16/2016	<0.50	<2.0	<0.50	<0.50	3.4	<0.50	<0.50	22.5	<0.50	<0.50	8.0	<0.50	<0.50	5.8	0.86
	3/30/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	4.6	<0.50	<0.50	1.6	<0.50
	6/12/2017	<2.0	<2.0	<0.50	<0.50	2.1	<1.0	<0.50	9.9	<0.50	<0.50	4.4	<0.50	<0.50	3.1	<0.50
MW-2	9/23/2015	<0.50	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/7/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/29/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-3	9/30/2016	<0.50	<2.0	0.67	<0.50	8.2	0.73	<0.50	95.3	1.5	1.6	145	2.0	<0.50	40.1	<0.50
	12/16/2016	<0.50	<2.0	0.52	<0.50	1.1	<0.50	<0.50	26.8	0.90	0.57	86.2	1.2	<0.50	23.9	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	7.1	1.3	<0.50	77.9	1.2	<0.50	67.6	0.64	<0.50	20.2	2.5
	6/14/2017	<2.0	<2.0	1.0	<0.50	2.1	<1.0	<0.50	39.0	1.5	<0.50	163	1.7	<0.50	30.4	<0.50
MW-5	9/29/2016	<5.0	<20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	<0.50	11.5	<0.50	<0.50	2.5	1.1
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	8.4	<0.50	<0.50	6.5	<0.50	<0.50	5.8	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	4.2	<0.50	<0.50	16.3	<0.50	<0.50	6.8	<0.50
MW-6	9/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/7/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/28/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-7	9/29/2016	<0.50	<2.0	<0.50	<0.50	1.1	<0.50	<0.50	10.9	<0.50	<0.50	<0.50	<0.50	<0.50	5.5	5.5
	9/29/2016 DUP	<0.50	<2.0	<0.50	<0.50	1.1	<0.50	<0.50	10.9	<0.50	<0.50	<0.50	<0.50	<0.50	6.0	5.5
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	9.2	<0.50	<0.50	0.65	<0.50	<0.50	<0.50	0.98
	12/14/2016 DUP	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	9.4	<0.50	<0.50	0.78	<0.50	<0.50	<0.50	1.0
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	0.73	<0.50
	3/28/2017 DUP	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	0.69	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	2.5
6/14/2017 DUP	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	
MW-8	9/27/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	<0.50	<0.50
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	35.7	0.96	<0.50	2.3	<0.50	<0.50	0.57	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	14.3	<0.50	<0.50	4.3	<0.50	<0.50	0.56	<0.50

Please refer to notes at end of table.

Table 3
Groundwater Analytical Results: 2016-2017
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 µg/L (ppb)														
MW-9	9/29/2016	<0.50	<2.0	<0.50	<0.50	1.2	<0.50	<0.50	39.3	1.8	<0.50	192	2.5	<0.50	91.9	0.76
	12/14/2016	<0.50	<2.0	<0.50	<0.50	1.3	<0.50	<0.50	59.7	1.6	<0.50	75.8	1.1	<0.50	44.9	0.52
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	27.9	0.89	<0.50	12.5	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	17.5	0.60	<0.50	104	1.3	<0.50	47.2	<0.50
MW-10	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	1.6	<0.50
	3/7/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	<0.50
	9/27/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	1.4	<0.50
	3/30/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	1.5	<0.50
MW-12	9/27/2016	<10.0	<40	<10.0	<10.0	26 D	<10.0	<10.0	525 D	<10.0	<10.0	67.6 D	<10.0	<10.0	45.4 D	14.8
	9/27/2016 DUP	<2.5	<10.0	<2.5	<2.5	44.4 D	<2.5	11.5	867 D	11.4	<2.5	387 D	3.9	<2.5	163 D	22.6
	12/14/2016	<1.0	<4	<1.0	<1.0	<1.0	<1.0	<1.0	6.9 D	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	20.5
	12/14/2016 DUP	<2.5	29.1	<2.5	<2.5	16.5	<2.5	4.7	744 D	<2.5	<2.5	62.3	<2.5	<2.5	42.2	21.2
	3/30/2017	<10.0	<40	<10.0	<10.0	<10.0	<10.0	<10.0	1,120	<10.0	<10.0	55.9	<10.0	<10.0	29.6	<37.8
	3/30/2017 DUP	<2.5	<10.0	<2.5	<2.5	11.4	<2.5	3.8	853	6.1	<2.5	49.0	<2.5	<2.5	26.0	28.3
	6/12/2017	<3.1	<12.5	<3.1	<3.1	14.0	<3.1	4.7	893 J	7.6	<3.1	42.4	<3.1	<3.1	18.1	48.4
6/12/2017 DUP	<3.1	<12.5	<3.1	<3.1	12.8	<3.1	<3.1	860	7.1	<3.1	40.0	<3.1	<3.1	16.5	47.4	
MW-13	9/28/2016	<25	<100	<25	<25	<2.5	<2.5	<25	148	<25	<25	4,840	<25	<25	895	<25
	9/28/16 DUP	<25	<100	<25	<25	<2.5	<2.5	<25	145	<25	<25	5,090	<25	<25	951	<25
	12/16/2016	<5.0	<20	<5.0	<5.0	<5.0	<5.0	<5.0	509	<5.0	<5.0	1,020	<5.0	<5.0	394	<5.0
	3/30/2017	<5.0	<20	<5.0	<5.0	<5.0	<5.0	<5.0	101	<5.0	<5.0	176	<5.0	<5.0	57.6	<5.0
	6/15/2017	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	1.2	272	1.6	<1.0	97.7	<1.0	<1.0	56.3	4.1
MW-14	9/27/2016	<0.50	<2.0	<0.50	<0.50	7.2	<0.50	2.1	61.8	0.94	<0.50	100	1.7	<0.50	218	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	0.56	<0.50	<0.50	0.97	<0.50
	3/27/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	0.57	69.2	<0.50	<0.50	14.7	<0.50	<0.50	33.4	0.62
	6/13/2017	<2.0	<2.0	<0.50	<0.50	10	<1.0	5.3	432	2.7	<0.50	58.3	2.1	<0.50	204	2.5
MW-15	9/23/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50
	3/8/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	<0.50	<0.50	<0.50	<0.50
	9/30/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	<0.50
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-16	9/28/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	9.5	<0.50	<0.50	144	0.66	<0.50	35.6	<0.50
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	51.5	<0.50	<0.50	11.6	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	1.6	<0.50	<0.50	19.0	<0.50	<0.50	27.0	<0.50	<0.50	6.4	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	6.4	<0.50	<0.50	53.7	0.66	<0.50	5.4	<0.50

Please refer to notes at end of table.

Table 3
Groundwater Analytical Results: 2016-2017
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 µg/L (ppb)														
MW-17	9/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	2.5	<0.50	<0.50	4.2	<0.50
	3/8/2016	<0.50	<2.0	<0.50	<0.50	0.83	<0.50	<0.50	3.3	<0.50	<0.50	9.4	<0.50	<0.50	22.7	<0.50
	9/27/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	4.2	<0.50	<0.50	10.4	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-18i	9/28/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	0.85	<0.50
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	1.5	<0.50	<0.50	1.2	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	1.4	<0.50	<0.50	1.2	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	0.66	<0.50
MW-19	9/26/2016	<5.0	<20	<5.0	<5.0	10.4	<5.0	11	235	<5.0	<5.0	1,520	14.5	<5.0	592	10.1
	12/12/2016	<5.0	<20	<5.0	<5.0	72.8	<5.0	11.2	1,030	10.7	<5.0	1,730	10.9	<5.0	812	28.2
	12/12/2016 DUP	<2.5	<10.0	<2.5	<2.5	78.7	<2.5	14.2	1,010	11.6	<2.5	1,530	15.5	<2.5	975	31.9
	3/28/2017	<5.0	<20	<5.0	<5.0	197	<5.0	25.5	1,930	19.7	<5.0	664	17.0	<5.0	826	58.5
	3/28/2017 DUP	<5.0	<20	<5.0	<5.0	214	<5.0	26.7	1,990	21.5	<5.0	755	19.9	<5.0	896	63.2
	6/14/2017	<2.5	<10	<2.5	<2.5	40.6	<2.5	15.4	481	6.1	<2.5	531	8.1	<2.5	481	16.5
6/14/2017 DUP	<2.5	<10	<2.5	<2.5	41.8	<2.5	15.8	486	6.2	<2.5	566	8.2	<2.5	506	17.2	
MW-19i	9/28/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-20i	9/28/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	8.7	<0.50	<0.50	4.0	<0.50	<0.50	2.2	<0.50
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	5.6	<0.50	<0.50	1.5	<0.50	<0.50	0.84	<0.50
MW-21i-105	9/26/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	11.7	<0.50	<0.50	5.8	<0.50	<0.50	5.1	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	5.7	<0.50	<0.50	2.9	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	4.7	<0.50	<0.50	7.6	<0.50	<0.50	4.1	<0.50
MW-21i-40	9/26/2016	<0.50	<2.0	<0.50	<0.50	2.6	<0.50	0.87	77.2	<0.50	<0.50	20.1	<0.50	<0.50	19.8	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	2.4	<0.50	0.83	74.2	<0.50	<0.50	21.4	<0.50	<0.50	19.4	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	2.6	<0.50	0.91	87.6	0.58	<0.50	21.8	<0.50	<0.50	16.2	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	2.3	<1.0	0.63	63.6	0.56	<0.50	24.1	<0.50	<0.50	15.1	<0.50

Please refer to notes at end of table.

Table 3
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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 µg/L (ppb)														
MW-22i	9/28/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	8.1	<0.50	<0.50	1.3	<0.50	<0.50	9.0	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	8.6	<0.50	<0.50	2.0	<0.50	<0.50	10.2	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	10.0	<0.50	<0.50	1.1	<0.50	<0.50	9.7	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	9.6	<0.50	<0.50	0.63	<0.50	<0.50	6.2	<0.50
MW-23i	9/27/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/27/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-24i	9/28/2016	<0.50	<2.0	<0.50	<0.50	0.53	<0.50	<0.50	5.4	<0.50	<0.50	5.8	<0.50	<0.50	3.1	<0.50
	12/12/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.70	<0.50	<0.50	1.0	<0.50	<0.50	<0.50	<0.50
	6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	3.2	<0.50	<0.50	6.6	<0.50	<0.50	2.8	<0.50
MW-24d	9/30/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/12/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/15/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-25i	9/29/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.81	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-26	9/27/2016	<0.50	<2.0	<0.50	<0.50	3.9	<0.50	1.1	61.1	1.6	<0.50	160	2.4	<0.50	288	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	8.9	<0.50	2.4	85.9	2.0	<0.50	167	3.3	<0.50	410	<0.50
	3/29/2017	<5.0	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	170	<5.0	<5.0	214	<5.0	<5.0	452	<5.0
	6/13/2017	<2.0	<2.0	<0.50	<0.50	6.7	<1.0	1.9	113	2.0	<0.50	160	2.1	<0.50	311 E, J	0.65
MW-32s	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/14/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
EW-1	9/21/2015	<0.50	<0.50	2.0	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	45.3	0.56	<0.50	12.5	<0.50
	3/8/2016	<0.50	<2.0	2.0	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	<0.50	62.6	0.83	<0.50	14.3	<0.50
	9/29/2016	<0.50	<2.0	1.1	<0.50	<0.50	1.5	<0.50	5.4	<0.50	<0.50	38.6	<0.50	<0.50	10.5	<0.50
	3/30/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.7	<0.50	<0.50	2.4	<0.50

Please refer to notes at end of table.

Table 3
Groundwater Analytical Results: 2016-2017
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 µg/L (ppb)														
S-1	9/27/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	0.73	<0.50	<0.50	3.0	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	0.54	<0.50	<0.50	1.6	<0.50
	3/27/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
S-2	9/26/2016	<0.50	<2.0	<0.50	<0.50	6.2	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2.0	<0.50	<0.50	3.5	<0.50	<0.50	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/27/2017	<0.50	<2.0	<0.50	<0.50	2.6	<0.50	<0.50	4.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/13/2017	<2.0	<2.0	<0.50	<0.50	3.3	<1.0	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MGMS1-3(43)	9/30/2016	<8.3	<33.3	<8.3	<8.3	81.9	<8.3	13.5	1,980	24.2	<8.3	230	<8.3	<8.3	366	52
	12/16/2016	<8.4	<33.4	<8.4	<8.4	92.6	<8.4	9.5	1,810	20.1	<8.4	64.1	<8.4	<8.4	171	239
	3/31/2017	<8.4	<33.4	<8.4	<8.4	90.8	<8.4	12.5	1,430	15.2	<8.4	45.8	<8.4	<8.4	119	348
	6/12/2017	<8.3	<33.3	<8.3	<8.3	173	<8.3	16.7	2,620	18.7	<8.3	24.4	<8.3	<8.3	116	681
MGMS1-2(60)	9/30/2016	<0.50	<2.0	<0.50	<0.50	0.89	<0.50	<0.50	17.7	<0.50	<0.50	22.5	<0.50	<0.50	17.6	<0.50
	12/16/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	7.6	<0.50	<0.50	4.7	<0.50
	3/31/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	15.6	<0.50	<0.50	13.6	<0.50	<0.50	13.2	<0.50
	6/12/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	6.0	<0.50	<0.50	12.8	<0.50	<0.50	7.1	<0.50
MGMS1-1(110)	3/19/2015	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	0.69	126	<0.50	<0.50	23.7	<0.50	<0.50	41.5	0.82
	9/21/2015	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	49	<0.50	<0.50	19.4	<0.50	<0.50	20.4	<0.50
	9/30/2016	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	56.7	<0.50	<0.50	18.4	<0.50	<0.50	28.7	<0.50
	3/31/2017	<0.50	<2.0	<0.50	<0.50	13.3	<0.50	1.1	328	<0.50	<0.50	20.1	<0.50	<0.50	62.0	6.5
MGMS2-4(40)	9/29/2016	<5.0	<20	<5.0	<5.0	12.1	<5.0	<5.0	115	<5.0	<5.0	33	<5.0	<5.0	25	142
	12/16/2016	<0.50	<2.0	<0.50	<0.50	10.3	<0.50	<0.50	5.2	<0.50	<0.50	2.6	<0.50	<0.50	1.9	2.0
	3/31/2017	<0.50	<2.0	<0.50	<0.50	57.6	<0.50	14.3	236	0.60	<0.50	4.3	<0.50	<0.50	14.4	235
	6/15/2017	<0.50	<2.0	<0.50	<0.50	38.6	<0.50	3.5	46.2	<0.50	<0.50	5.1	<0.50	<0.50	4.9	98.9
MGMS2-3(60)	9/30/2016	<0.50	<2.0	<0.50	<0.50	2.0	<0.50	<0.50	40	<0.50	<0.50	9.6	<0.50	<0.50	11.5	9.6
	12/16/2016	<0.50	<2.0	<0.50	<0.50	1.7	<0.50	<0.50	35.3	<0.50	<0.50	40.7	<0.50	<0.50	24.8	1.4
	3/31/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	18.5	<0.50	<0.50	26.0	<0.50	<0.50	11.2	0.75
	6/15/2017	<2.0	<2.0	<0.50	<0.50	0.88	<1.0	<0.50	20.7	<0.50	<0.50	40.4	<0.50	<0.50	17.3	1.3
MGMS2-2(110)	9/25/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15.3	<0.50	<0.50	9.4	<0.50	<0.50	5.9	4.1
	3/9/2016	<0.50	<2.0	<0.50	<0.50	0.73	<0.50	<0.50	22.6	<0.50	<0.50	7.1	<0.50	<0.50	8.0	10
	9/29/2016	<0.50	<2.0	<0.50	<0.50	0.62	<0.50	<0.50	16.8	<0.50	<0.50	6.5	<0.50	<0.50	6.3	5.8
	3/31/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	19.5	<0.50	<0.50	6.4	<0.50	<0.50	6.6	6.4

Please refer to notes at end of table.

Table 3
Groundwater Analytical Results: 2016-2017
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 µg/L (ppb)														
MGMS2-1(132)	9/25/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20.5	<0.50	<0.50	6.7	<0.50	<0.50	5.2	4.6
	3/9/2016	<0.50	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	36.8	<0.50	<0.50	7.9	0.69	<0.50	10.7	12.4
	9/29/2016	<0.50	<2.0	<0.50	<0.50	0.70	<0.50	<0.50	31.4	<0.50	<0.50	6.4	<0.50	<0.50	7.9	8.2
	3/31/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	15.6	<0.50	<0.50	5.2	<0.50	<0.50	4.7	4.8
MGMS3-4(40)	9/30/2016	<0.50	<2.0	<0.50	<0.50	4.1	<0.50	0.54	226	1.8	<0.50	1.7	<0.50	<0.50	1.3	45.8
	9/30/2016 DUP	<0.50	<2.0	<0.50	<0.50	4.5	<0.50	0.60	219	2.0	<0.50	1.5	<0.50	<0.50	1.4	52.1
	12/16/2016	<0.50	<2.0	<0.50	<0.50	1.0	<0.50	<0.50	1.3	0.97	<0.50	0.63	<0.50	<0.50	<0.50	0.88
	3/28/2017	<0.50	<2.0	<0.50	<0.50	22.5	0.68	2.8	979	5.5	<0.50	1.4	<0.50	<0.50	0.60	257
	3/28/2017 DUP	<2.5	<10.0	<2.5	<2.5	20.7	<2.5	3.3	1,050	6.0	<2.5	<2.5	<2.5	<2.5	<2.5	323
6/12/2017	<0.50	<2.0	<0.50	<0.50	3.3	<0.50	<0.50	1.7	<0.50	<0.50	0.97	<0.50	<0.50	<0.50	<0.50	
MGMS3-3(60)	9/30/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	3.7	<0.50	<0.50	1.9	<0.50
	12/16/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	1.7	<0.50	<0.50	0.68	<0.50
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50
	6/12/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.3	<0.50	<0.50	0.64	<0.50
MGMS3-2(110)	9/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	3.8	<0.50	<0.50	2.6	1.2
	3/9/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	7.3	<0.50	<0.50	7.5	<0.50	<0.50	6.1	<0.50
	9/30/2016	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	<0.50	4.4	<0.50	<0.50	3.0	<0.50
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	7.0	<0.50	<0.50	7.0	<0.50	<0.50	6.0	<0.50
MGMS3-1(132)	9/22/2015	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	13.3	<0.50	<0.50	8.1	<0.50	<0.50	8.2	1.2
	3/9/2016	<0.50	<2.0	<0.50	<0.50	1.0	<0.50	0.56	14.4	<0.50	<0.50	13.5	0.56	<0.50	12.7	0.8
	9/30/2016	<0.50	<2.0	<0.50	<0.50	0.84	<0.50	0.54	12.9	<0.50	<0.50	13.8	<0.50	<0.50	11.9	<0.50
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	7.9	<0.50	<0.50	13.8	<0.50	<0.50	9.6	<0.50
EX-1	9/28/2016	<1.7	<6.7	<1.7	<1.7	4.6	<1.7	3.5	2,230	3.8	<1.7	39.4	2.5	<1.7	549	128
	12/12/2016	<0.50	3.7	<0.50	<0.50	<0.50	<0.50	<0.50	8.1	<0.50	<0.50	4.3	<0.50	<0.50	0.96	51.9
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	5.2	<0.50	<0.50	6.1	<0.50	<0.50	1.9	<0.50
	6/14/2017	<2.0	10.2	<0.50	<0.50	10.7	<1.0	<0.50	11.7	0.56	<0.50	9.5	<0.50	<0.50	3.0	1.3
MP-1	9/28/2016	<0.50	<2.0	<0.50	<0.50	1.3	<0.50	3.1	40.5	<0.50	<0.50	99.4	<0.50	<0.50	35.5	3.3
	12/13/2016	<0.50	<2.0	<0.50	<0.50	0.64	<0.50	0.92	209	0.55	<0.50	2.9	<0.50	<0.50	1.0	4.3
	3/30/2017	<0.50	71.4	<0.50	<0.50	7.5	<0.50	<0.50	177	6.0	<0.50	<0.50	<0.50	<0.50	0.79	186
	6/14/2017	<2.0	4.0	<0.50	<0.50	2.3	<1.0	<0.50	143	1.9	<0.50	16.2	<0.50	<0.50	8.5	29.4

Notes:

1. µg/L (ppb) = Micrograms per liter (parts per billion).
2. **Bold** values represents detected concentration of listed analyte.
3. < = Not detected at or above the specified laboratory method reporting limit (MRL).
4. E = Analyte concentration exceeded the calibration range. Reported result is estimated.
5. D = Relative percent difference (RPD) between sample and duplicate is outside of the acceptable range of +/- 30%.
6. J = Result is estimated based on review of laboratory data quality.

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

Well Number:	MW-7																																			
	Sample Date:																																			
Analyte	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	9/23/2015	12/8/2015	6/17/2016	9/29/2016	12/14/2016	3/28/2017	6/14/2017	
	Concentrations in µg/L (ppb)																																			
Volatile Organic Compounds																																				
Tetrachloroethene	31,500	15,000	3,300	890	2,600	1,600	550	200	750	220	420	430	410	200	41	25	28	11	1.6	1.6	<0.50	0.51	9.8	<0.50	<0.50	0.61	<0.50	1.2	4.5	0.94	0.69	<0.50	0.78	1.2	<0.50	
Trichloroethene	352	450	270	350	250	160	56	72	110	36	82	110	84	32	8.6	5.2	5.2	6.8	0.78	<0.50	<0.50	<0.50	2.6	<0.50	<0.50	1.5	1.1	1.0	4.2	1.7	2.1	6.0	<0.50	0.73	0.55	
cis-1,2-Dichloroethene	<100	130	420	520	930	330	180	360	690	94	150	1,400	1,300	3,400	1,600	500	180	130	110	58	56	6.9	13	0.62	4.5	16	8.4	12	12.7	4.1	10.9	9.4	<0.50	<0.50	2.5	
trans-1,2-Dichloroethene	<100	<50	<15.0	<3.0	<3.0	<5.0	<2.0	<1.5	<3.0	<0.90	0.91	3.3	<5.0	6.8	<5.0	<2.0	0.70	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Vinyl chloride	<100	<50	<15.0	<3.0	<3.0	<5.0	<2.0	<1.5	4.8	1.7	9.3	7.9	78	110	600	290	80	18	11	16	10	9.1	7.6	1.4	9.8	21	1.0	12.6	4.8	1.9	5.4	5.5	1.0	<0.50	2.5	
Ethene	N/A	N/A	N/A	N/A	<1.0	<1.0	<1.0	<1.0	<1.0	1.19	7.76	<1.0	N/A	38.7	71	130	47	19.5	13.3	5.86	18.6	5.0	220	21.9	<1.0	<1.0	<6.2	<10.0	<10.0	<10.0	<10.0	N/A	N/A	N/A	<10.0	
1,1-Dichloroethene	<100	<50	<15.0	<3.0	5.5	<5.0	<2.0	<1.5	<3.0	<0.90	1.6	3.4	<5.0	6.9	<5.0	<2.0	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
1,1-Dichloroethane	<100	<50	<15.0	3.7	9.8	6.7	<2.0	<1.5	3.3	1.8	6.6	4.8	<5.0	8.0	9.2	9.0	3.8	1.9	0.69	0.51	1.5	2.9	1.6	0.19	2.7	4.5	1.0	2.6	1.8	<0.50	0.60	1.1	<0.50	<0.50	<0.50	
1,2-Dichloroethane	<100	<50	<0.50	<3.0	<3.0	<5.0	<2.0	<1.5	<3.0	<0.90	<0.90	<2.5	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
1,1,1-Trichloroethane	<100	<50	<15.0	5.2	10	6.7	2.0	2.7	3.5	1.6	5.1	4.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Attenuation Chemistry																																				
Total Organic Carbon (mg/L)	<1.0	2.4	6.7	N/A	4.1	2.5	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	40.6	9.8	18.9	N/A	N/A	N/A	9.1	
Field Parameters																																				
Dissolved Oxygen (mg/L)	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	0.87	1.98	1.67	0.96	1.13	0.89	1.08	
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	-30.5	84.1	-120.1	164.1	5.6	-25.4	-60.5	

Please refer to notes at end of table.

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

Well Number:	MP-1																																				
	Sample Date:																																				
Analyte	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	9/22/2015	12/8/2015	3/8/2016	6/17/2016	9/28/2016	12/13/2016	3/30/2017	6/14/2017	
	Concentrations in µg/L (ppb)																																				
Volatile Organic Compounds																																					
Tetrachloroethene	1,610	1,600	1,200	1,500	1,100	1,000	1,500	800	730	1,000	1,200	640	30	640	490	690	340	230	230	330	260	290	360	1,200	360	320	570	376	343	308	433	206	99.4	2.9	<0.50	16.2	
Trichloroethene	421	230	180	180	310	180	400	140	120	150	180	130	72	120	140	120	83	48	69	70	66	70	54	130	63	59	96	80.8	68.3	62.6	100	67.3	35.5	1.0	0.79	8.5	
cis-1,2-Dichloroethene	347	70	89	43	240	58	410	120	41	27	150	75	4.1	49	440	530	170	170	140	190	77	67	240	290	110	58	190	91	38.3	50.9	148	125	40.5	209	177	143	
trans-1,2-Dichloroethene	8.5	<5.0	<4.0	<4.0	8.9	<4.0	13	<3.0	<3.0	<3.0	<3.0	<2.5	<1.5	3.1	6.3	2.9	2.2	1.7	2.5	1.6	1.5	0.92	<1.5	1.7	<2.0	<1.5	1.5	0.87	<1.2	<1.2	1.2	0.97	<0.50	0.55	6.0	1.9	
Vinyl chloride	23.6	<5.0	<4.0	<4.0	7.3	<4.0	10	<3.0	<3.0	<3.0	5.9	<2.5	1.6	<2.5	21	48	4.5	1.8	1.8	1.8	<0.90	<0.90	<1.5	5.0	16	<1.5	25	<0.84	<1.2	<1.2	<0.84	<0.50	3.3	4.3	186	29.4	
Ethene	N/A	N/A	N/A	N/A	<1.0	<1.0	2.47	<1.0	<1.0	<1.0	<0.0010	<1.0	NA	3.28	15.9	66.6	16	21.1	5.86	2.96	3.17	<1.0	33	19.6	<1.0	<1.0	<6.2	<10.0	<1.0	<1.0	<1.0	<10.0	<10.0	<10.0	<10.0	328	83.2
1,1-Dichloroethene	<5.0	<5.0	<4.0	<4.0	<0.40	<4.0	4.7	<3.0	<3.0	<3.0	<3.0	<2.5	<1.5	<2.5	2.8	2.8	<1.5	<0.90	0.94	1.4	<0.90	1.1	<1.5	2.3	<2.0	<1.5	1.5	1.4	1.5	2.1	1.5	3.1	0.92	<0.50	<0.50		
1,1-Dichloroethane	18.4	<5.0	6.0	4.3	14	<4.0	22	3.2	<3.0	<3.0	7.1	4.9	2.4	2.6	9.4	5.6	4.0	2.0	5.1	4.5	2.9	1.7	2.2	4.9	2.8	1.7	3.6	2.9	1.8	1.8	7.5	5.0	1.3	0.64	7.5	2.3	
1,2-Dichloroethane	<5.0	<5.0	<4.0	<4.0	<4.0	<4.0	<3.0	<3.0	<3.0	<3.0	<3.0	<2.5	<1.5	<2.5	<1.5	<2.5	<1.5	<0.90	<0.90	<0.90	<0.90	<0.90	<1.5	<1.5	<2.0	<1.5	<1.0	<0.84	<1.2	<1.2	<0.84	<0.50	<0.50	<0.50	<0.50	<1.0	
1,1,1-Trichloroethane	11.2	10	10	12	8.2	7.1	8.6	5.4	4.0	4.5	6.4	3.3	1.9	3.1	3.5	12	2.0	1.0	1.4	0.95	1.2	1.8	9.5	<2.0	<1.5	1.0	<0.84	<1.2	<1.2	<0.84	<0.50	<0.50	<0.50	<0.50	<0.50		
Attenuation Chemistry																																					
Total Organic Carbon (mg/L)	<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	2.2	9.9	5.1	<1.0	2620	130	137	38.9	
Field Parameters																																					
Dissolved Oxygen (mg/L)	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	1.66	1.20	1.13	3.71	1.32	3.57	0.79	0.87	
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	105.5	82.8	29.5	-8.6	135.2	12.1	-137.7	-53.2	

Please refer to notes at end of table.

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

Well Number:	EX																																			
	Sample Date:																																			
Analyte	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	9/22/2015	12/8/2015	3/8/2016	6/17/2016	9/28/2016	12/12/2016	3/28/2017	6/14/2017
	Concentrations in µg/L (ppb)																																			
Volatile Organic Compounds																																				
Tetrachloroethene	2,810	4,500	1,400	24	2,100	700	150	150	2,400	900	6,800	1,400	4,100	<50	33	3.0	3.0	0.87	1.2	0.79	4.1	2.0	20	29	NS	22	170	186	302	94.4	274	592	39.4	4.3	6.1	9.5
Trichloroethene	564	830	420	11	380	56	33	39	220	99	910	170	460	<50	10	1.1	<1.5	<0.50	<0.50	<0.50	2.6	1.4	7.5	15	NS	2.7	56	42	61.9	21.3	71.1	90.8	549	0.96	1.9	3.0
cis-1,2-Dichloroethene	68.2	490	50	4.2	120	5.6	20	92	90	30	240	140	290	12,000	1,400	170	320	26	<0.50	1.6	71	34	30	160	NS	10	690	420	543	427	1,160	1,040	2,230	8.1	5.2	11.7
trans-1,2-Dichloroethene	<10.0	<15.0	<5.0	<0.50	0.76	<2.5	<0.50	<0.50	0.53	<0.50	<4.0	<4.0	<5.0	9.3	8.6	1.3	<1.5	<0.50	<0.50	<0.50	0.68	<0.50	<0.50	0.97	NS	<0.50	1.9	1.6	2.6	<0.50	3.6	<5.0	3.8	<0.50	<0.50	0.56
Vinyl chloride	<10.0	<15.0	<5.0	<0.50	1.1	<2.5	<0.50	2.2	1.8	0.71	5.1	<4.0	14	140	290	120	42	12	4.4	<0.50	30	28	11	38	NS	<0.50	2.8	3.2	24.4	2.1	13.3	<5.0	128	51.9	<0.50	1.3
Ethene	N/A	N/A	N/A	N/A	<1.0	55.6	<0.50	<1.0	<1.0	<1.0	1.91	<1.0	N/A	11.4	24.2	150	47.2	5.92	<1.0	<1.0	35.4	45.3	91.1	81.5	NS	<1.0	<6.2	<10.0	<1.0	<1.0	<1.0	<10.0	N/A	N/A	23.5	11.2
1,1-Dichloroethene	<10.0	<15.0	<5.0	<0.50	3.3	<2.5	<0.50	<0.50	1.6	0.59	8.1	<4.0	11	19	<4.0	0.68	<1.5	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	1.1	NS	<0.50	2.1	2.6	3.7	<0.50	2.9	<5.0	3.5	<0.50	<0.50	10.7
1,1-Dichloroethane	<10.0	54	<5.0	<0.50	4.1	<2.5	<0.50	0.97	1.5	0.83	8.2	<4.0	7.9	16	5.0	3.4	1.5	<0.50	<0.50	<0.50	1.9	3.8	0.80	2.9	NS	<0.50	3.5	2.6	2.9	<0.50	4.0	<5.0	4.6	<0.50	<0.50	10.7
1,2-Dichloroethane	<10.0	<15.0	<5.0	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<4.0	<4.0	<5.0	<5.0	<4.0	<0.50	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NS	<0.50	<0.50	<0.50	<0.50	<0.50	<1.2	<5.0	<1.7	<0.50	<0.50	<1.0	
1,1,1-Trichloroethane	40	71	43	1.1	38	3.7	3.2	2.3	20	6.7	110	15	73	17	<4.0	0.59	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NS	<0.50	2.5	0.88	0.65	<0.50	5.0	<5.0	2.5	<0.50	<0.50	<0.50	
Attenuation Chemistry																																				
Total Organic Carbon (mg/L)	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	22.6	7.5	22	1.2	N/A	N/A	347	14.0
Field Parameters																																				
Dissolved Oxygen (mg/L)	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	0.90	--	0.36	2.72	1.61	2.00	1.50	3.48
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	23.7	--	113.3	4.8	138.1	-24	89.9	-12.4

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	3/1/2012	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	9/22/2015	12/8/2015	3/8/2016	6/16/2016	9/27/2016	12/14/2016	3/30/2017	6/12/2017	
Analyte	Concentrations in µg/L (ppb)																									
Volatile Organic Compounds																										
Tetrachloroethene	53	860	520	770	270	1,100	38	760	610	510	150	180	42	680	25	580	514	343	44.9	325	314	387	62.3	55.9	42.4	
Trichloroethene	25	690	380	540	200	730	23	540	500	400	110	170	34	480	15	340	356	239	22	209	288	163	42.2	29.6	18.1	
cis-1,2-Dichloroethene	59	4,700	2,900	3,800	1,700	5,400	62	4,300	4,800	3,400	800	1,900	310	3,500	34	2,110	2,570	2,250	40.1	1,380	3,310	867	744	1,120	893 J	
trans-1,2-Dichloroethene	1.0	55	33	45	39	73	0.97	56	53	49	10	25	2.3	45	0.64	29	25	23.4	0.72	16.2	31.6	11.4	2.3	6.1	7.6	
Vinyl chloride	<0.50	63	40	46	22	84	<0.50	54	59	50	9.8	47	<1.5	42	<0.50	37	31.1	22.5	<0.50	21.3	52.3	14.8	20.5	28.3	48.4	
Ethene	<1.0	NA	6.15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<6.2	<10.0	<1.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	75.2	120
1,1-Dichloroethene	<0.50	45	28	44	16	58	<0.50	40	39	37	7.6	18	1.9	39	<0.50	25	28.2	16.9	<0.50	15.4	29.9	11.5	4.7	3.8	4.7	
1,1-Dichloroethane	1.8	240	130	210	100	270	1.0	200	240	170	36	110	14	190	0.73	102	151	120	0.84	79.9	174	44	16.5	11.4	14.0	
1,2-Dichloroethane	<0.50	2.5	1.3	<15.0	<5.0	<15.0	<0.50	1.8	<15.0	1.6	<2.5	0.77	<1.5	<15.0	<0.50	<5.0	<10.0	<8.3	<0.50	<3.6	<8.4	<10.0	<10.0	<2.5	<3.1	
1,1,1-Trichloroethane	0.70	65	34	48	13	76	0.53	53	46	37	5.8	8.6	1.6	36	<0.50	18	23.6	15.7	0.52	7.7	12.8	3.9	<10.0	<2.5	<3.1	
Attenuation Chemistry																										
Total Organic Carbon (mg/L)	0.94	8.3	59	65	56	100	4.9	95	62	110	23	41	13	93	1.9	4	4.8	4.4	16.5	5.5	3.7	5240	1930	490	530	
Field Parameters																										
Dissolved Oxygen (mg/L)	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	1.06	0.99	0.71	2.68	0.98	0.46	2.92	0.91	
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	65.3	28.1	62.2	59.7	252.5	-91.3	-17.9	-34.2	

Please refer to notes at end of table.

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

Well Number:	MW-241																								
	Sample Date:																								
Analyte	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	6/18/2015	9/22/2015	12/8/2015	3/8/2016	6/17/2016	9/28/2016	12/12/2016	3/30/2017	6/15/2017
	Concentrations in µg/L (ppb)																								
Volatile Organic Compounds																									
Tetrachloroethene	6.6	27	19	30	0.85	31	2.1	23	6.2	15	6.7	10	1.3	20	2.4	6.1	<0.50	2.2	189	4.1	11.5	5.8	1.1	1.0	6.6
Trichloroethene	1.4	24	14	11	<0.50	20	0.65	15	3.6	5.9	3.4	5.5	5.2	10	1.1	3.1	<0.50	0.8	36.4	1.6	6.3	3.1	<0.50	<0.50	2.8
cis-1,2-Dichloroethene	2.0	270	100	79	14	58	51	48	28	15	8.4	16	13	21	12	5.9	3.4	4.7	18	3.5	7.8	5.4	<0.50	0.70	3.2
trans-1,2-Dichloroethene	<0.50	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	<0.50	19	7.5	4.5	2.6	<0.50	<0.50	<0.50	<0.80	<0.80	<0.50	<0.80	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethene	<1.0	NA	2.29	2.03	1.52	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	29.1	<1.0	<1.0	<6.2	<10.0	<1.0	<1.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethene	<0.50	2.5	0.84	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	<0.50	13	5.0	5.9	1.8	4.4	<0.50	2.8	2.7	1.0	1.3	1.3	1.2	1.8	0.60	0.58	<0.50	1.9	0.74	<0.50	0.99	0.53	<0.50	<0.50	<0.50
1,2-Dichloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
1,1,1-Trichloroethane	<0.50	5.6	2.9	2.3	<0.50	0.79	<0.50	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Attenuation Chemistry																									
Total Organic Carbon (mg/L)	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	2.3	3.5	1.0	<1.0	5.3	1.5	3.4	1.2
Field Parameters																									
Dissolved Oxygen (mg/L)	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	1.85	1.36	1.75	3.12	2.58	5.64	5.24	3.72
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	99.4	99.2	47.8	14.0	123.9	2.6	14.3	-13.4

Please refer to notes at end of table.

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

Well Number:	MGMS2-40																								
	Sample Date:																								
Analyte	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	9/25/2015	12/8/2015	3/8/2016	6/17/2016	9/29/2016	12/16/2016	3/31/2017	6/15/2017
	Concentrations in µg/L (ppb)																								
Volatile Organic Compounds																									
Tetrachloroethene	4,400	790	61	9.9	7.2	89	10	5.6	0.94	16	2.4	2.6	21	170	3.4	31	18.4	67.4	4.0	6.5	223	33.3	2.6	4.3	5.1
Trichloroethene	1,400	380	39	5.4	2.5	80	3.4	2.2	<0.50	17	1.4	1.8	22	110	2.3	22	12.8	45.9	2.8	6.2	146	24.8	1.9	14.4	4.9
cis-1,2-Dichloroethene	1,600	7,400	5,300	470	20	310	33	300	7.9	290	8.4	84	88	590	10	47	53.8	105	7.2	36.0	744	115	5.2	236	46.2
trans-1,2-Dichloroethene	17	20	<15.0	2.8	1.3	3.2	1.3	2.0	<0.50	1.4	<0.50	<0.50	0.84	2.4	<0.50	<0.50	<0.50	0.61	<0.50	<0.50	2.8	<0.50	<0.50	0.60	<0.50
Vinyl chloride	48	58	460	260	63	440	4.0	270	4.8	330	3.4	270	90	800	18	17	48.3	57.8	3.3	36	227	142	2.0	235	98.9
Ethene	<1.0	NA	14.5	368	566	264	110	121	55.6	143	33.3	930	207	12.1	34	8.1	33.7	<10.0	22.8	63.7	31	N/A	N/A	N/A	128
1,1-Dichloroethene	30	28	<15.0	2.3	<0.50	2.8	<0.50	1.9	<0.50	4.8	<0.50	2.9	10	30	<0.50	3.9	1.3	4.2	<0.50	1.6	26.4	<0.50	<0.50	14.3	3.5
1,1-Dichloroethane	65	44	35	38	53	39	4.8	28	8.3	28	9.7	45	31	30	35	4.3	13.8	12.3	13.5	20.6	24.9	12.1	10.3	57.6	38.6
1,2-Dichloroethane	<15.0	<15.0	<15.0	<2.0	<0.50	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1-Trichloroethane	57	48	<15.0	5.2	<0.50	5.0	<0.50	2.5	<0.50	1.6	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	<0.50	0.92	<0.50	<0.50	3.1	<0.50	<0.50	<0.50	<0.50
Attenuation Chemistry																									
Total Organic Carbon (mg/L)	2.2	110	300	290	500	140	280	81	110	98	110	120	120	94	7.9	8	11	10.9	7.9	7.4	3.8	N/A	N/A	N/A	7.0
Field Parameters																									
Dissolved Oxygen (mg/L)	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	9.67	6.14	5.52	1.60	5.16	0.80	0.68	1.29
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	-145.1	-96.9	-161.7	-72.2	194.5	-28.1	-92.2	-109.6

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-13				MW-14				MW-19				MW-26				MGMS1-43			MGMS3-40				
	9/28/2016	12/16/2016	3/30/2017	6/15/2017	9/27/2016	12/13/2016	3/27/2017	6/13/2017	9/26/2016	12/12/2016	3/28/2017	6/14/2017	9/26/2016	12/13/2016	3/29/2017	6/13/2017	9/26/2016	12/16/2016	6/12/2017	9/26/2016	12/16/2016	3/28/2017	6/12/2017	
Analyte	Concentrations in µg/L (ppb)																							
Volatile Organic Compounds																								
Tetrachloroethene	5,090	1,020	176	97.7	100	0.56	14.7	58.3	1,520	1,730	755	566	160	167	214	160	230	64.1	24.4	1.7	0.63	1.4	0.97	
Trichloroethene	951	394	57.6	56.3	218	0.97	33.4	204	592	975	896	506	288	410	452	311 E, J	366	171	116	1.4	<0.50	0.60	<0.50	
cis-1,2-Dichloroethene	148	509	101	272	61.8	1.3	69.2	432	235	1,030	1,990	486	61.1	85.9	170	113	1,980	1,810	2,620	226	1.3	1,050	1.7	
trans-1,2-Dichloroethene	<2.5	<5.0	<5.0	1.6	0.94	<0.50	<0.50	2.7	<5.0	11.6	21.5	6.2	1.6	2.0	<0.50	2.0	24.2	20.1	18.7	2.0	0.97	6.0	<0.50	
Vinyl chloride	<2.5	<5.0	<5.0	4.1	<0.50	0.62	2.5	10.1	31.9	63.2	17.2	<0.50	<0.50	<0.50	0.65	52	239	681	52.1	0.88	323	<0.50		
Ethene	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0	NA	NA	<10.0	<10.0	NA	<10.0	<10.0	NA	<10.0	55.2	68.1	NA	
1,1-Dichloroethene	<2.5	<5.0	<5.0	1.2	2.1	<0.50	0.57	5.3	11.0	14.2	26.7	15.8	1.1	2.4	<0.50	1.9	13.5	9.5	16.7	0.60	<0.50	3.3	<0.50	
1,1-Dichloroethane	<2.5	<5.0	<5.0	<1.0	7.2	<0.50	<0.50	10	10.4	78.7	214	41.8	3.9	8.9	<0.50	6.7	81.9	92.6	173	4.5	1.0	22.5	3.3	
1,2-Dichloroethane	<2.5	<5.0	<5.0	<1.0	<0.50	<0.50	<0.50	<1.0	<5.0	<5.0	<5.0	<2.5	<0.50	<0.50	<0.50	<1.0	<8.3	<8.4	<8.3	<0.50	<0.50	0.68	<0.50	
1,1,1-Trichloroethane	<2.5	<5.0	<5.0	<1.0	1.7	<0.50	<0.50	2.1	14.5	15.5	19.9	8.2	2.4	3.3	<0.50	2.1	<8.3	<8.4	<8.3	<0.50	<0.50	<0.50	<0.50	
Attenuation Chemistry																								
Total Organic Carbon (mg/L)	33600	2220	341	NA	8.8	5.1	5.1	NA	1.9	8.1	4.8	NA	N/A	2.4	1.3	NA	9.0	6.2	NA	36.2	86.9	5.0	NA	
Field Parameters																								
Dissolved Oxygen (mg/L)	2.71	0.66	4.36	1.41	8.1	3.1	3.1	0.94	3.27	9.22	2.5	1.54	1.64	0.88	1.34	3.80	5.09	6.06	1.17	2.7	5.95	1.57	5.22	
Oxidation Reduction Potential (mV)	158.7	-111.4	-61.8	-105.7	221.2	55.0	55.0	61.3	174.4	175.2	35.8	-22.7	236.7	102.4	165.2	74.6	184.2	-17.5	-109.8	165.3	-9.20	-125.8	-94.1	

- Notes:
1. µg/L (ppb) = Micrograms per liter (parts per billion).
 2. NA = Not analyzed.
 3. Ethene is analyzed by EPA Method RSK-175M. All other VOCs were analyzed by EPA Method 826C
 4. **Boldface** value represents detected concentration of listed analyte.
 5. J = Result is estimated based on review of laboratory data quality
 6. E = Analyte concentration exceeded the calibration range. Reported result is estimated

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.
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

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	
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	--
7/29/2015	7.5	-17.0	0.3	-17.0	0.5	0.10	Used APEX PID #3.
8/31/2015	0.0	-11.0	0.0	-10.0	0.9	0.05	Used APEX PID #3.
9/28/2015	0.6	-12.0	2.4	-12.0	1.8	0.00	Used APEX PID #3.
10/29/2015	0.5	-12.0	0.3	-13.0	2.9	1.00	Used APEX PID #3.
11/30/2015	0.0	-13.0	0.2	-13.0	0.0	2.00	Used APEX PID #3.
12/28/2015	0.0	-17.0	9.0	-18.0	0.0	0.10	Used APEX PID #3.
2/1/2016	30.4	-28.0	0.0	-25.0	2.6	3.00	Used APEX PID #3.
2/29/2016	0.0	-13.0	0.0	-13.0	0.0	0.10	Used APEX PID #3.
3/29/2016	0.0	-12.0	0.0	-12.0	0.0	0.20	Used APEX PID #3.
4/27/2016	0.2	-11.0	0.0	-5.0	0.0	1.00	Used APEX PID #3. North SVE system turned off.
5/25/2016	--	--	--	--	--	--	North SVE system interntionally turned off for approx . 60 days to evaluate system efficiency.
6/28/2016	20.4	-23.0	14.3	-23.0	0.9	0.10	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	
7/26/2016	0.0	-20.0	0.4	-20.0	0.6	1.20	Used APEX PID #3.
9/29/2016	1.0	-16.0	0.0	-15.0	0.0	0.10	Used APEX PID #3.
10/25/2016	0.4	-14.0	0.0	-14.0	0.0	0.10	Used APEX PID #3.
11/28/2016	0.0	-12.0	0.0	-12.0	0.0	0.10	Used APEX PID #3.
12/28/2016	0.0	-12.0	0.0	-12.0	0.0	0.10	Used APEX PID #3.
1/30/2017	0.0	-5.0	0.0	-5.0	0.0	0.10	Used APEX PID #3.
2/28/2017	12.5	-15.0	8.7	-14.0	1.0	0.10	--
3/28/2017	0.0	-20.0	0.0	-20.0	0.1	0.00	Used Mini Rae 3000.
4/24/2017	0.8	-20.0	0.0	-20.0	2.0	0.10	Used APEX PID #3.

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- Trichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	Methylene Chloride	Tetrachloro- ethene	Toluene	Trichloro- ethene	Vinyl Chloride
			Concentrations in µg/m3								
System Effluent	North_EFF-20111012	10/12/2011	69	<16	160	<16	<14	9,500	16	700	<10
System Effluent	Post Blower_North_012312	1/23/2012	<170	<120	<120	<120	<110	16,000	<120	530	<79
System Effluent	North_Effluent_0121712	2/17/2012	<140	<100	<100	<100	<91	11,000	<99	300	<67
System Effluent	North Effluent-032212	3/22/2012	<28	<54	<27	<27	<23	6,600	<25	140	<8.6
System Effluent	North_Effluent_062012	6/20/2012	<1.6	<3.2	<1.6	<1.6	5.3	250	<1.5	15	<0.51
System Effluent	North_Effluent_082212	8/22/2012	<1.6	<3.2	<1.6	<1.6	<1.4	140	<1.5	11	<0.51
System Effluent	North_Effluent_112612	11/26/2012	39	<14	52	<7.1	<6.2	22,000	<6.8	510	<4.6
System Effluent	North_Effluent_122112	12/21/2012	<31	<59	<30	<30	<26	3,500	<28	61	<19
System Effluent	North_Effluent_022813	2/28/2013	<36	<70	<35	<35	<31	4,400	<33	160	<22
System Effluent	SVE North	5/24/2013	<240	<170	280	<170	<380	23,000	<160	1,100	<110
System Effluent	SVE North	6/25/2013	76	<51	88	<51	<110	13,000	<49	730	<33
System Effluent	SVE North	8/27/2013	<150	<110	<110	<110	<230	17,000	<100	800	<69
System Effluent	SVE North Effluent	10/24/2013	<82	<60	<60	<60	<130	10,000	<57	570	<39
System Effluent	SVE North Effluent	12/27/2013	<44	<32	<32	<32	<69	7,000	<30	470	<20
System Effluent	SVE North Effluent	1/29/2014	<10	<40	22	<40	<87	1,300	<38	110	<26
System Effluent	SVE_North_Post Carbon	2/24/2014	55	<83	68	<41	<36	8,700	<39	760	<27
System Effluent	SVE North Post Carbon	3/5/2014	25	<39	29	<20	<17	4,600	<19	300	<13
System Effluent	VCP_North_Effluent	3/31/2014	19	<13	18	<13	<28	3,500	<12	200	<8.2
System Effluent	North_SVE_Effluent_042914	4/29/2014	22	<15	17	<15	<33	3,500	<14	220	<9.8
System Effluent	North_SVE_Effluent_052714	5/27/2014	<31	<23	<23	<23	<50	4,100	<22	280	<15
System Effluent	North_VCP_Effluent	7/3/2014	<23	<17	20	<17	<37	4,500	<16	290	<11
System Effluent	SVE North	7/28/2014	<120	<88	<88	<88	<190	7,200	<84	460	<22
System Effluent	North SVE	9/30/2014	<48	<35	48	<35	<76	7,300	<33	480	<22
System Effluent	SVE North Effluent	10/27/2014	<110	<80	<80	<80	<180	15,000	<76	410	<52
System Effluent	SVE North 11.25.14	11/25/2014	<39	<28	<28	<28	<62	7,100	<27	390	<18
System Effluent	SVENorth122914	12/29/2014	<140	<99	<99	<99	<220	15,000	<94	290	<64
System Effluent	SVE North	1/26/2015	16	<31	<16	<16	<14	1,500	<15	130	<10
System Effluent	SVE North	2/26/2015	<1.6	<3.2	<1.6	<1.6	<1.5	32	<1.5	<2.1	<1.0
System Effluent	SVE North	3/30/2015	15	<9.6	9.5	<4.8	<4.2	1,700	<4.6	130	<3.1
System Effluent	SVE N	4/24/2015	<8.5	<16	<8.2	<8.2	<7.2	550	<7.8	50	<5.3

Please refer to notes at end of table.

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

Sampling Location	Sample ID	Date	1,1,1- Trichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	Methylene Chloride	Tetrachloro- ethene	Toluene	Trichloro- ethene	Vinyl Chloride
			Concentrations in µg/m 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	360	3.6	8.0	<2.4
System Effluent	SVE North	7/29/2015	19	<33	21	<16	<14	2,000	<16	210	<11
System Effluent	SVE North	8/31/2015	65	<65	62	<33	<28	7,100	<31	600	<21
System Effluent	SVE North	9/28/2015	21	<22	<11	<11	<9.7	1,400	<11	190	<7.1
System Effluent	SVE North	10/29/2015	<56	<110	59	<55	<48	6,300	<52	550	<35
System Effluent	SVE_North_Effluent_113015	11/30/2015	<54	<140	<72	<72	<72	2,300	<72	86	<72
System Effluent	SVE_North_Effluent_122815	12/28/2015	<32	<62	<31	<31	<27	5,600	<30	110	<20
System Effluent	North_Effluent_020116	2/1/2016	<53	<100	<51	<51	<45	11,000	<48	150	<33
System Effluent	SVE_North_Effluent_022916	2/29/2016	30	<33	29	<16	<14	7,800	<16	160	<11
System Effluent	SVE_North_Effluent_032916	3/29/2016	19	<14	<7.2	<7.2	<6.3	920	<6.9	19	<4.7
System Effluent	North_Effluent	4/27/2016	<15	<29	<14	<14	<13	1,500	<14	75	<9.2
System Effluent	North_Effluent_62816	6/28/2016	<11	<22	<11	<13	<9.6	1,800	<10	83	<7.1
System Effluent	SVE-North-Effluent 72616	7/26/2016	<1.6	<3.2	<1.6	<1.6	<1.4	84	2.0	6	<1.0
System Effluent	SVE-North-Effluent 83016	8/30/2016	<0.30	<0.80	<0.40	<0.40	<0.40	54	<0.40	2	<0.40
System Effluent	SVE_North_Effluent_092916	9/29/2016	<1.6	<3.2	<1.6	<1.6	<1.4	15	<1.5	<2.1	<1.0
System Effluent	SVE_North_Effluent_102516	10/25/2016	<1.6	<3.2	<1.6	<1.6	<1.4	7.9	3.0	<2.1	<1.0
System Effluent	SVE_North_Effluent_112816	11/28/2016	<1.6	<3.2	<1.6	<1.6	<1.4	2.8	3.9	<2.1	<1.0
System Effluent	SVE_North_Effluent_122816	12/28/2016	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	1.7	<2.1	<1.0
System Effluent	SVE_North_Effluent_013017	1/30/2017	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	4.6	<2.1	<1.0
System Effluent	SVE_North_Effluent_022817	2/28/2017	<1.6	<3.2	<1.6	<1.6	<1.4	5.9	<1.5	<2.1	<1.0
System Effluent	SVE_North_Effluent_032817	3/28/2017	<1.6	<3.2	<1.6	<1.6	<1.4	3.2	2.9	<2.1	<1.0
System Effluent	SVE_North_Effluent	4/24/2017	<1.6	<3.2	<1.6	<1.6	<1.4	3.9	3.7	<2.1	<1.0

Notes:

1. µg/m³ = 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
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

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	
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	--
7/29/2015	0.0	-16	14.1	25.0	9.6	14	1.2	5.0	Used Apex PID #3
8/31/2015	0.0	-20	1.2	26.0	6.9	14	1.8	6.0	Used Apex PID #3
9/28/2015	3.0	-20	7.4	26.0	3.8	16	1.1	6.0	Used Apex PID #3
10/29/2015	9.0	-22	11.2	27.0	7.6	16	0.2	8.0	Used Apex PID #3
11/30/2015	--	-18	7.0	30.0	33.6	18	0.4	6.0	Used Apex PID #3
12/28/2015	--	-18	12.5	29.0	1.3	18	0.4	8.0	Used Apex PID #3
2/1/2016	0.1	-24	0.3	19.0	9.2	16	0.0	7.0	Used Apex PID #3
2/29/2016	0.2	-18	25.2	30.0	8.5	17	2.3	6.0	Used Apex PID #3
3/29/2016	0.0	-19	54.0	28.0	13.2	16	3.4	7.0	Used Apex PID #3
4/27/2016	5.0	-28	32.0	50.0	21.3	0.2	22.3	1.0	Used Apex PID #3
5/25/2016	0.2	-100	0.3	3.0	23.2	2	9.7	0.6	Used Apex PID #3
6/28/2016	--	--	--	--	--	--	--	--	System shut down
7/26/2016	8.1	-20	30.4	30.0	26.2	20	18.1	10.0	Used Apex PID #3
9/29/2016	26.3	-18	27.4	28.0	36.7	16	35.7	6.0	Used Apex PID #3
10/25/2016	0.8	-18	13.3	30.0	58.0	18	7.7	8.0	Used Apex PID #3
11/28/2016	0.0	-22	70.1	30.0	78.0	18	54.2	8.0	Used Apex PID #3
12/28/2016	0.0	-100	0.0	2.0	0.4	1.0	1.0	1.0	Bleeder valve appears damaged. No sample collected. Turned system off prior to departure.
1/30/2017	0.0	-22	52.3	33.0	0.0	20.0	0.0	10.0	Used Apex PID #3
2/28/2017	--	--	--	--	--	--	--	--	No sample collected.
3/28/2017	--	--	--	--	--	--	--	--	System not working properly. Knock out drum valve was pulled down and sucking in ambient air. No sample collected.
4/24/2017	--	--	--	--	--	--	--	--	Could not get valved to operate properly. System pulling in ambient air.

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.

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/m³										
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	2/17/2012	<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_POSTCARBON	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
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

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 µg/m ³										
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 Pre Carbon	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
Pre Carbon	South_VCP_Post Blower	7/3/2014	<18	<18	56	<18	<45	2,800	<18	<18	150	<18	<63
Post Carbon	South_VCP_Post Carbon	7/3/2014	<16	<16	760	<16	<35	55	<15	430	3,200	<10	<60
Pre Carbon	SVE Pre Carbon	7/28/2014	<69	<67	200	<67	<150	15,000	<64	<93	750	<43	<254
Post Carbon	SVE Post Carbon	7/28/2014	<68	<67	270	<67	<150	13,000	<63	530	12,000	<43	<253
Pre Carbon	South SVE Pre Carbon	8/25/2014	<140	<130	340	<130	<290	20,000	<130	<180	1,100	<86	<520
Post Carbon	South SVE Post Carbon	8/25/2014	<140	<130	270	<130	<290	9,600	<130	<180	2,700	<86	<520
Pre Carbon	South SVE_Pre Carbon	9/30/2014	<110	<110	250	<110	<230	17,000	<100	<150	930	<69	<410
Post Carbon	South SVE_Post Carbon	9/30/2014	<130	<120	280	<120	<270	23,000	<120	<170	620	<80	<480
Pre Carbon	SVE South Post Blower	11/3/2014	<130	<130	320	<130	<280	24,000	<120	<170	1,100	<81	<490
Post Carbon	SVE South Post Carbon	11/3/2014	<81	<81	130	<81	<180	12,000	<77	<110	290	<52	<309
Pre Carbon	SVE South Pre Carbon	1/26/2015	<190	<500	420	<250	<220	21,000	240	<260	860	<160	<820
Post Carbon	SVE South Post Carbon	1/26/2015	<78	<200	<100	<100	<90	<170	190	<110	<140	<66	<330
Pre Carbon	SVE South Pre Carbon	2/26/2015	<150	<390	260	<200	<170	18,000	280	<200	660	<130	<650
Post Carbon	SVE South Post Carbon	2/26/2015	<1.2	<3.2	<1.6	<1.6	3.2	<2.7	<1.5	<1.6	<2.1	2.5	<5.2
Pre Carbon	SVE South Pre Carbon	3/30/2015	<61	<160	200	<79	160	17,000	180	<82	570	<51	<257
Post Carbon	SVE South Post Carbon	3/30/2015	<1.2	<3.2	<1.6	<1.6	2.8	<2.7	2.7	<1.6	51	2.5	<5.2
Pre Carbon	SVE S Pre Carbon	4/24/2015	<37	<97	170	<49	<43	5,400	<46	<50	410	<31	<163
Post Carbon	SVE S Post Carbon	4/24/2015	<6.2	<16	<8.1	<8.1	<7.1	660	<7.7	<8.3	19	<5.2	18

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 µg/m ³										
Pre Carbon	SVE South Pre Carbon	5/28/2015	<60	<160	140	<79	92	8,000	240	<81	460	<51	<256
Post Carbon	SVE South Post Carbon	5/28/2015	<4.9	<13	<6.3	<6.3	<5.6	650	<6.0	<6.5	16	<4.1	22.1
Pre Carbon	SVE South Pre Carbon	7/29/2015	<65	<170	190	<85	<75	12,000	<81	<88	790	<55	<183
Post Carbon	SVE South Post Carbon	7/29/2015	10	<27	960	16	<12	440	<13	<14	<18	<8.7	<45
Pre Carbon	SVE South Pre Carbon	8/31/2015	<64	<170	160	<83	<73	12,000	<79	<86	780	<54	<171
Post Carbon	SVE South Post Carbon	8/31/2015	<21	<55	530	<27	<24	3,400	<26	<28	94	<18	<90
Pre Carbon	SVE South Pre Carbon	9/28/2015	<83	<220	170	<110	<94	9,900	<100	<110	660	<70	<360
Post Carbon	SVE South Post Carbon	9/28/2015	3.4	<6.0	340	3.6	<2.6	300	<2.8	39	59	<1.9	<9.8
Pre Carbon	SVE South Pre Carbon	10/29/2015	<130	<350	230	<170	<150	18,000	<170	<180	790	<110	<570
Post Carbon	SVE South Post Carbon	10/29/2015	4.2	5.2	340	4.5	2.6	26	<1.5	67	310	1.7	<5.2
Pre Carbon	SVE_South_Precarbon_113015	11/30/2015	<29	<77	54	<38	<38	3,000	<38	<29	300	<38	<77
Post Carbon	SVE_South_Postcarbon_113015	11/30/2015	<0.80	<0.80	27	0.60	<0.40	<0.40	<0.40	6	11	<0.40	<0.80
Pre Carbon	SVE_SOUTH_PRE CARBON_12/28/15	12/28/2015	<120	<320	180	<160	<140	35,000	<150	<170	1,200	<100	<530
Post Carbon	SVE_SOUTH_POST CARBON_12/28/15	12/28/2015	<1.2	<3.2	28	<1.6	<1.4	<2.7	1.5	2	6.5	<1.0	<4.2
Pre Carbon	SVE_SOUTH_PRE CARBON	2/1/2016	<8.6	<22	20	<11	<9.8	2,900	<11	14	120	<7.2	<37
Post Carbon	SVE_SOUTH_POST CARBON	2/1/2016	2.2	<3.2	160	2.90	<1.4	<2.7	<1.5	92	260	<1.0	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON	3/29/2016	<230	<610	710	<300	<270	71,000	<290	520	2,800	<200	<670
Post Carbon	SVE_SOUTH_POST CARBON	3/29/2016	<69	<180	490	<23	<79	9,300	<86	1500	9,300	<58	<200
Pre Carbon	SVE_SOUTH_PRE CARBON	4/27/2016	<6.4	<17	12	<8.4	<7.4	910	<8.0	<8.7	23	<5.4	<18
Post Carbon	SVE_SOUTH_POST CARBON	4/27/2016	<63	<160	180	<82	<72	11,000	<78	110	2,200	<53	<180
Pre Carbon	SVE_SOUTH_PRE CARBON	5/25/2016	<1.2	<3.2	4	<1.6	<1.4	550	2.9	3	22	<1.0	3.9
Post Carbon	SVE_SOUTH_POST CARBON	5/25/2016	<16	<41	2300	30.00	<18	14,000	<19	130	3,300	<13	<45
Pre Carbon	SVE_SOUTH_PRE CARBON	7/26/2016	<98	<260	340	<130	<110	18,000	<120	<130	970	<83	<420
Post Carbon	SVE_SOUTH_POST CARBON	7/26/2016	<78	<200	760	<120	<89	15,000	<97	220	1,400	<66	<330
Pre Carbon	SVE_SOUTH_PRE CARBON	8/30/2016	<86	<230	340	<110	<99	28,000	<110	<120	1,400	<73	<370
Post Carbon	SVE_SOUTH_POST CARBON	8/30/2016	<81	<210	370	<110	<93	19,000	<100	210	910	<68	<350
Pre Carbon	SVE_SOUTH_PRE CARBON	9/29/2016	<73	<190	340	<95	<83	25,000	<90	110	1,300	<61	<310
Post Carbon	SVE_SOUTH_POST CARBON	9/29/2016	<46	<120	410	<60	<53	14,000	<57	140	1,900	<39	<196
Pre Carbon	SVE-SOUTH_PRE CARBON_102516	10/25/2016	<150	<390	380	<190	<170	32,000	<180	<200	1,500	<120	<630
Post Carbon	SVE-SOUTH_POST CARBON_102516	10/25/2016	<100	<260	530	<130	<120	19,000	<130	180	2,700	<85	<430
Pre Carbon	SVE_SOUTH_PRE CARBON_112816	11/28/2016	<260	<670	420	<340	<290	52,000	<320	<350	2,100	<220	<1110
Post Carbon	SVE_SOUTH_POST CARBON_112816	11/28/2016	<79	<210	<100	<100	<90	18,000	<98	360	3,200	<66	<340

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	SVE_SOUTH_PRE CARBON_013017	1/30/2017	<260	<690	660	<340	<300	61,000	<330	400	2,400	<220	<1130
Post Carbon	SVE_SOUTH_POST CARBON_013017	1/30/2017	<1.2	<3.2	<1.6	<1.6	<1.4	24	1.8	<1.6	<2.1	<1.0	<5.2

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.

13,717 = average PCE post carbon last 6 months ($\mu\text{g}/\text{m}^3$).
 16,981 = average PCE pre carbon since January 2015 ($\mu\text{g}/\text{m}^3$).

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

Sample Date	Post-Blower Pressure (in H ₂ O)	Air Flow Rate ⁽¹⁾ (cfm)	Total VOCs (mg/m ³)	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
7/29/2015	0.10	215	2.2	0.043
8/31/2015	0.05	215	7.8	0.150
9/28/2015	0.00	215	1.6	0.031
10/29/2015	1.00	215	6.9	0.134
11/30/2015	2.00	215	2.4	0.046
12/28/2015	0.10	215	5.7	0.110
2/1/2016	3.00	215	11.2	0.215
2/29/2016	0.10	215	8.0	0.154
3/29/2016	0.20	215	0.9	0.018
4/27/2016	1.00	215	1.6	0.030
5/25/2016	--*	--*	--*	--*
6/28/2016	0.10	215	1.8830	0.036
7/26/2016	1.20	215	0.0916	0.00177
9/29/2016	0.10	215	0.0150	0.00029
10/25/2016	0.10	215	0.0109	0.000211
11/28/2016	0.10	215	0.0067	0.000129
12/28/2016	0.10	215	0.0017	0.0000329
1/30/2017	0.10	215	0.0046	0.0000889
2/28/2017	0.10	215	0.0059	0.000114
3/28/2017	0.10	215	0.0061	0.000118
4/24/2017	0.10	215	0.0076	0.000147

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
6/30/2015	Estimate	0.000	0	0	190
7/29/2015	Sample	0.043	29	2	192
8/31/2015	Sample	0.150	33	5	197
9/28/2015	Sample	0.031	28	1	198
10/29/2015	Sample	0.134	31	5	203
11/30/2015	Sample	0.046	32	2	205
12/28/2015	Sample	0.110	28	4	209
2/1/2016	Sample	0.215	35	8	217
2/29/2016	Sample	0.154	28	5	222
3/29/2016	Sample	0.018	29	1	223
4/27/2016	Sample	0.030	29	1	224
5/25/2016	Sample	--*	28	--*	221
6/28/2016	Sample	0.0364	34	2	223
7/26/2016	Sample	0.00177	28	1	224
9/29/2016	Sample	0.00029	65	1	225
10/25/2016	Sample	0.000211	26	1	226
11/28/2016	Sample	0.000129	34	1	227
12/28/2016	Sample	0.0000329	30	1	228
1/30/2017	Sample	0.0000889	33	1	229
2/28/2017	Sample	0.000114	29	1	230
3/28/2017	Sample	0.000118	28	1	231
4/24/2017	Sample	0.000147	27	1	232

Notes:

1. Air flow rate read from system gauge.
2. cfm = Cubic feet per minute.
3. mg/m3 = Milligrams per cubic meter.
4. lb/day = Pounds per day.
5. lbs = Pounds.
6. * = Not sampled. System intentionally shut down to evaluate system efficiency.

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

Sample Date	Post-Blower Pressure (in H ₂ O)	Air Flow Rate ⁽¹⁾ (cfm)	Total VOCs (mg/m ³)	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	-- ⁶	30	1.6
3/22/2012	27.0	658	31	1.9
4/26/2012	27.0	--	0	0.0
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
7/29/2015	25.0	--	13	0.8
8/31/2015	26.0	--	13	0.8
9/28/2015	26.0	--	11	0.6
10/29/2015	27.0	--	19	1.1
11/30/2015	30.0	--	3	0.2
12/28/2015	29.0	--	36	2.2
2/1/2016	19.0	--	3	0.2
2/29/2016	30.0	--	3	0.2
3/29/2016	28.0	--	75	4.4
4/27/2016	5.0	--	1	0.1
5/25/2016	3.0	--	1	0.03
6/28/2016	-- *	-- *	-- *	-- *
7/26/2016	30.0	--	19	1.1
9/29/2016	28.0	--	27	1.6
10/25/2016	30.0	--	34	2.0
11/28/2016	30.0	--	55	3.3
1/30/2017	33.0	--	64	3.8

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	0.0	35	33	382
5/23/2012	Sample	1.2	29	18	400
6/20/2012	Sample	2.2	28	47	447
7/24/2012	Sample	2.0	34	72	519
8/22/2012	Sample	3.0	29	74	593
9/25/2012	Sample	3.1	34	104	697
10/29/2012	Sample	3.7	34	116	813
11/26/2012	Sample	0.6	28	61	874
12/21/2012	Sample	0.9	25	19	893
1/24/2013	Sample	0.1	34	17	910
2/28/2013	Sample	0.1	35	3	913
3/25/2013	Sample	0.2	25	4	917
4/29/2013	Sample	0.1	35	6	923
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
7/29/2015	Sample	0.8	62	41	2090
8/31/2015	Sample	0.8	33	26	2116
9/28/2015	Sample	0.6	28	20	2136
10/29/2015	Sample	1.1	31	28	2164
11/30/2015	Sample	0.2	32	22	2186
12/28/2015	Sample	2.2	28	33	2219
2/1/2016	Sample	0.2	35	41	2260
2/29/2016	Sample	0.2	28	6	2266
3/29/2016	Sample	4.4	29	67	2333
4/27/2016	Sample	0.1	29	66	2399
5/25/2016	Sample	0.03	28	2	2401

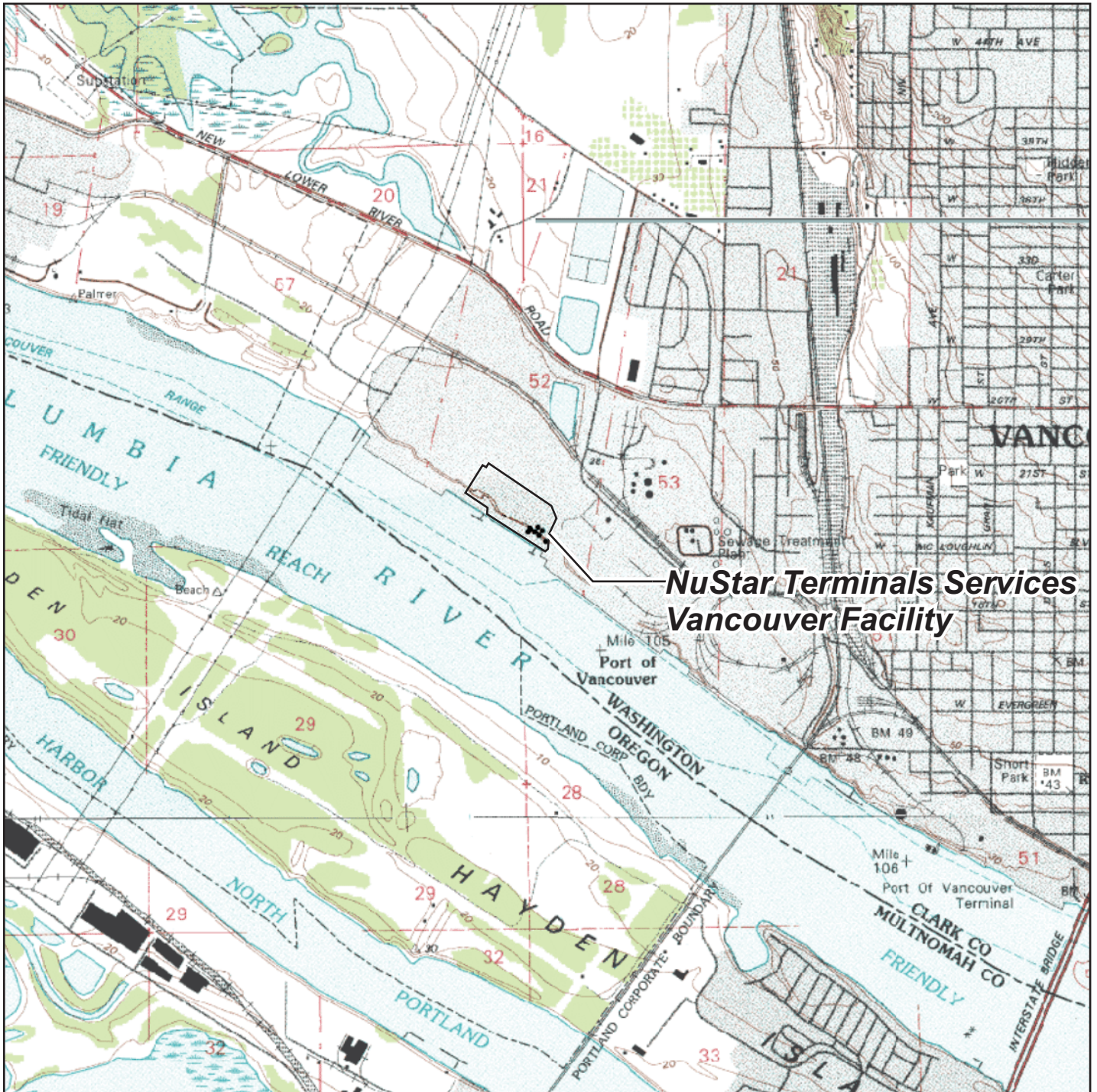
Please refer to notes at end of table.

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)
7/26/2016	Sample	1.1	62	36	2437
9/29/2016	Sample	1.6	65	89	2526
10/25/2016	Sample	2.0	26	47	2573
11/28/2016	Sample	3.3	34	90	2663
1/30/2017	Sample	3.8	63	223	2886

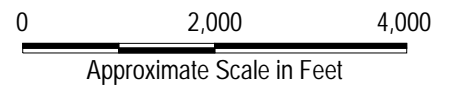
Notes:

1. Air flow rate read from system gauge.
2. cfm = cubic feet per minute.
3. mg/m³ = 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.
8. * = system was off for part replacement.



**NuStar Terminals Services
Vancouver Facility**

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




Vancouver



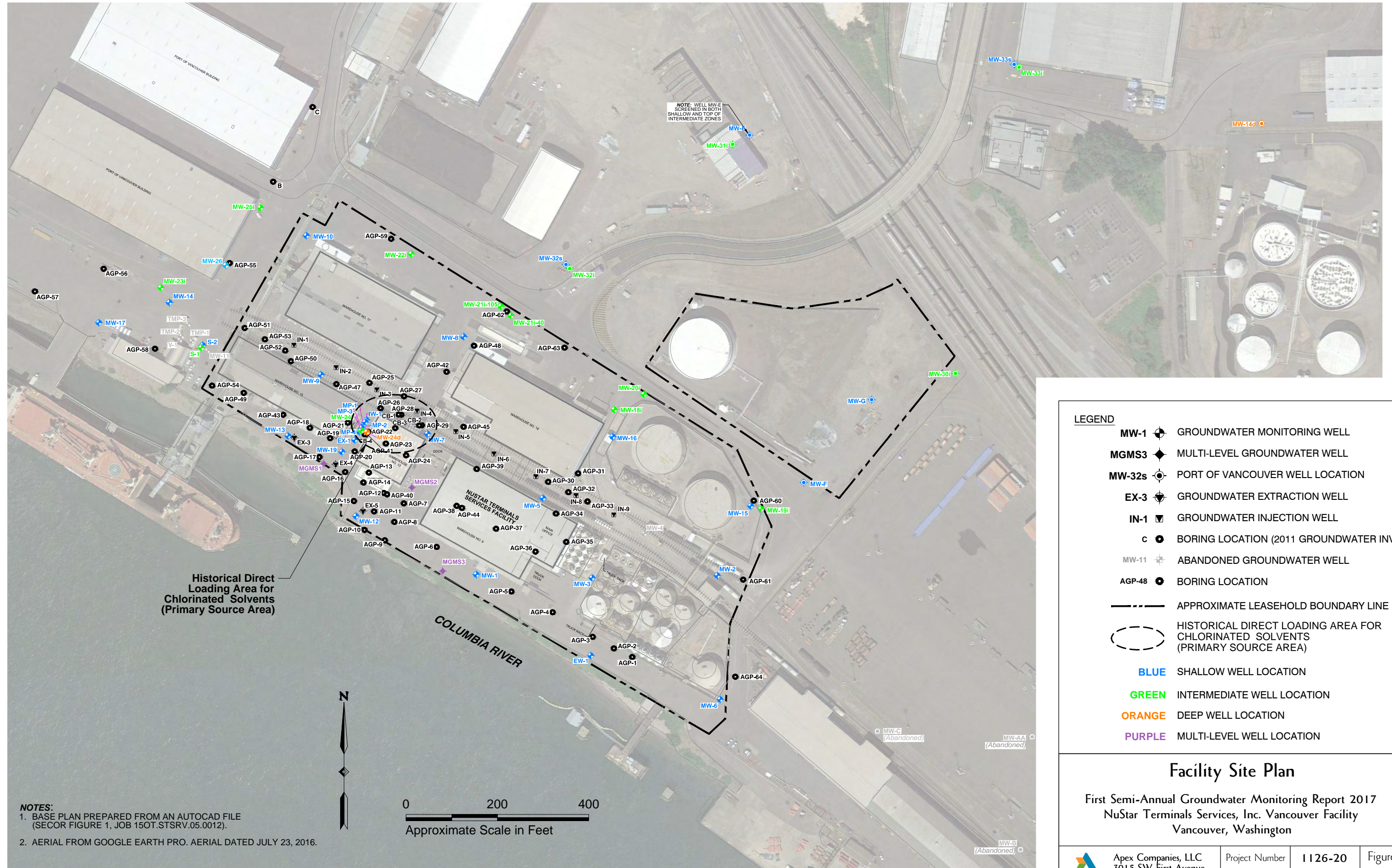
Facility Location Map

First Semi-Annual Groundwater Monitoring Report 2017
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington


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

Project Number	1126-20
August 2017	

Figure	1
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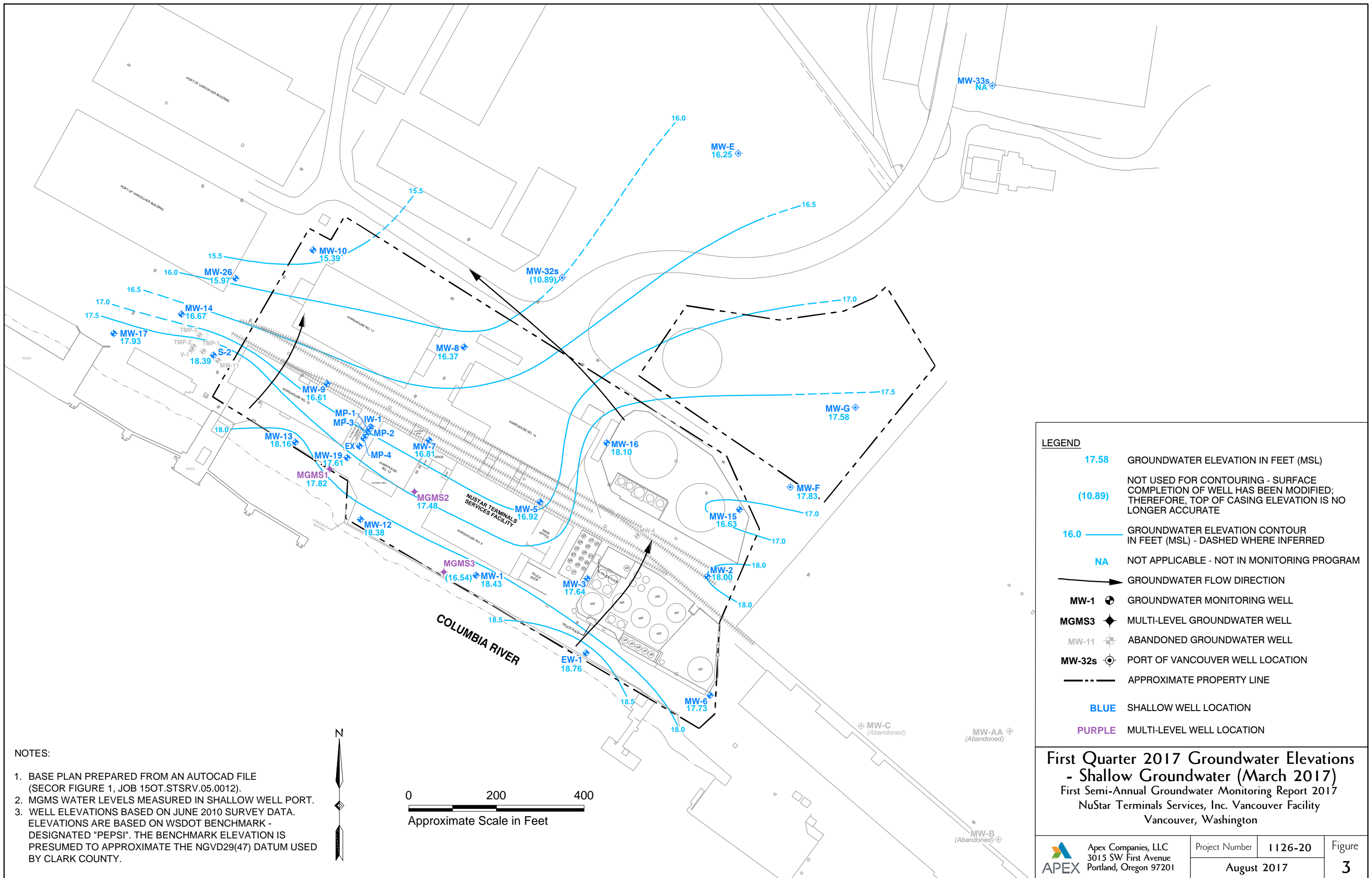


NOTES:
 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
 2. AERIAL FROM GOOGLE EARTH PRO. AERIAL DATED JULY 23, 2016.

LEGEND	
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL
MW-32s	PORT OF VANCOUVER WELL LOCATION
EX-3	GROUNDWATER EXTRACTION WELL
IN-1	GROUNDWATER INJECTION WELL
c	BORING LOCATION (2011 GROUNDWATER INV.)
MW-11	ABANDONED GROUNDWATER WELL
AGP-48	BORING LOCATION
(Dashed Line)	APPROXIMATE LEASEHOLD BOUNDARY LINE
(Dashed Oval)	HISTORICAL DIRECT LOADING AREA FOR CHLORINATED SOLVENTS (PRIMARY SOURCE AREA)
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 2017
 NuStar Terminals Services, Inc. Vancouver Facility
 Vancouver, Washington



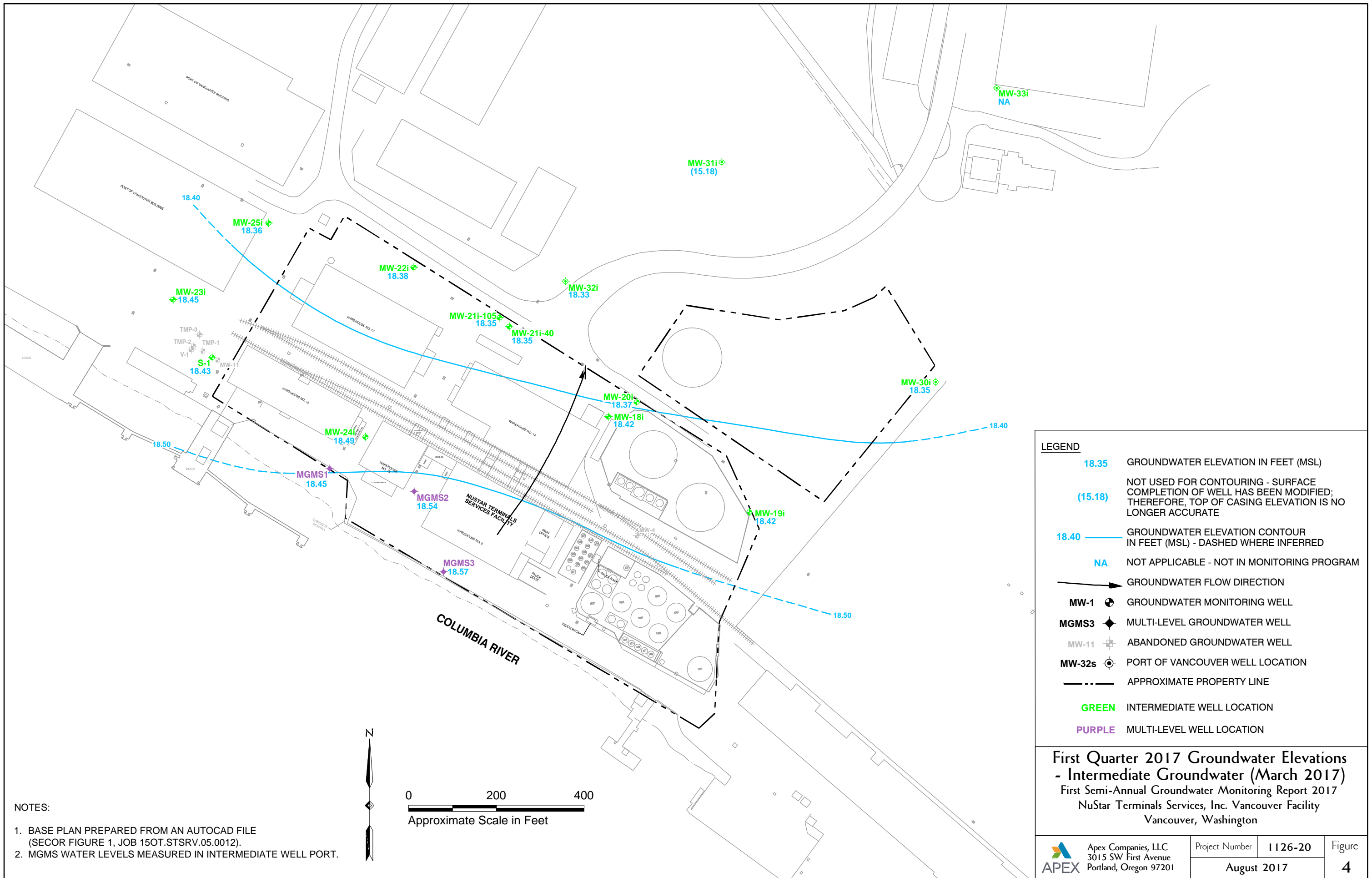
LEGEND

- 17.58 GROUNDWATER ELEVATION IN FEET (MSL)
- (10.89) NOT USED FOR CONTOURING - SURFACE COMPLETION OF WELL HAS BEEN MODIFIED; THEREFORE, TOP OF CASING ELEVATION IS NO LONGER ACCURATE
- 16.0 GROUNDWATER ELEVATION CONTOUR IN FEET (MSL) - DASHED WHERE INFERRED
- NA NOT APPLICABLE - NOT IN MONITORING PROGRAM
- 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 2017 Groundwater Elevations - Shallow Groundwater (March 2017)
 First Semi-Annual Groundwater Monitoring Report 2017
 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. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
3. 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.



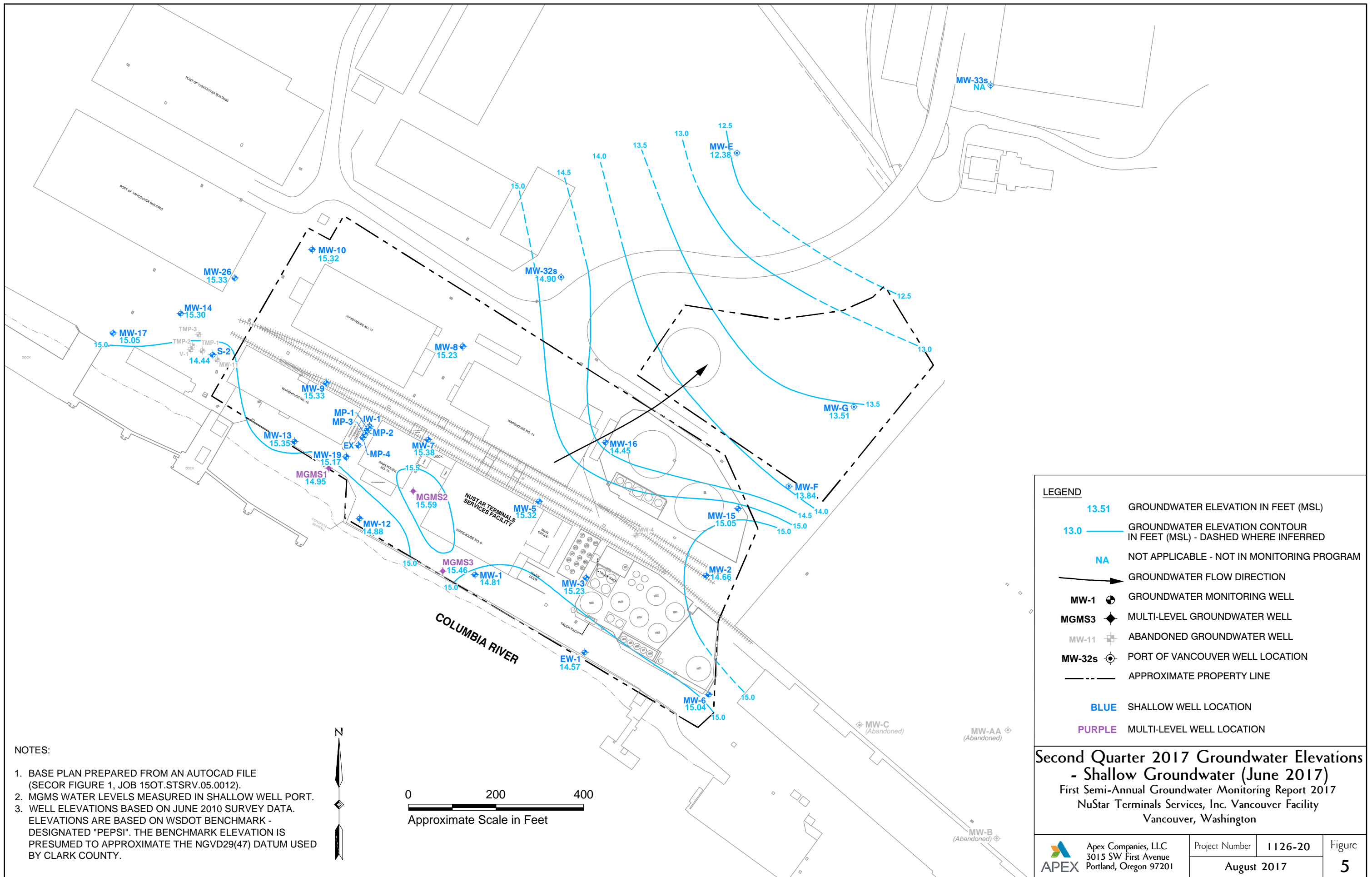
LEGEND

18.35	GROUNDWATER ELEVATION IN FEET (MSL)
(15.18)	NOT USED FOR CONTOURING - SURFACE COMPLETION OF WELL HAS BEEN MODIFIED; THEREFORE, TOP OF CASING ELEVATION IS NO LONGER ACCURATE
18.40	GROUNDWATER ELEVATION CONTOUR IN FEET (MSL) - DASHED WHERE INFERRED
NA	NOT APPLICABLE - NOT IN MONITORING PROGRAM
→	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

First Quarter 2017 Groundwater Elevations - Intermediate Groundwater (March 2017)
 First Semi-Annual Groundwater Monitoring Report 2017
 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. MGMS WATER LEVELS MEASURED IN INTERMEDIATE WELL PORT.



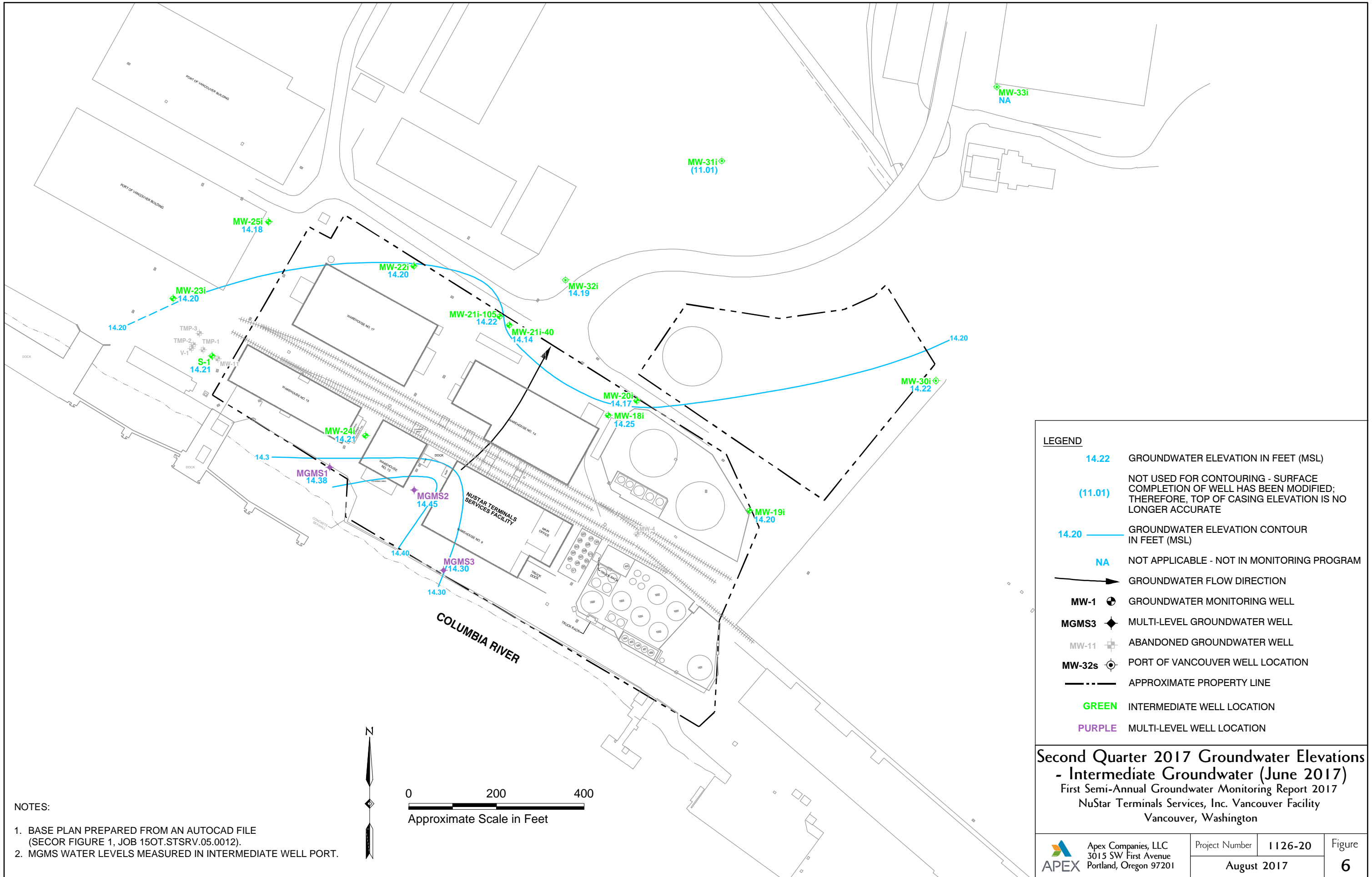
NOTES:

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
2. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
3. 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

- 13.51 GROUNDWATER ELEVATION IN FEET (MSL)
- 13.0 GROUNDWATER ELEVATION CONTOUR IN FEET (MSL) - DASHED WHERE INFERRED
- NA NOT APPLICABLE - NOT IN MONITORING PROGRAM
- 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

Second Quarter 2017 Groundwater Elevations - Shallow Groundwater (June 2017)
 First Semi-Annual Groundwater Monitoring Report 2017
 NuStar Terminals Services, Inc. Vancouver Facility
 Vancouver, Washington

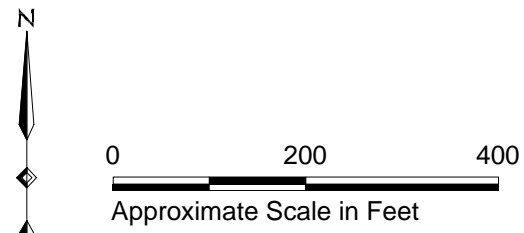


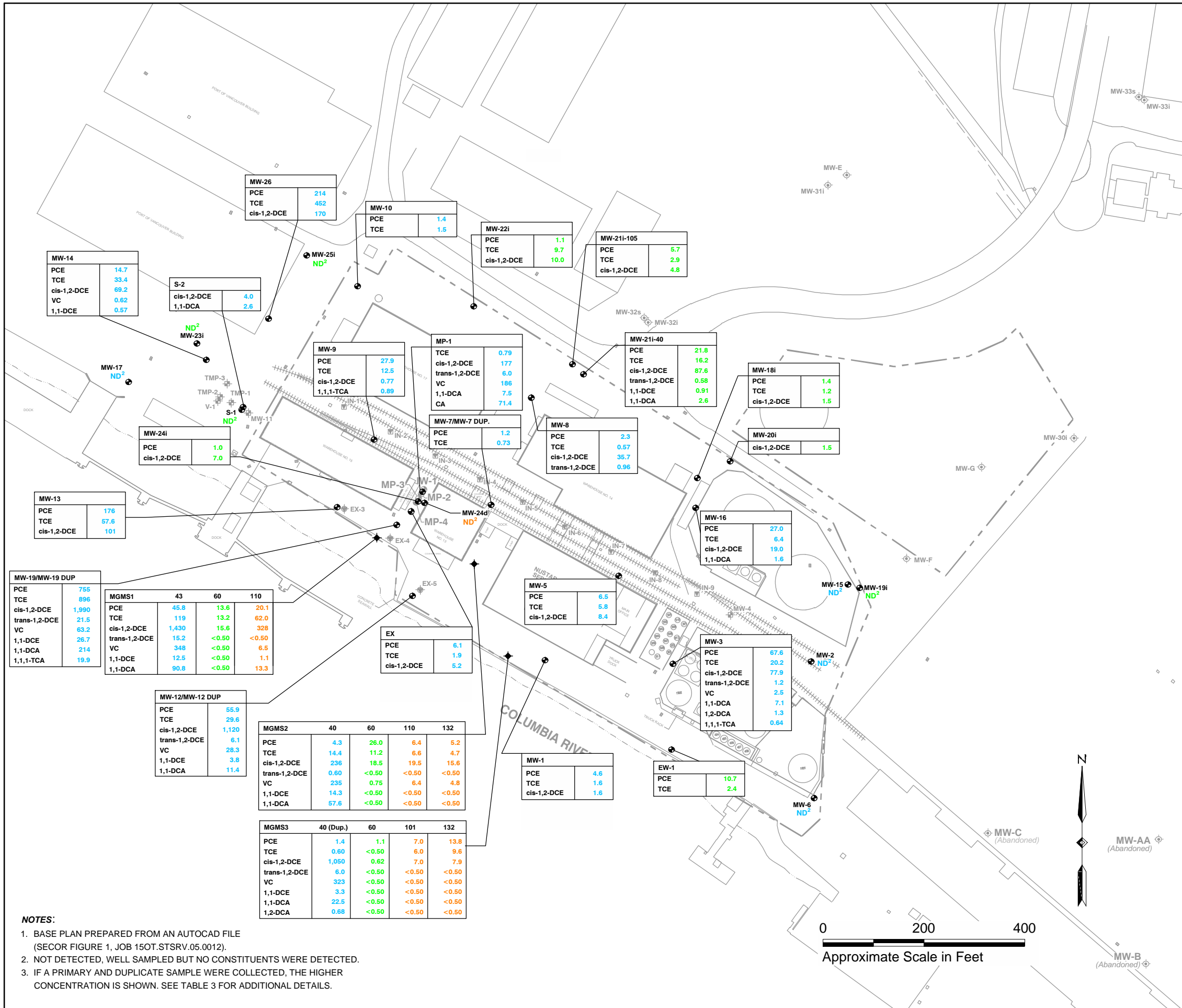
LEGEND

14.22	GROUNDWATER ELEVATION IN FEET (MSL)
(11.01)	NOT USED FOR CONTOURING - SURFACE COMPLETION OF WELL HAS BEEN MODIFIED; THEREFORE, TOP OF CASING ELEVATION IS NO LONGER ACCURATE
14.20	GROUNDWATER ELEVATION CONTOUR IN FEET (MSL)
NA	NOT APPLICABLE - NOT IN MONITORING PROGRAM
→	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 2017 Groundwater Elevations - Intermediate Groundwater (June 2017)
 First Semi-Annual Groundwater Monitoring Report 2017
 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. MGMS WATER LEVELS MEASURED IN INTERMEDIATE WELL PORT.





LEGEND

WELL IDENTIFICATION

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

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

MGMS1	60
PCE	13.6
TCE	13.2
cis-1,2-DCE	15.6
trans-1,2-DCE	<0.50
VC	<0.50
1,1-DCE	<0.50
1,1-DCA	<0.50

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
- APPROXIMATE PROPERTY LINE
- BLUE** SHALLOW ZONE CONCENTRATION DATA (DEPTHS OF 0 TO 45 FEET)
- GREEN** INTERMEDIATE ZONE CONCENTRATION DATA (DEPTHS OF 45 TO 100 FEET)
- ORANGE** DEEP ZONE CONCENTRATION DATA (DEPTHS OVER 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
1,1-DCA	1,1-DICHLOROETHANE
1,2-DCA	1,2-DICHLOROETHANE
1,1,1-TCA	1,1,1-TRICHLOROETHANE
CA	CHLOROETHANE

MW-19/MW-19 DUP

PCE	755
TCE	896
cis-1,2-DCE	1,990
trans-1,2-DCE	21.5
VC	63.2
1,1-DCE	28.7
1,1-DCA	214
1,1,1-TCA	19.9

MGMS1

	43	60	110
PCE	45.8	13.6	20.1
TCE	119	13.2	62.0
cis-1,2-DCE	1,430	15.6	328
trans-1,2-DCE	15.2	<0.50	<0.50
VC	348	<0.50	6.5
1,1-DCE	12.5	<0.50	1.1
1,1-DCA	90.8	<0.50	13.3

MW-12/MW-12 DUP

PCE	55.9
TCE	29.6
cis-1,2-DCE	1,120
trans-1,2-DCE	6.1
VC	28.3
1,1-DCE	3.8
1,1-DCA	11.4

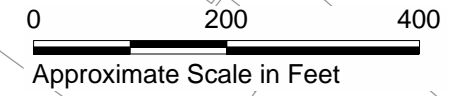
MGMS2

	40	60	110	132
PCE	4.3	26.0	6.4	5.2
TCE	14.4	11.2	6.6	4.7
cis-1,2-DCE	236	18.5	19.5	15.6
trans-1,2-DCE	0.60	<0.50	<0.50	<0.50
VC	235	0.75	6.4	4.8
1,1-DCE	14.3	<0.50	<0.50	<0.50
1,1-DCA	57.6	<0.50	<0.50	<0.50

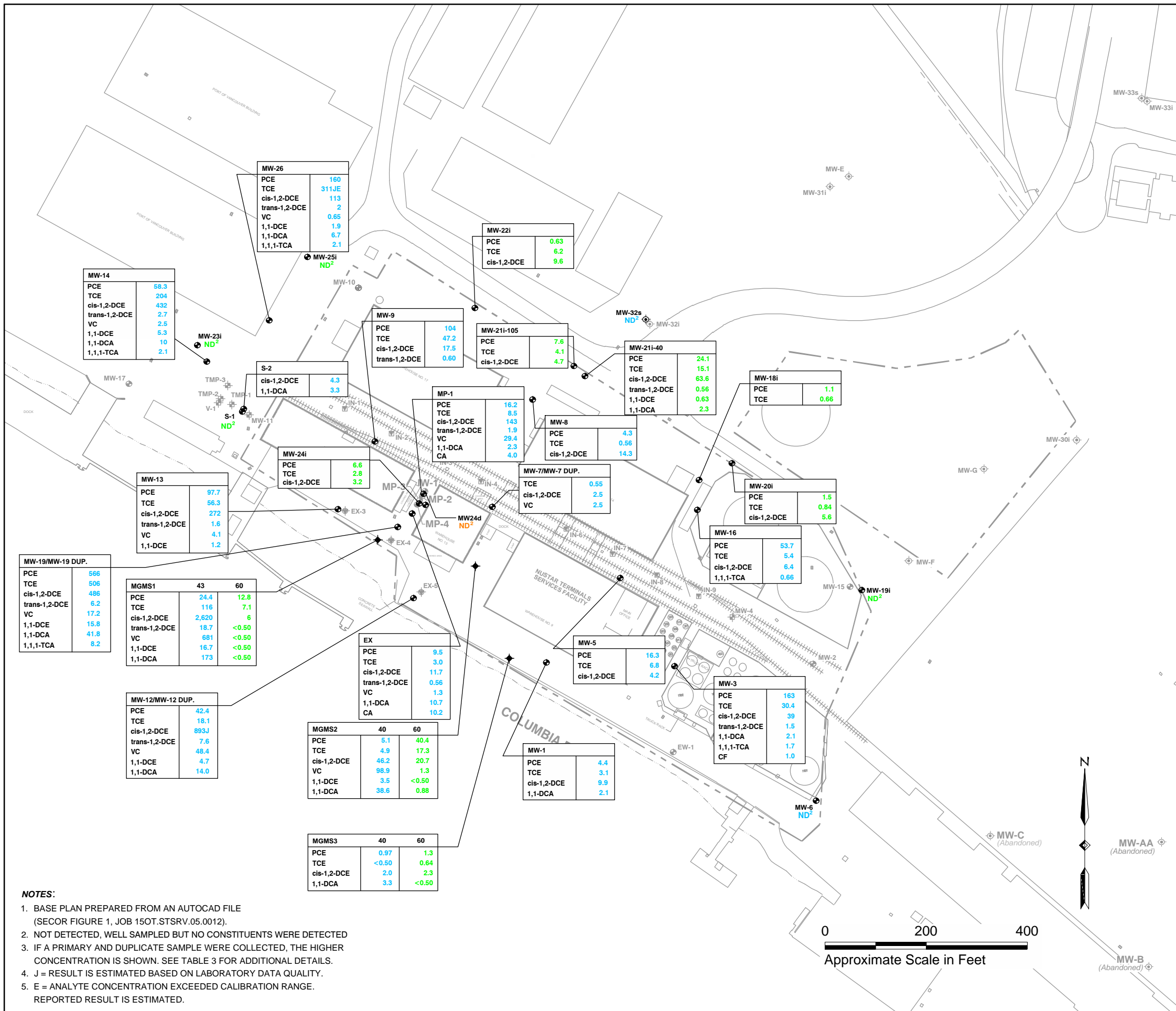
MGMS3

	40 (Dup.)	60	101	132
PCE	1.4	1.1	7.0	13.8
TCE	0.60	<0.50	6.0	9.6
cis-1,2-DCE	1,050	0.62	7.0	7.9
trans-1,2-DCE	6.0	<0.50	<0.50	<0.50
VC	323	<0.50	<0.50	<0.50
1,1-DCE	3.3	<0.50	<0.50	<0.50
1,1-DCA	22.5	<0.50	<0.50	<0.50
1,2-DCA	0.68	<0.50	<0.50	<0.50

- NOTES:**
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
 2. NOT DETECTED, WELL SAMPLED BUT NO CONSTITUENTS WERE DETECTED.
 3. IF A PRIMARY AND DUPLICATE SAMPLE WERE COLLECTED, THE HIGHER CONCENTRATION IS SHOWN. SEE TABLE 3 FOR ADDITIONAL DETAILS.



First Quarter 2017 Groundwater Concentrations (March 2017)
 First Semi-Annual Groundwater Monitoring Report 2017
 NuStar Terminals Services, Inc. Vancouver Facility
 Vancouver, Washington



LEGEND

WELL IDENTIFICATION

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

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

MGMS1	60
PCE	12.8
TCE	7.1
cis-1,2-DCE	6
trans-1,2-DCE	<0.50
VC	<0.50
1,1-DCE	<0.50
1,1-DCA	<0.50

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)
- ORANGE** DEEP ZONE CONCENTRATION DATA (DEPTHS OVER 100 FEET)

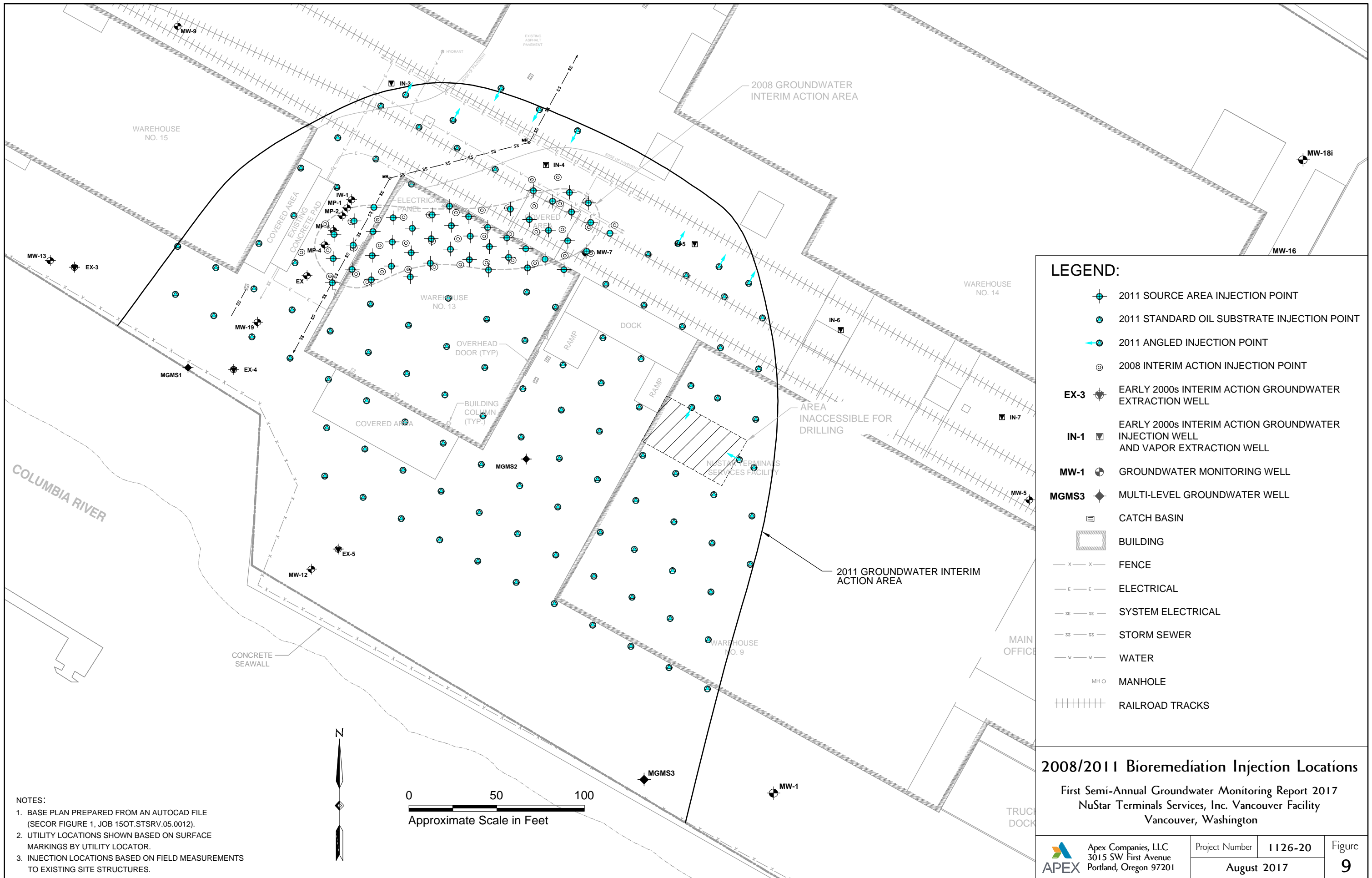
ABBREVIATIONS

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
1,1-DCA	1,1-DICHLOROETHANE
1,1,1-TCA	1,1,1-TRICHLOROETHANE
CF	CHLOROFORM
1,2-DCP	1,2-DICHLOROPROPANE
CA	CHLOROETHANE

- NOTES:**
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
 2. NOT DETECTED, WELL SAMPLED BUT NO CONSTITUENTS WERE DETECTED
 3. IF A PRIMARY AND DUPLICATE SAMPLE WERE COLLECTED, THE HIGHER CONCENTRATION IS SHOWN. SEE TABLE 3 FOR ADDITIONAL DETAILS.
 4. J = RESULT IS ESTIMATED BASED ON LABORATORY DATA QUALITY.
 5. E = ANALYTE CONCENTRATION EXCEEDED CALIBRATION RANGE. REPORTED RESULT IS ESTIMATED.

Second Quarter 2017 Groundwater Concentrations (June 2017)

First Semi-Annual Groundwater Monitoring Report 2017
 NuStar Terminals Services, Inc. Vancouver Facility
 Vancouver, Washington

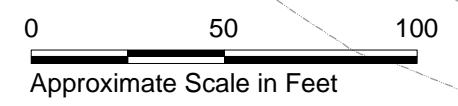


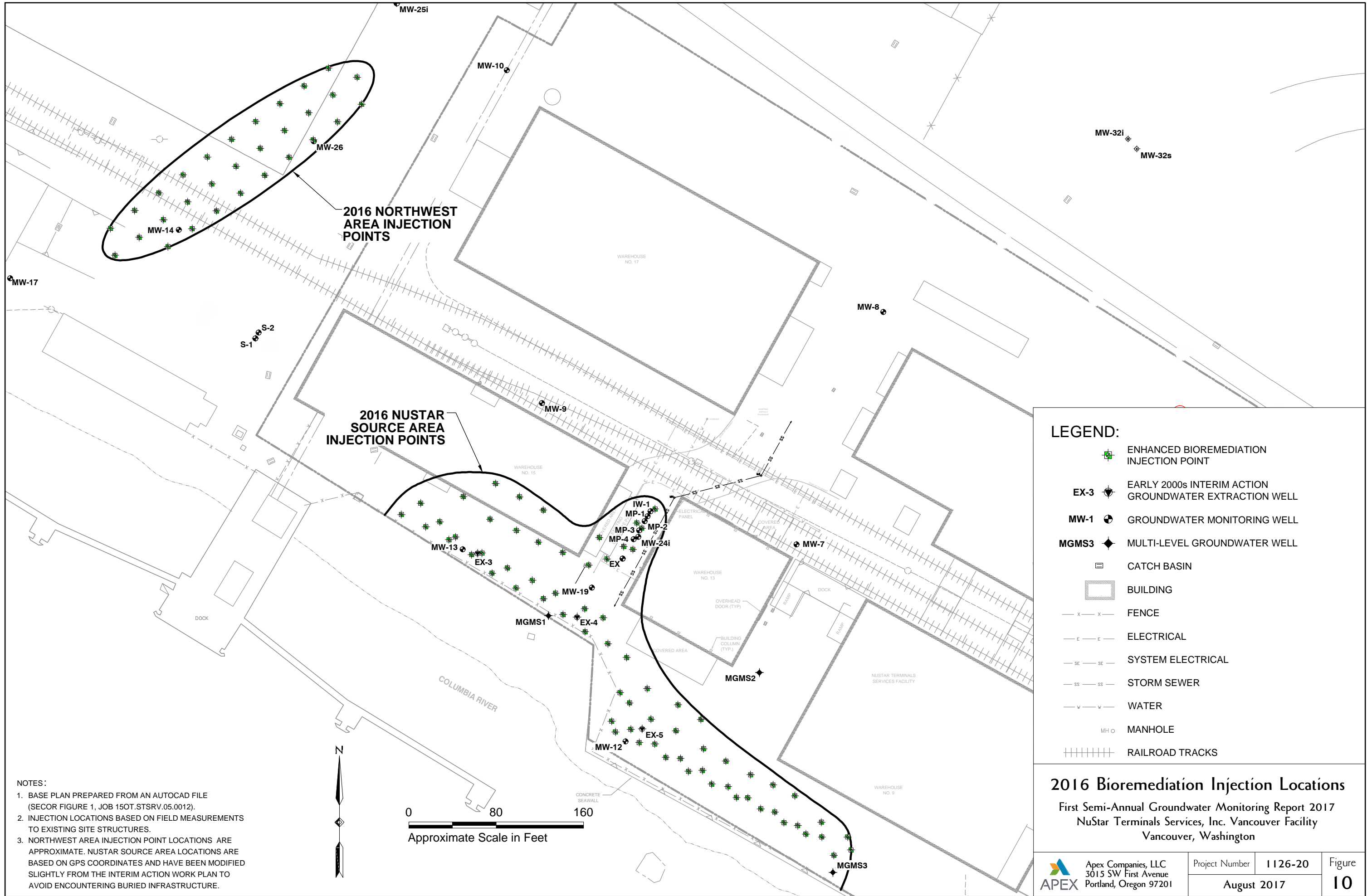
LEGEND:

- 2011 SOURCE AREA INJECTION POINT
- 2011 STANDARD OIL SUBSTRATE INJECTION POINT
- 2011 ANGLED INJECTION POINT
- 2008 INTERIM ACTION INJECTION POINT
- 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
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE
- RAILROAD TRACKS

2008/2011 Bioremediation Injection Locations
 First Semi-Annual Groundwater Monitoring Report 2017
 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.





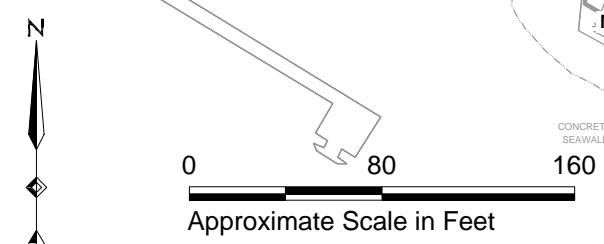
LEGEND:

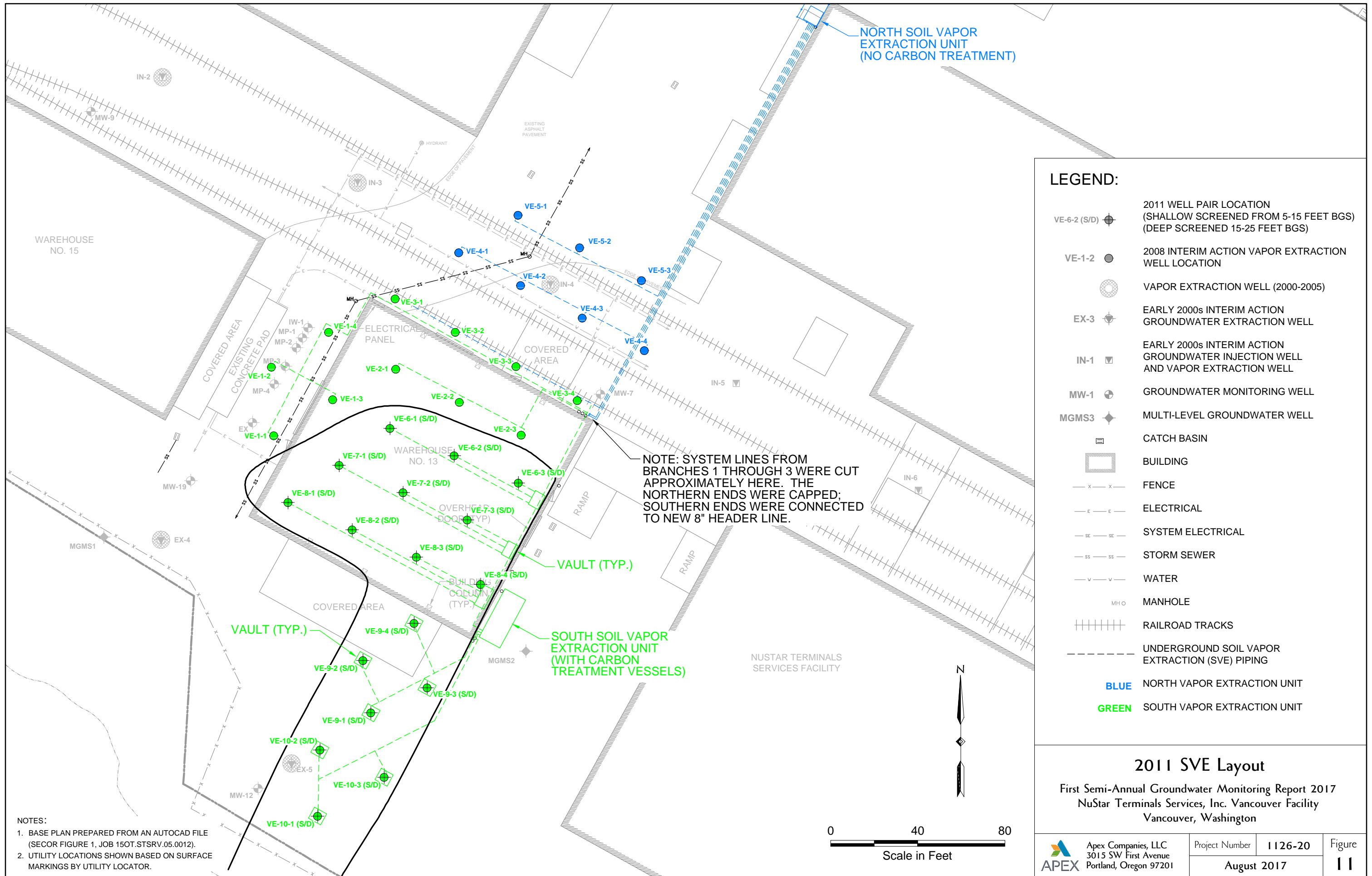
- ENHANCED BIOREMEDIATION INJECTION POINT
- EX-3 EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- MW-1 GROUNDWATER MONITORING WELL
- MGMS3 MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE
- RAILROAD TRACKS

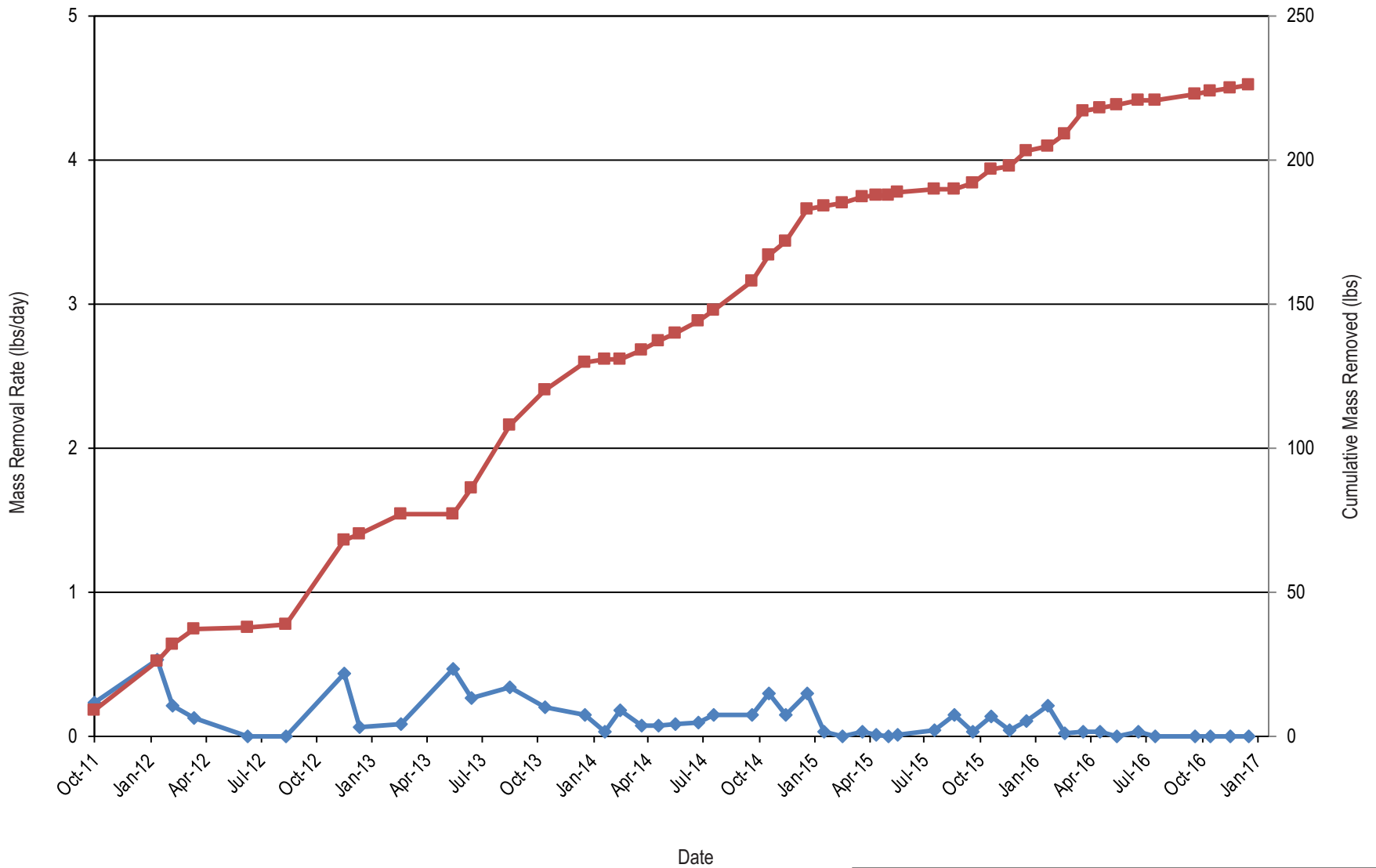
2016 Bioremediation Injection Locations
 First Semi-Annual Groundwater Monitoring Report 2017
 NuStar Terminals Services, Inc. Vancouver Facility
 Vancouver, Washington

NOTES:

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T-STSRV.05.0012).
2. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.
3. NORTHWEST AREA INJECTION POINT LOCATIONS ARE APPROXIMATE. NUSTAR SOURCE AREA LOCATIONS ARE BASED ON GPS COORDINATES AND HAVE BEEN MODIFIED SLIGHTLY FROM THE INTERIM ACTION WORK PLAN TO AVOID ENCOUNTERING BURIED INFRASTRUCTURE.







Legend:

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

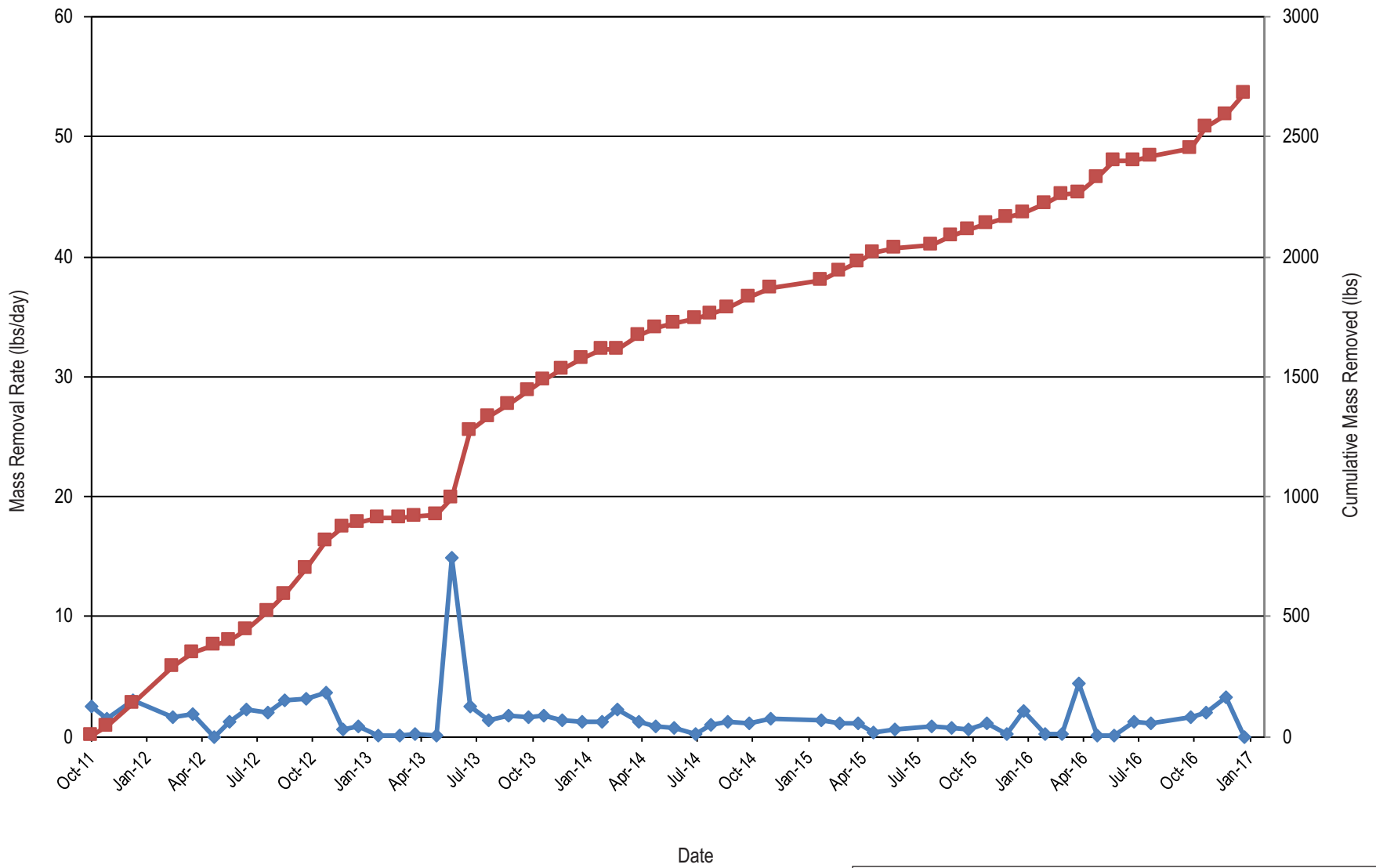
North SVE System - VOC Mass Removal

First Semi-Annual Groundwater Monitoring Report 2017
 NuStar Terminals Services, Inc. Vancouver Facility
 Vancouver, Washington

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

Project Number	1126-20
August 2017	

Figure
12



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 2017
 NuStar Terminals Services, Inc. Vancouver Facility
 Vancouver, Washington

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

Project Number	1126-20
August 2017	

Figure
13

Appendix A

Field Sampling Data Sheets



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

PROJECT NUMBER 1126-20
 FIELD REPORT NUMBER _____
 PAGE 1 OF 1
 DATE 3/27/17

PROJECT <u>Mustar Van GWM</u>	ARRIVAL TIME <u>0650</u>
LOCATION <u>Mustar Vancouver</u>	DEPARTURE TIME <u>1600</u>
CLIENT <u>Mustar Vancouver</u>	WEATHER <u>Rain</u>
PURPOSE OF OBSERVATIONS _____	
APEX REPRESENTATIVE <u>K.K. MM</u>	APEX PROJECT MANAGER <u>S. Satisbury</u>
CONTRACTOR _____	PERMIT NO. <u>245259</u>
CONTRACTOR REP. _____	H&S REVIEW <u>yes</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 - On site, sign in, safety meeting, safety training
 Get permit
 0800 - start to pop well caps for gauging
 0940 - start gauging wells
 1250 - Finish gauging wells
 1331 - At well 2SI, a sharpie fell out of my pocket and went down the hole. The lid was on.
 1240 - start setting up to sample wells, cal 4SI
 1325 - start sampling first well
 1530 - Finish sampling last well of the day.
 1550 - dump purge water into Drum
 1600 - sign out turn in permit OFF site

BY _____

 APEX REPRESENTATIVE

REVIEWED BY _____
 APEX PROJECT MANAGER

WELL GAGING DATA SHEET




Client:	Mustar Van	Job Number:	1126-20
Project:	1020176W	Date:	3/27/17
Weather:	Rain	Sampler:	PK, MM
		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-2	0940	—	16.04	—	—	—	
MW-9	0950	—	18.25	—	—	—	
MW-7	0954	—	16.93	—	—	—	
MW-5	0956	—	16.94	—	—	—	
MP-1	1000	—	16.89	—	—	—	
MP-2	1002	—	16.90	—	—	—	
MW-2AD	1005	—	15.53	—	—	—	
MP-3	1005	—	16.60	—	—	—	
MP-4	1006	—	16.35	—	—	—	
EX	1009	—	16.26	—	—	+	
MW-19	1011	—	15.98	—	—	—	
MW-13	1016	—	14.99	—	—	—	
S-2	1019	—	14.76	—	—	—	
S-1	1218	—	14.81	—	—	—	
MW-14	1023	—	17.14	—	—	—	
MW-17	1025	—	14.72	—	—	—	
MW-26	1030	—	17.76	—	—	—	
MW-10	1032	—	19.44	—	—	—	
MW-8	1035	—	17.60	—	—	—	
MW-32S	1039	—	23.45	—	—	—	
MW-E	1044	—	14.39	—	—	—	NO cover
MW-16	1050	—	14.95	—	—	—	
MW-15	1054	—	22.50	—	—	—	
MW-F	1057	—	15.65	—	—	—	
MW-G	1100	—	13.92	—	—	—	
MW-6	1102	—	15.16	—	—	—	
EW-1	1105	—	12.64	—	—	—	
MW-1	1107	—	14.17	—	—	—	
MW-12	1109	—	13.05	—	—	—	
M6MS1-43	1120	—	15.04	—	—	—	
M6MS2-60	1121	—	14.41	—	—	—	
M6MS1-132	1122	—	14.38	—	—	—	

WELL MONITORING DATA SHEET

	Well I.D.	MW-23i	Job Number:	1126-20
	Client:	Mustar Van	Date:	3/27/17
	Project:	19207 GWM	Sampler:	KK, mm
	Weather:	Rain, overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	15.36	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:		B. Pump		Pump Intake Depth:		MS		Comments			
Sampling Method:		LF		Tubing Type:		Skip Ded.					
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
1514	—	—	14.96	0.20	7.46	15.11	133	6.87	51.4	—	C
1517	—	—	15.00	↓	7.24	15.32	133	6.95	55.7	—	C
1520	—	—	15.03	↓	7.22	15.12	131	7.05	58.6	—	C
1523	—	—	15.05	✓	7.21	15.02	130	7.12	61.8	—	C


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

SAMPLING DATA

Sample ID:	MW-23i	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	1525	Final Depth to Water:	15.02	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD
3 x 40ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.: <u>MW-14</u>	Job Number: <u>1126-20</u>
	Client: <u>Nustar Van</u>	Date: <u>3/27/17</u>
	Project: <u>1Q 2017 GWM</u>	Sampler: <u>KK, MM</u>
	Weather: <u>Rain</u>	Time In/Out: _____

WELL DATA

Well Depth: _____	Well Diameter: <u>4"</u>	Water Height: _____
Depth to Water: <u>16.85</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>B. Pump</u>				Pump Intake Depth: <u>MS</u>				Comments			
Sampling Method: <u>LF</u>				Tubing Type: <u>SKIP Ded.</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>1444</u>	—	—	<u>17.28</u>	<u>0.20</u>	<u>6.67</u>	<u>14.92</u>	<u>672</u>	<u>5.61</u>	<u>42.3</u>		
<u>1447</u>	—	—	<u>17.37</u>	<u>0.20</u>	<u>6.65</u>	<u>15.62</u>	<u>810</u>	<u>2.29</u>	<u>41.6</u>		
<u>1460</u>	—	—	<u>17.38</u>	<u>0.20</u>	<u>6.65</u>	<u>15.81</u>	<u>843</u>	<u>2.50</u>	<u>37.1</u>		
<u>1453</u>	—	—	<u>17.38</u>	<u>0.20</u>	<u>6.65</u>	<u>15.79</u>	<u>846</u>	<u>2.50</u>	<u>35.8</u>		

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

SAMPLING DATA

Sample ID: <u>MW-14</u>	Sampling Flow Rate: <u>0.15</u>	Analytical Laboratory: <u>PACE</u>				
Sample Time: <u>1455</u>	Final Depth to Water: <u>17.29</u>	Did Well Dewater? <u>N</u>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<u>3x40ml</u>	<u>HCl</u>	<u>HUOC</u>	yes <input checked="" type="checkbox"/> no	—	—	—
<u>2x40ml</u>	—	<u>Ethene, Ethene</u>	yes <input checked="" type="checkbox"/> no	—	—	—
<u>2x40ml</u>	<u>H2SO4</u>	<u>TOC</u>	yes <input checked="" type="checkbox"/> no	—	—	—
			yes no			
			yes no			
			yes no			

COMMENTS



WELL MONITORING DATA SHEET

Well I.D.	S-1	Job Number:	1126-20
Client:	Austar Van	Date:	3/27/17
Project:	1Q2017 GWM	Sampler:	KK, MM
Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	14.84	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:		B, Pum			Pump Intake Depth:	MS					Comments			
Sampling Method:		LF			Tubing Type:								SKIP Deed-	
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			
1409	—	—	14.86	0.20	7.80	13.22	98	10.50	60.3	—	SC			
1412	—	—	14.86	—	7.92	13.20	94	10.37	65.1	—	SC			
1415	—	—	14.88	—	7.96	13.18	94	10.39	65.4	—	SC			
1418	—	—	14.87	—	8.00	13.15	93	10.21	63.4	—	SC			

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

SAMPLING DATA

Sample ID:	S-1	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1420	Final Depth to Water:	14.86	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.:	S-2	Job Number:	1126-20
Client:	Mustar Van	Date:	3/27/17
Project:	102017 GWM	Sampler:	KK/MM
Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"
Depth to Water:	14.76	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:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Skip bond	

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	—	—	14.00	0.20	6.71	14.06	1151	3.31	-6.1	—	CI
1338	—	—	14.12	↓	6.69	14.18	1186	2.54	-10.8	—	CI
1341	—	—	14.12	↓	6.67	14.17	1196	2.74	-3.6	—	CI
1344	—	—	14.12	↓	6.70	14.14	1182	2.98	4.6	—	CI

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

SAMPLING DATA

Sample ID:	S-2	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	1345	Final Depth to Water:	14.88	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3x40ml	HCl	HVOC	yes no	—	—
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS



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

PROJECT NUMBER 1126-20
 FIELD REPORT NUMBER _____
 PAGE 1 OF 1
 DATE 3/28/17

PROJECT	<u>1Q2017 GWM</u>	ARRIVAL TIME	<u>0650</u>
LOCATION	<u>Nustar Vancouver</u>	DEPARTURE TIME	<u>1645</u>
CLIENT	<u>Nustar</u>	WEATHER	<u>overcast</u>
PURPOSE OF OBSERVATIONS	<u>Groundwater monitoring</u>		
APEX REPRESENTATIVE	<u>KK, MM</u>	APEX PROJECT MANAGER	<u>S. Salisbury</u>
CONTRACTOR	_____	PERMIT NO.	_____
CONTRACTOR REP.	_____	H&S REVIEW	<u>yes</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 - on site, sign in, safety meeting, get permit
 0735 - start to set up for sampling, cal 45L, clean bladders
 0810 - start sampling wells.
 1200 - Empty purge buckets into new Drum.
 1230 - start o+m south system valve stuck down, high pressures.
 1330 - move on to MGMS3 and sample
 1620 Finish sampling last well of the day
 1630 - clean up, dump purge water in Drum
 1645 - off site

BY [Signature]
 APEX REPRESENTATIVE

REVIEWED BY _____
 APEX PROJECT MANAGER

WELL MONITORING DATA SHEET



Well I.D.	EX	Job Number:	1126-20
Client:	Nustar Van	Date:	3/28/17
Project:	1Q2017 GWM	Sampler:	VK/MM
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	15.95	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:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
1600	—	—	16.21	0.20	7.33	15.83	861	4.63	85.8	—	C
1603	—	—	16.18	—	7.21	16.30	874	1.52	90.0	—	C
1606	—	—	16.24	—	7.20	16.31	875	1.52	90.3	—	C
1609	—	—	16.18	—	7.21	16.31	877	1.50	89.9	—	C

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

SAMPLING DATA

Sample ID:	EX	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1612	Final Depth to Water:	16.21	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes (no)	—	—	—
2 X 40 ml	—	RSK 175	yes (no)	—	—	—
2 X 40 ml	H2SO4	TOL	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-19	Job Number:	1126-20
Client:	Mustar VAN	Date:	3/28/17
Project:	1Q2017 GWM	Sampler:	KK/MM
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	15.80	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:	B. Pump			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated skip						
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
1530	—	—	14.15	0.20	6.96	14.45	2099	4.48	117.4	—	C
1533	—	—	14.03	—	7.17	15.02	2464	2.48	105.6	—	C
1536	—	—	14.18	—	7.37	15.38	2240	1.56	88.5	—	C
1539	—	—	14.18	—	7.39	15.40	2230	1.48	84.1	—	C
1542	—	—	14.16	—	7.41	15.49	2189	1.26	82.7	—	C

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

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1545	Final Depth to Water:	15.05	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HUOC	yes (no)	—	—	MW-19 Dup
2 X 40 ml	—	RSK 175	yes	no		
2 X 40 ml	H2SO4	TBC	yes	no		
			yes	no		
			yes	no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MGMS3-132	Job Number:	1126-20
Client:	Mustar Van	Date:	3/28/17
Project:	1Q 2017 GWM	Sampler:	KK/mm
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	13.08	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:				B. Pump				Pump Intake Depth:				—		Comments	
Sampling Method:				LF				Tubing Type:				Dedicated			
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				
1452	—	—	13.02	0.15	8.32	10.18	178	2.91	32.0	—	C				
1455	—	—	13.03		8.37	10.05	177	0.86	31.2	—	C				
1458	—	—	13.03		8.40	10.01	176	0.59	30.1	—	C				
1501	—	—	13.08	✓	8.43	10.11	176	0.50	28.1	—	C				


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

SAMPLING DATA

Sample ID:	MGMS3-132	Sampling Flow Rate:	0.15	Analytical Laboratory:	Pace
Sample Time:	1505	Final Depth to Water:	13.10	Did Well Dewater?	NO
# Containers/Type	3X40	Preservative	HCl	Analysis/Method	HVOC
				Field Filtered	yes <input checked="" type="radio"/> no
				Filter Size	—
				MS/MSD	—
				Duplicate ID	—
				yes	no
				yes	no
				yes	no
				yes	no

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MGMS3-110	Job Number:	1126-20
	Client:	Nustar VAN	Date:	3/28/17
	Project:	1Q 2017 GWM	Sampler:	KK/MM
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	13.00	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:				B. Pump				Pump Intake Depth:			—		Comments	
Sampling Method:				LF				Tubing Type:			Dedicated			
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			
1433	—	—	13.01	0.15	7.86	10.97	144	6.74	35.8	—	C			
1436	—	—	13.07		7.89	10.84	156	1.48	36.6	—	C			
1439	—	—	13.02		7.93	10.85	160	1.29	36.0	—	C			
1442	—	—	13.05		7.96	10.78	161	1.12	35.4	—	C			


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

SAMPLING DATA

Sample ID:	MGMS3-110	Sampling Flow Rate:	0.15	Analytical Laboratory:	Pace	
Sample Time:	1445	Final Depth to Water:	13.10	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MGMS3-60	Job Number:	1126-20
	Client:	NuStar Van	Date:	3/28/17
	Project:	1Q 2017 GWM	Sampler:	KK/mm
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	13.01	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:	B. Pump			Pump Intake Depth:	—			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated						
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
1412	—	—	13.01	0.20	8.80	11.99	138	10.13	-48.3	—	C
1415			13.12		8.63	11.88	132	9.89	-29.7	—	C
1418			13.10		8.59	11.62	129	10.02	-21.3	—	C
1421			13.05		8.54	11.51	127	10.12	-14.8	—	C


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

SAMPLING DATA

Sample ID:	MGMS3-60	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1423	Final Depth to Water:	13.02	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MGMS3-40	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/28/17
	Project:	1Q 2017 GWM	Sampler:	KK/MM
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	12.98 13.02	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:	B Pump	Pump Intake Depth:	—	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

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	
1344	—	—	13.05	0.20	8.71	11.25	589	6.28	-58.0	—	C	
1347	—	—	13.05	0.20	9.36	11.44	530	3.69	-98.9	—	C	
1350	—	—	13.08	0.20	9.38	11.61	502	2.24	-115.2	—	C	
1353	—	—	13.11	0.20	9.37	11.60	499	1.98	-120.1	—	C	
1356	—	—	13.12	0.20	9.36	11.66	501	1.62	-123.9	—	C	
1359	—	—	13.12	0.20	9.34	11.77	504	1.57	-125.8	—	C	
1403			SAMPLE									

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


SAMPLING DATA

Sample ID:	MGMS3-40	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1403	Final Depth to Water:	13.03	Did Well Dewater?	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40	HCl	HDOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
2 x 40	—	Ethene, Ethane	yes <input type="radio"/> no <input checked="" type="radio"/>	—	MGMS3-40 Dup
2 x 40	H2SO4	TOC	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

--

WELL MONITORING DATA SHEET

	Well I.D.: MW-24d	Job Number: 1126-20
	Client: Mustar Van	Date: 3/28/17
	Project: 1Q 2017 GWM	Sampler: KK/MM
	Weather: overcast	Time In/Out:

WELL DATA

Well Depth: —	Well Diameter: 2"	Water Height: —
Depth to Water: 15.33	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: B. Pump				Pump Intake Depth: MS				Comments			
Sampling Method: LF				Tubing Type: Ded. Skip							
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
1138	—	—	15.83	0.20	8.58	14.06	268	5.62	-40.9	—	C
1141	—	—	15.90		9.24	12.88	265	1.83	-111.4	—	C
1144	—	—	15.90		9.28	12.85	262	1.69	-115.1	—	C
1147	—	—	15.90		9.31	12.85	262	1.52	-120.2	—	C


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

SAMPLING DATA

Sample ID: MW-24d	Sampling Flow Rate: 0.20	Analytical Laboratory: Pace				
Sample Time: 1150	Final Depth to Water: 15.44	Did Well Dewater? NO				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-2	Job Number:	1126-20
	Client:	Mustar Van	Date:	3/28/17
	Project:	12 2017 GWM	Sampler:	RK/MM
	Weather:	overcast	Time In/Out:	—

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	15.26	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:	B. Pump	Pump Intake Depth:	MS	Comments	
Sampling Method:	LF	Tubing Type:	Ded. Skid		

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
1040	—	—	—	0.20	7.26	12.89	25	9.85	96.6	—	C
1043	—	—	—	0.20	6.40	13.16	16	7.31	132.8	—	C
1046	—	—	—	0.20	6.42	13.21	88	3.26	130.0	—	C
1049	—	—	—	0.20	7.15	13.19	187	1.58	64	—	C
1052	—	—	—	0.20	7.75	13.19	250	1.40	-13.0	—	C
1055	—	—	—	0.20	7.93	13.18	294	1.29	-43.2	—	C
1058	—	—	—	0.20	8.08	13.17	360	1.13	-64.2	—	C
1101	—	—	—	0.20	8.36	13.20	488	1.00	-99.6	—	C
1104	—	—	—	0.20	8.48	13.16	558	0.91	-114.3	—	C
1107	—	—	—	0.20	8.48	13.16	571	0.84	-117.4	—	C

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


SAMPLING DATA

Sample ID:	MW-2	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1110	Final Depth to Water:	22.85	Did Well Dewater?	N
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

* Parameters would not stabilize, took sample after 10 readings. During testing could not get DTW, water level gauge wouldn't work

WELL MONITORING DATA SHEET

	Well I.D.	MW-15	Job Number:	1126-20
	Client:	Mustar Van	Date:	3/28/17
	Project:	1Q 2017 GWM	Sampler:	KK/MM
	Weather:	overcast	Time In/Out:	—

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	21.90	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:	B. Pump				Pump Intake Depth:	ms				Comments	
Sampling Method:	LF				Tubing Type:	Ded. Skip				—	
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
1000	—	—	—	0.20	7.16	12.59	438	4.96	56.0	—	C
1003	—	—	—		6.91	13.46	454	1.84	74.1	—	C
1006	—	—	—		6.89	13.45	454	1.73	77.4	—	C
1009	—	—	—		6.87	13.47	453	1.46	82.4	—	C

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

SAMPLING DATA

Sample ID:	MW-15	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1010	Final Depth to Water:	23.26	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HUOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

well on other side of wall so didn't get DTW every 3 mins.

WELL MONITORING DATA SHEET



Well I.D.	MW-5	Job Number:	1126-20
Client:	Nustar Van	Date:	3/28/17
Project:	1Q 2017 GWM	Sampler:	KK/MM
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	16.71	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:		B. Pump		Pump Intake Depth:		MS		Comments			
Sampling Method:		LF		Tubing Type:		Ded. Skip					
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
0925	—	—	16.77	0.20	8.25	13.21	540	6.14	-81.2	—	C
0928	—	—	16.56		8.21	14.78	530	6.97	-96.2	—	C
0931	—	—	16.57		8.17	14.88	528	7.14	-86.1	—	C
0934	—	—	16.57		8.13	15.04	524	7.28	-81.4	—	C

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

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	0936	Final Depth to Water:	16.74	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes (no)	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-7	Job Number:	1126-20
Client:	Nustar Van	Date:	3/28/17
Project:	1Q2017 GWM	Sampler:	KK, MM
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	16.60	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:	B. Pump	Pump Intake Depth:	ms	Comments
Sampling Method:	LF	Tubing Type:	Deed. Skip	

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
0841	—	—	16.73	0.20	7.34	12.66	91	7.28	51.4	—	C
0844	—	—	16.75		7.63	13.83	58	2.21	-2.4	—	C
0847	—	—	16.75		7.64	14.20	48	1.02	-21.6	—	C
0850	—	—	16.75		7.63	14.24	47	0.96	-22.5	—	C
0853	—	—	16.75		7.63	14.26	46	0.89	-25.4	—	C


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

SAMPLING DATA

Sample ID:	MW-7	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	0855	Final Depth to Water:	16.73	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
6 x 40 ml	HCl	HVOC	yes no	—	— MW-7 Dup
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.:	MW-9	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/28/17
	Project:	1Q2017 GWM	Sampler:	KK, MM
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	17.04	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:	B. Pump	Pump Intake Depth:	ms	Comments	
Sampling Method:	LF	Tubing Type:	skip ded.		

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
0812	—	—	17.05	0.20	4.75	11.64	1284	5.81	248.0	—	C
0815	—	—	17.07		4.33	12.35	1432	5.03	280.2	—	C
0818	—	—	17.07		4.30	12.39	1441	4.94	285.7	—	C
0821	—	—	17.07		4.27	12.42	1456	4.88	294.6	—	C

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

SAMPLING DATA

Sample ID:	MW-9	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	0823	Final Depth to Water:	17.05	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes (no)	—	—
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS



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

PROJECT NUMBER 1126-20
 FIELD REPORT NUMBER _____
 PAGE 1 OF 1
 DATE 3/29/17

PROJECT	<u>1Q2017 GWM</u>	ARRIVAL TIME	<u>0652</u>
LOCATION	<u>Vancouver, WA</u>	DEPARTURE TIME	<u>1600</u>
CLIENT	<u>Mustar Vancouver</u>	WEATHER	<u>Rain</u>
PURPOSE OF OBSERVATIONS	<u>Groundwater sampling</u>		
APEX REPRESENTATIVE	<u>KK</u>	APEX PROJECT MANAGER	<u>S. Salisbury</u>
CONTRACTOR	_____	PERMIT NO.	<u>245266</u>
CONTRACTOR REP.	_____	H&S REVIEW	<u>yes</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.

0652 - On site, sign in, safety meeting, get permit
 0730 - Set up for day, cal YSI
 0820 - Start sampling 1st well of the day.
 1530 - Finish sampling last well of the day.
 1540 - Clean up van, put away gear, dump purge water into Drum.
 1600 Sign out, turn in permit, OFF site

BY _____
KK
 APEX REPRESENTATIVE

REVIEWED BY _____
 APEX PROJECT MANAGER

WELL MONITORING DATA SHEET



Well I.D.	MW-19i	Job Number:	1126-20
Client:	Mustar Van	Date:	3/29/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	15.25	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:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Ded. skip	

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
1509	—	—	14.29	0.20	8.48	13.94	126	4.69	73.8	—	C
1512	—	—	14.36		7.84	13.92	133	1.31	73.9	—	C
1515	—	—	14.39		7.79	13.92	136	1.10	78.9	—	C
1518	—	—	14.40		7.80	13.91	136	0.92	80.8	—	C

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

SAMPLING DATA

Sample ID:	MW-19i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1520	Final Depth to Water:	15.25	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <input checked="" type="checkbox"/> no	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-18i	Job Number:	1126-20
Client:	Mustar Van	Date:	3/29/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	15.00	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:				B. Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LF		Tubing Type:				Ded. sk:p			
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		
1426	—	—	15.01	0.20	7.90	14.08	119	6.48	64.6	—	C		
1429	—	—	15.00		7.84	14.32	109	4.18	74.6	—	C		
1432	—	—	15.00		7.82	14.38	110	4.02	74.5	—	C		
1435	—	—	15.01		7.82	14.39	110	3.87	75.3	—	C		

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

SAMPLING DATA

Sample ID:	MW-18i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1437	Final Depth to Water:	15.00	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	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:	1126-20
Client:	Mustar van	Date:	3/29/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	14.75	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:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated skip					
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
1321	—	—	14.95	0.20	7.48	13.05	371	4.82	84.0	—	C
1324	—	—	14.98	1	7.32	13.24	378	1.56	91.4	—	C
1327	—	—	14.98	1	7.29	13.28	378	1.32	91.6	—	C
1330	—	—	14.99	1	7.29	13.28	379	1.31	89.9	—	C

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

SAMPLING DATA

Sample ID:	MW-16	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1332	Final Depth to Water:	14.95	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-3	Job Number:	1126-20
Client:	Mustar van	Date:	3/29/17
Project:	1 Q 2017 GWM	Sampler:	KK
Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	16.44	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:	B Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LP	Tubing Type:	Ded. skip	

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
1237	—	—	16.31	0.20	7.11	13.68	580	4.56	111.8	—	AC
1240	—	—	16.37		7.06	13.65	661	3.76	116.1	—	AC
1243	—	—	16.40		7.07	13.65	660	3.60	114.9	—	AC
1246	—	—	16.42		7.10	13.62	656	3.56	112.3	—	AC

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

SAMPLING DATA

Sample ID:	MW-3	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1248	Final Depth to Water:	16.45	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 X 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-21i-40	Job Number:	1126-20
Client:	Mustar van	Date:	3/29/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	15.73	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:				B. Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LF		Tubing Type:				Ded. skip			
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	—	—	15.45	0.15	7.66	14.90	189	3.73	55.1	—	C		
1153	—	—	15.53	↓	7.62	15.01	192	0.86	54.0	—	C		
1156	—	—	15.55	↓	7.62	14.99	193	0.64	52.6	—	C		
1159	—	—	15.56	↓	7.64	14.97	193	0.52	51.7	—	C		


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

SAMPLING DATA

Sample ID:	MW-21i-40	Sampling Flow Rate:	0.15	Analytical Laboratory:	Pace	
Sample Time:	1200	Final Depth to Water:	15.73	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40 ml	HCl	HVOC	yes (no)	—	—	—
			yes	no		
			yes	no		
			yes	no		
			yes	no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-21:-105	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/29/17
	Project:	1 Q 2017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	15.61	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:	B. Pump			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	ded. skip						
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
1125	—	—	15.59	0.20	7.75	13.74	112	4.23	22.8	—	C
1128	—	—	15.61		7.66	13.74	109	2.21	34.1	—	C
1131	—	—	15.60		7.62	13.81	109	2.04	39.6	—	C
1134	—	—	15.61		7.59	13.91	108	1.91	42.4	—	C

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

SAMPLING DATA

Sample ID:	MW-21:-105	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1135	Final Depth to Water:	15.62	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-22i	Job Number:	1126-20
Client:	Nustar van	Date:	3/29/17
Project:	1Q 2017 GUM	Sampler:	KK
Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	15.97	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:	B. Pump			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated skip			—			
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
1024	—	—	15.75	0.20	7.01	13.94	259	3.44	106.4	—	SC
1027	—	—	15.72		7.60	14.23	341	1.32	34.6	—	SC
1030	—	—	15.75		7.86	14.21	351	0.60	-35.1	—	SC
1033	—	—	15.74		7.90	14.23	353	0.53	-41.3	—	SC
1036	—	—	15.73		7.92	14.24	354	0.48	-43.7	—	SC


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

SAMPLING DATA

Sample ID:	MW-22i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1038	Final Depth to Water:	15.81	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <input checked="" type="radio"/> no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-25i	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/29/17
	Project:	1Q 2017 GWM	Sampler:	KK
	Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	15.20	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:				B. Pump				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			Ded. Skip			
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			
0948	—	—	15.20	0.20	7.59	12.01	282	7.55	106.3	—	C			
0951	—	—	15.20	1	7.62	12.93	155	3.23	94.7	—	C			
0954	—	—	15.20	1	7.59	13.02	152	3.08	95.3	—	C			
0957	—	—	15.19	1	7.56	12.97	151	2.91	94.3	—	C			


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

SAMPLING DATA

Sample ID:	MW-25i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1000	Final Depth to Water:	15.20	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-26	Job Number:	1126-20
	Client:	Mustar Van	Date:	3/29/17
	Project:	1 Q 2017 GWM	Sampler:	KK
	Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	17.25	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:	B. Pump			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	Ded. Skip			—			
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	—	—	17.28	0.20	6.52	13.62	2207	4.83	165.2	—	C
0908	—	—	17.28		6.44	13.98	2210	1.68	166.8	—	C
0911	—	—	17.28		6.47	13.84	2188	1.46	166.8	—	C
0914	—	—	17.28		6.49	13.83	2163	1.34	165.2	—	C


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

SAMPLING DATA

Sample ID:	MW-26	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	0915	Final Depth to Water:	17.27	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes (no)	—	—	—
2 X 40 ml	—	RSR 175	yes (no)	—	—	—
2 X 40 ml	H2SO4	TOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-17	Job Number:	1126-20
	Client:	Mustar Van	Date:	3/29/17
	Project:	1Q2017 GWM	Sampler:	KK
	Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	14.40	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:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Ded. skip	

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
0836	—	—	14.49	0.20	7.48	11.69	127	6.29	171.6	—	C
0839	—	—	14.51	—	7.05	11.87	114	5.23	162.8	—	C
0842	—	—	14.52	—	7.04	11.88	115	5.12	161.1	—	C
0845	—	—	14.52	—	7.05	11.90	116	5.01	158.7	—	C

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

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	0847	Final Depth to Water:	14.50	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS



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

PROJECT NUMBER 1126-20
 FIELD REPORT NUMBER _____
 PAGE 1 OF 1
 DATE 3/30/17

PROJECT	<u>1Q 2017 GWM</u>	ARRIVAL TIME	<u>0656</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	<u>1610</u>
CLIENT	<u>Nustar Vancouver</u>	WEATHER	_____
PURPOSE OF OBSERVATIONS	<u>Ground water sampling</u>		
APEX REPRESENTATIVE	<u>KK</u>	APEX PROJECT MANAGER	<u>S. Salisbury</u>
CONTRACTOR	_____	PERMIT NO.	<u>245268</u>
CONTRACTOR REP.	_____	H&S REVIEW	<u>yes</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.

0656 - on site, sign in, safety meeting, set permit
 0730 - setup for sampling, cal YSI
 0810 - start sampling first well of day
 1530 - Finish sampling
 1540 - clean up van, dump purge water into drum
 1610 - OFF site, sign out, turn in permit

BY
 APEX REPRESENTATIVE

REVIEWED BY _____
 APEX PROJECT MANAGER

WELL MONITORING DATA SHEET

	Well I.D.	MW-13	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/30/17
	Project:	1 Q 2017 GWM	Sampler:	KK
	Weather:		Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	14.32	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:				B. Pump				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			Dedicated			
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			
1510	—	—	14.71	0.20	7.81	12.68	659	8.11	-36.8	—	CI			
1513	—	—	15.15		8.11	12.32	668	4.73	-54.1	—	CI			
1516	—	—	15.58		8.12	12.23	672	4.55	-57.8	—	CI			
1519	—	—	15.85		8.16	12.08	673	4.36	-61.8	—	CI			

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

SAMPLING DATA

Sample ID:	MW-13	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1525	Final Depth to Water:	15.89	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
2 X 40 ml	—	RSK 175	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
2 X 40 ml	H ₂ SO ₄	TOC	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

WELL MONITORING DATA SHEET



Well I.D.	MW-24i	Job Number:	1126-20
Client:	Nustar Van	Date:	3/30/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:		Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	14.89	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:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated				—	
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
1435	—	—	14.00	0.20	8.79	14.73	210	5.29	-0.1	—	C
1438	—	—	13.84		8.77	14.69	199	5.10	4.1	—	C
1441	—	—	13.81		8.74	14.61	197	5.21	8.2	—	C
1444	—	—	13.80		8.70	14.62	196	5.24	14.3	—	C

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

SAMPLING DATA

Sample ID:	MW-24i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1448	Final Depth to Water:	14.90	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes (no)	—	—	—
2 X 40 ml	—	RSK 175	yes (no)	—	—	—
2 X 40 ml	H ₂ SO ₄	TOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MP-1	Job Number:	1126-20
Client:	Nustar Van	Date:	3/30/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	Part sun	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	16.38	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:	B Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
1344	—	—	16.60	0.20	7.92	15.86	1026	3.05	-4.8	—	C
1347	—	—	16.59	1	8.75	16.34	1336	1.16	-130.5	—	C
1350	—	—	16.60	1	8.79	16.38	1328	0.94	-135.4	—	C
1353	—	—	16.60	1	8.82	16.35	1321	0.79	-137.7	—	C


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

SAMPLING DATA

Sample ID:	MP-1	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace		
Sample Time:	1356	Final Depth to Water:	16.40	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3 X 40ml	HCl	HVOC	yes (no)	—	—	—	
2 X 40ml	—	RSK 175	yes (no)	—	—	—	
2 X 40ml	H ₂ SO ₄	TOC	yes (no)	—	—	—	
			yes no				
			yes no				
			yes no				

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.:	MW-8	Job Number:	1126-20
	Client:	MuStar Van	Date:	3/30/17
	Project:	1Q 2017 GWM	Sampler:	KK
	Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	17.06	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:				B Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LF		Tubing Type:				Dedicated			
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		
1256	—	—	17.24	0.20	7.35	14.80	1227	5.42	72.9	—		C	
1259	—	—	17.37		7.29	14.83	1282	1.46	71.6	—		C	
1302	—	—	17.56		7.29	14.94	1288	1.24	70.3	—		C	
1305	—	—	17.71		7.28	14.96	1292	1.11	68.9	—		C	


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

SAMPLING DATA

Sample ID:	MW-8	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1307	Final Depth to Water:	17.60	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-20i	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/30/17
	Project:	1 Q 2017 GWM	Sampler:	KK
	Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	14.65	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:				B. Pump				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			Dedicated		—	
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			
1149	—	—	14.67	0.20	8.10	14.05	126	7.35	52.6	—	C			
1152	—	—	14.67		7.86	14.39	122	5.55	53.1	—	C			
1155	—	—	14.66		7.84	14.37	120	5.39	53.6	—	C			
1158	—	—	14.66		7.83	14.35	121	5.34	54.0	—	C			


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

SAMPLING DATA

Sample ID:	MW-20i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1200	Final Depth to Water:	14.65	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes (no)	—	—	—
			yes	no		
			yes	no		
			yes	no		
			yes	no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.:	MW-10	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/30/17
	Project:	19207 Gwm	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	18.50	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:				B Pump				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			Dedicated			
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			
1116	—	—	18.75	0.20	6.75	14.19	1227	3.75	97.4	—	C			
1119	—	—	18.92		6.60	14.39	1274	1.29	99.3	—	C			
1122	—	—	19.04		6.58	14.42	1278	1.16	101.3	—	C			
1125	—	—	19.15		6.60	14.43	1274	1.08	103.3	—	C			


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

SAMPLING DATA

Sample ID:	MW-10	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace		
Sample Time:	1127	Final Depth to Water:	19.04	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3 x 40m	HCl	HVOC	yes (no)	—	—	—	
			yes no				
			yes no				
			yes no				
			yes no				
			yes no				

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-1	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/30/17
	Project:	1Q 2017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	14.01	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:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
1041	—	—	14.05	0.20	7.74	10.33	144	4.51	52.8	—	C
1044	—	—	14.08		7.73	9.39	112	1.37	53.4	—	C
1047	—	—	14.07		7.75	9.31	112	1.18	52.6	—	C
1050	—	—	14.05		7.77	9.30	111	1.03	50.8	—	C

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

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	1052	Final Depth to Water:	14.02	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	EW-1	Job Number:	1126-20
Client:	Mustar van	Date:	3/30/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	12.57	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:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated				—	
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
1010	—	—	12.45	0.20	7.84	10.08	136	8.41	32.9	—	C
1013	—	—	12.48		8.04	8.79	111	5.49	40.2	—	C
1016	—	—	12.46		7.99	8.71	110	5.31	41.7	—	C
1019	—	—	12.46		7.97	8.60	108	5.18	44.7	—	C


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

SAMPLING DATA

Sample ID:	EW-1	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1020	Final Depth to Water:	12.58	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-6	Job Number:	1126-20
	Client:	Mustar van	Date:	3/30/17
	Project:	1Q 2017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	14.82	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:				B Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LF		Tubing Type:				Dedicated			
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		
817	—	—	14.88	0.20	7.59	13.42	153	5.42	-8.4	—	C		
820	—	—	14.90		7.91	14.18	157	3.78	-29.5	—	C		
823	—	—	14.90		7.93	14.22	159	3.56	-33.5	—	C		
826	—	—	14.91		7.96	14.25	160	3.42	-35.7	—	C		


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

SAMPLING DATA

Sample ID:	MW-6	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	0828	Final Depth to Water:	14.82	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.:	MW-12	Job Number:	1126-20
	Client:	Nustar van	Date:	3/30/17
	Project:	1Q 2017 G60m	Sampler:	KK
	Weather:	Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height:	—
Depth to Water:	12.63	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:	B. Pump	Pump Intake Depth:	MS	Comments:	
Sampling Method:	LF	Tubing Type:	Dedicated		

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
0915	—	—	13.30	0.25	7.14	11.31	1148	6.82	4.1	—	SC
0918	—	—	13.48		7.36	11.10	1211	3.64	-12.7	—	SC
0921	—	—	13.65		7.43	11.03	1214	3.12	-15.0	—	SC
0924	—	—	13.88		7.44	11.08	1217	3.00	-16.6	—	SC
0927	—	—	14.13		7.42	11.14	1219	2.92	-17.9	—	SC

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

SAMPLING DATA

Sample ID:	MW-12	Sampling Flow Rate:	0.25	Analytical Laboratory:	Pace	
Sample Time:	0930	Final Depth to Water:	14.57	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 x 40 ml	HCl	HVOC	yes (no)	—	—	MW-12 Dup
2 x 40 ml	—	RSK 175	yes (no)	—	—	—
2 x 40 ml	H ₂ SO ₄	TOC	yes (no)	—	—	—
6 x 40 ml	HCl	HVOC	yes (no)	—	MS/MSD	—
			yes no			
			yes no			

COMMENTS



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

PROJECT NUMBER 1126-20
 FIELD REPORT NUMBER _____
 PAGE 1 OF 1
 DATE 3/31/17

PROJECT	<u>1Q 2017 GWM</u>	ARRIVAL TIME	<u>0650</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	_____
CLIENT	<u>Nustar Vancouver</u>	WEATHER	<u>Part sun</u>
PURPOSE OF OBSERVATIONS	<u>Groundwater Sampling</u>		
APEX REPRESENTATIVE	<u>KK</u>	APEX PROJECT MANAGER	<u>S. Salisbury</u>
CONTRACTOR	_____	PERMIT NO.	<u>245201</u>
CONTRACTOR REP.	_____	H&S REVIEW	<u>yes</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>0650 - on site, sign in, safety meeting, get permit</u>
<u>0735 - set up for sampling, cal YSI.</u>
<u>0815 - start sampling mgms1</u>
<u>1148 - Finish sampling last well of event</u>
<u>1150 - clean up van, dump purge water into Drum. 2 Full Drums.</u>
<u>1210 - Turn in permit, sign out</u>
<u>1215 - OFF site</u>

BY _____
 APEX REPRESENTATIVE

REVIEWED BY _____
 APEX PROJECT MANAGER

WELL MONITORING DATA SHEET

	Well I.D.	M6MS2-40	Job Number:	1126-20
	Client:	Nustar Van	Date:	3/31/17
	Project:	1Q 2017 GWM	Sampler:	KK
	Weather:	Part sun	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	14.48	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:		B. Pump			Pump Intake Depth:					Comments		
Sampling Method:		LF			Tubing Type:		Dedicated					
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	
1130	—	—	14.80	0.15	7.46	14.63	1519	3.11	122.8	—	C	
1133	—	—	14.81		8.42	15.08	1590	1.08	-54.2	—	C	
1136	—	—	14.80		8.64	15.18	1601	0.90	-87.8	—	C	
1139	—	—	14.80		8.68	15.34	1611	0.78	-90.6	—	C	
1142	—	—	14.81		8.72	15.41	1618	0.68	-92.2	—	C	

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

SAMPLING DATA

Sample ID:	M6MS2-40	Sampling Flow Rate:	0.15	Analytical Laboratory:	Pace	
Sample Time:	1144	Final Depth to Water:	14.52	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	H VOC	yes <input checked="" type="radio"/> no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MGMS2-110	Job Number:	1126-20
Client:	Nustar Van	Date:	3/31/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	13.90	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:	B. Pump				Pump Intake Depth:	—				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
0948	—	—	13.95	0.15	7.21	13.36	133	1.60	65.2	—	C
0951	—	—	13.95		7.61	13.95	142	2.04	58.9	—	C
0954	—	—	13.95		7.64	13.96	140	2.89	56.5	—	C
0957	—	—	13.94		7.67	14.03	140	2.37	54.5	—	C


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

SAMPLING DATA

Sample ID:	MGMS2-110	Sampling Flow Rate	0.15	Analytical Laboratory:	Pace
Sample Time:	1000	Final Depth to Water:	13.94	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 X 40 ml	HCl	HVOC	yes (B)	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.:	MGMSD-60	Job Number:	1106-20
	Client:	NuStar Van	Date:	3/31/17
	Project:	1Q 2017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	13.97	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:		B. Pump			Pump Intake Depth:		—			Comments		
Sampling Method:		LF			Tubing Type:		Dedicated					
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	
1106	—	—	13.97	0.15	7.48	13.96	120	4.40	49.8	—	C	
1109	—	—	13.92		8.04	13.53	120	4.48	43.8	—	C	
1112	—	—	13.94		8.01	13.55	120	4.53	45.3	—	C	
1115	—	—	13.93		8.03	13.58	119	4.64	45.8	—	C	


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

SAMPLING DATA

Sample ID:	MGMSD-60	Sampling Flow Rate	0.15	Analytical Laboratory:	Pace	
Sample Time:	1117	Final Depth to Water:	13.91	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MGMSD-132	Job Number:	1126-20
	Client:	Nustar van	Date:	3/31/17
	Project:	102017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	13.85	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:		B. Pump			Pump Intake Depth:		—			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
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	—	—	14.00	0.15	7.37	13.42	172	3.37	62.6	—	C
1019	—	—	14.04		7.94	13.63	175	0.99	56.1	—	C
1022	—	—	14.05		7.97	13.67	175	0.78	53.2	—	C
1025	—	—	14.05		8.00	13.67	175	0.60	48.6	—	

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

SAMPLING DATA

Sample ID:	MGMSD-132	Sampling Flow Rate:	0.15	Analytical Laboratory:	Pace	
Sample Time:	1027	Final Depth to Water:	13.95	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MGMSI-132	Job Number:	1126-20
Client:	Nustar Van	Date:	3/21/17
Project:	1Q 2017 GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	14.28	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:	B. Pump				Pump Intake Depth:	—				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
0908	—	—	14.24	0.15	7.88	10.62	128	2.81	43.2	—	C
0911	—	—	14.27	1	7.84	10.66	127	1.18	45.1	—	C
0914	—	—	14.28	1	7.81	10.68	126	1.10	46.3	—	C
0917			14.28	1	7.79	10.70	126	1.04	47.4	—	C


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

SAMPLING DATA

Sample ID:	MGMSI-132	Sampling Flow Rate	0.15	Analytical Laboratory:	Pace	
Sample Time:	0920	Final Depth to Water:	14.29	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.:	M6MS1-60	Job Number:	1126-20
	Client:	Nuster Van	Date:	3/31/17
	Project:	1Q 2017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	14.25	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:		B Pump			Pump Intake Depth:		—			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated			—	
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
0847	—	—	14.31	0.15	8.60	10.54	156	4.79	6.1	—	C
0850	—	—	14.32		8.58	10.59	133	4.23	11.4	—	C
0853	—	—	14.32		8.57	10.59	130	4.20	14.6	—	C
0856	—	—	14.30	↓	8.56	10.57	129	4.15	17.5	—	C

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

SAMPLING DATA

Sample ID:	M6MS1-60	Sampling Flow Rate	0.15	Analytical Laboratory:	Pace
Sample Time:	0858	Final Depth to Water:	14.28	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD
3x40ml	HCl	HVOC	yes no	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS



WELL MONITORING DATA SHEET

Well I.D.	MGMS1-43	Job Number:	1126-20
Client:	Nustar Van	Date:	3/31/17
Project:	1Q2017 GWM	Sampler:	KK
Weather:	Overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	14.71	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:				B. Pump				Pump Intake Depth:			ms		Comments	
Sampling Method:				LF				Tubing Type:			Dedicated			
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			
818	—	—	14.85	0.20	6.92	10.54	1555	5.53	85.4	—	C			
821	—	—	14.78		7.73	10.94	1425	3.31	-24.3	—	C			
824	—	—	14.78		7.78	11.03	1421	3.19	-34.4	—	C			
827	—	—	14.79		7.81	11.09	1424	3.02	-40.7	—	C			

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

SAMPLING DATA

Sample ID:	MGMS1-	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace		
Sample Time:	0830	Final Depth to Water:	14.70	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3 x 40ml	HCl	HVOC	yes (no)	—	—	—	
2 x 40ml	—	RSK 175	yes (no)	—	—	—	
2 x 40ml	H ₂ SO ₄	TOC	yes (no)	—	—	—	
			yes no				
			yes no				
			yes no				

COMMENTS



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

PROJECT NUMBER 1126-20
 FIELD REPORT NUMBER _____
 PAGE _____ OF _____
 DATE 6/12/17

PROJECT	<u>2Q 2017 GWM</u>	ARRIVAL TIME	<u>0650</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	<u>1625</u>
CLIENT	<u>Nustar Vancouver</u>	WEATHER	<u>overcast</u>
PURPOSE OF OBSERVATIONS	<u>well gauging and sampling</u>		
APEX REPRESENTATIVE	<u>KK, MM</u>	APEX PROJECT MANAGER	<u>Heather Gosack</u>
CONTRACTOR	<u>-</u>	PERMIT NO.	<u>245336</u>
CONTRACTOR REP.	<u>-</u>	H&S REVIEW	<u>yes</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 - on site, sign in, safety meeting get permit
 0730 - Place new waste drum in waste area
 0735 - Start popping well caps
 0905 - Finish popping well caps start gauging wells
 1136 - Finish gauging regular wells, have to wait to gauge intermediate wells.
 1210 - set up to sample wells
 1450 - Finish sampling last well of day, 6 total for day.
 1505 - Dump purge water in waste drum
 1515 - start gauging intermediate wells
 1554 - Finish gauging intermediate wells
 1600 - Turn in permit, sign out
 1625 - OFF site

BY [Signature]
 APEX REPRESENTATIVE

REVIEWED BY _____
 APEX PROJECT MANAGER

WELL GAGING DATA SHEET



Client:	Nustar Van	Job Number:	1126-20
Project:	2Q2017 GWM	Date:	6/12/17
Weather:	overcast	Sampler:	KK, MM
		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-9	0908	—	18.53	—	—	—	
MW-7	0910	—	18.36	—	—	—	
MW-5	0913	—	18.54	—	—	—	
MP-1	0917	—	18.64	—	—	—	
MP-2	0918	—	18.71	—	—	—	
MW-24d	0919	—	19.45	—	—	—	
MP-3	0920	—	18.50	—	—	—	
MP-4	0922	—	18.51	—	—	—	
EX	0924	—	18.44	—	—	—	
MW-19	0925	—	18.42	—	—	—	
MW-12	0930	—	16.55	—	—	—	white debris from Injection
MW-13	0933	—	17.80	—	—	—	" " " "
S-2	0937	—	18.71	—	—	—	
MW-14	0939	—	18.51	—	—	—	
MW-17	0943	—	17.60	—	—	—	
MW-26	0946	—	18.40	—	—	—	
MW-10	0949	—	19.51	—	—	—	
MW-8	1013	—	18.74	—	—	—	
MW-32S	1017	—	19.44	—	—	—	
MW-E	1022	—	18.26	—	—	—	
MW-16	1028	—	18.60	—	—	—	
MW-15	1034	—	24.08	—	—	—	
MW-F	1037	—	19.64	—	—	—	
MW-G	1040	—	17.99	—	—	—	
MW-2	1051	—	19.32	—	—	—	
MW-6	1054	—	17.79	—	—	—	
EW-1	1057	—	16.83	—	—	—	
MW-3	1059	—	19.18	—	—	—	
MW-1	1101	—	17.79	—	—	—	
M6MS3-40	1106	—	16.19	—	—	—	
M6MS3-60	1107	—	17.35	—	—	—	
M6MS3-110	1108	—	17.32	—	—	—	

WELL MONITORING DATA SHEET



Well I.D.	MW-1	Job Number:	1126-26
Client:	Nustar van	Date:	6/12/17
Project:	2Q 2017 GWM	Sampler:	KK, MM
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	17.84	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:		B. Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
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
1217	—	—	17.60	0.20	6.85	16.4	1011	4.44	-34.7	—	AC
1220	—	—	17.48	0.20	6.71	13.8	991	2.21	-64.7	—	AC
1223	—	—	17.48	0.20	6.71	13.7	913	1.14	-79.7	—	AC
1226	—	—	17.47	0.20	6.72	13.8	900	1.09	-84.1	—	AC
1229	—	—	17.48	0.20	6.72	13.7	892	1.06	-86.0	—	AC

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

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1230	Final Depth to Water:	17.85	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3x40ml	HCl	HVOC	yes (no)	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MGMS1-43	Job Number:	1126-20
Client:	Nustar Van	Date:	6/12/17
Project:	2Q 2017 GWM	Sampler:	KK, MM
Weather:	Overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	18.03	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:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

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
1255	—	—	18.30	0.2	6.82	15.7	2571	1.80	-105.4		C
1258	—	—	18.36	0.2	6.71	15.5	2774	1.37	-110.1		C
1301	—	—	18.09	0.2	6.70	15.4	2806	1.23	-110.1		C
1304	—	—	18.27	0.2	6.70	15.2	2806	1.17	-110.8		C
1307	—	—	18.13	0.2	6.70	15.0	2809	1.17	-109.8		C
1310			SAMPLE								


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

SAMPLING DATA

Sample ID:	MGMS1-43	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1310	Final Depth to Water:	18.11	Did Well Dewater?	N	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40	HCl	HUOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	M6MS1-60	Job Number:	1126-20
	Client:	NuStar-Van	Date:	6-12-17
	Project:	2Q 2017 GUM	Sampler:	MM, KK
	Weather:	OVERCAST	Time In/Out:	

WELL DATA

Well Depth:	-	Well Diameter:	-	Water Height	-
Depth to Water:	18.92	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:		Bladder			Pump Intake Depth:		MS			Comments		
Sampling Method:		LF			Tubing Type:		Dedicated					
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	
1318	-	-	18.91	0.20	7.79	15.1	185.0	6.30	-54.6	-	C	
1321	-	-	18.96	0.20	7.53	14.6	146.7	6.15	-29.2	-	C	
1324	-	-	18.91	0.20	7.40	14.6	146.5	6.04	-18.0	-	C	
1327	-	-	18.91	0.20	7.30	14.5	145.9	5.95	-10.7	-	C	
1330	-	-	18.93	0.20	7.26	14.4	145.8	5.88	-8.4	-	C	
1333	-	-	18.91	0.20	7.24	14.3	146.0	5.82	-7.6	-	C	
1336												

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

SAMPLING DATA

Sample ID:	M6MS1-60	Sampling Flow Rate	02.0	Analytical Laboratory:	PACE	
Sample Time:	1336	Final Depth to Water:	18.95	Did Well Dewater?	N	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 90ml	HCl	HVOCs	yes <input checked="" type="radio"/> no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MGMS 3-40	Job Number:	1126-20
Client:	Nustar VAN	Date:	6/12/17
Project:	2Q 2017 GWM	Sampler:	KK, mm
Weather:	Overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	17.12	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:		B. Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
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
1349	—	—	17.17	0.20	6.75	13.1	928	5.39	-954.7	—	C
1352	—	—	17.18	0.20	6.68	12.9	945	5.26	-94.7	—	C
1355	—	—	17.19	0.20	6.69	12.9	951	5.33	-94.4	—	C
1358	—	—	17.19	0.20	6.70	12.8	954	5.22	-94.1	—	C
1400			SAMPLE								


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

SAMPLING DATA

Sample ID:	MGMS 3-40	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1400	Final Depth to Water:	17.20	Did Well Dewater?		
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes	no	—	—
			yes	no		
			yes	no		
			yes	no		
			yes	no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	M6MS3-60	Job Number:	1126-20
	Client:	Nustar Van	Date:	6/13/17
	Project:	2Q2017 GWM	Sampler:	KK, MM
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	17.46	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:		B. Pump		Pump Intake Depth:		MS		Comments			
Sampling Method:		LF		Tubing Type:		Dedicated		—			
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
1408	—	—	17.45	0.20	7.01	14.2	166.2	4.32	-45.4	—	C
1411	—	—	17.46	0.20	7.16	13.5	137.6	6.81	-35.3	—	C
1414	—	—	17.45	0.20	7.19	13.3	136.4	6.92	-39.1	—	C
1417	—	—	17.45	0.20	7.20	13.3	136.5	6.97	-24.3	—	C

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

SAMPLING DATA

Sample ID:	M6MS3-60	Sampling Flow Rate:	0.20	Analytical Laboratory:	PACE
Sample Time:	1420	Final Depth to Water:	17.45	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3x40ml	HCl	H400s	yes no	—	—
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.:	MW-12	Job Number:	1126-20
Client:	Nustar Van	Date:	6/12/17
Project:	2Q2017 GWM	Sampler:	KK/mm
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"
Depth to Water:	16.30	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:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

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
1437	—	—	16.82	0.25	5.61	13.9	1378	1.65	-12.7	—	AC
1440	—	—	17.25	0.25	5.58	13.8	1382	1.03	-24.4	—	AC
1443	—	—	17.72	0.25	5.58	13.7	1380	0.95	-30.5	—	AC
1446	—	—	18.04	0.25	5.58	13.7	1380	0.91	-34.2	—	AC

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

SAMPLING DATA

Sample ID:	MW-12	Sampling Flow Rate:	0.25	Analytical Laboratory:	Pace
Sample Time:	1450	Final Depth to Water:	18.83	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD
6 x 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
3 x 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	MS
3 x 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	MSD
2 x 40 ml	—	RSK 175	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
2 x 40 ml	H2SO4	TOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
			yes <input type="radio"/> no <input type="radio"/>		

COMMENTS



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

PROJECT NUMBER 1126-20
 FIELD REPORT NUMBER _____
 PAGE 1 OF 1
 DATE 6/13/17

PROJECT	<u>222017 GWM</u>	ARRIVAL TIME	<u>0700</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	<u>1520</u>
CLIENT	<u>NUStar Vancouver</u>	WEATHER	<u>light rain</u>
PURPOSE OF OBSERVATIONS	<u>well sampling</u>		
APEX REPRESENTATIVE	<u>Kyle Kline</u>	APEX PROJECT MANAGER	<u>Heather Gosack</u>
CONTRACTOR	<u>-</u>	PERMIT NO.	<u>245190</u>
CONTRACTOR REP.	<u>-</u>	H&S REVIEW	<u>yes</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.

0700 - on site, sign in, safety meeting, get permit
 0730 - set up truck to start sampling
 0748 - set up on first well, mw-8 and start sampling wells
 1445 - finish sampling last well of the day, 10 total
 1450 - clean up and pack up truck
 1505 - Dump purge buckets into waste drum
 1515 - Sign out, turn in permit
 1520 - OFF site

BY Kyle Kline
 APEX REPRESENTATIVE

REVIEWED BY _____
 APEX PROJECT MANAGER

WELL MONITORING DATA SHEET



Well I.D.	MW-18i	Job Number:	1126-20
Client:	Nustar Van	Date:	6/13/17
Project:	2Q2017 GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height:	
Depth to Water:	19.92	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:	B. Pump			Pump Intake Depth:	ms			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated						
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
1430	-	-	19.64	0.20	7.19	17.9	157.3	8.73	57.6	-	C
1433	-	-	19.54	0.20	7.14	16.6	156.1	7.12	43.0	-	C
1436	-	-	19.51	0.20	7.11	16.3	156.0	7.00	40.4	-	C
1439	-	-	19.51	0.20	7.09	16.2	155.8	6.94	40.1	-	C

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

SAMPLING DATA

Sample ID:	MW-18i	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1442	Final Depth to Water:	19.93	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes <input checked="" type="radio"/>	-	-	-
			yes <input type="radio"/>			
			yes <input type="radio"/>			
			yes <input type="radio"/>			
			yes <input type="radio"/>			
			yes <input type="radio"/>			

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-21i-40	Job Number:	1126-20
Client:	Nustar Van	Date:	6/13/17
Project:	2Q 2017 GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	20.61	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:	B. Pump				Pump Intake Depth:	ms				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
1358	—	—	20.60	0.20	7.25	17.0	257.8	6.37	18.8	—	C
1401	—	—	20.61	0.20	6.89	15.8	259.2	1.80	27.7	—	C
1404	—	—	20.62	0.20	6.85	15.7	261.2	1.46	19.8	—	C
1407	—	—	20.62	0.20	6.81	15.7	263.4	1.34	14.3	—	C


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

SAMPLING DATA

Sample ID:	MW-21i-40	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1410	Final Depth to Water:	20.62	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	H10C	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	mw-21i-105	Job Number:	1126-20
	Client:	Nustar Van	Date:	6/13/17
	Project:	2Q2017 GWM	Sampler:	KK
	Weather:	overcast/rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	20.45	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:		B. Pump			Pump Intake Depth:		ms			Comments		
Sampling Method:		LF			Tubing Type:		Dedicated					
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	
1317	—	—	20.53	0.20	7.32	17.6	167.7	6.91	33.4	—	C	
1320	—	—	20.53	0.20	6.97	15.8	171.0	2.61	34.5	—	C	
1323	—	—	20.54	0.20	7.04	15.6	189.5	2.84	30.8	—	C	
1326	—	—	20.54	0.20	7.08	15.4	190.6	2.93	22.3	—	C	
1329	—	—	20.54	0.20	7.10	15.3	191.8	2.90	16.1	—	C	

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

SAMPLING DATA

Sample ID:	mw-21i-105	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1332	Final Depth to Water:	20.49	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-22i	Job Number:	1126-20
Client:	Nustar Van	Date:	6/13/17
Project:	2Q 2017 GWM	Sampler:	KK
Weather:	light Rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	20.82	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:	B. Pump				Pump Intake Depth:	ms				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
1230	—	—	20.83	0.20	7.21	18.8	387.2	4.44	32.4	—	AC
1233	—	—	20.84	0.20	6.76	16.8	515	1.64	-43.5	—	AC
1236	—	—	20.85	0.20	6.70	16.3	504	1.22	-53.1	—	AC
1239	—	—	20.83	0.20	6.67	16.1	501	1.20	-52.6	—	AC
1242	—	—	20.83	0.20	6.64	16.0	494.8	1.21	-51.9	—	AC


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

SAMPLING DATA

Sample ID:	MW-22i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1245	Final Depth to Water:	20.85	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	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:	1126-20
	Client:	Nustar Van	Date:	6/13/17
	Project:	2Q2017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	18.50	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:		B. Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
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
1125	—	—	18.44	0.20	6.22	16.5	3721	3.20	139.3	—	C
1128	—	—	18.48	0.20	6.24	15.9	3041	2.36	104.8	—	C
1131	—	—	18.46	0.20	6.24	15.8	2795	3.45	81.6	—	C
1134	—	—	18.46	0.20	6.24	15.8	2748	3.64	75.8	—	C
1137	—	—	18.47	0.20	6.24	15.7	2763	3.80	74.6	—	C


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

SAMPLING DATA

Sample ID:	MW-26	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1140	Final Depth to Water:	18.50	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-23i	Job Number:	1126-20
	Client:	Nustar Van	Date:	6/13/17
	Project:	2Q 2017 GWM	Sampler:	KK
	Weather:	light rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:		Water Height	—
Depth to Water:	20.14	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:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

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
1022	—	—	20.00	0.20	7.81	16.4	161.5	10.45	34.1	—	AC
1025	—	—	20.00	0.20	7.42	15.4	155.6	7.74	41.6	—	AC
1028	—	—	19.97	0.20	7.39	15.3	155.8	7.61	40.8	—	AC
1031	—	—	19.94	0.20	7.38	15.3	156.0	7.51	39.6	—	AC


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

SAMPLING DATA

Sample ID:	MW-23i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1034	Final Depth to Water:	20.15	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes <u>(no)</u>	—	—	—
			yes	no		
			yes	no		
			yes	no		
			yes	no		
			yes	no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	MW-14	Job Number:	1126-20
	Client:	Mustar Van	Date:	6/13/17
	Project:	202017 GWM	Sampler:	KK
	Weather:	light rain	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	18.39	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:	B. Pump	Pump Intake Depth:	ms	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

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
0950	—	—	18.79	0.20	6.58	16.0	1633	3.99	111.0	—	AC
0953	—	—	18.97	0.20	6.42	15.8	1765	1.10	74.9	—	AC
0956	—	—	19.00	0.20	6.39	15.9	1746	1.00	68.7	—	AC
0959			18.98	0.20	6.38	15.9	1734	0.94	61.3	—	AC


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

SAMPLING DATA

Sample ID:	MW-14	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1002	Final Depth to Water:	18.80	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40ml	HCl	HVOC	yes <input checked="" type="radio"/> no	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	S-2	Job Number:	1126-20
	Client:	Nustar Van	Date:	6/13/17
	Project:	202017 GWM	Sampler:	KK
	Weather:	over cast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	19.40	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:		B. Pump			Pump Intake Depth:		ms			Comments		
Sampling Method:		LF			Tubing Type:		Dedicated					
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	
905	—	—	19.61	0.20	6.66	15.0	1540	3.58	64.6	—	AC	
908	—	—	19.65	0.20	6.49	14.7	1955	1.05	36.1	—	AC	
911	—	—	19.71	0.20	6.48	14.6	1968	0.94	36.4	—	AC	
914	—	—	19.72	0.20	6.47	14.5	1974	0.90	39.3	—	AC	


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

SAMPLING DATA

Sample ID:	S-2	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	0915	Final Depth to Water:	19.51	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes (no)	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET

	Well I.D.	S-1	Job Number:	1126-20
	Client:	Mustar van	Date:	6/13/17
	Project:	2Q 2017 GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	19.54	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:	B Pump			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated						
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	—	—	18.60	0.20	6.31	14.9	301.2	3.29	150.8	—	C
0831	—	—	18.55	0.20	6.42	14.8	257.0	1.54	117.4	—	C
0834	—	—	18.74	0.20	6.43	14.8	256.3	1.46	111.2	—	C
0837	—	—	18.90	0.20	6.43	14.8	256.2	1.52	106.4	—	C

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

SAMPLING DATA

Sample ID:	S-1	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	0840	Final Depth to Water:	19.54	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 X 40 ML	HCl	HVOC	yes <input checked="" type="checkbox"/>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

WELL MONITORING DATA SHEET



Well I.D.	MW-8	Job Number:	1126-20
Client:	Nustar van	Date:	6/13/17
Project:	202017 6WM	Sampler:	KK
Weather:	overcast	Time In/Out:	

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height:	—
Depth to Water:	18.65	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:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
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
0750	—	—	19.08	0.20	6.31	15.2	1959	2.04	53.0	—	C
0755	—	—	19.25	0.20	6.21	15.1	1962	1.23	29.9	—	C
0758	—	—	19.44	0.20	6.20	15.1	1958	1.37	28.0	—	C
0801	—	—	19.58	0.20	6.21	15.1	1950	1.45	24.3	—	C

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

SAMPLING DATA

Sample ID:	MW-8	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	0803	Final Depth to Water:	19.55	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		

COMMENTS

Appendix B

Historical Groundwater Analytical Data

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

Well Number	Sample Date	Concentrations in ug/L (ppb)														
		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	--	500	--	--	<250	<250	--	14,000	--	--	750	<250	--	1,400	<500
	09/01/95	<250	<500	<250	<250	<250	<250	<250	13,000	<250	<250	620	<250	--	890	610
	09/24/96	<5	<20	<2	<2	54	<2	8.4	11,000	83	17	2,600	68	--	1,800	420
	12/02/96	0.8	<0.50	<0.50	<0.20	6.7	<0.50	0.3	1,500	4.4	<0.20	1,200	7.3	--	310	1.6
	11/12/97	<125	<250	<125	<125	<125	<125	<125	11,600	<125	<125	6,330	<125	--	2,880	<250
	08/11/99	<50	<250	<25	<250	43.1	<25	<25	8,590	86	<25	2,520	52.5	--	1,210	408
	11/16/99	<50	<125	<25	<50	38	<25	<25	6,250	47.5	<25	2,400	28	--	829	148
	02/29/00	<100	<500	<50	<50	<50	<50	<50	6,720	60.9	<50	1,370	<100	--	590	438
	06/27/00	<100	<500	<50	<50	<50	<50	<50	6,480	65.1	<50	1,780	<100	--	795	284
	08/31/00	<100	<500	<50	<50	<50	<50	<50	5,160	<50	<50	1,960	<100	--	720	<50
	11/30/00	<20	<100	<10	<10	15	<10	<10	1,550	12.7	<10	660	<20	--	234	<10
	02/27/01	<100	<100	<50	<50	<50	<50	<50	4,990	<50	<50	1,140	<100	--	440	190
	05/29/01	<50	<250	<25	<25	<25	<25	<25	4,050	<25	<25	1,040	<50	--	407	91
	09/25/01	<50	<50	<50	<50	<50	<50	<50	5,000	<50	<50	890	<50	--	440	240
	12/17/01	<2	<10	<1	<1	<1	<1	<1	109	1.26	<1	164	<2	--	42.9	<1
	03/19/02	<50	<25	<25	<50	35	<25	<25	4,120	35	<25	710	<25	--	349	170
	05/30/02	<10	<5	<5	<10	10.8	<5	<5	1,140	6.6	<5	307	<5	--	101	22.3
	11/08/02	<20	<10	<10	<20	22.8	<10	<10	1,980	20.2	<10	367	<10	--	174	14.4
	05/30/03	<20	<10	<10	<20	21.2	<10	<10	2,180	<10	<10	1,200	14.2	--	340	22.6
	11/02/04	<20	<10	<10	<20	22.4	<10	<10	2,130	23.6	<10	335	<10	--	169	22.8
	11/16/04	<12	<12	<12	<12	15	<12	<12	1,300	<12	<12	310	<12	--	130	<12
	05/18/05	<5	<2.5	<2.5	<5	12	<2.5	<2.5	773	14.1	<2.5	193	<2.5	--	87.6	3.8
	05/23/07	<10	<10	<10	<10	15.5	<10	<10	1,110	<10	<10	58.5	<10	--	45.4	11.7
	09/11/07	<50	<25	<25	<50	<25	<25	<25	916	<25	<25	34	<25	--	34	62.5
	12/13/07	<10	<5	<5	<10	9.7	<5	<5	526	5	<5	81.9	<5	--	45.4	8.8
	03/05/08	<1	<0.500	<0.500	<1	16.1	<0.500	1.66	826	9.18	2.3	49.7	0.88	<0.500	45.6	58.8
	09/19/08	<20	<10	<10	<20	20.4	<10	<10	633	<10	<10	108	<10	<10	74.8	<10
	12/10/08	<2.5	<2.5	<2.5	<2.5	15	<2.5	<2.5	570	6.2	<2.5	28	<2.5	<2.5	25	48
	03/27/09	<2.5	<2.5	<2.5	<2.5	17	<0.50	<2.5	580	5.7	<2.5	39	<2.5	<2.5	42	4.4
	06/17/09	<0.90	<0.90	<0.90	<0.90	6.3	<0.90	<0.90	310	3.6	0.99	21	<0.90	<0.90	14	9.7
	09/18/09	<0.80	<0.80	<0.80	<0.80	19	<0.80	<0.80	590	4.2	1.9	29	<0.80	<0.80	27	8.1
	12/17/09	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	170	0.72	0.67	53	0.53	<0.50	26	<0.50

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 ug/L (ppb)														
		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	03/19/10	<0.50	<0.50	<0.50	<0.50	9.3	<0.50	0.61	300	3.6	1.4	22	<0.50	<0.50	21	26
(continued)	06/15/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.6	<0.50	<0.50	22	<0.50	<0.50	6.6	<0.50
	09/23/10	<0.90	<0.90	<0.90	<0.90	12	<0.90	<0.90	380	3.4	1.6	25	<0.90	<0.90	27	7.1
	12/09/10	<1.5	<1.5	<1.5	<1.5	7.1	1.5	<1.5	250	2.2	<1.5	25	<1.5	<1.5	17	8
	03/10/11	<1.5	<1.5	<1.5	<1.5	7.5	<1.5	<1.5	250	3	<1.5	16	<1.5	<1.5	16	18
	06/09/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	<0.5	<0.5	11	<0.5	<0.5	3.4	<0.5
	09/19/11	<1.5	<1.5	<1.5	<1.5	12	<1.5	<1.5	300	3.2	<1.5	5.2	<1.5	<1.5	13	30
	12/09/11	<1.5	<1.5	<1.5	<1.5	11	<1.5	<1.5	260	2.9	<1.5	6.2	<1.5	<1.5	8.4	40
	03/09/12	<0.50	<0.50	<0.50	<0.50	7.8	<0.50	<0.50	200	2.4	1	3.1	<0.50	<0.50	9.5	19
	06/22/12	<0.5	<0.5	<0.5	<0.5	4.8	<0.5	<0.5	140	1.7	0.53	17	<0.5	<0.5	13	14
	09/13/12	<1.5	<1.5	<1.5	<1.5	10	<1.5	<1.5	260	2.4	<1.5	<1.5	<1.5	<1.5	7	25
	12/13/12	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	47	0.64	<0.50	26	<0.50	<0.50	14	<0.50
	03/15/13	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	140	1.6	0.8	0.83	<0.50	<0.50	6	0.98
	06/13/13	<0.50	<0.50	<0.50	<0.50	7.2	<0.50	<0.50	130	1.9	0.63	1.1	<0.50	<0.50	2.4	28
	09/19/13	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	180	1.6	1	3.2	<0.50	<0.50	5.6	0.92
	12/16/13	<0.50	<0.50	<0.50	<0.50	7.8	<0.50	<0.50	110	1.8	<0.50	8.5	<0.50	<0.50	5.9	13
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.1	<0.50	<0.50	10	<0.50	<0.50	4.3	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.6	45	1	<0.50	<0.50	<0.50	<0.50	0.65	5.9
	9/30/2014	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	170	1.3	0.83	12	<0.50	<0.50	9.7	3.3
	12/11/2014	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	30	<0.50	<0.50	17	<0.50	<0.50	9.4	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	6.2	<0.50	<0.50	47.4	0.67	<0.50	1.1	<0.50	<0.50	1.9	<5
	6/17/2015	<0.50	<0.50	<0.50	<0.50	9.5	<0.50	<0.50	75	0.8	<0.50	4.3	<0.50	<0.50	4.6	4.9
	9/24/2015	<0.50	<0.50	<0.50	<0.50	8.4	<0.50	<0.50	39.1	0.65	<0.50	2.8	<0.50	<0.50	2.4	32.7
	12/8/2015	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	25.2	<0.50	<0.50	18	<0.50	<0.50	8.9	<0.50
	3/7/2016	<0.50	<2	<5	<0.50	4.4	<0.50	<0.50	51.9	<0.50	<0.50	18	<0.50	<0.50	10.3	0.57
	6/15/2016	<0.50	<2	<0.50	<0.50	3.7	<0.50	<0.50	13.1	<0.50	<0.50	0.67	<0.50	<0.50	1.2	5.3
	9/27/2016	<0.50	<2	<0.50	<0.50	8.6	<0.50	<0.50	25.2	<0.50	<0.50	2.3	<0.50	<0.50	3.1	23.9
	12/16/2016	<0.50	<2	<0.50	<0.50	3.4	<0.50	<0.50	22.5	<0.50	<0.50	8	<0.50	<0.50	5.8	0.86
	3/30/2017	<0.50	<2	<0.50	<0.50	<0.5	<0.5	<0.50	1.6	<0.50	<0.50	4.6	<0.50	<0.50	1.6	<0.50
	6/12/2017	<2.0	<2.0	<0.50	<0.50	2.1	<1.0	<0.50	9.9	<0.50	<0.50	4.4	<0.50	<0.50	3.1	<0.50

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 ug/L (ppb)														
		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	--	51	--	--	12	<0.50	--	10	--	--	<0.50	<0.50	--	<0.50	<0.10
	09/01/95	<0.50	16	<0.50	<0.20	8.2	<0.50	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	--	<0.50	2.2
	09/24/96	<0.50	19	<0.20	<0.20	9.6	0.5	<0.20	9.4	<0.20	<0.20	<0.20	<0.50	--	0.3	5.1
	12/02/96	<0.50	8.8	<0.50	<0.20	6.9	0.6	<0.20	11	<1	<0.20	<0.50	<1	--	<0.30	7.2
	11/13/97	<0.50	<1	<0.50	<0.50	5.32	0.571	<0.50	7.9	<0.50	<0.50	<0.50	<0.50	--	<0.50	<1
	08/11/99	<1	18.3	<0.50	<0.50	6.38	<0.50	<0.50	20	<0.50	<0.50	<0.50	<1	--	10.4	1.64
	02/29/00	<1	16	<0.50	<0.50	5.68	<0.50	<0.50	23.5	<0.50	<0.50	<0.50	<1	--	4.52	1.21
	06/27/00	<1	18.3	<0.50	<0.50	5.34	<0.50	1.27	23.4	<0.50	<0.50	<0.50	<1	--	16.6	<0.50
	05/30/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50
	05/30/02	<1	1.68	<0.50	<1	2.65	<0.50	<0.50	0.51	<0.50	<0.50	0.61	<0.50	--	<0.50	<0.50
	11/08/02	<1	10.4	<0.50	<1	3.13	<0.50	<0.50	1.84	<0.50	<0.50	1.05	<0.50	--	0.98	<0.50
	05/30/03	<1	3.64	<0.50	<1	1.95	<0.50	<0.50	0.59	<0.50	<0.50	6.6	<0.50	--	1.13	<0.50
	09/12/07	<1	5.9	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	03/07/08	<1	7.86	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.5	<0.500	<0.500	<0.500	<0.500
	09/18/08	<1	5.93	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	03/24/09	<0.50	4.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/16/09	<0.50	5.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	0.85	<0.50
	03/19/10	<0.50	5.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/23/10	<0.5	3.8	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	03/09/11	<0.50	4.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/16/11	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/09/12	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/13/12	<0.50	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/13	<0.50	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/19/13	<0.50	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/30/2014	<0.50	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2015	<0.50	0.96	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/23/2015	<0.50	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/7/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/29/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

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 ug/L (ppb)														
		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	--	210	--	--	27	4	--	240	--	--	190	20	--	97	130
	09/01/95	<50	<100	<50	<50	<50	<50	<50	2,700	<50	<50	1,300	<50	--	140	730
	09/24/96	<5	<20	7.9	<2	12	<2	<2	1,100	9.5	4	1,800	21	--	330	82
	12/02/96	<50	<50	<50	<20	<30	<50	<20	650	<100	<20	2,100	<100	--	470	<50
	11/12/97	<25	<50	<25	<25	<25	<25	<25	464	<25	<25	2,000	<25	--	241	<50
	08/11/99	<20	<100	<10	<10	<10	<10	<10	500	<10	<10	1,760	25.4	--	247	<10
	11/16/99	<20	<50	<10	<20	14	<10	<10	628	15.2	<10	700	<10	--	132	<10
	02/29/00	<20	<100	<10	<10	<10	<10	<10	473	<10	<10	1,890	25.4	--	356	<10
	06/27/00	<20	<100	<10	<10	<10	<10	<10	410	<10	10.2	1,460	<20	--	241	<10
	08/31/00	<20	<100	<10	<10	52.2	<10	<10	2,580	25.5	<10	399	<20	--	100	171
	11/30/00	<5	<25	<2.5	<2.5	13.3	<2.5	<2.5	374	3.73	<2.5	366	<5	--	80.3	3.1
	02/29/01	<5	<25	3.64	<2.5	5.78	<2.5	<2.5	153	<2.5	2.5	358	<5	--	76.1	<2.5
	05/29/01	<5	<25	2.8	<2.5	<2.5	<2.5	<2.5	112	<2.5	<2.5	647	5.12	--	93.3	<2.5
	09/25/01	<1.3	3.1	2.4	<1.3	10	2	<1.3	210	3	1.7	550	7.2	--	90	4.9
	12/17/01	<10	<50	<5	<5	<5	<5	<5	164	<5	<5	826	16.9	--	155	<5
	03/19/02	<5	<2.5	2.75	<5	<2.5	<2.5	<2.5	138	4.1	<2.5	758	9.6	--	107	<2.5
	05/30/02	<10	7.8	<5	<10	27.8	<5	<5	1,380	42.6	6	302	11.5	--	55.1	96.7
	11/08/02	<5	15	<2.5	<5	29.4	3.55	<2.5	399	9.05	5.7	359	5.8	--	67.1	19.4
	05/30/03	<5	<2.5	6.45	<5	<2.5	<2.5	<2.5	50.1	3.65	<2.5	706	4.95	--	72.6	<2.5
	11/16/04	<10	<5	<5	<10	15	<5	<5	440	5.9	<5	270	<5	--	72	<5
	03/23/05	<2	2.26	4.16 B	<2	8.92	<1	<1	246	8.4	2.86	329	5.04	--	71.9	3.84
	05/18/05	<2	<1	3.86	<2	5.74	<1	<1	188	4.72	3.02	304	5.06	--	88.5	<1
	05/23/07	<2	<2	<2	<2	<2	<2	<2	110	6.3	<2	349	4.54	--	70.6	<2
	09/11/07	<5	9.95	14.4	<5	43	6.1	<2.50	950	28.2	12	601	31	--	223	6.1
	12/12/07	<10	<5	<5	<10	<5	<5	<5	95.7	<5	<5	254	<5	--	63.2	<5
	03/06/08	<1	<0.500	2.10 J	<1	1.32	<0.500	<0.500	127	8.49	2.37	144	5.66	<0.500	94.7	<0.500
	09/19/08	<5	3.7	2.65 J	<5	10.6	<2.50	<2.50	187	5.85	2.95	283	6.6	<2.50	75	<2.50
	12/10/08	<0.90	1.5	1.9	<0.90	5.3	1.2	<0.90	120	4.3	1.5	200	3.8	<0.90	54	<0.90
	03/26/09	<0.50	<0.50	1.4	<0.50	1.6	<0.50	<0.50	83	4.3	1.2	180	3.6	<0.50	46	<0.50
	06/17/09	<0.50	<0.50	1.1	<0.50	0.89	<0.50	<0.50	76	4.7	0.71	190	3.4	<0.50	49	<0.50
	09/18/09	<0.50	<0.50	3.3	<0.50	10	<0.50	<0.50	180	6.2	2.2	270	7.3	<0.50	62	1.2
	12/17/09	<0.90	<0.90	0.96	<0.90	<0.90	<0.90	<0.90	50	3.2	<0.90	180	3.2	<0.90	47	<0.90
	03/19/10	<0.90	<0.90	1 BE	<0.90	<0.90	<0.90	<0.90	77	5.4	<0.90	280	4.1	<0.90	49	<0.90
	06/16/10	<0.50	<0.50	2.3	<0.50	1.6	0.9	<0.50	42	1.7	<0.50	180	1.9	<0.50	30	<0.50
	09/23/10	<0.5	<0.5	2.8 BE	<0.5	0.56	<0.5	<0.5	75	4.4	0.51	220	3	<0.5	39	<0.5
	12/09/10	<0.5	<0.5	2.7	<0.5	<0.5	<0.5	<0.5	39	3.4	<0.5	210	3	<0.5	35	<0.5

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 ug/L (ppb)														
		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 (continued)	03/10/11	<0.50	<0.50	5.4	<0.50	<0.50	<0.50	<0.50	8.9	1.1	<0.50	110	1.6	<0.50	15	<0.50
	06/10/11	<0.5	<0.5	1.6	<0.5	2.2	0.76	<0.5	36	1.1	0.54	99	1.6	<0.5	30	<0.5
	09/16/11	<0.50	<0.50	2	<0.50	3	0.59	<0.50	70	1.7	0.91	130	2.4	<0.50	31	<0.50
	12/09/11	<0.50	<0.50	2.2	<0.50	2.9	0.54	<0.50	62	1.6	0.83	190	2.6	<0.50	45	<0.50
	03/12/12	<0.50	<0.50	2.4	<0.50	0.83	<0.50	<0.50	52	2.8	1	140	3.1	<0.50	45	<0.50
	06/21/12	<0.5	<0.5	2.3	<0.5	0.9	<0.5	<0.5	45	2.7	0.56	170	2.7	<0.5	37	<0.5
	09/13/12	<0.50	<0.50	1.7	<0.50	4.1	<0.50	<0.50	100	2.1	1.4	140	3.3	<0.50	45	<0.50
	12/13/12	<0.50	<0.50	1.3	<0.50	0.78	<0.50	<0.50	27	1.6	<0.50	170	2	<0.50	36	<0.50
	03/14/13	<0.50	<0.50	1.8	<0.50	1	<0.50	<0.50	64	2.5	1.4	160	3.2	<0.50	53	<0.50
	06/14/13	<0.90	<0.90	1.4	<0.90	1.1	<0.90	<0.90	68	3.1	1.3	210	3.3	<0.90	48	<0.90
	09/19/13	<0.50	<0.50	1.1	<0.50	1.1	<0.50	<0.50	99	1.5	1.4	86	1.7	<0.50	30	<0.50
	12/16/13	<0.50	<0.50	1.4	<0.50	1.3	<0.50	<0.50	47	2.1	0.81	170	2.4	<0.50	38	<0.50
	3/21/2014	<0.50	<0.50	1.3	<0.50	0.64	<0.50	<0.50	27	1.6	<0.50	150	2	<0.50	30	<0.50
	6/24/2014	<0.50	0.86	0.86	<0.50	1.4	<0.50	<0.50	65	3.2	1.3	180	3.2	<0.50	44	<0.50
	9/30/2014	<0.50	<0.50	1	<0.50	6.7	0.7	<0.50	110	2.1	1.3	180	2.8	<0.50	47	<0.50
	12/11/2014	<0.50	<0.50	1.2	<0.50	0.8	<0.50	<0.50	28	1.7	<0.50	150	2.2	<0.50	37	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/15/2015	<0.50	<0.50	0.86	<0.50	1.1	<0.50	<0.50	49	2	0.88	160	2.8	<0.50	44	<0.50
	12/9/2015	<0.50	<0.50	0.66	<0.50	4.9	<0.50	<0.50	72	1.8	1.1	145	1.8	<0.50	33.6	<0.50
	3/7/2016	<0.50	<2	0.76	<0.50	2.2	<0.50	<0.50	61.8	2.5	1.3	199	3.6	<0.50	45.1	<0.50
6/16/2016	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	50.2	0.82	<0.50	49.5	0.77	<0.50	17.4	<0.50	
9/30/2016	<0.50	<2	0.67	<0.50	8.2	0.73	<0.50	95.3	1.5	1.6	145	2	<0.50	40.1	<0.50	
12/16/2016	<0.50	<2	0.52	<0.50	1.1	<0.50	<0.50	26.8	0.9	0.57	86.2	1.2	<0.50	23.9	<0.50	
3/29/2017	<0.50	<2	<0.50	<0.50	7.1	1.3	<0.50	77.9	1.2	<0.50	67.6	0.64	<0.50	20.2	2.5	
6/14/2017	<2.0	<2.0	1.0	<0.50	2.1	<1.0	<0.50	39.0	1.5	<0.50	163	1.7	<0.50	30.4	<0.50	
MW-4	11/17/93	--	850	--	--	12	<50	--	20	--	--	40	<50	--	5.4	<10
	09/01/95	<5	340	<5	<5	5.2	<50	<5	14	<5	<5	<50	<50	--	<50	30
	09/24/96	<0.50	300	<0.20	<0.20	7.1	1.4	<0.20	3.2	<0.20	1	0.5	<0.50	--	0.8	4.7
	12/02/96	<0.50	310	<0.50	0.3	3.8	1	<0.20	19	<1	0.3	<0.50	<1	--	<0.30	39
	11/13/97	<0.50	252	<0.50	<0.50	4.22	1.23	<0.50	6.91	<0.50	0.688	<0.50	<0.50	--	<0.50	<1

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 ug/L (ppb)														
		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 (continued)	08/11/99	<2	144	<1	<1	1.21	<1	<1	<1	<1	<1	3.6	<2	--	<1	<1
	11/16/99	<1	26.3	<0.50	<1	2.3	<0.50	<0.50	4.18	<0.50	<0.50	1.2	<0.50	--	0.88	2.07
	02/29/00	<2	119	<1	<1	2.84	<1	<1	4.1	<1	<1	<1	<2	--	<1	5.72
	06/28/00	<5	59.4	<2.5	<2.5	3.89	<2.5	<2.5	2.5	<2.5	<2.5	<2.5	<5	--	<2.5	<2.5
	07/05/00	Well Abandoned														
MW-5	11/17/93	--	1,900	--	--	<25	<25	--	100	--	--	1,200	<25	--	52	<50
	09/01/95	<1	<2	<1	<2	<1	<1	<1	1,300	<1	<1	60,000	<1	--	<1	<2
	09/24/96	<5	140	<2	<2	35	<2	7.5	2,600	80	5.3	16,000	64	--	670	370
	12/02/96	71	<50	<50	27	<30	<50	<20	5,600	<100	<20	27,000	110	--	1,700	340
	11/12/97	<500	<1	<500	<500	<500	<500	<500	<500	<500	<500	28,000	<500	--	1,250	<1
	08/11/99	<200	<1	<100	<100	<100	<100	<100	1,750	<100	<100	25,100	<200	--	862	238
	02/29/00	<100	<500	<50	<50	<50	<50	<50	126	<50	<50	5,250	<100	--	135	<50
	08/31/00	<50	<250	<25	<25	41.4	<25	<25	1,860	<25	<25	5,660	<50	--	347	280
	11/30/00	<50	<250	<25	<25	27.3	<25	<25	3,850	26.8	<25	6,150	<50	--	511	189
	02/27/01	<50	<250	<25	<25	<25	<25	<25	1,370	<25	<25	7,350	<50	--	445	127
	05/30/01	<50	<250	<25	<25	<25	<25	<25	2,410	<25	<25	5,560	<50	--	439	129
	09/25/01	<25	200	<25	<25	34	<25	<25	1,800	<25	<25	2,200	<25	--	180	180
	12/17/01	<100	<500	<50	<50	<50	<50	<50	1,480	<50	<50	10,100	<100	--	646	<50
	03/19/02	<50	<25	<25	<50	<25	<25	<25	360	<25	<25	4,640	<25	--	221	114
	05/29/02	<50	46	<25	<50	<25	<25	<25	916	<25	<25	4,330	<25	--	238	39.5
	08/29/02	<50	<25	<25	<50	<25	<25	<25	1,160	<25	<25	4,090	<25	--	288	310
	11/08/02	<5	178	<2.5	<5	8.3	<2.5	<2.5	385	3.25	<2.5	603	<2.5	--	63.4	66
	01/23/03	<50	<25	<25	<50	<25	<25	<25	582	<25	<25	4,090	<25	--	349	<25
	05/30/03	<10	14.1	<5	<10	<5	<5	<5	382	<5	<5	1,450	7.9	--	140	67
	11/10/03	<1	84.2	<1	<1	1.06	<1	<1	90.7	<1	<1	161	<1	--	30.8	9.42
01/26/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/04/04	<20	<20	<20	<20	<20	<20	<20	<20	432	<20	<20	2,440	<20	--	178	188
08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/16/04	<50	<50	<50	<50	<50	<50	<50	<50	6,300	<50	<50	1,800	<50	--	370	990
03/23/05	<20	<10	<10	<20	26.2	<10	<10	<10	2,350	27.6	<10	511	<10	--	147	604
05/18/05	<5	<2.5	<2.5	<5	9.25	<2.5	<2.5	6.45	817	10.2	<2.5	611	<2.5	--	156	329

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 ug/L (ppb)														
		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)	08/18/05	<5	5.15	<2.50	<5	14.4	<2.50	<2.50	397	4.7	<2.50	169 B	<2.50	--	81.8	278
	11/15/05	<20	<10	<10	<20	36.2	<10	<10	2,790	14	<10	408	<10	--	177	615
	02/21/06	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	72.7	1.06	<0.500	184	0.78	--	31.5	5.05
	06/05/06	<20	<20	<20	<20	<20	<20	<20	2,800	<20	<20	157	<20	--	75	199
	09/06/06	<2	10.6	<1	<2	8.3	<1	<1	377	3.66	<1	104	<1	--	45	29.9
	12/06/06	<2	<1	<1	<2	1.32	<1	1.34	113	1.28	1.52	240	1.6	--	58	43.3
	02/07/07	<10	<5	<5	<10	<5	<5	<5	1,220	18	<5	124	<5	--	26.9	600
	05/22/07	<5	<5	<5	<5	<5	<5	<5	634	8.45	<5	102	<5	--	40.8	59.4
	09/12/07	<1	67.5	<0.50	<1	<0.50	<0.50	<0.50	16.2	<0.50	<0.50	0.89	<0.50	--	1.38	1.86
	12/13/07	<1	<0.50	<0.50	<1	7.1	<0.50	4.67	2,420	9.22	1.14	180	<0.50	--	179	416
	03/07/08	<1	<0.500	<0.500	<1	2.18	<0.500	1.33	411	3.21	<0.500	86.4	<0.500	<0.500	26.1	105
	09/18/08	<1	101	<0.500	<1	0.79	<0.500	<0.500	11.2	<0.500	<0.500	1.14	<0.500	<0.500	1.27	1.74
	12/10/08	<2	<2	<2	<2	3.7	<2	<2	360	2.3	<2	49	<2	<2	53	150
	03/27/09	<0.50	4.2	<0.50	<0.50	4	<0.50	<0.50	170	1	<0.50	0.59	<0.50	<0.50	<0.50	64
	06/17/09	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	0.6	160	2.5	<0.50	11	<0.50	<0.50	12	11
	09/18/09	<0.50	65 BE	<0.50	<0.50	<0.50	<0.50	<0.50	3.6	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	1.2
	12/17/09	<0.50	<0.80	<0.50	<0.50	2.1	<0.50	1.4	340	2	<0.50	19	<0.50	<0.50	37	93
	03/19/10	<0.50	1.4	<0.50	<0.50	4.4	<0.50	<0.50	72	<0.50	<0.50	24	<0.50	<0.50	14	21
	06/16/10	<0.50	<0.50	<0.50	<0.50	3.6	<0.50	0.83	94	0.65	0.54	4.1	<0.50	<0.50	10	23
	09/23/10	<0.5	59	<0.5	<0.5	0.84	<0.5	<0.5	9.7	<0.5	<0.5	<0.5	<0.5	<0.5	0.97	1.3
	12/09/10	<0.5	<0.5	<0.5	<0.5	0.84	<0.5	<0.5	140	0.73	<0.5	5.6	<0.5	<0.5	8.8	15
	03/11/11	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	34	<0.50	<0.50	8.4	<0.50	<0.50	7.6	4.7
	06/10/11	<0.5	<0.5	<0.5	<0.5	5	<0.5	<0.5	40	<0.5	0.63	2.2	<0.5	<0.5	3.8	26
09/19/11	<0.50	2.3	<0.50	<0.50	2.8	<0.50	<0.50	97	<0.50	<0.50	1.3	<0.50	<0.50	11	6.3	
12/09/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	47	<0.50	<0.50	2.7	<0.50	<0.50	7.7	2.8	
03/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	
06/22/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	13	<0.5	<0.5	0.54	<0.5	<0.5	2.9	3	
09/14/12	<0.50	20	<0.50	<0.50	0.75	<0.50	<0.50	26	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	
12/13/12	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	67	0.65	<0.50	<0.50	<0.50	<0.50	<0.50	6.6	
03/15/13	<0.50	7.4	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	48	<0.50	<0.50	<0.50	<0.50	<0.50	6.6	

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 ug/L (ppb)															
		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)	06/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.5	<0.50	<0.50	7.2	<0.50	<0.50	7.2	1.7
	09/19/13	<0.50	23	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	0.61
	12/16/13	<0.50	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	180	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	71
	3/21/2014	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	39	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	10
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<5	<0.50	<0.50	14	<0.50	<0.50	1.3	<0.50	<0.50	<0.50	8	2.3
	9/30/2014	<0.50	28	<0.50	<0.50	<5	<0.50	<0.50	20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.6
	12/16/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	33	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	1.9
	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26.5	<0.50	<0.50	8.4	<0.50	<0.50	<0.50	5.8	5.6
	6/17/2015	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	0.63	<0.50	<0.50	<0.50	0.64	<0.50
	9/24/2015	<0.50	24.6	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	199	<0.50	<0.50	29.5	<0.50	<0.50	<0.50	43.2	32.3
	12/8/2015 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	175	<0.50	<0.50	27.1	<0.50	<0.50	<0.50	38.5	28.4
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	9.9	<0.50	<0.50	<0.50	3.1	<0.50
	6/17/2016	<0.50	7.5	<0.50	<0.50	<0.50	<0.50	<0.50	23.3	<0.50	<0.50	7.3	<0.50	<0.50	<0.50	3.2	<0.50
	9/29/2016	<5	<20	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	<0.50	11.5	<0.50	<0.50	2.5	1.1
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.4	<0.5	<0.5	6.5	<0.5	<0.5	5.8	<0.5
6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	4.2	<0.50	<0.50	16.3	<0.50	<0.50	6.8	<0.50	
MW-6	11/17/93	--	<1	--	--	<0.50	<0.50	--	1.2	--	--	2.1	<0.50	--	0.54	<1	
	09/01/95	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<1	
	09/24/96	<0.50	<2	<0.20	<0.20	<0.20	<0.20	<0.20	0.3	<0.20	<0.20	<0.20	<0.50	--	<0.20	<1	
	12/02/96	<0.50	<0.50	<0.50	<0.20	<0.20	<0.50	<0.20	<0.20	<1	<0.20	<0.50	<1	--	<0.20	<0.20	
	11/12/97	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.03	<0.50	--	<0.50	<1	
	08/11/99	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	1.37	<0.50	
	11/16/99	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	
	02/29/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.654	<1	--	<0.50	<0.50	
	06/27/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50	
	05/29/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50	
	05/30/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	1.51	<0.50	<0.50	1.31	<0.50	--	<0.50	<0.50	

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 ug/L (ppb)														
		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)	08/28/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/08/02	<1	<0.50	<0.50	<1	0.51	<0.50	<0.50	2.55	<0.50	<0.50	0.97	<0.50	--	0.55	0.52
	01/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/30/03	<0.50	<0.50	<0.50	<1	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	3.73	<0.50	--	0.99	<0.50
	11/17/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	05/17/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	09/12/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	03/06/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	1.16	<0.500	<0.500	<0.500	<0.500
	09/19/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	03/24/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/19/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/23/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	03/09/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/15/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/05/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/19/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
10/2/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/7/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/28/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
MW-7	12/02/96	81	<50	<50	39	<30	<50	110	110	<100	<20	73,000	1,900	--	7,600	<50
	11/12/97	<500	<1	<500	<500	<500	<500	<500	<500	<500	<500	36,400	<500	--	7,670	<1
	08/11/99	<1	<5	<500	<500	<500	<500	<500	<500	<500	<500	49,000	1,210	--	4,650	<500
	11/16/99	<100	<250	<50	<100	<50	<50	92	353	<50	<50	54,800	914	--	5,320	<50
	02/28/00	<1	<5	<500	<500	<500	<500	<500	<500	<500	<500	52,400	<1	--	4,060	<500
	06/28/00	<1	<5	<500	<500	<500	<500	<500	<500	<500	<500	54,300	<1	--	3,390	<500

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 ug/L (ppb)														
		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)	08/31/00	<500	<2	<250	<250	<250	<250	<250	<250	<250	<250	50,900	824	--	3,960	<250
	11/30/00	<500	<2	<250	<250	<250	<250	<250	<250	<250	<250	33,500	520	--	3,560	<250
	02/27/01	<500	<2	<250	<250	<250	<250	<250	386	<250	<250	26,700	<500	--	3,290	<250
	05/30/01	<200	<1,000	<100	<100	<100	<100	<100	374	<100	<100	20,400	214	--	2,820	<100
	09/25/01	<25	<25	<25	<25	28	<25	35	350	<25	<25	19,000	260	--	2,500	<25
	12/17/01	<100	<50	<50	<50	84.6	<50	<50	506	<50	<50	10,100	200	--	1,960	<50
	03/18/02	<50	<25	<25	<50	<25	<25	<25	206	<25	<25	7,250	71	--	1,020	<25
	05/31/02	<50	<25	<25	<50	<25	<25	<25	42.5	<25	<25	5,500	<25	--	311	<25
	08/29/02	<50	<25	<25	<50	<25	<25	50.5	93	<25	<25	4,940	44.5	--	634	<25
	11/07/02	<50	<25	<25	<50	<25	<25	<25	123	<25	<25	5,810	43	--	758	<25
	01/23/03	<20	<10	<10	<20	<10	<10	<10	59.8	<10	<10	2,010	14	--	282	<10
	05/28/03	<10	<5	<5	<5	6.3	<5	<5	<5	<5	<5	1,080	10.9	--	67.9	<5
	11/11/03	<20	<20	<20	<20	40.2	<20	<20	246	<20	<20	2,460	62	--	599	<20
	01/27/04	<20	<10	<10	<20	17	<10	<10	105	<10	<10	3,510	33	--	380	<10
	05/04/04	<20	<20	<20	<20	<20	<20	<20	72.4	<20	<20	3,940	22	--	323	<20
	11/16/04	<50	<50	<50	<50	<50	<50	<50	99	<50	<50	8,000	<50	--	520	<50
	03/24/05	<50	<25	<25	<50	<25	<25	<25	98.5	<25	<25	3,930	26	--	404	<25
	05/18/05	<10	<5	<5	<10	<5	<5	<5	72.7	<5	<5	1,310	12.4	--	180	<5
	05/18/05 DUP	<10	<5	<5	<10	<5	<5	<5	69.4	<5	<5	1,250	12.4	--	179	<5
	08/18/05	<20	<10	<10	<20	<10	<10	<10	54.8	<10	<10	1,800	<10	--	237	<10
	11/15/05	<20	<10	<10	<20	15.2	<10	<10	107	<10	<10	1,960	29.6	--	333	<10
	02/21/06	<20	<10	<10	<20	<10	<10	<10	<10	<10	<10	2,640	<10	--	139	<10
	06/05/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	26,100	<200	--	568	<200
	09/06/06	<100	<50	<50	<100	<50	<50	<50	56	<50	<50	12,800	<50	--	422	<50
	12/06/06	<200	<100	<100	<200	<100	<100	<100	<100	<100	<100	24,600	<100	--	408	<100
	02/07/07	<200	<100	<100	<200	<100	<100	<100	<100	<100	<100	31,500	<100	--	352	<100
	05/22/07	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	29,100	<200	--	450	<200
	09/12/07	<200	<100	<100	<200	<100	<100	<100	<100	<100	<100	21,300	<100	--	366	<100
12/13/07	<500	<250	<250	<500	<250	<250	<250	345	<250	<250	18,700	<250	--	1,040	280	
03/06/08 ¹	<1	<0.500	<0.500	<1	5.06	2.57	3.99	42.3	2.9	<0.500	26,300	38.7	<0.500	430	<0.500	
06/10/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	27,000	<500	<500	575	<500	
09/18/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	23,200	<500	<500	530	<500	
12/11/08	<50	<50	<50	<50	<50	<50	<50	130	<50	<50	15,000	<50	<50	450	<50	
12/11/08 DUP	<50	<50	<50	<50	<50	<50	<50	120	<50	<50	14,000	<50	<50	430	<50	

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 ug/L (ppb)														
		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)	03/23/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	420	<0.50	<0.50	3,330	<0.50	<0.50	270	<0.50
	06/18/09	<3	<3	<3	<3	3.7	<3	<3	520	<3	<3	890	5.2	<3	350	<3
	06/18/09 DUP	<2.5	<2.5	<2.5	<2.5	3.8	<2.5	<2.5	520	<2.5	<2.5	910	5.6	<2.5	360	<2.5
	09/18/09	<3	<3	<3	<3	9.8	<3	5.5	930	<3	<3	2,600	10	<3	250	<3
	09/18/09 DUP	<3	<3	<3	<3	8.7	<3	4.8	850	<3	<3	2,600	9.3	<3	240	<3
	12/18/09	<5	<5	<5	<5	6.7	<5	<5	330	<5	<5	1,600	6.7	<5	160	<5
	12/18/09 DUP	<5	<5	<5	<5	6.6	<5	<5	320	<5	<5	1,500	6.6	<5	160	<5
	03/16/10	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	180	<2.5	<2.5	510	<2.5	<2.5	52	<2.5
	03/16/10 DUP	<2	<2	<2	<2	<2	<2	<2	180	<2	<2	560	<2	<2	55	<2
	06/17/10	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	360	<1.5	<1.5	200	2.7	<1.5	72	<1.5
	06/17/10 DUP	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	360	<1.5	<1.5	200	2.8	<1.5	72	<1.5
	09/23/10	<3	<3	<3	<3	3.3	<3	<3	690	<3	<3	750	3.5	<3	110	4.8
	09/23/10 DUP	<3	<3	<3	<3	3.1	<3	<3	700	<3	<3	740	3.8	<3	100	4.1
	12/10/10	<0.9	<0.9	<0.9	<0.9	1.8	<0.9	<0.9	94	<0.9	<0.9	220	1.6	<0.9	36	1.7
	12/10/10 DUP	<0.9	<0.9	<0.9	<0.9	1.7	<0.9	<0.9	98	<0.9	<0.9	230	1.7	<0.9	36	1.8
	03/11/11	<0.90	<0.90	<0.90	<0.90	6.6	<0.90	1.6	150	0.91	<0.90	420	5.1	<0.90	82	9.3
	03/11/11 DUP	<0.90	<0.90	<0.90	<0.90	6.5	<0.90	1.9	150	1.1	<0.90	400	5.2	<0.90	80	9.7
	06/07/11	<2.5	<2.5	<2.5	<2.5	4.8	<2.5	3.4	1,400	3.3	<2.5	430	4	<2.5	110	7.9
	06/07/11 DUP	<6	<6	<6	<6	<6	<6	<6	1,400	<6	<6	400	<6	<6	110	7.8
	09/19/11	<5	<5	<5	<5	<5	<5	<5	1,300	<5	<5	410	<5	<5	84	78
	09/19/11 DUP	<7	<7	<7	<7	<7	<7	<7	1,300	<7	<7	420	<7	<7	87	81
	12/07/11	<5	<5	<5	<5	8	<5	6.9	3,400	6.8	<5	200	<5	<5	32	110
	12/07/11 DUP	<6	<6	<6	<6	7.6	<6	7.8	3,400	6.8	<6	210	<6	<6	32	110
	03/12/12	<5	<5	<5	<5	9.2	<5	<5	1,600	<5	<5	41	<5	<5	8.6	600
	03/12/12 DUP	<7	<7	<7	<7	9.5	<7	<7	1,600	<7	<7	42	<7	<7	8.9	660
	06/22/2012	<2	9.2	<2	<2	9.8	<2	<2	540	<2	<2	24	<2	<2	5.1	300
	06/22/12 DUP	<2	8.1	<2	<2	9	<2	<2	500	<2	<2	25	<2	<2	5.2	290
	09/14/12	<0.50	6.3	<0.50	<0.50	3.8	<0.50	0.54	180	0.7	<0.50	28	<0.50	0.52	5.2	80
	09/14/12 DUP	<0.50	5.7	<0.50	<0.50	3.8	<0.50	<0.50	180	0.78	<0.50	28	<0.50	<0.50	5.3	79
	12/14/12	<0.50	6.3	<0.50	<0.50	1.9	<0.50	<0.50	130	<0.50	<0.50	8.2	<0.50	<0.50	5.3	16
12/14/12 DUP	<0.50	5.6	<0.50	<0.50	1.8	<0.50	<0.50	130	<0.50	<0.50	11	<0.50	<0.50	6.8	18	
03/15/13	<0.50	5.2	<0.50	<0.50	0.68	<0.50	<0.50	110	<0.50	<0.50	1.5	<0.50	<0.50	0.75	11	
03/15/13 DUP	<0.50	5.4	<0.50	<0.50	0.69	<0.50	<0.50	110	<0.50	<0.50	1.6	<0.50	<0.50	0.78	11	

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 ug/L (ppb)														
		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	<0.50	2	<0.50	<0.50	<0.50	<0.50	<0.50	57	<0.50	<0.50	1.6	<0.50	<0.50	<0.50	15
	06/14/13 DUP	<0.50	2	<0.50	<0.50	0.51	<0.50	<0.50	58	<0.50	<0.50	1.5	<0.50	<0.50	<0.50	16
	09/20/13	<0.50	3	<0.50	<0.50	1.5	<0.50	<0.50	56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10
	09/20/13 DUP	<0.50	3	<0.50	<0.50	1.5	<0.50	<0.50	56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10
	12/16/13	<0.50	2.4	<0.50	<0.50	2.9	<0.50	<0.50	6.9	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	9.1
	12/16/13 DUP	<0.50	2.4	<0.50	<0.50	2.4	<0.50	<0.50	6.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.9
	3/24/2014	<0.50	0.97	<0.50	<0.50	1.6	<0.50	<0.50	13	<0.50	<0.50	9.8	<0.50	<0.50	2.6	7.6
	3/24/2014 DUP	<0.50	1	<0.50	<0.50	1.6	<0.50	<0.50	13	<0.50	<0.50	9.4	<0.50	<0.50	2.5	7.7
	6/25/2014	<0.50	1.3	<0.50	<0.50	0.17	<0.50	<0.50	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3
	6/25/14 DUP	<0.50	0.15	<0.50	<0.50	0.19	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4
	9/30/2014	<0.50	1.9	<0.50	<0.50	2.7	<0.50	<0.50	4.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.8
	9/30/2014 DUP	<0.50	1.7	<0.50	<0.50	2.6	<0.50	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.8
	12/15/2014	<0.50	1.2	<0.50	<0.50	3.4	<0.50	<0.50	12	<0.50	<0.50	<0.50	<0.50	<0.50	1	15
	12/15/2014 DUP	<0.50	1.6	<0.50	<0.50	4.5	<0.50	<0.50	16	<0.50	<0.50	0.61	<0.50	<0.50	1.5	21
	3/20/2015	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	1
	3/20/15 DUP	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	7.7	<0.50	<0.50	0.53	<0.50	<0.50	1	10.4
	6/17/2015	<0.50	0.72	<0.50	<0.50	2.6	<0.50	<0.50	12	<0.50	<0.50	1.2	<0.50	<0.50	1	12.6
	6/17/2015 DUP	<0.50	0.71	<0.50	<0.50	2.6	<0.50	<0.50	12.2	<0.50	<0.50	0.96	<0.50	<0.50	1	12.3
	9/24/2015	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	12.4	<0.50	<0.50	4.5	<0.50	<0.50	4.2	4.6
	9/24/2015 DUP	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	12.7	<0.50	<0.50	4.5	<0.50	<0.50	4.2	4.8
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	9.4	<0.50	<0.50	1.7	1.9
	6/17/2016	<0.50	<2	<0.50	<0.50	0.6	<0.50	<0.50	10.9	<0.50	<0.50	0.69	<0.50	<0.50	2.1	5.4
	6/17/16 DUP	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	0.62	<0.50	<0.50	2	5.4
	9/29/2016	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	10.9	<0.50	<0.50	<0.50	<0.50	<0.50	5.5	5.5
	9/29/2016 DUP	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	10.9	<0.50	<0.50	<0.50	<0.50	<0.50	6	5.5
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	9.2	<0.50	<0.50	0.65	<0.50	<0.50	<0.50	0.98
	12/14/2016 DUP	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	9.4	<0.50	<0.50	0.78	<0.50	<0.50	<0.50	1
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	0.73	<0.5
	3/28/2017 DUP	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	0.69	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	2.5
	6/14/2017 DUP	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5

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 ug/L (ppb)														
		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	12/02/96	<0.50	<0.50	<0.50	<0.20	1	<0.50	0.2	6.5	<1	<0.20	2.3	<1	--	12	<0.50
	11/13/97	<1	<2	<1	<1	1.72	<1	2.44	9.32	<1	<1	52.4	4	--	38.6	<2
	08/11/99	<1	<5	<0.50	<0.50	0.75	<0.50	<0.50	1.82	<0.50	<0.50	46.2	4.79	--	24.3	<0.50
	11/16/99	<1	<2.5	<0.50	<1	1.22	<0.50	<0.50	2.11	<0.50	<0.50	39.8	1.55	--	15.5	<0.50
	02/28/00	<1	<5	<0.50	<0.50	0.929	<0.50	0.721	2.38	<0.50	<0.50	41.8	3.7	--	20.5	<0.50
	06/27/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	1.46	<0.50	<0.50	33.7	2.88	--	17.5	<0.50
	05/30/01	<100	<5	<0.50	<0.50	0.611	<0.50	<0.50	0.601	<0.50	<0.50	11.8	<1	--	5.46	<0.50
	05/30/02	<1	<0.50	<0.50	<1	1.09	<0.50	<0.50	2.02	<0.50	<0.50	12.1	<0.50	--	4.47	<0.50
	05/28/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.84	<0.50	<0.50	40.4	1.55	--	11.2	<0.50
	11/02/04	<1	<0.50	<0.50	<1	1.02	<0.50	<0.50	1.99	<0.50	<0.50	8.88	<0.50	--	2.4	<0.50
	11/16/04	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	1.6	<0.50	<0.50	0.6	<0.50	--	3.1	<0.50
	03/23/05	<1	<0.50	<0.50	<1	0.78	<0.50	<0.50	1.82	<0.50	<0.50	13.5	0.53	--	2.41	<0.50
	05/17/05	<1	<0.50	<0.50	<1	1.1	<0.50	<0.50	6.45	<0.50	<0.50	13.2	<0.50	--	6.92	<0.50
	05/17/05 DUP	<1	<0.50	<0.50	<1	1.19	<0.50	<0.50	6.97	<0.50	<0.50	11.4	<0.50	--	6.39	<0.50
	11/16/05	<1	<0.500	<0.500	<1	0.78	<0.500	<0.500	4.19	<0.500	<0.500	14.8	0.65	--	2.99	<0.500
	06/05/06	<1	<1	<1	<1	1.26	<1	<1	19.8	<1	<1	20.7	<1	--	11.4	<1
	12/06/06	<1	<0.50	<0.50	<1	1.11	<0.50	<0.50	14.2	<0.50	<0.50	18.3	<0.50	--	5.08	<0.50
	05/23/07	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	22.8	<1	--	2.32	<1
	09/12/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	12.4	0.6	--	0.65	<0.50
	12/12/07	<1	<0.50	<0.50	<1	1.03	<0.50	<0.50	13.7	<0.50	<0.50	8.27	<0.50	--	2.71	<0.50
	03/06/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	1.64	<0.500	<0.500	19.1 J	<0.500	<0.500	1.4	<0.500
	6/10/08 ⁷	<1	<1	<1	<1	1.07	<1	<1	10.5	<1	<1	10.8	<1	<1	3.87	<1
	09/18/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	1.58	<0.500	<0.500	13.2	0.5	<0.500	1.21	<0.500
	12/09/08	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	9.1	<0.50	<0.50	0.57	<0.50
	12/09/08 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	9.7	<0.50	<0.50	0.59	<0.50
	03/26/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	8	<0.50	<0.50	0.56	<0.50
	06/17/09	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	12	<0.50	<0.50	4.8	<0.50	<0.50	1.4	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50
	12/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	8.4	<0.50	<0.50	0.51	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50
	06/14/10	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	20	0.52	<0.50	4.2	<0.50	<0.50	1.1	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	8.1	<0.5	<0.5	<0.5	<0.5
	12/08/10	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	20	1.1	<0.5	2.5	<0.5	<0.5	0.6	<0.5
	03/11/11	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	<0.50	20	0.58	<0.50	7.9	<0.50	<0.50	0.95	<0.50
	06/08/11	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	40	0.82	<0.5	4	<0.5	<0.5	1.1	<0.5
	09/15/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	10	<0.50	<0.50	0.54	<0.50
	12/08/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	10	<0.50	<0.50	<0.50	<0.50

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 ug/L (ppb)															
		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)	03/06/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.5	<0.50	<0.50	6.8	<0.50	<0.50	0.56	<0.50
	06/20/12	<0.5	<0.5	<0.5	<0.5	0.89	<0.5	<0.5	22	<0.5	<0.5	6.1	<0.5	<0.5	1.4	<0.5	
	09/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	7	<0.50	<0.50	<0.50	<0.50	
	12/12/12	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	36	1	<0.50	4.8	<0.50	<0.50	1	<0.80	
	03/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	7.2	<0.50	<0.50	<0.50	<0.50	
	06/13/13	<0.50	<0.50	<0.50	<0.50	0.84	<0.50	<0.50	18	0.64	<0.50	6.2	<0.50	<0.50	0.76	<0.50	
	09/19/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.6	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50	
	12/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.5	0.54	<0.50	4	<0.50	<0.50	<0.50	<0.50	
	3/19/2014	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	21	1.1	<0.50	2.3	<0.50	<0.50	0.85	<0.50	
	6/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	5.6	<0.50	<0.50	<0.50	<0.50	
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	6.1	<0.50	<0.50	<0.50	<0.50	
	12/10/2014	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	13	0.86	<0.50	2.3	<0.50	<0.50	0.62	<0.50	
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	7.6	<0.50	<0.50	<0.50	<0.50	
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	<0.50	<0.50	
	9/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	6.3	<0.50	<0.50	<0.50	<0.50	
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50	
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	6.4	<0.50	<0.50	<0.50	<0.50	
	6/15/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	<0.50	<0.50	
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	<0.50	<0.50	
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50	
3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	35.7	0.96	<0.5	2.3	<0.5	<0.5	0.57	<0.5		
6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	14.3	<0.50	<0.50	4.3	<0.50	<0.50	0.56	<0.50		
MW-9	12/02/96	<50	<50	<50	<20	<30	<50	<20	<20	<100	<20	5,000	200	--	1,600	<50	
	11/13/97	<50	<100	<50	<50	<50	<50	<50	487	<50	<50	2,890	<50	--	1,840	<100	
	08/11/99	<20	<100	<10	<10	<10	<10	<10	54	<10	<10	1,490	43.2	--	517	<10	
	11/16/99	<20	<50	<10	<20	<10	<10	<10	103	<10	<10	1,730	32	--	305	<10	
	02/28/00	<20	<100	<10	<10	<10	<10	<10	<10	<10	<10	2,040	36.4	--	315	<10	
	06/27/00	<50	<250	<25	<25	<25	<25	<25	<25	<25	<25	1,300	<50	--	298	<25	
	08/31/00	<10	<50	<5	<5	<5	<5	<5	<5	<5	<5	1,560	31.3	--	229	<5	
	11/30/00	<10	<50	<5	<5	21.7	<5	10.5	1,330	11.7	<5	823	26.6	--	528	8.15	
	09/25/01	<2.5	<2.5	<2.5	<2.5	3.8	<2.5	<2.5	9.1	<2.5	<2.5	680	16	--	140	<2.5	
	12/17/01	<5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	306	<5	--	74.2	<2.5	

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 ug/L (ppb)														
		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)	03/18/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	113	<0.50	--	19.1	<0.50
	05/31/02	<2	<1	<1	<2	<1	<1	<1	1.22	<1	<1	296	1.44	--	44	<1
	08/29/02	<2	<1	<1	<2	<1	<1	<1	1.88	<1	<1	294	2.12	--	67.4	<1
	11/07/02	<5	<2.5	<2.5	<5	<2.5	<2.5	<2.5	17.2	<2.5	<2.5	453	4	--	145	<2.5
	01/23/03	<2	<1	<1	<2	<1	<1	<1	1.66	<1	<1	205	2.74	--	59.5	<1
	05/28/03	<1	<0.50	<0.50	<1	1.81	<0.50	<0.50	0.97	<0.50	<0.50	141	2.85	--	27.4	<0.50
	11/11/03	<5	<5	<5	<5	<5	<5	<5	23.7	<5	<5	401	6.25	--	91.4	<5
	01/27/04	<2	<1	<1	<2	<1	<1	<1	2.58	<1	<1	179	2.54	--	58.1	<1
	05/04/04	<1	<1	<1	<1	<1	<1	<1	1.09	<1	<1	178	2.56	--	51.9	<1
	11/15/04	<25	<25	<25	<25	28	<25	<25	1,200	27	<25	1,800	<25	--	1,000	<25
	03/24/05	<5	<2.5	<2.5	<5	3.3	<2.5	<2.5	54.2	<2.5	<2.5	675	8	--	239	<2.5
	05/18/05	<2	<1	<1	<2	<1	<1	<1	2.68	<1	<1	2.41	2.08	--	62.4	<1
	08/18/05	<5	<2.50	<2.50	<5	<2.50	<2.50	<2.50	20.5 B	<2.50	<2.50	551	7.6	--	209	<2.50
	11/15/05	<10	<5	<5	<10	27.1	<5	6.8	1,020	18.6	<5	1,040	14.1	--	633	21.2
	02/21/06	<10	<5	<5	<10	<5	<5	<5	16.7	<5	<5	534	<5	--	165	<5
	06/05/06	<1	<1	<1	<1	<1	<1	<1	1.47	<1	<1	151	2.6	--	57.3	<1
	09/05/06	<5	<2.50	<2.50	<5	5.5	<2.50	<2.50	117	3.15	<2.50	698	6.8	--	314	<2.50
	12/06/06	<5	<2.50	<2.50	<5	2.95	<2.50	<2.50	59	<2.50	<2.50	578	5.55	--	237	<2.50
	02/07/07	<5	<2.50	<2.50	<5	3.15	<2.50	<2.50	72.6	<2.50	<2.50	591	6.1	--	239	2.65
	05/23/07	<2	<2	<2	<2	<2	<2	<2	6.32	<2	<2	210	3	--	90.4	<2
	09/12/07	<2	<1	<1	<2	2.34	<1	<1	47.1	1.44	<1	282	5.12	--	184	<1
	12/13/07	<5	<2.50	<2.50	<5	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	253	4.45	--	78.4	<2.50
	03/06/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	1.92	<0.500	<0.500	138	3.77	<0.500	61.5	<0.500
	06/10/08	<1	<1	<1	<1	<1	<1	<1	2.73	<1	<1	297	5.16	<1	87.7	<1
	09/18/08	<5	<2.50	<2.50	<5	7.05	<2.50	<2.50	172	3.8	<0.5000	524	5.35	<0.500	315	4.15
	12/09/08	<0.90	<0.90	<0.90	<0.90	3.8	<0.90	1.3	130	2.5	<0.90	270	5.1	<0.90	140	2.3
	03/26/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	<0.50	170	4	<0.50	56	<0.50
	06/17/09	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	1.1	72	2.8	<0.50	420	4.9	<0.50	180	1.8
	09/17/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	170	4.4	<0.50	60	<0.50
	12/17/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	120	2.5	<0.50	43	<0.50
	03/19/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	160	3	<0.50	48	<0.50
	06/16/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	100	1.4	<0.50	36	<0.50
	09/21/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	140	2.9	<0.5	50	<0.5
12/10/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	100	1.3	<0.5	330	<0.5	
03/11/11	<0.50	<0.50	<0.50	<0.50	0.66	<0.50	<0.50	17	0.82	<0.50	190	2.7	<0.50	81	0.52	
03/11/11 DUP	<0.50	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	17	0.85	<0.50	200	2.8	<0.50	84	0.51	

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 ug/L (ppb)															
		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)	06/10/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	53	1.9	<0.5	31	<0.5
	09/19/11	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	72	2.3	<0.50	230	3.1	<0.50	120	0.78	
	12/09/11	<0.90	<0.90	<0.90	<0.90	53	<0.90	11	1,800	40	<0.90	600	10	<0.90	590	26	
	03/12/12	<0.50	<0.50	<0.50	<0.50	0.66	<0.50	<0.50	20	0.57	<0.50	140	2	<0.50	56	<0.50	
	06/22/12	<0.5	<0.5	<0.5	<0.5	3.3	<0.5	1.1	140	4.3	<0.5	220	3.3	<0.5	180	2.3	
	09/14/12	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	17	<0.90	<0.90	210	2.4	<0.90	78	<0.90	
	12/13/12	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	29	0.96	<0.50	110	1.1	<0.50	49	<0.50	
	03/15/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5	<0.50	<0.50	86	1.8	<0.50	34	<0.50	
	06/13/13	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	1	100	3.7	<0.50	240	3.1	<0.50	150	2.2	
	09/20/13	<0.50	<0.50	<0.50	<0.50	2	<0.50	0.51	74	2.2	<0.50	160	2	<0.50	87	0.82	
	12/16/13	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	1.4	230	6.4	<0.50	210	3.5	<0.50	180	2.8	
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	39	0.57	<0.50	19	<0.50	
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	41	1.6	<0.50	190	2.3	<0.50	91	1.1	
	9/30/2014	<0.90	<0.90	<0.90	<0.90	2.3	<0.90	<0.90	77	2.3	<0.90	230	2.9	<0.90	110	1.3	
	12/15/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35	0.64	<0.50	18	<0.50	
	3/19/2015	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	18.9	0.6	<0.50	155	2	<0.50	59.5	<0.50	
	6/17/2015	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	0.54	12.5	0.78	<0.50	160	1.9	<0.50	61.8	1.6	
	9/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	74.3	2.2	<0.50	31.6	<0.50	
	12/8/2015	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	0.85	145	4.2	<0.50	199	2.4	<0.50	113	2	
	12/8/2015 DUP	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	0.93	153	4.4	<0.50	198	2.5	<0.50	118	2.1	
	3/8/2016	<1	<4	<1	<1	4.1	<1	<1	117	3.8	<1	164	2.3	<1	94.6	3.4	
	6/17/2016	<0.50	<2	<0.50	<0.50	1.8	<0.50	0.58	60.7	2.4	<0.50	116	1.7	<0.50	68.3	0.89	
	9/29/2016	<0.50	<2	<0.50	<0.50	1.2	<0.50	<0.50	39.3	1.8	<0.50	192	2.5	<0.50	91.9	0.76	
12/14/2016	<0.50	<2	<0.50	<0.50	1.3	<0.50	<0.50	59.7	1.6	<0.50	75.8	1.1	<0.50	44.9	0.52		
3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.77	<0.5	<0.5	27.9	0.89	<0.5	12.5	<0.5		
6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	17.5	0.60	<0.50	104	1.3	<0.50	47.2	<0.50		
MW-10	12/02/96	<0.50	<0.50	<0.50	<0.20	<0.30	<0.50	<0.20	<0.20	<1	<0.20	2.7	<1	--	0.4	<0.50	
	11/13/97	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.53	<0.50	--	3.65	<1	
	08/11/99	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.02	<1	--	1.24	<0.50	
	11/16/99	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	69.6	1.89	--	10.3	<0.50	
	02/28/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.63	<1	--	1.16	<0.50	
	06/27/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.72	<1	--	3.74	<0.50	
	05/30/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.25	<1	--	2.52	<0.50	

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 ug/L (ppb)														
		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	05/30/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.05	<0.50	--	1.43	<0.50
	05/28/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	2.21	<0.50	--	1.28	<0.50
	11/02/04	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	--	0.98	<0.50
	11/16/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	--	3.4	<0.50
	03/23/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.02	<0.50	--	1.21	<0.50
	05/17/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.26	<0.50	--	1.19	<0.50
	09/12/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59 J	<0.50	--	0.83	<0.50
	03/05/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	1.66	<0.500	<0.500	1.67	<0.500
	09/18/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	1.13	<0.500	<0.500	1.4	<0.500
	03/25/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	1.6	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	2	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	1.6	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	1.4	<0.5
	03/09/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	0.8	<0.50
	09/14/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	2.1	<0.50
	03/06/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	2	<0.50
	09/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	<0.50	<0.50	1.4	<0.50
	03/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	<0.50	3.1	<0.50
	09/18/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	1.4	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	8.8	<0.50	<0.50	16	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	2	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	1.8	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	1.6	<0.50
3/7/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	<0.50	
9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	1.4	<0.50	
3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	1.5	<0.5	
MW-11	12/02/96	<50	<50	<50	<20	<30	<50	52	140	<100	<20	2,200	550	--	5,900	<50
	11/13/97	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50	686	90.3	--	2,720	<100
	08/10/99	<5	<25	<2.5	<2.5	13.7	<2.5	22.8	14.4	<2.5	<2.5	259	112	--	1,300	<2.5
	11/16/99	<20	<50	<10	<20	12	<10	16.8	18.8	<10	<10	478	94.8	--	1,500	<10
	02/28/00	<5	<25	<2.5	<2.5	2.71	<2.5	7.9	5.05	<2.5	<2.5	247	30.2	--	473	<2.5
	06/27/00	<10	<50	<5	<5	12.1	<5	28.9	14.8	<5	<5	337	108	--	1,390	<5
	08/31/00	<20	<100	<10	<10	15.4	<10	28	24.8	<10	<10	646	159	--	1,690	<10
	11/30/00	<20	<100	<10	<10	12.2	<10	26.4	19.3	<10	<10	342	125	--	1,550	<10
	02/27/01	<5	<25	<2.5	<2.5	3.65	<2.5	7.82	7.1	<2.5	<2.5	198	35.1	--	468	<2.5
	05/30/01	<10	<50	<5	<5	5.2	<5	13.6	9.09	<5	<5	256	48.8	--	858	<5
	09/25/01	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	260	57	--	820	<13
	12/17/01	<10	<50	<5	<5	<5	<5	15.4	25.9	<5	<5	983	40.9	--	1,390	<5

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 ug/L (ppb)														
		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)	03/18/02	<10	<5	<5	<10	11.9	<5	19.4	17.1	<5	<5	433	79.8	--	1,370	<5
	05/30/02	<10	<5	<5	<10	5.9	<5	10.9	15.6	<5	<5	571	45.6	--	965	<5
	11/07/02	<10	<5	<5	<10	15	<5	19.3	18.9	<5	<5	347	112	--	1,640	<5
	01/23/03	<5	<2.5	<2.5	<5	3.35	<2.5	4.3	5.35	<2.5	<2.5	265	24.1	--	534	<2.5
	05/28/03	<10	<5	<5	<10	13.3	<5	17.9	17.6	<5	<5	305	105	--	1,580	<5
	11/11/03	<5	<5	<5	<5	5	<5	5.15	9.15	<5	<5	191	38.8	--	504	<5
	01/26/04	<10	<5	<5	<10	9.6	<5	11.5	13.5	<5	<5	369	73.3	--	1,070	<5
	03/22/04	Well Abandoned														
MW-12	12/02/96	<50	<50	<50	<20	<30	<50	<20	29	<100	<20	2,500	<100	--	950	<50
	11/12/97	<250	<500	<250	<250	<250	<250	<250	2,710	<250	<250	12,900	645	--	5,400	<500
	08/11/99	<200	<1	<100	<100	120	<100	<100	2,680	<100	<100	11,300	758	--	3,520	<100
	11/16/99	<200	<500	<100	<200	<100	<100	<100	160	<100	<100	18,200	922	--	4,630	<100
	02/28/00	<200	<1	<100	<100	<100	<100	<100	908	<100	<100	3,780	<200	--	1,210	<100
	06/27/00	<100	<500	<50	<50	161	<50	<50	2,880	<50	<50	12,000	712	--	3,180	<50
	05/30/01	<50	<250	<25	<25	64.8	<25	54	1,650	<25	<25	4,990	298	--	1,810	<25
	05/30/02	<5	<2.5	<2.5	<5	4.25	<2.5	<2.5	101	<2.5	<2.5	344	6.6	--	81.6	<2.5
	05/29/03	<5	<2.5	<2.5	<5	28.4	<2.5	8	601	5.7	<2.5	362	18.2	--	199	<2.5
	11/16/04	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	59	<2.5	<2.5	410	3.5	--	96	<2.5
	03/23/05	<20	<10	<10	<20	247	<10	53	3,640	40.2	<10	1,080	49.8	--	639	14.2
	05/18/05	<1	<0.50	<0.50	<1	0.96	<0.50	0.98	30.1	0.57	<0.50	51.1	0.92	--	21.4	<0.50
	05/22/07	<5	<5	<5	<5	35.6	<5	7.45	785	11.1	<5	233	7.8	--	139	<5
	09/11/07	<100	<50	<50	<100	316	<50	57	6,700	53	<50	431	<50	--	516	<50
	12/12/07	<2	<1	<1	<2	1.1	<1	<1	43.8	<1	<1	106	3.16	--	39.6	<1
	03/05/08	<1	4.97	<0.500	<1	156	2.01	46.2	3,170	41.8	<0.500	440	21.2	<0.500	329	18.5
	09/19/08	<50	<25	<25	<50	394	<25	66	7,650	69	<25	968	45	<25	924	58
	12/10/08	<4	<4	<4	<4	33	<4	6.6	670	8.7	<4	99	5	<4	80	<4
	03/27/09	<4	4.8	<4	<4	230	<4	39	4,800	46	<4	540	28	<4	440	31
	03/27/09 DUP	<4	5	<4	<4	250	<4	44	4,700	51	<4	600	32	<4	490	35
06/18/09	<15	<15	<15	<15	170	<15	32	3,500	36	<15	270	<15	<15	230	26	
06/18/09 DUP	<15	<15	<15	<15	170	<15	32	3,600	37	<15	310	<15	<15	250	25	
09/18/09	<15	<15	<15	<15	240	<15	46	4,200	50	<15	540	<15	<15	440	51	
09/18/09 DUP	<15	<15	<15	<15	260	<15	49	4,600	52	<15	590	28	<15	470	56	
12/18/09	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	100	1.1	1.3	170	2.2	<0.50	65	<0.50	
12/18/09 DUP	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	96	1.1	1.3	160	2.1	<0.50	62	<0.50	

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

Well Number	Sample Date	Concentrations in ug/L (ppb)														
		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)	03/19/10	<0.50	4.1	<0.50	<0.50	220	2.6	48	4,400	53	<0.50	480	28	0.7	380	37
	03/19/10 DUP	<15	<15	<15	<15	270	<15	44	4,900	54	<15	600	29	<15	460	39
	06/16/10	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	19	<0.50	<0.50	38	<0.50	<0.50	17	<0.50
	06/16/10 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18	0.54	<0.50	37	<0.50	<0.50	16	<0.50
	09/23/10	<15	<15	<15	<15	260	<15	47	4,800	56	<15	780	38	<15	560	68
	9/23/10 DUP	<15	<15	<15	<15	260	<15	49	4,800	57	<15	800	41	<15	580	65
	12/09/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.5	<0.5	<0.5	5.1	<0.5	<0.5	2.1	<0.5
	12/09/10 DUP	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	<0.5	<0.5	5.8	<0.5	<0.5	2	<0.5
	03/10/11	<0.50	0.67	<0.50	<0.50	94	0.96	17	1,900	19	0.55	340	12	<0.50	220	11
	03/10/11 DUP	<0.50	0.87	<0.50	<0.50	93	1	17	1,600	19	0.55	260	13	<0.50	180	11
	06/07/11	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	59	1	<0.5	53	0.7	<0.5	25	<0.5
	06/07/11 DUP	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	60	1	<0.5	58	0.69	<0.5	27	<0.5
	09/19/11	<0.50	3	<0.50	<0.50	240	2.5	45	4,700	55	<0.50	860	65	0.94	690	63
	09/19/11 DUP	<20	<20	<20	<20	240	<20	53	4,700	60	<20	860	60	<20	680	68
	12/07/11	<0.50	<0.50	<0.50	<0.50	130	1.3	28	2,900	33	<0.50	520	34	0.54	380	40
	12/07/11 DUP	<0.50	<15	<0.50	<0.50	140	1.3	29	2,900	33	<0.50	580	34	0.55	400	41
	03/12/12	<15	<15	<15	<15	210	<15	44	3,800	45	<15	770	48	<15	540	46
	03/12/12 DUP	<20	<20	<20	<20	220	<20	44	4,000	47	<20	740	50	<20	540	45
	06/22/2012	<5	<5	<5	<5	100	<5	16	1,700	39	<5	270	13	<5	200	22
	06/22/12 DUP	<5	<5	<5	<5	100	<5	16	1,700	39	<5	270	13	<5	190	22
	09/14/12	<5	<5	<5	<5	220	<5	45	4,700	56	<5	890	61	<5	590	58
	09/14/12 DUP	<15	<15	<15	<15	270	<15	58	5,400	73	<15	1,100	76	<15	730	84
	12/13/12	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	62	0.97	<0.50	38	0.52	<0.50	22	<0.50
	12/13/12 DUP	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	62	0.92	<0.50	38	0.53	<0.50	23	<0.50
	03/15/13	<0.50	1	<0.50	<0.50	200	1.7	40	4,300	55	<0.50	760	53	0.71	540	53
	03/15/13 DUP	<0.50	1	<0.50	<0.50	200	1.8	40	4,200	56	<0.50	750	52	0.66	520	54
	06/13/13	<15	<15	<15	<15	230	<15	38	4,700	53	<15	590	44	<15	480	55
	06/13/13 DUP	<15	<15	<15	<15	240	<15	39	4,800	53	<15	610	46	<15	500	59
	09/20/13	<0.50	<0.50	<0.50	<0.50	170	1.6	37	3,400	49	<0.50	510	37	0.66	400	50
	09/20/13 DUP	<0.50	<0.50	<0.50	<0.50	180	1.7	36	3,400	48	<0.50	520	37	0.63	400	49
	12/16/13	<2.5	<2.5	<2.5	<2.5	36	<2.5	7.5	800	10	<2.5	150	5.7	<2.5	110	9.6
	12/16/13 DUP	<2.5	<2.5	<2.5	<2.5	35	<2.5	7.6	770	9.6	<2.5	140	5.8	<2.5	110	9.8
	3/24/2014	<0.50	<0.50	<0.50	<0.50	110	0.77	18	1,900	25	<0.50	180	8.6	<0.50	170	47
	3/24/2014 DUP	<7	<7	<7	<7	97	<7	16	1,900	22	<7	170	7.5	<7	140	35

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

Well Number	Sample Date	Concentrations in ug/L (ppb)														
		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)	6/24/2014	<1.5	<1.5	<1.5	<1.5	14	<1.5	1.7	300	2.1	<1.5	42	<1.5	<1.5	32	<1.5
	6/24/2014 DUP	<1.5	<1.5	<1.5	<1.5	14	<1.5	1.9	310	2.3	<1.5	42	1.6	<1.5	34	<1.5
	9/30/2014	<15	<15	<15	<15	190	<15	39	3,500	45	<15	670	36	<15	480	42
	9/30/2014 DUP	<15	<15	<15	<15	180	<15	39	3,500	45	<15	680	35	<15	460	42
	12/11/2014	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	34	0.64	<0.50	25	<0.50	<0.50	15	<0.50
	12/11/2014 DUP	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	32	0.6	<0.50	24	<0.50	<0.50	14	<0.50
	3/20/2015	<5	<5	<5	<5	102	<5	25.4	2,110	29.4	<5	584	17.8	<5	344	36.8
	3/20/15 DUP	<12.5	<12.5	<12.5	<12.5	143	<12.5	25.8	2,490	28.8	<12.5	495	21.7	<12.5	340	29
	6/19/2015	<10	<10	<10	<10	151	<10	28.2	2,570	25	<10	514	23.6	<10	356	31.1
	6/19/2015 DUP	<10	<10	<10	<10	157	<10	31	2,680	30	<10	516	23.4	<10	362	33.2
	9/22/2015	<8.3	<8.3	<8.3	<8.3	120	<8.3	16.9	2,250	23.4	<8.3	343	15.7	<8.3	239	22.5
	9/22/2015 DUP	<8.3	<8.3	<8.3	<8.3	134	<8.3	21.4	2,490	25.7	<8.3	425	20.1	<8.3	282	26.5
	12/8/2015	<5	<5	<5	<5	8	<5	<5	40	0.7	<5	45	0.5	<5	22	<5
	3/8/2016	<3.6	<14.3	<3.6	<3.6	79.9	<3.6	15.4	1,380	16.2	<3.6	325	7.7	<3.6	209	21.3
	3/8/16 DUP	<3.6	<14.3	<3.6	<3.6	82	<3.6	16.6	1,390	15.6	<3.6	336	7.7	<3.6	210	21.2
	6/16/2016	<8.4	<33.4	<8.4	<8.4	174	<8.4	29.9	3,310	31.6	<8.4	314	12.8	<8.4	288	52.3
	6/16/16 DUP	<8.4	<33.4	<8.4	<8.4	192	<8.4	31.9	3,420	37.4	<8.4	367	15.4	<8.4	311	67
	9/27/2016	<10	<40	<10	<10	26	<10	<10	525	<10	<10	67.6	<10	<10	45.4	14.8
	9/27/2016 DUP	<2.5	<10	<2.5	<2.5	44.4	<2.5	11.5	867	11.4	<2.5	387	3.9	<2.5	163	22.6
	12/14/2016	<1	<4	<1	<1	<1	<1	<1	6.9	2.3	<1	<1	<1	<1	<1	20.5
12/14/2016 DUP	<2.5	29.1	<2.5	<2.5	16.5	<2.5	4.7	744	<2.5	<2.5	62.3	<2.5	<2.5	42.2	21.2	
3/30/2017	<10	<40	<10	<10	<10	<10	<10	1,120	<10	<10	55.9	<10	<10	29.6	37.8	
3/30/2017 DUP	<2.5	<10	<2.5	<2.5	11.4	<2.5	3.8	853	6.1	<2.5	49	<2.5	<2.5	26	28.3	
6/12/2017	<125	<12.5	<3.1	<3.1	14.0	<3.1	4.7	893	7.6	<3.1	42.4	<3.1	<3.1	18.1	48.4	
6/12/2017 DUP	<3.1	<12.5	<3.1	<3.1	12.8	<3.1	<3.1	860	7.1	<3.1	40.0	<3.1	<3.1	16.5	47.4	
MW-13	12/02/96	0.7	<0.50	<0.50	<0.20	<0.30	<0.50	0.3	9.1	<1	<0.20	750	6.6	--	82	<0.50
	11/12/97	<250	<500	<250	<250	291	<250	<250	5,050	<250	<250	18,100	<250	--	9,050	<500
	08/11/99	<200	<1	<100	<100	<100	<100	<100	2,280	<100	<100	9,590	<200	--	3,920	<100
	11/16/99	<50	<125	<25	<50	108	<25	51	2,620	<25	<25	7,210	67.5	--	3,050	--
	02/28/00	<200	<1	<100	<100	<100	<100	<100	562	<100	<100	1,340	<200	--	602	<100
	06/28/00	<100	<500	<50	<50	132	<50	142	4,210	<50	<50	14,700	155	--	6,360	<50
	05/30/01	<200	<1,000	<100	<100	<100	<100	<100	2,460	<100	<100	10,300	<200	--	4,620	<100
	05/30/02	<2	<1	<1	<2	1.44	<1	1.28	60.4	<1	<1	241	1.68	--	86.4	<1
	05/28/03	<1	<0.50	<0.50	<1	1.71	<0.50	1.75	79.6	1.26	<0.50	121	1.58	--	130	<0.50
	11/16/04	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	1,200	<12	--	230	<12
	05/18/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	3.14	<0.50	<0.50	71.2	<0.50	--	10.3	<0.50

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 ug/L (ppb)														
		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)	09/12/07	<50	<25	<25	<50	55	<25	28	1,290	<25	<25	2,730	29.5	--	2,020	<25
	12/12/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	3.36	<0.50	<0.50	51.3	0.64	--	19.5	<0.50
	03/05/08	<1	<0.500	<0.500	<1	8.32	<0.500	4.46	174	4.52	<0.500	383	4.21	<0.500	337	0.96
	06/25/08	<5	<5	<5	<5	15.2	<5	<5	320	10.4	<5	132	<5	--	160	<5
	09/19/08	<5	<2.50	<2.50	<5	5.6	<2.50	<2.50	116	2.65	<2.50	266	<2.50	<2.50	187	<2.50
	12/10/08	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.62	32	0.69	<0.50	25	0.6	<0.50	39	<0.50
	03/27/09	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	15	<0.50	<0.50	25	<0.50	<0.50	17	<0.50
	03/27/09 DUP	<0.50	<0.50	<0.50	<0.50	0.79	<0.50	<0.50	15	<0.50	<0.50	25	<0.50	<0.50	17	<0.50
	06/18/09	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	0.8	58	1.8	<0.50	16	<0.50	<0.50	42	<0.50
	09/17/09	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	3.3	130	2.9	<0.50	430	4	<0.50	270	1
	12/18/09	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	16	<0.50	<0.50	66	0.61	<0.50	45	<0.50
	03/19/10	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	1.4	64	1.2	<0.50	130	1.3	<0.50	110	<0.50
	06/16/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	14	<0.50	<0.50	7.6	<0.50
	09/23/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.7	<0.5	<0.5	45	<0.5	<0.5	12	<0.5
	12/21/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	03/11/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	0.65	<0.50
	06/09/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	6.1	<0.5	<0.5	4.2	<0.5
	09/19/11	<0.50	0.54	<0.50	<0.50	35	<0.50	17	700	20	<0.50	2,200	17	0.63	1,300	3.6
	12/09/11	<9	<9	<9	<9	23	<9	11	530	18	<9	2,800	12	<9	1,400	<9
	03/12/12	<9	<9	<9	<9	24	<9	14	600	14	<9	1,800	11	<9	1,200	<9
	06/22/12	<4	<4	<4	<4	40	<4	13	940	30	<4	1,300	8.6	<4	1,000	4.5
	09/14/12	<4	<4	<4	<4	38	<4	21	900	22	<4	3,100	16	<4	1,800	<4
	12/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	13	0.62	<0.50	88	<0.50	<0.50	51	<0.50
03/15/13	<0.50	<0.50	<0.50	<0.50	34	<0.50	21	890	20	<0.50	2,400	14	0.68	1,700	3.2	
06/14/13	<4	<4	<4	<4	19	<4	9.4	520	15	<4	1,100	6	<4	920	<4	
09/20/13	<0.50	<0.50	<0.50	<0.50	40	<0.50	20	770	19	<0.50	2,600	13	0.74	1,700	3.4	
12/13/13	<4	<4	<4	<4	11	<4	6.6	280	5.8	<4	1,300	4.9	<4	720	<4	
3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	100	<0.50	<0.50	54	<0.50	
6/24/2014	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	880	33	<0.50	1,500	12	0.67	1,300	3.2	
09/30/14	<4	<4	<4	<4	38	<4	20	890	19	<4	3,100	13	<4	2,000	<4	
12/11/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18	0.66	<0.50	91	<0.50	<0.50	65	<0.50	

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 ug/L (ppb)														
		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)	3/18/2015	<1.6	<1.6	<1.6	<1.6	19	<1.6	3.1	515	7.4	<1.6	551	2.4	<1.6	609	<1.6
	6/18/2015	<0.50	<0.50	<0.50	<0.50	33.9	<0.50	15.9	615	15.3	<0.50	1,960	10.4	<0.50	1,390	2
	9/22/2015	<0.50	<0.50	<0.50	<0.50	33.9	<0.50	21	754	15.6	<0.50	2,370	10.4	<0.50	1,740	2.4
	12/8/2015	<0.50	<0.50	<0.50	<0.50	0.89	<0.50	0.64	30.5	0.88	<0.50	185	0.7	<0.50	121	<0.50
	3/8/2016	<2.5	<10	<2.5	<2.5	14.3	<2.5	6.4	336	4.6	<2.5	839	3.7	<2.5	736	<2.5
	6/16/2016	<8.4	<33.4	<8.4	<8.4	41.3	<8.4	17.8	841	19.2	<8.4	2,470	10.1	<8.4	1,820	<8.4
	9/28/2016	<2.5	<10	<2.5	<2.5	<2.5	<2.5	<2.5	148	<2.5	<2.5	4,840	<2.5	<2.5	895	<2.5
	9/28/16 DUP	<2.5	<10	<2.5	<2.5	<2.5	<2.5	<2.5	145	<2.5	<2.5	5,090	<2.5	<2.5	951	<2.5
	12/16/2016	<5	<20	<5	<5	<5	<5	<5	509	<5	<5	1,020	<5	<5	394	<5
	3/30/2017	<5	<20	<5	<5	<5	<5	<5	101	<5	<5	176	<5	<5	57.6	<5
6/15/2017	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	272	1.6	<1.0	97.7	<1.0	<1.0	56.3	4.1
MW-14	11/12/97	<5	<10	<5	<5	5.01	<5	<5	<5	<5	<5	42.6	<5	--	394	<10
	08/10/99	<20	<100	<10	<10	<10	<10	<10	15.1	<10	<10	121	35.6	--	853	<10
	11/16/99	<2	<5	<1	<2	2.48	<1	2.48	4.2	<1	<1	186	10.8	--	313	<1
	02/28/00	<100	<500	<50	<50	<50	<50	83.2	85.1	<50	<50	711	190	--	5,300	<50
	06/27/00	<10	<50	<5	<5	10.1	<5	18.9	219	<5	<5	207	46.2	--	1,150	<5
	11/30/00	<2	<10	<1	<1	1.08	<1	1.88	2.27	<1	<1	21.3	5.54	--	157	<1
	05/30/01	<1	<50	<5	<5	6.16	<5	13.8	30.4	<5	<5	268	28.2	--	1,280	<5
	05/30/02	<10	<5	<5	<10	<5	<5	<5	8.4	<5	<5	78.3	11.9	--	303	<5
	05/28/03	<1	<0.50	<0.50	<1	0.9	<0.50	1.47	4.15	<0.50	<0.50	80.6	4.99	--	188	<0.50
	11/15/04	<25	<25	<25	<25	<25	<25	<25	96	<25	<25	480	<25	--	1,200	<25
	05/17/05	<2	<1	<1	<2	4.64	<1	2.3	41.1	<1	<1	127	9.28	--	367	<1
	09/12/07	<20	<10	<10	<20	21.6	<10	<10	162	<10	<10	180	22.2	--	963	<10
	03/05/08	<1	<0.500	0.850 J	<1	24.3	<0.500	13.9	217	3.86	<0.500	549	27.2	<0.500	1,770	<0.500
	06/25/08	<5	<5	<5	<5	15.2	<5	10.2	113	<5	<5	360	18.2	--	1,290	<5
	09/19/08	<5	<2.50	<2.50	<5	19.1	<2.50	8.6	173	<2.50	<2.50	425	16.6	<2.50	1,320	<2.50
	12/10/08	<5	<5	<5	<5	17	<5	9.6	160	<5	<5	330	17	<5	1,200	<5
	03/27/09	<2.5	<2.5	<2.5	<2.5	16	<2.5	6.7	160	2.5	<2.5	320	14	<2.5	980	<2.5
	06/17/09	<2.5	<2.5	<2.5	<2.5	21	<2.5	12	150	<2.5	<2.5	400	21	<2.5	1,400	<2.5
	09/18/09	<0.50	<0.50	0.74	<0.50	19	<0.50	8.8	150	2	<0.50	440	17	<0.50	1,300	<0.50
	12/15/09	<2.5	<2.5	<2.5	<2.5	11	<2.5	4.7	120	<2.5	<2.5	410	7.6	<2.5	820	<2.5
03/17/10	<2.5	<2.5	<2.5	<2.5	22	<2.5	9.5	140	<2.5	<2.5	320	15	<2.5	1,300	<2.5	
07/02/10	<2.5	<2.5	<2.5	<2.5	7	<2.5	4.8	52	<2.5	<2.5	220	5.9	<2.5	610	<2.5	
09/22/10	<3	<3	<3	<3	16	<3	6.5	140	<3	<3	230	10	<3	800	<3	
12/08/10	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	0.7	11	<0.5	<0.5	82	1.5	<0.5	150	<0.5	

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 ug/L (ppb)														
		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)	03/09/11	<3	<3	<3	<3	6.8	<3	3.8	55	<3	<3	200	5	<3	540	<3
	06/08/11	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	<0.5	1.8	<0.5	<0.5	27	1.1	<0.5	66	<0.5
	09/14/11	<2.5	<2.5	<2.5	<2.5	12	<2.5	5.7	120	<2.5	<2.5	300	8	<2.5	850	<2.5
	12/06/11	<2.5	<2.5	<2.5	<2.5	8.4	<2.5	3.9	88	<2.5	<2.5	320	5.7	<2.5	740	<2.5
	03/07/12	<2.5	<2.5	<2.5	<2.5	9.3	<2.5	4.6	87	<2.5	<2.5	270	6.1	<2.5	760	<2.5
	06/19/12	<2.5	<2.5	<2.5	<2.5	11	<2.5	5.6	70	<2.5	<2.5	200	7.4	<2.5	730	<2.5
	09/11/12	<2.5	<2.5	<2.5	<2.5	11	<2.5	5.1	110	<2.5	<2.5	280	6.6	<2.5	730	<2.5
	12/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	16	<0.50	<0.50	27	<0.50
	03/12/13	<0.50	<0.50	0.56	<0.50	12	<0.50	4.4	100	1.7	<0.50	230	7.2	<0.50	670	<0.50
	06/12/13	<3	<3	<3	<3	11	<3	5	84	<3	<3	260	6.6	<3	770	<3
	09/18/13	<0.50	<0.50	<0.50	<0.50	13	<0.50	4.6	130	2	<0.50	240	5.9	<0.50	640	<0.50
	12/11/13	<1.5	<1.5	<1.5	<1.5	8.4	<1.5	2.8	83	<1.5	<1.5	180	3.7	<1.5	460	<1.5
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	20	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	17	<0.50	7	120	1.8	<0.50	210	0.87	<0.50	670	<0.50
	9/24/2014	<2.5	<2.5	<2.5	<2.5	10	<2.5	4	120	<2.5	<2.5	240	4	<2.5	640	<2.5
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	<0.50	29	0.61	<0.50	63	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	15.4	<0.50	5.9	128	2.2	<0.50	312	5.9	<0.50	912	<0.50
	6/16/2015	<3.1	<3.1	<3.1	<3.1	14.7	<3.1	4.9	117	<3.1	<3.1	248	4.4	<3.1	792	<3.1
	9/21/2015	<0.50	<0.50	<0.50	<0.50	15.2	<0.50	5.6	116	2.1	<0.50	201	4.7	<0.50	654	<0.50
	12/8/2015	Not sampled; well monument under water.														
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	12.5	<0.50	<0.50	29.2
9/27/2016	<0.50	<2	<0.50	<0.50	7.2	<0.50	<0.50	2.1	61.8	0.94	<0.50	100	1.7	<0.50	218	<0.50
12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	0.56	<0.50	<0.50	0.97	<0.50
3/27/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.57	69.2	<0.5	<0.5	14.7	<0.5	<0.5	33.4	0.62
6/13/2017	<2.0	<2.0	<0.50	<0.50	10	<1.0	5.3	432	2.7	<0.50	58.3	2.1	<0.50	204	2.5	
MW-15	11/13/97	<0.50	<1	<0.50	<0.50	<0.50	1.1	<0.50	6.78	<0.50	<0.50	2.38	1.68	--	1.81	<1
	11/16/99	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	967	13.7	--	63.4	<0.50
	02/28/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	17.9	1.55	--	1.01	<0.50
	06/27/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.44	1.03	--	0.565	<0.50
	05/30/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.32	<1	--	<0.50	<0.50
	05/31/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.59	0.63	--	<0.50	<0.50
	05/29/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	4.42	<0.50	--	1.3	<0.50
11/02/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	--	<0.50	<0.50	

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 ug/L (ppb)															
		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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	12	<0.50	--	3.1	<0.50
	03/24/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	--	1.49	<0.50
	05/17/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.54	<0.50	--	0.58	<0.50
	09/13/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54 J	<0.50	--	<0.50	<0.50
	03/07/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	2.63 J	<0.500	<0.500	<0.500	<0.500
	09/18/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.86	<0.500	<0.500	<0.500	<0.500
	03/25/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	<0.50	<0.50
	09/17/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.81	<0.50	<0.50	<0.50	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	<0.50	<0.50
	09/23/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.76	<0.5	<0.5	<0.5	<0.5
	03/09/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/16/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	<0.50	<0.50
	03/09/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	<0.50	<0.50
	09/10/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	<0.50	<0.50
	03/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	<0.50	<0.50
	09/19/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	<0.50
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/30/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	<0.50	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50
3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	<0.50	<0.50	<0.50	<0.50	
9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	<0.50	
3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
MW-16	11/12/97	<5	<10	<5	<5	19.8	<5	27.8	23.6	<5	<5	328	57.5	--	142	<10	
	08/11/99	<5	<25	<2.5	<2.5	15.2	<2.5	<2.5	7.2	<2.5	<2.5	205	55.6	--	85.6	<2.5	
	02/28/00	<2	<10	<1	<1	10.4	<1	12	7.4	<1	<1	523	54.5	--	112	<1	
	06/27/00	<10	<50	<5	<5	12.4	<5	13.9	8.39	<5	<5	236	45	--	93.8	<5	
	05/30/01	<10	<50	<5	<5	9.28	<5	12	8.95	<5	<5	302	30.1	--	110	<5	
	05/30/02	<5	<2.5	<2.5	<5	13.5	<2.5	10.6	8.65	<2.5	<2.5	467	24	--	119	<2.5	
	05/29/03	<5	<2.5	<2.5	<5	3.6	<2.5	3.35	2.85	<2.5	<2.5	412	13.4	--	76	<2.5	
	11/02/04	<2	<10	<1	<1	<1	<1	<1	1.66	<1	<1	260	6.9	--	25.4	<1	
	11/16/04	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	300	7.8	--	26	<2.5	
	03/24/05	<2	<1	<1	<2	1.8	<1	1.34	1.96	<1	<1	373	11.8	--	49.4	<1	
	05/17/05	<1	<0.50	<0.50	<1	4.39	<0.50	3.14	9.25	<0.50	<0.50	120	9.09	--	41.5	<0.50	

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 ug/L (ppb)														
		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	<1	<0.500	<0.500	<1	2.75	<0.500	1.86	2.5	<0.500	<0.500	152	8.94	--	33.4	<0.500
	02/21/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	06/06/06	<2	<2	<2	<2	12.2	<2	3.38	210	<2	<2	84.6	2.56	--	25.2	5.64
	12/06/06	<2	<1	<1	<2	4.2	<1	2.12	16.7	<1	<1	176	5.88	--	45.6	<1
	05/23/07	<1	<1	<1	<1	2.57	<1	<1	14	<1	<1	98.8	3.35	--	23.8	<1
	09/13/07	<1	<0.50	<0.50	<1	3.15	<0.50	1.08	6.6	<0.50	<0.50	163	5.87	--	49.2	<0.50
	12/12/07	<2	<1	<1	<1	2.32	<1	1.44	5.9	<1	<1	110	5.92	--	28.2	<1
	03/07/08	<1	<0.500	<0.500	<1	3	<0.500	1.86	5.93	<0.500	<0.500	280	6.12	<0.500	73.3	<0.500
	09/18/08	<5	<2.50	<2.50	<5	2.7	<2.50	<2.50	5.15	<2.50	<2.50	300	6.2	<2.50	65.2	<2.50
	12/09/08	<1	<1	<1	<1	2.6	<1	1.8	5.5	<1	<1	300	5.7	<1	67	<1
	03/26/09	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	0.82	3.2	<0.50	<0.50	150	5.2	<0.50	28	<0.50
	06/17/09	<0.50	<0.50	<0.50	<0.50	5	<0.50	0.95	29	<0.50	<0.50	54	1.8	<0.50	16	0.68
	09/17/09	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	1.1	2	<0.50	<0.50	220	4.8	<0.50	33	<0.50
	12/17/09	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	0.6	1.4	<0.50	<0.50	100	3.2	<0.50	19	<0.50
	03/19/10	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	1	2	<0.50	<0.50	110	4.5	<0.50	36	<0.50
	06/16/10	<0.50	<0.50	<0.50	<0.50	4.9	<0.50	0.91	37	<0.50	<0.50	39	0.94	<0.50	9.9	1.6
	09/23/10	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	0.94	2.8	<0.5	<0.5	240	4.2	<0.5	43	<0.5
	12/10/10	<0.5	<0.5	<0.5	<0.5	0.85	<0.5	0.54	1.6	<0.5	<0.5	94	2.4	<0.5	18	<0.5
	03/10/11	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	0.5	6.2	<0.50	<0.50	110	1.9	<0.50	21	<0.50
	06/09/11	<0.5	<0.5	<0.5	<0.5	4.9	<0.5	1.2	63	<0.5	<0.5	28	<0.5	<0.5	7.1	2.2
	09/19/11	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	5.1	<0.50	<0.50	160	2.7	<0.50	13	<0.50
	12/08/11	<0.50	<0.50	<0.50	<0.50	0.92	<0.50	0.61	2.2	<0.50	<0.50	210	2.9	<0.50	38	<0.50
	06/20/12	<0.5	<0.5	<0.5	<0.5	3.6	<0.5	0.56	24	<0.5	<0.5	60	0.98	<0.5	14	0.62
	09/13/12	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	0.61	6.5	<0.50	<0.50	190	2.4	<0.50	35	<0.50
	12/13/12	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.68	5.7	<0.50	<0.50	110	1.1	<0.50	24	<0.50
	03/14/13	<0.50	<0.50	<0.50	<0.50	0.98	<0.50	0.7	4.7	<0.50	<0.50	200	2	<0.50	50	<0.50
	06/14/13	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	6	<0.50	<0.50	84	0.96	<0.50	18	<0.50
	09/19/13	<0.50	<0.50	<0.50	<0.50	0.92	<0.50	0.75	7.1	<0.50	<0.50	180	1.4	<0.50	57	<0.50
	12/13/13	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	0.68	5.9	<0.50	<0.50	160	1.4	<0.50	52	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	0.89	19	<0.50	<0.50	52	<0.50	<0.50	13	0.55
	6/24/2014	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	10	<0.50	<0.50	70	0.7	<0.50	12	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	0.66	8.8	<0.50	<0.50	200	1.4	<0.50	47	<0.50

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 ug/L (ppb)														
		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)	12/11/2014	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	4	<0.50	<0.50	76	0.96	<0.50	17	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	6	<0.50	<0.50	157	0.94	<0.50	31	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	0.61	<0.50	<0.50	10.5	<0.50	<0.50	179	1	<0.50	41.6	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	0.65	10.4	<0.50	<0.50	173	1.2	<0.50	43.5	<0.50
	12/7/2015	Not sampled: well monument under water.														
	9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	9.5	<0.50	<0.50	144	0.66	<0.50	35.6	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	51.5	<0.50	<0.50	11.6	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	1.6	<0.5	<0.5	19	<0.5	<0.5	27	<0.5	<0.5	6.4	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	6.4	<0.50	<0.50	53.7	0.66	<0.50	5.4	<0.50
MW-17	11/13/97	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	--	<0.50	<1
	11/16/99	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	127	1.5	--	9.54	<0.50
	02/28/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.85	<1	--	2.51	<0.50
	06/27/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.27	<1	--	<0.50	<0.50
	05/30/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50
	05/30/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	<0.50	--	<0.50	<0.50
	05/28/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.75	<0.50	--	0.92	<0.50
	11/15/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	--	<0.50	<0.50
	05/17/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.06	<0.50	--	6.68	<0.50
	05/23/07	<1	<1	<1	<1	<1	<1	<1	8.82	<1	<1	37.8	<1	--	28.2	<1
	09/11/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50 J	<0.50	--	<0.50	<0.50
	03/05/08	<1	<0.500	<0.500	<1	0.9	<0.500	<0.500	0.96	<0.500	<0.500	1.05	<0.500	<0.500	3.62	<0.500
	09/19/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.8	<0.500
	03/25/09	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	1	<0.50	<0.50	0.69	<0.50	<0.50	3	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	0.72	<0.50	<0.50	3.2	<0.50
	03/23/10	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	3.9	<0.50	<0.50	3.2	0.58	<0.50	18	<0.50
	09/20/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.69	<0.5	<0.5	0.71	<0.5	<0.5	3	<0.5
	03/09/11	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	8.2	<0.50
	09/13/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	0.71	<0.50	<0.50	3.1	<0.50
	03/07/12	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	5.4	<0.50	<0.50	6.8	0.56	<0.50	25	<0.50
09/11/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	0.66	<0.50	<0.50	2.5	<0.50	
03/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	4.1	<0.50	<0.50	11	<0.50	
09/17/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	4.2	<0.50	<0.50	8.9	<0.50	

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 ug/L (ppb)														
		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-17 (continued)	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	3.2	<0.50	<0.50	6.8	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	2.4	<0.50	<0.50	3.9	<0.50	<0.50	12.6	<0.50
	9/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	2.5	<0.50	<0.50	4.2	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	0.83	<0.50	<0.50	3.3	<0.50	<0.50	9.4	<0.50	<0.50	22.7	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	4.2	<0.50	<0.50	10.4	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-18i	09/29/00	ND	ND	0.694	ND	0.843	ND	ND	16.5	ND	ND	11.7	ND	--	8.32	ND
	11/30/00	<1	<5	<0.50	<0.50	0.907	<0.50	<0.50	11.6	<0.50	<0.50	12.4	<1	--	17.6	<0.50
	02/27/01	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	10.2	<2.5	<2.5	15.2	<5	--	10	<2.5
	05/30/01	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	6.47	<2.5	<2.5	29.5	<5	--	8.06	<2.5
	09/25/01	<1	<1	<1	<1	1.8	<1	<1	23	<1	<1	62	2.3	--	39	<1
	03/29/02	<1	<0.50	<0.50	<1	1.2	<0.50	<0.50	17.3	<0.50	<0.50	71.1	1.22	--	31	<0.50
	05/30/02	<1	<0.50	<0.50	<1	1.18	<0.50	<0.50	18.6	<0.50	<0.50	53.2	1.14	--	19.3	<0.50
	08/29/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	6.91	<0.50	<0.50	18.2	<0.50	--	7.34	<0.50
	11/07/02	<1	<0.50	<0.50	<1	0.56	<0.50	<0.50	10.1	<0.50	<0.50	23.3	<0.50	--	9.7	<0.50
	01/23/03	<1	<0.50	<0.50	<1	0.68	<0.50	<0.50	12.3	<0.50	<0.50	27.6	0.5	--	12.5	<0.50
	05/29/03	<1	<0.50	<0.50	<1	0.59	<0.50	<0.50	10.4	<0.50	<0.50	23.9	0.5	--	10.8	<0.50
	11/11/03	<1	<1	<1	<1	<1	<1	<1	16.1	<1	<1	31.5	<1	--	16.3	<1
	01/27/04	<1	<0.50	<0.50	<1	0.67	<0.50	<0.50	14.2	<0.50	<0.50	69.7	0.53	--	12	<0.50
	05/04/04	<1	<1	<1	<1	<1	<1	<1	15.6	<1	<1	112	<1	--	12.1	<1
	08/17/04	<1	<0.50	3.76	<0.50	0.81	1.86	<0.50	22.6	0.78	<0.50	43.8	0.96	--	24	<1
	11/02/04	<0.50	<0.50	<0.50	<0.50	1.09	<0.50	<0.50	21.8	<0.50	<0.50	32.2	0.6	--	17.8	<0.50
	11/16/04	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	24	<0.50	<0.50	42	0.69	--	21	<0.50
	02/01/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	8.92	<0.50	<0.50	13	<0.50	--	6.01	<0.50
	05/18/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	11	<0.50	<0.50	9.69	<0.50	--	7.3	<0.50
	08/18/05	<1	<0.500	<0.500	<1	1.17	<0.500	<0.500	18 B	<0.500	<0.500	21.4 B	0.58	--	16.3 B	<0.500
08/18/05 DUP	<1	<0.500	<0.500	<1	1.17	<0.500	<0.500	18.5 B	<0.500	<0.500	21.8 B	0.57	--	16.2 B	<0.500	
11/15/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	7.31	<0.500	<0.500	11.4	<0.500	--	6.31	<0.500	
02/21/06	<1	<0.500	<0.500	<1	0.93	<0.500	<0.500	14.8	<0.500	<0.500	24.3	0.52	--	15.2	<0.500	
06/06/06	<1	<1	<1	<1	<1	<1	<1	5.88	<1	<1	8.46	<1	--	4.47	<1	

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 ug/L (ppb)														
		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)	09/06/06	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	5.79	<0.50	<0.50	7.89	<0.50	--	4.23	<0.50
	12/06/06	<1	<0.50	<0.50	<1	0.56	<0.50	<0.50	11.6	<0.50	<0.50	11.2	<0.50	--	6.91	<0.50
	02/07/07	<1	<0.50	<0.50	<1	0.68	<0.50	<0.50	12	<0.50	<0.50	15	<0.50	--	9.32	<0.50
	05/23/07	<1	<1	<1	<1	<1	<1	<1	14.6	<1	<1	17.2	<1	--	11.3	<1
	09/11/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.87	<0.50	<0.50	1.13	<0.50	--	1.46	<0.50
	12/13/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.99	<0.50	<0.50	5.57	<0.50	--	3.32	<0.50
	03/06/08	<1	<0.500	<0.500	<1	0.82	<0.500	<0.500	13.2	<0.500	<0.500	13.2	<0.500	<0.500	9.78	<0.500
	06/10/08	<1	1	1	<1	<1	<1	<1	4.17	<1	<1	4.31	<1	--	2.18	<1
	09/17/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	3.95	<0.500	<0.500	3.1	<0.500	<0.500	2.55	<0.500
	12/09/08	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	12	<0.50	<0.50	8.5	<0.50	<0.50	7.4	<0.50
	03/26/09	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	8	<0.50	<0.50	4.8	<0.50	<0.50	4.7	<0.50
	06/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	<0.50	2.5	<0.50	<0.50	1.7	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.2	<0.50	<0.50	5.9	<0.50	<0.50	4.5	<0.50
	12/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	2.5	<0.50	<0.50	1.6	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	11	<0.50	<0.50	9.7	<0.50	<0.50	6	<0.50
	06/15/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	3.6	<0.50	<0.50	1.8	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	0.71	<0.5	0.5	15	<0.5	<0.5	9.8	<0.5	<0.5	7.4	<0.5
	12/09/10	<0.5	<0.5	<0.5	<0.5	0.66	<0.5	0.5	15	<0.5	<0.5	12	<0.5	<0.5	8	<0.5
	03/10/11	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	12	<0.50	<0.50	9.4	<0.50	<0.50	5.2	<0.50
	06/09/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5	<0.5	2.1	<0.5	<0.5	1	<0.5
	09/15/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	<0.50	2.9	<0.50	<0.50	1.9	<0.50
	12/08/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.8	<0.50	<0.50	8.5	<0.50	<0.50	4.8	<0.50
	03/07/12	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	15	<0.50	<0.50	12	<0.50	<0.50	6.4	<0.50
	06/21/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.7	<0.5	<0.5	1.5	<0.5	<0.5	0.97	<0.5
	09/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	1.7	<0.50	<0.50	1	<0.50
	12/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.3	<0.50	<0.50	3.9	<0.50	<0.50	2.1	<0.50
	03/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.2	<0.50	<0.50	3.8	<0.50	<0.50	2.1	<0.50
	06/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	2.4	<0.50	<0.50	1.3	<0.50
09/19/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	2.2	<0.50	<0.50	1.3	<0.50	
12/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	5.3	<0.50	<0.50	3.6	<0.50	
3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	1	<0.50	<0.50	0.7	<0.50	
6/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.63	<0.50	<0.50	0.19	<0.50	<0.50	1	<0.50	
9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	1.5	<0.50	<0.50	0.93	<0.50	
12/10/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	<0.50	2	<0.50	<0.50	1.3	<0.50	

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 ug/L (ppb)														
		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)	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	2	<0.50	<0.50	1.1	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	2	<0.50	<0.50	1.1	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	<0.50	3.4	<0.50	<0.50	1.8	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	<0.50	4	<0.50	<0.50	2.6	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	1	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	<0.50	<0.50	0.73	<0.50
	9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	0.85	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	1.5	<0.50	<0.50	1.2	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	1.4	<0.5	<0.5	1.2	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	0.66	<0.50
MW-19	11/07/02	<20	<10	<10	<20	252	<10	66.2	2,450	23	<10	3,100	139	--	1,810	79.2
	05/30/03	<50	<25	<25	<50	109	<25	36	1,300	<25	<25	7,160	104	--	2,070	35.5
	11/16/04	<50	<50	<50	<50	<50	65	<50	490	<50	<50	7,300	130	--	1,400	<50
	05/18/05	<10	<5	<5	<10	19.3	<5	<5	161	<5	<5	1,500	33.8	--	205	24.6
	11/15/05	<20	<10	<10	<20	27	<10	18.8	230	<10	<10	3,080	67.2	--	785	14.6
	11/15/05 DUP	<20	<10	<10	<20	25	<10	20.2	221	<10	<10	2,860	64.4	--	762	15.2
	06/05/06	<10	<10	<10	<10	<10	<10	<10	80.9	<10	<10	1,280	13.1	--	237	<10
	12/06/06	<20	<10	<10	<20	<10	<10	<10	76.2	<10	<10	2,060	17.2	--	304	<10
	05/22/07	<20	<20	<20	<20	<20	<20	<20	114	<20	<20	2,720	51.4	--	504	<20
	09/11/07	<50	<25	<25	<50	<25	<25	<25	85.5	<25	<25	3,370	62.5	--	608	<25
	12/12/07	<50	<25	<25	<50	<25	<25	<25	80	<25	<25	2,070	38.5	--	326	<25
	03/05/08 ¹	<1	<0.500	<0.500	<1	12.5	<0.500	20.5	149	4.53	<0.500	4,060	66	<0.500	1,030	6.41
	06/25/08	<20	<20	<20	<20	45.8	<20	29.6	435	<20	<20	2,790	46.6	--	1,410	<20
	09/19/08	<50	<25	<25	<50	62	<25	37.5	715	<25	<25	4,990	56.5	<25	2,870	39.5
	12/10/08	<25	<25	<25	<25	51	<25	<25	500	<25	<25	6,600	110	<25	1,100	<25
	03/27/09	<15	<15	<15	<15	53	<15	39	650	<15	<15	4,500	120	<15	1,900	25
	03/27/09 DUP	<15	<15	<15	<15	56	<15	39	670	<15	<15	4,800	130	<15	1,900	25
	06/18/09	<2.5	<2.5	<2.5	<2.5	5.4	<2.5	5.3	82	<2.5	<2.5	680	8.6	<2.5	240	<2.5
	06/18/09 DUP	<2.5	<2.5	<2.5	<2.5	5.1	<2.5	5.4	80	<2.5	<2.5	660	8.4	<2.5	240	<2.5
	09/18/09	<2.5	<2.5	<2.5	<2.5	12	<2.5	36	170	4.6	<2.5	9,400	140	<2.5	2,000	11
09/18/09 DUP	<2.5	<2.5	<2.5	<2.5	12	<2.5	36	170	4.4	<2.5	9,700	140	<2.5	2,000	12	
12/18/09	<10	<10	<10	<10	87	<10	29	780	13	<10	3,200	57	<10	1,200	35	
12/18/09 DUP	<10	<10	<10	<10	84	<10	27	740	12	<10	3,100	53	<10	1,200	32	
03/19/10	<5	<5	<5	<5	<5	<5	8.3	45	<5	<5	1,900	19	<5	380	<5	
03/19/10 DUP	<7	<7	<7	<7	<7	<7	8.3	44	<7	<7	1,800	18	<7	360	<7	

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 ug/L (ppb)														
		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)	06/17/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.7	<0.50	<0.50	67	<0.50	<0.50	25	<0.50
	06/17/10 DUP	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	6.9	<0.50	<0.50	65	0.52	<0.50	24	<0.50
	09/23/10	<2.5	<2.5	<2.5	<2.5	8.7	<2.5	21	110	3.6	<2.5	3,400	50	<2.5	920	12
	09/23/10 DUP	<2.5	<2.5	<2.5	<2.5	8.5	<2.5	21	110	3.4	<2.5	3,700	49	<0.25	890	13
	12/09/10	<15	<15	<15	<15	59	<15	38	590	<15	<15	6,200	68	<15	1,500	48
	12/09/10 DUP	<1.5	<1.5	<1.5	<1.5	58	<1.5	37	590	<1.5	<1.5	6,000	67	<1.5	1,500	48
	03/08/11	<5	<5	<5	<5	23	<5	12	280	<5	<5	1,500	18	<5	590	13
	06/10/11	<0.9	<0.9	<0.9	<0.9	22	<0.9	2.7	160	1.4	<0.9	240	3.6	<0.9	130	5.6
	06/10/11 DUP	<0.9	<0.9	<0.9	<0.9	19	<0.9	2.3	140	1.3	<0.9	220	3.3	<0.9	120	5
	09/19/11	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	53	<1.5	<1.5	400	3	<1.5	78	<1.5
	09/19/11 DUP	<2	<2	<2	<2	<2	<2	<2	53	<2	<2	410	3.2	<2	80	<2
	12/09/11	<1.5	<1.5	<1.5	<1.5	5	<1.5	4.3	110	<1.5	<1.5	730	10	<1.5	220	3.9
	12/09/2011 DUP	<2	<2	<2	<2	5.4	<2	4.7	120	<2	<2	770	10	<2	230	3.9
	03/09/12	<2.5	<2.5	<2.5	<2.5	46	<2.5	26	820	1	<2.5	2,400	50	<2.5	1,200	67
	03/09/12 DUP	<4	<4	<4	<4	43	<4	24	770	8.8	<4	2,400	46	<4	1,200	62
	06/22/2012	<5	<5	<5	<5	74	<5	17	1,000	14	<5	1,300	21	<5	1,000	57
	06/22/12 DUP	<5	<5	<5	<5	74	<5	18	1,000	13	<5	1,300	22	<5	1,000	57
	09/14/12	<5	<5	<5	<5	<5	<5	5.7	300	<5	<5	2,200	31	<5	340	8
	09/14/12 DUP	<5	<5	<5	<5	<5	<5	5.9	300	<5	<5	2,300	31	<5	340	<5
	12/14/12	<1.5	9.8	<1.5	<1.5	21	<1.5	1.8	330	3.6	<1.5	290	3.2	<1.5	140	3.1
	12/14/12 DUP	<1	9.3	<1	<1	21	<1	1.7	340	3.7	<1	300	3.1	<1	140	3
	03/15/13	<1.5	4.7	<1.5	<1.5	29	<1.5	21	870	5.5	<1.5	3,200	67	<1.5	1,600	9
	03/15/13 DUP	<1.5	4.7	<1.5	<1.5	30	<1.5	20	820	6.1	<1.5	3,200	68	<1.5	1,500	9.2
	06/14/13	<9	<9	<9	<9	25	<9	13	730	<9	<9	2,500	29	<9	1,000	<9
	06/14/13 DUP	<9	<9	<9	<9	25	<9	11	720	<9	<9	2,400	26	<9	1,000	<9
	09/20/13	<0.50	1.2	<0.50	<0.50	14	<0.50	25	520	4.5	<0.50	3,000	61	<0.50	1,100	10
	09/20/13 DUP	<1	1.1	<1	<1	12	<1	21	490	3.8	<1	3,200	52	<1	1,200	9
12/16/13	<15	<15	<15	<15	37	<15	22	680	<15	<15	3,000	36	<15	1,100	<15	
12/16/13 DUP	<15	<15	<15	<15	36	<15	22	660	<15	<15	2,900	37	<15	1,100	<15	
3/21/2014	<0.50	1.4	<0.50	<0.50	4.8	<0.50	2.4	130	1.2	<0.50	180	1.6	<0.50	51	4.3	
3/21/2014 DUP	<0.50	1.4	<0.50	<0.50	4.8	<0.50	2.2	130	1.1	<0.50	180	1.6	<0.50	51	4.3	

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 ug/L (ppb)														
		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)	6/26/2014	<5	0.89	<0.50	<0.50	0.54	110	38	2,000	21	<0.50	1,900	36	0.8	1,500	6.2
	6/26/14 DUP	<5	1.1	<0.50	<0.50	110	<0.50	38	1,900	21	<0.50	1,900	36	0.74	1,600	6.1
	9/30/2014	<15	<15	<15	<15	18	<15	38	520	<15	<15	4,400	61	<15	1,700	32
	9/30/2014 DUP	<15	<15	<15	<15	18	<15	37	510	<15	<15	4,400	60	<15	1,700	30
	12/12/2014	<5	<5	<5	<5	96	<5	20	1,500	12	<5	1,400	19	<5	790	60
	12/12/2014 DUP	<5	<5	<5	<5	110	<5	21	1,500	14	<5	1,500	21	<5	890	68
	3/18/2015	<4.2	<4.2	<4.2	<4.2	72.5	<4.2	48	1,460	17.5	<4.2	5,920	56.5	<4.2	3,970	53.7
	3/18/2015 DUP	<4.2	<4.2	<4.2	<4.2	82.9	<4.2	47.9	1,410	17.8	<4.2	4,930	56.2	<4.2	3,500	46.6
	6/18/2015	<0.50	<0.50	<0.50	<0.50	21.5	<0.5	48.5	628	6.6	<0.50	8,080	94.3	<0.50	2,200	28
	6/18/2015 DUP	<0.50	<0.50	<0.50	<0.50	22.7	<0.50	48.8	614	7.5	<0.50	7,990	985	<0.50	2,090	30.7
	9/22/2015	<0.50	<0.50	<0.50	<0.50	4.9	<0.5	31.7	185	2	<0.50	7,200	74.8	<0.50	791	6.8
	12/8/2015	<0.50	<0.50	<0.50	<0.50	150	<0.5	33.5	1,640	16.4	<0.50	2,900	36	<0.50	1,550	87.3
	12/8/15 DUP	<0.50	<0.50	<0.50	<0.50	155	<0.50	35.1	1,680	17.2	<0.50	3,020	37.1	<0.50	1,600	89.8
	3/8/2016	<10	<40	<10	<10	96.6	<10	42	1,520	20.2	<10	4,080	40.8	<10	2,610	64.8
	3/8/16 DUP	<10	<40	<10	<10	93	<10	42.8	1,460	18.2	<10	3,760	40.4	<10	2,560	72.4
	6/16/2016	<10	<40	<10	<10	<10	<10	22.2	507	<10	<10	3,250	29.2	<10	1,030	18.3
	6/16/2016 DUP	<12.5	<50	<12.5	<12.5	19.5	<12.5	23.8	505	<12.5	<12.5	3,460	28.1	<12.5	1,020	17.6
	9/26/2016	<5	<20	<5	<5	10.4	<5	11	235	<5	<5	1,520	14.5	<5	592	10.1
	12/12/2016	<5	<20	<5	<5	72.8	<5	11.2	1,030	10.7	<5	1,730	10.9	<5	812	28.2
	12/12/2016 DUP	<2.5	<10	<2.5	<2.5	78.7	<2.5	14.2	1,010	11.6	<2.5	1,530	15.5	<2.5	975	31.9
3/28/2017	<5	<20	<5	<5	197	<5	25.5	1,930	19.7	<5	664	17	<5	826	58.5	
3/28/2017 DUP	<5	<20	<5	<5	214	<5	26.7	1,990	21.5	<5	755	19.9	<5	896	63.2	
6/14/2017	<2.5	<10	<2.5	<2.5	40.6	<2.5	15.4	481	6.1	<2.5	531	8.1	<2.5	481	16.5	
6/14/2017 DUP	<2.5	<10	<2.5	<2.5	41.8	<2.5	15.8	486	6.2	<2.5	566	8.2	<2.5	506	17.2	
MW-19i	06/10/08	<1	<1	<1	<1	<1	<1	<1	8.46	<1	<1	<1	<1	<1	1.28	<1
	09/17/08	<1	<0.500	<0.500	<1	1.93	0.53	<0.500	27.1	<0.500	<0.500	1.72	<0.500	<0.500	5.77	<0.500
	12/10/08	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	28	<0.50	<0.50	<0.50	<0.50	<0.50	5.6	<0.50
	03/26/09	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	25	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	<0.50
	06/17/09	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	10	<0.50	<0.50	0.67	<0.50	<0.50	1.5	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	1.7	0.64	<0.50	28	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	0.79
	12/15/09	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	10	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	1.1	0.53	<0.50	15	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50
06/15/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

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 ug/L (ppb)														
		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)	09/22/10	<0.5	<0.5	<0.5	<0.5	1.2	0.58	<0.5	20	<0.5	<0.5	<0.5	<0.5	<0.5	2.4	<0.5
	12/09/10	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	14	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5
	03/09/11	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	14	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50
	06/09/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.88	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	09/15/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50
	12/09/11	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	8.8	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50
	03/12/12	<0.50	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	13	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50
	06/21/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	09/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	<0.50	<0.50	<0.50	0.65	<0.50
	12/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/13	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	9.5	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50
	06/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/19/13	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	6.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/13	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	<0.50	6.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	0.83	<0.50	<0.50	1.6	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	6.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/28/2016	<5	<2	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

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 ug/L (ppb)														
		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	06/10/08	<1	<1	<1	<1	<1	<1	<1	18	<1	<1	5.77	<1	<1	3.2	<1
	09/17/08	<1	<0.500	<0.500	<1	2.12	<0.500	<0.500	42.3	<0.500	<0.500	12.8	<0.500	<0.500	11	<0.500
	12/11/08	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	47	<0.50	<0.50	11	<0.50	<0.50	9.3	<0.50
	03/25/09	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	36	<0.50	<0.50	8.4	<0.50	<0.50	6.4	<0.50
	06/16/09	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	30	<0.50	<0.50	6.3	<0.50	<0.50	5.1	<0.50
	09/17/09	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	34	<0.50	<0.50	7.4	<0.50	<0.50	5	<0.50
	12/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.3	<0.50	<0.50	1.1	<0.50	<0.50	0.69	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	47	<0.50	<0.50	11	<0.50	<0.50	6.9	<0.50
	06/15/10	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	13	<0.50	<0.50	4.3	<0.50	<0.50	2.3	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	43	<0.5	<0.5	17	<0.5	<0.5	10	<0.5
	12/09/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	13	<0.5	<0.5	3.7	<0.5	<0.5	2	<0.5
	03/11/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.6	<0.50	<0.50	2.4	<0.50	<0.50	2.3	<0.50
	06/08/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	09/15/11	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	21	<0.50	<0.50	7.6	<0.50	<0.50	4.5	<0.50
	12/08/11	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	26	<0.50	<0.50	6.4	<0.50	<0.50	4.2	<0.50
	03/07/12	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	32	<0.50	<0.50	11	<0.50	<0.50	5.9	<0.50
	06/21/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.3	<0.5	<0.5	2.6	<0.5	<0.5	1.5	<0.5
	09/13/12	<0.50	<0.50	<0.50	<0.50	0.83	<0.50	<0.50	18	<0.50	<0.50	6.1	<0.50	<0.50	3.8	<0.50
	12/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.9	<0.50	<0.50	1.4	<0.50	<0.50	0.84	<0.50
	03/14/13	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	28	<0.50	<0.50	9.2	<0.50	<0.50	6	<0.50
	06/13/13	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	14	<0.50	<0.50	7.3	<0.50	<0.50	3.7	<0.50
	09/19/13	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	11	<0.50	<0.50	3.9	<0.50	<0.50	2.4	<0.50
	12/13/13	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	16	<0.50	<0.50	2.4	<0.50	<0.50	1.9	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	<0.50
	6/30/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	1.1	<0.50	<0.50	0.58	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	0.68	<0.50	<0.50	12	<0.50	<0.50	4.3	<0.50	<0.50	2.6	<0.50
	12/12/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	0.68	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.3	<0.50	<0.50	3	<0.50	<0.50	1.7	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.8	<0.50	<0.50	3.7	<0.50	<0.50	2.2	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.69	<0.50	<0.50	13.8	<0.50	<0.50	4.1	<0.50	<0.50	2.1	<0.50
	12/7/2015	Not sampled; well monument under water.														

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 ug/L (ppb)														
		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)	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	6.8	<0.50	<0.50	3.4	<0.50	<5	1.8	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	7.4	<0.50	<0.50	2.1	<0.50	<0.50	1.5	<0.50
	9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8.7	<0.50	<0.50	4	<0.50	<0.50	2.2	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	5.6	<0.50	<0.50	1.5	<0.50	<0.50	0.84	<0.50
MW-21i-105	06/10/08	<2	<2	<2	<2	2	<2	<2	15.8	<2	<2	53.2	<2	<0.50	25.1	<2
	09/18/08	<1	<0.500	<0.500	<1	0.78	<0.500	<0.500	5.42	<0.500	<0.500	2.97	<0.500	<0.50	1.77	<0.500
	12/11/08	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	0.88	61	<0.50	<0.50	33	0.87	<0.50	17	<0.50
	03/26/09	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	61	<0.50	<0.50	0.76	<0.50	<0.50	0.7	<0.50
	06/17/09	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	76	<0.50	<0.50	4.3	0.6	<0.50	3.4	<0.50
	09/17/09	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	73	<0.50	<0.50	11	0.59	<0.50	6.7	<0.50
	12/16/09	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	60	<0.50	<0.50	14	0.65	<0.50	9.3	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	64	<0.50	<0.50	6.2	0.58	<0.50	7.6	<0.50
	06/15/10	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	0.63	60	<0.50	<0.80	29	0.84	<0.50	22	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	75	<0.5	<0.5	5.2	0.55	<0.50	5.1	<0.5
	12/08/10	<0.5	<0.5	<0.5	<0.5	2	<0.5	0.52	72	<0.5	<0.5	27	0.91	<0.50	14	<0.50
	03/09/11	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	0.69	61	<0.50	<0.50	32	1.1	<0.50	17	<0.50
	06/09/11	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	0.61	63	<0.5	<0.5	29	0.7	<0.5	17	<0.5
	09/15/11	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	88	<0.50	<0.50	12	0.59	<0.50	12	<0.50
	12/08/11	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	73	<0.50	<0.50	15	0.58	<0.50	9.3	<0.50
	03/07/12	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	38	<0.50	<0.50	5.6	<0.50	<0.50	5.7	<0.50
	06/20/12	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	52	<0.5	<0.5	1.4	<0.5	<0.5	3	<0.5
	09/12/12	<0.50	<0.50	<0.50	<0.50	0.82	<0.50	<0.50	34	<0.50	<0.50	5	<0.50	<0.50	6.3	<0.50
	12/12/12	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	60	1	<0.50	13	<0.50	<0.50	15	<0.50
	03/13/13	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	42	<0.50	<0.50	2.4	<0.50	<0.50	3.7	<0.50
06/13/13	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	48	<0.50	<0.50	1.2	<0.50	<0.50	9.9	<0.50	
09/18/13	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	51	<0.50	<0.50	2.8	<0.50	<0.50	4.2	<0.50	
12/12/13	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	61	1.6	<0.50	4	<0.50	<0.50	5.4	<0.50	
3/20/2014	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	52	<0.50	<0.50	4.4	<0.50	<0.50	6.8	<0.50	
6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

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 ug/L (ppb)															
		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)	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	5.4	<0.50	<0.50	3.3	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	<0.50	37	<0.50	<0.50	5.4	<0.50	<0.50	9.6	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	13.3	<0.50	<0.50	6.6	<0.50	<0.50	5.4	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20.8	<0.50	<0.50	3.5	<0.50	<0.50	4	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.91	<0.50	<0.50	<0.50	41.4	<0.50	<0.50	3.4	<0.50	<0.50	5.4	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	0.79	<0.50	<0.50	<0.50	28.5	<0.50	<0.50	4.9	<0.50	<0.50	8.1	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/26/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11.7	<0.50	<0.50	5.8	<0.50	<0.50	5.1	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.8	<0.5	<0.5	5.7	<0.5	<0.5	2.9	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	4.7	<0.50	<0.50	7.6	<0.50	<0.50	4.1	<0.50
MW-21i-40	09/18/08	<1	<0.500	<0.500	<1	7.48	<0.500	4.38	124	0.77	<0.500	107	2.01	<0.500	133	<0.500	
	12/11/08	<0.50	<0.50	<0.50	<0.50	6.6	<0.50	3.6	130	0.84	<0.50	100	1.6	<0.50	110	<0.50	
	03/26/09	<0.50	<0.50	<0.50	<0.50	6.2	<0.50	3.6	130	0.63	<0.50	77	1.3	<0.50	88	<0.50	
	06/17/09	<0.50	<0.50	<0.50	<0.50	6.6	<0.50	3.1	120	0.79	<0.50	71	1.5	<0.50	88	<0.50	
	09/18/09	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	3.2	120	1	<0.50	75	1.3	<0.50	92	0.55	
	12/16/09	<0.50	<0.50	<0.50	<0.50	5.7	<0.50	2.6	120	1	<0.50	90	1.2	<0.50	89	<0.50	
	03/18/10	<0.50	<0.50	<0.50	<0.50	5.5	<0.50	2.8	120	0.74	<0.50	84	1.1	<0.50	91	<0.50	
	06/15/10	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	2.4	120	0.89	<0.50	62	1.2	<0.50	64	<0.50	
	09/22/10	<0.5	<0.5	<0.5	<0.5	4.9	<0.5	2.2	110	0.73	<0.5	68	0.93	<0.5	75	<0.5	
	12/08/10	<0.5	<0.5	<0.5	<0.5	5.1	<0.5	2.3	110	0.77	<0.5	72	1	<0.5	69	<0.5	
	03/10/11	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	1.9	100	0.64	<0.50	53	1	<0.50	57	<0.50	
	06/09/11	<0.5	<0.5	<0.5	<0.5	4.7	<0.5	2.1	110	0.7	<0.5	50	0.96	<0.5	55	<0.5	
	09/15/11	<0.50	<0.50	<0.50	<0.50	5	<0.50	1.9	110	0.65	<0.50	54	1.1	<0.50	57	<0.50	
	12/08/11	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	2.1	110	0.66	<0.50	61	0.96	<0.50	60	<0.50	
	03/07/12	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	2.1	110	0.76	<0.50	74	1.5	<0.50	58	<0.50	
	06/20/12	<0.5	<0.5	<0.5	<0.5	5	<0.5	2	160	0.84	<0.5	19	0.81	<0.5	23	<0.5	
	09/12/12	<0.50	<0.50	<0.50	<0.50	5	<0.50	1.8	110	0.63	<0.50	50	1.1	<0.50	48	<0.50	
12/12/12	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	2	120	0.69	<0.50	74	1.1	<0.50	53	<0.50		

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 ug/L (ppb)														
		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)	03/13/13	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	1.8	120	0.6	<0.50	43	0.83	<0.50	42	<0.50
	06/13/13	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	48	<0.50	<0.50	12	<0.50	<0.50	9.9	<0.50
	09/18/13	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	1.4	100	0.53	<0.50	38	0.68	<0.50	33	<0.50
	12/12/13	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	1.3	100	1	<0.50	41	0.73	<0.50	37	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	1.5	100	0.61	<0.50	40	0.76	<0.50	34	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	1.3	100	0.51	<0.50	33	0.65	<0.50	29	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	4	<0.50	1.4	100	86	<0.50	31	0.51	<0.50	32	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	1.4	100	0.6	<0.50	30	0.51	<0.50	32	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	1.5	102	0.51	<0.50	43.6	<0.50	<0.50	37.2	<0.50
	6/19/2015	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	0.76	61.6	<0.50	<0.50	24.7	<0.50	<0.50	21.8	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	0.95	84.2	<0.50	<0.50	26.3	<0.50	<0.50	26.6	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	0.7	63.6	<0.50	<0.50	24.7	<0.50	<0.50	21.1	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	2.1	<0.50	<0.50	58.6	<0.50	<0.50	14.2	<0.50	<0.50	15.1	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	2.3	<0.50	0.8	67.8	<0.50	<0.50	18.1	<0.50	<0.50	17.1	<0.50
	9/26/2016	<0.50	<2	<0.50	<0.50	2.6	<0.50	0.87	77.2	<0.50	<0.50	20.1	<0.50	<0.50	19.8	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	2.4	<0.50	0.83	74.2	<0.50	<0.50	21.4	<0.50	<0.50	19.4	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	2.6	<0.5	0.91	87.6	0.58	<0.5	21.8	<0.5	<0.5	16.2	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	2.3	<1.0	0.63	63.6	0.56	<0.50	24.1	<0.50	<0.50	15.1	<0.50
MW-22i	06/10/08	<1	<1	<1	<1	1.02	<1	<1	30	<1	<1	10.3	<1	<1	30	<1
	09/17/08	<1	<0.500	<0.500	<1	7.48	<0.500	4.38	124	0.77	<0.500	107	2.01	<0.500	133	<0.500
	12/11/08	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.73	63	<0.50	<0.50	1.1	<0.50	<0.50	6.8	<0.50
	03/25/09	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	0.64	50	<0.50	<0.50	2.5	<0.50	<0.50	14	<0.50
	06/16/09	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.52	39	<0.50	<0.50	8.5	<0.50	<0.50	24	<0.50
	09/17/09	<0.50	<0.50	<0.50	<0.50	1	<0.50	0.57	40	<0.50	<0.50	3.3	<0.50	<0.50	21	<0.50
	12/15/09	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	28	<0.50	<0.50	3.8	<0.50	<0.50	20	<0.50
	03/18/10	<0.50	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	34	<0.50	<0.50	2.6	<0.50	<0.50	16	<0.50
	06/14/10	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	<0.50	17	<0.50	<0.50	4	<0.50	<0.50	18	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	0.75	<0.5	<0.5	24	<0.5	<0.5	3.6	<0.5	<0.5	18	<0.5
	12/08/10	<0.5	<0.5	<0.5	<0.5	0.73	<0.5	<0.5	21	<0.5	<0.5	3.5	<0.5	<0.5	18	<0.5
	03/11/11	<0.50	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	17	<0.50	<0.50	3.6	<0.50	<0.50	17	<0.50
	06/08/11	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	18	<0.5	<0.5	1.8	<0.5	<0.5	12	<0.5

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 ug/L (ppb)														
		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)	09/14/11	<0.50	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	18	<0.50	<0.50	1.3	<0.50	<0.50	11	<0.50
	12/08/11	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	17	<0.50	<0.50	2.5	<0.50	<0.50	14	<0.50
	03/06/12	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	13	<0.50	<0.50	2.4	<0.50	<0.50	13	<0.50
	06/20/12	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	12	<0.5	<0.5	1.9	<0.5	<0.5	11	<0.5
	09/12/12	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	16	<0.50	<0.50	1.5	<0.50	<0.50	10	<0.50
	12/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	13	<0.50	<0.50	1.8	<0.50	<0.50	11	<0.50
	03/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	2.2	<0.50	<0.50	11	<0.50
	06/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	1.1	<0.50	<0.50	9.6	<0.50
	09/18/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10	<0.50	<0.50	2.1	<0.50	<0.50	11	<0.50
	12/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.3	<0.50	<0.50	1.4	<0.50	<0.50	8.2	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10	<0.50	<0.50	1.3	<0.50	<0.50	9.6	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9	<0.50	<0.50	1.1	<0.50	<0.50	5.7	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.8	<0.50	<0.50	1.7	<0.50	<0.50	9.8	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.2	<0.50	<0.50	2.1	<0.50	<0.50	11	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.2	<0.50	<0.50	1.8	<0.50	<0.50	8.7	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.6	<0.50	<0.50	1.6	<0.50	<0.50	9	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	10	<0.50	<0.50	2.1	<0.50	<0.50	1.15	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8	<0.50	<0.50	2.1	<0.50	<0.50	11	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8	<0.50	<0.50	2.2	<0.50	<0.50	12	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	<0.50	1	<0.50	<0.50	7.9	<0.50
9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8.1	<0.50	<0.50	1.3	<0.50	<0.50	9	<0.50	
12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8.6	<0.50	<0.50	2	<0.50	<0.50	10.2	<0.50	
3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	10	<0.5	<0.5	1.1	<0.5	<0.5	9.7	<0.5	
6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	9.6	<0.50	<0.50	0.63	<0.50	<0.50	6.2	<0.50	
MW-23i	06/10/08	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	06/10/08 DUP	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	09/17/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	12/09/08	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
12/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

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 ug/L (ppb)														
		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)	03/17/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	12/08/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	03/09/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/08/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	09/13/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/06/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/07/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/19/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	09/11/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	<0.50
	12/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/11/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.78
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
3/27/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

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 ug/L (ppb)														
		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-24i	10/01/10	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	0.94	52	<0.50	<0.50	52	1.9	<0.50	29	<0.50
	12/10/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.5	<0.5	<0.5	6.3	<0.5	<0.5	2	<0.5
	03/14/11	<0.50	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	15	<0.50	<0.50	23	1	<0.50	7.4	<0.50
	06/07/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5	<0.5	6.6	<0.5	<0.5	1.4	<0.5
	09/16/11	<0.50	<0.50	<0.50	<0.50	13	<0.50	2.5	270	1.7	<0.50	27	5.6	<0.50	24	19
	12/07/11	<0.50	<0.50	<0.50	<0.50	5	<0.50	0.84	100	<0.50	<0.50	19	2.9	<0.50	14	7.5
	03/12/12	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	79	<0.50	<0.50	30	2.3	<0.50	11	4.5
	06/22/12	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	14	<0.5	<0.5	0.85	<0.5	<0.5	<0.5	2.6
	09/14/12	<0.50	<0.50	<0.50	<0.50	4.4	<0.50	0.87	58	<0.50	<0.50	31	0.79	<0.50	20	<0.50
	12/14/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	2.1	<0.50	<0.50	0.65	<0.50
	03/15/13	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	48	<0.50	<0.50	23	0.57	<0.50	15	<0.50
	06/14/13	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	28	<0.50	<0.50	6.2	<0.50	<0.50	3.6	<0.80
	09/20/13	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	15	<0.50	<0.50	15	<0.50	<0.50	5.9	<0.80
	12/16/13	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	8.4	<0.50	<0.50	6.7	<0.50	<0.50	3.4	<0.50
	3/24/2014	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	16	<0.50	<0.50	10	<0.50	<0.50	5.5	<0.80
	6/23/2014	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	13	<0.50	<0.50	1.3	<0.50	<0.50	5.2	2.1
	9/30/2014	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	21	<0.50	<0.50	20	<0.50	<0.50	10	<0.50
	12/15/2014	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	<0.50	12	<0.50	<0.50	2.4	<0.50	<0.50	1.1	<0.50
	3/20/2015	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	5.9	<0.50	<0.50	6.1	<0.50	<0.50	3.1	<0.50
	6/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/22/2015	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	4.7	<0.50	<0.50	2.2	<0.50	<0.50	0.8	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	18	<0.50	<0.50	189	<0.50	<0.50	36.4	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	<0.50	4.1	<0.50	<0.50	1.6	<0.50
	6/17/2016	<0.50	<2	<0.50	<0.50	0.99	<0.50	<0.50	7.8	<0.50	<0.50	11.5	<0.50	<0.50	6.3	<0.50
9/28/2016	<0.50	<2	<0.50	<0.50	0.53	<0.50	<0.50	5.4	<0.50	<0.50	5.8	<0.50	<0.50	3.1	<0.50	
12/12/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50	
3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5
6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.2	<0.50	<0.50	6.6	<0.50	<0.50	2.8	<0.50
MW-24d	09/14/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/09/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/21/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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 ug/L (ppb)														
		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)	09/14/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/14/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/20/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/16/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	4	<0.50	<0.50	1.6
	6/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/2/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/15/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	3.8	<0.50	<0.50	1.7
	9/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/17/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
12/12/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-25i	09/16/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	12/08/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	03/06/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	06/20/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	09/11/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	12/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	03/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	06/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	09/18/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	12/11/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

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 ug/L (ppb)														
		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-25i (continued)	9/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/9/2016 DUP	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/15/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/29/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	0.81	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-26	09/16/11	<2	<2	<2	<2	7	<2	2.2	120	2.6	<2	250	5.7	<2	490	<2
	12/08/11	<2	<2	<2	<2	7.1	<2	2.5	110	2.2	<2	300	5.8	<2	500	<2
	03/06/12	<2	<2	<2	<2	8.2	<2	2.2	99	<2	<2	210	4.6	<2	450	<2
	06/19/12	<2	<2	<2	<2	14	<2	3	90	<2	<2	160	5.2	<2	460	<2
	09/11/12	<2	<2	<2	<2	6.3	<2	2.3	110	3	<2	280	4.3	<2	460	<2
	12/12/12	<2	<2	<2	<2	5.6	<2	<2	120	3.7	<2	300	3.8	<2	470	<2
	03/13/13	<2	<2	<2	<2	4.9	<2	<2	83	<2	<2	210	2.9	<2	390	<2
	06/12/13	<2	<2	<2	<2	8.2	<2	<2	80	<2	<2	170	4.5	<2	360	<2
	09/18/13	<2	<2	<2	<2	5.7	<2	<2	96	2.4	<2	210	3.2	<2	410	<2
	12/11/13	<2	<2	<2	<2	7.8	<2	<2	75	<2	<2	150	3.9	<2	370	<2
	3/19/2014	<2	<2	<2	<2	4.9	<2	<2	95	2.1	<2	220	2.9	<2	350	<2
	6/24/2014	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	6.4	49	0.86	<0.50	150	2.1	<0.50	200	<0.50
	9/24/2014	<2	<2	<2	<2	3.9	<2	<2	68	<2	<2	220	3.1	<2	340	<2
	12/9/2014	<0.90	<0.90	<0.90	<0.90	3.8	<0.90	0.96	55	1.3	<0.90	160	2.8	<0.90	280	<0.90
	3/17/2015	<1	<1	<1	<1	5.8	<1	1.7	75.7	1.8	<1	265	3.7	<1	458	<1
	6/16/2015	<1.7	<1.7	<1.7	<1.7	5	<1.7	<1.7	77.9	<1.7	<1.7	205	2.8	<1.7	385	<1.7
	9/21/2015	<1.7	<1.7	<1.7	<1.7	4.3	<1.7	<1.7	72.4	1.7	<1.7	176	2.7	<1.7	326	<1.7
12/7/2015	<1.2	<1.2	<1.2	<1.2	8.5	<1.2	1.7	75	1.6	<1.2	179	3.5	<1.2	393	<1.2	
3/8/2016	<1.2	<5	<1.2	<1.2	8	<1.2	1.5	76.1	1.8	<1.2	171	3.7	<1.2	370	<1.2	

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 ug/L (ppb)														
		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 (continued)	6/15/2016	<1	<4	<1	<1	4.6	<1	1.4	83.1	2.2	<1	192	2.2	<1	343	<1
	9/27/2016	<0.50	<2	<0.50	<0.50	3.9	<0.50	1.1	61.1	1.6	<0.50	160	2.4	<0.50	288	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	8.9	<0.50	2.4	85.9	2	<0.50	167	3.3	<0.50	410	<0.50
	3/29/2017	<5	<20	<5	<5	<5	<5	<5	170	<5	<5	214	<5	<5	452	<5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	6.7	<1.0	1.9	113	2.0	<0.50	160	2.1	<0.50	311 E, J	0.65
MW-32s	03/24/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.79	<0.50	--	<0.50	<0.50
	08/18/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	03/06/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	09/17/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	12/09/08	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/22/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/07/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/09/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	0.94	<0.5	<0.5	1.1
	09/15/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/08/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/21/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	09/13/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/11/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/11/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/20/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
12/16/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/11/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

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 ug/L (ppb)														
		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)	3/19/2015	<0.50	<0.50	0.77	<0.50	1.5	<0.50	<0.50	73.5	2.5	<0.50	<0.50	3.5	<0.50	52	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-F	06/14/95	--	<10	<5	<5	<5	5	<5	15	<5	--	<5	<5	--	<5	<10
	02/27/01	<1	<5	<0.50	<0.50	0.754	<0.50	<0.50	5.99	<0.50	<0.50	0.506	<1	--	1.18	<0.50
	05/29/01	<1	<5	<0.50	<0.50	0.58	<0.50	<0.50	6.47	<0.50	<0.50	<0.50	<1	--	0.585	<0.50
	09/24/01	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	6.5	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	12/18/01	<1	<5	<0.50	<0.50	1.44	<0.50	<0.50	17.9	<0.50	<0.50	<0.50	<1	--	0.709	<0.50
	03/18/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/31/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/28/02	<1	<0.50	<0.50	<1	1.12	0.65	<0.50	9.54	<0.50	<0.50	<0.50	<0.50	--	0.69	<0.50
	11/08/02	<1	<0.50	<0.50	<1	1.15	0.81	<0.50	9.86	<0.50	<0.50	<0.50	<0.50	--	0.65	<0.50
	01/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/29/03	<1	<0.50	<0.50	<1	1.11	0.83	<0.50	10.6	<0.50	<0.50	<0.50	<0.50	--	0.62	<0.50
	11/10/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01/26/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/04/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	03/24/05	<1	<0.50	<0.50	<1	0.87	0.64	<0.50	8.31	<0.50	<0.50	0.52	<0.50	--	0.74	<0.50
	05/17/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/18/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/13/07	<1	<0.50	<0.50	<1	0.5	0.52	<0.50	5.93	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	
09/18/08	<1	<0.500	<0.500	<1	0.85	0.72	<0.500	8.57	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	

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 ug/L (ppb)														
		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	04/25/91	--	<2	--	--	35	20	--	750	--	--	9,100	280	--	440	9.3
	11/17/93	--	<200	---	--	<100	<100	--	1,700	--	--	8,600	<100	--	480	<200
	09/01/95	<25	<50	<25	<25	<25	<25	<25	140	<25	<25	2,400	74	--	340	<50
	09/24/96	<1	<4	3	<0.4	8.5	2.1	<0.40	260	6.2	<0.40	49	34	--	29	89
	12/02/96	0.7	<0.50	1.9	<0.20	5.7	5	1	530	3.3	<0.20	310	86	--	98	10
	11/12/97	<2.5	<5	<2.5	<2.5	5.05	3.38	<2.5	68.5	4.91	<2.5	111	5.1	--	47.4	9.2
	08/11/99	<10	<50	<5	<5	<5	<5	<5	14.5	<5	<5	369	<10	--	39.9	<5
	11/16/99	<5	<12.5	<2.5	<5	<2.5	3.15	<2.5	41.7	3	<2.5	314	6.9	--	35.5	5.1
	02/29/00	<2	<10	<1	<1	<1	6.42	<1	13.7	<1	<1	97.3	3.48	--	20.8	<1
	06/27/00	<2	<10	2.12	<1	<1	6.42	<1	17.5	<1	<1	293	5.37	--	35.1	<1
	08/31/00	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	31.9	<2.5	<2.5	325	<5	--	38.4	<2.5
	01/30/00	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	45.6	<2.5	<2.5	380	5.86	--	53.9	<2.5
	02/27/01	<2	<10	1.42	<1	2.51	2.83	<1	35	<1	<1	240	7.98	--	47.5	2.43
	05/29/01	<10	<50	<5	<5	<5	<5	<5	22.4	<5	<5	338	<10	--	61.1	<5
	09/25/01	<5	<5	<5	<5	<5	<5	<5	14	<5	<5	320	9.5	--	61	<5
	12/17/01	<2	<10	<1	<1	1.19	<1	<1	25.8	<1	<1	217	12.8	--	47.1	<1
	03/19/02	<2	<1	<1	<2	1.04	<1	<1	17.5	<1	<1	323	5.66	--	46.1	<1
	05/30/02	<2	<1	1.38	<2	1	1.68	<1	23.5	<1	<1	319	6.46	--	39.9	<1
	08/29/02	<2	<1	1.36	<2	2.44	1.24	<1	20.4	<1	<1	307	3.38	--	37.8	<1
	11/08/02	<2	<1	1.46	<2	3.02	3.96	<1	28.4	<1	<1	274	5.54	--	50.2	<1
	01/23/03	<2	<1	1.36	<2	2.34	<1	<1	17	<1	<1	252	5.06	--	51.9	<1
	05/30/03	<2	<1	5.22	<2	<1	<1	<1	6.12	<1	<1	255	5.06	--	41.1	<1
	11/10/03	<5	<5	<5	<5	<5	<5	<5	9	<5	<5	85.8	<5	--	16.2	<5
	01/27/04	<1	<0.50	2.07	<1	0.87	0.78	<0.50	5.2	<0.50	<0.50	151	4.26	--	37.6	<0.50
	05/04/04	<1	<1	4.73	<1	<1	1.25	<1	4.36	<1	<1	168	3.09	--	30.8	<1
	08/17/04	<1	<0.50	3.76	<0.50	0.81	1.86	<0.50	6.83	<0.50	<0.50	144	1.73	--	23.2	<0.50
	11/17/04	<2.5	<2.5	4	<2.5	<2.5	<2.5	<2.5	9.6	<2.5	<2.5	180	3.6	--	33	<2.5
	05/18/05	<2	<1	<1	<2	<1	<1	<1	8.28	<1	<1	207	<1	--	23.2	2.3
	11/14/05	<2	<1	1.06	<2	1.36	2.7	<1	11.1	<1	<1	187	<1	--	26.1	<1
	06/05/06	<1	<1	2.4	<1	<1	<1	<1	6.18	<1	<1	102	3.55	--	19.1	<1
	12/06/06	<1	<0.50	2.07	<1	1.13	<0.50	<0.50	8.98	<0.50	<0.50	133	2.1	--	28.3	<0.50

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 ug/L (ppb)															
		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)	09/12/07	<1	<0.50	2.66	<1	0.51	1.14	<0.50	6.28	<0.50	<0.50	76.9	1.47	--	18.3	<0.50	
	03/06/08	<1	<0.500	1.71 J	<1	0.64	1.04	<0.500	5.75	<0.500	<0.500	80.9	1.45	<0.500	19.9	<0.500	
	09/19/08	<5	<2.50	<2.50	<5	<2.50	<2.50	<2.50	14.6	<2.50	<2.50	86.1	<2.50	<2.50	20.8	<2.50	
	03/26/09	<0.50	<0.50	3.6	<0.50	<0.50	0.76	<0.50	3.8	<0.50	<0.50	81	1	<0.50	14	<0.50	
	09/17/09	<0.50	<0.50	3.4	<0.50	0.63	<0.50	<0.50	8.3	<0.50	<0.50	100	0.74	<0.50	17	<0.50	
	03/19/10	<0.50	<0.50	3.5 BE	<0.50	<0.50	<0.50	0.52	4.1	<0.50	<0.50	89	1.5	<0.50	22	<0.50	
	09/23/10	<0.50	<0.50	1.7 BE	<0.50	0.86	0.94	<0.50	10	<0.50	<0.50	87	0.64	<0.50	17	<0.50	
	03/10/11	<0.50	<0.50	5.2	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	<0.50	67	0.89	<0.50	13	<0.50	
	09/16/11	<0.50	<0.50	2.7	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	75	0.69	<0.50	9.9	<0.50	
	03/12/12	<0.50	<0.50	4.4	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	52	0.68	<0.50	13	<0.50	
	09/13/12	<0.50	<0.50	1.7	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	60	0.58	<0.50	8.6	<0.50	
	03/15/12	<0.50	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	78	0.63	<0.50	12	<0.50	
	09/19/13	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	63	0.57	<0.50	14	<0.50	
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	32	1.6	<0.50	12	<0.50
	9/27/2014	Insufficient water for sampling during monitoring event.															
	9/21/2015	<0.50	<0.50	2	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	45.3	0.56	<0.50	12.5	<0.50
	3/8/2016	<0.50	<2	2	<0.50	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	<0.50	62.6	0.83	<0.50	14.3	<0.50
9/29/2016	<0.50	<2	1.1	<0.50	<0.50	<0.50	1.5	<0.50	5.4	<0.50	<0.50	38.6	<0.50	<0.50	10.5	<0.50	
3/30/2017	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.7	<0.50	<0.50	2.4	<0.50	
S-1	08/10/99	<1	<5	<0.50	<1	<0.50	<0.50	<0.50	2.63	<0.50	<0.50	7.81	1.3	--	20.6	<0.50	
	02/29/00	<1	<5	<0.50	<0.50	0.761	<0.50	<0.50	2.21	<0.50	<0.50	60.6	2.98	--	24.4	<0.50	
	06/28/00	<5	<25	<2.5	<2.5	<2.5	<2.5	2.7	58.2	<2.5	<2.5	749	14.5	--	232	<2.5	
	08/31/00	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	4.98	<2.5	<2.5	313	5.14	--	60.4	<2.5	
	11/30/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	1.61	<0.50	<0.50	9.78	1.95	--	29.8	<0.50	
	02/27/01	<1	<5	<0.50	<0.50	<0.50	<0.50	0.551	1.66	<0.50	<0.50	13.5	2.26	--	45.2	<0.50	
	05/30/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	0.974	<0.50	<0.50	7.38	<1	--	12.6	<0.50	
	09/25/01	<2.5	<2.5	<2.5	<2.5	2.6	<2.5	4	2.7	<2.5	<2.5	39	18	--	210	<2.5	
	03/19/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.21	<0.50	--	3.73	<0.50	
	05/30/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.45	<0.50	--	10.4	<0.50	
	11/07/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.34	<0.50	<0.50	8.71	1.02	--	19.7	<0.50	
	01/23/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	6.15	0.56	--	13	<0.50	
	05/28/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.500	--	8.67	<0.50	

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 ug/L (ppb)														
		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)	11/11/03	<1	<1	<1	<1	<1	<1	<1	1.85	<1	<1	4.22	<1	--	13.2	<1
	01/26/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.57	0.67	--	15.5	<0.50
	05/04/04	<1	<1	<1	<1	<1	<1	<1	1.17	<1	<1	4.07	<1	--	10.6	<1
	11/15/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	8.4	0.82	--	18	<0.50
	02/01/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	1.89	<0.50	--	2.87	<0.50
	05/18/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.24	<0.50	<0.50	3.73	<0.50	--	8.39	<0.50
	05/23/07	<1	<1	<1	<1	<1	<1	<1	3.63	<1	<1	4.02	<1	--	6.85	<1
	12/13/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.61	<0.50	<0.50	4.87	<0.50	--	8.44	<0.50
	03/05/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	5.15	<0.500	<0.500	<0.500	4.14	<0.500	<0.500	<0.500
	06/25/08	<1	<1	<1	<1	<1	<1	<1	1.67	<1	<1	1.37	<1	<1	<1	<1
	09/17/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	5.55	<0.500	<0.500	2.81	<0.500	<0.500	6.07	<0.500
	12/09/08	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	0.62	<0.50	<0.50	1.4	<0.50
	03/25/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.4	<0.50	<0.50	2.7	<0.50
	06/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.91	<0.50	<0.50	0.81	<0.50	<0.50	1.8	<0.50
	09/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	1.7	<0.50	<0.50	5	<0.50
	12/16/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	1.7	<0.50	<0.50	6.1	<0.50
	03/17/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	1	<0.50
	07/02/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/22/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.66	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5
	12/08/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	0.77	<0.5	<0.5	3	<0.5
	03/09/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50
	06/08/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.66	<0.5
	09/14/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	1.4	<0.50	<0.50	4	<0.50
	12/06/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	1.3	<0.50	<0.50	3.1	<0.50
	03/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	<0.50	<0.50	0.74	<0.50	<0.50	1.8	<0.50
	06/21/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.98	<0.5	<0.5	0.94	<0.5	<0.5	3.5	<0.5
	09/14/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	0.88	<0.50	<0.50	2.6	<0.50
	12/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	0.96	<0.50	<0.50	3.8	<0.50
	03/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	1.5	<0.50
	06/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	2.2	<0.50
09/20/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	1.8	<0.50	<0.50	5.4	<0.50	
12/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	1.2	<0.50	<0.50	5.1	<0.50	
3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	
6/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	<0.50	<0.50	2.1	<0.50	

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 ug/L (ppb)															
		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)	9/27/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	1.3	<0.50	<0.50	4.3	<0.50
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	1.3	<0.50	<0.50	4.9	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	1.4	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	1.6	<0.50	<0.50	5.1	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.6	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	0.73	<0.50	<0.50	3	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	0.54	<0.50	<0.50	1.6	<0.50
	3/27/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
S-2	08/11/99	<1	<5	<0.50	<0.50	2.37	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	<1	--	0.843	<0.50	
	11/15/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	4.4	<0.50	--	1.6	<0.50	
	12/12/12	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	03/13/13	<0.50	<0.50	<0.50	<0.50	3.4	<0.50	<0.50	2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	06/12/13	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	09/20/13	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	12/12/13	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	3/20/2014	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	6/24/2014	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	9/27/2014	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	12/9/2014	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	4.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	3/18/2015	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	5.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	6/16/2015	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	12/8/2015	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	6/16/2016	<0.50	<2	<0.50	<0.50	4.3	<0.50	<0.50	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	9/26/2016	<0.50	<2	<0.50	<0.50	6.2	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	12/13/2016	<0.50	<2	<0.50	<0.50	3.5	<0.50	<0.50	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/27/2017	<0.5	<2	<0.5	<0.5	2.6	<0.5	<0.5	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
6/13/2017	<2.0	<2.0	<0.50	<0.50	3.3	<1.0	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		

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 ug/L (ppb)														
		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)	06/28/00	<50	<250	<25	<25	278	<25	55.9	4,270	<25	<25	734	<50	--	1,840	<25
	08/30/00	<200	<1	<100	<100	420	<100	116	8,850	<100	<100	5,940	<200	--	3,040	<100
	11/29/00	<100	<500	<50	<50	249	<50	76.2	4,560	<50	<50	1,210	<100	--	1,140	<50
	02/27/01	<100	<500	<50	<50	697	<50	164	14,000	<50	<50	148	<100	--	1,390	133
	05/31/01	<100	<500	<50	<50	<50	<50	<50	5,870	<50	<50	130	<100	--	599	<50
	09/24/01	<13	<13	<13	<13	150	<13	32	4,700	<13	<13	310	<13	--	450	25
	12/18/01	<50	<250	<25	<25	153	<25	33.3	3,600	<25	<25	276	<50	--	568	<25
	03/19/02	<100	<50	<50	<100	310	<50	103	6,700	<50	<50	2,090	<50	--	1,720	86
	05/29/02	<50	<25	<25	<50	188	<25	39	4,700	<25	<25	470	<25	--	624	37.5
	08/29/02	<1	<0.50	<0.50	<1	3.72	<0.50	0.84	94.7	0.54	<0.50	34.9	0.75	--	35.7	1.46
	11/11/02	<100	<50	<50	<100	183	<50	<50	4,810	<50	<50	757	<50	--	831	51
	01/23/03	<100	<50	<50	<100	378	<50	76	10,500	<50	<50	782	<50	--	1,290	109
	05/28/03	<100	<50	<50	<100	402	<50	72	9,510	<50	<50	270	<50	--	841	114
	11/11/03	<50	<50	<50	<50	252	<50	<50	9,710	<50	<50	516	<50	--	1,020	58
	01/27/04	<50	<25	<25	<50	290	<25	54.5	8,160	53.5	<25	393	<25	--	808	95
	05/03/04	<100	<100	<100	<100	370	<100	<100	12,300	<100	<100	830	<100	--	1,520	111
	08/17/04	<100	<50	<50	<100	401	<50	114	12,700	109	<50	1,540	<50	--	2,340	151
	11/15/04	<120	<120	<120	<120	270	<120	<120	9,600	<120	<120	1,400	<120	--	1,600	<120
	03/24/05	<100	<50	<50	<100	481	<50	148	15,600	135	<50	1,390	<50	--	2,090	266
	05/16/05	<50	<25	<25	<50	327	<25	89	9,670	83	<25	802	<25	--	1,410	157
	05/17/05	<100	<50	<50	<100	353	<50	86	10,600	94	<50	920	<50	--	1,660	173
	11/17/05	<100	<50	<50	<100	392	<50	121	13,400	133	<50	1,310	<50	--	2,280	186
	06/06/06	<100	<100	<100	<100	385	<100	<100	11,800	115	<100	628	<100	--	1,370	192
	12/06/06	<100	<50	<50	<100	256	<50	72	9,960	92	<50	843	<50	--	1,260	155
	05/22/07	<100	<100	<100	<100	439	<100	119	14,200	152	<100	910	<100	--	1,920	245
	09/11/07	<100	<50	<50	<100	303	<50	109	11,700	128	<50	1,100	<50	--	2,060	189
	12/12/07	<100	<50	<50	<100	270	<50	75	8,740	93	<50	1,010	<50	--	1,540	167
	03/05/08	<50	<25	<25	<50	370	<25	128	6,740	220	<25	1,480	36	<25	2,350	234
	09/16/08	<100	<50	<50	<100	302	<50	112	10,400	139	<50	2,700	<50	<50	2,500	171
	12/08/08	<4	<4	<4	<4	190	<4	63	6,000	78	<4	1,300	19	<4	1,200	100
	03/25/09	<15	<15	<15	<15	110	<15	66	3,500	34	<15	3,600	49	<15	2,100	49
	09/15/09	<15	<15	<15	<15	140	<15	74	4,200	45	<15	4,300	44	<15	2,300	84
	12/14/09	<15	<15	<15	<15	140	<15	46	4,000	55	<15	1,500	15	<15	1,100	67
	03/17/10	<15	<15	<15	<15	160	<15	63	4,600	44	<15	2,800	32	<15	1,900	78

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 ug/L (ppb)														
		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	<25	<25	<25	<25	220	<25	46	5,400	69	<25	790	<25	<25	900	85
	09/21/10	<15	<15	<15	<15	130	<15	55	3,800	43	<15	2,900	37	<15	1,900	68
	12/07/10	<15	<15	<15	<15	190	<15	63	5,500	69	<15	2,500	23	<15	1,800	96
	03/08/11	<20	<20	<20	<20	170	<20	52	4,600	56	<20	1,400	<20	<20	1,300	86
	06/06/11	<15	<15	<15	<15	190	<15	36	4,700	71	<15	610	<15	<15	790	97
	09/13/11	<20	<20	<20	<20	290	<20	78	8,000	160	<20	900	<20	<20	1,800	160
	03/08/12	<4	<40	<40	<40	340	<40	62	9,500	150	<40	240	<40	<40	690	890
	06/21/12	<20	<20	<20	<20	220	<20	25	4,400	76	<20	74	<20	<20	260	1,100
	09/12/12	<20	<20	<20	<20	280	<20	72	8,800	180	<20	360	<20	<20	970	890
	12/11/12	<20	<20	<20	<20	220	<20	40	6,100	110	<20	160	<20	<20	430	680
	03/12/13	<20	<20	<20	<20	220	<20	21	4,700	74	<20	110	<20	<20	340	1,600
	06/11/13	<20	<20	<20	<20	190	<20	<20	3,900	56	<20	78	<20	<20	260	1,100
	09/17/13	<15	<15	<15	<15	190	<15	21	4,600	66	<15	100	<15	<15	350	1,100
	12/10/13	<15	<15	<15	<15	210	<15	18	3,600	54	<15	95	<15	<15	270	1,800
	3/18/2014	<20	<20	<20	<20	150	<20	<20	3,600	40	<20	93	<20	<20	260	440
	6/26/2014	<7	<7	<7	<7	120	<7	14	2,000	14	<7	21	<7	<7	57	480
	9/23/2014	<15	<15	<15	<15	190	<15	35	4,700	69	<15	120	<15	<15	420	550
	12/12/2014	<7	<7	<7	<7	200	<7	23	4,000	52	<7	100	<7	<7	350	810
	3/19/2015	<12.5	<12.5	<12.5	<12.5	131	<12.5	<12.5	2,450	16.6	<12.5	31.7	<12.5	<12.5	129	249
	6/18/2015	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	59.1	<0.50	<0.50	0.84	<0.50	<0.50	2.8	3.1
	9/21/2015	<10	<10	<10	<10	124	<10	14.1	2,810	24.8	<10	53.5	<10	<10	171	129
	12/8/2015	<0.50	<0.50	<0.50	<0.50	92	<0.50	<0.50	1,580	11.5	<0.50	26.2	<0.50	<0.50	88	230
	3/9/2016	<10	<40	<10	<10	93.9	<10	<10	1,700	12.4	<10	24.1	<10	<10	81.9	209
6/17/2016	<8.3	<33.3	<8.3	<8.3	163	<8.3	26.6	3,130	36.1	<8.3	64.6	<8.3	<8.3	248	288	
9/30/2016	<8.3	<33.3	<8.3	<8.3	81.9	<8.3	13.5	1,980	24.2	<8.3	230	<8.3	<8.3	366	52	
12/16/2016	<8.4	<33.4	<8.4	<8.4	92.6	<8.4	9.5	1,810	20.1	<8.4	64.1	<8.4	<8.4	171	239	
3/31/2017	<8.4	<33.4	<8.4	<8.4	90.8	<8.4	12.5	1,430	15.2	<8.4	45.8	<8.4	<8.4	119	348	
6/12/2017	<8.3	<33.3	<8.3	<8.3	173	<8.3	16.7	2,620	18.7	<8.3	24.4	<8.3	<8.3	116	681	
MGMS1-2(60)	06/28/00	<10	<50	<5	<5	53.6	<5	<5	369	<5	<5	658	19.7	--	240	<5
	08/30/00	<20	<100	<10	<10	21.7	<10	13.1	267	<10	<10	2,590	108	--	586	<10
	11/29/00	<2	<10	<1	<1	1.58	<1	1.09	57.7	<1	<1	121	4.58	--	40.3	<1

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 ug/L (ppb)														
		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)	02/27/01	<1	<5	<0.5	<0.5	0.838	<0.5	0.686	32.9	<0.5	<0.5	54.6	2.06	--	24.7	<0.5
	05/31/01	<1	<5	<0.50	<0.50	0.662	<0.50	0.581	39	<0.50	<0.50	69.4	<1	--	27.8	0.52
	09/24/01	<13	<13	<13	<13	<13	<13	<13	89	<13	<13	830	14	--	150	<13
	12/18/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	20.4	<0.50	<0.50	12.8	<1	--	15.7	<0.50
	03/19/02	<1	<0.50	<0.50	<1	2.52	<0.50	0.99	68	<0.50	<0.50	62.9	1.2	--	34	3.48
	05/29/02	<1	<0.50	<0.50	<1	0.78	<0.50	<0.50	22.8	<0.50	<0.50	23.4	<0.50	--	14.2	0.6
	08/29/02	<10	<5	<5	<10	30.6	<5	5.1	661	<5	<5	138	<5	--	116	<5
	11/11/02	<1	<0.50	<0.50	<1	2.99	<0.50	0.83	86	<0.50	<0.50	38.2	1.16	--	38.9	<0.50
	01/23/03	<1	<0.50	<0.50	<1	1.53	<0.50	0.74	42.6	<0.50	<0.50	42.8	0.78	--	34.2	1.04
	05/28/03	<1	<0.50	<0.50	<1	2.87	<0.50	1.21	72	<0.50	<0.50	51.1	1.18	--	47.6	0.63
	11/11/03	<1	<1	<1	<1	1.84	<1	<1	48.8	<1	<1	45.9	<1	--	36	<1
	01/27/04	<1	<0.50	<0.50	<1	2.06	<0.50	1.06	72.3	0.69	<0.50	40.9	0.66	--	43.1	0.63
	05/03/04	<1	<1	<1	<1	4.07	<1	1.22	70.7	<1	<1	54.8	1.36	--	43.5	2.53
	08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/04	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.68	39	<0.50	<0.50	31	<0.50	--	28	0.67
	02/01/05	<1	<0.50	<0.50	<1	1.31	<0.50	<0.50	37.5	0.56	<0.50	33.2	<0.50	--	21.7	1.3
	05/16/05	<1	<0.50	<0.50	<1	0.95	<0.50	<0.50	40.6	<0.50	<0.50	21.7	<0.50	--	19.8	<0.50
	05/16/05 DUP	<1	<0.50	<0.50	<1	1.02	<0.50	<0.50	42.1	<0.50	<0.50	21.4	<0.50	--	20.5	<0.50
	08/18/05	<1	<0.500	<0.500	<1	7.28	<0.500	2.41	145	1.2	<0.500	76.5 B	1.46	--	65.6	5.16 B
	11/17/05	<1	<0.500	<0.500	<1	2.53	<0.500	0.99	87	0.59	<0.500	34.8	<0.500	--	26.4	0.93
	02/20/06	<1	<0.500	<0.500	<1	6.17	<0.500	1.93	136	1.1	<0.500	61.9	0.93	--	45.5	4.17
	06/06/06	<1	<1	<1	<1	1.02	<1	<1	33.7	<1	<1	23.4	<1	--	18.7	<1
	09/05/06	<1	<0.50	<0.50	<1	5.37	<0.50	1.75	115	0.84	<0.50	55.9	0.8	--	37.5	4.79
	12/06/06	<1	<0.50	<0.50	<1	3.39	<0.50	1.12	90.9	0.62	<0.50	39.5	<0.50	--	28.3	2.15
	02/07/07	<1	<0.50	<0.50	<1	4.37	<0.50	1.37	116	0.93	<0.50	55.9	0.58	--	40.7	3
	05/22/07	<1	<1	<1	<1	1.18	<1	<1	38.5	<1	<1	31.6	<1	--	25.2	<1
09/11/07	<5	<2.50	<2.50	<5	26.6	<2.50	8.75	711	7.2	<2.50	81.4	2.95	--	216	11.9	
12/12/07	<1	<0.50	<0.50	<1	1.83	<0.50	0.79	64.9	0.65	<0.50	28.1	<0.50	--	24.9	0.67	
03/04/08	<1	<0.500	<0.500	<1	6.65	<0.500	2.22	166	2.92	<0.500	75.4	0.81	<0.500	60.5	2.79	
09/16/08	<5	<2.50	<2.50	<2.50	5.5	<2.50	<2.50	160	<2.50	<2.50	38.8	<2.50	<2.50	65.5	<2.50	
12/08/08	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	1.2	88	1.1	<0.50	40	0.51	<0.50	38	1.3	
12/08/08 DUP	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	1.2	84	1.1	<0.50	42	0.52	<0.50	38	1.3	

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 ug/L (ppb)														
		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)	03/25/09	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	1.3	71	0.75	<0.50	40	0.65	<0.50	37	0.54
	06/15/09	<0.50	<0.50	<0.50	<0.50	1	<0.50	0.8	47	0.9	<0.50	26	<0.50	<0.50	30	0.55
	09/15/09	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	0.82	44	0.58	<0.50	42	<0.50	<0.50	30	0.82
	12/14/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	17	<0.50	<0.50	18	<0.50	<0.50	16	<0.50
	03/17/10	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	0.96	61	0.68	<0.50	40	0.51	<0.50	38	<0.50
	06/14/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20	<0.50	<0.50	17	<0.50	<0.50	15	<0.50
	09/21/10	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	0.57	46	<0.5	<0.5	42	<0.5	<0.5	32	0.8
	12/07/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	16	<0.5	<0.5	19	<0.5	<0.5	15	<0.5
	03/08/11	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	19	<0.50	<0.50	27	<0.50	<0.50	16	<0.50
	06/06/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.3	<0.5	<0.5	16	<0.5	<0.5	11	<0.5
	09/13/11	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	0.73	42	0.5	<0.50	42	0.89	<0.50	30	0.74
	12/06/11	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	30	<0.50	<0.50	33	<0.50	<0.50	22	0.6
	03/08/12	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	32	<0.50	<0.50	36	<0.50	<0.50	21	<0.5
	06/19/12	<0.5	<0.5	<0.5	<0.5	0.71	<0.5	<0.5	28	<0.5	<0.5	22	<0.5	<0.5	16	<0.5
	09/12/12	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	0.66	36	<0.50	<0.50	33	<0.50	<0.50	20	1.1
	12/11/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20	<0.50	<0.50	19	<0.50	<0.50	11	<0.50
	03/12/13	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	0.56	38	<0.50	<0.50	35	<0.50	<0.50	20	0.66
	06/11/13	<0.50	<0.50	<0.50	<0.50	0.66	<0.50	<0.50	29	<0.50	<0.50	27	<0.50	<0.50	18	<0.50
	09/17/13	<0.50	<0.50	<0.50	<0.50	0.89	<0.50	<0.50	20	<0.50	<0.50	32	<0.50	<0.50	16	0.54
	12/10/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	16	<0.50	<0.50	17	<0.50	<0.50	11	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.5	<0.50	<0.50	10	<0.50	<0.50	5.8	<0.50
	6/26/2014	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	33	<0.50	<0.50	21	<0.50	<0.50	20	<0.50
	9/23/2014	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	26	<0.50	<0.50	34	<0.50	<0.50	20	12
	12/12/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	22	<0.50	<0.50	20	<0.50	<0.50	14	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	26.1	<0.50	<0.50	22.7	<0.50	<0.50	16.1	<0.50
	6/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.95	<0.50	<0.50	17.7	<0.50	<0.50	9.1	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.6	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18.8	<0.50	<0.50	13.8	<0.50	<0.50	12.4	<0.50
3/9/2016	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	17.5	<0.50	<0.50	16.9	<0.50	<0.50	14	<0.50	
6/17/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	11.8	<0.50	<0.50	18	<0.50	<0.50	11.1	<0.50	
9/30/2016	<0.50	<2	<0.50	<0.50	0.89	<0.50	<0.50	17.7	<0.50	<0.50	22.5	<0.50	<0.50	17.6	<0.50	
12/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	7.6	<0.50	<0.50	4.7	<0.50	
3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	15.6	<0.5	<0.5	13.6	<0.5	<0.5	13.2	<0.5	
6/12/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	6.0	<0.50	<0.50	12.8	<0.50	<0.50	7.1	<0.50

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 ug/L (ppb)														
		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	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	3.78	<0.50	<0.50	3.9	<1	--	3.35	<0.50
	08/30/00	<5	<25	<2.5	<2.5	3.7	<2.5	3.32	55	<2.5	<2.5	510	24	--	130	<2.5
	11/29/00	<5	<25	<2.5	<2.5	4.21	<2.5	4.59	51	<2.5	<2.5	583	23.2	--	166	<2.5
	02/27/01	<5	<25	<2.5	<2.5	5.21	<2.5	3.39	47.5	<2.5	<2.5	385	16.5	--	105	<2.5
	05/31/01	<10	<50	<5	<5	<5	<5	<5	55.8	<5	<5	639	13.8	--	141	<5
	09/24/01	<1.3	<1.3	<1.3	<1.3	6.1	<1.3	2.9	57	<1.3	<1.3	580	20	--	120	<1.3
	12/18/01	<5	<25	<2.5	<2.5	5.04	<2.5	2.68	54.8	<2.5	<2.5	527	20.2	--	131	<2.5
	03/19/02	<5	<2.5	<2.5	<5	5.25	<2.5	<2.5	54	<2.5	<2.5	454	10.8	--	98	<2.5
	05/29/02	<5	<2.5	<2.5	<5	4.9	<2.5	<2.5	62.3	<2.5	<2.5	299	9.7	--	65.1	<2.5
	08/29/02	<1	<0.50	<0.50	<1	5.43	<0.50	1.32	110	0.8	<0.50	60.2	3.62	--	47.8	<0.50
	11/11/02	<2	<1	<1	<2	4.74	<1	1.2	46.1	<1	<1	208	7.84	--	66.1	<1
	01/23/03	<2	<1	<1	<2	4.44	<1	1.24	65.3	<1	<1	210	6.54	--	74.1	<1
	05/28/03	<2	<1	<1	<2	3.96	<1	<1	69.2	<1	<1	109	2.48	--	57.5	<1
	11/11/03	<2	<2	<2	<2	4.14	<2	<2	44.8	<2	<2	256	3.6	--	60.2	<2
	01/27/04	<2	<1	<1	<2	4.22	<1	1.1	67.1	<1	<1	167	4.16	--	69.7	<1
	05/03/04	<1	<1	<1	<1	3.66	<1	<1	47.2	<1	<1	190	2.18	--	55.9	<1
	11/15/04	<2.5	<2.5	<2.5	<2.5	3.7	<2.5	<2.5	95	<2.5	<2.5	76	<2.5	--	64	<2.5
	06/20/05	<2	<1	<1	<2	9.22	<1	2.58	283	1.8	<1	23.6	1.62	--	70	1.24
	11/17/05	<1	<0.500	<0.500	<1	2.93	<0.500	<0.500	51.3	<0.500	<0.500	102	1.95	--	76.1	<0.500
	06/06/06	<1	<1	<1	<1	2.15	<1	<1	44	<1	<1	94.4	1.36	--	66.8	<1
	12/06/06	<1	<0.50	<0.50	<1	5.81	<0.50	0.6	142	<0.50	<0.50	53.8	0.88	--	74.6	0.57
	09/11/07	<2	<1	<1	<2	3.78	<1	1.2	189	<1	<1	31.6	<1	--	61.1	<1
	03/04/08	<1	<0.500	<0.500	<1	3.73	<0.500	0.91	242	2.37	<0.500	32.7	0.64	<0.500	44.4	<0.500
	03/25/09	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	0.87	160	0.9	<0.50	25	<0.50	<0.50	39	<0.50
	06/15/09	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	0.74	130	1	<0.50	24	<0.50	<0.50	39	<0.50
	09/15/09	<2.5	<2.5	<2.5	<2.5	20	<2.5	2.7	620	3.6	<2.5	24	<2.5	<2.5	75	<2.5
	03/17/10	<2.5	<2.5	<2.5	<2.5	20	<2.5	4.3	720	3.7	<2.5	20	<2.5	<2.5	79	<2.5
	09/21/10	<0.5	<0.5	<0.5	<0.5	2.5	<0.5	1.1	150	1	<0.5	28	<0.5	<0.5	53	<0.5
	03/10/11	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	0.57	83	0.52	<0.50	26	<0.50	<0.50	31	<0.50
	09/13/11	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	1.2	110	0.96	<0.50	30	<0.50	<0.50	59	<0.50
	03/08/12	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	62	<0.50	<0.50	22	<0.50	<0.50	21	<0.50
	09/12/12	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	0.53	60	<0.50	<0.50	22	<0.50	<0.50	25	<0.50
	03/12/13	<0.50	<0.50	<0.50	<0.50	0.95	<0.50	<0.50	65	<0.50	<0.50	23	<0.50	<0.50	24	<0.50
	09/17/13	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	0.56	68	<0.50	<0.50	26	<0.50	<0.50	32	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	63	<0.50	<0.50	23	<0.50	<0.50	27	0.65

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NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in ug/L (ppb)														
		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)	9/24/2014	Not sampled; 60 foot port accidentally sampled twice.														
	3/19/2015	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	0.69	126	<0.50	<0.50	23.7	<0.50	<0.50	41.5	0.82
	9/21/2015	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	49	<0.50	<0.50	19.4	<0.50	<0.50	20.4	<0.50
	9/30/2016	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	56.7	<0.50	<0.50	18.4	<0.50	<0.50	28.7	<0.50
	3/31/2017	<0.50	<20	<0.50	<0.50	13.3	<0.50	1.1	328	0.7	<0.50	20.1	<0.50	<0.50	62	6.5
MGMS2-4(40)	06/28/00	<50	<250	<25	<25	44.9	<25	<25	1,210	<25	<25	5,030	215	--	3,090	<25
	08/30/00	<10	<50	<5	<5	23.4	<5	31.3	644	7.28	<5	2,980	152	--	1,850	<5
	11/29/00	<100	<500	<50	<50	51.3	<50	94	1,420	<50	<50	8,740	424	--	3,980	<50
	02/27/01	<50	<250	<25	<25	35.6	<25	66.2	753	<25	<25	7,360	280	--	3,360	<25
	05/31/01	<50	<250	<25	<25	<25	<25	<25	604	<25	<25	3,610	94.4	--	2,050	<25
	09/24/01	<5	<5	<5	<5	28	<5	26	780	13	<5	2,600	170	--	1,700	<5
	12/18/01	<50	<250	<25	<25	175	<25	77	1,350	<25	<25	5,590	374	--	3,220	<25
	03/19/02	<50	<25	<25	<50	36	<25	36	868	<25	<25	6,240	180	--	3,040	<25
	05/29/02	<50	<25	<25	<50	76	<25	53	1,330	<25	<25	6,580	230	--	2,530	<25
	11/11/02	<20	<10	<10	<20	19.8	<10	13.6	639	<10	<10	3,080	89.4	--	1,820	<10
	01/23/03	<20	<10	<10	<20	13.4	<10	<10	353	<10	<10	2,290	52.6	--	1,480	<10
	05/28/03	<10	<5	<5	<10	5.4	<5	<5	110	<5	<5	1,190	19.1	--	474	<5
	11/11/03	<10	<10	<10	<10	<10	<10	<10	54.1	<10	<10	1,820	14	--	398	<10
	01/27/04	<20	<10	<10	<20	45.2	<10	<10	397	<10	<10	1,740	55.8	--	688	<10
	05/03/04	<10	<10	<10	<10	<10	<10	<10	41.2	<10	<10	599	<10	--	200	<10
	08/17/04	<10	<5	<5	<10	9.7	<5	6.1	158	<5	<5	1,530	30.7	--	705	<5
	11/15/04	<25	<25	<25	<25	<25	<25	<25	310	<25	<25	2,900	<25	--	1,300	<25
	03/24/05	<20	<10	<10	<20	10.8	<10	<10	159	<10	<10	1,900	25.8	--	834	<10
	05/16/05	<20	<10	<10	<20	34.2	<10	28.2	489	<10	<10	2,540	52.2	--	1,150	<10
	11/16/05	<50	<25	<25	<50	43.5	<25	<25	396	<25	<25	4,240	82.5	--	1,750	<25
06/06/06	<50	<50	<50	<50	62	<50	<50	917	<50	<50	4,820	55	--	1,770	<50	
12/05/06	<50	<25	<25	<50	<25	<25	<25	370	<25	<25	3,090	31.5	--	1,200	<25	
05/21/07	<20	<20	<20	<20	27.4	<20	<20	359	<20	<20	2,880	38.2	--	1,080	<20	
09/10/07	<50	<25	<25	<50	<25	<25	<25	402	<25	<25	2,010	52.5	--	1,600	<25	
12/12/07	<50	<25	<25	<50	26	<25	<25	330	<25	<25	2,080	35.5	--	914	<25	
03/04/08 ¹	<1	<0.500	<0.500	<1	20.4	<0.500	16.1	181	7.71	<0.500	1,810	53.7	0.51	950	4.68	
09/16/08	<50	<25	<25	<25	<25	<25	<25	208	<25	<25	2,330	32	<25	1,130	<25	
12/08/08	Not sampled. Air leak in sampling point prohibited the collection of the sample.															
03/24/09	<2	<2	<2	<2	8.4	<2	3.6	100	2	<2	990	14	<2	430	<2	

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 ug/L (ppb)														
		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)	09/15/09	<1.5	<1.5	<1.5	<1.5	3.1	<1.5	<1.5	52	<1.5	<1.5	440	4.1	<1.5	200	<1.5
	12/14/09	<1.5	<1.5	<1.5	<1.5	54	<1.5	16	360	6.9	<1.5	2,400	62	<1.5	1,000	2.6
	03/16/10	<7	<7	<7	<7	16	<7	<7	140	<7	<7	1,800	19	<7	810	<7
	06/14/10	<25	<25	<25	<25	72	<25	41	1,400	<25	<25	6,400	68	<25	1,500	43
	09/21/10	<2.5	<2.5	<2.5	<2.5	35	<2.5	17	480	9	<2.5	3,500	48	<2.5	1,500	5.4
	12/07/10	<15	<15	<15	<15	69	<15	26	700	<15	<15	4,100	83	<15	1,600	<15
	03/07/11	<15	<15	<15	<15	88	<15	30	930	<15	<15	3,700	91	<15	1,600	<15
	06/07/11	<15	<15	<15	<15	65	<15	30	1,600	17	<15	4,400	57	<15	1,400	48
	09/12/11	<15	<15	<15	<15	44	<15	28	7,400	20	<15	790	48	<15	380	58
	12/07/11	<15	<15	<15	<15	35	<15	<15	5,300	<15	<15	61	<15	<15	39	460
	03/08/12	<2	<2	<2	<2	38	<2	2.3	470	2.8	<2	9.9	5.2	<2	5.4	260
	06/19/12	<0.5	3.9	<0.5	<0.5	53	<0.5	<0.5	20	1.3	<0.5	7.2	<0.5	<0.5	2.5	63
	09/13/12	<1.5	1.8	<1.5	<1.5	39	<1.5	2.8	310	3.2	<1.5	89	5	<1.5	80	440
	12/11/12	<0.50	30	<0.50	<0.50	4.8	<0.50	<0.50	33	1.3	<0.50	10	<0.50	<0.50	3.4	4
	03/12/13	<0.50	8.2	<0.50	<0.50	28	<0.50	1.9	300	2	<0.50	5.6	2.5	<0.50	2.2	270
	06/11/13	<0.50	15	<0.50	<0.50	8.3	<0.50	<0.50	7.9	<0.50	<0.50	0.94	<0.50	<0.50	<0.50	4.8
	09/17/13	<0.50	9.4	<0.50	<0.50	28	<0.50	4.8	290	1.4	<0.50	16	1.6	<0.50	17	330
	12/16/13	<0.50	6.9	<0.50	<0.50	9.7	<0.50	<0.50	8.4	<0.50	<0.50	2.4	<0.50	<0.50	1.4	3.4
	3/24/2014	<0.50	2.4	<0.50	<0.50	45	<0.50	2.9	84	<0.50	<0.50	2.6	<0.50	<0.50	1.8	270
	6/26/2014	<0.50	6.1	<0.50	<0.50	31	<0.50	10	88	0.84	<0.50	21	<0.50	<0.50	22	90
	9/23/2014	<0.50	2.5	<0.50	<0.50	30	<0.50	30	590	2.4	<0.50	170	3.2	<0.50	110	800
	12/12/2014	<0.50	12	<0.50	<0.50	35	<0.50	<0.50	10	<0.50	<0.50	3.4	<0.50	<0.50	2.3	18
	3/20/2015	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	3.9	47	<0.50	<0.50	30.6	<0.50	<0.50	22.1	17.3
	6/19/2015	<0.50	<0.50	<0.50	<0.50	13.8	<0.50	1.3	53.8	<0.50	<0.50	18.4	<0.50	<0.50	12.8	48.3
	9/25/2015	<0.50	<0.50	<0.50	<0.50	12.3	<0.50	4.2	105	0.61	<0.50	67.4	0.92	<0.50	45.9	57.8
	12/8/2015	<0.50	3.8	<0.50	<0.50	13.5	<0.50	<0.50	7	<0.50	<0.50	4	<0.50	<0.50	2.8	3.3
	3/9/2016	<0.50	<2	<0.50	<0.50	20.6	<0.50	1.6	36	<0.50	<0.50	6.5	<0.50	<0.50	6.2	36
6/17/2016	<0.50	<2	<0.50	<0.50	24.9	<0.50	26.4	744	2.8	<0.50	223	3.1	<0.50	146	227	
9/29/2016	<0.50	<2	<0.50	<0.50	12.1	<0.50	<0.50	115	<0.50	<0.50	33.3	<0.50	<0.50	24.8	142	
12/16/2016	<0.50	<2	<0.50	<0.50	10.3	<0.50	<0.50	5.2	<0.50	<0.50	2.6	<0.50	<0.50	1.9	2	
3/31/2017	<0.5	<2	<0.5	<0.5	57.6	<0.5	14.3	236	0.6	<0.5	4.3	<0.5	<0.5	14.4	235	
6/15/2017	<0.50	<2.0	<0.50	<0.50	38.6	<0.50	3.5	46.2	<0.50	<0.50	5.1	<0.50	<0.50	4.9	98.9	

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 ug/L (ppb)														
		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	<5	<25	<2.5	<2.5	35.6	<2.5	8.3	433	<2.5	<2.5	110	22.3	--	198	<2.5
	08/30/00	<10	<50	<5	<5	36	<5	13	1,120	<5	<5	164	32	--	136	<5
	11/29/00	<5	<25	<2.5	<2.5	5.08	<2.5	3.88	279	<2.5	<2.5	26.8	<5	--	38	<2.5
	02/27/01	<2	<10	<1	<1	40.2	<1	2.65	46.6	<1	<1	20.7	12.4	--	27	173
	05/31/01	<1	<5	<0.50	<0.50	2.47	<0.50	2.3	39.1	<0.50	<0.50	113	3.44	--	75.6	5.06
	09/24/01	<2.5	<2.5	<2.5	<2.5	14	<2.5	11	180	3.6	<2.5	340	11	--	220	48
	12/18/01	<1	<5	<0.50	<0.50	0.607	<0.50	1.01	15	<0.50	<0.50	64.4	2.06	--	47.7	<0.50
	03/19/02	<1	<0.50	<0.50	<1	5.4	<0.50	2.96	62.9	0.81	<0.50	91.9	5.78	--	80.1	15.2
	05/29/02	<1	<0.50	<0.50	<1	2.55	<0.50	2.02	59.7	0.82	<0.50	119	4.8	--	67.6	1.06
	01/23/03	<1	<0.50	<0.50	<1	10.1	<0.50	2.7	114	1.12	<0.50	111	6.06	--	96	22.8
	05/28/03	<2	<1	<1	<2	15	<1	3.28	178	1.48	<1	131	9.3	--	126	15.6
	11/11/03	<2	<2	<2	<2	21.3	<2	4.56	208	<2	<2	223	9.06	--	139	20.6
	01/27/04	<1	<0.50	<0.50	<1	17.2	<0.50	2.83	117	1.57	<0.50	96.3	5.38	--	92.2	17.7
	05/03/04	<1	<1	<1	<1	4.79	<1	1.96	86.4	<1	<1	121	3.31	--	84	<1
	11/15/04	<2.5	<2.5	<2.5	<2.5	<2.5	13	4.4	220	2.8	<2.5	170	6.4	--	140	11
	02/01/05	<1	<0.50	<0.50	<1	2.49	<0.50	1.47	92	2.46	<0.50	97.7	2.41	--	73.9	0.6
	05/16/05	<1	<0.50	<0.50	<1	1.49	<0.50	1.51	45.2	0.59	<0.50	74.1	1.61	--	41.5	<0.50
	08/18/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	27.6 B	<0.500	<0.500	23.5 B	<0.500	--	13 B	<0.500
	11/16/05	<1	<0.500	<0.500	<1	7.5	<0.500	2.05	90.9	1.16	<0.500	107	3.1	--	78.3	2.68
	02/20/06	<1	<0.500	<0.500	<1	3.35	<0.500	1.6	65	0.82	<0.500	99.5	1.55	--	62.3	1.27
	06/06/06	<1	<1	<1	<1	<1	<1	<1	55	<1	<1	76.3	1.01	--	36.2	<1
	09/05/06	<1	<0.50	<0.50	<1	2.85	<0.50	1.13	75.1	0.73	<0.50	73	1.11	--	45.6	0.83
	12/05/06	<1	<0.50	<0.50	<1	2.58	<0.50	1.44	77	0.75	<0.50	98.7	1.27	--	61.2	0.79
	02/07/07	<1	<0.50	<0.50	<1	3.36	<0.50	1.3	96.5	0.79	<0.50	76.3	1.64	--	55	1.51
	05/21/07	<1	<1	<1	<1	2.45	<1	1.33	73.7	<1	<1	99.1	1.51	--	54.5	<1
	09/10/07	<10	<5	<5	<10	31.2	<5	8.2	559	<5	<5	221	10.8	--	192	26.7
	12/12/07	<1	<0.50	<0.50	<1	1.49	<0.50	0.88	78.6	0.56	<0.50	66.1	0.98	--	36.8	1.75
	03/04/08	<1	<0.500	<0.500	<1	4.46	<0.500	2.19	164	1.37	<0.500	89.7	2.32	<0.500	72.2	6.88
	09/16/08	<5	<2.50	<2.50	<5	10.4	<2.50	3.65	166	<2.50	<2.50	111	3.85	<2.50	96.4	7.15
	12/08/08	<0.80	<0.80	<0.80	<0.80	11	<0.80	3	160	1.7	<0.80	110	3.2	<0.80	80	10
	03/24/09	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	1.6	110	1	<0.50	84	2.2	<0.50	53	3.7
	09/15/09	<0.50	<0.50	<0.50	<0.50	6.4	<0.50	2.3	91	1.2	<0.50	110	2.4	<0.50	72	4.2
	12/14/09	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	1.1	61	0.75	<0.50	84	1.1	<0.50	54	0.96
	03/16/10	<0.50	<0.50	<0.50	<0.50	15	<0.50	3.6	140	1.6	<0.50	160	8.2	<0.50	110	12
	06/14/10	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.75	46	0.55	<0.50	73	0.86	<0.50	38	0.88
	09/21/10	<0.5	<0.5	<0.5	<0.5	11	<0.5	3	130	1.5	<0.5	150	5.8	<0.5	100	6.8

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 ug/L (ppb)														
		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)	12/07/10	<0.5	<0.5	<0.5	<0.5	4.1	<0.5	1.8	86	1.2	<0.5	120	1.7	<0.5	77	1.6
	03/07/11	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.86	73	0.62	<0.50	61	1.2	<0.50	34	1.4
	06/06/11	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	<0.5	22	<0.5	<0.5	64	0.54	<0.5	27	<0.5
	09/12/11	<0.50	<0.50	<0.50	<0.50	10	<0.50	3.2	110	1.4	<0.50	170	6	<0.50	100	2
	12/05/11	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	0.95	51	0.54	<0.50	84	1	<0.50	41	<0.50
	03/08/12	<0.50	<0.50	<0.50	<0.50	10	<0.50	2.9	300	1.9	<0.50	71	1.5	<0.50	45	43
	06/19/12	<0.5	<0.5	<0.5	<0.5	2	<0.5	1	79	0.87	<0.5	78	0.78	<0.5	45	5.3
	09/12/12	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.56	48	<0.50	<0.50	44	<0.50	<0.50	20	2.7
	12/11/12	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	2.5	59	1.5	<0.50	57	0.62	<0.50	36	16
	03/12/13	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	22	<0.50	<0.50	16	<0.50	<0.50	9	<0.50
	06/11/13	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	1.5	53	0.58	<0.50	29	0.55	<0.50	21	12
	09/17/13	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	0.98	73	0.66	<0.50	24	0.6	<0.50	13	29
	12/10/13	<0.50	<0.50	<0.50	<0.50	3	<0.50	1	88	0.88	<0.50	23	0.6	<0.50	18	13
	3/18/2014	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	28	<0.50	<0.50	33	<0.50	<0.50	13	1.7
	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	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	29.4	<0.50	<0.50	41.4	<0.50	<0.50	24.3	5.2
	6/19/2015	<0.50	<0.50	<0.50	<0.50	2	<0.50	0.56	38.1	<0.50	<0.50	35.1	<0.50	<0.50	23.5	7.9
	9/25/2015	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	0.5	51.6	<0.50	<0.50	18.4	<0.50	<0.50	15.8	9.7
	12/8/2015	Well Damaged, Unable to Sample														
6/17/2016	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	19.4	<0.50	<0.50	17.2	<0.50	<0.50	11.8	3.4	
9/30/2016	<0.50	<2	<0.50	<0.50	2	<0.50	<0.50	40	<0.50	<0.50	9.6	<0.50	<0.50	11.5	9.6	
12/16/2016	<0.50	<2	<0.50	<0.50	1.7	<0.50	<0.50	35.3	<0.50	<0.50	40.7	<0.50	<0.50	24.8	1.4	
3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	18.5	<0.5	<0.5	26	<0.5	<0.5	11.2	0.75	
6/15/2017	<2.0	<2.0	<0.50	<0.50	0.88	<1.0	<0.50	20.7	<0.50	<0.50	40.4	<0.50	<0.50	17.3	1.3	
MGMS2-2(110)	06/28/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	12.2	<0.50	<0.50	6.04	<1	--	17.1	<0.50
	08/30/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	4.41	<0.50	<0.50	16.4	<1	--	14.7	<0.50
	11/29/00	<1	<5	<0.50	<0.50	<0.50	<0.50	0.717	8.23	<0.50	<0.50	13	<1	--	19.3	<0.50
	02/27/01	<1	<5	<0.50	<0.50	<0.50	<0.50	0.756	7.31	<0.50	<0.50	15.2	<1	--	21.6	<0.50
	05/31/01	<1	<5	<0.50	<0.50	<0.50	<0.50	0.938	10.7	<0.50	<0.50	24.4	1.14	--	29.1	<0.50
	09/24/01	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.6	6.8	<0.50	<0.50	37	1.1	--	34	<0.50

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 ug/L (ppb)														
		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)	12/18/01	<1	<5	<0.50	<0.50	<0.50	<0.50	0.62	4.91	<0.50	<0.50	35.1	<1	--	27.5	<0.50
	03/19/02	<1	<0.50	<0.50	<1	<0.50	<0.50	0.61	9.97	<0.50	<0.50	35.6	1.23	--	24.6	<0.50
	05/29/02	<1	<0.50	<0.50	<1	<0.50	<0.50	1.21	31.9	<0.50	<0.50	114	2.39	--	51	0.61
	01/23/03	<1	<0.50	<0.50	<1	<0.50	<0.50	1.01	57.1	<0.50	<0.50	47.8	2.79	--	44.1	2.98
	05/28/03	<1	<0.50	<0.50	<1	0.61	<0.50	0.73	63.9	<0.50	<0.50	54.6	1.98	--	43.1	1.13
	11/11/03	<1	<1	<1	<1	1.14	<1	<1	76.7	1.07	<1	32.4	2.19	--	30.8	2.03
	01/27/04	<1	<0.50	<0.50	<1	0.63	<0.50	<0.50	49	<0.50	<0.50	67.9	1.17	--	30	1
	05/03/04	<1	<1	<1	<1	<1	<1	<1	14	<1	<1	28	<1	--	13.6	<1
	11/15/04	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	0.62	60	<0.50	<0.50	50	1.6	--	30	<0.50
	05/16/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	27.9	<0.50	<0.50	21.5	0.52	--	10.9	<0.50
	11/16/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	15.1	<0.500	<0.500	18	<0.500	--	8.42	<0.500
	06/06/06	<1	<1	<1	<1	<1	<1	<1	30.9	<1	<1	13.9	<1	--	6.59	<1
	12/05/06	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	36.2	<0.50	<0.50	17.9	<0.50	--	8.27	<0.50
	09/10/07	<5	<2.50	<2.50	<5	<2.50	<2.50	3.2	512	<2.50	<2.50	146	5.65	--	94.4	14.9
	03/04/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	59.5	<0.500	<0.500	33.4	0.75	<0.500	16.7	2.82
	09/16/08	<1	<0.500	<0.500	<1	<0.500	<0.500	0.71	77	<0.500	<0.500	44	1.18	<0.500	23.8	3.45
	03/24/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	40	<0.50	<0.50	27	<0.50	<0.50	11	2.5
	06/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	31	<0.50	<0.50	20	0.57	<0.50	8.9	2.3
	09/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	16	<0.50	<0.50	6.7	1.8
	03/15/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	28	<0.50	<0.50	21	<0.50	<0.50	8.1	1.6
	09/21/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	33	<0.5	<0.5	34	0.6	<0.5	14	1.3
	03/07/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	24	<0.50	<0.50	26	<0.50	<0.50	8.6	1
	09/12/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15	<0.50	<0.50	22	<0.50	<0.50	8.3	<0.50
	03/08/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	31	<0.50	<0.50	23	<0.50	<0.50	9.3	2.4
	09/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18	<0.50	<0.50	20	<0.50	<0.50	8.3	1.4
	03/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	34	<0.50	<0.50	23	0.52	<0.50	10	2.7
	09/17/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	30	<0.50	<0.50	18	<0.50	<0.50	8.7	2.2
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	21	<0.50	<0.50	13	<0.50	<0.50	6.2	2.5
9/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	25	<0.50	<0.50	12	<0.50	<0.50	7.3	4.9	
3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18.3	<0.50	<0.50	7.9	<0.50	<0.50	4.8	4.6	
9/25/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15.3	<0.50	<0.50	9.4	<0.50	<0.50	5.9	4.1	
3/9/2016	<0.50	<2	<0.50	<0.50	0.73	<0.50	<0.50	22.6	<0.50	<0.50	7.1	<0.50	<0.50	8	10	
9/29/2016	<0.50	<2	<0.50	<0.50	0.62	<0.50	<0.50	16.8	<0.50	<0.50	6.5	<0.50	<0.50	6.3	5.8	
3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	19.5	<0.5	<0.5	6.4	<0.5	<0.5	6.6	6.4	

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 ug/L (ppb)														
		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)	06/28/00	<1	<5	<0.50	<0.50	1.25	<0.50	1.77	27.6	<0.50	<0.50	27.5	2.06	--	54.3	<0.50
	08/30/00	<1	<5	<0.50	<0.50	0.903	<0.50	<0.50	23	<0.50	<0.50	77.8	2.47	--	52.9	<0.50
	11/29/00	<1	<5	<0.50	<0.50	<0.50	<0.50	0.569	12.4	<0.50	<0.50	25.3	<1	--	27.8	<0.50
	02/27/01	<1	<5	<0.50	<0.50	0.537	<0.50	0.605	11.4	<0.50	<0.50	25.2	<1	--	24.4	2.6
	05/31/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	8.86	<0.50	<0.50	25.5	<1	--	24.4	<0.50
	09/24/01	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	7.6	<0.50	<0.50	29	1.1	--	30	<0.50
	12/18/01	<1	<5	<0.50	<0.50	<0.50	<0.50	0.773	6.81	<0.50	<0.50	26.8	1.36	--	23.8	<0.50
	03/19/02	<1	<0.50	<0.50	<1	<0.50	<0.50	0.53	8.62	<0.50	<0.50	33.5	0.77	--	24.2	<0.50
	05/29/02	<1	<0.50	<0.50	<1	<0.50	<0.50	1.29	35.4	0.52	<0.50	117	2.5	--	53.6	0.62
	01/23/03	<1	<0.50	<0.50	<1	<0.50	<0.50	0.96	57.4	<0.50	<0.50	49.9	2.35	--	46.2	3.19
	05/28/03	<1	<0.50	<0.50	<1	<0.50	<0.50	0.53	27.2	<0.50	<0.50	29.3	0.98	--	24	1.07
	11/11/03	<1	<1	<1	<1	<1	<1	<1	46.3	<1	<1	28.8	1.56	--	29.7	1.49
	01/27/04	<1	<0.50	<0.50	<1	0.63	<0.50	0.56	37.6	<0.50	<0.50	28	0.96	--	22.2	1.51
	05/04/04	<1	<1	<1	<1	<1	<1	<1	38.2	<1	<1	7.55	<1	--	5.22	<1
	11/15/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	62	<0.50	<0.50	38	1.1	--	26	0.85
	05/16/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	29.5	<0.50	<0.50	23.7	0.56	--	15.2	0.86
	11/16/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	8.85	<0.500	<0.500	13	<0.500	--	6.06	<0.500
	06/06/06	<1	<1	<1	<1	<1	<1	<1	23.1	<1	<1	14.8	<1	--	6.71	<1
	12/05/06	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	27.6	<0.50	<0.50	14.9	<0.50	--	7.89	<0.50
	09/10/07	<5	<2.50	<2.50	<5	4.55	<2.50	3	615	<2.50	<2.50	93.2	5.5	--	61	21.5
	03/04/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	37.3 J	<0.500	<0.500	22.6 J	0.59	<0.500	12.9 J	2.4
	09/16/08	<1	<0.500	<0.500	<1	0.53	<0.500	1	101	0.56	<0.500	38.3	1.37	<0.500	26.1	6.11
	03/24/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	32	<0.50	<0.50	24	0.57	<0.50	11	1.5
	06/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	32	<0.50	<0.50	24	<0.50	<0.50	12	1.6
	09/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	18	<0.50	<0.50	8	1.5
	03/15/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	28	<0.50	<0.50	23	<0.50	<0.50	9.9	1.6
	09/21/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	28	<0.5	<0.5	31	<0.5	<0.5	12	1.1
	03/07/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	30	<0.50	<0.50	41	0.56	<0.50	13	0.97
	03/08/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	24	<0.50	<0.50	9.4	1.8
	09/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	22	<0.50	<0.50	22	<0.50	<0.50	9	2
	03/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	24	<0.50	<0.50	19	<0.50	<0.50	8.3	1.9
	09/17/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35	<0.50	<0.50	15	<0.50	<0.50	8.1	2.7
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	22	<0.50	<0.50	12	<0.50	<0.50	5.4	2.6
	9/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	32	<0.50	<0.50	9.8	<0.50	<0.50	6	5.5
	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.5	<0.50	<0.50	9.4	<0.50	<0.50	4.4	0.75

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

Well Number	Sample Date	Concentrations in ug/L (ppb)														
		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)	3/9/2016	<0.50	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	36.8	<0.50	<0.50	7.9	0.69	<0.50	10.7	12.4
	9/29/2016	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	31.4	<0.50	<0.50	6.4	<0.50	<0.50	7.9	8.2
	3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	15.6	<0.5	<0.5	5.2	<0.5	<0.5	4.7	4.8
MGMS3-4(40)	08/30/00	<10	<50	<5	<5	13.2	<5	5.01	858	14.1	<5	580	10.8	--	205	6.65
	11/29/00	<20	<100	<10	<10	<10	<10	<10	820	10.6	<10	2,810	<20	--	395	<10
	02/27/01	<50	<250	<25	<25	39.4	<25	29.2	4,570	<25	<25	2,970	<50	--	756	79.3
	05/31/01	<50	<250	<25	<25	<25	<25	<25	2,920	38.5	<25	3,960	<50	--	716	<25
	09/24/01	<2.5	<2.5	<2.5	<2.5	5.8	<2.5	<2.5	730	5.4	<2.5	1,400	9.2	--	230	3.5
	12/18/01	<50	<250	<25	<25	<25	<25	<25	2,550	<25	<25	3,310	<50	--	631	31
	03/19/02	<20	<10	<10	<20	34.6	<10	15.4	3,370	30.2	<10	3,560	23.8	--	707	57
	05/29/02	<50	<25	<25	<50	71.5	<25	<25	5,180	38.5	<25	2,470	33.5	--	728	86
	11/11/02	<50	<25	<25	<50	<25	<25	<25	1,520	<25	<25	2,750	<25	--	309	<25
	01/23/03	<20	<10	<10	<20	137	<10	38.4	3,530	32.6	<10	2,380	118	--	1,400	83.6
	05/28/03	<50	<25	<25	<50	56	<25	28.5	1,720	<25	<25	3,560	<25	--	1,470	<25
	11/11/03	<10	<10	<10	<10	<10	<10	<10	672	<10	<10	58.3	<10	--	32.4	<10
	01/27/04	<20	<10	<10	<20	20	<10	<10	1,900	19.4	<10	1,350	10	--	246	20
	05/03/04	<20	<20	<20	<20	50	<20	<20	1,420	<20	<20	2,700	34.2	--	913	24.8
	08/17/04	<20	<10	<10	<20	71.6	<10	17	3,300	31	<10	1,360	29.2	--	569	45.2
	11/15/04	<25	<25	<25	<25	<25	<25	<25	1,400	<25	<25	1,600	<25	--	290	<25
	03/24/05	<20	<10	<10	<20	79.4	<10	30	3,440	34.2	<10	2,330	43.8	--	1,080	60.2
	03/24/05 DUP	<20	<10	<10	<20	83.2	<10	29.2	3,450	34	<10	2,150	44	--	1,040	58.6
	05/16/05	<10	<5	<5	<10	7	<5	<5	657	11.3	<5	1,130	8.1	--	224	<5
	11/16/05	<10	<5	<5	<10	5.8	<5	<5	794	8.4	<5	1,180	7.6	--	210	<5
	03/14/06	<50	<50	<50	<50	51	<50	<50	4,130	<50	<50	1,410	<50	--	484	<50
	06/06/06	<20	<20	<20	<20	20.4	<20	<20	2,290	32.2	<20	1,410	<20	--	401	23.6
	12/05/06	<20	<10	<10	<20	29.8	<10	<10	3,570	29	<10	1,020	<10	--	360	95.4
05/22/07	<20	<20	<20	<20	20.8	<20	<20	2,640	20.2	<20	952	<20	--	349	22.6	
09/10/07	<50	<25	<25	<50	<25	<25	<25	2,340	<25	<25	499	<25	--	215	25.5	
12/12/07	<50	<25	<25	<50	<25	<25	<25	723	<25	<25	536	<25	--	133	<25	
03/04/08	<1	<0.500	<0.500	<1	32.4	3.08	22	2,280	25.4	3.86	1,580	27.5	<0.500	972	85.1	
09/16/08	<50	<25	<25	<50	64.5	<25	<25	2,700	<25	<25	714	<25	<25	462	47	
12/08/08	<9	<9	<9	<9	24	<9	<9	1,800	20	<9	350	<9	<9	160	90	
03/24/09	<7	<7	<7	<7	36	<7	7.9	1,600	12	<7	600	11	<7	280	33	
09/15/09	<5	<5	<5	<5	15	<5	<5	1,500	13	<5	550	<5	<5	180	8.2	
09/15/09 DUP	<5	<5	<5	<5	15	<5	<5	1,400	13	<5	540	<5	<5	170	9.8	

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 ug/L (ppb)														
		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)	12/14/09	<2.5	<2.5	<2.5	<2.5	8.1	<2.5	<2.5	750	5.3	<2.5	180	<2.5	<2.5	74	19
	03/17/10	<2.5	<2.5	<2.5	<2.5	52	<2.5	14	1,800	18	2.9	810	16	<2.5	490	41
	03/17/10 DUP	<5	<5	<5	<5	51	<5	14	1,600	18	<5	780	16	<5	470	39
	06/14/10	<0.90	<0.90	<0.90	<0.90	2.4	<0.90	<0.90	230	2.3	<0.90	300	2.2	<0.90	88	1.5
	09/20/10	<7	<7	<7	<7	32	<7	8.6	1,800	16	<7	530	7.9	<7	230	31
	09/20/10 DUP	<6	<6	<6	<6	31	<6	7.4	1,700	15	<6	510	7.4	<6	220	29
	12/07/10	<2	<2	<2	<2	5.3	<2	<2	460	3.9	<2	330	2.2	<2	95	3.2
	03/07/11	<2	<2	<2	<2	20	<2	4.7	1,300	10	<2	330	4	<2	140	53
	03/07/11 DUP	<4	<4	<4	<4	19	<4	4.9	1,200	10	<4	320	<4	<4	140	46
	06/06/11	<3	<3	<3	<3	6.5	<3	4.1	780	7	<3	370	5.4	<3	150	8.5
	09/13/11	<5	<5	<5	<5	45	<5	13	1,800	19	<5	560	15	<5	380	29
	09/13/11 DUP	<7	<7	<7	<7	40	<7	12	1,700	16	<7	570	12	<7	330	23
	12/06/11	<5	<5	<5	<5	14	<5	<5	1,000	9.3	<5	140	<5	<5	64	44
	03/08/12	<5	<5	<5	<5	33	<5	13	1,400	14	<5	930	17	<5	450	28
	03/08/12 DUP	<6	<6	<6	<6	35	<6	14	1,400	14	<6	990	18	<6	480	30
	06/21/2012	<5	<5	<5	<5	22	<5	5.6	1,300	11	<5	220	<5	<5	140	44
	09/12/12	<5	<5	<5	<5	23	<5	6.2	1,400	13	<5	220	<5	<5	120	85
	09/12/12 DUP	<5	<5	<5	<5	23	<5	5.3	1,400	13	<5	230	<5	<5	120	86
	12/11/12	<2	<2	<2	<2	7.1	<2	<2	510	6.5	<2	180	<2	<2	72	6.5
	03/12/13	<2	<2	<2	<2	30	<2	8.4	1,400	12	<2	510	8.7	<2	260	35
	03/12/13 DUP	<2	<2	<2	<2	29	<2	8.8	1,300	12	<2	470	8.4	<2	250	35
	06/11/13	<2.5	<2.5	<2.5	<2.5	11	<2.5	<2.5	740	7.1	<2.5	110	<2.5	<2.5	58	34
	09/16/13	<2	<2	<2	<2	7.7	<2	<2	360	4.6	<2	100	<2	<2	48	24
	09/16/13 DUP	<2	<2	<2	<2	8.5	<2	<2	380	5.1	<2	100	<2	<2	49	25
	12/10/13	<0.90	<0.90	<0.90	<0.90	4.7	<0.90	<0.90	230	2.8	<0.90	60	<0.90	<0.90	29	2
	12/10/13 DUP	<0.90	<0.90	<0.90	<0.90	4.6	<0.90	<0.90	230	2.7	<0.90	61	<0.90	<0.90	29	1.9
	3/18/2014	<0.90	<0.90	<0.90	<0.90	2.7	<0.90	0.98	280	1.8	0.91	84	<0.90	<0.90	38	<0.90
3/18/2014 DUP	<0.90	<0.90	<0.90	<0.90	2.6	<0.90	<0.90	280	1.9	0.93	86	<0.90	<0.90	39	<0.90	
6/26/2014	<0.90	<0.90	<0.90	<0.90	12	<0.90	3.5	690	5.7	<0.90	180	1.3	<0.90	100	20	
6/26/14 DUP	<0.90	<0.90	<0.90	<0.90	11	<0.90	2.8	490	5	<0.90	160	1.1	<0.90	930	14	
9/23/2014	<0.90	<0.90	<0.90	<0.90	10	<0.90	1.7	410	5.8	<0.90	72	<0.90	<0.90	55	74	
9/23/2014 DUP	<0.20	<0.20	<0.20	<0.20	11	<0.20	<0.20	430	5.5	<0.20	70	<0.20	<0.20	53	75	

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 ug/L (ppb)														
		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)	12/12/2014	<2	<2	<2	<2	7.9	<2	<2	490	4.2	<2	36	<2	<2	28	20
	3/18/2015	<1.6	<1.6	<1.6	<1.6	20	<1.6	3.2	896	7.3	<1.6	249	<1.6	<1.6	159	21.7
	3/18/2015 DUP	<0.50	<0.50	<0.50	<0.50	17	<0.50	2.4	713	5.5	<0.50	194	<0.50	<0.50	124	16.8
	6/19/2015	<0.84	<0.84	<0.84	<0.84	7.2	<0.84	<0.84	339	3.2	<0.84	34.4	<0.84	<0.84	32.8	73.3
	9/22/2015	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	164	<0.50	<0.50	2.5	<0.50	<0.50	8.6	61.9
	9/22/2015 DUP	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	151	1.2	<0.50	2.3	<0.50	<0.50	7.8	51.9
	12/7/2015	<0.50	<0.50	<0.50	<0.50	9.1	<0.50	2	370	3.1	<0.50	109	<0.50	<0.50	94.8	4
	3/9/2016	<2.5	<10	<2.5	<2.5	11.6	<2.5	<2.5	610	4	<2.5	86.7	<2.5	<2.5	89.7	22.9
	3/8/2016 DUP	<2.5	<10	<2.5	<2.5	12.4	<2.5	<2.5	643	5.4	<2.5	97.4	<2.5	<2.5	102	28
	6/17/2016	<1.2	<5	<1.2	<1.2	24.5	<1.2	6	955	9.1	<1.2	232	<1.2	<1.2	209	85.9
	9/30/2016	<0.50	<2	<0.50	<0.50	4.1	<0.50	0.54	226	1.8	<0.50	1.7	<0.50	<0.50	1.3	45.8
	9/30/2016 DUP	<0.50	<2	<0.50	<0.50	4.5	<0.50	0.6	219	2	<0.50	1.5	<0.50	<0.50	1.4	52.1
	12/16/2016	<0.50	<2	<0.50	<0.50	1	<0.50	<0.50	1.3	0.97	<0.50	0.63	<0.50	<0.50	<0.50	0.88
	3/28/2017	<0.5	<2	<0.5	<0.5	22.5	0.68	2.8	979	5.5	<0.5	1.4	<0.5	<0.5	0.6	257
	3/28/2017 DUP	<2.5	<10	<2.5	<2.5	20.7	<2.5	3.3	1,050	6	<2.5	<2.5	<2.5	<2.5	<2.5	323
6/12/2017	<0.50	<2.0	<0.50	<0.50	3.3	<0.50	<0.50	1.7	<0.50	<0.50	0.97	<0.50	<0.50	<0.50	<0.50	
MGMS3-3(60)	08/30/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	7.03	<1	--	3.31	<0.50
	11/29/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	3.11	<0.50	<0.50	2.8	<1	--	1.28	<0.50
	02/27/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	21.5	<0.50	<0.50	14.9	<1	--	7.32	<0.50
	05/31/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	10.1	<0.50	<0.50	9.84	<1	--	4.76	<0.50
	09/24/01	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.1	<0.50	<0.50	9.7	<0.50	--	3.7	<0.50
	12/18/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	3.26	<0.50	<0.50	17	<1	--	3.84	<0.50
	03/19/02	<1	<0.50	<0.50	<1	0.68	<0.50	<0.50	17.6	<0.50	<0.50	32.3	0.5	--	14	<0.50
	05/29/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	40.5	<0.50	<0.50	20.8	<0.50	--	7.92	<0.50
	01/23/03	<1	<0.50	<0.50	<1	0.5	<0.50	<0.50	33.9	<0.50	<0.50	20.3	<0.50	--	12.7	<0.50
	05/28/03	<1	<0.50	<0.50	<1	0.58	<0.50	<0.50	88.3	0.53	<0.50	16.9	<0.50	--	11.9	0.7
	11/11/03	<2	<2	<2	<2	<2	<2	<2	298	<2	<2	36.1	<2	--	23	<2
	01/27/04	<2	<1	<1	<2	1.2	<1	<1	274	1.24	<1	25.2	<1	--	23.4	1.28
	05/03/04	<2	<2	<2	<2	<2	<2	<2	274	<2	<2	46.6	<2	--	27	<2
	11/15/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	43	<0.50	<0.50	8.8	<0.50	--	3.4	<0.50
	02/01/05	<2	<1	<1	<2	<1	<1	<1	179	1.72	<1	15.6	<1	--	7.9	<1
	05/16/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	33.8	<0.50	<0.50	5.7	<0.50	--	2.39	<0.50
	08/18/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	47.9	<0.500	<0.500	4.39 B	<0.500	--	1.96 B	0.66 B

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 ug/L (ppb)														
		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)	11/16/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	8.39	<0.500	<0.500	2.59	<0.500	--	0.83	<0.500
	02/21/06	<5	<2.50	<2.50	<5	2.65	<2.50	<2.50	558	<2.50	<2.50	25	<2.50	--	14.4	21.6
	03/14/06	<1	<1	<1	<1	2.92	<1	1.37	97.1	<1	<1	50.6	<1	--	39.2	<1
	06/06/06	<1	<1	<1	<1	<1	<1	<1	7.97	<1	<1	2.84	<1	--	1.04	<1
	09/05/06	<1	<0.50	<0.50	<1	2.75	<0.50	1.17	108	0.78	<0.50	47.3	0.93	--	34.2	0.65
	12/05/06	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	19.8	<0.50	<0.50	10.5	<0.50	--	5.57	<0.50
	02/07/07	<1	<0.50	<0.50	<1	1.08	<0.50	<0.50	44.3	<0.50	<0.50	21.5	<0.50	--	15.4	<0.50
	05/22/07	<1	<1	<1	<1	<1	<1	<1	32.5	<1	<1	45.2	<1	--	18.2	<1
	09/10/07	<2	<1	<1	<2	2.98	<1	<1	148	<1	<1	28.8	<1	--	31.6	1.67
	12/12/07	<2	<1	<1	<2	<1	<1	<1	11.5	<1	<1	4.22	<1	--	1.9	1.18
	03/04/08	<1	<0.500	<0.500	<1	1.58	<0.500	0.68	72.1	0.6	<0.500	27.2	0.5	<0.500	22.7	2.33
	12/08/08	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	44	<0.50	<0.50	12	<0.50	<0.50	9.2	1.3
	03/24/09	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	42	<0.50	<0.50	21	<0.50	<0.50	14	0.91
	09/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15	<0.50	<0.50	8.5	<0.50	<0.50	4.3	0.84
	12/14/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	2	<0.50	<0.50	0.85	<0.50
	03/17/10	<0.50	<0.50	<0.50	<0.50	0.69	<0.50	<0.50	25	<0.50	<0.50	17	<0.50	<0.50	10	0.57
	06/14/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	2.4	<0.50	<0.50	1.1	0.69
	09/20/10	<0.5	<0.5	<0.5	<0.5	0.81	<0.5	<0.5	28	<0.5	<0.5	18	<0.5	<0.5	11	0.52
	12/07/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9	<0.5	<0.5	3.4	<0.5	<0.5	1.5	0.94
	03/07/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	17	<0.50	<0.50	10	<0.50	<0.50	4.6	0.67
	06/06/11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	2	<0.5	<0.5	0.73	<0.5
	09/13/11	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	34	<0.50	<0.50	17	<0.50	<0.50	12	<0.50
	12/05/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	14	<0.50	<0.50	7.3	<0.50
	03/08/12	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	21	<0.50	<0.50	15	<0.50	<0.50	9	<0.50
	06/21/12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	3	<0.5	<0.5	1.2	<0.5
	09/12/12	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	39	<0.50	<0.50	18	<0.50	<0.50	12	<0.50
	12/11/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	2.3	<0.50	<0.50	0.9	<0.50
	03/12/13	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	22	<0.50	<0.50	16	<0.50	<0.50	9	<0.50
06/11/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	16	<0.50	<0.50	11	<0.50	<0.50	5.4	<0.50	
09/16/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	6.8	<0.50	<0.50	3.3	<0.50	
12/10/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	3.6	<0.50	<0.50	1.5	<0.50	
3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	2.5	<0.50	<0.50	0.89	<0.50	
6/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	3.4	<0.50	<0.50	1.4	<0.50	

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 ug/L (ppb)														
		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)	9/23/2014	<0.50	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	2	<0.50	<0.50	8.8	<0.50	<0.50	4.7	<0.50
	12/12/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	2.2	<0.50	<0.50	0.72	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12.2	<0.50	<0.50	6	<0.50	<0.50	3.7	<0.50
	6/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6	<0.50	<0.50	3.5	<0.50	<0.50	1.6	<0.50
	9/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	3.9	<0.50	<0.50	2	0.6
	12/7/2015	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	13.9	<0.50	<0.50	4.2	<0.50	<0.50	2.5	16.7
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	2.8	<0.50	<0.50	0.78	<0.50
	6/17/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	17.4	<0.50	<0.50	5.8	<0.50	<0.50	5	<0.50
	9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	3.7	<0.50	<0.50	1.9	<0.50
	12/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	1.7	<0.50	<0.50	0.68	<0.50
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.62	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5
	6/12/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.3	<0.50	<0.50	0.64
MGMS3-2(101)	08/30/00	<10	<50	<5	<5	7.28	<5	<5	120	<5	<5	154	12.1	--	98.2	<5
	11/29/00	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	11.4	<2.5	<2.5	11.5	<5	--	13	<2.5
	02/27/01	<2	<10	<1	<1	<1	<1	<1	2.4	<1	<1	3.36	<2	--	1.98	<1
	05/31/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	4.24	<0.50	<0.50	3.07	<1	--	1.85	<0.50
	09/24/01	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.6	<0.50	<0.50	5.3	<0.50	--	2.4	<0.50
	12/18/01	<1	<5	<0.50	<0.50	0.864	<0.50	0.913	10.3	<0.50	<0.50	50.9	2.98	--	23.9	<0.50
	03/19/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.02	<0.50	<0.50	6.88	<0.50	--	2.54	<0.50
	05/29/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	8.19	<0.50	<0.50	11.5	<0.50	--	3.9	<0.50
	01/23/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	21.2	<0.50	<0.50	17.2	<0.50	--	8.38	<0.50
	05/28/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	28.6	<0.50	<0.50	18.4	<0.50	--	8.76	<0.50
	11/11/03	<1	<1	<1	<1	<1	<1	<1	53.7	<1	<1	18.3	<1	--	9.3	<1
	01/27/04	<1	<0.50	<0.50	<1	0.53	<0.50	<0.50	114	0.8	<0.50	24	<0.50	--	15.1	<0.50
	05/03/04	<1	<1	<1	<1	<1	<1	<1	22.1	<1	<1	6.74	<1	--	4.21	<1
	11/15/04	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	47	<0.50	<0.50	6.3	<0.50	--	2.9	<0.50
	05/16/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	66.5	<0.50	<0.50	3.59	<0.50	--	1.48	0.77
	11/16/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	25.3	<0.500	<0.500	4.93	<0.500	--	1.66	0.66
	03/14/06	<1	<1	<1	<1	<1	<1	<1	23.1	<1	<1	2.91	<1	--	1.14	1.06
	06/06/06	<1	<1	<1	<1	<1	<1	<1	15.9	<1	<1	3.56	<1	--	1.88	1.06
	12/05/06	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	32.6	<0.50	<0.50	2.84	<0.50	--	1.17	2.85
	09/10/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	40.4	<0.50	<0.50	6.32	<0.50	--	3.7	13.2

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 ug/L (ppb)														
		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)	03/04/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	18.1	<0.500	<0.500	3.4	<0.500	<0.500	1.47	5.64
	09/16/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	20.4	<0.500	<0.500	6.34	<0.500	<0.500	3.5	4.24
	03/24/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15	<0.50	<0.50	3	<0.50	<0.50	1.5	2.3
	06/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	2.4	<0.50	<0.50	1.2	2.2
	09/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	3.8	<0.50	<0.50	2.1	3.2
	03/17/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7	<0.50	<0.50	3.1	<0.50	<0.50	1.8	1.2
	09/20/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.5	<0.5	<0.5	3	<0.5	<0.5	1.4	1.2
	03/07/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	3.7	<0.50	<0.50	2.2	0.86
	03/08/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	5.9	<0.50	<0.50	4.5	<0.50
	09/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	2.7	<0.50	<0.50	1.3	<0.50
	03/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.9	<0.50	<0.50	5.6	<0.50	<0.50	4.4	0.59
	09/16/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	3.6	<0.50	<0.50	2.1	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.8	<0.50	<0.50	9.1	<0.50	<0.50	6.5	<0.50
	9/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	3	<0.50	<0.50	1.5	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	4.4	<0.50	<0.50	2.8	<0.50
	9/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	3.8	<0.50	<0.50	2.6	1.2
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	7.3	<0.50	<0.50	7.5	<0.50	<0.50	6.1	<0.50
9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	<0.50	4.4	<0.50	<0.50	3	<0.50	
3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	7	<0.5	<0.5	7	<0.5	<0.5	6	<0.5	
MGMS3-1(132)	08/30/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	5.58	<1	--	0.746	<0.50
	11/29/00	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	2.04	<0.50	<0.50	0.754	<1	--	<0.50	<0.50
	02/27/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	1.08	<0.50	<0.50	2.62	<1	--	0.722	<0.50
	05/31/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	6.67	<0.50	<0.50	3.13	<1	--	1.44	<0.50
	09/24/01	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	6.1	<0.50	--	1.9	<0.50
	12/18/01	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	4.11	<0.50	<0.50	8.75	<1	--	2.24	<0.50
	03/19/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.88	<0.50	<0.50	9.63	<0.50	--	3.02	<0.50
	05/29/02	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	11.8	<0.50	<0.50	14.6	<0.50	--	4.28	<0.50
	01/23/03	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	16.8	<0.50	<0.50	11.4	<0.50	--	6.04	<0.50
	05/28/03	<1	<0.50	<0.50	<1	0.59	<0.50	<0.50	93.3	0.76	<0.50	16.3	<0.50	--	10.1	0.83
	11/11/03	<1	<1	<1	<1	<1	<1	<1	72.4	<1	<1	12.2	<1	--	8	<1
	01/27/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	34.9	0.61	<0.50	12.7	<0.50	--	9.47	<0.50
	05/03/04	<1	<1	<1	<1	<1	<1	<1	11.9	<1	<1	<1	<1	--	14.2	<1
	11/15/04	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	200	<2.5	<2.5	6.2	<2.5	--	3.4	<2.5

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 ug/L (ppb)														
		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)	05/16/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	42.6	0.79	<0.50	4.42	<0.50	--	2.23	<0.50
	11/16/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	19.9	<0.500	<0.500	2.41	<0.500	--	0.8	<0.500
	03/14/06	<1	<1	<1	<1	<1	<1	<1	20.3	<1	<1	2.13	<1	--	<1	<1
	06/06/06	<1	<1	<1	<1	<1	<1	<1	18.6	<1	<1	1.57	<1	--	<1	1.36
	12/05/06	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	24.1	<0.50	<0.50	3.05	<0.50	--	1.08	4.68
	09/10/07	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	36.5	<0.50	<0.50	4.69	<0.50	--	3.17	16.8
	03/04/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	21.8	<0.500	<0.500	3.37	<0.500	<0.500	1.64	6.83
	09/16/08	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	26	<0.500	<0.500	4.86	<0.500	<0.500	3.52	4.96
	03/24/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.3	<0.50	<0.50	1.8	<0.50	<0.50	0.79	2.4
	03/24/09 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	1.6	<0.50	<0.50	0.78	2.3
	06/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	4.3	<0.50	<0.50	1.9	1.6
	09/15/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	2.1	<0.50	<0.50	1.2	2
	03/17/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.2	<0.50	<0.50	2.6	<0.50	<0.50	1.9	0.92
	09/20/10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6.5	<0.5	<0.5	2.9	<0.5	<0.5	2.3	1.3
	03/07/11	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	18	<0.50	<0.50	4	<0.50	<0.50	3.8	4.3
	09/13/11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.6	<0.50	<0.50	3.8	<0.50	<0.50	3.4	0.55
	03/08/12	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	9.3	<0.50	<0.50	7	<0.50	<0.50	6.9	0.67
	09/12/12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6	<0.50	<0.50	4.9	<0.50	<0.50	4	<0.50
	03/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.4	<0.50	<0.50	8.1	<0.50	<0.50	7.2	0.98
	09/16/13	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	9.8	<0.50	<0.50	7.9	<0.50	<0.50	8.1	0.84
	3/18/2014	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	0.51	11	<0.50	<0.50	13	<0.50	<0.50	11	0.76
	9/23/2014	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	8.9	<0.50	<0.50	9	<0.50	<0.50	7.9	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	9.3	<0.50	<0.50	6.3	<0.50	<0.50	6	0.56
9/22/2015	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	13.3	<0.50	<0.50	8.1	<0.50	<0.50	8.2	1.2	
3/9/2016	<0.50	<2	<0.50	<0.50	1	<0.50	0.56	14.4	<0.50	<0.50	13.5	0.56	<0.50	12.7	0.8	
9/30/2016	<0.50	<2	<0.50	<0.50	0.84	<0.50	0.54	12.9	<0.50	<0.50	13.8	<0.50	<0.50	11.9	<0.50	
3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	7.9	<0.5	<0.5	13.8	<0.5	<0.5	9.6	<0.5	
CMT1-1	11/11/03	<1	<1	2.87	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	01/26/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	05/03/04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	08/19/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/04	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5

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 ug/L (ppb)														
		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 (continued)	03/23/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	05/17/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	--	<0.500	<0.500
	05/26/06	Well Abandoned														
CMT1-2	11/11/03	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	01/26/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	--	1.03	<0.50
	05/03/04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	08/19/04	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	--	0.88	<0.50
	02/01/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.37	<0.50	--	0.99	<0.50
	05/16/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	--	0.69	<0.50
	11/17/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.6	<0.500	--	<0.500	<0.500
05/26/06	Well Abandoned															
CMT1-3	11/11/03	<2	<2	3.56	<2	<2	<2	<2	<2	<2	<2	<2	<2	--	<2	<2
	01/26/04	<1	<0.50	1.1	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	05/03/04	<1	<1	2.97	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	08/19/04	<1	<0.50	2.16	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/04	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	--	<25	<25
	05/16/05	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	--	<0.50	<0.50
	11/17/05	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	--	<0.500	<0.500
05/26/06	Well Abandoned															
EX	03/23/09	<5	<5	<5	<5	<5	<5	<5	50	<5	<5	1,400	43	<5	420	<5
	06/18/09	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	24	1.1	<0.50	11	<0.50
	09/18/09	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	3.3	120	0.76	<0.50	2,100	38	<0.50	380	1.1
	12/18/09	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	5.6	<2.5	<2.5	700	3.7	<2.5	56	<2.5
	03/16/10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20	<0.50	<0.50	150	3.2	<0.50	33	<0.50
	06/17/10	<0.50	<0.50	<0.50	<0.50	0.97	<0.50	<0.50	92	<0.50	<0.50	150	2.3	<0.50	39	2.2
	09/23/10	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	1.6	90	0.53	<0.5	2,400	20	<0.5	220	1.8
	12/21/10	<0.5	<0.5	<0.5	<0.5	0.83	<0.5	0.59	30	<0.50	<0.5	900	6.7	<0.5	99	0.71
	03/31/11	<4	<4	<4	<4	8.2	<4	8.1	240	<4	<4	6,800	110	<4	910	5.1
	06/07/11	<4	<4	<4	<4	<4	<4	<4	<4	140	<4	<4	1,400	15	<4	170

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 ug/L (ppb)															
		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 (continued)	09/19/11	<5	<5	<5	<5	7.9	<5	11	290	<5	<5	4,100	73	<5	460	14	
	12/07/11	<5	<5	<5	<5	16	<5	19	12,000	9.3	<5	<50	17	<5	<50	140	
	03/09/12	<4	<4	<4	<4	5	<4	<4	1,400	8.6	<4	33	<4	<4	10	290	
	06/22/12	<0.5	5.5	<0.5	<0.5	3.4	<0.5	0.68	170	1.3	<0.5	3	0.59	<0.5	1.1	120	
	09/14/12	<1.5	2.7	<1.5	<1.5	1.5	<1.5	<1.5	320	<1.5	<1.5	3	<1.5	<1.5	<1.5	42	
	12/14/12	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	12	
	03/15/13	<0.50	2.8	<0.50	<0.50	<0.50	<0.50	<0.50	9.5	<0.50	<0.50	1.2	<0.50	<0.50	<0.50	4.4	
	06/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	0.79	<0.50	<0.50	<0.50	<0.50	
	09/20/13	<0.50	1.9	<0.50	<0.50	1.9	<0.50	0.54	71	0.68	<0.50	4.1	<0.50	<0.50	2.6	30	
	12/16/13	<0.50	1.4	<0.50	<0.50	3.8	<0.50	<0.50	34	<0.50	<0.50	2	<0.50	<0.50	1.4	28	
	3/24/2014	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	30	<0.50	<0.50	20	<0.50	<0.50	7.5	11	
	6/23/2014	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	1.1	160	0.97	<0.50	29	<0.50	<0.50	15	38	
	9/30/2014	Insufficient water for sampling .															
	12/15/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10	<0.50	<0.50	22	<0.50	<0.50	2.7	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	2.1	688	1.9	<0.50	168	2.5	<0.50	55.8	2.8	
	6/18/2015	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	2.6	420	1.6	<0.50	186	0.88	<0.50	42	3.2	
	9/22/2015	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	3.7	543	2.6	<0.50	302	0.65	<0.50	61.9	24.4	
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	427	<0.50	<0.50	94	<0.50	<0.50	21.3	2.1	
	3/8/2016	<1.2	<5	<1.2	<1.2	4	<1.2	2.9	1,160	3.6	<1.2	274	5	<1.2	71.1	13.3	
	6/17/2016	<5	<20	<5	<5	<5	<5	<5	1,040	<5	<5	592	<5	<5	90.8	<5	
9/28/2016	<1.7	<6.7	<1.7	<1.7	4.6	<1.7	3.5	2,230	3.8	<1.7	39.4	2.5	<1.7	549	128		
12/12/2016	<0.50	3.7	<0.50	<0.50	<0.50	<0.50	<0.50	8.1	<0.50	<0.50	4.3	<0.50	<0.50	0.96	51.9		
3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	5.2	<0.5	<0.5	6.1	<0.5	<0.5	1.9	<0.5		
6/14/2017	<2.0	10.2	<0.50	<0.50	10.7	<1.0	<0.50	11.7	0.56	<0.50	9.5	<0.50	<0.50	3.0	1.3		
MP-1	03/23/09	<4	<4	<4	<4	6	<4	<4	89	<4	<4	1,200	10	<4	180	<4	
	06/18/09	<4	<4	<4	<4	4.3	<4	<4	43	<4	<4	1,500	12	<4	180	<4	
	09/18/09	<4	<4	<4	<4	14	<4	<4	240	8.9	<4	1,100	8.2	<4	310	7.3	
	12/18/09	<4	<4	<4	<4	<4	<4	<4	58	<4	<4	1,000	7.1	<4	180	<4	
	03/16/10	<3	<3	<3	<3	22	<3	4.7	410	13	<3	1,500	8.6	<3	400	10	
	06/17/10	<3	<3	<3	<3	3.2	<3	<3	120	<3	<3	800	5.4	<3	140	<3	
	09/23/10	<3	<3	<3	<3	<3	<3	<3	41	<3	<3	730	4	<3	120	<3	

Please refer to notes at end of table.

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Historical Groundwater Analytical Results
NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in ug/L (ppb)														
		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 (continued)	12/10/10	<3	<3	<3	<3	<3	<3	<3	27	<3	<3	1,000	4.5	<3	150	<3
	03/14/11	<3	<3	<3	<3	7.1	<3	<3	150	<3	<3	1,200	6.4	<3	180	5.9
	06/07/11	<2.5	<2.5	<2.5	<2.5	4.9	<2.5	<2.5	75	<2.5	<2.5	640	3.3	<2.5	130	<2.5
	09/19/11	<1.5	<1.5	<1.5	<1.5	2.4	<1.5	<1.5	41	<1.5	<1.5	300	1.9	<1.5	72	1.6
	12/07/11	<2.5	<2.5	<2.5	<2.5	2.6	<2.5	<2.5	49	3.1	<2.5	640	3.1	<2.5	120	<2.5
	03/09/12	<1.5	<1.5	<1.5	<1.5	9.4	<1.5	2.8	440	6.3	<1.5	490	3.5	<1.5	140	21
	06/22/12	<2.5	<2.5	<2.5	<2.5	5.6	<2.5	2.8	530	2.9	<2.5	690	12	<2.5	120	48
	09/14/12	<1.5	<1.5	<1.5	<1.5	4	<1.5	<1.5	170	2.2	<1.5	340	2	<1.5	83	4.5
	12/14/12	<0.90	<0.90	<0.90	<0.90	2	<0.90	<0.90	170	1.7	<0.90	230	1	<0.90	48	1.8
	03/15/13	<0.90	<0.90	<0.90	<0.90	5.1	<0.90	0.94	140	2.5	<0.90	230	1	<0.90	69	1.8
	06/14/13	<0.90	<0.90	<0.90	<0.90	4.5	<0.90	1.4	190	1.6	<0.90	330	1.4	<0.90	70	1.8
	09/20/13	<0.90	<0.90	<0.90	<0.90	2.9	<0.90	<0.90	77	1.5	<0.90	260	0.95	<0.90	66	<0.90
	12/16/13	<0.90	<0.90	<0.90	<0.90	1.7	<0.90	1.1	67	0.92	<0.90	290	1.2	<0.90	70	<0.90
	3/24/2014	<1.5	<1.5	<1.5	<1.5	2.2	<1.5	<1.5	240	<1.5	<1.5	360	1.8	<1.5	54	<1.5
	6/23/2014	<1.5	<1.5	<1.5	<1.5	4.9	<1.5	2.3	290	1.7	<1.5	1,200	9.5	<1.5	130	5
	9/30/2014	<2	<2	<2	<2	2.8	<2	<2	110	<2	<2	360	<2	<2	63	16
	12/15/2014	<1.5	<1.5	<1.5	<1.5	1.7	<1.5	<1.5	58	<1.5	<1.5	320	<1.5	<1.5	59	<1.5
	3/20/2015	<1	<1	<1	<1	3.6	<1	1.5	188	1.5	<1	565	1	<1	95.6	24.8
	6/18/2015	<0.84	<0.84	<0.84	<0.84	2.9	<0.84	1.5	91	0.87	<0.84	376	<0.84	<0.84	80.8	<0.84
	9/22/2015	<1.2	<1.2	<1.2	<1.2	1.8	<1.2	1.4	38.3	<1.2	<1.2	343	<1.2	<1.2	68.3	<1.2
12/8/2015	<1.2	<1.2	<1.2	<1.2	1.8	<1.2	1.5	50.9	<1.2	<1.2	308	<1.2	<1.2	62.6	<1.2	
3/8/2016	<0.84	<3.3	<0.84	<0.84	7.5	<0.84	2.1	148	1.2	<0.84	433	<0.84	<0.84	100	<0.84	
6/17/2016	<0.50	<2	<0.50	<0.50	5	<0.50	1.5	125	0.97	<0.50	206	<0.50	<0.50	67.3	<0.50	

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 ug/L (ppb)														
		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 (continued)	9/28/2016	<0.50	<2	<0.50	<0.50	1.3	<0.50	3.1	40.5	<0.50	<0.50	99.4	<0.50	<0.50	35.5	3.3
	12/13/2016	<0.50	<2	<0.50	<0.50	0.64	<0.50	0.92	209	0.55	<0.50	2.9	<0.50	<0.50	1	4.3
	3/30/2017	<0.5	71.4	<0.5	<0.5	7.5	<0.5	<0.5	177	6	<0.5	<0.5	<0.5	<0.5	0.79	186
	6/14/2017	<2.0	4.0	<0.50	<0.50	2.3	<1.0	<0.50	143	1.9	<0.50	16.2	<0.50	<0.50	8.5	29.4

Notes:

1. HVOCs = Halogenated volatile organic compounds analysis by U.S. Environmental Protection Agency (EPA) Method 8260B; results reported in micrograms per liter (µg/L).
2. 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).
3. -- = Not sampled or not analyzed.
4. < = Not detected at or above the specified laboratory method reporting limit (MRL).
5. B = Estimated concentration based on data quality review - similar detection in associated equipment blank (less than 5x difference).
6. J = Estimated concentration based on data quality review.
7. 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.
8. ND = Not detected and no reporting limit specified.
9. 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.
10. 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

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

Appendix C – Laboratory Analytical Reports and Data Quality Review

1.0 Introduction

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 2017 groundwater sampling events and air samples collected during the January through April 2017 soil vapor extraction (SVE) effluent sampling events for the NuStar Terminals Services, Inc. (NuStar) Vancouver Facility (Facility) in Vancouver, Washington. TestAmerica Laboratories in West Sacramento, California and Pace Analytical (Pace) in Davis, California performed the analyses. A copy of each analytical laboratory report is included in this appendix.

Report	Report Date	Sampling Event
1285102	April 4, 2017	First Quarter Groundwater Monitoring
320-25383-1	February 7, 2017	January SVE Monitoring
320-26384-1	March 17, 2017	February SVE Monitoring
320-27201-1	April 19, 2017	March SVE Monitoring
320-27847-1	May 11, 2017	April SVE Monitoring
1289722	June 28, 2017	Second Quarter Groundwater Monitoring

2.0 Data Validation

The QA review outlines the applicable quality control criteria utilized during the data review process, as well as any deviations from those criteria. Examination and validation of the laboratory summary reports include:

- Analytical preparation and quantitation methods
- Analytical method holding times
- Sample handling
- Chain of custody handling
- Detection and reporting limits
- Method blank, field blank, equipment blank and trip blank detections
- Laboratory control samples, matrix spikes and surrogates to assess laboratory accuracy
- Laboratory control sample duplicates, matrix spike duplicates and laboratory duplicates to assess laboratory precision
- Field duplicates to assess sampling and laboratory precision

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

3.0 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 total organic carbon (TOC) by EPA Method 5310B and ethene by EPA Method RSK-175M. SVE effluent vapor samples were analyzed for VOCs using EPA Method TO-15.

4.0 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.

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 MW-14 and MGMS3-40 from the March 2017 sampling event were insufficiently acid preserved for VOC analysis. There is potential that these results are biased low since MW-14 and MGMS3-40 were analyzed outside of 7-days.

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

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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 LCSD recovery associated with the air samples collected during the January 2017 SVE monitoring event was outside control limits for benzyl chloride. This analyte was biased high in the LCSD but because the analyte was not detected in the associated project samples, no data were flagged.

The LCSD recovery for vinyl acetate was below the lower control limit for air samples collected during the March 2017 air samples. This analyte is biased low in the LCSD but because the analyte is not part of the monitoring program analytes, no data was flagged in the data table.

Multiple VOC analytes were above the control limit for the LCS from the June 2017 laboratory report. Because none of these analytes were detected in the associated batch samples, no data was flagged in the data table.

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 RPD between LCS and LCSDs are within the control limit.

Matrix Spike Analyses. A matrix spike QC sample is used to assess the performance of the analytical method by determining potential matrix interferences. Matrix spike (MS) and matrix spike duplicate (MSD) analyses are performed on one environmental sample per analytical batch. A matrix spike sample uses an environmental sample that is spiked with known concentrations of analytes of interest. The matrix spike is then prepared and analyzed with the same analytical procedures as environmental samples in the analytical batch. The resulting concentration of the matrix spike is then compared to the known - or true - values plus the non-spiked environmental sample concentration. This comparison is expressed as a percent recovery. The matrix spike duplicate is then compared to the matrix spike of the same batch and expressed as a RPD value. The percent recovery and RPD values are then compared to control limits to assess data quality.

Several MS and MS duplicates (MSD) were analyzed during the batch analyses for both groundwater monitoring events. Percent recoveries and RPD values were within control limits for quality control samples associated with samples collected during the March 2017 groundwater monitoring event.

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For the June 2017 groundwater monitoring event, the recovery of trichloroethene in batch 117005 was above the upper control limit for the matrix spike duplicate. Since the source sample (MW-26) had a detectable concentration of trichloroethene, the result is J-flagged in the data table as an estimated value because of possible matrix interference.

For batch 117047 and 117173 from the June 2017 data, the recovery for cis-1,2-dichloroethene was below the lower control limit. The cis-1,2-dichloroethene result for MW-12 may have potential matrix interference and is J-flagged in the data table as an estimated value.

For batch 117288, multiple analytes were below the lower control limit and had RPD exceedances. Since the source sample was not part of the lab report 1289722 and the LCS and LCSD recoveries were within control limits, no data was flagged.

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

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 acceptable control limits.

Laboratory Duplicate. A laboratory duplicate is a second analysis of an environmental sample received by the laboratory, 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.

RPD values were outside of the control limit methane and ethene for batch 467360 of report 1285102. The higher of the two results for ethene were included in the data table.

The TOC RPD value was outside of the control limit for the laboratory duplicate of batch 82886. The source sample for the laboratory duplicate was not a sample included in the June 2017 sampling event and no data was flagged.

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 second sample to assess the precision of the analytical method. This comparison can be expressed by the RPD between the original and duplicate samples. The

Appendix C – Laboratory Analytical Reports and Data Quality Review

analytes in the groundwater samples were within 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 2017 monitoring events. Field blank air samples were not collected.

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 groundwater samples. No analytes were identified in the equipment blanks collected during the first and second quarter 2017 monitoring events.

Trip Blank. A trip blank is a sample of analyte free water 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. A trip blank was not analyzed for the first and second quarter 2017 monitoring event.

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

April 14, 2017

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

RE: Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Dear Stephanie Bosze-Salisbury:

Enclosed are the analytical results for sample(s) received by the laboratory on April 04, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

The analysis for methane, ethane, and ethene by method RSK 175, could not be completed within hold time. The data will be compared against historical values, and is considered to be representable for this purpose.

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

Sincerely,



Scott M Forbes
scott.forbes@pacelabs.com
(530) 297-4800
Project Manager

Enclosures

cc: Kelsi Evans, Apex Companies, LLC



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: UST-078

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas Certification #: 88-0680

California Certification #: MN00064

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: MN00064

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon NwTPH Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DW Certification #: 9952 C

West Virginia WW Certification #: 382

Wisconsin Certification #: 999407970

Wyoming via EPA Region 8 Certification #: 8TMS-L

Davis Certification IDs

2795 Second Street Suite 300 Davis, CA 95618

North Dakota Certification #: R-214

Oregon Certification #: CA300002

Washington Certification #: C926-15a

California Certification #: 08263CA

Minnesota Department of Health Certification #: 006-999-465

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

Commonwealth of Virginia (TNI): 480246

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1285102001	MW-23i	Water	03/27/17 15:25	04/04/17 09:33
1285102002	MW-14	Water	03/27/17 14:55	04/04/17 09:33
1285102005	EX	Water	03/28/17 16:12	04/04/17 09:33
1285102006	MW-19	Water	03/28/17 15:45	04/04/17 09:33
1285102011	MGMS3-40	Water	03/28/17 14:03	04/04/17 09:33
1285102028	MW-26	Water	03/29/17 09:15	04/04/17 09:33
1285102030	MW-13	Water	03/30/17 15:25	04/04/17 09:33
1285102031	MW-24i	Water	03/30/17 14:48	04/04/17 09:33
1285102032	MP-1	Water	03/30/17 13:56	04/04/17 09:33
1285102047	MGMS1-43	Water	03/31/17 08:30	04/04/17 09:33
1285102039	MW-12	Water	03/30/17 09:30	04/04/17 09:33
1285102003	S-1	Water	03/27/17 14:20	04/04/17 09:33
1285102004	S-2	Water	03/27/17 13:45	04/04/17 09:33
1285102007	MW-19 DUP	Water	03/28/17 15:45	04/04/17 09:33
1285102008	MGMS3-132	Water	03/28/17 15:05	04/04/17 09:33
1285102009	MGMS3-110	Water	03/28/17 14:45	04/04/17 09:33
1285102010	MGMS3-60	Water	03/28/17 14:23	04/04/17 09:33
1285102012	MGMS3-40 DUP	Water	03/28/17 14:03	04/04/17 09:33
1285102013	MW-24d	Water	03/28/17 11:50	04/04/17 09:33
1285102014	MW-2	Water	03/28/17 11:10	04/04/17 09:33
1285102015	MW-15	Water	03/28/17 10:10	04/04/17 09:33
1285102016	MW-5	Water	03/28/17 09:36	04/04/17 09:33
1285102017	MW-7	Water	03/28/17 08:55	04/04/17 09:33
1285102018	MW-7 DUP	Water	03/28/17 08:55	04/04/17 09:33
1285102019	MW-9	Water	03/28/17 08:23	04/04/17 09:33
1285102020	MW-19i	Water	03/29/17 15:20	04/04/17 09:33
1285102021	MW-18i	Water	03/29/17 14:37	04/04/17 09:33
1285102022	MW-16	Water	03/29/17 13:32	04/04/17 09:33
1285102023	MW-3	Water	03/29/17 12:48	04/04/17 09:33
1285102024	MW-21i-40	Water	03/29/17 12:00	04/04/17 09:33
1285102025	MW-21i-105	Water	03/29/17 11:35	04/04/17 09:33
1285102026	MW-22i	Water	03/29/17 10:38	04/04/17 09:33
1285102027	MW-25i	Water	03/29/17 10:00	04/04/17 09:33
1285102029	MW-17	Water	03/29/17 08:47	04/04/17 09:33
1285102033	MW-8	Water	03/30/17 13:07	04/04/17 09:33
1285102034	MW-20i	Water	03/30/17 12:00	04/04/17 09:33
1285102035	MW-10	Water	03/30/17 11:27	04/04/17 09:33

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SAMPLE SUMMARY

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1285102036	MW-1	Water	03/30/17 10:52	04/04/17 09:33
1285102037	EW-1	Water	03/30/17 13:18	04/04/17 09:33
1285102038	MW-6	Water	03/30/17 08:28	04/04/17 09:33
1285102040	MW-12 DUP	Water	03/30/17 09:30	04/04/17 09:33
1285102041	MGMS2-40	Water	03/31/17 11:44	04/04/17 09:33
1285102042	MGMS2-110	Water	03/31/17 10:00	04/04/17 09:33
1285102043	MGMS2-60	Water	03/31/17 11:17	04/04/17 09:33
1285102044	MGMS2-132	Water	03/31/17 10:27	04/04/17 09:33
1285102045	MGMS1-132	Water	03/31/17 09:20	04/04/17 09:33
1285102046	MGMS1-60	Water	03/31/17 08:58	04/04/17 09:33
1285102048	Equipment Blank	Water	03/30/17 15:40	04/04/17 09:33
1285102049	Field Blank	Water	03/27/17 15:50	04/04/17 09:33
1285102050	Field Blank	Water	03/28/17 16:30	04/04/17 09:33
1285102051	Field Blank	Water	03/29/17 15:40	04/04/17 09:33
1285102052	Field Blank	Water	03/30/17 15:40	04/04/17 09:33
1285102053	Field Blank	Water	03/31/17 10:00	04/04/17 09:33

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1285102001	MW-23i	EPA 8260B	JCP	31	PASI-DAV
1285102002	MW-14	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102005	EX	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102006	MW-19	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102011	MGMS3-40	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102028	MW-26	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102030	MW-13	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102031	MW-24i	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102032	MP-1	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102047	MGMS1-43	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102039	MW-12	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	CN	1	PASI-N
1285102003	S-1	EPA 8260B	JCP	31	PASI-DAV
1285102004	S-2	EPA 8260B	JCP	31	PASI-DAV
1285102007	MW-19 DUP	EPA 8260B	JCP	31	PASI-DAV
1285102008	MGMS3-132	EPA 8260B	JCP	31	PASI-DAV
1285102009	MGMS3-110	EPA 8260B	JCP	31	PASI-DAV
1285102010	MGMS3-60	EPA 8260B	JCP	31	PASI-DAV

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1285102012	MGMS3-40 DUP	EPA 8260B	JCP	31	PASI-DAV
1285102013	MW-24d	EPA 8260B	JCP	31	PASI-DAV
1285102014	MW-2	EPA 8260B	JCP	31	PASI-DAV
1285102015	MW-15	EPA 8260B	JCP	31	PASI-DAV
1285102016	MW-5	EPA 8260B	JCP	31	PASI-DAV
1285102017	MW-7	EPA 8260B	JCP	31	PASI-DAV
1285102018	MW-7 DUP	EPA 8260B	JCP	31	PASI-DAV
1285102019	MW-9	EPA 8260B	JCP	31	PASI-DAV
1285102020	MW-19i	EPA 8260B	JCP	31	PASI-DAV
1285102021	MW-18i	EPA 8260B	JCP	31	PASI-DAV
1285102022	MW-16	EPA 8260B	JCP	31	PASI-DAV
1285102023	MW-3	EPA 8260B	JCP	31	PASI-DAV
1285102024	MW-21i-40	EPA 8260B	JCP	31	PASI-DAV
1285102025	MW-21i-105	EPA 8260B	JCP	31	PASI-DAV
1285102026	MW-22i	EPA 8260B	JCP	31	PASI-DAV
1285102027	MW-25i	EPA 8260B	JCP	31	PASI-DAV
1285102029	MW-17	EPA 8260B	JCP	31	PASI-DAV
1285102033	MW-8	EPA 8260B	JCP	31	PASI-DAV
1285102034	MW-20i	EPA 8260B	JCP	31	PASI-DAV
1285102035	MW-10	EPA 8260B	JCP	31	PASI-DAV
1285102036	MW-1	EPA 8260B	JCP	31	PASI-DAV
1285102037	EW-1	EPA 8260B	JCP	31	PASI-DAV
1285102038	MW-6	EPA 8260B	JCP	31	PASI-DAV
1285102040	MW-12 DUP	EPA 8260B	JCP	31	PASI-DAV
1285102041	MGMS2-40	EPA 8260B	JCP	31	PASI-DAV
1285102042	MGMS2-110	EPA 8260B	JCP	31	PASI-DAV
1285102043	MGMS2-60	EPA 8260B	JCP	31	PASI-DAV
1285102044	MGMS2-132	EPA 8260B	JCP	31	PASI-DAV
1285102045	MGMS1-132	EPA 8260B	JCP	31	PASI-DAV
1285102046	MGMS1-60	EPA 8260B	JCP	31	PASI-DAV
1285102048	Equipment Blank	EPA 8260B	JCP	31	PASI-DAV
1285102049	Field Blank	EPA 8260B	JCP	31	PASI-DAV
1285102050	Field Blank	EPA 8260B	JCP	31	PASI-DAV
1285102051	Field Blank	EPA 8260B	JCP	31	PASI-DAV
1285102052	Field Blank	EPA 8260B	JCP	31	PASI-DAV
1285102053	Field Blank	EPA 8260B	JCP	31	PASI-DAV

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-23i	Lab ID: 1285102001	Collected: 03/27/17 15:25	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 12:25	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 12:25	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/05/17 12:25	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 12:25	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 12:25	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/05/17 12:25	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/05/17 12:25	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/05/17 12:25	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 12:25	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 12:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 12:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 12:25	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/05/17 12:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 12:25	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/05/17 12:25	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 12:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 12:25	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 12:25	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 12:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 12:25	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 12:25	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 12:25	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/05/17 12:25	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 12:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 12:25	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/05/17 12:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 12:25	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/05/17 12:25	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/05/17 12:25	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/05/17 12:25	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/05/17 12:25	460-00-4	

Sample: MW-14	Lab ID: 1285102002	Collected: 03/27/17 14:55	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		04/10/17 10:32	74-84-0	
Ethene	ND	ug/L	10.0	1		04/10/17 10:32	74-85-1	
Methane	1180	ug/L	10.0	1		04/10/17 10:32	74-82-8	
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 12:44	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 12:44	75-25-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-14		Lab ID: 1285102002		Collected: 03/27/17 14:55		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromomethane	ND	ug/L	20.0	1		04/05/17 12:44	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 12:44	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 12:44	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/05/17 12:44	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/05/17 12:44	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/05/17 12:44	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 12:44	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 12:44	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 12:44	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 12:44	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/05/17 12:44	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 12:44	107-06-2		
1,1-Dichloroethene	0.57	ug/L	0.50	1		04/05/17 12:44	75-35-4		
cis-1,2-Dichloroethene	69.2	ug/L	0.50	1		04/05/17 12:44	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 12:44	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 12:44	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 12:44	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 12:44	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 12:44	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 12:44	79-34-5		
Tetrachloroethene	14.7	ug/L	0.50	1		04/05/17 12:44	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 12:44	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 12:44	79-00-5		
Trichloroethene	33.4	ug/L	0.50	1		04/05/17 12:44	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 12:44	75-69-4		
Vinyl chloride	0.62	ug/L	0.50	1		04/05/17 12:44	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/05/17 12:44	17060-07-0		
Toluene-d8 (S)	100	%	70-130	1		04/05/17 12:44	2037-26-5		
4-Bromofluorobenzene (S)	94	%	70-130	1		04/05/17 12:44	460-00-4		

Sample: EX		Lab ID: 1285102005		Collected: 03/28/17 16:12		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
5310B TOC		Analytical Method: SM 5310B							
Total Organic Carbon	3.9	mg/L	1.0	1		04/10/17 10:38	7440-44-0		

Sample: EX		Lab ID: 1285102005		Collected: 03/28/17 16:12		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
RSK 175 AIR Headspace		Analytical Method: RSK 175							
Ethane	23.5	ug/L	10.0	1		04/10/17 10:47	74-84-0		
Ethene	23.5	ug/L	10.0	1		04/10/17 10:47	74-85-1		
Methane	3280	ug/L	10.0	1		04/10/17 10:47	74-82-8		

Sample: EX		Lab ID: 1285102005		Collected: 03/28/17 16:12		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 12:38	75-27-4		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: EX		Lab ID: 1285102005		Collected: 03/28/17 16:12	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromoform	ND	ug/L	0.50	1		04/07/17 12:38	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/07/17 12:38	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 12:38	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 12:38	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/07/17 12:38	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/07/17 12:38	67-66-3	
Chloromethane	ND	ug/L	2.0	1		04/07/17 12:38	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 12:38	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 12:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 12:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 12:38	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/07/17 12:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/07/17 12:38	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 12:38	75-35-4	
cis-1,2-Dichloroethene	5.2	ug/L	0.50	1		04/07/17 12:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/07/17 12:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 12:38	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 12:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 12:38	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 12:38	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 12:38	79-34-5	
Tetrachloroethene	6.1	ug/L	0.50	1		04/07/17 12:38	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/07/17 12:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 12:38	79-00-5	
Trichloroethene	1.9	ug/L	0.50	1		04/07/17 12:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 12:38	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/07/17 12:38	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/07/17 12:38	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/07/17 12:38	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	1		04/07/17 12:38	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	347	mg/L	10.0	10		04/13/17 00:37	7440-44-0	

Sample: MW-19		Lab ID: 1285102006		Collected: 03/28/17 15:45	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	17.8	ug/L	10.0	1		04/10/17 10:54	74-84-0	
Ethene	ND	ug/L	10.0	1		04/10/17 10:54	74-85-1	
Methane	3240	ug/L	10.0	1		04/10/17 10:54	74-82-8	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-19	Lab ID: 1285102006	Collected: 03/28/17 15:45	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		04/05/17 16:21	75-27-4	
Bromoform	ND	ug/L	5.0	10		04/05/17 16:21	75-25-2	
Bromomethane	ND	ug/L	200	10		04/05/17 16:21	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		04/05/17 16:21	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		04/05/17 16:21	108-90-7	
Chloroethane	ND	ug/L	20.0	10		04/05/17 16:21	75-00-3	
Chloroform	ND	ug/L	5.0	10		04/05/17 16:21	67-66-3	
Chloromethane	ND	ug/L	5.0	10		04/05/17 16:21	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		04/05/17 16:21	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:21	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:21	106-46-7	
1,1-Dichloroethane	197	ug/L	5.0	10		04/05/17 16:21	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		04/05/17 16:21	107-06-2	
1,1-Dichloroethene	25.5	ug/L	5.0	10		04/05/17 16:21	75-35-4	
cis-1,2-Dichloroethene	1930	ug/L	5.0	10		04/05/17 16:21	156-59-2	
trans-1,2-Dichloroethene	19.7	ug/L	5.0	10		04/05/17 16:21	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		04/05/17 16:21	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		04/05/17 16:21	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		04/05/17 16:21	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		04/05/17 16:21	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		04/05/17 16:21	79-34-5	
Tetrachloroethene	664	ug/L	5.0	10		04/05/17 16:21	127-18-4	
1,1,1-Trichloroethane	17.0	ug/L	5.0	10		04/05/17 16:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		04/05/17 16:21	79-00-5	
Trichloroethene	826	ug/L	5.0	10		04/05/17 16:21	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		04/05/17 16:21	75-69-4	
Vinyl chloride	58.5	ug/L	5.0	10		04/05/17 16:21	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	70-130	10		04/05/17 16:21	17060-07-0	
Toluene-d8 (S)	100	%	70-130	10		04/05/17 16:21	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	10		04/05/17 16:21	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	4.8	mg/L	1.0	1		04/10/17 11:16	7440-44-0	

Sample: MGMS3-40	Lab ID: 1285102011	Collected: 03/28/17 14:03	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	176	ug/L	10.0	1		04/10/17 11:01	74-84-0	
Ethene	68.1	ug/L	10.0	1		04/10/17 11:01	74-85-1	
Methane	4560	ug/L	10.0	1		04/10/17 11:01	74-82-8	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS3-40		Lab ID: 1285102011	Collected: 03/28/17 14:03	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 14:03	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 14:03	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/05/17 14:03	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 14:03	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 14:03	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/05/17 14:03	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/05/17 14:03	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/05/17 14:03	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 14:03	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 14:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 14:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 14:03	106-46-7	
1,1-Dichloroethane	22.5	ug/L	0.50	1		04/05/17 14:03	75-34-3	
1,2-Dichloroethane	0.68	ug/L	0.50	1		04/05/17 14:03	107-06-2	
1,1-Dichloroethene	2.8	ug/L	0.50	1		04/05/17 14:03	75-35-4	
cis-1,2-Dichloroethene	979	ug/L	25.0	50		04/07/17 03:02	156-59-2	
trans-1,2-Dichloroethene	5.5	ug/L	0.50	1		04/05/17 14:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 14:03	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 14:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 14:03	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 14:03	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 14:03	79-34-5	
Tetrachloroethene	1.4	ug/L	0.50	1		04/05/17 14:03	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 14:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 14:03	79-00-5	
Trichloroethene	0.60	ug/L	0.50	1		04/05/17 14:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 14:03	75-69-4	
Vinyl chloride	257	ug/L	25.0	50		04/07/17 03:02	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/05/17 14:03	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/05/17 14:03	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/05/17 14:03	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	5.0	mg/L	1.0	1		04/10/17 11:34	7440-44-0	

Sample: MW-26		Lab ID: 1285102028	Collected: 03/29/17 09:15	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		04/10/17 11:08	74-84-0	
Ethene	ND	ug/L	10.0	1		04/10/17 11:08	74-85-1	
Methane	225	ug/L	10.0	1		04/10/17 11:08	74-82-8	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-26	Lab ID: 1285102028	Collected: 03/29/17 09:15	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		04/05/17 16:40	75-27-4	
Bromoform	ND	ug/L	5.0	10		04/05/17 16:40	75-25-2	
Bromomethane	ND	ug/L	200	10		04/05/17 16:40	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		04/05/17 16:40	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		04/05/17 16:40	108-90-7	
Chloroethane	ND	ug/L	20.0	10		04/05/17 16:40	75-00-3	
Chloroform	ND	ug/L	5.0	10		04/05/17 16:40	67-66-3	
Chloromethane	ND	ug/L	5.0	10		04/05/17 16:40	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		04/05/17 16:40	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:40	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:40	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:40	106-46-7	
1,1-Dichloroethane	ND	ug/L	5.0	10		04/05/17 16:40	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		04/05/17 16:40	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	10		04/05/17 16:40	75-35-4	
cis-1,2-Dichloroethene	170	ug/L	5.0	10		04/05/17 16:40	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	10		04/05/17 16:40	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		04/05/17 16:40	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		04/05/17 16:40	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		04/05/17 16:40	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		04/05/17 16:40	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		04/05/17 16:40	79-34-5	
Tetrachloroethene	214	ug/L	5.0	10		04/05/17 16:40	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	5.0	10		04/05/17 16:40	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		04/05/17 16:40	79-00-5	
Trichloroethene	452	ug/L	5.0	10		04/05/17 16:40	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		04/05/17 16:40	75-69-4	
Vinyl chloride	ND	ug/L	5.0	10		04/05/17 16:40	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	10		04/05/17 16:40	17060-07-0	
Toluene-d8 (S)	100	%	70-130	10		04/05/17 16:40	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	10		04/05/17 16:40	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	1.3	mg/L	1.0	1		04/10/17 11:53	7440-44-0	

Sample: MW-13	Lab ID: 1285102030	Collected: 03/30/17 15:25	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		04/10/17 11:15	74-84-0	
Ethene	ND	ug/L	10.0	1		04/10/17 11:15	74-85-1	
Methane	524	ug/L	10.0	1		04/10/17 11:15	74-82-8	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-13	Lab ID: 1285102030	Collected: 03/30/17 15:25	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		04/05/17 16:59	75-27-4	
Bromoform	ND	ug/L	5.0	10		04/05/17 16:59	75-25-2	
Bromomethane	ND	ug/L	200	10		04/05/17 16:59	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		04/05/17 16:59	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		04/05/17 16:59	108-90-7	
Chloroethane	ND	ug/L	20.0	10		04/05/17 16:59	75-00-3	
Chloroform	ND	ug/L	5.0	10		04/05/17 16:59	67-66-3	
Chloromethane	ND	ug/L	5.0	10		04/05/17 16:59	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		04/05/17 16:59	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:59	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:59	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		04/05/17 16:59	106-46-7	
1,1-Dichloroethane	ND	ug/L	5.0	10		04/05/17 16:59	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		04/05/17 16:59	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	10		04/05/17 16:59	75-35-4	
cis-1,2-Dichloroethene	101	ug/L	5.0	10		04/05/17 16:59	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	10		04/05/17 16:59	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		04/05/17 16:59	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		04/05/17 16:59	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		04/05/17 16:59	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		04/05/17 16:59	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		04/05/17 16:59	79-34-5	
Tetrachloroethene	176	ug/L	5.0	10		04/05/17 16:59	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	5.0	10		04/05/17 16:59	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		04/05/17 16:59	79-00-5	
Trichloroethene	57.6	ug/L	5.0	10		04/05/17 16:59	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		04/05/17 16:59	75-69-4	
Vinyl chloride	ND	ug/L	5.0	10		04/05/17 16:59	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	10		04/05/17 16:59	17060-07-0	
Toluene-d8 (S)	101	%	70-130	10		04/05/17 16:59	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	10		04/05/17 16:59	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	341	mg/L	10.0	10		04/10/17 12:12	7440-44-0	

Sample: MW-24i	Lab ID: 1285102031	Collected: 03/30/17 14:48	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		04/10/17 11:23	74-84-0	
Ethene	ND	ug/L	10.0	1		04/10/17 11:23	74-85-1	
Methane	ND	ug/L	10.0	1		04/10/17 11:23	74-82-8	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-24i	Lab ID: 1285102031	Collected: 03/30/17 14:48	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 23:50	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 23:50	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 23:50	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 23:50	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 23:50	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 23:50	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 23:50	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 23:50	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 23:50	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:50	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 23:50	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 23:50	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 23:50	75-35-4	
cis-1,2-Dichloroethene	0.70	ug/L	0.50	1		04/06/17 23:50	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 23:50	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 23:50	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 23:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 23:50	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 23:50	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 23:50	79-34-5	
Tetrachloroethene	1.0	ug/L	0.50	1		04/06/17 23:50	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 23:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 23:50	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 23:50	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 23:50	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 23:50	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/06/17 23:50	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 23:50	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/06/17 23:50	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	3.4	mg/L	1.0	1		04/10/17 12:31	7440-44-0	

Sample: MP-1	Lab ID: 1285102032	Collected: 03/30/17 13:56	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	20.1	ug/L	10.0	1		04/10/17 11:30	74-84-0	
Ethene	328	ug/L	10.0	1		04/10/17 11:30	74-85-1	
Methane	19600	ug/L	10.0	1		04/10/17 11:30	74-82-8	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MP-1		Lab ID: 1285102032		Collected: 03/30/17 13:56		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 20:25	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/07/17 20:25	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/07/17 20:25	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 20:25	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 20:25	108-90-7		
Chloroethane	71.4	ug/L	2.0	1		04/07/17 20:25	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/07/17 20:25	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/07/17 20:25	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 20:25	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 20:25	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 20:25	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 20:25	106-46-7		
1,1-Dichloroethane	7.5	ug/L	0.50	1		04/07/17 20:25	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/07/17 20:25	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 20:25	75-35-4		
cis-1,2-Dichloroethene	177	ug/L	2.5	5		04/07/17 01:45	156-59-2		
trans-1,2-Dichloroethene	6.0	ug/L	0.50	1		04/07/17 20:25	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 20:25	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 20:25	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 20:25	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 20:25	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 20:25	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		04/07/17 20:25	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/07/17 20:25	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 20:25	79-00-5		
Trichloroethene	0.79	ug/L	0.50	1		04/07/17 20:25	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 20:25	75-69-4		
Vinyl chloride	186	ug/L	0.50	1		04/07/17 20:25	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/07/17 20:25	17060-07-0		
Toluene-d8 (S)	100	%	70-130	1		04/07/17 20:25	2037-26-5		
4-Bromofluorobenzene (S)	101	%	70-130	1		04/07/17 20:25	460-00-4		
5310B TOC		Analytical Method: SM 5310B							
Total Organic Carbon	137	mg/L	10.0	10		04/13/17 00:56	7440-44-0		

Sample: MGMS1-43		Lab ID: 1285102047		Collected: 03/31/17 08:30		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
RSK 175 AIR Headspace		Analytical Method: RSK 175							
Ethane	19.4	ug/L	10.0	1		04/10/17 12:18	74-84-0		
Ethene	14.8	ug/L	10.0	1		04/10/17 12:18	74-85-1		
Methane	3380	ug/L	10.0	1		04/10/17 12:18	74-82-8		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS1-43	Lab ID: 1285102047	Collected: 03/31/17 08:30	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	8.4	16.7		04/07/17 02:43	75-27-4	
Bromoform	ND	ug/L	8.4	16.7		04/07/17 02:43	75-25-2	
Bromomethane	ND	ug/L	334	16.7		04/07/17 02:43	74-83-9	
Carbon tetrachloride	ND	ug/L	8.4	16.7		04/07/17 02:43	56-23-5	
Chlorobenzene	ND	ug/L	8.4	16.7		04/07/17 02:43	108-90-7	
Chloroethane	ND	ug/L	33.4	16.7		04/07/17 02:43	75-00-3	
Chloroform	ND	ug/L	8.4	16.7		04/07/17 02:43	67-66-3	
Chloromethane	ND	ug/L	8.4	16.7		04/07/17 02:43	74-87-3	
Dibromochloromethane	ND	ug/L	8.4	16.7		04/07/17 02:43	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	8.4	16.7		04/07/17 02:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	8.4	16.7		04/07/17 02:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	8.4	16.7		04/07/17 02:43	106-46-7	
1,1-Dichloroethane	90.8	ug/L	8.4	16.7		04/07/17 02:43	75-34-3	
1,2-Dichloroethane	ND	ug/L	8.4	16.7		04/07/17 02:43	107-06-2	
1,1-Dichloroethene	12.5	ug/L	8.4	16.7		04/07/17 02:43	75-35-4	
cis-1,2-Dichloroethene	1430	ug/L	8.4	16.7		04/07/17 02:43	156-59-2	
trans-1,2-Dichloroethene	15.2	ug/L	8.4	16.7		04/07/17 02:43	156-60-5	
1,2-Dichloropropane	ND	ug/L	8.4	16.7		04/07/17 02:43	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	8.4	16.7		04/07/17 02:43	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	8.4	16.7		04/07/17 02:43	10061-02-6	
Methylene Chloride	ND	ug/L	83.5	16.7		04/07/17 02:43	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	8.4	16.7		04/07/17 02:43	79-34-5	
Tetrachloroethene	45.8	ug/L	8.4	16.7		04/07/17 02:43	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	8.4	16.7		04/07/17 02:43	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	8.4	16.7		04/07/17 02:43	79-00-5	
Trichloroethene	119	ug/L	8.4	16.7		04/07/17 02:43	79-01-6	
Trichlorofluoromethane	ND	ug/L	8.4	16.7		04/07/17 02:43	75-69-4	
Vinyl chloride	348	ug/L	8.4	16.7		04/07/17 02:43	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	70-130	16.7		04/07/17 02:43	17060-07-0	
Toluene-d8 (S)	101	%	70-130	16.7		04/07/17 02:43	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130	16.7		04/07/17 02:43	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	7.0	mg/L	1.0	1		04/10/17 16:08	7440-44-0	

Sample: MW-12	Lab ID: 1285102039	Collected: 03/30/17 09:30	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	12.4	ug/L	10.0	1		04/10/17 11:37	74-84-0	
Ethene	75.2	ug/L	10.0	1		04/10/17 11:37	74-85-1	
Methane	6810	ug/L	10.0	1		04/10/17 11:37	74-82-8	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-12		Lab ID: 1285102039		Collected: 03/30/17 09:30	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	10.0	20		04/05/17 10:27	75-27-4	
Bromoform	ND	ug/L	10.0	20		04/05/17 10:27	75-25-2	
Bromomethane	ND	ug/L	400	20		04/05/17 10:27	74-83-9	
Carbon tetrachloride	ND	ug/L	10.0	20		04/05/17 10:27	56-23-5	
Chlorobenzene	ND	ug/L	10.0	20		04/05/17 10:27	108-90-7	
Chloroethane	ND	ug/L	40.0	20		04/05/17 10:27	75-00-3	
Chloroform	ND	ug/L	10.0	20		04/05/17 10:27	67-66-3	
Chloromethane	ND	ug/L	10.0	20		04/05/17 10:27	74-87-3	
Dibromochloromethane	ND	ug/L	10.0	20		04/05/17 10:27	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	10.0	20		04/05/17 10:27	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	20		04/05/17 10:27	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	20		04/05/17 10:27	106-46-7	
1,1-Dichloroethane	ND	ug/L	10.0	20		04/05/17 10:27	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	20		04/05/17 10:27	107-06-2	
1,1-Dichloroethene	ND	ug/L	10.0	20		04/05/17 10:27	75-35-4	
cis-1,2-Dichloroethene	1120	ug/L	10.0	20		04/05/17 10:27	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	10.0	20		04/05/17 10:27	156-60-5	
1,2-Dichloropropane	ND	ug/L	10.0	20		04/05/17 10:27	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	10.0	20		04/05/17 10:27	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	10.0	20		04/05/17 10:27	10061-02-6	
Methylene Chloride	ND	ug/L	100	20		04/05/17 10:27	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	20		04/05/17 10:27	79-34-5	
Tetrachloroethene	55.9	ug/L	10.0	20		04/05/17 10:27	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	10.0	20		04/05/17 10:27	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	20		04/05/17 10:27	79-00-5	
Trichloroethene	29.6	ug/L	10.0	20		04/05/17 10:27	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	20		04/05/17 10:27	75-69-4	
Vinyl chloride	37.8	ug/L	10.0	20		04/05/17 10:27	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	20		04/05/17 10:27	17060-07-0	
Toluene-d8 (S)	101	%	70-130	20		04/05/17 10:27	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	20		04/05/17 10:27	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	490	mg/L	10.0	10		04/10/17 15:49	7440-44-0	

Sample: S-1		Lab ID: 1285102003		Collected: 03/27/17 14:20	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 13:04	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 13:04	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/05/17 13:04	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 13:04	56-23-5	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: S-1		Lab ID: 1285102003		Collected: 03/27/17 14:20		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 13:04	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/05/17 13:04	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/05/17 13:04	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/05/17 13:04	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 13:04	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:04	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:04	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:04	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/05/17 13:04	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 13:04	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:04	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:04	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:04	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 13:04	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 13:04	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 13:04	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 13:04	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 13:04	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		04/05/17 13:04	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 13:04	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 13:04	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		04/05/17 13:04	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 13:04	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		04/05/17 13:04	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/05/17 13:04	17060-07-0		
Toluene-d8 (S)	100	%	70-130	1		04/05/17 13:04	2037-26-5		
4-Bromofluorobenzene (S)	96	%	70-130	1		04/05/17 13:04	460-00-4		

Sample: S-2		Lab ID: 1285102004		Collected: 03/27/17 13:45		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 13:24	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/05/17 13:24	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/05/17 13:24	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 13:24	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 13:24	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/05/17 13:24	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/05/17 13:24	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/05/17 13:24	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 13:24	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:24	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:24	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:24	106-46-7		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: S-2		Lab ID: 1285102004	Collected: 03/27/17 13:45	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1-Dichloroethane	2.6	ug/L	0.50	1		04/05/17 13:24	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 13:24	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:24	75-35-4	
cis-1,2-Dichloroethene	4.0	ug/L	0.50	1		04/05/17 13:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:24	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 13:24	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 13:24	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 13:24	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 13:24	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 13:24	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/05/17 13:24	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 13:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 13:24	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/05/17 13:24	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 13:24	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/05/17 13:24	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/05/17 13:24	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/05/17 13:24	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/05/17 13:24	460-00-4	

Sample: MW-19 DUP		Lab ID: 1285102007	Collected: 03/28/17 15:45	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		04/07/17 02:23	75-27-4	
Bromoform	ND	ug/L	5.0	10		04/07/17 02:23	75-25-2	
Bromomethane	ND	ug/L	200	10		04/07/17 02:23	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		04/07/17 02:23	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		04/07/17 02:23	108-90-7	
Chloroethane	ND	ug/L	20.0	10		04/07/17 02:23	75-00-3	
Chloroform	ND	ug/L	5.0	10		04/07/17 02:23	67-66-3	
Chloromethane	ND	ug/L	5.0	10		04/07/17 02:23	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		04/07/17 02:23	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		04/07/17 02:23	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		04/07/17 02:23	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		04/07/17 02:23	106-46-7	
1,1-Dichloroethane	214	ug/L	5.0	10		04/07/17 02:23	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		04/07/17 02:23	107-06-2	
1,1-Dichloroethene	26.7	ug/L	5.0	10		04/07/17 02:23	75-35-4	
cis-1,2-Dichloroethene	1990	ug/L	10.0	20		04/07/17 22:00	156-59-2	
trans-1,2-Dichloroethene	21.5	ug/L	5.0	10		04/07/17 02:23	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		04/07/17 02:23	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		04/07/17 02:23	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		04/07/17 02:23	10061-02-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-19 DUP		Lab ID: 1285102007	Collected: 03/28/17 15:45	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Methylene Chloride	ND	ug/L	50.0	10		04/07/17 02:23	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		04/07/17 02:23	79-34-5	
Tetrachloroethene	755	ug/L	5.0	10		04/07/17 02:23	127-18-4	
1,1,1-Trichloroethane	19.9	ug/L	5.0	10		04/07/17 02:23	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		04/07/17 02:23	79-00-5	
Trichloroethene	896	ug/L	5.0	10		04/07/17 02:23	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		04/07/17 02:23	75-69-4	
Vinyl chloride	63.2	ug/L	5.0	10		04/07/17 02:23	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%	70-130	10		04/07/17 02:23	17060-07-0	
Toluene-d8 (S)	101	%	70-130	10		04/07/17 02:23	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	10		04/07/17 02:23	460-00-4	

Sample: MGMS3-132		Lab ID: 1285102008	Collected: 03/28/17 15:05	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 15:03	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 15:03	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/05/17 15:03	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 15:03	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 15:03	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/05/17 15:03	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/05/17 15:03	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/05/17 15:03	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 15:03	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:03	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/05/17 15:03	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 15:03	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/05/17 15:03	75-35-4	
cis-1,2-Dichloroethene	7.9	ug/L	0.50	1		04/05/17 15:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 15:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 15:03	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 15:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 15:03	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 15:03	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 15:03	79-34-5	
Tetrachloroethene	13.8	ug/L	0.50	1		04/05/17 15:03	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 15:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 15:03	79-00-5	
Trichloroethene	9.6	ug/L	0.50	1		04/05/17 15:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 15:03	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/05/17 15:03	75-01-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS3-132		Lab ID: 1285102008		Collected: 03/28/17 15:05	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/05/17 15:03	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/05/17 15:03	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/05/17 15:03	460-00-4	

Sample: MGMS3-110		Lab ID: 1285102009		Collected: 03/28/17 14:45	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 15:22	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 15:22	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/05/17 15:22	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 15:22	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 15:22	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/05/17 15:22	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/05/17 15:22	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/05/17 15:22	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 15:22	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:22	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/05/17 15:22	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 15:22	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/05/17 15:22	75-35-4	
cis-1,2-Dichloroethene	7.0	ug/L	0.50	1		04/05/17 15:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 15:22	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 15:22	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 15:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 15:22	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 15:22	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 15:22	79-34-5	
Tetrachloroethene	7.0	ug/L	0.50	1		04/05/17 15:22	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 15:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 15:22	79-00-5	
Trichloroethene	6.0	ug/L	0.50	1		04/05/17 15:22	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 15:22	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/05/17 15:22	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/05/17 15:22	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		04/05/17 15:22	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/05/17 15:22	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS3-60		Lab ID: 1285102010		Collected: 03/28/17 14:23	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 15:42	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 15:42	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/05/17 15:42	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 15:42	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 15:42	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/05/17 15:42	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/05/17 15:42	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/05/17 15:42	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 15:42	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 15:42	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/05/17 15:42	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 15:42	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/05/17 15:42	75-35-4	
cis-1,2-Dichloroethene	0.62	ug/L	0.50	1		04/05/17 15:42	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 15:42	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 15:42	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 15:42	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 15:42	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 15:42	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 15:42	79-34-5	
Tetrachloroethene	1.1	ug/L	0.50	1		04/05/17 15:42	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 15:42	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 15:42	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/05/17 15:42	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 15:42	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/05/17 15:42	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/05/17 15:42	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/05/17 15:42	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130	1		04/05/17 15:42	460-00-4	

Sample: MGMS3-40 DUP		Lab ID: 1285102012		Collected: 03/28/17 14:03	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	2.5	5		04/07/17 18:59	75-27-4	
Bromoform	ND	ug/L	2.5	5		04/07/17 18:59	75-25-2	
Bromomethane	ND	ug/L	100	5		04/07/17 18:59	74-83-9	
Carbon tetrachloride	ND	ug/L	2.5	5		04/07/17 18:59	56-23-5	
Chlorobenzene	ND	ug/L	2.5	5		04/07/17 18:59	108-90-7	
Chloroethane	ND	ug/L	10.0	5		04/07/17 18:59	75-00-3	
Chloroform	ND	ug/L	2.5	5		04/07/17 18:59	67-66-3	
Chloromethane	ND	ug/L	10.0	5		04/07/17 18:59	74-87-3	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MGMS3-40 DUP		Lab ID: 1285102012		Collected: 03/28/17 14:03		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	2.5	5		04/07/17 18:59	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	2.5	5		04/07/17 18:59	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	2.5	5		04/07/17 18:59	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	2.5	5		04/07/17 18:59	106-46-7		
1,1-Dichloroethane	20.7	ug/L	2.5	5		04/07/17 18:59	75-34-3		
1,2-Dichloroethane	ND	ug/L	2.5	5		04/07/17 18:59	107-06-2		
1,1-Dichloroethene	3.3	ug/L	2.5	5		04/07/17 18:59	75-35-4		
cis-1,2-Dichloroethene	1050	ug/L	10.0	20		04/10/17 14:25	156-59-2		
trans-1,2-Dichloroethene	6.0	ug/L	2.5	5		04/07/17 18:59	156-60-5		
1,2-Dichloropropane	ND	ug/L	2.5	5		04/07/17 18:59	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	2.5	5		04/07/17 18:59	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	2.5	5		04/07/17 18:59	10061-02-6		
Methylene Chloride	ND	ug/L	25.0	5		04/07/17 18:59	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	2.5	5		04/07/17 18:59	79-34-5		
Tetrachloroethene	ND	ug/L	2.5	5		04/07/17 18:59	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	2.5	5		04/07/17 18:59	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	2.5	5		04/07/17 18:59	79-00-5		
Trichloroethene	ND	ug/L	2.5	5		04/07/17 18:59	79-01-6		
Trichlorofluoromethane	ND	ug/L	2.5	5		04/07/17 18:59	75-69-4		
Vinyl chloride	323	ug/L	2.5	5		04/07/17 18:59	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%	70-130	5		04/07/17 18:59	17060-07-0		
Toluene-d8 (S)	101	%	70-130	5		04/07/17 18:59	2037-26-5		
4-Bromofluorobenzene (S)	101	%	70-130	5		04/07/17 18:59	460-00-4		

Sample: MW-24d		Lab ID: 1285102013		Collected: 03/28/17 11:50		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 10:29	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/06/17 10:29	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/06/17 10:29	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 10:29	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 10:29	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/06/17 10:29	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/06/17 10:29	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/06/17 10:29	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 10:29	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 10:29	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 10:29	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 10:29	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 10:29	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 10:29	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 10:29	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 10:29	156-59-2		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-24d		Lab ID: 1285102013		Collected: 03/28/17 11:50		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 10:29	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 10:29	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 10:29	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 10:29	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 10:29	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 10:29	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 10:29	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 10:29	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 10:29	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		04/06/17 10:29	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 10:29	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 10:29	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/06/17 10:29	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		04/06/17 10:29	2037-26-5		
4-Bromofluorobenzene (S)	95	%	70-130	1		04/06/17 10:29	460-00-4		

Sample: MW-2		Lab ID: 1285102014		Collected: 03/28/17 11:10		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 11:47	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/06/17 11:47	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/06/17 11:47	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 11:47	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 11:47	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/06/17 11:47	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/06/17 11:47	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/06/17 11:47	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 11:47	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 11:47	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 11:47	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 11:47	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 11:47	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 11:47	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 11:47	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 11:47	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 11:47	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 11:47	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 11:47	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 11:47	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 11:47	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 11:47	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 11:47	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 11:47	71-55-6		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-2		Lab ID: 1285102014	Collected: 03/28/17 11:10	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 11:47	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 11:47	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 11:47	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 11:47	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%	70-130	1		04/06/17 11:47	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 11:47	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	1		04/06/17 11:47	460-00-4	

Sample: MW-15		Lab ID: 1285102015	Collected: 03/28/17 10:10	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 12:07	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 12:07	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 12:07	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 12:07	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 12:07	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 12:07	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 12:07	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 12:07	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 12:07	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:07	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 12:07	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 12:07	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:07	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 12:07	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 12:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 12:07	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 12:07	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 12:07	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 12:07	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 12:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 12:07	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 12:07	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 12:07	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 12:07	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/06/17 12:07	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 12:07	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/06/17 12:07	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-5		Lab ID: 1285102016		Collected: 03/28/17 09:36		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 12:58	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/07/17 12:58	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/07/17 12:58	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 12:58	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 12:58	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/07/17 12:58	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/07/17 12:58	67-66-3		
Chloromethane	ND	ug/L	2.0	1		04/07/17 12:58	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 12:58	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 12:58	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 12:58	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 12:58	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/07/17 12:58	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/07/17 12:58	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 12:58	75-35-4		
cis-1,2-Dichloroethene	8.4	ug/L	0.50	1		04/07/17 12:58	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/07/17 12:58	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 12:58	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 12:58	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 12:58	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 12:58	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 12:58	79-34-5		
Tetrachloroethene	6.5	ug/L	0.50	1		04/07/17 12:58	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/07/17 12:58	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 12:58	79-00-5		
Trichloroethene	5.8	ug/L	0.50	1		04/07/17 12:58	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 12:58	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		04/07/17 12:58	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/07/17 12:58	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		04/07/17 12:58	2037-26-5		
4-Bromofluorobenzene (S)	99	%	70-130	1		04/07/17 12:58	460-00-4		

Sample: MW-7		Lab ID: 1285102017		Collected: 03/28/17 08:55		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 12:26	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/06/17 12:26	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/06/17 12:26	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 12:26	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 12:26	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/06/17 12:26	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/06/17 12:26	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/06/17 12:26	74-87-3		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-7	Lab ID: 1285102017	Collected: 03/28/17 08:55	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 12:26	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:26	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 12:26	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 12:26	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:26	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:26	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:26	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 12:26	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 12:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 12:26	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 12:26	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 12:26	79-34-5	
Tetrachloroethene	1.1	ug/L	0.50	1		04/06/17 12:26	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 12:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 12:26	79-00-5	
Trichloroethene	0.73	ug/L	0.50	1		04/06/17 12:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 12:26	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 12:26	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 12:26	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 12:26	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/06/17 12:26	460-00-4	

Sample: MW-7 DUP	Lab ID: 1285102018	Collected: 03/28/17 08:55	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 12:46	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 12:46	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 12:46	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 12:46	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 12:46	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 12:46	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 12:46	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 12:46	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 12:46	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 12:46	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 12:46	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 12:46	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:46	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:46	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-7 DUP		Lab ID: 1285102018	Collected: 03/28/17 08:55	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 12:46	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 12:46	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 12:46	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 12:46	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 12:46	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 12:46	79-34-5	
Tetrachloroethene	1.2	ug/L	0.50	1		04/06/17 12:46	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 12:46	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 12:46	79-00-5	
Trichloroethene	0.69	ug/L	0.50	1		04/06/17 12:46	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 12:46	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 12:46	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 12:46	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 12:46	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/06/17 12:46	460-00-4	

Sample: MW-9		Lab ID: 1285102019	Collected: 03/28/17 08:23	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 13:18	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/07/17 13:18	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/07/17 13:18	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 13:18	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 13:18	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/07/17 13:18	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/07/17 13:18	67-66-3	
Chloromethane	ND	ug/L	2.0	1		04/07/17 13:18	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 13:18	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:18	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:18	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:18	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/07/17 13:18	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/07/17 13:18	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 13:18	75-35-4	
cis-1,2-Dichloroethene	0.77	ug/L	0.50	1		04/07/17 13:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/07/17 13:18	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 13:18	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 13:18	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 13:18	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 13:18	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 13:18	79-34-5	
Tetrachloroethene	27.9	ug/L	0.50	1		04/07/17 13:18	127-18-4	
1,1,1-Trichloroethane	0.89	ug/L	0.50	1		04/07/17 13:18	71-55-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-9		Lab ID: 1285102019	Collected: 03/28/17 08:23	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 13:18	79-00-5	
Trichloroethene	12.5	ug/L	0.50	1		04/07/17 13:18	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 13:18	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/07/17 13:18	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%	70-130	1		04/07/17 13:18	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/07/17 13:18	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1		04/07/17 13:18	460-00-4	

Sample: MW-19i		Lab ID: 1285102020	Collected: 03/29/17 15:20	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 13:38	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/07/17 13:38	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/07/17 13:38	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 13:38	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 13:38	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/07/17 13:38	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/07/17 13:38	67-66-3	
Chloromethane	ND	ug/L	2.0	1		04/07/17 13:38	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 13:38	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:38	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/07/17 13:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/07/17 13:38	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 13:38	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/07/17 13:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/07/17 13:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 13:38	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 13:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 13:38	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 13:38	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 13:38	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/07/17 13:38	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/07/17 13:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 13:38	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/07/17 13:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 13:38	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/07/17 13:38	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/07/17 13:38	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/07/17 13:38	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		04/07/17 13:38	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-18i		Lab ID: 1285102021	Collected: 03/29/17 14:37	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 13:58	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/07/17 13:58	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/07/17 13:58	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 13:58	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 13:58	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/07/17 13:58	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/07/17 13:58	67-66-3	
Chloromethane	ND	ug/L	2.0	1		04/07/17 13:58	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 13:58	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 13:58	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/07/17 13:58	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/07/17 13:58	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 13:58	75-35-4	
cis-1,2-Dichloroethene	1.5	ug/L	0.50	1		04/07/17 13:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/07/17 13:58	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 13:58	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 13:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 13:58	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 13:58	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 13:58	79-34-5	
Tetrachloroethene	1.4	ug/L	0.50	1		04/07/17 13:58	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/07/17 13:58	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 13:58	79-00-5	
Trichloroethene	1.2	ug/L	0.50	1		04/07/17 13:58	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 13:58	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/07/17 13:58	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%	70-130	1		04/07/17 13:58	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/07/17 13:58	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		04/07/17 13:58	460-00-4	

Sample: MW-16		Lab ID: 1285102022	Collected: 03/29/17 13:32	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 14:18	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/07/17 14:18	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/07/17 14:18	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 14:18	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 14:18	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/07/17 14:18	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/07/17 14:18	67-66-3	
Chloromethane	ND	ug/L	2.0	1		04/07/17 14:18	74-87-3	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-16		Lab ID: 1285102022		Collected: 03/29/17 13:32		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 14:18	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 14:18	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 14:18	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 14:18	106-46-7		
1,1-Dichloroethane	1.6	ug/L	0.50	1		04/07/17 14:18	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/07/17 14:18	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 14:18	75-35-4		
cis-1,2-Dichloroethene	19.0	ug/L	0.50	1		04/07/17 14:18	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/07/17 14:18	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 14:18	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 14:18	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 14:18	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 14:18	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 14:18	79-34-5		
Tetrachloroethene	27.0	ug/L	0.50	1		04/07/17 14:18	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/07/17 14:18	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 14:18	79-00-5		
Trichloroethene	6.4	ug/L	0.50	1		04/07/17 14:18	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 14:18	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		04/07/17 14:18	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%	70-130	1		04/07/17 14:18	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		04/07/17 14:18	2037-26-5		
4-Bromofluorobenzene (S)	103	%	70-130	1		04/07/17 14:18	460-00-4		

Sample: MW-3		Lab ID: 1285102023		Collected: 03/29/17 12:48		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/07/17 14:38	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/07/17 14:38	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/07/17 14:38	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/07/17 14:38	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/07/17 14:38	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/07/17 14:38	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/07/17 14:38	67-66-3		
Chloromethane	ND	ug/L	2.0	1		04/07/17 14:38	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/07/17 14:38	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 14:38	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 14:38	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/07/17 14:38	106-46-7		
1,1-Dichloroethane	7.1	ug/L	0.50	1		04/07/17 14:38	75-34-3		
1,2-Dichloroethane	1.3	ug/L	0.50	1		04/07/17 14:38	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/07/17 14:38	75-35-4		
cis-1,2-Dichloroethene	77.9	ug/L	0.50	1		04/07/17 14:38	156-59-2		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-3		Lab ID: 1285102023		Collected: 03/29/17 12:48	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	1.2	ug/L	0.50	1		04/07/17 14:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/07/17 14:38	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 14:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/07/17 14:38	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/07/17 14:38	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/07/17 14:38	79-34-5	
Tetrachloroethene	67.6	ug/L	0.50	1		04/07/17 14:38	127-18-4	
1,1,1-Trichloroethane	0.64	ug/L	0.50	1		04/07/17 14:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/07/17 14:38	79-00-5	
Trichloroethene	20.2	ug/L	0.50	1		04/07/17 14:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/07/17 14:38	75-69-4	
Vinyl chloride	2.5	ug/L	0.50	1		04/07/17 14:38	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	106	%	70-130	1		04/07/17 14:38	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/07/17 14:38	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130	1		04/07/17 14:38	460-00-4	

Sample: MW-21i-40		Lab ID: 1285102024		Collected: 03/29/17 12:00	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 13:05	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 13:05	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 13:05	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 13:05	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 13:05	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 13:05	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 13:05	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 13:05	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 13:05	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:05	106-46-7	
1,1-Dichloroethane	2.6	ug/L	0.50	1		04/06/17 13:05	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 13:05	107-06-2	
1,1-Dichloroethene	0.91	ug/L	0.50	1		04/06/17 13:05	75-35-4	
cis-1,2-Dichloroethene	87.6	ug/L	0.50	1		04/06/17 13:05	156-59-2	
trans-1,2-Dichloroethene	0.58	ug/L	0.50	1		04/06/17 13:05	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 13:05	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 13:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 13:05	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 13:05	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 13:05	79-34-5	
Tetrachloroethene	21.8	ug/L	0.50	1		04/06/17 13:05	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 13:05	71-55-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-21i-40		Lab ID: 1285102024	Collected: 03/29/17 12:00	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 13:05	79-00-5	
Trichloroethene	16.2	ug/L	0.50	1		04/06/17 13:05	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 13:05	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 13:05	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 13:05	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 13:05	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/06/17 13:05	460-00-4	

Sample: MW-21i-105		Lab ID: 1285102025	Collected: 03/29/17 11:35	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 13:25	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 13:25	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 13:25	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 13:25	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 13:25	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 13:25	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 13:25	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 13:25	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 13:25	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:25	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 13:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 13:25	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 13:25	75-35-4	
cis-1,2-Dichloroethene	4.8	ug/L	0.50	1		04/06/17 13:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 13:25	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 13:25	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 13:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 13:25	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 13:25	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 13:25	79-34-5	
Tetrachloroethene	5.7	ug/L	0.50	1		04/06/17 13:25	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 13:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 13:25	79-00-5	
Trichloroethene	2.9	ug/L	0.50	1		04/06/17 13:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 13:25	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 13:25	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/06/17 13:25	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 13:25	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/06/17 13:25	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-22i		Lab ID: 1285102026		Collected: 03/29/17 10:38	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 13:44	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 13:44	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 13:44	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 13:44	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 13:44	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 13:44	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 13:44	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 13:44	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 13:44	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:44	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:44	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 13:44	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 13:44	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 13:44	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 13:44	75-35-4	
cis-1,2-Dichloroethene	10	ug/L	0.50	1		04/06/17 13:44	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 13:44	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 13:44	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 13:44	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 13:44	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 13:44	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 13:44	79-34-5	
Tetrachloroethene	1.1	ug/L	0.50	1		04/06/17 13:44	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 13:44	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 13:44	79-00-5	
Trichloroethene	9.7	ug/L	0.50	1		04/06/17 13:44	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 13:44	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 13:44	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/06/17 13:44	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 13:44	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	1		04/06/17 13:44	460-00-4	

Sample: MW-25i		Lab ID: 1285102027		Collected: 03/29/17 10:00	Received: 04/04/17 09:33	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 14:04	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 14:04	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 14:04	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 14:04	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 14:04	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 14:04	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 14:04	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 14:04	74-87-3	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-25i		Lab ID: 1285102027		Collected: 03/29/17 10:00		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 14:04	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:04	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:04	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:04	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 14:04	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 14:04	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 14:04	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 14:04	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 14:04	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 14:04	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 14:04	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 14:04	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 14:04	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 14:04	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 14:04	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 14:04	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 14:04	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		04/06/17 14:04	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 14:04	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 14:04	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 14:04	17060-07-0		
Toluene-d8 (S)	100	%	70-130	1		04/06/17 14:04	2037-26-5		
4-Bromofluorobenzene (S)	93	%	70-130	1		04/06/17 14:04	460-00-4		

Sample: MW-17		Lab ID: 1285102029		Collected: 03/29/17 08:47		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 14:24	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/06/17 14:24	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/06/17 14:24	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 14:24	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 14:24	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/06/17 14:24	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/06/17 14:24	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/06/17 14:24	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 14:24	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:24	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:24	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:24	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 14:24	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 14:24	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 14:24	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 14:24	156-59-2		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-17		Lab ID: 1285102029	Collected: 03/29/17 08:47	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 14:24	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 14:24	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 14:24	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 14:24	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 14:24	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 14:24	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 14:24	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 14:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 14:24	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 14:24	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 14:24	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 14:24	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/06/17 14:24	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 14:24	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/06/17 14:24	460-00-4	

Sample: MW-8		Lab ID: 1285102033	Collected: 03/30/17 13:07	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 14:43	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 14:43	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 14:43	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 14:43	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 14:43	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 14:43	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 14:43	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 14:43	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 14:43	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 14:43	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 14:43	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 14:43	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 14:43	75-35-4	
cis-1,2-Dichloroethene	35.7	ug/L	0.50	1		04/06/17 14:43	156-59-2	
trans-1,2-Dichloroethene	0.96	ug/L	0.50	1		04/06/17 14:43	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 14:43	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 14:43	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 14:43	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 14:43	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 14:43	79-34-5	
Tetrachloroethene	2.3	ug/L	0.50	1		04/06/17 14:43	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 14:43	71-55-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: MW-8		Lab ID: 1285102033	Collected: 03/30/17 13:07	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 14:43	79-00-5	
Trichloroethene	0.57	ug/L	0.50	1		04/06/17 14:43	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 14:43	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 14:43	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		04/06/17 14:43	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 14:43	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/06/17 14:43	460-00-4	

Sample: MW-20i		Lab ID: 1285102034	Collected: 03/30/17 12:00	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 15:03	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 15:03	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 15:03	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 15:03	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 15:03	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 15:03	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 15:03	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 15:03	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 15:03	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 15:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 15:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 15:03	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 15:03	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 15:03	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 15:03	75-35-4	
cis-1,2-Dichloroethene	1.5	ug/L	0.50	1		04/06/17 15:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 15:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 15:03	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 15:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 15:03	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 15:03	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 15:03	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 15:03	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 15:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 15:03	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 15:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 15:03	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 15:03	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		04/06/17 15:03	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 15:03	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130	1		04/06/17 15:03	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-10		Lab ID: 1285102035	Collected: 03/30/17 11:27	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 15:22	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 15:22	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 15:22	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 15:22	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 15:22	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 15:22	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 15:22	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 15:22	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 15:22	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 15:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 15:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 15:22	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 15:22	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 15:22	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 15:22	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 15:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 15:22	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 15:22	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 15:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 15:22	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 15:22	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 15:22	79-34-5	
Tetrachloroethene	1.4	ug/L	0.50	1		04/06/17 15:22	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 15:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 15:22	79-00-5	
Trichloroethene	1.5	ug/L	0.50	1		04/06/17 15:22	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 15:22	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 15:22	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		04/06/17 15:22	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 15:22	2037-26-5	
4-Bromofluorobenzene (S)	92	%	70-130	1		04/06/17 15:22	460-00-4	

Sample: MW-1		Lab ID: 1285102036	Collected: 03/30/17 10:52	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 00:00	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 00:00	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 00:00	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 00:00	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 00:00	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 00:00	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 00:00	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 00:00	74-87-3	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-1	Lab ID: 1285102036	Collected: 03/30/17 10:52	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 00:00	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:00	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:00	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:00	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:00	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:00	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:00	75-35-4	
cis-1,2-Dichloroethene	1.6	ug/L	0.50	1		04/06/17 00:00	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:00	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 00:00	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:00	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:00	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 00:00	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 00:00	79-34-5	
Tetrachloroethene	4.6	ug/L	0.50	1		04/06/17 00:00	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:00	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:00	79-00-5	
Trichloroethene	1.6	ug/L	0.50	1		04/06/17 00:00	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 00:00	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 00:00	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/06/17 00:00	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 00:00	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	1		04/06/17 00:00	460-00-4	

Sample: EW-1	Lab ID: 1285102037	Collected: 03/30/17 13:18	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 00:19	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 00:19	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 00:19	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 00:19	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 00:19	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 00:19	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 00:19	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 00:19	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 00:19	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:19	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:19	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:19	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:19	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:19	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: EW-1		Lab ID: 1285102037		Collected: 03/30/17 13:18		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:19	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 00:19	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:19	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:19	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 00:19	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 00:19	79-34-5		
Tetrachloroethene	10.7	ug/L	0.50	1		04/06/17 00:19	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:19	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:19	79-00-5		
Trichloroethene	2.4	ug/L	0.50	1		04/06/17 00:19	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 00:19	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 00:19	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/06/17 00:19	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		04/06/17 00:19	2037-26-5		
4-Bromofluorobenzene (S)	95	%	70-130	1		04/06/17 00:19	460-00-4		

Sample: MW-6		Lab ID: 1285102038		Collected: 03/30/17 08:28		Received: 04/04/17 09:33		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 00:39	75-27-4		
Bromoform	ND	ug/L	0.50	1		04/06/17 00:39	75-25-2		
Bromomethane	ND	ug/L	20.0	1		04/06/17 00:39	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 00:39	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 00:39	108-90-7		
Chloroethane	ND	ug/L	2.0	1		04/06/17 00:39	75-00-3		
Chloroform	ND	ug/L	0.50	1		04/06/17 00:39	67-66-3		
Chloromethane	ND	ug/L	0.50	1		04/06/17 00:39	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 00:39	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:39	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:39	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:39	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:39	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:39	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:39	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:39	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:39	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 00:39	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:39	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:39	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 00:39	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 00:39	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 00:39	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:39	71-55-6		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MW-6		Lab ID: 1285102038	Collected: 03/30/17 08:28	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:39	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 00:39	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 00:39	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 00:39	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		04/06/17 00:39	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		04/06/17 00:39	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	70-130	1		04/06/17 00:39	460-00-4	

Sample: MW-12 DUP		Lab ID: 1285102040	Collected: 03/30/17 09:30	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	2.5	5		04/07/17 02:04	75-27-4	
Bromoform	ND	ug/L	2.5	5		04/07/17 02:04	75-25-2	
Bromomethane	ND	ug/L	100	5		04/07/17 02:04	74-83-9	
Carbon tetrachloride	ND	ug/L	2.5	5		04/07/17 02:04	56-23-5	
Chlorobenzene	ND	ug/L	2.5	5		04/07/17 02:04	108-90-7	
Chloroethane	ND	ug/L	10.0	5		04/07/17 02:04	75-00-3	
Chloroform	ND	ug/L	2.5	5		04/07/17 02:04	67-66-3	
Chloromethane	ND	ug/L	2.5	5		04/07/17 02:04	74-87-3	
Dibromochloromethane	ND	ug/L	2.5	5		04/07/17 02:04	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	2.5	5		04/07/17 02:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	2.5	5		04/07/17 02:04	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	2.5	5		04/07/17 02:04	106-46-7	
1,1-Dichloroethane	11.4	ug/L	2.5	5		04/07/17 02:04	75-34-3	
1,2-Dichloroethane	ND	ug/L	2.5	5		04/07/17 02:04	107-06-2	
1,1-Dichloroethene	3.8	ug/L	2.5	5		04/07/17 02:04	75-35-4	
cis-1,2-Dichloroethene	853	ug/L	2.5	5		04/07/17 02:04	156-59-2	
trans-1,2-Dichloroethene	6.1	ug/L	2.5	5		04/07/17 02:04	156-60-5	
1,2-Dichloropropane	ND	ug/L	2.5	5		04/07/17 02:04	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	2.5	5		04/07/17 02:04	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	2.5	5		04/07/17 02:04	10061-02-6	
Methylene Chloride	ND	ug/L	25.0	5		04/07/17 02:04	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	2.5	5		04/07/17 02:04	79-34-5	
Tetrachloroethene	49.0	ug/L	2.5	5		04/07/17 02:04	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	2.5	5		04/07/17 02:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	2.5	5		04/07/17 02:04	79-00-5	
Trichloroethene	26.0	ug/L	2.5	5		04/07/17 02:04	79-01-6	
Trichlorofluoromethane	ND	ug/L	2.5	5		04/07/17 02:04	75-69-4	
Vinyl chloride	28.3	ug/L	2.5	5		04/07/17 02:04	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	70-130	5		04/07/17 02:04	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	5		04/07/17 02:04	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	70-130	5		04/07/17 02:04	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS2-40		Lab ID: 1285102041	Collected: 03/31/17 11:44	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 21:54	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 21:54	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 21:54	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 21:54	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 21:54	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 21:54	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 21:54	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 21:54	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 21:54	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:54	106-46-7	
1,1-Dichloroethane	57.6	ug/L	0.50	1		04/06/17 21:54	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 21:54	107-06-2	
1,1-Dichloroethene	14.3	ug/L	0.50	1		04/06/17 21:54	75-35-4	
cis-1,2-Dichloroethene	236	ug/L	5.0	10		04/07/17 21:03	156-59-2	
trans-1,2-Dichloroethene	0.60	ug/L	0.50	1		04/06/17 21:54	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 21:54	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 21:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 21:54	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 21:54	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 21:54	79-34-5	
Tetrachloroethene	4.3	ug/L	0.50	1		04/06/17 21:54	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 21:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 21:54	79-00-5	
Trichloroethene	14.4	ug/L	0.50	1		04/06/17 21:54	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 21:54	75-69-4	
Vinyl chloride	235	ug/L	5.0	10		04/07/17 21:03	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		04/06/17 21:54	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 21:54	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/06/17 21:54	460-00-4	

Sample: MGMS2-110		Lab ID: 1285102042	Collected: 03/31/17 10:00	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 22:14	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 22:14	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 22:14	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 22:14	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 22:14	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 22:14	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 22:14	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 22:14	74-87-3	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS2-110	Lab ID: 1285102042	Collected: 03/31/17 10:00	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 22:14	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:14	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 22:14	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 22:14	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 22:14	75-35-4	
cis-1,2-Dichloroethene	19.5	ug/L	0.50	1		04/06/17 22:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 22:14	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 22:14	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 22:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 22:14	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 22:14	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 22:14	79-34-5	
Tetrachloroethene	6.4	ug/L	0.50	1		04/06/17 22:14	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 22:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 22:14	79-00-5	
Trichloroethene	6.6	ug/L	0.50	1		04/06/17 22:14	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 22:14	75-69-4	
Vinyl chloride	6.4	ug/L	0.50	1		04/06/17 22:14	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 22:14	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 22:14	2037-26-5	
4-Bromofluorobenzene (S)	92	%	70-130	1		04/06/17 22:14	460-00-4	

Sample: MGMS2-60	Lab ID: 1285102043	Collected: 03/31/17 11:17	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 22:33	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 22:33	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 22:33	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 22:33	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 22:33	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 22:33	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 22:33	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 22:33	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 22:33	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:33	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:33	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:33	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 22:33	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 22:33	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 22:33	75-35-4	
cis-1,2-Dichloroethene	18.5	ug/L	0.50	1		04/06/17 22:33	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS2-60		Lab ID: 1285102043	Collected: 03/31/17 11:17	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 22:33	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 22:33	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 22:33	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 22:33	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 22:33	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 22:33	79-34-5	
Tetrachloroethene	26.0	ug/L	0.50	1		04/06/17 22:33	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 22:33	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 22:33	79-00-5	
Trichloroethene	11.2	ug/L	0.50	1		04/06/17 22:33	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 22:33	75-69-4	
Vinyl chloride	0.75	ug/L	0.50	1		04/06/17 22:33	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 22:33	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 22:33	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/06/17 22:33	460-00-4	

Sample: MGMS2-132		Lab ID: 1285102044	Collected: 03/31/17 10:27	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 22:52	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 22:52	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 22:52	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 22:52	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 22:52	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 22:52	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 22:52	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 22:52	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 22:52	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 22:52	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 22:52	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 22:52	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 22:52	75-35-4	
cis-1,2-Dichloroethene	15.6	ug/L	0.50	1		04/06/17 22:52	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 22:52	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 22:52	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 22:52	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 22:52	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 22:52	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 22:52	79-34-5	
Tetrachloroethene	5.2	ug/L	0.50	1		04/06/17 22:52	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 22:52	71-55-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS2-132		Lab ID: 1285102044	Collected: 03/31/17 10:27	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 22:52	79-00-5	
Trichloroethene	4.7	ug/L	0.50	1		04/06/17 22:52	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 22:52	75-69-4	
Vinyl chloride	4.8	ug/L	0.50	1		04/06/17 22:52	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 22:52	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/06/17 22:52	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/06/17 22:52	460-00-4	

Sample: MGMS1-132		Lab ID: 1285102045	Collected: 03/31/17 09:20	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 23:12	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 23:12	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 23:12	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 23:12	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 23:12	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 23:12	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 23:12	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 23:12	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 23:12	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:12	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:12	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:12	106-46-7	
1,1-Dichloroethane	13.3	ug/L	0.50	1		04/06/17 23:12	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 23:12	107-06-2	
1,1-Dichloroethene	1.1	ug/L	0.50	1		04/06/17 23:12	75-35-4	
cis-1,2-Dichloroethene	328	ug/L	5.0	10		04/07/17 21:22	156-59-2	
trans-1,2-Dichloroethene	0.70	ug/L	0.50	1		04/06/17 23:12	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 23:12	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 23:12	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 23:12	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 23:12	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 23:12	79-34-5	
Tetrachloroethene	20.1	ug/L	0.50	1		04/06/17 23:12	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 23:12	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 23:12	79-00-5	
Trichloroethene	62.0	ug/L	0.50	1		04/06/17 23:12	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 23:12	75-69-4	
Vinyl chloride	6.5	ug/L	0.50	1		04/06/17 23:12	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/06/17 23:12	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 23:12	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/06/17 23:12	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: MGMS1-60		Lab ID: 1285102046	Collected: 03/31/17 08:58	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 23:31	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 23:31	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 23:31	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 23:31	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 23:31	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 23:31	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 23:31	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 23:31	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 23:31	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 23:31	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 23:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 23:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 23:31	75-35-4	
cis-1,2-Dichloroethene	15.6	ug/L	0.50	1		04/06/17 23:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 23:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 23:31	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 23:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 23:31	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 23:31	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 23:31	79-34-5	
Tetrachloroethene	13.6	ug/L	0.50	1		04/06/17 23:31	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 23:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 23:31	79-00-5	
Trichloroethene	13.2	ug/L	0.50	1		04/06/17 23:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 23:31	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 23:31	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/06/17 23:31	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 23:31	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	1		04/06/17 23:31	460-00-4	

Sample: Equipment Blank		Lab ID: 1285102048	Collected: 03/30/17 15:40	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 21:35	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 21:35	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 21:35	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 21:35	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 21:35	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 21:35	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 21:35	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 21:35	74-87-3	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: Equipment Blank	Lab ID: 1285102048	Collected: 03/30/17 15:40	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 21:35	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:35	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 21:35	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 21:35	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 21:35	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 21:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 21:35	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 21:35	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 21:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 21:35	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 21:35	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 21:35	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 21:35	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 21:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 21:35	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 21:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 21:35	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 21:35	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%	70-130	1		04/06/17 21:35	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/06/17 21:35	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	1		04/06/17 21:35	460-00-4	

Sample: Field Blank	Lab ID: 1285102049	Collected: 03/27/17 15:50	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/05/17 13:43	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/05/17 13:43	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/05/17 13:43	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/05/17 13:43	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/05/17 13:43	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/05/17 13:43	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/05/17 13:43	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/05/17 13:43	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/05/17 13:43	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/05/17 13:43	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/05/17 13:43	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/05/17 13:43	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:43	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:43	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: Field Blank		Lab ID: 1285102049	Collected: 03/27/17 15:50	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/05/17 13:43	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/05/17 13:43	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 13:43	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/05/17 13:43	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/05/17 13:43	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/05/17 13:43	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/05/17 13:43	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/05/17 13:43	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/05/17 13:43	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/05/17 13:43	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/05/17 13:43	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/05/17 13:43	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/05/17 13:43	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/05/17 13:43	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	1		04/05/17 13:43	460-00-4	

Sample: Field Blank		Lab ID: 1285102050	Collected: 03/28/17 16:30	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 00:58	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 00:58	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 00:58	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 00:58	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 00:58	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 00:58	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 00:58	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 00:58	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 00:58	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 00:58	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:58	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 00:58	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:58	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 00:58	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 00:58	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 00:58	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 00:58	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 00:58	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 00:58	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:58	71-55-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Sample: Field Blank		Lab ID: 1285102050	Collected: 03/28/17 16:30	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 00:58	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 00:58	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 00:58	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 00:58	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	70-130	1		04/06/17 00:58	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		04/06/17 00:58	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	70-130	1		04/06/17 00:58	460-00-4	

Sample: Field Blank		Lab ID: 1285102051	Collected: 03/29/17 15:40	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 01:18	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 01:18	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 01:18	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 01:18	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 01:18	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 01:18	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 01:18	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 01:18	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 01:18	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 01:18	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 01:18	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 01:18	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 01:18	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 01:18	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 01:18	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 01:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 01:18	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 01:18	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 01:18	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 01:18	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 01:18	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 01:18	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 01:18	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 01:18	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 01:18	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 01:18	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 01:18	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 01:18	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	70-130	1		04/06/17 01:18	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		04/06/17 01:18	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	70-130	1		04/06/17 01:18	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: Field Blank		Lab ID: 1285102052	Collected: 03/30/17 15:40	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 01:38	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 01:38	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 01:38	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 01:38	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 01:38	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 01:38	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 01:38	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 01:38	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 01:38	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 01:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 01:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 01:38	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 01:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 01:38	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 01:38	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 01:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 01:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 01:38	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 01:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 01:38	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 01:38	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 01:38	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 01:38	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 01:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 01:38	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 01:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 01:38	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 01:38	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/06/17 01:38	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		04/06/17 01:38	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	1		04/06/17 01:38	460-00-4	

Sample: Field Blank		Lab ID: 1285102053	Collected: 03/31/17 10:00	Received: 04/04/17 09:33	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		04/06/17 21:15	75-27-4	
Bromoform	ND	ug/L	0.50	1		04/06/17 21:15	75-25-2	
Bromomethane	ND	ug/L	20.0	1		04/06/17 21:15	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		04/06/17 21:15	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		04/06/17 21:15	108-90-7	
Chloroethane	ND	ug/L	2.0	1		04/06/17 21:15	75-00-3	
Chloroform	ND	ug/L	0.50	1		04/06/17 21:15	67-66-3	
Chloromethane	ND	ug/L	0.50	1		04/06/17 21:15	74-87-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Sample: Field Blank	Lab ID: 1285102053	Collected: 03/31/17 10:00	Received: 04/04/17 09:33	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		04/06/17 21:15	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		04/06/17 21:15	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		04/06/17 21:15	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		04/06/17 21:15	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		04/06/17 21:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 21:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		04/06/17 21:15	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		04/06/17 21:15	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 21:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		04/06/17 21:15	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		04/06/17 21:15	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		04/06/17 21:15	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		04/06/17 21:15	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		04/06/17 21:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		04/06/17 21:15	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		04/06/17 21:15	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		04/06/17 21:15	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		04/06/17 21:15	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%.	70-130	1		04/06/17 21:15	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		04/06/17 21:15	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	70-130	1		04/06/17 21:15	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

QC Batch: 467360 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 1285102002, 1285102005, 1285102006, 1285102011, 1285102028, 1285102030, 1285102031, 1285102032, 1285102039, 1285102047

METHOD BLANK: 2553396 Matrix: Water
Associated Lab Samples: 1285102002, 1285102005, 1285102006, 1285102011, 1285102028, 1285102030, 1285102031, 1285102032, 1285102039, 1285102047

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	04/10/17 09:51	
Ethene	ug/L	ND	10.0	04/10/17 09:51	
Methane	ug/L	ND	10.0	04/10/17 09:51	

LABORATORY CONTROL SAMPLE & LCSD: 2553397

Parameter	Units	2553398					% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec				
Ethane	ug/L	114	106	107	93	94	85-115	1	20	
Ethene	ug/L	106	99.9	101	94	95	85-115	1	20	
Methane	ug/L	60.7	56.2	57.8	93	95	85-115	3	20	

SAMPLE DUPLICATE: 2556437

Parameter	Units	1285102002 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	1180	2640	76	20 R1	

SAMPLE DUPLICATE: 2556438

Parameter	Units	1285102047 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	19.4	19.6	1	20	
Ethene	ug/L	14.8	11.7	24	20 R1	
Methane	ug/L	3380	3340	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

QC Batch: 110023 Analysis Method: EPA 8260B
 QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
 Associated Lab Samples: 1285102001, 1285102002, 1285102003, 1285102004, 1285102005, 1285102006, 1285102008, 1285102009,
 1285102010, 1285102011, 1285102028, 1285102030, 1285102031, 1285102039, 1285102049

METHOD BLANK: 435227 Matrix: Water
 Associated Lab Samples: 1285102001, 1285102002, 1285102003, 1285102004, 1285102005, 1285102006, 1285102008, 1285102009,
 1285102010, 1285102011, 1285102028, 1285102030, 1285102031, 1285102039, 1285102049

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	04/05/17 10:07	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	04/05/17 10:07	
1,1,2-Trichloroethane	ug/L	ND	0.50	04/05/17 10:07	
1,1-Dichloroethane	ug/L	ND	0.50	04/05/17 10:07	
1,1-Dichloroethene	ug/L	ND	0.50	04/05/17 10:07	
1,2-Dichlorobenzene	ug/L	ND	0.50	04/05/17 10:07	
1,2-Dichloroethane	ug/L	ND	0.50	04/05/17 10:07	
1,2-Dichloropropane	ug/L	ND	0.50	04/05/17 10:07	
1,3-Dichlorobenzene	ug/L	ND	0.50	04/05/17 10:07	
1,4-Dichlorobenzene	ug/L	ND	0.50	04/05/17 10:07	
Bromodichloromethane	ug/L	ND	0.50	04/05/17 10:07	
Bromoform	ug/L	ND	0.50	04/05/17 10:07	
Bromomethane	ug/L	ND	20.0	04/05/17 10:07	
Carbon tetrachloride	ug/L	ND	0.50	04/05/17 10:07	
Chlorobenzene	ug/L	ND	0.50	04/05/17 10:07	
Chloroethane	ug/L	ND	2.0	04/05/17 10:07	
Chloroform	ug/L	ND	0.50	04/05/17 10:07	
Chloromethane	ug/L	ND	0.50	04/05/17 10:07	
cis-1,2-Dichloroethene	ug/L	ND	0.50	04/05/17 10:07	
cis-1,3-Dichloropropene	ug/L	ND	0.50	04/05/17 10:07	
Dibromochloromethane	ug/L	ND	0.50	04/05/17 10:07	
Methylene Chloride	ug/L	ND	5.0	04/05/17 10:07	
Tetrachloroethene	ug/L	ND	0.50	04/05/17 10:07	
trans-1,2-Dichloroethene	ug/L	ND	0.50	04/05/17 10:07	
trans-1,3-Dichloropropene	ug/L	ND	0.50	04/05/17 10:07	
Trichloroethene	ug/L	ND	0.50	04/05/17 10:07	
Trichlorofluoromethane	ug/L	ND	0.50	04/05/17 10:07	
Vinyl chloride	ug/L	ND	0.50	04/05/17 10:07	
1,2-Dichloroethane-d4 (S)	%	101	70-130	04/05/17 10:07	
4-Bromofluorobenzene (S)	%	95	70-130	04/05/17 10:07	
Toluene-d8 (S)	%	100	70-130	04/05/17 10:07	

LABORATORY CONTROL SAMPLE: 435228

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	40.8	102	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	38.4	96	75-125	
1,1,2-Trichloroethane	ug/L	40	38.5	96	75-126	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

LABORATORY CONTROL SAMPLE: 435228

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	39.3	98	71-131	
1,1-Dichloroethene	ug/L	40	38.3	96	74-126	
1,2-Dichlorobenzene	ug/L	40	39.2	98	75-125	
1,2-Dichloroethane	ug/L	40	39.6	99	64-141	
1,2-Dichloropropane	ug/L	40	39.9	100	73-127	
1,3-Dichlorobenzene	ug/L	40	39.5	99	75-125	
1,4-Dichlorobenzene	ug/L	40	37.5	94	75-125	
Bromodichloromethane	ug/L	40	40.5	101	70-134	
Bromoform	ug/L	40	40.0	100	68-130	
Bromomethane	ug/L	40	41.9	105	30-150	
Carbon tetrachloride	ug/L	40	41.4	104	66-135	
Chlorobenzene	ug/L	40	39.5	99	75-125	
Chloroethane	ug/L	40	38.8	97	55-150	
Chloroform	ug/L	40	40.7	102	72-131	
Chloromethane	ug/L	40	36.8	92	54-132	
cis-1,2-Dichloroethene	ug/L	40	40.2	101	75-125	
cis-1,3-Dichloropropene	ug/L	40	41.8	104	74-130	
Dibromochloromethane	ug/L	40	43.2	108	70-132	
Methylene Chloride	ug/L	40	39.2	98	68-125	
Tetrachloroethene	ug/L	40	40.0	100	75-130	
trans-1,2-Dichloroethene	ug/L	40	39.7	99	75-125	
trans-1,3-Dichloropropene	ug/L	40	39.9	100	69-137	
Trichloroethene	ug/L	40	42.7	107	75-125	
Trichlorofluoromethane	ug/L	40	42.2	105	59-140	
Vinyl chloride	ug/L	40	39.3	98	68-132	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			105	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 435229 435230

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1285102039 Result	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	ND	800	800	834	845	104	106	63-142	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	800	800	790	816	99	102	75-125	3	30		
1,1,2-Trichloroethane	ug/L	ND	800	800	784	791	98	99	75-132	1	30		
1,1-Dichloroethane	ug/L	ND	800	800	818	823	102	103	75-126	1	30		
1,1-Dichloroethene	ug/L	ND	800	800	752	759	94	95	75-125	1	30		
1,2-Dichlorobenzene	ug/L	ND	800	800	778	817	97	102	75-125	5	30		
1,2-Dichloroethane	ug/L	ND	800	800	805	813	101	102	75-137	1	30		
1,2-Dichloropropane	ug/L	ND	800	800	806	816	101	102	74-131	1	30		
1,3-Dichlorobenzene	ug/L	ND	800	800	789	828	99	104	75-126	5	30		
1,4-Dichlorobenzene	ug/L	ND	800	800	743	776	93	97	73-125	4	30		
Bromodichloromethane	ug/L	ND	800	800	826	834	103	104	65-137	1	30		
Bromoform	ug/L	ND	800	800	804	829	100	104	60-147	3	30		

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 435229		435230		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1285102039 Result	MS Spike Conc.	MSD Spike Conc.	MS Result										
Bromomethane	ug/L	ND	800	800	790	821	99	103	30-150	4	30				
Carbon tetrachloride	ug/L	ND	800	800	847	861	106	108	45-150	2	30				
Chlorobenzene	ug/L	ND	800	800	804	799	100	100	75-125	1	30				
Chloroethane	ug/L	ND	800	800	788	801	99	100	66-145	2	30				
Chloroform	ug/L	ND	800	800	830	832	104	104	74-128	0	30				
Chloromethane	ug/L	ND	800	800	726	740	91	92	51-150	2	30				
cis-1,2-Dichloroethene	ug/L	1120	800	800	1940	1930	103	101	75-125	1	30				
cis-1,3-Dichloropropene	ug/L	ND	800	800	845	857	106	107	75-129	1	30				
Dibromochloromethane	ug/L	ND	800	800	870	883	109	110	66-141	1	30				
Methylene Chloride	ug/L	ND	800	800	804	792	101	99	74-125	1	30				
Tetrachloroethene	ug/L	55.9	800	800	855	894	100	105	75-135	4	30				
trans-1,2-Dichloroethene	ug/L	ND	800	800	817	829	101	103	75-125	1	30				
trans-1,3-Dichloropropene	ug/L	ND	800	800	811	826	101	103	67-139	2	30				
Trichloroethene	ug/L	29.6	800	800	894	893	108	108	75-130	0	30				
Trichlorofluoromethane	ug/L	ND	800	800	855	873	107	109	57-144	2	30				
Vinyl chloride	ug/L	37.8	800	800	823	855	98	102	70-136	4	30				
1,2-Dichloroethane-d4 (S)	%.						97	96	70-130						
4-Bromofluorobenzene (S)	%.						108	105	70-130						
Toluene-d8 (S)	%.						102	99	70-130						

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

QC Batch: 110037 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1285102012, 1285102013, 1285102014, 1285102015, 1285102016, 1285102017, 1285102018, 1285102019, 1285102020, 1285102021, 1285102022, 1285102023, 1285102024, 1285102025, 1285102026, 1285102027, 1285102029, 1285102033, 1285102034, 1285102035

METHOD BLANK: 435275 Matrix: Water
Associated Lab Samples: 1285102012, 1285102013, 1285102014, 1285102015, 1285102016, 1285102017, 1285102018, 1285102019, 1285102020, 1285102021, 1285102022, 1285102023, 1285102024, 1285102025, 1285102026, 1285102027, 1285102029, 1285102033, 1285102034, 1285102035

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	04/06/17 10:10	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	04/06/17 10:10	
1,1,2-Trichloroethane	ug/L	ND	0.50	04/06/17 10:10	
1,1-Dichloroethane	ug/L	ND	0.50	04/06/17 10:10	
1,1-Dichloroethene	ug/L	ND	0.50	04/06/17 10:10	
1,2-Dichlorobenzene	ug/L	ND	0.50	04/06/17 10:10	
1,2-Dichloroethane	ug/L	ND	0.50	04/06/17 10:10	
1,2-Dichloropropane	ug/L	ND	0.50	04/06/17 10:10	
1,3-Dichlorobenzene	ug/L	ND	0.50	04/06/17 10:10	
1,4-Dichlorobenzene	ug/L	ND	0.50	04/06/17 10:10	
Bromodichloromethane	ug/L	ND	0.50	04/06/17 10:10	
Bromoform	ug/L	ND	0.50	04/06/17 10:10	
Bromomethane	ug/L	ND	20.0	04/06/17 10:10	
Carbon tetrachloride	ug/L	ND	0.50	04/06/17 10:10	
Chlorobenzene	ug/L	ND	0.50	04/06/17 10:10	
Chloroethane	ug/L	ND	2.0	04/06/17 10:10	
Chloroform	ug/L	ND	0.50	04/06/17 10:10	
Chloromethane	ug/L	ND	0.50	04/06/17 10:10	
cis-1,2-Dichloroethene	ug/L	ND	0.50	04/06/17 10:10	
cis-1,3-Dichloropropene	ug/L	ND	0.50	04/06/17 10:10	
Dibromochloromethane	ug/L	ND	0.50	04/06/17 10:10	
Methylene Chloride	ug/L	ND	5.0	04/06/17 10:10	
Tetrachloroethene	ug/L	ND	0.50	04/06/17 10:10	
trans-1,2-Dichloroethene	ug/L	ND	0.50	04/06/17 10:10	
trans-1,3-Dichloropropene	ug/L	ND	0.50	04/06/17 10:10	
Trichloroethene	ug/L	ND	0.50	04/06/17 10:10	
Trichlorofluoromethane	ug/L	ND	0.50	04/06/17 10:10	
Vinyl chloride	ug/L	ND	0.50	04/06/17 10:10	
1,2-Dichloroethane-d4 (S)	%	102	70-130	04/06/17 10:10	
4-Bromofluorobenzene (S)	%	94	70-130	04/06/17 10:10	
Toluene-d8 (S)	%	102	70-130	04/06/17 10:10	

LABORATORY CONTROL SAMPLE: 435276

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	42.5	106	67-138	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

LABORATORY CONTROL SAMPLE: 435276

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,2,2-Tetrachloroethane	ug/L	40	36.7	92	75-125	
1,1,2-Trichloroethane	ug/L	40	38.3	96	75-126	
1,1-Dichloroethane	ug/L	40	40.6	102	71-131	
1,1-Dichloroethene	ug/L	40	40.5	101	74-126	
1,2-Dichlorobenzene	ug/L	40	41.2	103	75-125	
1,2-Dichloroethane	ug/L	40	40.1	100	64-141	
1,2-Dichloropropane	ug/L	40	41.8	105	73-127	
1,3-Dichlorobenzene	ug/L	40	43.3	108	75-125	
1,4-Dichlorobenzene	ug/L	40	40.7	102	75-125	
Bromodichloromethane	ug/L	40	42.6	106	70-134	
Bromoform	ug/L	40	38.3	96	68-130	
Bromomethane	ug/L	40	31.4	78	30-150	
Carbon tetrachloride	ug/L	40	44.2	110	66-135	
Chlorobenzene	ug/L	40	41.3	103	75-125	
Chloroethane	ug/L	40	40.5	101	55-150	
Chloroform	ug/L	40	41.7	104	72-131	
Chloromethane	ug/L	40	36.4	91	54-132	
cis-1,2-Dichloroethene	ug/L	40	41.3	103	75-125	
cis-1,3-Dichloropropene	ug/L	40	43.1	108	74-130	
Dibromochloromethane	ug/L	40	43.6	109	70-132	
Methylene Chloride	ug/L	40	40.3	101	68-125	
Tetrachloroethene	ug/L	40	43.0	108	75-130	
trans-1,2-Dichloroethene	ug/L	40	40.7	102	75-125	
trans-1,3-Dichloropropene	ug/L	40	40.6	101	69-137	
Trichloroethene	ug/L	40	43.6	109	75-125	
Trichlorofluoromethane	ug/L	40	46.2	115	59-140	
Vinyl chloride	ug/L	40	41.4	104	68-132	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			107	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 435277 435278

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1285102013 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	ND	40	40	41.5	41.7	104	104	63-142	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	37.9	38.0	95	95	75-125	0	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	39.1	38.1	98	95	75-132	3	30	
1,1-Dichloroethane	ug/L	ND	40	40	40.0	39.7	100	99	75-126	1	30	
1,1-Dichloroethene	ug/L	ND	40	40	38.0	38.3	95	96	75-125	1	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	39.9	40.5	100	101	75-125	2	30	
1,2-Dichloroethane	ug/L	ND	40	40	40.3	39.9	101	100	75-137	1	30	
1,2-Dichloropropane	ug/L	ND	40	40	40.7	40.3	102	101	74-131	1	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	41.2	41.1	103	103	75-126	0	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	38.3	38.4	95	96	73-125	0	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 435277		435278		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1285102013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Bromodichloromethane	ug/L	ND	40	40	41.5	41.5	104	104	65-137	0	30		
Bromoform	ug/L	ND	40	40	38.2	38.0	96	95	60-147	1	30		
Bromomethane	ug/L	ND	40	40	25.7	31.3	64	78	30-150	20	30		
Carbon tetrachloride	ug/L	ND	40	40	42.1	42.2	105	105	45-150	0	30		
Chlorobenzene	ug/L	ND	40	40	39.6	40.0	99	100	75-125	1	30		
Chloroethane	ug/L	ND	40	40	40.2	40.4	101	101	66-145	0	30		
Chloroform	ug/L	ND	40	40	41.2	41.1	103	103	74-128	0	30		
Chloromethane	ug/L	ND	40	40	33.6	33.4	84	84	51-150	1	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	40.9	40.6	102	101	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	41.1	40.7	103	102	75-129	1	30		
Dibromochloromethane	ug/L	ND	40	40	43.5	42.4	109	106	66-141	2	30		
Methylene Chloride	ug/L	ND	40	40	39.5	39.9	99	100	74-125	1	30		
Tetrachloroethene	ug/L	ND	40	40	40.0	40.5	100	101	75-135	1	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	39.9	39.9	100	100	75-125	0	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	39.7	38.8	99	97	67-139	2	30		
Trichloroethene	ug/L	ND	40	40	41.9	41.8	105	105	75-130	0	30		
Trichlorofluoromethane	ug/L	ND	40	40	43.8	39.0	110	98	57-144	12	30		
Vinyl chloride	ug/L	ND	40	40	39.4	40.5	98	101	70-136	3	30		
1,2-Dichloroethane-d4 (S)	%						96	95	70-130				
4-Bromofluorobenzene (S)	%						106	104	70-130				
Toluene-d8 (S)	%						101	101	70-130				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

QC Batch: 110090 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1285102036, 1285102037, 1285102038, 1285102050, 1285102051, 1285102052

METHOD BLANK: 435455 Matrix: Water
Associated Lab Samples: 1285102036, 1285102037, 1285102038, 1285102050, 1285102051, 1285102052

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	04/05/17 18:47	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	04/05/17 18:47	
1,1,2-Trichloroethane	ug/L	ND	0.50	04/05/17 18:47	
1,1-Dichloroethane	ug/L	ND	0.50	04/05/17 18:47	
1,1-Dichloroethene	ug/L	ND	0.50	04/05/17 18:47	
1,2-Dichlorobenzene	ug/L	ND	0.50	04/05/17 18:47	
1,2-Dichloroethane	ug/L	ND	0.50	04/05/17 18:47	
1,2-Dichloropropane	ug/L	ND	0.50	04/05/17 18:47	
1,3-Dichlorobenzene	ug/L	ND	0.50	04/05/17 18:47	
1,4-Dichlorobenzene	ug/L	ND	0.50	04/05/17 18:47	
Bromodichloromethane	ug/L	ND	0.50	04/05/17 18:47	
Bromoform	ug/L	ND	0.50	04/05/17 18:47	
Bromomethane	ug/L	ND	20.0	04/05/17 18:47	
Carbon tetrachloride	ug/L	ND	0.50	04/05/17 18:47	
Chlorobenzene	ug/L	ND	0.50	04/05/17 18:47	
Chloroethane	ug/L	ND	2.0	04/05/17 18:47	
Chloroform	ug/L	ND	0.50	04/05/17 18:47	
Chloromethane	ug/L	ND	0.50	04/05/17 18:47	
cis-1,2-Dichloroethene	ug/L	ND	0.50	04/05/17 18:47	
cis-1,3-Dichloropropene	ug/L	ND	0.50	04/05/17 18:47	
Dibromochloromethane	ug/L	ND	0.50	04/05/17 18:47	
Methylene Chloride	ug/L	ND	5.0	04/05/17 18:47	
Tetrachloroethene	ug/L	ND	0.50	04/05/17 18:47	
trans-1,2-Dichloroethene	ug/L	ND	0.50	04/05/17 18:47	
trans-1,3-Dichloropropene	ug/L	ND	0.50	04/05/17 18:47	
Trichloroethene	ug/L	ND	0.50	04/05/17 18:47	
Trichlorofluoromethane	ug/L	ND	0.50	04/05/17 18:47	
Vinyl chloride	ug/L	ND	0.50	04/05/17 18:47	
1,2-Dichloroethane-d4 (S)	%	102	70-130	04/05/17 18:47	
4-Bromofluorobenzene (S)	%	93	70-130	04/05/17 18:47	
Toluene-d8 (S)	%	101	70-130	04/05/17 18:47	

LABORATORY CONTROL SAMPLE: 435456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	41.8	104	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	38.8	97	75-125	
1,1,2-Trichloroethane	ug/L	40	39.6	99	75-126	
1,1-Dichloroethane	ug/L	40	40.2	100	71-131	
1,1-Dichloroethene	ug/L	40	38.9	97	74-126	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

LABORATORY CONTROL SAMPLE: 435456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	40.9	102	75-125	
1,2-Dichloroethane	ug/L	40	40.8	102	64-141	
1,2-Dichloropropane	ug/L	40	41.4	104	73-127	
1,3-Dichlorobenzene	ug/L	40	43.0	107	75-125	
1,4-Dichlorobenzene	ug/L	40	39.3	98	75-125	
Bromodichloromethane	ug/L	40	41.6	104	70-134	
Bromoform	ug/L	40	38.6	97	68-130	
Bromomethane	ug/L	40	40.6	101	30-150	
Carbon tetrachloride	ug/L	40	42.5	106	66-135	
Chlorobenzene	ug/L	40	40.9	102	75-125	
Chloroethane	ug/L	40	40.4	101	55-150	
Chloroform	ug/L	40	41.7	104	72-131	
Chloromethane	ug/L	40	36.3	91	54-132	
cis-1,2-Dichloroethene	ug/L	40	40.4	101	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.1	105	74-130	
Dibromochloromethane	ug/L	40	42.9	107	70-132	
Methylene Chloride	ug/L	40	40.0	100	68-125	
Tetrachloroethene	ug/L	40	42.9	107	75-130	
trans-1,2-Dichloroethene	ug/L	40	40.7	102	75-125	
trans-1,3-Dichloropropene	ug/L	40	40.2	100	69-137	
Trichloroethene	ug/L	40	43.2	108	75-125	
Trichlorofluoromethane	ug/L	40	44.0	110	59-140	
Vinyl chloride	ug/L	40	39.1	98	68-132	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			106	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 435457 435458

Parameter	Units	1285106002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
1,1,1-Trichloroethane	ug/L	<0.14	40	40	43.5	43.5	109	109	109	63-142	0	30	
1,1,2,2-Tetrachloroethane	ug/L	<0.12	40	40	40.5	38.6	101	97	97	75-125	5	30	
1,1,2-Trichloroethane	ug/L	<0.15	40	40	40.8	39.5	102	99	99	75-132	3	30	
1,1-Dichloroethane	ug/L	<0.12	40	40	41.9	41.5	105	104	104	75-126	1	30	
1,1-Dichloroethene	ug/L	<0.18	40	40	40.4	40.3	101	101	101	75-125	0	30	
1,2-Dichlorobenzene	ug/L	<0.11	40	40	42.3	41.9	106	105	105	75-125	1	30	
1,2-Dichloroethane	ug/L	<0.10	40	40	41.9	41.1	105	103	103	75-137	2	30	
1,2-Dichloropropane	ug/L	<0.13	40	40	42.8	42.1	107	105	105	74-131	2	30	
1,3-Dichlorobenzene	ug/L	<0.20	40	40	44.5	43.2	111	108	108	75-126	3	30	
1,4-Dichlorobenzene	ug/L	<0.12	40	40	41.0	40.5	103	101	101	73-125	1	30	
Bromodichloromethane	ug/L	<0.098	40	40	42.7	41.9	107	105	105	65-137	2	30	
Bromoform	ug/L	<0.18	40	40	39.8	38.2	100	96	96	60-147	4	30	
Bromomethane	ug/L	<0.25	40	40	43.6	46.1	109	115	115	30-150	6	30	
Carbon tetrachloride	ug/L	<0.12	40	40	43.8	43.9	110	110	110	45-150	0	30	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Parameter	Units	1285106002		435457		435458		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Chlorobenzene	ug/L	<0.14	40	40	42.3	41.1	106	103	75-125	3	30		
Chloroethane	ug/L	<0.27	40	40	41.6	41.2	104	103	66-145	1	30		
Chloroform	ug/L	<0.098	40	40	43.1	42.6	108	106	74-128	1	30		
Chloromethane	ug/L	<0.15	40	40	38.2	38.1	96	95	51-150	0	30		
cis-1,2-Dichloroethene	ug/L	<0.19	40	40	41.6	41.7	104	104	75-125	0	30		
cis-1,3-Dichloropropene	ug/L	<0.081	40	40	42.5	42.5	106	106	75-129	0	30		
Dibromochloromethane	ug/L	<0.13	40	40	44.7	43.6	112	109	66-141	2	30		
Methylene Chloride	ug/L	<0.11	40	40	40.3	41.5	101	104	74-125	3	30		
Tetrachloroethene	ug/L	<0.12	40	40	43.6	42.8	109	107	75-135	2	30		
trans-1,2-Dichloroethene	ug/L	<0.11	40	40	41.6	40.8	104	102	75-125	2	30		
trans-1,3-Dichloropropene	ug/L	<0.089	40	40	40.7	40.5	102	101	67-139	1	30		
Trichloroethene	ug/L	<0.11	40	40	43.7	43.3	109	108	75-130	1	30		
Trichlorofluoromethane	ug/L	<0.12	40	40	40.8	44.3	102	111	57-144	8	30		
Vinyl chloride	ug/L	<0.20	40	40	40.4	40.0	101	100	70-136	1	30		
1,2-Dichloroethane-d4 (S)	%						97	97	70-130				
4-Bromofluorobenzene (S)	%						107	105	70-130				
Toluene-d8 (S)	%						102	102	70-130				

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

QC Batch: 110196 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1285102007, 1285102011, 1285102031, 1285102032, 1285102040, 1285102041, 1285102042, 1285102043, 1285102044, 1285102045, 1285102046, 1285102047, 1285102048, 1285102053

METHOD BLANK: 435849 Matrix: Water
Associated Lab Samples: 1285102007, 1285102011, 1285102031, 1285102032, 1285102040, 1285102041, 1285102042, 1285102043, 1285102044, 1285102045, 1285102046, 1285102047, 1285102048, 1285102053

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	04/06/17 19:38	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	04/06/17 19:38	
1,1,2-Trichloroethane	ug/L	ND	0.50	04/06/17 19:38	
1,1-Dichloroethane	ug/L	ND	0.50	04/06/17 19:38	
1,1-Dichloroethene	ug/L	ND	0.50	04/06/17 19:38	
1,2-Dichlorobenzene	ug/L	ND	0.50	04/06/17 19:38	
1,2-Dichloroethane	ug/L	ND	0.50	04/06/17 19:38	
1,2-Dichloropropane	ug/L	ND	0.50	04/06/17 19:38	
1,3-Dichlorobenzene	ug/L	ND	0.50	04/06/17 19:38	
1,4-Dichlorobenzene	ug/L	ND	0.50	04/06/17 19:38	
Bromodichloromethane	ug/L	ND	0.50	04/06/17 19:38	
Bromoform	ug/L	ND	0.50	04/06/17 19:38	
Bromomethane	ug/L	ND	20.0	04/06/17 19:38	
Carbon tetrachloride	ug/L	ND	0.50	04/06/17 19:38	
Chlorobenzene	ug/L	ND	0.50	04/06/17 19:38	
Chloroethane	ug/L	ND	2.0	04/06/17 19:38	
Chloroform	ug/L	ND	0.50	04/06/17 19:38	
Chloromethane	ug/L	ND	0.50	04/06/17 19:38	
cis-1,2-Dichloroethene	ug/L	ND	0.50	04/06/17 19:38	
cis-1,3-Dichloropropene	ug/L	ND	0.50	04/06/17 19:38	
Dibromochloromethane	ug/L	ND	0.50	04/06/17 19:38	
Methylene Chloride	ug/L	ND	5.0	04/06/17 19:38	
Tetrachloroethene	ug/L	ND	0.50	04/06/17 19:38	
trans-1,2-Dichloroethene	ug/L	ND	0.50	04/06/17 19:38	
trans-1,3-Dichloropropene	ug/L	ND	0.50	04/06/17 19:38	
Trichloroethene	ug/L	ND	0.50	04/06/17 19:38	
Trichlorofluoromethane	ug/L	ND	0.50	04/06/17 19:38	
Vinyl chloride	ug/L	ND	0.50	04/06/17 19:38	
1,2-Dichloroethane-d4 (S)	%	100	70-130	04/06/17 19:38	
4-Bromofluorobenzene (S)	%	92	70-130	04/06/17 19:38	
Toluene-d8 (S)	%	100	70-130	04/06/17 19:38	

LABORATORY CONTROL SAMPLE: 435850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	42.3	106	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	35.5	89	75-125	
1,1,2-Trichloroethane	ug/L	40	37.6	94	75-126	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

LABORATORY CONTROL SAMPLE: 435850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	40.6	102	71-131	
1,1-Dichloroethene	ug/L	40	39.7	99	74-126	
1,2-Dichlorobenzene	ug/L	40	41.7	104	75-125	
1,2-Dichloroethane	ug/L	40	40.1	100	64-141	
1,2-Dichloropropane	ug/L	40	41.3	103	73-127	
1,3-Dichlorobenzene	ug/L	40	44.5	111	75-125	
1,4-Dichlorobenzene	ug/L	40	40.8	102	75-125	
Bromodichloromethane	ug/L	40	41.3	103	70-134	
Bromoform	ug/L	40	36.4	91	68-130	
Bromomethane	ug/L	40	38.1	95	30-150	
Carbon tetrachloride	ug/L	40	43.3	108	66-135	
Chlorobenzene	ug/L	40	41.1	103	75-125	
Chloroethane	ug/L	40	42.4	106	55-150	
Chloroform	ug/L	40	41.6	104	72-131	
Chloromethane	ug/L	40	35.7	89	54-132	
cis-1,2-Dichloroethene	ug/L	40	40.6	102	75-125	
cis-1,3-Dichloropropene	ug/L	40	41.5	104	74-130	
Dibromochloromethane	ug/L	40	41.5	104	70-132	
Methylene Chloride	ug/L	40	39.9	100	68-125	
Tetrachloroethene	ug/L	40	42.7	107	75-130	
trans-1,2-Dichloroethene	ug/L	40	40.5	101	75-125	
trans-1,3-Dichloropropene	ug/L	40	38.6	97	69-137	
Trichloroethene	ug/L	40	43.0	108	75-125	
Trichlorofluoromethane	ug/L	40	42.2	106	59-140	
Vinyl chloride	ug/L	40	42.1	105	68-132	
1,2-Dichloroethane-d4 (S)	%			94	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 435860 435861

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1285107001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	ND	40	40	42.4	42.1	106	105	63-142	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	36.9	38.5	92	96	75-125	4	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	38.0	39.0	95	97	75-132	2	30	
1,1-Dichloroethane	ug/L	ND	40	40	41.5	40.7	104	102	75-126	2	30	
1,1-Dichloroethene	ug/L	ND	40	40	40.7	40.4	101	100	75-125	1	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	42.0	40.9	105	102	75-125	3	30	
1,2-Dichloroethane	ug/L	ND	40	40	40.3	40.4	101	101	75-137	0	30	
1,2-Dichloropropane	ug/L	ND	40	40	41.8	41.4	105	103	74-131	1	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	44.2	43.2	111	108	75-126	2	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	40.8	39.3	102	98	73-125	4	30	
Bromodichloromethane	ug/L	ND	40	40	42.2	41.4	106	103	65-137	2	30	
Bromoform	ug/L	ND	40	40	37.0	38.5	93	96	60-147	4	30	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 435860												435861	
Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual	
		1285107001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	% Rec	% Rec					
Bromomethane	ug/L	ND	40	40	40.2	42.6	101	106	30-150	6	30		
Carbon tetrachloride	ug/L	ND	40	40	43.6	42.6	109	107	45-150	2	30		
Chlorobenzene	ug/L	ND	40	40	41.2	41.1	103	103	75-125	0	30		
Chloroethane	ug/L	ND	40	40	42.5	42.2	106	105	66-145	1	30		
Chloroform	ug/L	ND	40	40	42.9	42.7	106	106	74-128	0	30		
Chloromethane	ug/L	ND	40	40	37.4	37.1	93	93	51-150	1	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	41.5	40.9	104	102	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	41.5	41.1	104	103	75-129	1	30		
Dibromochloromethane	ug/L	ND	40	40	42.6	42.7	106	107	66-141	0	30		
Methylene Chloride	ug/L	ND	40	40	40.4	40.6	101	101	74-125	0	30		
Tetrachloroethene	ug/L	45.6	40	40	89.4	88.1	109	106	75-135	1	30	E	
trans-1,2-Dichloroethene	ug/L	ND	40	40	41.7	40.2	104	101	75-125	3	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	39.0	39.9	97	100	67-139	2	30		
Trichloroethene	ug/L	ND	40	40	43.5	43.2	108	107	75-130	1	30		
Trichlorofluoromethane	ug/L	ND	40	40	46.2	45.6	116	114	57-144	1	30		
Vinyl chloride	ug/L	ND	40	40	42.4	41.3	106	103	70-136	3	30		
1,2-Dichloroethane-d4 (S)	%.						94	96	70-130				
4-Bromofluorobenzene (S)	%.						105	105	70-130				
Toluene-d8 (S)	%.						102	101	70-130				

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

QC Batch: 110295 Analysis Method: EPA 8260B
 QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
 Associated Lab Samples: 1285102005, 1285102012, 1285102016, 1285102019, 1285102020, 1285102021, 1285102022, 1285102023

METHOD BLANK: 436223 Matrix: Water
 Associated Lab Samples: 1285102005, 1285102012, 1285102016, 1285102019, 1285102020, 1285102021, 1285102022, 1285102023

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	04/07/17 11:58	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	04/07/17 11:58	
1,1,2-Trichloroethane	ug/L	ND	0.50	04/07/17 11:58	
1,1-Dichloroethane	ug/L	ND	0.50	04/07/17 11:58	
1,1-Dichloroethene	ug/L	ND	0.50	04/07/17 11:58	
1,2-Dichlorobenzene	ug/L	ND	0.50	04/07/17 11:58	
1,2-Dichloroethane	ug/L	ND	0.50	04/07/17 11:58	
1,2-Dichloropropane	ug/L	ND	0.50	04/07/17 11:58	
1,3-Dichlorobenzene	ug/L	ND	0.50	04/07/17 11:58	
1,4-Dichlorobenzene	ug/L	ND	0.50	04/07/17 11:58	
Bromodichloromethane	ug/L	ND	0.50	04/07/17 11:58	
Bromoform	ug/L	ND	0.50	04/07/17 11:58	
Bromomethane	ug/L	ND	20.0	04/07/17 11:58	
Carbon tetrachloride	ug/L	ND	0.50	04/07/17 11:58	
Chlorobenzene	ug/L	ND	0.50	04/07/17 11:58	
Chloroethane	ug/L	ND	2.0	04/07/17 11:58	
Chloroform	ug/L	ND	0.50	04/07/17 11:58	
Chloromethane	ug/L	ND	2.0	04/07/17 11:58	
cis-1,2-Dichloroethene	ug/L	ND	0.50	04/07/17 11:58	
cis-1,3-Dichloropropene	ug/L	ND	0.50	04/07/17 11:58	
Dibromochloromethane	ug/L	ND	0.50	04/07/17 11:58	
Methylene Chloride	ug/L	ND	5.0	04/07/17 11:58	
Tetrachloroethene	ug/L	ND	0.50	04/07/17 11:58	
trans-1,2-Dichloroethene	ug/L	ND	0.50	04/07/17 11:58	
trans-1,3-Dichloropropene	ug/L	ND	0.50	04/07/17 11:58	
Trichloroethene	ug/L	ND	0.50	04/07/17 11:58	
Trichlorofluoromethane	ug/L	ND	0.50	04/07/17 11:58	
Vinyl chloride	ug/L	ND	0.50	04/07/17 11:58	
1,2-Dichloroethane-d4 (S)	%	103	70-130	04/07/17 11:58	
4-Bromofluorobenzene (S)	%	102	70-130	04/07/17 11:58	
Toluene-d8 (S)	%	101	70-130	04/07/17 11:58	

LABORATORY CONTROL SAMPLE: 436224

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	46.6	116	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	37.4	94	75-125	
1,1,2-Trichloroethane	ug/L	40	37.6	94	75-126	
1,1-Dichloroethane	ug/L	40	44.5	111	71-131	
1,1-Dichloroethene	ug/L	40	46.7	117	74-126	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

LABORATORY CONTROL SAMPLE: 436224

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	39.7	99	75-125	
1,2-Dichloroethane	ug/L	40	39.9	100	64-141	
1,2-Dichloropropane	ug/L	40	40.8	102	73-127	
1,3-Dichlorobenzene	ug/L	40	41.6	104	75-125	
1,4-Dichlorobenzene	ug/L	40	39.2	98	75-125	
Bromodichloromethane	ug/L	40	42.7	107	70-134	
Bromoform	ug/L	40	39.5	99	68-130	
Bromomethane	ug/L	40	45.0	113	30-150	
Carbon tetrachloride	ug/L	40	47.0	118	66-135	
Chlorobenzene	ug/L	40	41.8	105	75-125	
Chloroethane	ug/L	40	46.3	116	55-150	
Chloroform	ug/L	40	43.3	108	72-131	
Chloromethane	ug/L	40	45.1	113	54-132	
cis-1,2-Dichloroethene	ug/L	40	42.8	107	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.3	106	74-130	
Dibromochloromethane	ug/L	40	39.0	97	70-132	
Methylene Chloride	ug/L	40	41.2	103	68-125	
Tetrachloroethene	ug/L	40	45.7	114	75-130	
trans-1,2-Dichloroethene	ug/L	40	45.1	113	75-125	
trans-1,3-Dichloropropene	ug/L	40	40.8	102	69-137	
Trichloroethene	ug/L	40	45.0	112	75-125	
Trichlorofluoromethane	ug/L	40	49.6	124	59-140	
Vinyl chloride	ug/L	40	48.8	122	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 436225 436226

Parameter	Units	1285107007		436225		436226		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Result						
1,1,1-Trichloroethane	ug/L	ND	40	40	41.9	41.3	105	103	63-142	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	41.2	41.0	103	102	75-125	1	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	40.5	40.1	101	100	75-132	1	30		
1,1-Dichloroethane	ug/L	ND	40	40	41.8	41.5	104	104	75-126	1	30		
1,1-Dichloroethene	ug/L	ND	40	40	42.8	41.7	107	104	75-125	3	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	40.4	38.8	101	97	75-125	4	30		
1,2-Dichloroethane	ug/L	ND	40	40	41.0	40.4	102	101	75-137	1	30		
1,2-Dichloropropane	ug/L	ND	40	40	40.7	40.1	102	100	74-131	2	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	41.2	40.1	103	100	75-126	3	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	38.5	37.4	96	94	73-125	3	30		
Bromodichloromethane	ug/L	ND	40	40	43.3	42.7	108	107	65-137	1	30		
Bromoform	ug/L	ND	40	40	42.5	42.3	106	106	60-147	1	30		
Bromomethane	ug/L	ND	40	40	42.6	41.4	106	104	30-150	3	30		
Carbon tetrachloride	ug/L	ND	40	40	42.4	41.7	106	104	45-150	2	30		

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 436225		436225		436226		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1285107007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Chlorobenzene	ug/L	ND	40	40	39.8	38.8	100	97	75-125	3	30		
Chloroethane	ug/L	ND	40	40	43.9	41.8	110	105	66-145	5	30		
Chloroform	ug/L	ND	40	40	42.1	41.9	105	105	74-128	1	30		
Chloromethane	ug/L	ND	40	40	40.8	39.9	102	100	51-150	2	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	41.5	41.3	104	103	75-125	0	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	42.5	42.2	106	105	75-129	1	30		
Dibromochloromethane	ug/L	ND	40	40	41.8	41.7	104	104	66-141	0	30		
Methylene Chloride	ug/L	ND	40	40	40.6	39.6	101	99	74-125	2	30		
Tetrachloroethene	ug/L	31.8	40	40	72.6	71.8	102	100	75-135	1	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	40.3	40.7	101	102	75-125	1	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	43.1	42.0	108	105	67-139	3	30		
Trichloroethene	ug/L	ND	40	40	40.7	41.2	102	103	75-130	1	30		
Trichlorofluoromethane	ug/L	ND	40	40	42.0	41.8	105	104	57-144	0	30		
Vinyl chloride	ug/L	ND	40	40	42.7	42.1	107	105	70-136	1	30		
1,2-Dichloroethane-d4 (S)	%						102	103	70-130				
4-Bromofluorobenzene (S)	%						104	103	70-130				
Toluene-d8 (S)	%						101	102	70-130				

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

QC Batch: 110381 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1285102007, 1285102032, 1285102041, 1285102045

METHOD BLANK: 436425 Matrix: Water
Associated Lab Samples: 1285102007, 1285102032, 1285102041, 1285102045

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	04/07/17 18:48	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	04/07/17 18:48	
1,1,2-Trichloroethane	ug/L	ND	0.50	04/07/17 18:48	
1,1-Dichloroethane	ug/L	ND	0.50	04/07/17 18:48	
1,1-Dichloroethene	ug/L	ND	0.50	04/07/17 18:48	
1,2-Dichlorobenzene	ug/L	ND	0.50	04/07/17 18:48	
1,2-Dichloroethane	ug/L	ND	0.50	04/07/17 18:48	
1,2-Dichloropropane	ug/L	ND	0.50	04/07/17 18:48	
1,3-Dichlorobenzene	ug/L	ND	0.50	04/07/17 18:48	
1,4-Dichlorobenzene	ug/L	ND	0.50	04/07/17 18:48	
Bromodichloromethane	ug/L	ND	0.50	04/07/17 18:48	
Bromoform	ug/L	ND	0.50	04/07/17 18:48	
Bromomethane	ug/L	ND	20.0	04/07/17 18:48	
Carbon tetrachloride	ug/L	ND	0.50	04/07/17 18:48	
Chlorobenzene	ug/L	ND	0.50	04/07/17 18:48	
Chloroethane	ug/L	ND	2.0	04/07/17 18:48	
Chloroform	ug/L	ND	0.50	04/07/17 18:48	
Chloromethane	ug/L	ND	0.50	04/07/17 18:48	
cis-1,2-Dichloroethene	ug/L	ND	0.50	04/07/17 18:48	
cis-1,3-Dichloropropene	ug/L	ND	0.50	04/07/17 18:48	
Dibromochloromethane	ug/L	ND	0.50	04/07/17 18:48	
Methylene Chloride	ug/L	ND	5.0	04/07/17 18:48	
Tetrachloroethene	ug/L	ND	0.50	04/07/17 18:48	
trans-1,2-Dichloroethene	ug/L	ND	0.50	04/07/17 18:48	
trans-1,3-Dichloropropene	ug/L	ND	0.50	04/07/17 18:48	
Trichloroethene	ug/L	ND	0.50	04/07/17 18:48	
Trichlorofluoromethane	ug/L	ND	0.50	04/07/17 18:48	
Vinyl chloride	ug/L	ND	0.50	04/07/17 18:48	
1,2-Dichloroethane-d4 (S)	%	97	70-130	04/07/17 18:48	
4-Bromofluorobenzene (S)	%	95	70-130	04/07/17 18:48	
Toluene-d8 (S)	%	100	70-130	04/07/17 18:48	

LABORATORY CONTROL SAMPLE: 436426

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	43.4	109	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	36.1	90	75-125	
1,1,2-Trichloroethane	ug/L	40	38.5	96	75-126	
1,1-Dichloroethane	ug/L	40	42.0	105	71-131	
1,1-Dichloroethene	ug/L	40	41.3	103	74-126	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

LABORATORY CONTROL SAMPLE: 436426

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	41.9	105	75-125	
1,2-Dichloroethane	ug/L	40	40.5	101	64-141	
1,2-Dichloropropane	ug/L	40	42.3	106	73-127	
1,3-Dichlorobenzene	ug/L	40	44.6	112	75-125	
1,4-Dichlorobenzene	ug/L	40	41.1	103	75-125	
Bromodichloromethane	ug/L	40	42.4	106	70-134	
Bromoform	ug/L	40	36.3	91	68-130	
Bromomethane	ug/L	40	28.4	71	30-150	
Carbon tetrachloride	ug/L	40	44.1	110	66-135	
Chlorobenzene	ug/L	40	42.2	106	75-125	
Chloroethane	ug/L	40	42.6	106	55-150	
Chloroform	ug/L	40	42.7	107	72-131	
Chloromethane	ug/L	40	35.9	90	54-132	
cis-1,2-Dichloroethene	ug/L	40	42.3	106	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.9	107	74-130	
Dibromochloromethane	ug/L	40	42.6	106	70-132	
Methylene Chloride	ug/L	40	41.5	104	68-125	
Tetrachloroethene	ug/L	40	43.0	107	75-130	
trans-1,2-Dichloroethene	ug/L	40	42.3	106	75-125	
trans-1,3-Dichloropropene	ug/L	40	39.6	99	69-137	
Trichloroethene	ug/L	40	44.1	110	75-125	
Trichlorofluoromethane	ug/L	40	47.8	119	59-140	
Vinyl chloride	ug/L	40	42.5	106	68-132	
1,2-Dichloroethane-d4 (S)	%			95	70-130	
4-Bromofluorobenzene (S)	%			105	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 436427 436428

Parameter	Units	1285044013		436428		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
1,1,1-Trichloroethane	ug/L	0.0J	40	40	41.9	42.2	105	106	63-142	1	30	
1,1,2,2-Tetrachloroethane	ug/L	0.0J	40	40	35.3	34.8	88	87	75-125	1	30	
1,1,2-Trichloroethane	ug/L	0.0J	40	40	37.1	36.8	93	92	75-132	1	30	
1,1-Dichloroethane	ug/L	0.0J	40	40	40.8	40.9	102	102	75-126	0	30	
1,1-Dichloroethene	ug/L	0.0J	40	40	40.4	38.8	101	97	75-125	4	30	
1,2-Dichlorobenzene	ug/L	0.0J	40	40	40.4	40.7	101	102	75-125	1	30	
1,2-Dichloroethane	ug/L	0.0J	40	40	39.5	39.4	99	99	75-137	0	30	
1,2-Dichloropropane	ug/L	0.0J	40	40	40.7	41.1	102	103	74-131	1	30	
1,3-Dichlorobenzene	ug/L	0.0J	40	40	42.5	42.5	106	106	75-126	0	30	
1,4-Dichlorobenzene	ug/L	0.0J	40	40	39.6	39.8	99	99	73-125	0	30	
Bromodichloromethane	ug/L	0.0J	40	40	41.3	41.5	103	104	65-137	1	30	
Bromoform	ug/L	0.0J	40	40	34.6	35.6	87	89	60-147	3	30	
Bromomethane	ug/L	0.0J	40	40	33.1	38.2	83	96	30-150	15	30	
Carbon tetrachloride	ug/L	0.0J	40	40	43.4	43.9	109	110	45-150	1	30	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Parameter	Units	1285044013		436427		436428		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Chlorobenzene	ug/L	0.0J	40	40	40.5	40.8	101	102	75-125	1	30		
Chloroethane	ug/L	0.0J	40	40	41.7	42.2	104	106	66-145	1	30		
Chloroform	ug/L	0.0J	40	40	41.7	42.0	104	105	74-128	1	30		
Chloromethane	ug/L	0.0J	40	40	36.1	37.6	90	94	51-150	4	30		
cis-1,2-Dichloroethene	ug/L	0.0J	40	40	41.3	41.7	103	104	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	0.0J	40	40	40.4	41.3	101	103	75-129	2	30		
Dibromochloromethane	ug/L	0.0J	40	40	40.7	41.1	102	103	66-141	1	30		
Methylene Chloride	ug/L	0.0J	40	40	40.6	40.3	102	101	74-125	1	30		
Tetrachloroethene	ug/L	0.0J	40	40	40.5	41.4	101	103	75-135	2	30		
trans-1,2-Dichloroethene	ug/L	0.0J	40	40	40.8	40.9	102	102	75-125	0	30		
trans-1,3-Dichloropropene	ug/L	0.0J	40	40	38.0	38.5	95	96	67-139	1	30		
Trichloroethene	ug/L	0.0J	40	40	42.7	42.6	107	106	75-130	0	30		
Trichlorofluoromethane	ug/L	0.0J	40	40	46.0	41.9	115	105	57-144	9	30		
Vinyl chloride	ug/L	0.0J	40	40	42.0	43.4	105	108	70-136	3	30		
1,2-Dichloroethane-d4 (S)	%						94	94	70-130				
4-Bromofluorobenzene (S)	%						106	104	70-130				
Toluene-d8 (S)	%						101	101	70-130				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

QC Batch: 110440	Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B	Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1285102012	

METHOD BLANK: 436655 Matrix: Water

Associated Lab Samples: 1285102012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	0.50	04/10/17 12:49	
1,2-Dichloroethane-d4 (S)	%.	97	70-130	04/10/17 12:49	
4-Bromofluorobenzene (S)	%.	94	70-130	04/10/17 12:49	
Toluene-d8 (S)	%.	101	70-130	04/10/17 12:49	

LABORATORY CONTROL SAMPLE: 436656

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	40	41.7	104	75-125	
1,2-Dichloroethane-d4 (S)	%.			94	70-130	
4-Bromofluorobenzene (S)	%.			105	70-130	
Toluene-d8 (S)	%.			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 436657 436658

Parameter	Units	1285128002		436657		436658		% Rec	% Rec	% Rec Limits	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
cis-1,2-Dichloroethene	ug/L	ND	40	40	43.8	44.5	110	111	75-125	2	30	
1,2-Dichloroethane-d4 (S)	%.						95	95	70-130			
4-Bromofluorobenzene (S)	%.						107	105	70-130			
Toluene-d8 (S)	%.						101	101	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

QC Batch: 78144 Analysis Method: SM 5310B
QC Batch Method: SM 5310B Analysis Description: 5310B TOC
Associated Lab Samples: 1285102002, 1285102006, 1285102011, 1285102028, 1285102030, 1285102031, 1285102039, 1285102047

METHOD BLANK: 330565 Matrix: Water
Associated Lab Samples: 1285102002, 1285102006, 1285102011, 1285102028, 1285102030, 1285102031, 1285102039, 1285102047

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	04/10/17 09:27	

LABORATORY CONTROL SAMPLE: 330566

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	31.6	31.0	98	90-110	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

QC Batch: 78355

Analysis Method: SM 5310B

QC Batch Method: SM 5310B

Analysis Description: 5310B TOC

Associated Lab Samples: 1285102005, 1285102032

METHOD BLANK: 331335

Matrix: Water

Associated Lab Samples: 1285102005, 1285102032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	04/12/17 18:00	

LABORATORY CONTROL SAMPLE: 331336

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	31.6	30.6	97	90-110	

MATRIX SPIKE SAMPLE: 331338

Parameter	Units	2052694002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	7.5	20	28.5	105	75-125	

SAMPLE DUPLICATE: 331337

Parameter	Units	2052694002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	7.5	7.5	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

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

BATCH QUALIFIERS

Batch: 110023

[1] Field preservation was insufficient for samples 1285102002 and 1285102011. Analysis conducted outside the recognized method holding time.

[2] The recovery of the second source standard used to verify the initial calibration curve for Bromomethane is outside the laboratory's control limits. The Bromomethane result is estimated.

Batch: 110090

[1] The recovery of the second source standard used to verify the initial calibration curve for Bromomethane is outside the laboratory's control limits. The Bromomethane result is estimated.

ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

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.: 1285102

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1285102002	MW-14	RSK 175	467360		
1285102005	EX	RSK 175	467360		
1285102006	MW-19	RSK 175	467360		
1285102011	MGMS3-40	RSK 175	467360		
1285102028	MW-26	RSK 175	467360		
1285102030	MW-13	RSK 175	467360		
1285102031	MW-24i	RSK 175	467360		
1285102032	MP-1	RSK 175	467360		
1285102047	MGMS1-43	RSK 175	467360		
1285102039	MW-12	RSK 175	467360		
1285102001	MW-23i	EPA 8260B	110023		
1285102002	MW-14	EPA 8260B	110023		
1285102005	EX	EPA 8260B	110023		
1285102005	EX	EPA 8260B	110295		
1285102006	MW-19	EPA 8260B	110023		
1285102011	MGMS3-40	EPA 8260B	110023		
1285102011	MGMS3-40	EPA 8260B	110196		
1285102028	MW-26	EPA 8260B	110023		
1285102030	MW-13	EPA 8260B	110023		
1285102031	MW-24i	EPA 8260B	110023		
1285102031	MW-24i	EPA 8260B	110196		
1285102032	MP-1	EPA 8260B	110196		
1285102032	MP-1	EPA 8260B	110381		
1285102047	MGMS1-43	EPA 8260B	110196		
1285102039	MW-12	EPA 8260B	110023		
1285102003	S-1	EPA 8260B	110023		
1285102004	S-2	EPA 8260B	110023		
1285102007	MW-19 DUP	EPA 8260B	110196		
1285102007	MW-19 DUP	EPA 8260B	110381		
1285102008	MGMS3-132	EPA 8260B	110023		
1285102009	MGMS3-110	EPA 8260B	110023		
1285102010	MGMS3-60	EPA 8260B	110023		
1285102012	MGMS3-40 DUP	EPA 8260B	110037		
1285102012	MGMS3-40 DUP	EPA 8260B	110295		
1285102012	MGMS3-40 DUP	EPA 8260B	110440		
1285102013	MW-24d	EPA 8260B	110037		
1285102014	MW-2	EPA 8260B	110037		
1285102015	MW-15	EPA 8260B	110037		
1285102016	MW-5	EPA 8260B	110037		
1285102016	MW-5	EPA 8260B	110295		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver GWM
Pace Project No.: 1285102

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1285102017	MW-7	EPA 8260B	110037		
1285102018	MW-7 DUP	EPA 8260B	110037		
1285102019	MW-9	EPA 8260B	110037		
1285102019	MW-9	EPA 8260B	110295		
1285102020	MW-19i	EPA 8260B	110037		
1285102020	MW-19i	EPA 8260B	110295		
1285102021	MW-18i	EPA 8260B	110037		
1285102021	MW-18i	EPA 8260B	110295		
1285102022	MW-16	EPA 8260B	110037		
1285102022	MW-16	EPA 8260B	110295		
1285102023	MW-3	EPA 8260B	110037		
1285102023	MW-3	EPA 8260B	110295		
1285102024	MW-21i-40	EPA 8260B	110037		
1285102025	MW-21i-105	EPA 8260B	110037		
1285102026	MW-22i	EPA 8260B	110037		
1285102027	MW-25i	EPA 8260B	110037		
1285102029	MW-17	EPA 8260B	110037		
1285102033	MW-8	EPA 8260B	110037		
1285102034	MW-20i	EPA 8260B	110037		
1285102035	MW-10	EPA 8260B	110037		
1285102036	MW-1	EPA 8260B	110090		
1285102037	EW-1	EPA 8260B	110090		
1285102038	MW-6	EPA 8260B	110090		
1285102040	MW-12 DUP	EPA 8260B	110196		
1285102041	MGMS2-40	EPA 8260B	110196		
1285102041	MGMS2-40	EPA 8260B	110381		
1285102042	MGMS2-110	EPA 8260B	110196		
1285102043	MGMS2-60	EPA 8260B	110196		
1285102044	MGMS2-132	EPA 8260B	110196		
1285102045	MGMS1-132	EPA 8260B	110196		
1285102045	MGMS1-132	EPA 8260B	110381		
1285102046	MGMS1-60	EPA 8260B	110196		
1285102048	Equipment Blank	EPA 8260B	110196		
1285102049	Field Blank	EPA 8260B	110023		
1285102050	Field Blank	EPA 8260B	110090		
1285102051	Field Blank	EPA 8260B	110090		
1285102052	Field Blank	EPA 8260B	110090		
1285102053	Field Blank	EPA 8260B	110196		
1285102002	MW-14	SM 5310B	78144		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver GWM

Pace Project No.: 1285102

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1285102005	EX	SM 5310B	78355		
1285102006	MW-19	SM 5310B	78144		
1285102011	MGMS3-40	SM 5310B	78144		
1285102028	MW-26	SM 5310B	78144		
1285102030	MW-13	SM 5310B	78144		
1285102031	MW-24i	SM 5310B	78144		
1285102032	MP-1	SM 5310B	78355		
1285102047	MGMS1-43	SM 5310B	78144		
1285102039	MW-12	SM 5310B	78144		

REPORT OF LABORATORY ANALYSIS

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

SRG # / Lab No.

1285102

Page 1 of 5

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 #:
320001126-20

Project Name:
NuStar Vancouver GWM

Project Address:

Global ID:

EDD Deliverable To (Email Address):
Ssalisbury@apexcos.com

Bill to:
Apex Companies

Sampler Name & Signature: Kyle Kline

California EDF Report? Yes No

CRA EQUIS Required Yes No

XLS Report Required Yes No

Chain-of-Custody Record and Analysis Request

Analysis Request

Other: Please Specify

TAT

12 hr
 24 hr
 48hr
 72hr
 1 wk

Sample Designation	Sampling		Container				Preservative			Matrix			TOC	Methane, Ethane, Ethene	HOLD	TAT	For Lab Use Only
	Date	Time	40 ml VOA	Sleeve	Poly	250 ml Glass	Tedlar	HCl	HNO ₃	H ₂ SO ₄	None	Water					
MW-23i	3/27/2017	1525	3					3				X				X	001
MW-14	3/27/2017	1455	7					3	2	2		X				X	002
S-1	3/27/2017	1420	3					3				X				X	003
S-2	3/27/2017	1345	3					3				X				X	004
EX	3/28/2017	1612	7					3	2	2		X				X	005
MW-19	3/28/2017	1545	7					3	2	2		X				X	006
MW-19 DUP	2/28/2017	1545	3					3				X				X	007
MGMS3-132	3/28/2017	1505	3					3				X				X	008
MGMS3-110	3/28/2017	1445	3					3				X				X	009
MGMS3-60	3/28/2017	1423	3					3				X				X	010
MGMS3-40	2/28/2017	1403	7					3	2	2		X				X	011
MGMS3-40 DUP	3/28/2017	1403	3					3				X				X	012
MW-24d	3/28/2017	1150	3					3				X				X	013

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

Received by: *[Signature]* 04/17/17 9:00
Time

Received by: *[Signature]*
Time

Received by: *[Signature]*
Time

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
3.5	WJ	04/17	09:55	1434	Yes / No

(3.9 cooler #2)



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

SRG # / Lab No. 1285102

Page 2 of 5

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 #: 320001126-20
 P.O. #:

Project Name: NuStar Vancouver GWM

Bill to: Apex Companies

Sample Name & Signature: Kyle Kline

Chain-of-Custody Record and Analysis Request

Analysis Request

Other: Please Specify

TAT

12 hr
 24 hr
 48hr
 72hr
 1 wk

Sample Designation	Sampling Date	Time	40 ml VOA	Sieve	Poly	250 ml Glass	Tedlar	HCl	HNO ₃	H ₂ SO ₄	Preservative	Matrix	Volatle Halocarbons (EPA 8260B)	TOC	Methane, Ethane, Ethene	Hold	TAT
MW-2	03/28/17	1110	3					3			None	Water	X				X
MW-15	03/28/17	1010	3					3				Water	X				X
MW-5	03/28/17	0936	3					3				Water	X				X
MW-7	03/28/17	0855	3					3				Water	X				X
MW-7 DUP	03/28/17	0855	3					3				Water	X				X
MW-9	03/28/17	0823	3					3				Water	X				X
MW-19i	03/29/17	1520	3					3				Water	X				X
MW-18i	03/29/17	1437	3					3				Water	X				X
MW-16	03/29/17	1332	3					3				Water	X				X
MW-3	03/29/17	1248	3					3				Water	X				X
MW-21i-40	03/29/17	1200	3					3				Water	X				X
MW-21i-105	03/29/17	1135	3					3				Water	X				X
MW-22i	03/29/17	1038	3					3				Water	X				X

Remarks:

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

Relinquished by: *Kyle Kline*
 Date: 4/13/17
 Received by: *Stephanie Bosze*
 Time: 9:00

Relinquished by: *Kyle Kline*
 Date: 4/13/17
 Received by: *Stephanie Bosze*
 Time: 9:00

Relinquished by:

Date

Received by Laboratory:

Time

Temp °C

Date

Received by Laboratory:

Time

Initials

Date

Therm. ID #

Coolant Present

Yes / No



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

SRG # / Lab No. 1285102

Page 3 of 5

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 #: 320001126-20

P.O. #:
 Apex Companies

Project Name: NuStar Vancouver GWM

Project Address:
 Sampler Name & Signature: Kyle Kline

Global ID:
 EDD Deliverable To (Email Address):
 Ssalisbury@apexcos.com

Bill to:
 Apex Companies

California EDF Report? Yes No
 CRA EQUIS Required Yes No
 XLS Report Required Yes No

Chain-of-Custody Record and Analysis Request

Analysis Request

Other: Please Specify

TAT

12 hr

24 hr

48hr

72hr

1 wk

For Lab Use Only

Sample Designation	Sampling		Container				Preservative				Matrix		
	Date	Time	40 ml VOA	Poly	250 ml Glass	Tedlar	HCl	HNO ₃	H ₂ SO ₄	None	Water	Soil	Air
MW-25i	3/29/2017	1000	3				3			X			
MW-26	3/29/2017	0915	7				3	2	2	X			
MW-17	3/29/2017	0847	3				3			X			
MW-13	3/30/2017	1525	7				3	2	2	X			
MW-24i	3/30/2017	1448	7				3	2	2	X			
MP-1	3/30/2017	1356	7				3	2	2	X			
MW-8	3/30/2017	1307	3				3			X			
MW-20i	3/30/2017	1200	3				3			X			
MW-10	3/30/2017	1127	3				3			X			
MW-1	3/30/2017	1052	3				3			X			
EW-1	3/30/2017	1318	3				3			X			
MW-6	3/30/2017	0828	3				3			X			

Relinquished by: *Kyle Kline* Date: 4/13/17 Time: 900
 Received by: *Potter Analytical* Date: 4/13/17 Time: 0900

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

For Lab Use Only: Sample Receipt



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

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 #: 320001126-20
 P.O. #: [Blank]
 Project Name: NuStar Vancouver GWM
 Project Address: [Blank]

Global ID: [Blank]
 EDD Deliverable To (Email Address):
 Ssallisbury@apexcos.com
 Bill to: Apex Companies
 Sampler Name & Signature: Kyle Kline

California EDF Report? Yes No
 CRA EQUIS Required Yes No
 XLS Report Required Yes No

SRG # / Lab No. 1285102

Page 5 of 5

Chain-of-Custody Record and Analysis Request

Sample Designation	Date	Time	Sampling			Container			Preservative			Matrix			Analysis Request Other: Please Specify	TAT	
			40 ml VOA	Sieve	250 ml Glass	Tedlar	1 L	HCl	HNO ₃	H ₂ SO ₄	None	Water	Soil	Air			
Equipment Blank	3/30/2017	1540	3							3				X		X	
Field Blank	3/27/2017	1550	3							3				X		X	
Field Blank	3/28/2017	1630	3							3				X		X	
Field Blank	3/29/2017	1540	3							3				X		X	
Field Blank	3/30/2017	1540	3							3				X		X	
Field Blank	3/31/2017	1000	3							3				X		X	
Trip Blank	--	--	5														

0219
 050/049
 051/050
 052/051
 053/052
 054/053
 055/054
 056/055
 057/056

Relinquished by: Kyle Kline	Date: 4/13/17	Time: 900	Received by: [Signature]	Time: 040417 053
Relinquished by:	Date:	Time:	Received by:	Time:
Relinquished by:	Date:	Time:	Received by:	Time:

Remarks: MSMSD 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 Companies

Project #: **WO#: 1285102**



Courier: Fed Ex UPS USPS Client
 Commercial Pace OnTrac Other: _____

Tracking Number: 8099 9440 4243
7784 0547 2125

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): 3.0/3.4 Cooler Temp Corrected(°C): 3.5/3.9 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: _____ Date and Initials of Person Examining Contents: [Signature]

Chain of Custody Present?	Chain of Custody Filled Out?	Chain of Custody Relinquished?	Sampler Name and/or Signature on COC?	Samples Arrived within Hold Time?	Short Hold Time Analysis (<72 hr)?	Rush Turn Around Time Requested?	Sufficient Volume?	Correct Containers Used?	-Pace Containers Used?	Containers Intact?	Filtered Volume Received for Dissolved Tests?	Sample Labels Match COC?	-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	All containers needing acid/base preservation have been checked?	All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	Headspace in VOA Vials (>6mm)?	Trip Blank Present?	Trip Blank Custody Seals Present?	Pace Trip Blank Lot # (if purchased):	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Comments: 1. The date on the COC for sample 11 states 2/28/17. However, the date for sample 12 (MIMS 3-40 dup) is 3/28/17 along with the containers for both samples. SR will log it in as 3/28/17 until further clarification. 2. There are no unpreserved containers. (all HCl preserved per the labels) or H ₂ SO ₄ preservat 3. The COC states unpreserved cont. for samples 2, 5, 6, 11, 28, 30, 31, 32, 39, 47. Note if sediment is visible in the dissolved container. 4. Sample 54 has 5 HCl preservat conts; sample 6 has a date of 3/28/17 along with sample 7 on the labels. SR will log it in per the labels and not the COC for samples 54 and 7 information from 040417 5. Initial when completed: _____ Lot # of added preservative: _____ 6. Samples 28, 31, 33, 41, 47 7. Sample 7 has a date of 2/28/17 per the COC. Sample 6 has a date of 3/28 along with the labels for both samples. SR will log it in per the labels until further clarification. 8. Sample 54 will be logged in with a date of 3/27/17 and as an (TOD). 9. Sample 37 has a time of 1020 in cont.s.																				

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____

Date/Time: _____ Field Data Required? Yes No

Comments/Resolution: _____

Project Manager Review: Scott Fees

Date: 4/4/17

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)

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: 320-25383-1
Client Project/Site: NuStar Vapor REM

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

Attn: Stephanie Salisbury



Authorized for release by:
2/7/2017 3:48:29 PM
Kelsey Devries, Project Management Assistant I
(253)922-2310

kelsey.devries@testamericainc.com

Designee for

Cathy Gamble, Project Manager I
(253)922-2310

cathy.gamble@testamericainc.com

LINKS

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results through
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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.

- 1
- 2
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Definitions/Glossary

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Qualifiers

Air - GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

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 REM

TestAmerica Job ID: 320-25383-1

Job ID: 320-25383-1

Laboratory: TestAmerica Sacramento

Narrative

**Job Narrative
320-25383-1**

Comments

No additional comments.

Receipt

The samples were received on 1/31/2017 10:00 AM; 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 duplicate (LCSD) for analytical batch 320-148872 recovered outside control limits for the following analytes: Benzyl chloride. These analytes were biased high in the LCSD 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.



Detection Summary

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_South_PreCarbon_013017

Lab Sample ID: 320-25383-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	170		87		ppb v/v	217		TO-15	Total/NA
Tetrachloroethene	8900		87		ppb v/v	217		TO-15	Total/NA
1,1,1-Trichloroethane	72		65		ppb v/v	217		TO-15	Total/NA
Trichloroethene	440		87		ppb v/v	217		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	660		340		ug/m3 Air	217		TO-15	Total/NA
Tetrachloroethene	61000		590		ug/m3 Air	217		TO-15	Total/NA
1,1,1-Trichloroethane	400		360		ug/m3 Air	217		TO-15	Total/NA
Trichloroethene	2400		470		ug/m3 Air	217		TO-15	Total/NA

Client Sample ID: SVE_South_PostCarbon_013017

Lab Sample ID: 320-25383-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	3.5		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	0.47		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	24		2.7		ug/m3 Air	1		TO-15	Total/NA
Toluene	1.8		1.5		ug/m3 Air	1		TO-15	Total/NA

Client Sample ID: SVE_North_Effluent_013017

Lab Sample ID: 320-25383-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.48		0.40		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.51		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	1.2		0.40		ppb v/v	1		TO-15	Total/NA
Trichlorofluoromethane	1.2		0.40		ppb v/v	1		TO-15	Total/NA
m,p-Xylene	1.0		0.80		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.5		1.3		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.5		2.0		ug/m3 Air	1		TO-15	Total/NA
Toluene	4.6		1.5		ug/m3 Air	1		TO-15	Total/NA
Trichlorofluoromethane	6.8		2.2		ug/m3 Air	1		TO-15	Total/NA
m,p-Xylene	4.4		3.5		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 Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_South_PreCarbon_013017

Lab Sample ID: 320-25383-1

Date Collected: 01/30/17 07:51

Matrix: Air

Date Received: 01/31/17 10:00

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		1100		ppb v/v			02/03/17 23:47	217
Benzene	ND		87		ppb v/v			02/03/17 23:47	217
Benzyl chloride	ND	*	170		ppb v/v			02/03/17 23:47	217
Bromodichloromethane	ND		65		ppb v/v			02/03/17 23:47	217
Bromoform	ND		87		ppb v/v			02/03/17 23:47	217
Bromomethane	ND		170		ppb v/v			02/03/17 23:47	217
2-Butanone (MEK)	ND		170		ppb v/v			02/03/17 23:47	217
Carbon disulfide	ND		170		ppb v/v			02/03/17 23:47	217
Carbon tetrachloride	ND		170		ppb v/v			02/03/17 23:47	217
Chlorobenzene	ND		65		ppb v/v			02/03/17 23:47	217
Dibromochloromethane	ND		87		ppb v/v			02/03/17 23:47	217
Chloroethane	ND		170		ppb v/v			02/03/17 23:47	217
Chloroform	ND		65		ppb v/v			02/03/17 23:47	217
Chloromethane	ND		170		ppb v/v			02/03/17 23:47	217
1,2-Dibromoethane (EDB)	ND		170		ppb v/v			02/03/17 23:47	217
1,2-Dichlorobenzene	ND		87		ppb v/v			02/03/17 23:47	217
1,3-Dichlorobenzene	ND		87		ppb v/v			02/03/17 23:47	217
1,4-Dichlorobenzene	ND		87		ppb v/v			02/03/17 23:47	217
Dichlorodifluoromethane	ND		87		ppb v/v			02/03/17 23:47	217
1,1-Dichloroethane	ND		65		ppb v/v			02/03/17 23:47	217
1,2-Dichloroethane	ND		170		ppb v/v			02/03/17 23:47	217
1,1-Dichloroethene	ND		170		ppb v/v			02/03/17 23:47	217
cis-1,2-Dichloroethene	170		87		ppb v/v			02/03/17 23:47	217
trans-1,2-Dichloroethene	ND		87		ppb v/v			02/03/17 23:47	217
1,2-Dichloropropane	ND		87		ppb v/v			02/03/17 23:47	217
cis-1,3-Dichloropropene	ND		87		ppb v/v			02/03/17 23:47	217
trans-1,3-Dichloropropene	ND		87		ppb v/v			02/03/17 23:47	217
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		87		ppb v/v			02/03/17 23:47	217
Ethylbenzene	ND		87		ppb v/v			02/03/17 23:47	217
4-Ethyltoluene	ND		87		ppb v/v			02/03/17 23:47	217
Hexachlorobutadiene	ND		430		ppb v/v			02/03/17 23:47	217
2-Hexanone	ND		87		ppb v/v			02/03/17 23:47	217
Methylene Chloride	ND		87		ppb v/v			02/03/17 23:47	217
4-Methyl-2-pentanone (MIBK)	ND		87		ppb v/v			02/03/17 23:47	217
Styrene	ND		87		ppb v/v			02/03/17 23:47	217
1,1,2,2-Tetrachloroethane	ND		87		ppb v/v			02/03/17 23:47	217
Tetrachloroethene	8900		87		ppb v/v			02/03/17 23:47	217
Toluene	ND		87		ppb v/v			02/03/17 23:47	217
1,2,4-Trichlorobenzene	ND		430		ppb v/v			02/03/17 23:47	217
1,1,1-Trichloroethane	72		65		ppb v/v			02/03/17 23:47	217
1,1,2-Trichloroethane	ND		87		ppb v/v			02/03/17 23:47	217
Trichloroethene	440		87		ppb v/v			02/03/17 23:47	217
Trichlorofluoromethane	ND		87		ppb v/v			02/03/17 23:47	217
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		87		ppb v/v			02/03/17 23:47	217
1,2,4-Trimethylbenzene	ND		170		ppb v/v			02/03/17 23:47	217
1,3,5-Trimethylbenzene	ND		87		ppb v/v			02/03/17 23:47	217
Vinyl acetate	ND		170		ppb v/v			02/03/17 23:47	217
Vinyl chloride	ND		87		ppb v/v			02/03/17 23:47	217

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_South_PreCarbon_013017

Lab Sample ID: 320-25383-1

Date Collected: 01/30/17 07:51

Matrix: Air

Date Received: 01/31/17 10:00

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
m,p-Xylene	ND		170		ppb v/v			02/03/17 23:47	217
o-Xylene	ND		87		ppb v/v			02/03/17 23:47	217
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		2600		ug/m3 Air			02/03/17 23:47	217
Benzene	ND		280		ug/m3 Air			02/03/17 23:47	217
Benzyl chloride	ND	*	900		ug/m3 Air			02/03/17 23:47	217
Bromodichloromethane	ND		440		ug/m3 Air			02/03/17 23:47	217
Bromoform	ND		900		ug/m3 Air			02/03/17 23:47	217
Bromomethane	ND		670		ug/m3 Air			02/03/17 23:47	217
2-Butanone (MEK)	ND		510		ug/m3 Air			02/03/17 23:47	217
Carbon disulfide	ND		540		ug/m3 Air			02/03/17 23:47	217
Carbon tetrachloride	ND		1100		ug/m3 Air			02/03/17 23:47	217
Chlorobenzene	ND		300		ug/m3 Air			02/03/17 23:47	217
Dibromochloromethane	ND		740		ug/m3 Air			02/03/17 23:47	217
Chloroethane	ND		460		ug/m3 Air			02/03/17 23:47	217
Chloroform	ND		320		ug/m3 Air			02/03/17 23:47	217
Chloromethane	ND		360		ug/m3 Air			02/03/17 23:47	217
1,2-Dibromoethane (EDB)	ND		1300		ug/m3 Air			02/03/17 23:47	217
1,2-Dichlorobenzene	ND		520		ug/m3 Air			02/03/17 23:47	217
1,3-Dichlorobenzene	ND		520		ug/m3 Air			02/03/17 23:47	217
1,4-Dichlorobenzene	ND		520		ug/m3 Air			02/03/17 23:47	217
Dichlorodifluoromethane	ND		430		ug/m3 Air			02/03/17 23:47	217
1,1-Dichloroethane	ND		260		ug/m3 Air			02/03/17 23:47	217
1,2-Dichloroethane	ND		700		ug/m3 Air			02/03/17 23:47	217
1,1-Dichloroethene	ND		690		ug/m3 Air			02/03/17 23:47	217
cis-1,2-Dichloroethene	660		340		ug/m3 Air			02/03/17 23:47	217
trans-1,2-Dichloroethene	ND		340		ug/m3 Air			02/03/17 23:47	217
1,2-Dichloropropane	ND		400		ug/m3 Air			02/03/17 23:47	217
cis-1,3-Dichloropropene	ND		390		ug/m3 Air			02/03/17 23:47	217
trans-1,3-Dichloropropene	ND		390		ug/m3 Air			02/03/17 23:47	217
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		610		ug/m3 Air			02/03/17 23:47	217
Ethylbenzene	ND		380		ug/m3 Air			02/03/17 23:47	217
4-Ethyltoluene	ND		430		ug/m3 Air			02/03/17 23:47	217
Hexachlorobutadiene	ND		4600		ug/m3 Air			02/03/17 23:47	217
2-Hexanone	ND		360		ug/m3 Air			02/03/17 23:47	217
Methylene Chloride	ND		300		ug/m3 Air			02/03/17 23:47	217
4-Methyl-2-pentanone (MIBK)	ND		360		ug/m3 Air			02/03/17 23:47	217
Styrene	ND		370		ug/m3 Air			02/03/17 23:47	217
1,1,2,2-Tetrachloroethane	ND		600		ug/m3 Air			02/03/17 23:47	217
Tetrachloroethene	61000		590		ug/m3 Air			02/03/17 23:47	217
Toluene	ND		330		ug/m3 Air			02/03/17 23:47	217
1,2,4-Trichlorobenzene	ND		3200		ug/m3 Air			02/03/17 23:47	217
1,1,1-Trichloroethane	400		360		ug/m3 Air			02/03/17 23:47	217
1,1,2-Trichloroethane	ND		470		ug/m3 Air			02/03/17 23:47	217
Trichloroethene	2400		470		ug/m3 Air			02/03/17 23:47	217
Trichlorofluoromethane	ND		490		ug/m3 Air			02/03/17 23:47	217
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		670		ug/m3 Air			02/03/17 23:47	217
1,2,4-Trimethylbenzene	ND		850		ug/m3 Air			02/03/17 23:47	217

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_South_PreCarbon_013017

Lab Sample ID: 320-25383-1

Date Collected: 01/30/17 07:51

Matrix: Air

Date Received: 01/31/17 10:00

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
1,3,5-Trimethylbenzene	ND		430		ug/m3 Air			02/03/17 23:47	217
Vinyl acetate	ND		610		ug/m3 Air			02/03/17 23:47	217
Vinyl chloride	ND		220		ug/m3 Air			02/03/17 23:47	217
m,p-Xylene	ND		750		ug/m3 Air			02/03/17 23:47	217
o-Xylene	ND		380		ug/m3 Air			02/03/17 23:47	217
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		70 - 130					02/03/17 23:47	217
1,2-Dichloroethane-d4 (Surr)	95		70 - 130					02/03/17 23:47	217
Toluene-d8 (Surr)	100		70 - 130					02/03/17 23:47	217

Client Sample ID: SVE_South_PostCarbon_013017

Lab Sample ID: 320-25383-2

Date Collected: 01/30/17 07:55

Matrix: Air

Date Received: 01/31/17 10:00

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		5.0		ppb v/v			02/04/17 00:42	1
Benzene	ND		0.40		ppb v/v			02/04/17 00:42	1
Benzyl chloride	ND	*	0.80		ppb v/v			02/04/17 00:42	1
Bromodichloromethane	ND		0.30		ppb v/v			02/04/17 00:42	1
Bromoform	ND		0.40		ppb v/v			02/04/17 00:42	1
Bromomethane	ND		0.80		ppb v/v			02/04/17 00:42	1
2-Butanone (MEK)	ND		0.80		ppb v/v			02/04/17 00:42	1
Carbon disulfide	ND		0.80		ppb v/v			02/04/17 00:42	1
Carbon tetrachloride	ND		0.80		ppb v/v			02/04/17 00:42	1
Chlorobenzene	ND		0.30		ppb v/v			02/04/17 00:42	1
Dibromochloromethane	ND		0.40		ppb v/v			02/04/17 00:42	1
Chloroethane	ND		0.80		ppb v/v			02/04/17 00:42	1
Chloroform	ND		0.30		ppb v/v			02/04/17 00:42	1
Chloromethane	ND		0.80		ppb v/v			02/04/17 00:42	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			02/04/17 00:42	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			02/04/17 00:42	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			02/04/17 00:42	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			02/04/17 00:42	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			02/04/17 00:42	1
1,1-Dichloroethane	ND		0.30		ppb v/v			02/04/17 00:42	1
1,2-Dichloroethane	ND		0.80		ppb v/v			02/04/17 00:42	1
1,1-Dichloroethene	ND		0.80		ppb v/v			02/04/17 00:42	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			02/04/17 00:42	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			02/04/17 00:42	1
1,2-Dichloropropane	ND		0.40		ppb v/v			02/04/17 00:42	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			02/04/17 00:42	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			02/04/17 00:42	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			02/04/17 00:42	1
Ethylbenzene	ND		0.40		ppb v/v			02/04/17 00:42	1
4-Ethyltoluene	ND		0.40		ppb v/v			02/04/17 00:42	1
Hexachlorobutadiene	ND		2.0		ppb v/v			02/04/17 00:42	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_South_PostCarbon_013017

Lab Sample ID: 320-25383-2

Date Collected: 01/30/17 07:55

Matrix: Air

Date Received: 01/31/17 10:00

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		0.40		ppb v/v			02/04/17 00:42	1
Methylene Chloride	ND		0.40		ppb v/v			02/04/17 00:42	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			02/04/17 00:42	1
Styrene	ND		0.40		ppb v/v			02/04/17 00:42	1
1,1,2-Tetrachloroethane	ND		0.40		ppb v/v			02/04/17 00:42	1
Tetrachloroethene	3.5		0.40		ppb v/v			02/04/17 00:42	1
Toluene	0.47		0.40		ppb v/v			02/04/17 00:42	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			02/04/17 00:42	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			02/04/17 00:42	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			02/04/17 00:42	1
Trichloroethene	ND		0.40		ppb v/v			02/04/17 00:42	1
Trichlorofluoromethane	ND		0.40		ppb v/v			02/04/17 00:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			02/04/17 00:42	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			02/04/17 00:42	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			02/04/17 00:42	1
Vinyl acetate	ND		0.80		ppb v/v			02/04/17 00:42	1
Vinyl chloride	ND		0.40		ppb v/v			02/04/17 00:42	1
m,p-Xylene	ND		0.80		ppb v/v			02/04/17 00:42	1
o-Xylene	ND		0.40		ppb v/v			02/04/17 00:42	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			02/04/17 00:42	1
Benzene	ND		1.3		ug/m3 Air			02/04/17 00:42	1
Benzyl chloride	ND	*	4.1		ug/m3 Air			02/04/17 00:42	1
Bromodichloromethane	ND		2.0		ug/m3 Air			02/04/17 00:42	1
Bromoform	ND		4.1		ug/m3 Air			02/04/17 00:42	1
Bromomethane	ND		3.1		ug/m3 Air			02/04/17 00:42	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			02/04/17 00:42	1
Carbon disulfide	ND		2.5		ug/m3 Air			02/04/17 00:42	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			02/04/17 00:42	1
Chlorobenzene	ND		1.4		ug/m3 Air			02/04/17 00:42	1
Dibromochloromethane	ND		3.4		ug/m3 Air			02/04/17 00:42	1
Chloroethane	ND		2.1		ug/m3 Air			02/04/17 00:42	1
Chloroform	ND		1.5		ug/m3 Air			02/04/17 00:42	1
Chloromethane	ND		1.7		ug/m3 Air			02/04/17 00:42	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			02/04/17 00:42	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			02/04/17 00:42	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			02/04/17 00:42	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			02/04/17 00:42	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			02/04/17 00:42	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			02/04/17 00:42	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			02/04/17 00:42	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			02/04/17 00:42	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/04/17 00:42	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/04/17 00:42	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			02/04/17 00:42	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/04/17 00:42	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/04/17 00:42	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			02/04/17 00:42	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_South_PostCarbon_013017

Lab Sample ID: 320-25383-2

Date Collected: 01/30/17 07:55

Matrix: Air

Date Received: 01/31/17 10:00

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		1.7		ug/m3 Air			02/04/17 00:42	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			02/04/17 00:42	1
Hexachlorobutadiene	ND		21		ug/m3 Air			02/04/17 00:42	1
2-Hexanone	ND		1.6		ug/m3 Air			02/04/17 00:42	1
Methylene Chloride	ND		1.4		ug/m3 Air			02/04/17 00:42	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			02/04/17 00:42	1
Styrene	ND		1.7		ug/m3 Air			02/04/17 00:42	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			02/04/17 00:42	1
Tetrachloroethene	24		2.7		ug/m3 Air			02/04/17 00:42	1
Toluene	1.8		1.5		ug/m3 Air			02/04/17 00:42	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			02/04/17 00:42	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			02/04/17 00:42	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			02/04/17 00:42	1
Trichloroethene	ND		2.1		ug/m3 Air			02/04/17 00:42	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			02/04/17 00:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			02/04/17 00:42	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			02/04/17 00:42	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			02/04/17 00:42	1
Vinyl acetate	ND		2.8		ug/m3 Air			02/04/17 00:42	1
Vinyl chloride	ND		1.0		ug/m3 Air			02/04/17 00:42	1
m,p-Xylene	ND		3.5		ug/m3 Air			02/04/17 00:42	1
o-Xylene	ND		1.7		ug/m3 Air			02/04/17 00:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130					02/04/17 00:42	1
1,2-Dichloroethane-d4 (Surr)	96		70 - 130					02/04/17 00:42	1
Toluene-d8 (Surr)	99		70 - 130					02/04/17 00:42	1

Client Sample ID: SVE_North_Effluent_013017

Lab Sample ID: 320-25383-3

Date Collected: 01/30/17 08:16

Matrix: Air

Date Received: 01/31/17 10:00

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		5.0		ppb v/v			02/04/17 01:38	1
Benzene	0.48		0.40		ppb v/v			02/04/17 01:38	1
Benzyl chloride	ND	*	0.80		ppb v/v			02/04/17 01:38	1
Bromodichloromethane	ND		0.30		ppb v/v			02/04/17 01:38	1
Bromoform	ND		0.40		ppb v/v			02/04/17 01:38	1
Bromomethane	ND		0.80		ppb v/v			02/04/17 01:38	1
2-Butanone (MEK)	ND		0.80		ppb v/v			02/04/17 01:38	1
Carbon disulfide	ND		0.80		ppb v/v			02/04/17 01:38	1
Carbon tetrachloride	ND		0.80		ppb v/v			02/04/17 01:38	1
Chlorobenzene	ND		0.30		ppb v/v			02/04/17 01:38	1
Dibromochloromethane	ND		0.40		ppb v/v			02/04/17 01:38	1
Chloroethane	ND		0.80		ppb v/v			02/04/17 01:38	1
Chloroform	ND		0.30		ppb v/v			02/04/17 01:38	1
Chloromethane	ND		0.80		ppb v/v			02/04/17 01:38	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_North_Effluent_013017

Lab Sample ID: 320-25383-3

Date Collected: 01/30/17 08:16

Matrix: Air

Date Received: 01/31/17 10:00

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		0.80		ppb v/v			02/04/17 01:38	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			02/04/17 01:38	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			02/04/17 01:38	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			02/04/17 01:38	1
Dichlorodifluoromethane	0.51		0.40		ppb v/v			02/04/17 01:38	1
1,1-Dichloroethane	ND		0.30		ppb v/v			02/04/17 01:38	1
1,2-Dichloroethane	ND		0.80		ppb v/v			02/04/17 01:38	1
1,1-Dichloroethene	ND		0.80		ppb v/v			02/04/17 01:38	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			02/04/17 01:38	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			02/04/17 01:38	1
1,2-Dichloropropane	ND		0.40		ppb v/v			02/04/17 01:38	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			02/04/17 01:38	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			02/04/17 01:38	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			02/04/17 01:38	1
Ethylbenzene	ND		0.40		ppb v/v			02/04/17 01:38	1
4-Ethyltoluene	ND		0.40		ppb v/v			02/04/17 01:38	1
Hexachlorobutadiene	ND		2.0		ppb v/v			02/04/17 01:38	1
2-Hexanone	ND		0.40		ppb v/v			02/04/17 01:38	1
Methylene Chloride	ND		0.40		ppb v/v			02/04/17 01:38	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			02/04/17 01:38	1
Styrene	ND		0.40		ppb v/v			02/04/17 01:38	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			02/04/17 01:38	1
Tetrachloroethene	ND		0.40		ppb v/v			02/04/17 01:38	1
Toluene	1.2		0.40		ppb v/v			02/04/17 01:38	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			02/04/17 01:38	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			02/04/17 01:38	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			02/04/17 01:38	1
Trichloroethene	ND		0.40		ppb v/v			02/04/17 01:38	1
Trichlorofluoromethane	1.2		0.40		ppb v/v			02/04/17 01:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			02/04/17 01:38	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			02/04/17 01:38	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			02/04/17 01:38	1
Vinyl acetate	ND		0.80		ppb v/v			02/04/17 01:38	1
Vinyl chloride	ND		0.40		ppb v/v			02/04/17 01:38	1
m,p-Xylene	1.0		0.80		ppb v/v			02/04/17 01:38	1
o-Xylene	ND		0.40		ppb v/v			02/04/17 01:38	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			02/04/17 01:38	1
Benzene	1.5		1.3		ug/m3 Air			02/04/17 01:38	1
Benzyl chloride	ND	*	4.1		ug/m3 Air			02/04/17 01:38	1
Bromodichloromethane	ND		2.0		ug/m3 Air			02/04/17 01:38	1
Bromoform	ND		4.1		ug/m3 Air			02/04/17 01:38	1
Bromomethane	ND		3.1		ug/m3 Air			02/04/17 01:38	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			02/04/17 01:38	1
Carbon disulfide	ND		2.5		ug/m3 Air			02/04/17 01:38	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			02/04/17 01:38	1
Chlorobenzene	ND		1.4		ug/m3 Air			02/04/17 01:38	1
Dibromochloromethane	ND		3.4		ug/m3 Air			02/04/17 01:38	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_North_Effluent_013017

Lab Sample ID: 320-25383-3

Date Collected: 01/30/17 08:16

Matrix: Air

Date Received: 01/31/17 10:00

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		2.1		ug/m3 Air			02/04/17 01:38	1
Chloroform	ND		1.5		ug/m3 Air			02/04/17 01:38	1
Chloromethane	ND		1.7		ug/m3 Air			02/04/17 01:38	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			02/04/17 01:38	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			02/04/17 01:38	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			02/04/17 01:38	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			02/04/17 01:38	1
Dichlorodifluoromethane	2.5		2.0		ug/m3 Air			02/04/17 01:38	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			02/04/17 01:38	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			02/04/17 01:38	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			02/04/17 01:38	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/04/17 01:38	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/04/17 01:38	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			02/04/17 01:38	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/04/17 01:38	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/04/17 01:38	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			02/04/17 01:38	1
Ethylbenzene	ND		1.7		ug/m3 Air			02/04/17 01:38	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			02/04/17 01:38	1
Hexachlorobutadiene	ND		21		ug/m3 Air			02/04/17 01:38	1
2-Hexanone	ND		1.6		ug/m3 Air			02/04/17 01:38	1
Methylene Chloride	ND		1.4		ug/m3 Air			02/04/17 01:38	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			02/04/17 01:38	1
Styrene	ND		1.7		ug/m3 Air			02/04/17 01:38	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			02/04/17 01:38	1
Tetrachloroethene	ND		2.7		ug/m3 Air			02/04/17 01:38	1
Toluene	4.6		1.5		ug/m3 Air			02/04/17 01:38	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			02/04/17 01:38	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			02/04/17 01:38	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			02/04/17 01:38	1
Trichloroethene	ND		2.1		ug/m3 Air			02/04/17 01:38	1
Trichlorofluoromethane	6.8		2.2		ug/m3 Air			02/04/17 01:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			02/04/17 01:38	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			02/04/17 01:38	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			02/04/17 01:38	1
Vinyl acetate	ND		2.8		ug/m3 Air			02/04/17 01:38	1
Vinyl chloride	ND		1.0		ug/m3 Air			02/04/17 01:38	1
m,p-Xylene	4.4		3.5		ug/m3 Air			02/04/17 01:38	1
o-Xylene	ND		1.7		ug/m3 Air			02/04/17 01:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130					02/04/17 01:38	1
1,2-Dichloroethane-d4 (Surr)	97		70 - 130					02/04/17 01:38	1
Toluene-d8 (Surr)	99		70 - 130					02/04/17 01:38	1

TestAmerica Sacramento

Surrogate Summary

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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)
320-25383-1	SVE_South_PreCarbon_013017	75	95	100
320-25383-2	SVE_South_PostCarbon_013017	97	96	99
320-25383-3	SVE_North_Effluent_013017	94	97	99
LCS 320-148872/3	Lab Control Sample	105	97	98
LCSD 320-148872/4	Lab Control Sample Dup	105	96	98
MB 320-148872/6	Method Blank	84	96	99

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 REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: MB 320-148872/6

Matrix: Air

Analysis Batch: 148872

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			02/03/17 14:10	1
Benzene	ND		0.40		ppb v/v			02/03/17 14:10	1
Benzyl chloride	ND		0.80		ppb v/v			02/03/17 14:10	1
Bromodichloromethane	ND		0.30		ppb v/v			02/03/17 14:10	1
Bromoform	ND		0.40		ppb v/v			02/03/17 14:10	1
Bromomethane	ND		0.80		ppb v/v			02/03/17 14:10	1
2-Butanone (MEK)	ND		0.80		ppb v/v			02/03/17 14:10	1
Carbon disulfide	ND		0.80		ppb v/v			02/03/17 14:10	1
Carbon tetrachloride	ND		0.80		ppb v/v			02/03/17 14:10	1
Chlorobenzene	ND		0.30		ppb v/v			02/03/17 14:10	1
Dibromochloromethane	ND		0.40		ppb v/v			02/03/17 14:10	1
Chloroethane	ND		0.80		ppb v/v			02/03/17 14:10	1
Chloroform	ND		0.30		ppb v/v			02/03/17 14:10	1
Chloromethane	ND		0.80		ppb v/v			02/03/17 14:10	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			02/03/17 14:10	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			02/03/17 14:10	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			02/03/17 14:10	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			02/03/17 14:10	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			02/03/17 14:10	1
1,1-Dichloroethane	ND		0.30		ppb v/v			02/03/17 14:10	1
1,2-Dichloroethane	ND		0.80		ppb v/v			02/03/17 14:10	1
1,1-Dichloroethene	ND		0.80		ppb v/v			02/03/17 14:10	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			02/03/17 14:10	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			02/03/17 14:10	1
1,2-Dichloropropane	ND		0.40		ppb v/v			02/03/17 14:10	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			02/03/17 14:10	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			02/03/17 14:10	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			02/03/17 14:10	1
Ethylbenzene	ND		0.40		ppb v/v			02/03/17 14:10	1
4-Ethyltoluene	ND		0.40		ppb v/v			02/03/17 14:10	1
Hexachlorobutadiene	ND		2.0		ppb v/v			02/03/17 14:10	1
2-Hexanone	ND		0.40		ppb v/v			02/03/17 14:10	1
Methylene Chloride	ND		0.40		ppb v/v			02/03/17 14:10	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			02/03/17 14:10	1
Styrene	ND		0.40		ppb v/v			02/03/17 14:10	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			02/03/17 14:10	1
Tetrachloroethene	ND		0.40		ppb v/v			02/03/17 14:10	1
Toluene	ND		0.40		ppb v/v			02/03/17 14:10	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			02/03/17 14:10	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			02/03/17 14:10	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			02/03/17 14:10	1
Trichloroethene	ND		0.40		ppb v/v			02/03/17 14:10	1
Trichlorofluoromethane	ND		0.40		ppb v/v			02/03/17 14:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			02/03/17 14:10	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			02/03/17 14:10	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			02/03/17 14:10	1
Vinyl acetate	ND		0.80		ppb v/v			02/03/17 14:10	1
Vinyl chloride	ND		0.40		ppb v/v			02/03/17 14:10	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: MB 320-148872/6

Matrix: Air

Analysis Batch: 148872

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			02/03/17 14:10	1
o-Xylene	ND		0.40		ppb v/v			02/03/17 14:10	1
Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		12		ug/m3 Air			02/03/17 14:10	1
Benzene	ND		1.3		ug/m3 Air			02/03/17 14:10	1
Benzyl chloride	ND		4.1		ug/m3 Air			02/03/17 14:10	1
Bromodichloromethane	ND		2.0		ug/m3 Air			02/03/17 14:10	1
Bromoform	ND		4.1		ug/m3 Air			02/03/17 14:10	1
Bromomethane	ND		3.1		ug/m3 Air			02/03/17 14:10	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			02/03/17 14:10	1
Carbon disulfide	ND		2.5		ug/m3 Air			02/03/17 14:10	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			02/03/17 14:10	1
Chlorobenzene	ND		1.4		ug/m3 Air			02/03/17 14:10	1
Dibromochloromethane	ND		3.4		ug/m3 Air			02/03/17 14:10	1
Chloroethane	ND		2.1		ug/m3 Air			02/03/17 14:10	1
Chloroform	ND		1.5		ug/m3 Air			02/03/17 14:10	1
Chloromethane	ND		1.7		ug/m3 Air			02/03/17 14:10	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			02/03/17 14:10	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			02/03/17 14:10	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			02/03/17 14:10	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			02/03/17 14:10	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			02/03/17 14:10	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			02/03/17 14:10	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			02/03/17 14:10	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			02/03/17 14:10	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/03/17 14:10	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			02/03/17 14:10	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			02/03/17 14:10	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/03/17 14:10	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			02/03/17 14:10	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			02/03/17 14:10	1
Ethylbenzene	ND		1.7		ug/m3 Air			02/03/17 14:10	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			02/03/17 14:10	1
Hexachlorobutadiene	ND		21		ug/m3 Air			02/03/17 14:10	1
2-Hexanone	ND		1.6		ug/m3 Air			02/03/17 14:10	1
Methylene Chloride	ND		1.4		ug/m3 Air			02/03/17 14:10	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			02/03/17 14:10	1
Styrene	ND		1.7		ug/m3 Air			02/03/17 14:10	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			02/03/17 14:10	1
Tetrachloroethene	ND		2.7		ug/m3 Air			02/03/17 14:10	1
Toluene	ND		1.5		ug/m3 Air			02/03/17 14:10	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			02/03/17 14:10	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			02/03/17 14:10	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			02/03/17 14:10	1
Trichloroethene	ND		2.1		ug/m3 Air			02/03/17 14:10	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			02/03/17 14:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			02/03/17 14:10	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: MB 320-148872/6

Matrix: Air

Analysis Batch: 148872

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			02/03/17 14:10	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			02/03/17 14:10	1
Vinyl acetate	ND		2.8		ug/m3 Air			02/03/17 14:10	1
Vinyl chloride	ND		1.0		ug/m3 Air			02/03/17 14:10	1
m,p-Xylene	ND		3.5		ug/m3 Air			02/03/17 14:10	1
o-Xylene	ND		1.7		ug/m3 Air			02/03/17 14:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		70 - 130		02/03/17 14:10	1
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		02/03/17 14:10	1
Toluene-d8 (Surr)	99		70 - 130		02/03/17 14:10	1

Lab Sample ID: LCS 320-148872/3

Matrix: Air

Analysis Batch: 148872

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	19.5		ppb v/v		97	71 - 131
Benzene	20.0	19.2		ppb v/v		96	68 - 128
Benzyl chloride	16.0	19.2		ppb v/v		120	58 - 120
Bromodichloromethane	20.0	19.6		ppb v/v		98	65 - 130
Bromoform	20.0	20.6		ppb v/v		103	64 - 144
Bromomethane	20.0	19.5		ppb v/v		97	70 - 131
2-Butanone (MEK)	20.0	19.4		ppb v/v		97	71 - 131
Carbon disulfide	20.0	19.1		ppb v/v		96	63 - 123
Carbon tetrachloride	20.0	19.6		ppb v/v		98	67 - 127
Chlorobenzene	20.0	19.6		ppb v/v		98	70 - 132
Dibromochloromethane	20.0	20.0		ppb v/v		100	68 - 128
Chloroethane	20.0	19.9		ppb v/v		99	70 - 131
Chloroform	20.0	18.7		ppb v/v		94	69 - 129
Chloromethane	20.0	20.6		ppb v/v		103	67 - 127
1,2-Dibromoethane (EDB)	20.0	19.9		ppb v/v		99	68 - 131
1,2-Dichlorobenzene	20.0	21.9		ppb v/v		110	73 - 143
1,3-Dichlorobenzene	20.0	22.0		ppb v/v		110	77 - 136
1,4-Dichlorobenzene	20.0	22.0		ppb v/v		110	73 - 143
Dichlorodifluoromethane	20.0	18.6		ppb v/v		93	69 - 129
1,1-Dichloroethane	20.0	19.6		ppb v/v		98	65 - 125
1,2-Dichloroethane	20.0	19.7		ppb v/v		99	71 - 131
1,1-Dichloroethene	20.0	19.5		ppb v/v		98	53 - 128
cis-1,2-Dichloroethene	20.0	18.7		ppb v/v		94	68 - 128
trans-1,2-Dichloroethene	20.0	19.5		ppb v/v		97	70 - 130
1,2-Dichloropropane	20.0	19.7		ppb v/v		98	74 - 128
cis-1,3-Dichloropropene	20.0	19.6		ppb v/v		98	78 - 132
trans-1,3-Dichloropropene	20.0	20.3		ppb v/v		101	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.3		ppb v/v		96	64 - 124
Ethylbenzene	20.0	19.8		ppb v/v		99	76 - 136
4-Ethyltoluene	20.0	22.3		ppb v/v		112	62 - 136

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: LCS 320-148872/3

Matrix: Air

Analysis Batch: 148872

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	20.2		ppb v/v		101	42 - 150
2-Hexanone	20.0	21.3		ppb v/v		107	70 - 128
Methylene Chloride	20.0	20.3		ppb v/v		102	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	20.6		ppb v/v		103	73 - 133
Styrene	20.0	20.3		ppb v/v		101	76 - 144
1,1,2,2-Tetrachloroethane	20.0	21.5		ppb v/v		107	75 - 135
Tetrachloroethene	20.0	19.2		ppb v/v		96	56 - 138
Toluene	20.0	19.3		ppb v/v		96	71 - 132
1,2,4-Trichlorobenzene	20.0	19.1		ppb v/v		96	59 - 150
1,1,1-Trichloroethane	20.0	18.5		ppb v/v		92	65 - 124
1,1,2-Trichloroethane	20.0	19.6		ppb v/v		98	71 - 131
Trichloroethene	20.0	19.1		ppb v/v		95	64 - 127
Trichlorofluoromethane	20.0	18.4		ppb v/v		92	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.9		ppb v/v		95	50 - 132
1,2,4-Trimethylbenzene	20.0	21.9		ppb v/v		109	61 - 145
1,3,5-Trimethylbenzene	20.0	21.7		ppb v/v		109	65 - 136
Vinyl acetate	20.0	20.9		ppb v/v		104	77 - 134
Vinyl chloride	20.0	20.1		ppb v/v		100	69 - 129
m,p-Xylene	40.0	40.1		ppb v/v		100	75 - 138
o-Xylene	20.0	20.3		ppb v/v		101	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	46.3		ug/m3 Air		97	71 - 131
Benzene	64	61.4		ug/m3 Air		96	68 - 128
Benzyl chloride	83	99.6		ug/m3 Air		120	58 - 120
Bromodichloromethane	130	131		ug/m3 Air		98	65 - 130
Bromoform	210	213		ug/m3 Air		103	64 - 144
Bromomethane	78	75.6		ug/m3 Air		97	70 - 131
2-Butanone (MEK)	59	57.1		ug/m3 Air		97	71 - 131
Carbon disulfide	62	59.6		ug/m3 Air		96	63 - 123
Carbon tetrachloride	130	123		ug/m3 Air		98	67 - 127
Chlorobenzene	92	90.2		ug/m3 Air		98	70 - 132
Dibromochloromethane	170	170		ug/m3 Air		100	68 - 128
Chloroethane	53	52.5		ug/m3 Air		99	70 - 131
Chloroform	98	91.4		ug/m3 Air		94	69 - 129
Chloromethane	41	42.6		ug/m3 Air		103	67 - 127
1,2-Dibromoethane (EDB)	150	153		ug/m3 Air		99	68 - 131
1,2-Dichlorobenzene	120	132		ug/m3 Air		110	73 - 143
1,3-Dichlorobenzene	120	132		ug/m3 Air		110	77 - 136
1,4-Dichlorobenzene	120	132		ug/m3 Air		110	73 - 143
Dichlorodifluoromethane	99	92.1		ug/m3 Air		93	69 - 129
1,1-Dichloroethane	81	79.1		ug/m3 Air		98	65 - 125
1,2-Dichloroethane	81	79.9		ug/m3 Air		99	71 - 131
1,1-Dichloroethene	79	77.5		ug/m3 Air		98	53 - 128
cis-1,2-Dichloroethene	79	74.2		ug/m3 Air		94	68 - 128
trans-1,2-Dichloroethene	79	77.3		ug/m3 Air		97	70 - 130
1,2-Dichloropropane	92	91.0		ug/m3 Air		98	74 - 128

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: LCS 320-148872/3

Matrix: Air

Analysis Batch: 148872

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	89.1		ug/m3 Air		98	78 - 132
trans-1,3-Dichloropropene	91	92.0		ug/m3 Air		101	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	135		ug/m3 Air		96	64 - 124
Ethylbenzene	87	85.9		ug/m3 Air		99	76 - 136
4-Ethyltoluene	98	110		ug/m3 Air		112	62 - 136
Hexachlorobutadiene	210	215		ug/m3 Air		101	42 - 150
2-Hexanone	82	87.3		ug/m3 Air		107	70 - 128
Methylene Chloride	69	70.7		ug/m3 Air		102	65 - 125
4-Methyl-2-pentanone (MIBK)	82	84.4		ug/m3 Air		103	73 - 133
Styrene	85	86.3		ug/m3 Air		101	76 - 144
1,1,2,2-Tetrachloroethane	140	147		ug/m3 Air		107	75 - 135
Tetrachloroethene	140	130		ug/m3 Air		96	56 - 138
Toluene	75	72.5		ug/m3 Air		96	71 - 132
1,2,4-Trichlorobenzene	150	142		ug/m3 Air		96	59 - 150
1,1,1-Trichloroethane	110	101		ug/m3 Air		92	65 - 124
1,1,2-Trichloroethane	110	107		ug/m3 Air		98	71 - 131
Trichloroethene	110	102		ug/m3 Air		95	64 - 127
Trichlorofluoromethane	110	103		ug/m3 Air		92	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	145		ug/m3 Air		95	50 - 132
1,2,4-Trimethylbenzene	98	108		ug/m3 Air		109	61 - 145
1,3,5-Trimethylbenzene	98	107		ug/m3 Air		109	65 - 136
Vinyl acetate	70	73.5		ug/m3 Air		104	77 - 134
Vinyl chloride	51	51.3		ug/m3 Air		100	69 - 129
m,p-Xylene	170	174		ug/m3 Air		100	75 - 138
o-Xylene	87	88.0		ug/m3 Air		101	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		70 - 130
1,2-Dichloroethane-d4 (Surr)	97		70 - 130
Toluene-d8 (Surr)	98		70 - 130

Lab Sample ID: LCSD 320-148872/4

Matrix: Air

Analysis Batch: 148872

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	20.0		ppb v/v		100	71 - 131	3	25
Benzene	20.0	19.4		ppb v/v		97	68 - 128	1	25
Benzyl chloride	16.0	19.5	*	ppb v/v		122	58 - 120	1	25
Bromodichloromethane	20.0	19.7		ppb v/v		98	65 - 130	0	25
Bromoform	20.0	20.9		ppb v/v		105	64 - 144	1	25
Bromomethane	20.0	19.7		ppb v/v		98	70 - 131	1	25
2-Butanone (MEK)	20.0	19.9		ppb v/v		100	71 - 131	3	25
Carbon disulfide	20.0	19.4		ppb v/v		97	63 - 123	1	25
Carbon tetrachloride	20.0	19.8		ppb v/v		99	67 - 127	1	25
Chlorobenzene	20.0	19.9		ppb v/v		99	70 - 132	1	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: LCSD 320-148872/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 148872

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	20.4		ppb v/v		102	68 - 128	2	25
Chloroethane	20.0	20.2		ppb v/v		101	70 - 131	1	25
Chloroform	20.0	18.9		ppb v/v		95	69 - 129	1	25
Chloromethane	20.0	21.4		ppb v/v		107	67 - 127	4	25
1,2-Dibromoethane (EDB)	20.0	20.2		ppb v/v		101	68 - 131	2	25
1,2-Dichlorobenzene	20.0	22.2		ppb v/v		111	73 - 143	1	25
1,3-Dichlorobenzene	20.0	22.4		ppb v/v		112	77 - 136	2	25
1,4-Dichlorobenzene	20.0	22.4		ppb v/v		112	73 - 143	2	25
Dichlorodifluoromethane	20.0	18.9		ppb v/v		95	69 - 129	2	25
1,1-Dichloroethane	20.0	19.8		ppb v/v		99	65 - 125	1	25
1,2-Dichloroethane	20.0	19.9		ppb v/v		100	71 - 131	1	25
1,1-Dichloroethene	20.0	19.7		ppb v/v		98	53 - 128	1	25
cis-1,2-Dichloroethene	20.0	18.9		ppb v/v		95	68 - 128	1	25
trans-1,2-Dichloroethene	20.0	19.7		ppb v/v		98	70 - 130	1	25
1,2-Dichloropropane	20.0	19.9		ppb v/v		99	74 - 128	1	25
cis-1,3-Dichloropropene	20.0	19.8		ppb v/v		99	78 - 132	1	25
trans-1,3-Dichloropropene	20.0	20.7		ppb v/v		103	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.6		ppb v/v		98	64 - 124	2	25
Ethylbenzene	20.0	20.0		ppb v/v		100	76 - 136	1	25
4-Ethyltoluene	20.0	22.5		ppb v/v		112	62 - 136	1	25
Hexachlorobutadiene	20.0	20.4		ppb v/v		102	42 - 150	1	25
2-Hexanone	20.0	21.5		ppb v/v		107	70 - 128	1	25
Methylene Chloride	20.0	20.2		ppb v/v		101	65 - 125	0	25
4-Methyl-2-pentanone (MIBK)	20.0	20.6		ppb v/v		103	73 - 133	0	25
Styrene	20.0	20.5		ppb v/v		102	76 - 144	1	25
1,1,2,2-Tetrachloroethane	20.0	21.7		ppb v/v		109	75 - 135	1	25
Tetrachloroethene	20.0	19.6		ppb v/v		98	56 - 138	2	25
Toluene	20.0	19.5		ppb v/v		97	71 - 132	1	25
1,2,4-Trichlorobenzene	20.0	19.8		ppb v/v		99	59 - 150	3	25
1,1,1-Trichloroethane	20.0	18.9		ppb v/v		94	65 - 124	2	25
1,1,2-Trichloroethane	20.0	20.0		ppb v/v		100	71 - 131	2	25
Trichloroethene	20.0	19.4		ppb v/v		97	64 - 127	2	25
Trichlorofluoromethane	20.0	18.4		ppb v/v		92	68 - 128	0	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	19.2		ppb v/v		96	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	22.3		ppb v/v		111	61 - 145	2	25
1,3,5-Trimethylbenzene	20.0	22.1		ppb v/v		110	65 - 136	2	25
Vinyl acetate	20.0	21.0		ppb v/v		105	77 - 134	1	25
Vinyl chloride	20.0	20.9		ppb v/v		104	69 - 129	4	25
m,p-Xylene	40.0	40.6		ppb v/v		102	75 - 138	1	25
o-Xylene	20.0	20.6		ppb v/v		103	77 - 132	2	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	47.5		ug/m3 Air		100	71 - 131	3	25
Benzene	64	61.8		ug/m3 Air		97	68 - 128	1	25
Benzyl chloride	83	101	*	ug/m3 Air		122	58 - 120	1	25
Bromodichloromethane	130	132		ug/m3 Air		98	65 - 130	0	25
Bromoform	210	216		ug/m3 Air		105	64 - 144	1	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: LCSD 320-148872/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 148872

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	76.4		ug/m3 Air		98	70 - 131	1	25
2-Butanone (MEK)	59	58.7		ug/m3 Air		100	71 - 131	3	25
Carbon disulfide	62	60.3		ug/m3 Air		97	63 - 123	1	25
Carbon tetrachloride	130	125		ug/m3 Air		99	67 - 127	1	25
Chlorobenzene	92	91.5		ug/m3 Air		99	70 - 132	1	25
Dibromochloromethane	170	173		ug/m3 Air		102	68 - 128	2	25
Chloroethane	53	53.3		ug/m3 Air		101	70 - 131	1	25
Chloroform	98	92.4		ug/m3 Air		95	69 - 129	1	25
Chloromethane	41	44.2		ug/m3 Air		107	67 - 127	4	25
1,2-Dibromoethane (EDB)	150	155		ug/m3 Air		101	68 - 131	2	25
1,2-Dichlorobenzene	120	134		ug/m3 Air		111	73 - 143	1	25
1,3-Dichlorobenzene	120	134		ug/m3 Air		112	77 - 136	2	25
1,4-Dichlorobenzene	120	135		ug/m3 Air		112	73 - 143	2	25
Dichlorodifluoromethane	99	93.7		ug/m3 Air		95	69 - 129	2	25
1,1-Dichloroethane	81	80.2		ug/m3 Air		99	65 - 125	1	25
1,2-Dichloroethane	81	80.7		ug/m3 Air		100	71 - 131	1	25
1,1-Dichloroethene	79	78.1		ug/m3 Air		98	53 - 128	1	25
cis-1,2-Dichloroethene	79	75.1		ug/m3 Air		95	68 - 128	1	25
trans-1,2-Dichloroethene	79	78.0		ug/m3 Air		98	70 - 130	1	25
1,2-Dichloropropane	92	91.9		ug/m3 Air		99	74 - 128	1	25
cis-1,3-Dichloropropene	91	90.0		ug/m3 Air		99	78 - 132	1	25
trans-1,3-Dichloropropene	91	93.7		ug/m3 Air		103	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	137		ug/m3 Air		98	64 - 124	2	25
Ethylbenzene	87	87.0		ug/m3 Air		100	76 - 136	1	25
4-Ethyltoluene	98	111		ug/m3 Air		112	62 - 136	1	25
Hexachlorobutadiene	210	218		ug/m3 Air		102	42 - 150	1	25
2-Hexanone	82	87.9		ug/m3 Air		107	70 - 128	1	25
Methylene Chloride	69	70.3		ug/m3 Air		101	65 - 125	0	25
4-Methyl-2-pentanone (MIBK)	82	84.5		ug/m3 Air		103	73 - 133	0	25
Styrene	85	87.1		ug/m3 Air		102	76 - 144	1	25
1,1,2,2-Tetrachloroethane	140	149		ug/m3 Air		109	75 - 135	1	25
Tetrachloroethene	140	133		ug/m3 Air		98	56 - 138	2	25
Toluene	75	73.4		ug/m3 Air		97	71 - 132	1	25
1,2,4-Trichlorobenzene	150	147		ug/m3 Air		99	59 - 150	3	25
1,1,1-Trichloroethane	110	103		ug/m3 Air		94	65 - 124	2	25
1,1,2-Trichloroethane	110	109		ug/m3 Air		100	71 - 131	2	25
Trichloroethene	110	104		ug/m3 Air		97	64 - 127	2	25
Trichlorofluoromethane	110	104		ug/m3 Air		92	68 - 128	0	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	147		ug/m3 Air		96	50 - 132	1	25
1,2,4-Trimethylbenzene	98	109		ug/m3 Air		111	61 - 145	2	25
1,3,5-Trimethylbenzene	98	109		ug/m3 Air		110	65 - 136	2	25
Vinyl acetate	70	74.0		ug/m3 Air		105	77 - 134	1	25
Vinyl chloride	51	53.3		ug/m3 Air		104	69 - 129	4	25
m,p-Xylene	170	176		ug/m3 Air		102	75 - 138	1	25
o-Xylene	87	89.4		ug/m3 Air		103	77 - 132	2	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

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

Lab Sample ID: LCSD 320-148872/4

Matrix: Air

Analysis Batch: 148872

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	105		70 - 130
1,2-Dichloroethane-d4 (Surr)	96		70 - 130
Toluene-d8 (Surr)	98		70 - 130

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QC Association Summary

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Air - GC/MS VOA

Analysis Batch: 148872

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25383-1	SVE_South_PreCarbon_013017	Total/NA	Air	TO-15	
320-25383-2	SVE_South_PostCarbon_013017	Total/NA	Air	TO-15	
320-25383-3	SVE_North_Effluent_013017	Total/NA	Air	TO-15	
MB 320-148872/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-148872/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-148872/4	Lab Control Sample Dup	Total/NA	Air	TO-15	



Lab Chronicle

Client: Apex Companies LLC
 Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Client Sample ID: SVE_South_PreCarbon_013017

Lab Sample ID: 320-25383-1

Date Collected: 01/30/17 07:51

Matrix: Air

Date Received: 01/31/17 10:00

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		217	1.56 mL	250 mL	148872	02/03/17 23:47	AP1	TAL SAC

Client Sample ID: SVE_South_PostCarbon_013017

Lab Sample ID: 320-25383-2

Date Collected: 01/30/17 07:55

Matrix: Air

Date Received: 01/31/17 10:00

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	377 mL	250 mL	148872	02/04/17 00:42	AP1	TAL SAC

Client Sample ID: SVE_North_Effluent_013017

Lab Sample ID: 320-25383-3

Date Collected: 01/30/17 08:16

Matrix: Air

Date Received: 01/31/17 10:00

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	429 mL	250 mL	148872	02/04/17 01:38	AP1	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 REM

TestAmerica Job ID: 320-25383-1

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
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

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
USDA	Federal		P330-11-00092	04-17-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: Apex Companies LLC
Project/Site: NuStar Vapor REM

TestAmerica Job ID: 320-25383-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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 REM

TestAmerica Job ID: 320-25383-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-25383-1	SVE_South_PreCarbon_013017	Air	01/30/17 07:51	01/31/17 10:00
320-25383-2	SVE_South_PostCarbon_013017	Air	01/30/17 07:55	01/31/17 10:00
320-25383-3	SVE_North_Effluent_013017	Air	01/30/17 08:16	01/31/17 10:00

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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, Inc.
Address: 3015 SW 1st Ave
City/State/Zip: Portland, OR 97201
Phone: 503-924-4704
FAX: 503-924-4704
Project Name: Mustang Vancouver REM
Site/Location: Mustang Vancouver
P O #: 126-18

Project Manager: Stephanie Salisbury
Phone: 503 924 4704 X1905
Email: Ssalisbury@Apexcos.com
Site Contact: -
TA Contact: -
Analysis Turnaround Time
Standard (Specific):
Rush (Specify):

Samples Collected By: Kyle Kline

COC No: 1 of 1 COCs

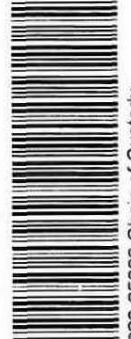
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:
(See below for Add'l Items)

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

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	Sample Specific Notes:												
								TO-15 (Med / Std / Low / SIM)	MA-APH	EPA 3C	EPA 25C / 25.3	ASTM D-1946 / 1945 / 3588	EPA 15/16	TO-3	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas
SVE - South - Pre Carbon - 013017	1/30/17	0750	0751	-30	-1	-	34009	X												
SVE - South - Post Carbon - 013017	1/30/17	0754	0755	-30	-1	-	34009	X												
SVE - North - Effluent - 013017	1/30/17	0815	0816	-29	-3	-	34000	X												



Special Instructions/QC Requirements & Comments: Email Results to: Ssalisbury@Apexcos.com

Samples Shipped by: Kyle Kline
Date / Time: 1/30/17 1700

Samples Relinquished by: Kyle Kline/Apex
Date / Time: 1/30/17 1130

Relinquished by: Kyle Kline/Apex
Date / Time: 1/30/17 1355

Lab Use Only: Shipper Name: Kyle Kline
Date / Time: 1/30/17 1700

Samples Received by: Kyle Kline
Date / Time: 1/30/17 1320

Received by: Kyle Kline/Apex
Date / Time: 1/30/17 1320

Condition: Kyle Nelson 1-31-17 1000



Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-25383-1

Login Number: 25383

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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 (excluding tests with immediate HTs)	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

TO-15 (SCAN)

Date Cleaned/Batch ID

BD-03-17 320-24780

Date of QC

1/4/2017

Data File Number

C:\msdchem\1\DATA\170104



320-24780 Chain of Custody

M47010424.d
CANISTER ID NUMBERS

34001565	34000430	
7755	34000470	
34000529	* 3400566	
34001589	34000491	
34001395		
7989		
34001374		
7971		

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.

1st level Reviewed By:

1/5/17
Date:

2nd level Reviewed By:

1/10/17
Date:

Certification Type TO-15 SCAN
 Date Cleaned/Batch ID 1/13/17 320-25033
 Date of QC 1/17/17, 1/18/17
1/16/17 C:\MSDL\EM\1\DATA 1701181



320-25033 Chain of Custody

Canister ID	Filename	Canister ID	Filename
34000849	MS9011711	146679	
2750	MS9011712		
5685			
34000694	MS9011715		
34000854	MS9011716		
34000003	MS9011717		
7964	MS9011718	↓	
34002158	MS7011821.d	146814	
34001346	MS7011822.d		
8043	MS7011824.d		
8087	MS7011825.d	↓	
34000305	MS9011820	146793	

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.

W for AP
 1st level Reviewed By: [Signature]
 2nd level Reviewed By: [Signature]

1/18/17
 Date: 1/19/17
2/6/17
 Date:

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24780-1
 SDG No.: _____
 Client Sample ID: 34000566 Lab Sample ID: 320-24780-11
 Matrix: Air Lab File ID: MS7010424.D
 Analysis Method: TO-15 Date Collected: 01/03/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/05/2017 09:03
 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.: 144917 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	0.27
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.: 320-24780-1
 SDG No.: _____
 Client Sample ID: 34000566 Lab Sample ID: 320-24780-11
 Matrix: Air Lab File ID: MS7010424.D
 Analysis Method: TO-15 Date Collected: 01/03/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/05/2017 09:03
 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.: 144917 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	0.12
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	0.11	J	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	0.21
108-88-3	Toluene	0.064	J	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.: 320-24780-1
 SDG No.: _____
 Client Sample ID: 34000566 Lab Sample ID: 320-24780-11
 Matrix: Air Lab File ID: MS7010424.D
 Analysis Method: TO-15 Date Collected: 01/03/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/05/2017 09:03
 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.: 144917 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)	109		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170104-38451.b\MS7010424.D
 Lims ID: 320-24780-A-11
 Client ID: 34000566
 Sample Type: Client
 Inject. Date: 05-Jan-2017 09:03:30 ALS Bottle#: 15 Worklist Smp#: 24
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-24638-A-1
 Misc. Info.: 455 mL
 Operator ID: LHS Instrument ID: ATMS7
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20170104-38451.b\TO15_ATMS7N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 05-Jan-2017 10:51:03 Calib Date: 19-Dec-2016 13:03:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20161218-37977.b\MS7121821.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK009

First Level Reviewer: leeh

Date: 05-Jan-2017 10:51:03

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.290	12.338	-0.048	90	32931	4.00	
* 2 1,4-Difluorobenzene	114	14.437	14.492	-0.055	95	139761	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.117	21.160	-0.043	88	145125	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.488	13.537	-0.049	97	56667	4.38	
\$ 5 Toluene-d8 (Surr)	100	17.838	17.893	-0.055	98	94312	4.13	
\$ 6 4-Bromofluorobenzene (Surr	95	23.660	23.703	-0.043	91	80584	3.66	
11 Propene	41	3.852	3.882	-0.030	86	569	0.1086	
75 Toluene	91	18.014	18.069	-0.055	91	2564	0.0636	

Reagents:

VAMIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170104-38451.b\MS7010424.D

Injection Date: 05-Jan-2017 09:03:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-24780-A-11

Lab Sample ID: 320-24780-11

Worklist Smp#: 24

Client ID: 34000566

Purge Vol: 5.000 mL

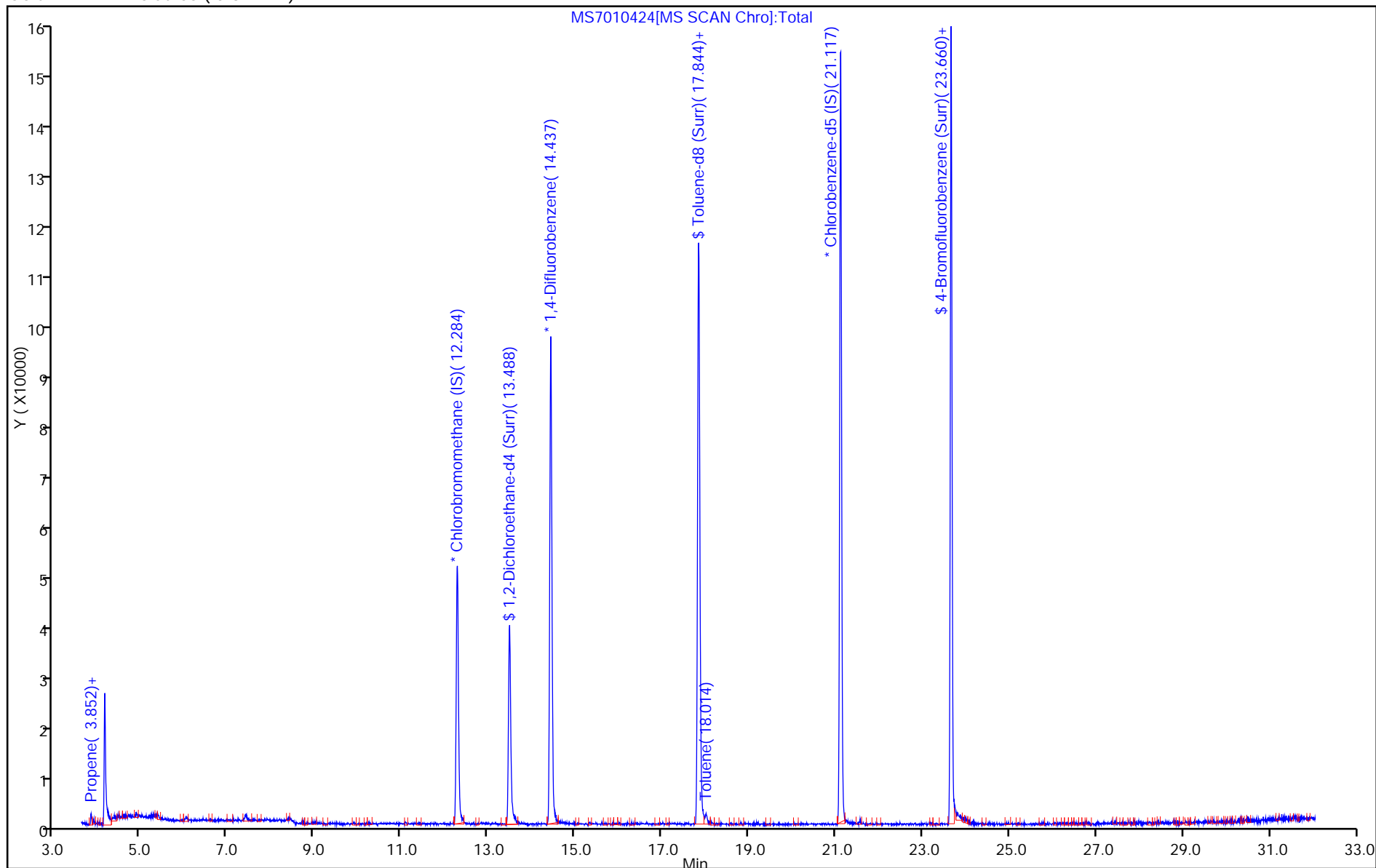
Dil. Factor: 1.0000

ALS Bottle#: 15

Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170104-38451.b\MS7010424.D

Injection Date: 05-Jan-2017 09:03:30

Instrument ID: ATMS7

Lims ID: 320-24780-A-11

Lab Sample ID: 320-24780-11

Client ID: 34000566

Operator ID: LHS

ALS Bottle#: 15

Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

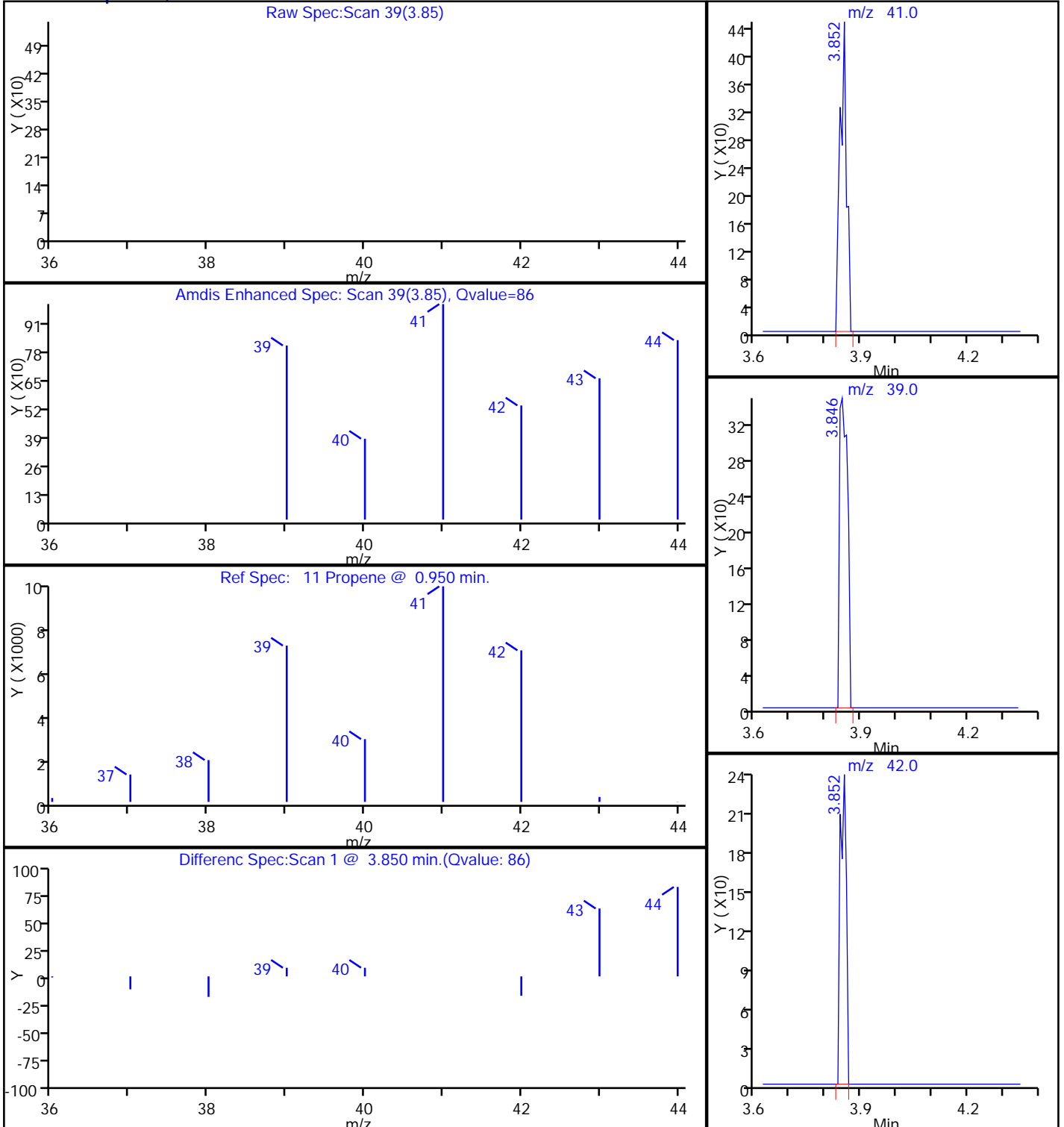
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

11 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170104-38451.b\MS7010424.D

Injection Date: 05-Jan-2017 09:03:30

Instrument ID: ATMS7

Lims ID: 320-24780-A-11

Lab Sample ID: 320-24780-11

Client ID: 34000566

Operator ID: LHS

ALS Bottle#: 15

Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

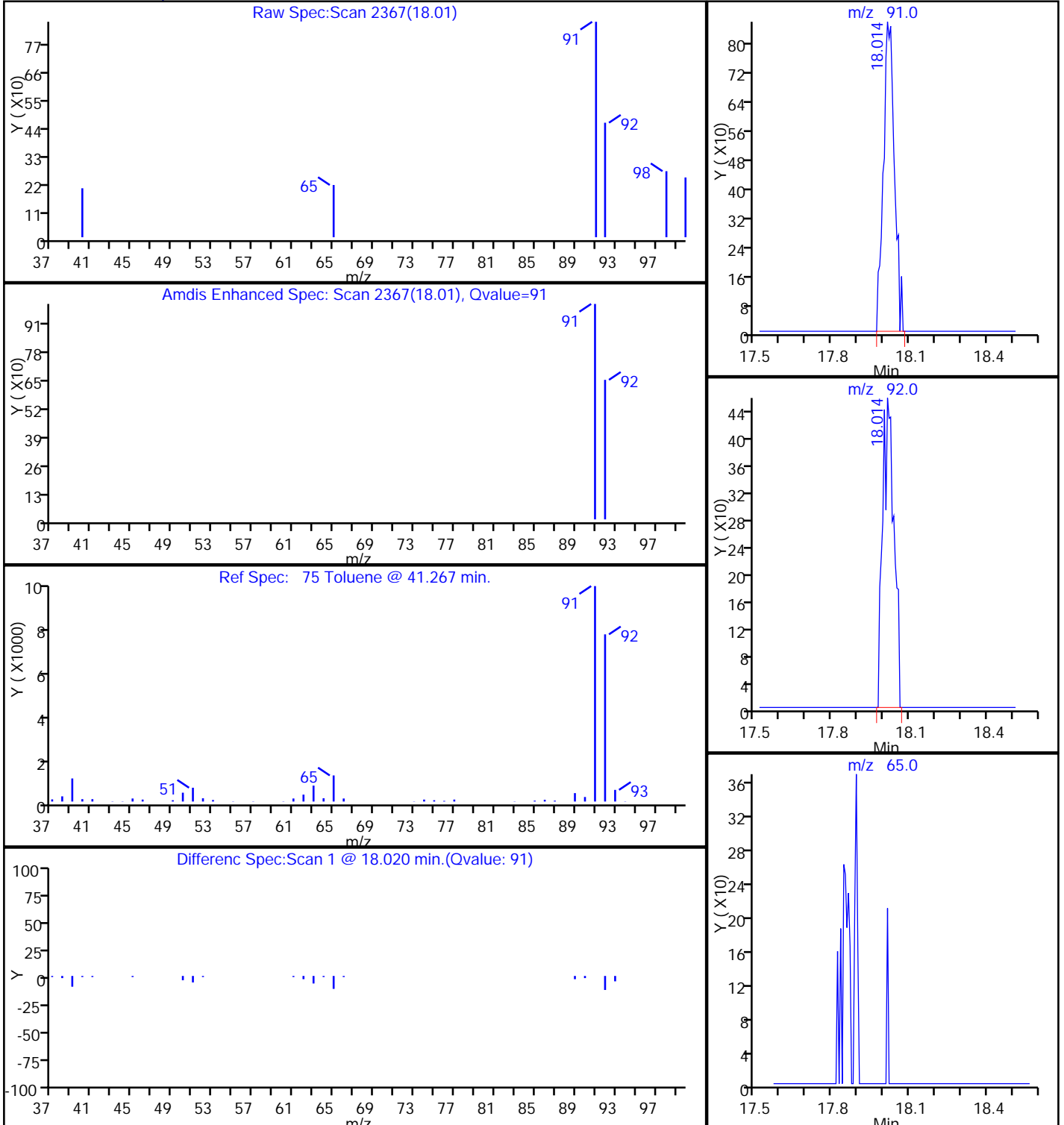
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

75 Toluene, CAS: 108-88-3



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000849 Lab Sample ID: 320-25033-1
 Matrix: Air Lab File ID: MS9011711.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/17/2017 20:31
 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.: 146679 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.22	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000849 Lab Sample ID: 320-25033-1
 Matrix: Air Lab File ID: MS9011711.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/17/2017 20:31
 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.: 146679 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	0.12
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	0.21
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000849 Lab Sample ID: 320-25033-1
 Matrix: Air Lab File ID: MS9011711.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/17/2017 20:31
 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.: 146679 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)	100		70-130
2037-26-5	Toluene-d8 (Surr)	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011711.D
 Lims ID: 320-25033-A-1
 Client ID: 34000849
 Sample Type: Client
 Inject. Date: 17-Jan-2017 20:31:30 ALS Bottle#: 4 Worklist Smp#: 13
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-1
 Misc. Info.: 500 CAN CERT
 Operator ID: SV Instrument ID: ATMS9
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\TO15_ATMS9N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 18-Jan-2017 13:38:08 Calib Date: 05-Jan-2017 23:38:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20170106-38533.b\MS9010512.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK033

First Level Reviewer: phanthasena

Date: 18-Jan-2017 12:15:54

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.387	12.400	-0.013	95	52441	4.00	
* 2 1,4-Difluorobenzene	114	14.492	14.498	-0.006	94	218090	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.418	20.418	0.000	85	191968	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.568	13.580	-0.012	98	62229	4.00	
\$ 5 Toluene-d8 (Surr)	100	17.662	17.662	0.000	99	126596	4.00	
\$ 6 4-Bromofluorobenzene (Surr	174	22.340	22.340	0.000	95	104066	3.74	
14 Propene	41	4.235	4.181	0.054	1	865	0.0895	
15 Dichlorodifluoromethane	85	4.272	4.248	0.024	94	1529	0.0483	
18 Chloromethane	50	4.753	4.704	0.049	6	721	0.0695	
22 Butane	43	4.959	4.941	0.018	69	1620	0.0985	
31 Acetone	43	7.758	7.673	0.085	92	4469	0.2187	
85 Toluene	91	17.820	17.814	0.006	85	1976	0.0350	
126 1,2,4-Trichlorobenzene	180	26.781	26.793	-0.012	1	598	0.0206	
128 Hexachlorobutadiene	225	27.055	27.055	0.000	1	274	0.009381	

Reagents:

VAMSIS20_00002 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011711.D

Injection Date: 17-Jan-2017 20:31:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-25033-A-1

Lab Sample ID: 320-25033-1

Worklist Smp#: 13

Client ID: 34000849

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

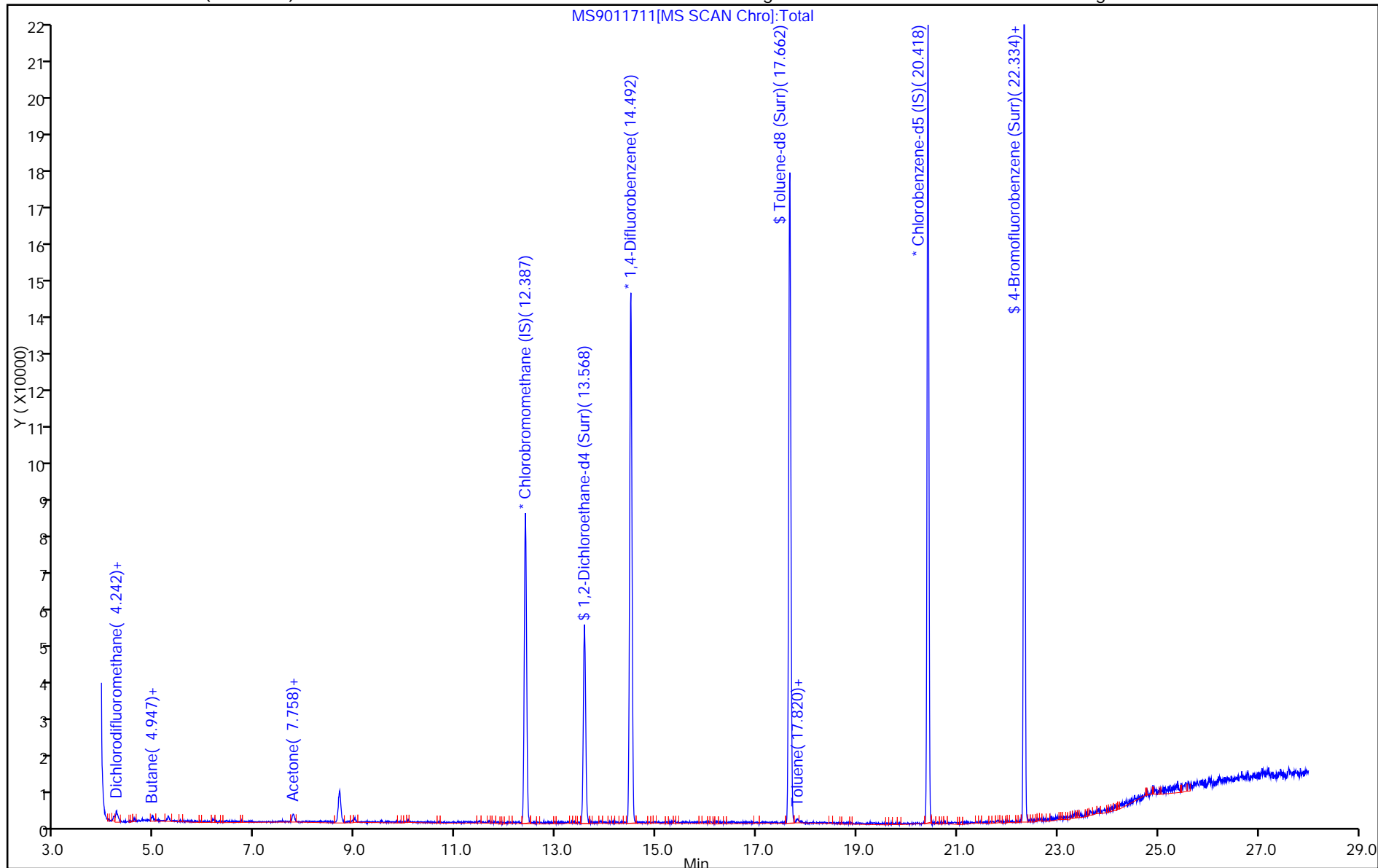
ALS Bottle#: 4

Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011711.D

Injection Date: 17-Jan-2017 20:31:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-1

Lab Sample ID: 320-25033-1

Client ID: 34000849

Operator ID: SV

ALS Bottle#: 4 Worklist Smp#: 13

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

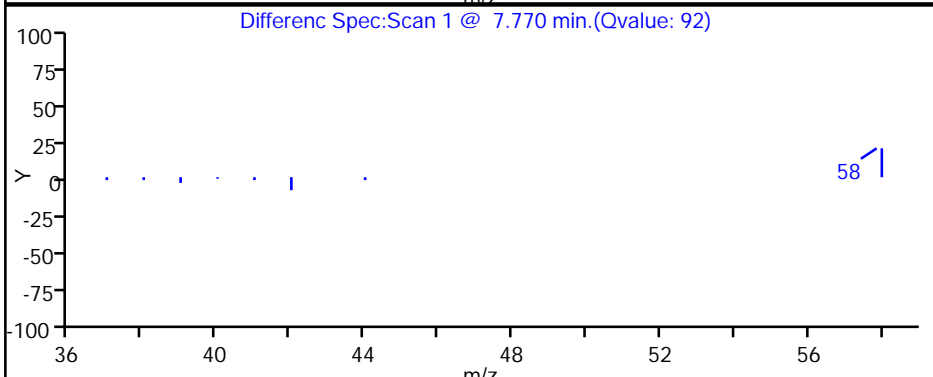
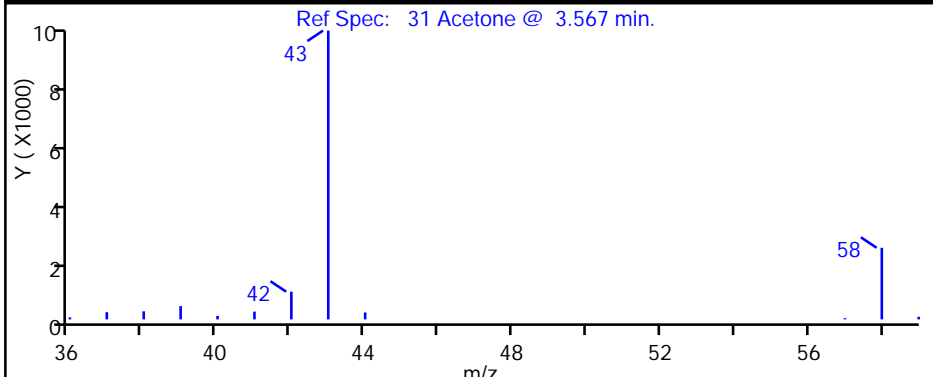
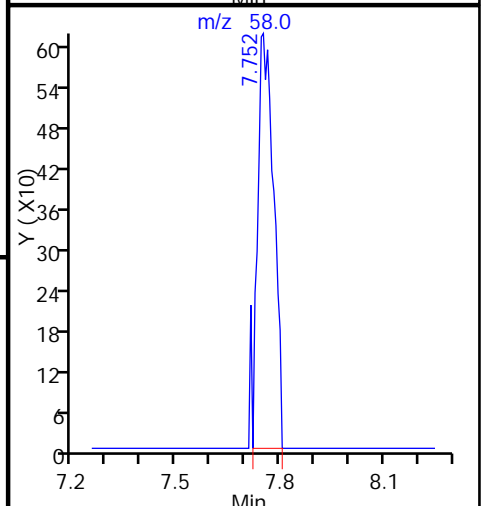
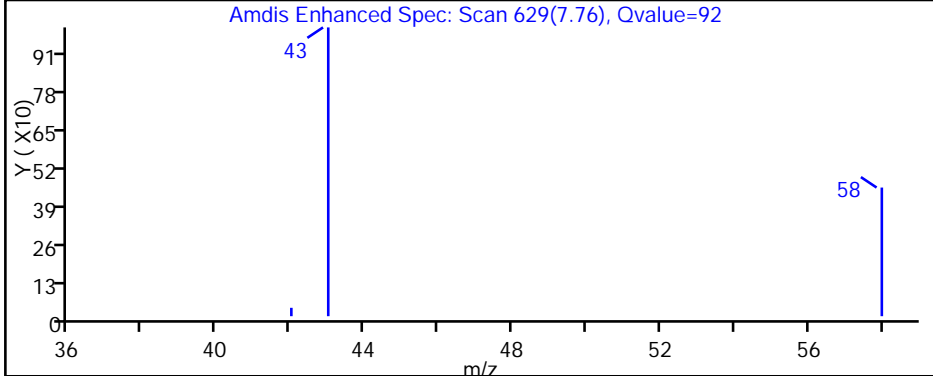
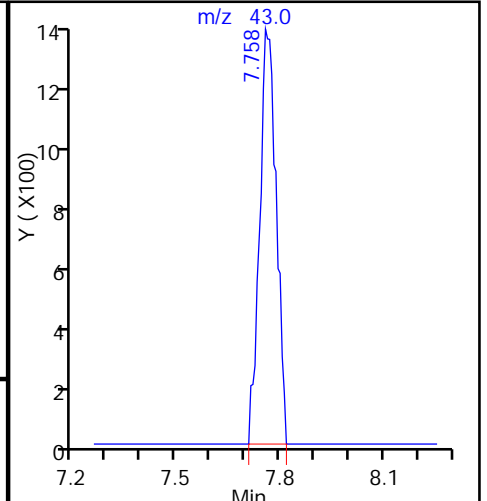
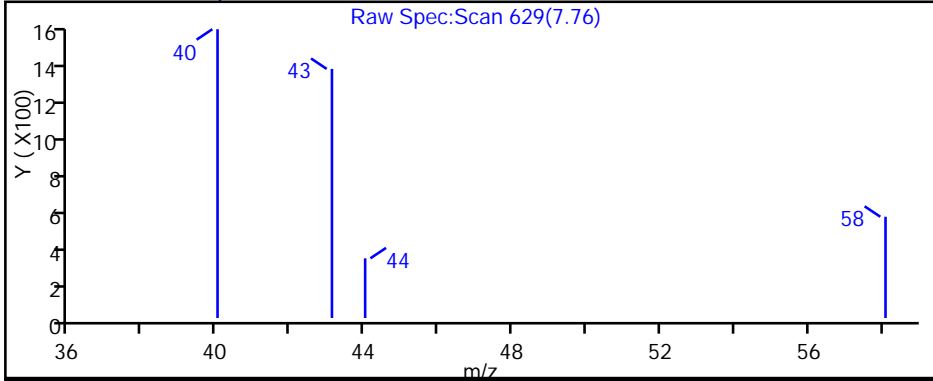
Method: TO15_ATMS9N

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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 2750 Lab Sample ID: 320-25033-2
 Matrix: Air Lab File ID: MS9011712.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/17/2017 21:26
 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.: 146679 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.20	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 2750 Lab Sample ID: 320-25033-2
 Matrix: Air Lab File ID: MS9011712.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/17/2017 21:26
 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.: 146679 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	0.12
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	0.12	J	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	0.21
108-88-3	Toluene	0.064	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 2750 Lab Sample ID: 320-25033-2
 Matrix: Air Lab File ID: MS9011712.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/17/2017 21:26
 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.: 146679 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)	100		70-130
2037-26-5	Toluene-d8 (Surr)	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011712.D
 Lims ID: 320-25033-A-2
 Client ID: 2750
 Sample Type: Client
 Inject. Date: 17-Jan-2017 21:26:30 ALS Bottle#: 5 Worklist Smp#: 14
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-2
 Misc. Info.: 500 CAN CERT
 Operator ID: SV Instrument ID: ATMS9
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\TO15_ATMS9N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 18-Jan-2017 13:38:08 Calib Date: 05-Jan-2017 23:38:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20170106-38533.b\MS9010512.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK033

First Level Reviewer: phanthasena

Date: 18-Jan-2017 13:38:08

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.394	12.400	-0.006	95	53225	4.00	
* 2 1,4-Difluorobenzene	114	14.492	14.498	-0.006	94	217533	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.412	20.418	-0.006	85	192079	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.568	13.580	-0.012	98	63076	4.00	
\$ 5 Toluene-d8 (Surr)	100	17.656	17.662	-0.006	99	128088	4.06	
\$ 6 4-Bromofluorobenzene (Surr	174	22.334	22.340	-0.006	93	105717	3.80	
14 Propene	41	4.217	4.181	0.036	46	1140	0.1162	
15 Dichlorodifluoromethane	85	4.278	4.248	0.030	95	1634	0.0509	
18 Chloromethane	50	4.765	4.704	0.061	32	648	0.0616	
22 Butane	43	4.959	4.941	0.018	93	1427	0.0855	
31 Acetone	43	7.764	7.673	0.091	94	4045	0.1951	
85 Toluene	91	17.814	17.814	0.000	91	3629	0.0644	

Reagents:

VAMSIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011712.D

Injection Date: 17-Jan-2017 21:26:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-25033-A-2

Lab Sample ID: 320-25033-2

Worklist Smp#: 14

Client ID: 2750

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

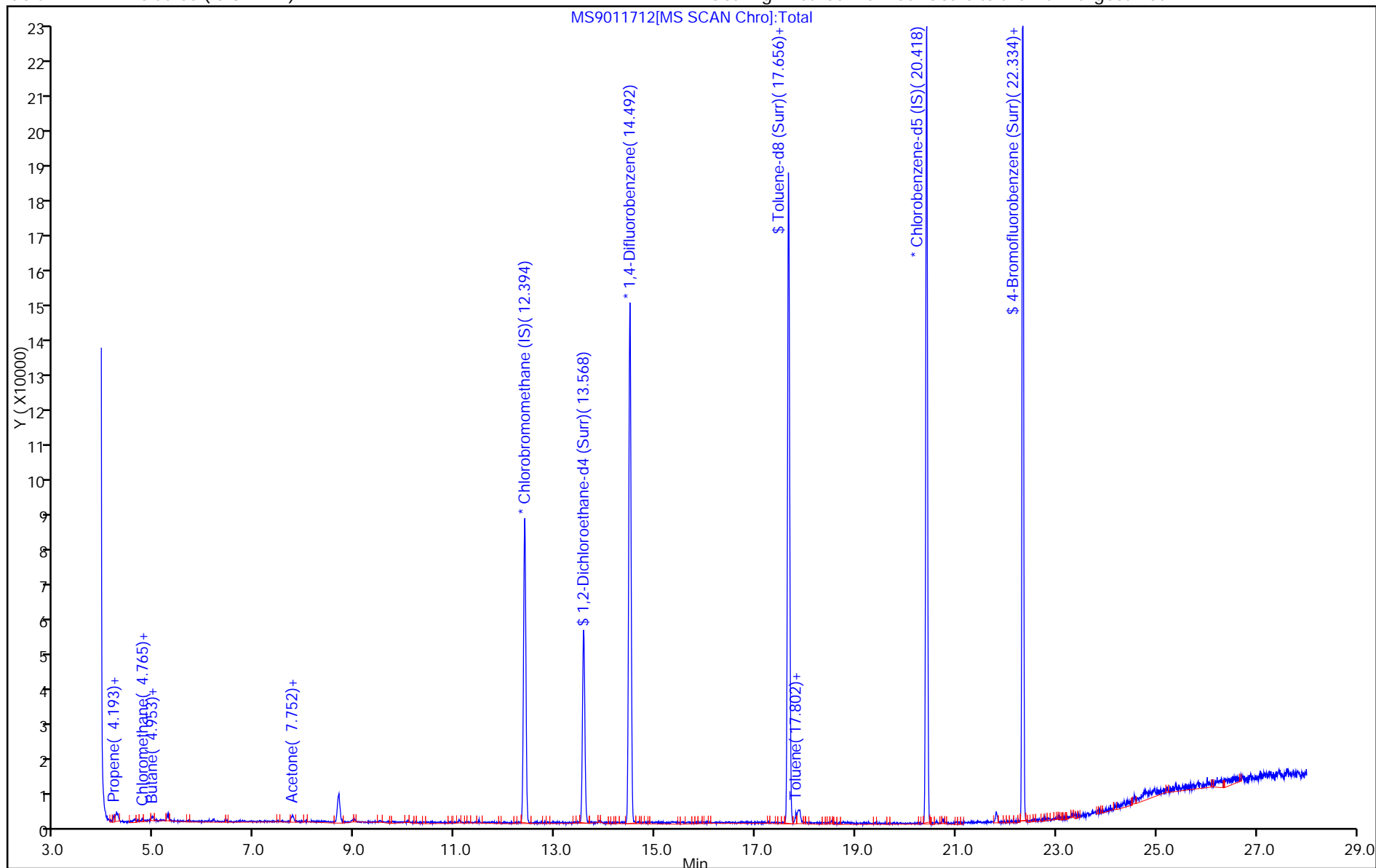
ALS Bottle#: 5

Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011712.D

Injection Date: 17-Jan-2017 21:26:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-2

Lab Sample ID: 320-25033-2

Client ID: 2750

Operator ID: SV

ALS Bottle#: 5

Worklist Smp#: 14

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

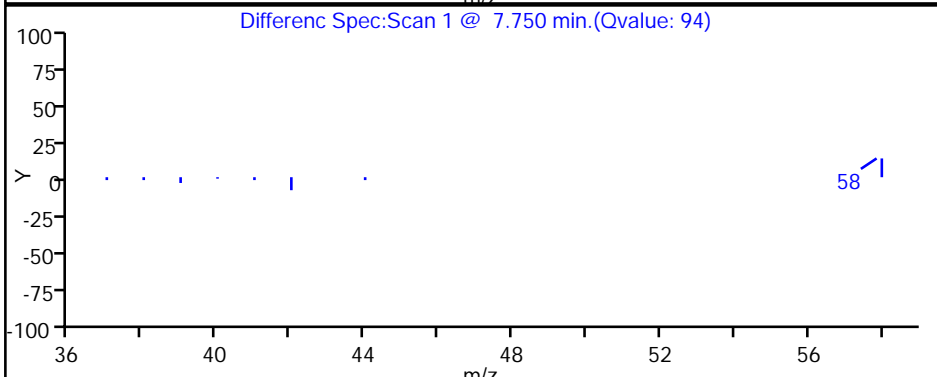
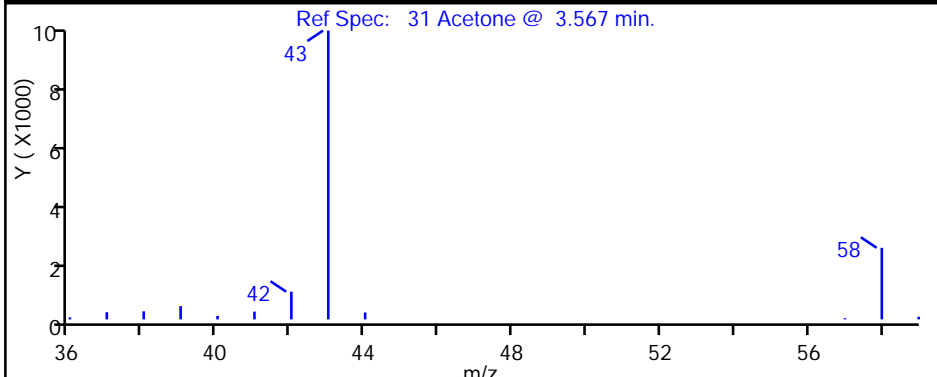
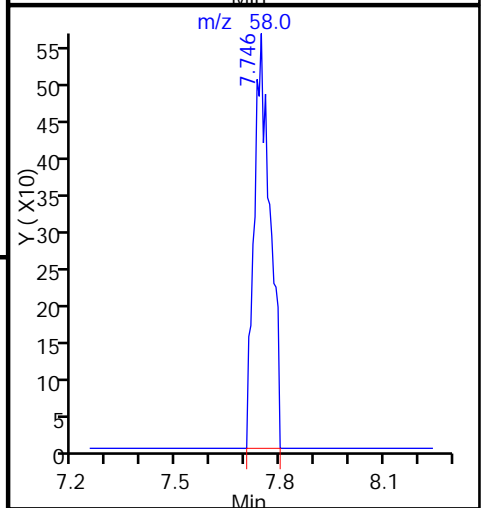
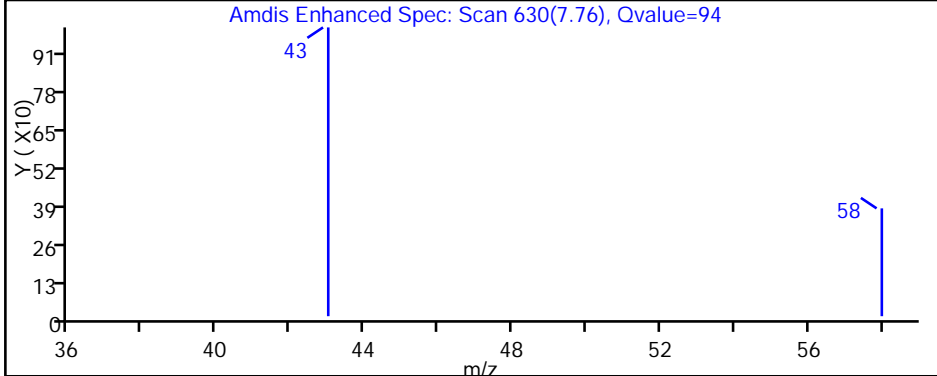
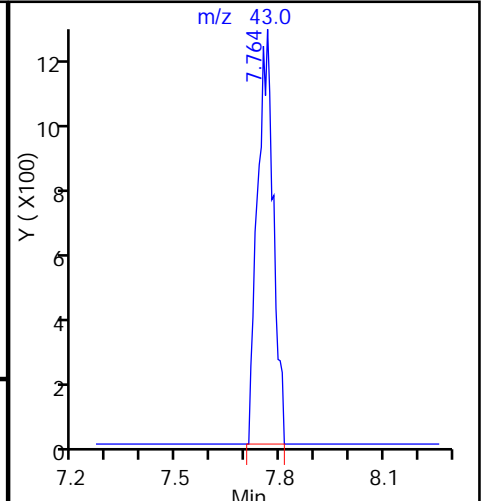
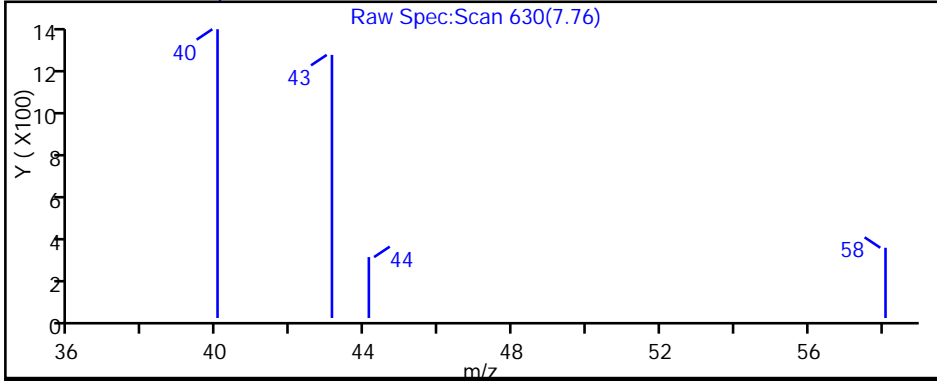
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011712.D

Injection Date: 17-Jan-2017 21:26:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-2

Lab Sample ID: 320-25033-2

Client ID: 2750

Operator ID: SV

ALS Bottle#: 5 Worklist Smp#: 14

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

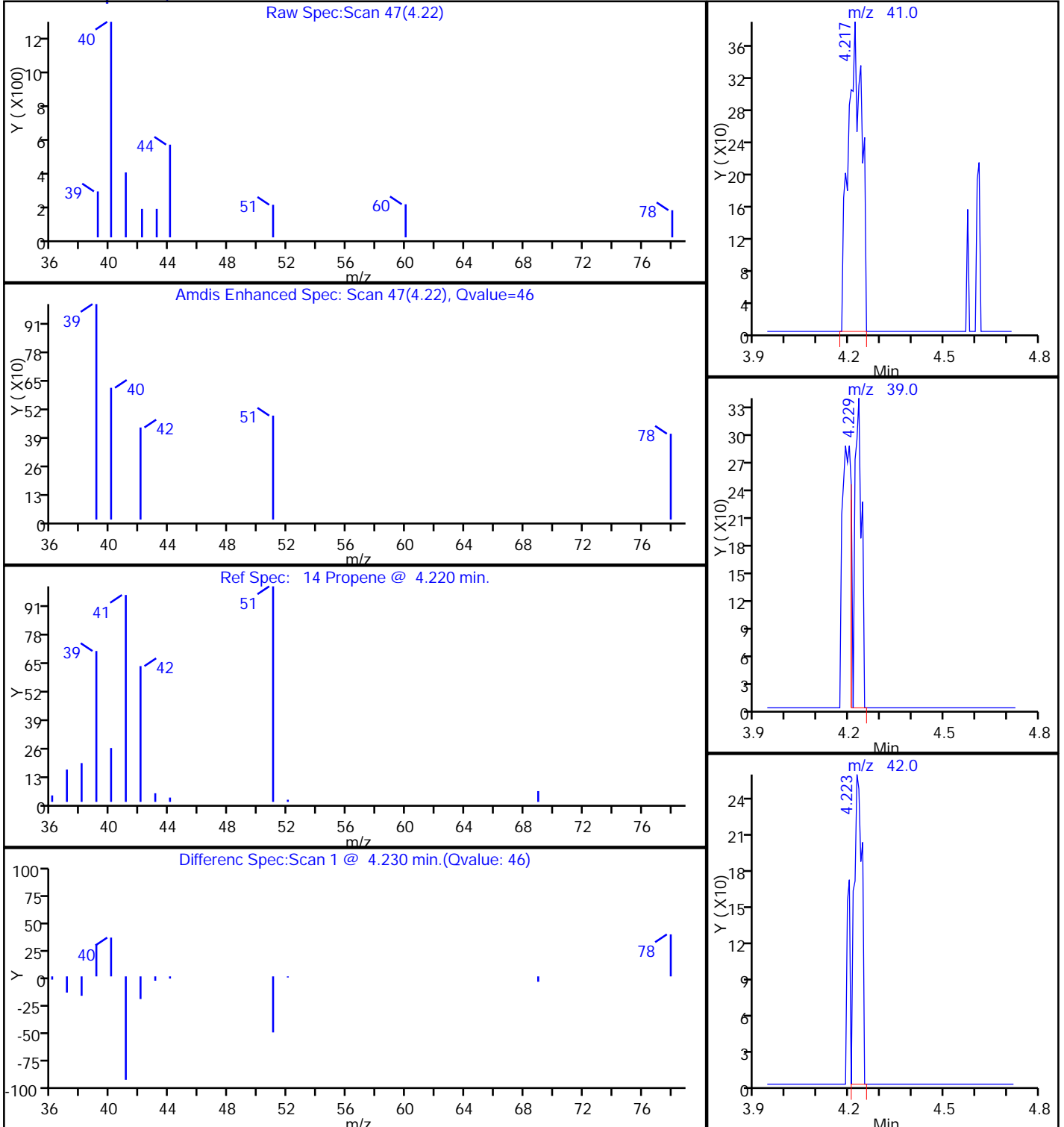
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

14 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011712.D

Injection Date: 17-Jan-2017 21:26:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-2

Lab Sample ID: 320-25033-2

Client ID: 2750

Operator ID: SV

ALS Bottle#: 5

Worklist Smp#: 14

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

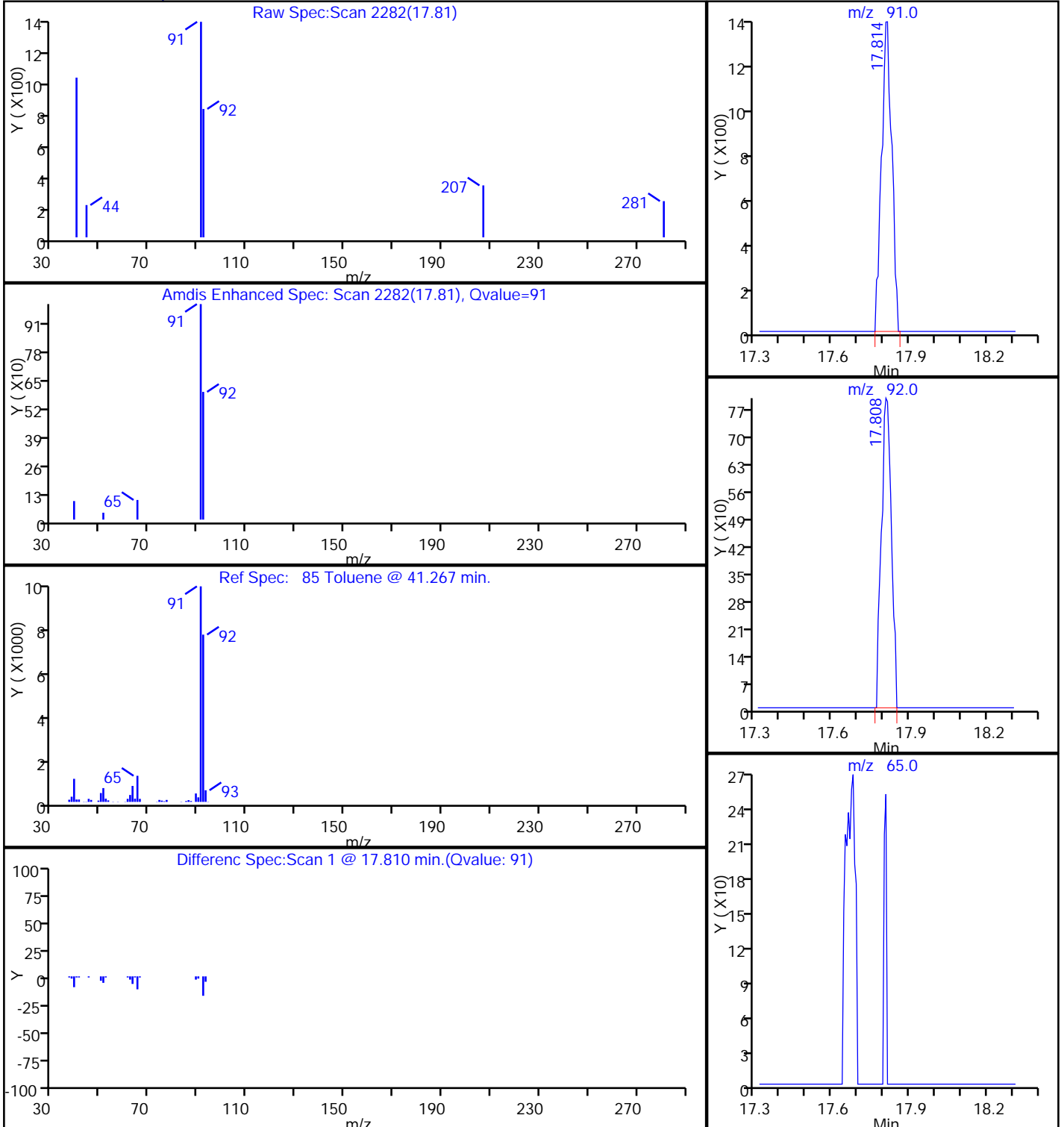
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

85 Toluene, CAS: 108-88-3



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000694 Lab Sample ID: 320-25033-4
 Matrix: Air Lab File ID: MS9011715.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 00:09
 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.: 146679 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.24	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000694 Lab Sample ID: 320-25033-4
 Matrix: Air Lab File ID: MS9011715.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 00:09
 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.: 146679 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	0.12
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	0.12	J	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	0.21
108-88-3	Toluene	0.061	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000694 Lab Sample ID: 320-25033-4
 Matrix: Air Lab File ID: MS9011715.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 00:09
 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.: 146679 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)	99		70-130
2037-26-5	Toluene-d8 (Surr)	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011715.D
 Lims ID: 320-25033-A-4
 Client ID: 34000694
 Sample Type: Client
 Inject. Date: 18-Jan-2017 00:09:30 ALS Bottle#: 7 Worklist Smp#: 16
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-4
 Misc. Info.: 500 CAN CERT
 Operator ID: SV Instrument ID: ATMS9
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\TO15_ATMS9N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 18-Jan-2017 15:47:17 Calib Date: 05-Jan-2017 23:38:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20170106-38533.b\MS9010512.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK033

First Level Reviewer: phanthasena

Date: 18-Jan-2017 15:47:17

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.393	12.400	-0.007	96	54013	4.00	
* 2 1,4-Difluorobenzene	114	14.498	14.498	0.000	94	220029	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.418	20.418	0.000	86	194868	4.00	
\$ 4 1,2-Dichloroethane-d4 (Surr	65	13.574	13.580	-0.006	98	63180	3.95	
\$ 5 Toluene-d8 (Surr)	100	17.662	17.662	0.000	98	128253	4.02	
\$ 6 4-Bromofluorobenzene (Surr	174	22.340	22.340	0.000	93	106592	3.78	
14 Propene	41	4.247	4.181	0.066	63	1191	0.1196	
22 Butane	43	4.984	4.941	0.043	90	1601	0.0945	
31 Acetone	43	7.752	7.673	0.079	93	5027	0.2389	
85 Toluene	91	17.814	17.814	0.000	90	3476	0.0610	

Reagents:

VAMSIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011715.D

Injection Date: 18-Jan-2017 00:09:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-25033-A-4

Lab Sample ID: 320-25033-4

Worklist Smp#: 16

Client ID: 34000694

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

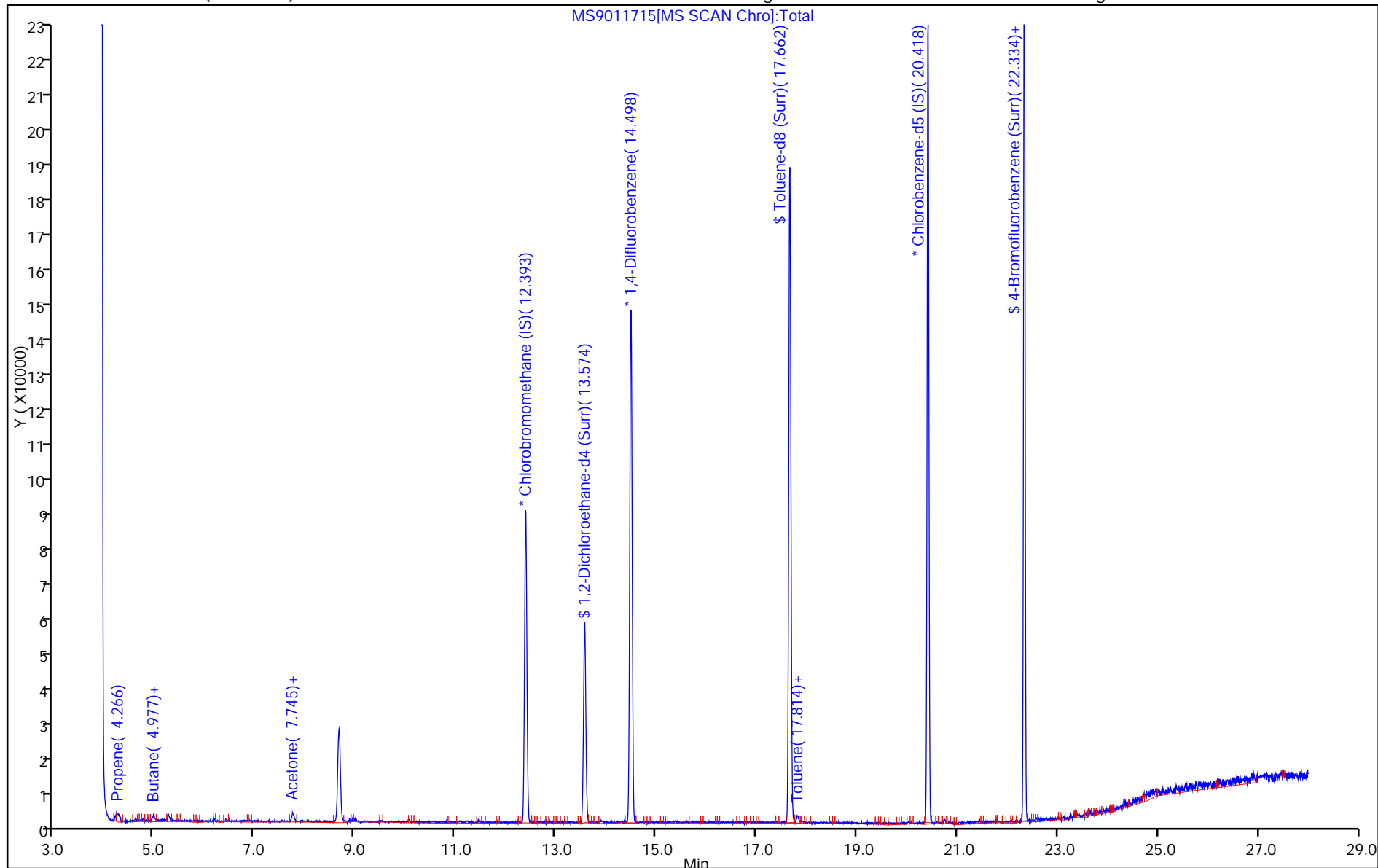
ALS Bottle#: 7

Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011715.D

Injection Date: 18-Jan-2017 00:09:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-4

Lab Sample ID: 320-25033-4

Client ID: 34000694

Operator ID: SV

ALS Bottle#: 7 Worklist Smp#: 16

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

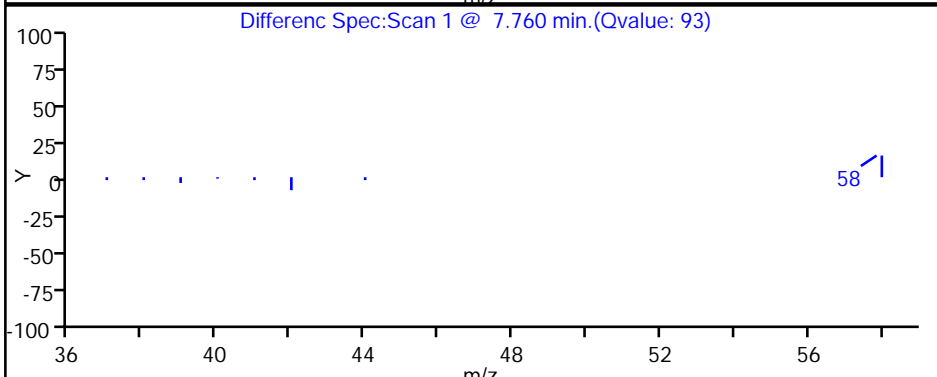
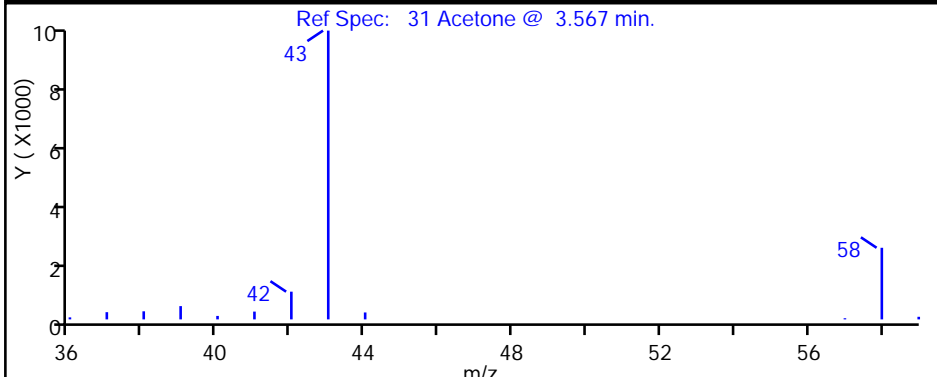
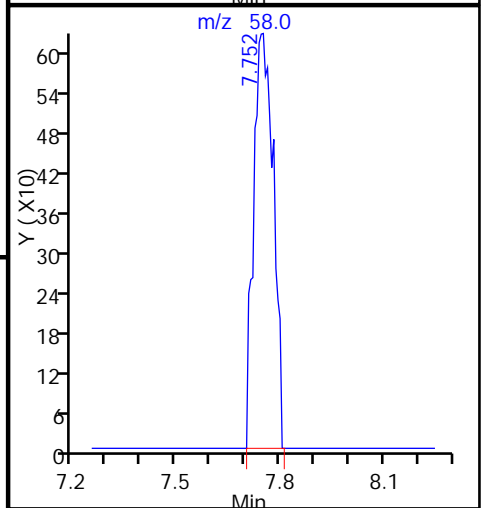
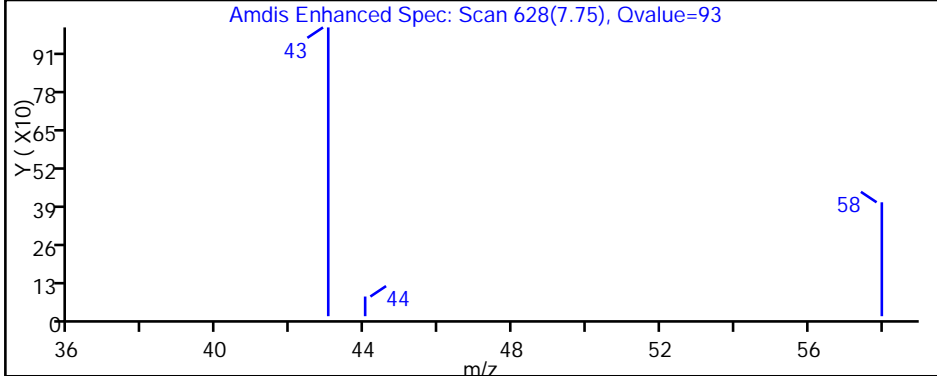
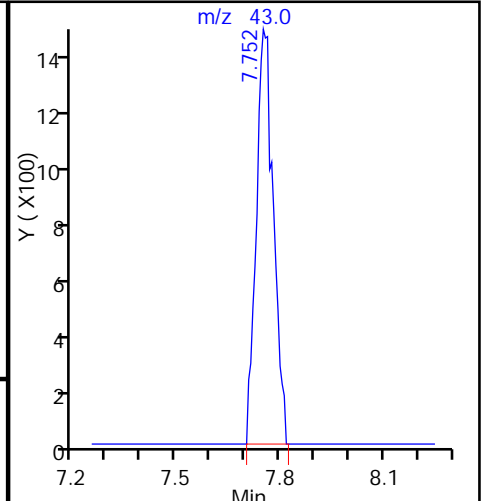
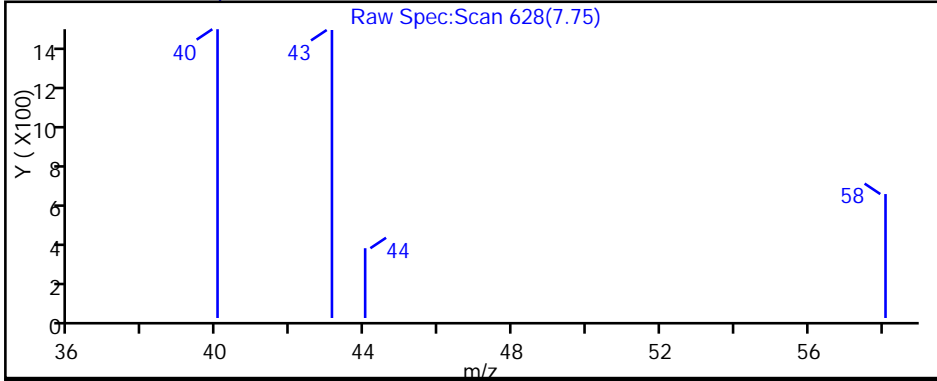
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011715.D

Injection Date: 18-Jan-2017 00:09:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-4

Lab Sample ID: 320-25033-4

Client ID: 34000694

Operator ID: SV

ALS Bottle#: 7 Worklist Smp#: 16

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

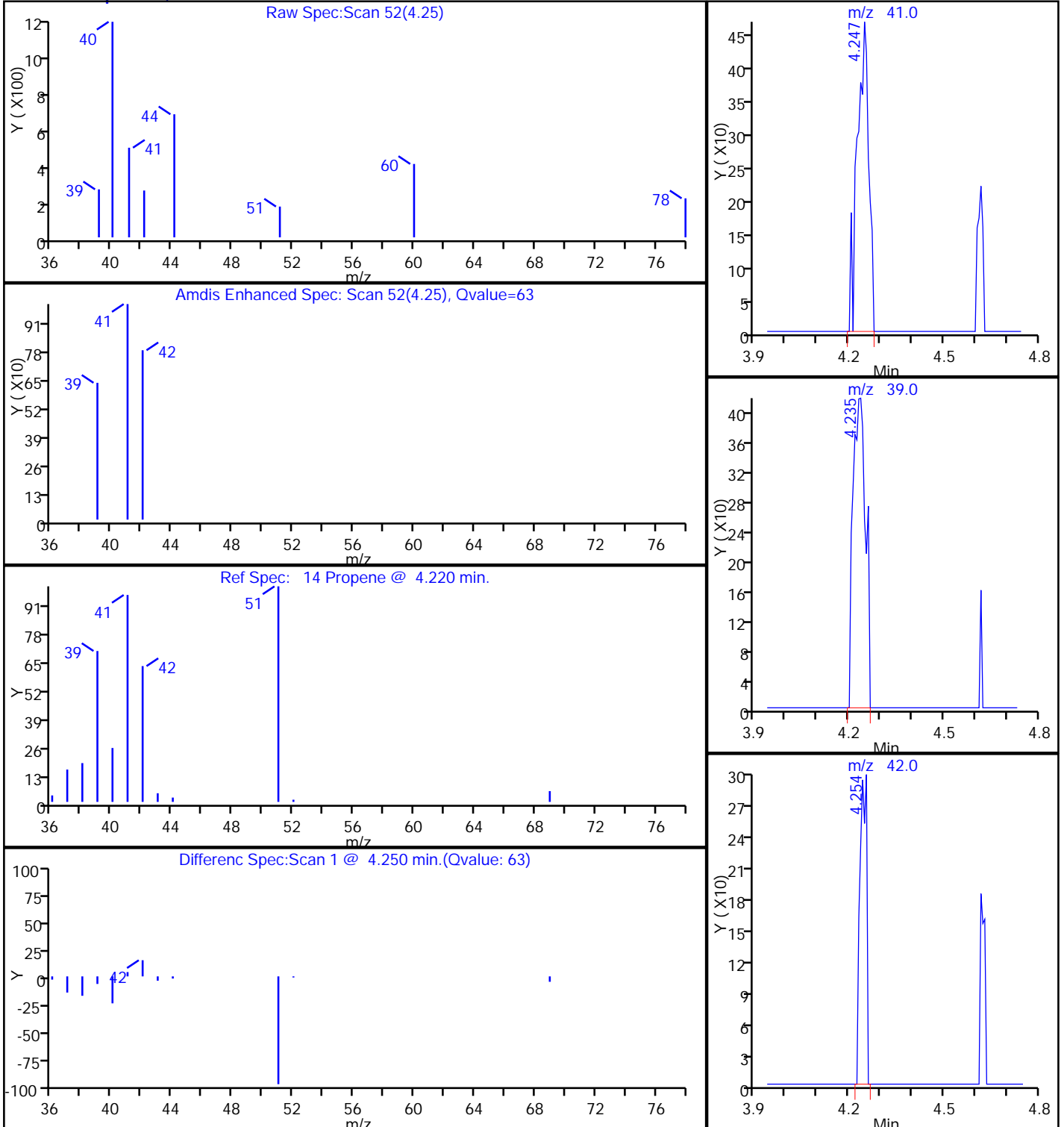
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

14 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011715.D

Injection Date: 18-Jan-2017 00:09:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-4

Lab Sample ID: 320-25033-4

Client ID: 34000694

Operator ID: SV

ALS Bottle#: 7 Worklist Smp#: 16

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

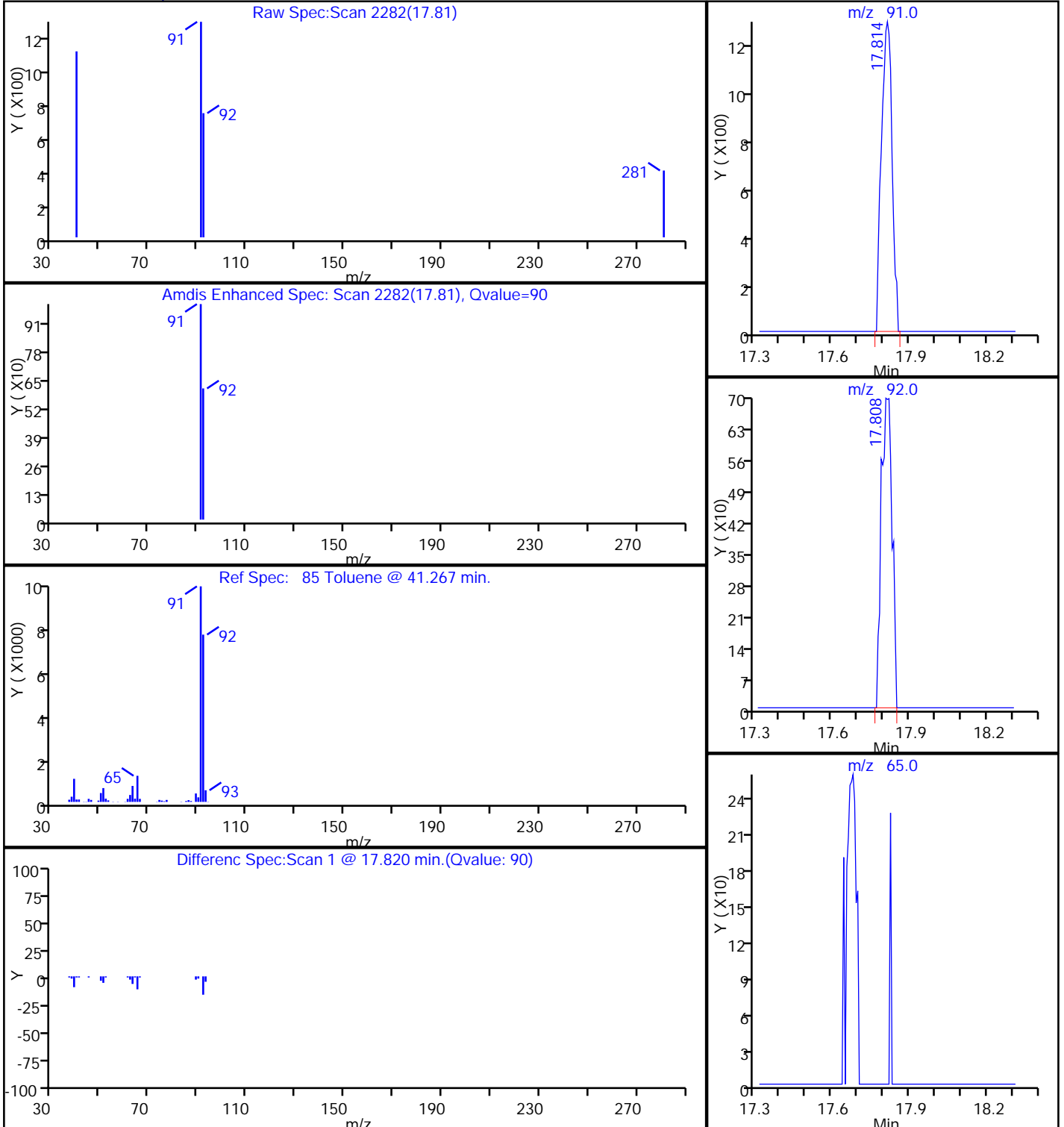
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

85 Toluene, CAS: 108-88-3



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000854 Lab Sample ID: 320-25033-5
 Matrix: Air Lab File ID: MS9011716.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 01:05
 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.: 146679 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.23	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000854 Lab Sample ID: 320-25033-5
 Matrix: Air Lab File ID: MS9011716.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 01:05
 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.: 146679 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	0.12
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	0.11	J	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	0.056	J	0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.21
108-88-3	Toluene	0.10	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000854 Lab Sample ID: 320-25033-5
 Matrix: Air Lab File ID: MS9011716.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 01:05
 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.: 146679 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	0.22	J	0.80	0.10
95-47-6	o-Xylene	0.087	J	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)	98		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D
 Lims ID: 320-25033-A-5
 Client ID: 34000854
 Sample Type: Client
 Inject. Date: 18-Jan-2017 01:05:30 ALS Bottle#: 8 Worklist Smp#: 17
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-5
 Misc. Info.: 500 CAN CERT
 Operator ID: SV Instrument ID: ATMS9
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\TO15_ATMS9N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 18-Jan-2017 16:41:21 Calib Date: 05-Jan-2017 23:38:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20170106-38533.b\MS9010512.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK033

First Level Reviewer: phanthasena

Date: 18-Jan-2017 16:41:21

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.393	12.400	-0.007	96	52927	4.00	
* 2 1,4-Difluorobenzene	114	14.492	14.498	-0.006	94	215227	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.418	20.418	0.000	86	189474	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.568	13.580	-0.012	98	61680	3.93	
\$ 5 Toluene-d8 (Surr)	100	17.662	17.662	0.000	100	127477	4.08	
\$ 6 4-Bromofluorobenzene (Surr	174	22.340	22.340	0.000	94	106924	3.90	
14 Propene	41	4.235	4.235	0.054	52	1114	0.1142	
15 Dichlorodifluoromethane	85	4.290	4.248	0.042	96	1594	0.0499	
22 Butane	43	4.978	4.941	0.037	56	1433	0.0864	
31 Acetone	43	7.758	7.673	0.085	92	4654	0.2257	
88 n-Octane	43	17.656	17.668	-0.012	42	2063	0.0527	
85 Toluene	91	17.814	17.814	0.000	93	5762	0.1034	
93 Tetrachloroethene	166	19.085	19.098	-0.013	87	1540	0.0560	
97 Ethylbenzene	91	20.606	20.606	0.000	94	3730	0.0522	
98 m-Xylene & p-Xylene	91	20.746	20.752	-0.006	98	11693	0.2193	
101 o-Xylene	91	21.440	21.446	-0.006	96	4714	0.0868	
110 4-Ethyltoluene	120	22.760	22.784	-0.024	93	715	0.0296	
115 1,2,4-Trimethylbenzene	120	23.399	23.399	0.000	57	362	0.0107	

Reagents:

VAMIS20_00002 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D

Injection Date: 18-Jan-2017 01:05:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-25033-A-5

Lab Sample ID: 320-25033-5

Worklist Smp#: 17

Client ID: 34000854

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

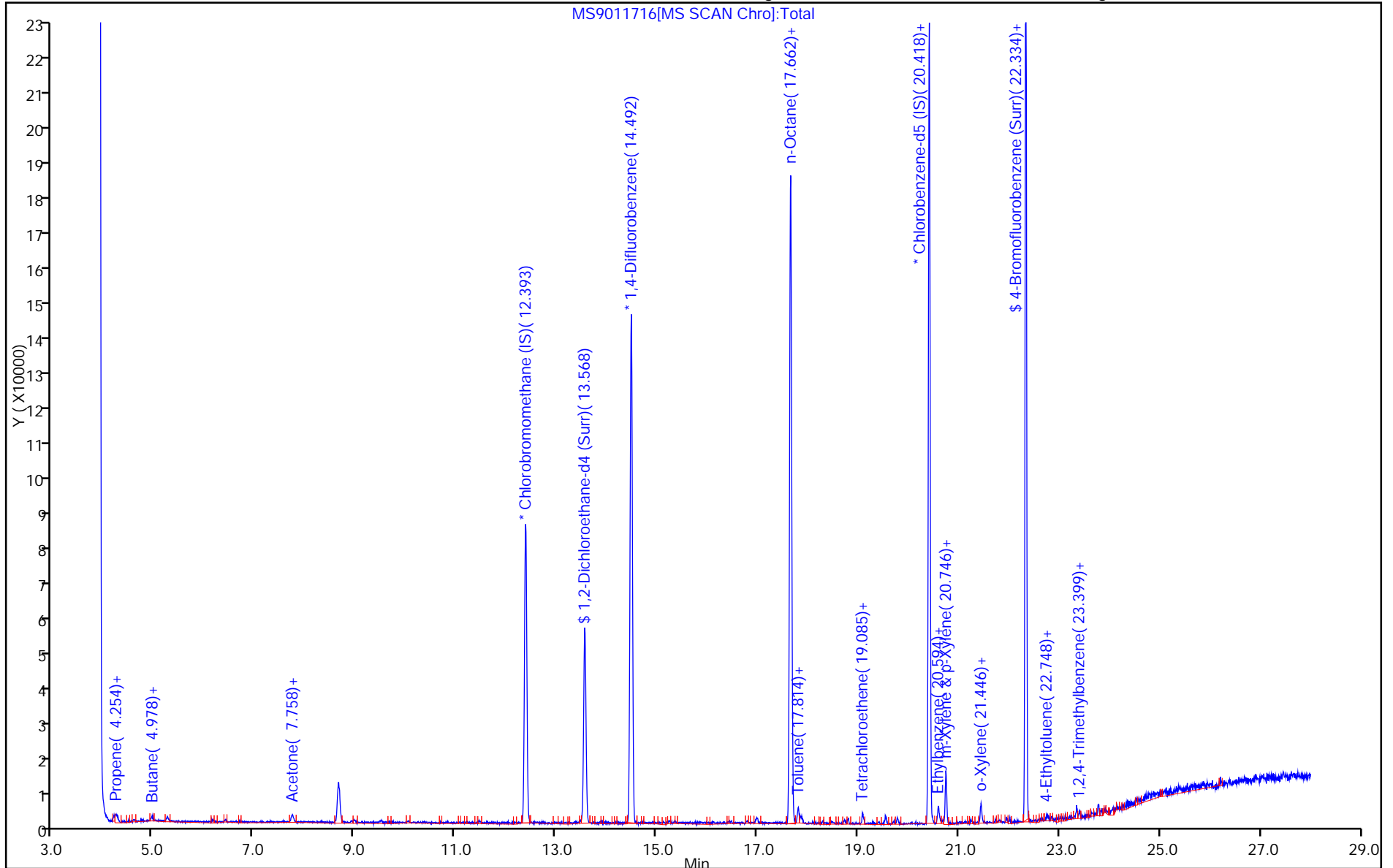
ALS Bottle#: 8

Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D

Injection Date: 18-Jan-2017 01:05:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-5

Lab Sample ID: 320-25033-5

Client ID: 34000854

Operator ID: SV

ALS Bottle#: 8 Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

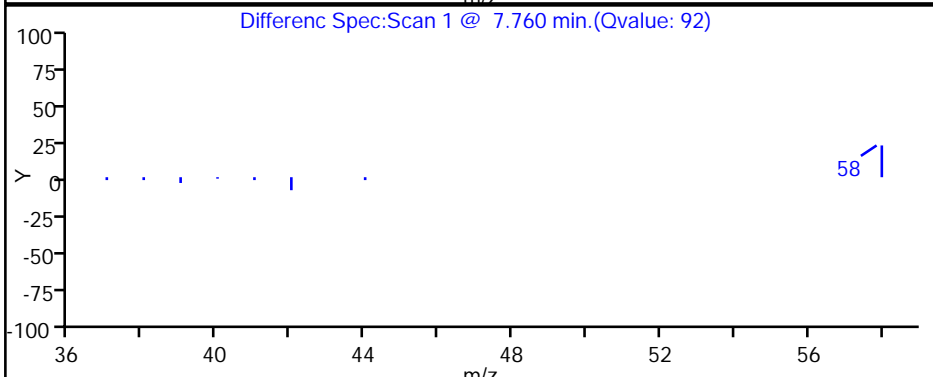
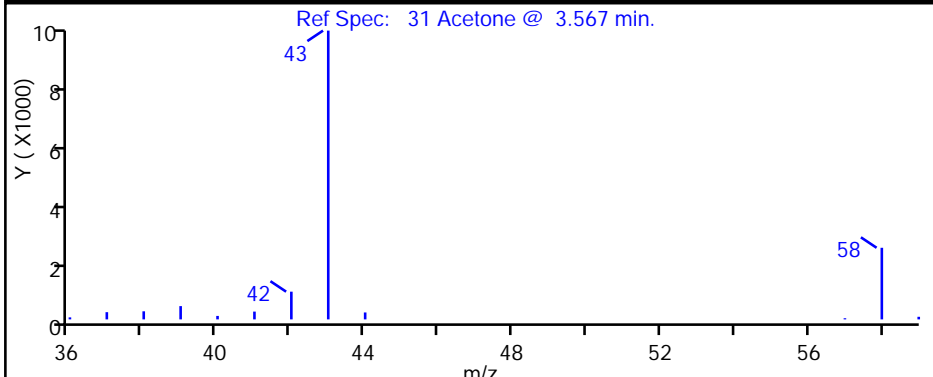
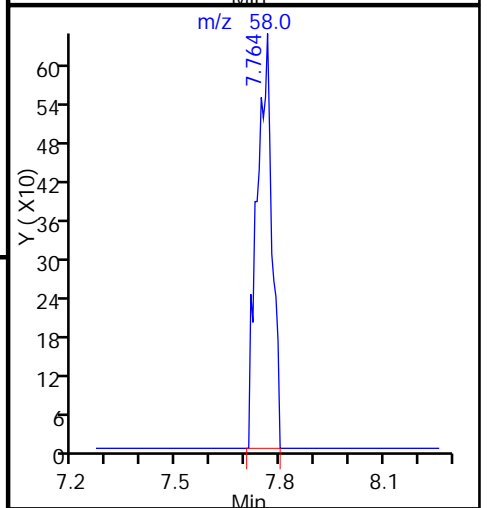
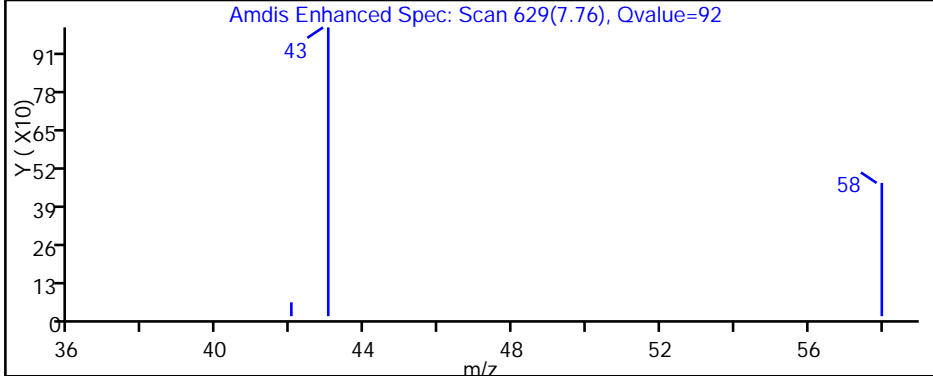
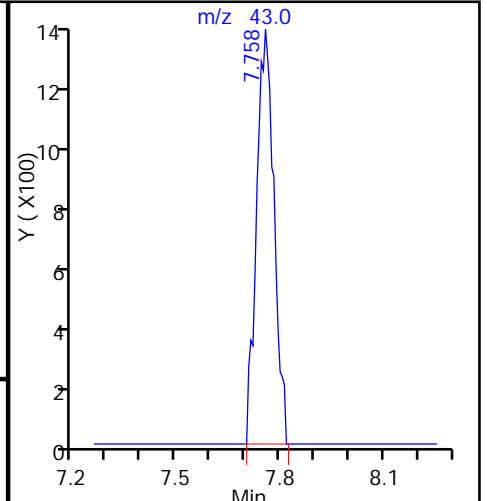
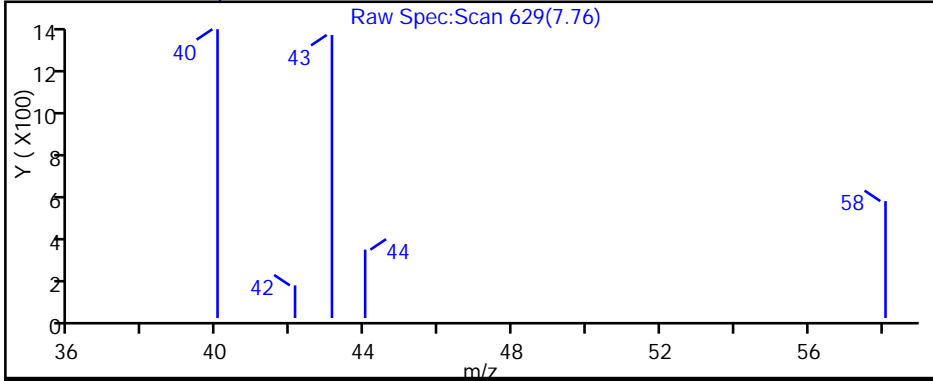
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D

Injection Date: 18-Jan-2017 01:05:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-5

Lab Sample ID: 320-25033-5

Client ID: 34000854

Operator ID: SV

ALS Bottle#: 8 Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

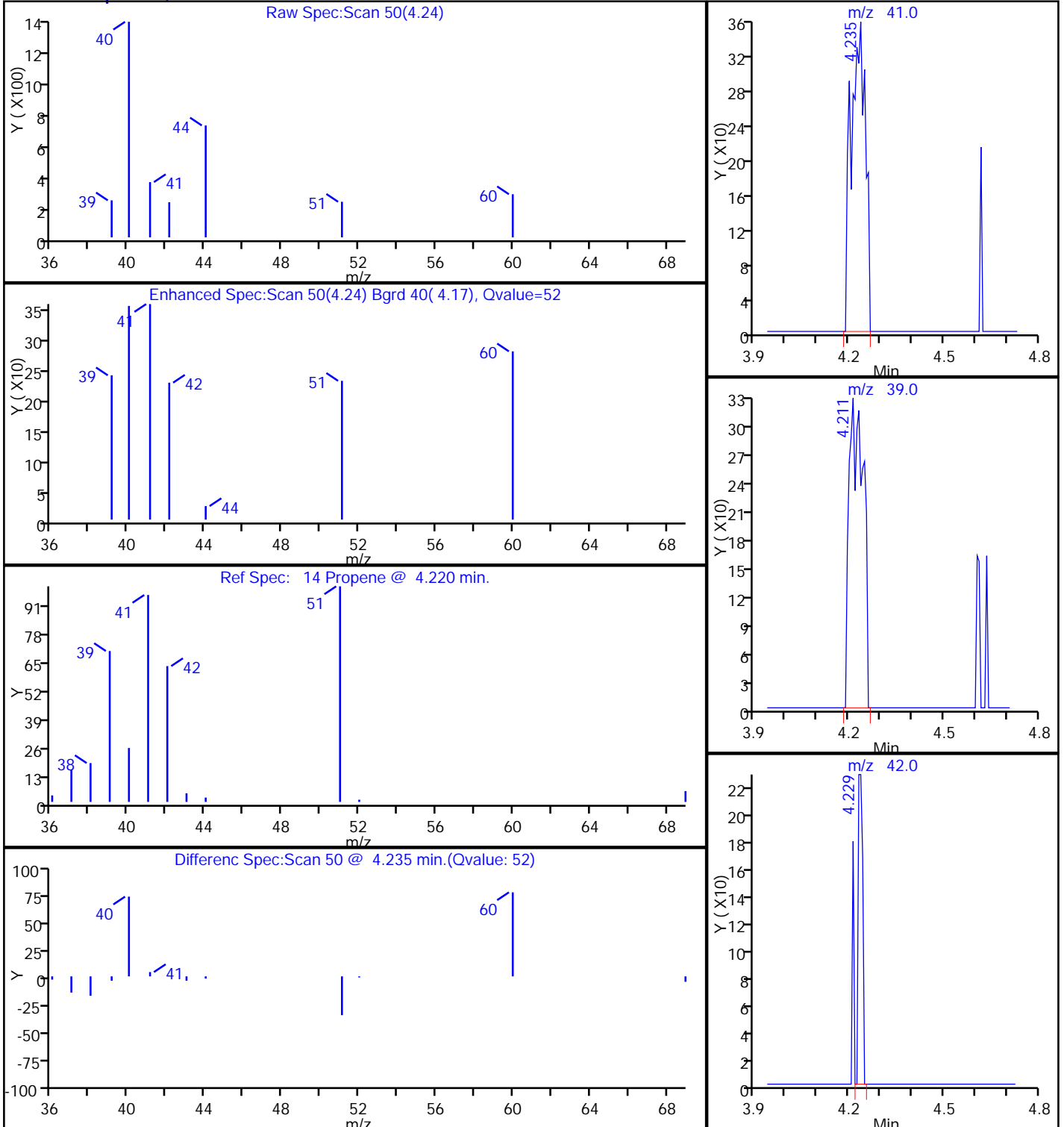
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

14 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D

Injection Date: 18-Jan-2017 01:05:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-5

Lab Sample ID: 320-25033-5

Client ID: 34000854

Operator ID: SV

ALS Bottle#: 8 Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

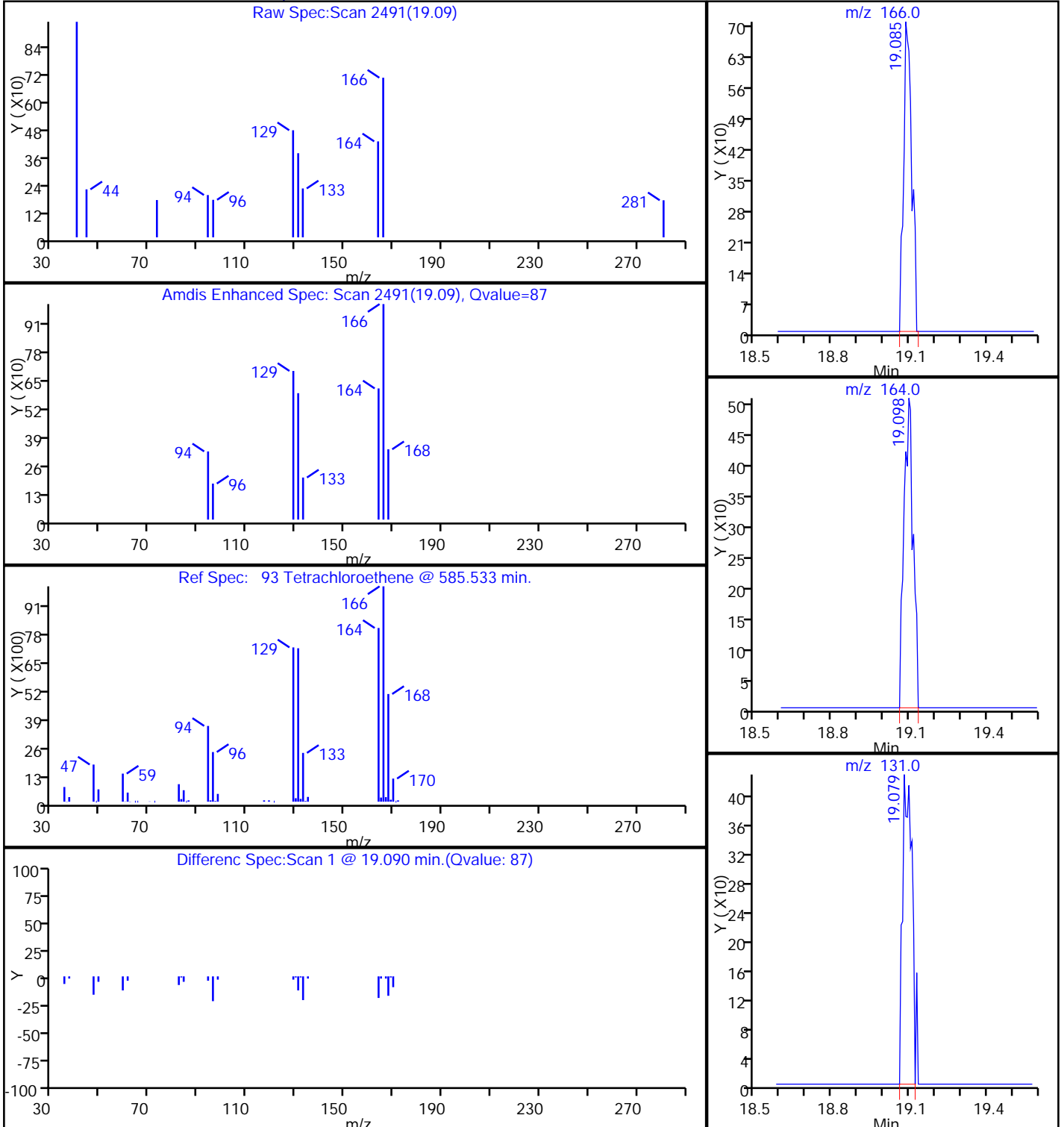
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

93 Tetrachloroethene, CAS: 127-18-4



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D

Injection Date: 18-Jan-2017 01:05:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-5

Lab Sample ID: 320-25033-5

Client ID: 34000854

Operator ID: SV

ALS Bottle#: 8 Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

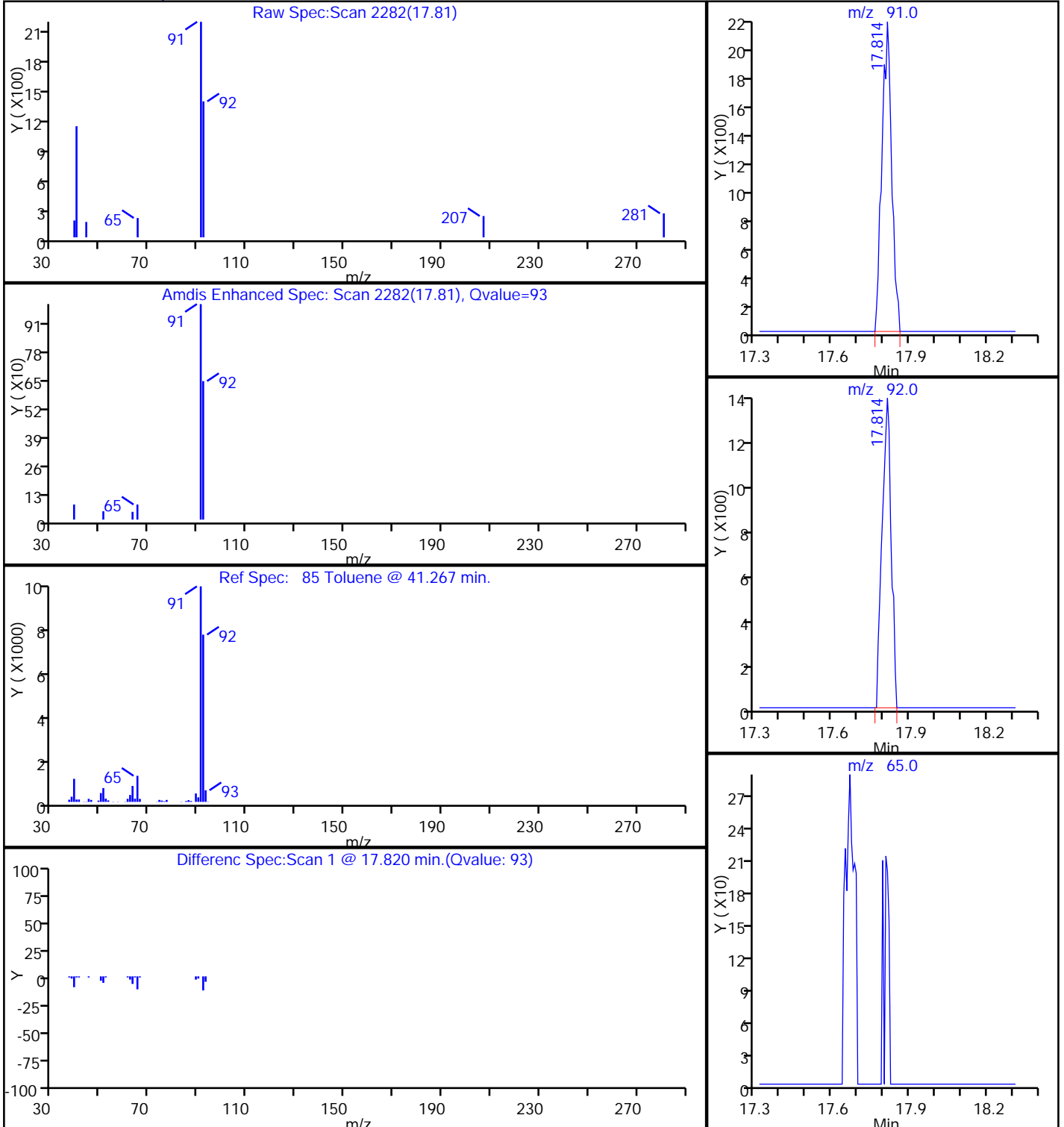
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

85 Toluene, CAS: 108-88-3



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D

Injection Date: 18-Jan-2017 01:05:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-5

Lab Sample ID: 320-25033-5

Client ID: 34000854

Operator ID: SV

ALS Bottle#: 8 Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

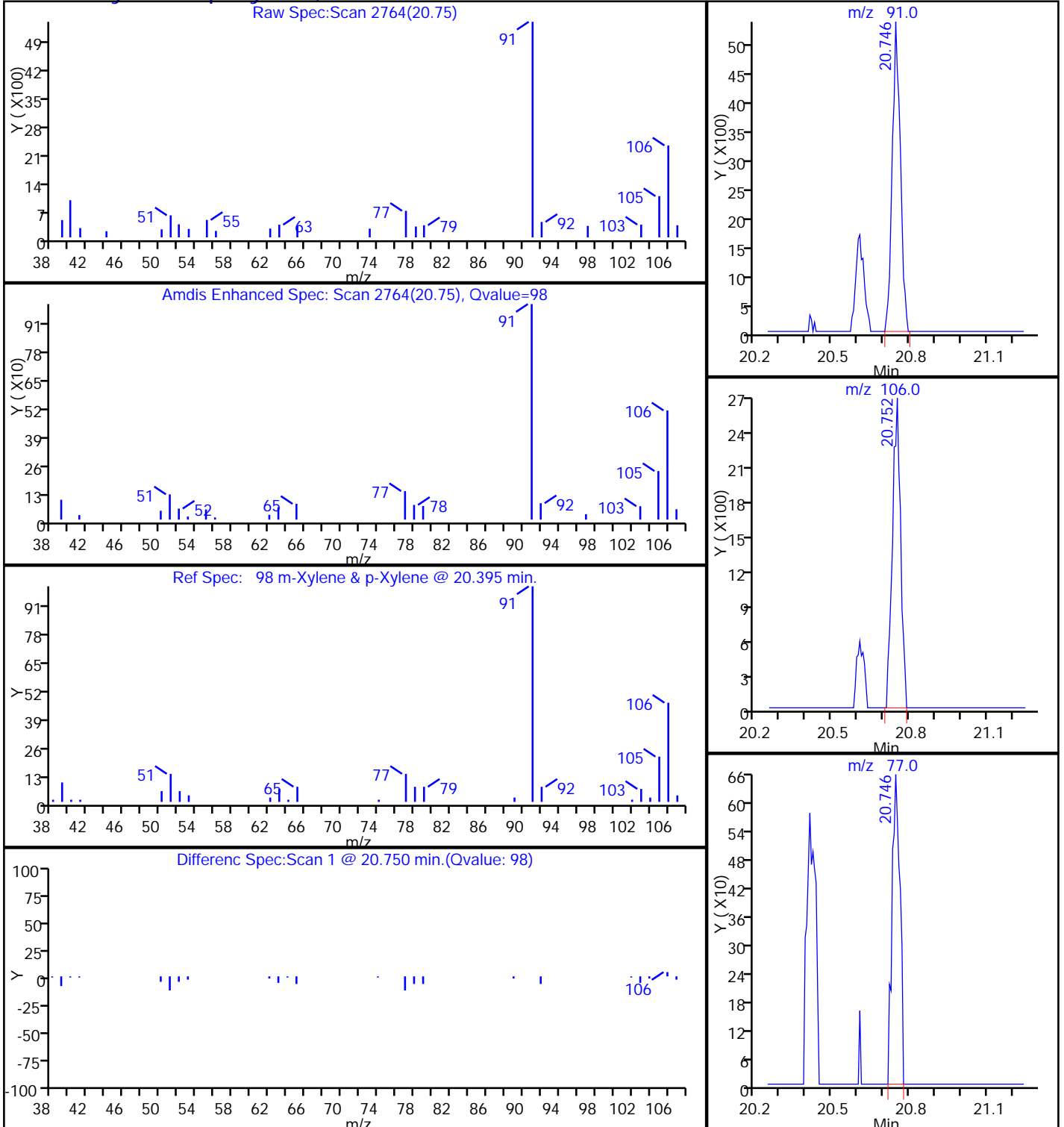
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

98 m-Xylene & p-Xylene, CAS: 179601-23-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011716.D

Injection Date: 18-Jan-2017 01:05:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-5

Lab Sample ID: 320-25033-5

Client ID: 34000854

Operator ID: SV

ALS Bottle#: 8 Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

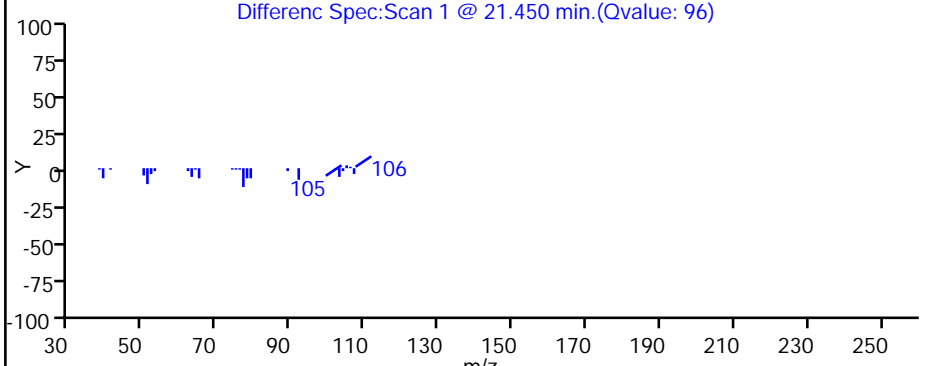
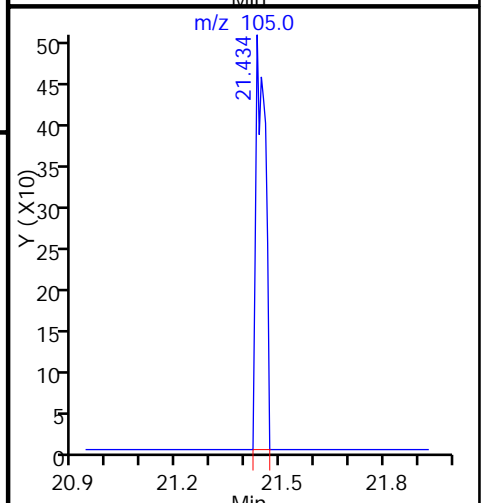
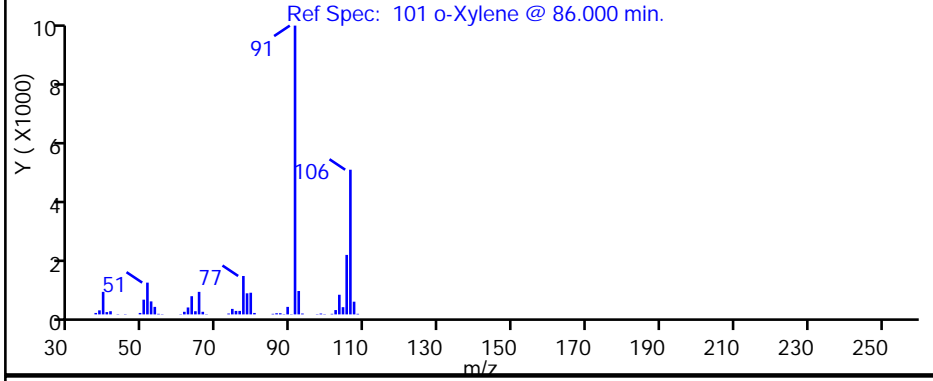
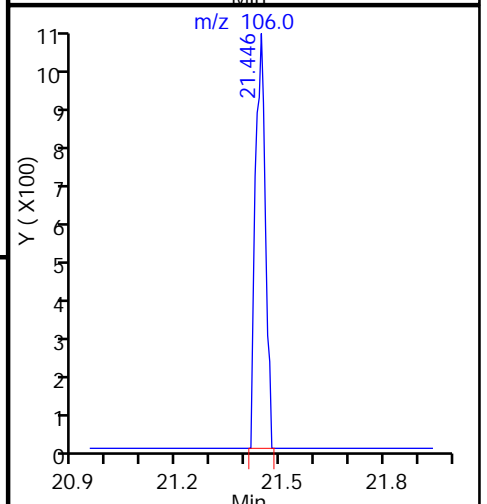
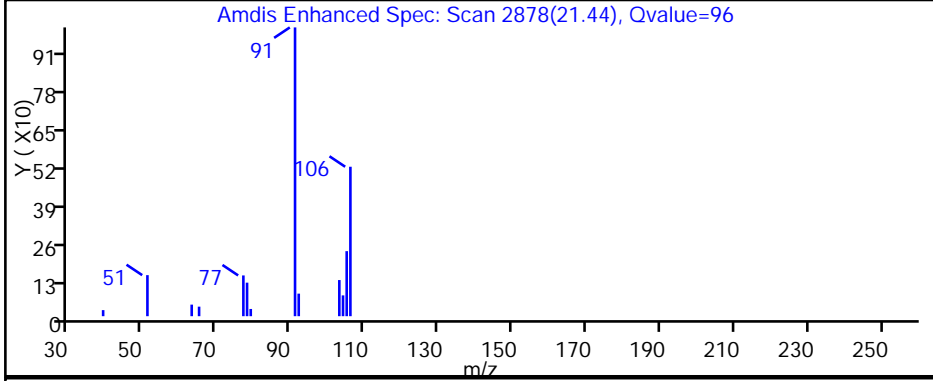
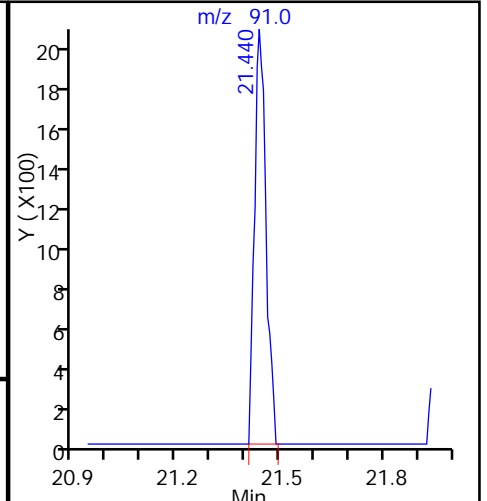
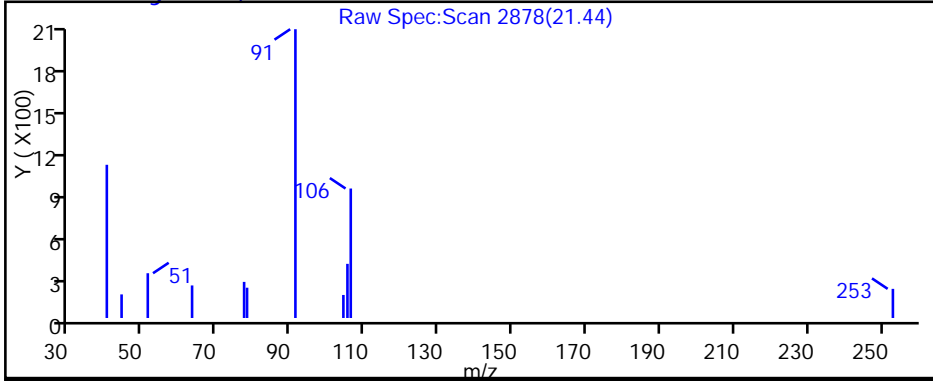
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

101 o-Xylene, CAS: 95-47-6



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000003 Lab Sample ID: 320-25033-6
 Matrix: Air Lab File ID: MS9011717.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 02:01
 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.: 146679 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.34	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000003 Lab Sample ID: 320-25033-6
 Matrix: Air Lab File ID: MS9011717.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 02:01
 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.: 146679 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	0.12
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	0.12	J	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	0.21
108-88-3	Toluene	0.062	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000003 Lab Sample ID: 320-25033-6
 Matrix: Air Lab File ID: MS9011717.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 02:01
 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.: 146679 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)	100		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011717.D
 Lims ID: 320-25033-A-6
 Client ID: 34000003
 Sample Type: Client
 Inject. Date: 18-Jan-2017 02:01:30 ALS Bottle#: 9 Worklist Smp#: 18
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-6
 Misc. Info.: 500 CAN CERT
 Operator ID: SV Instrument ID: ATMS9
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\TO15_ATMS9N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 18-Jan-2017 17:39:10 Calib Date: 05-Jan-2017 23:38:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20170106-38533.b\MS9010512.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK033

First Level Reviewer: phanthasena

Date: 18-Jan-2017 17:39:10

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.393	12.400	-0.007	96	52992	4.00	
* 2 1,4-Difluorobenzene	114	14.492	14.498	-0.006	94	213106	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.412	20.418	-0.006	86	184972	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.568	13.580	-0.012	98	62580	3.99	
\$ 5 Toluene-d8 (Surr)	100	17.662	17.662	0.000	99	126190	4.08	
\$ 6 4-Bromofluorobenzene (Surr	174	22.340	22.340	0.000	92	101703	3.80	
14 Propene	41	4.235	4.235	0.054	20	1221	0.1250	
15 Dichlorodifluoromethane	85	4.284	4.248	0.036	29	1666	0.0521	
22 Butane	43	4.965	4.941	0.024	85	1744	0.1050	
31 Acetone	43	7.752	7.673	0.079	94	7096	0.3437	
85 Toluene	91	17.814	17.814	0.000	92	3399	0.0616	
98 m-Xylene & p-Xylene	91	20.752	20.752	0.000	1	1307	0.0251	

Reagents:

VAMSIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011717.D

Injection Date: 18-Jan-2017 02:01:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-25033-A-6

Lab Sample ID: 320-25033-6

Worklist Smp#: 18

Client ID: 34000003

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

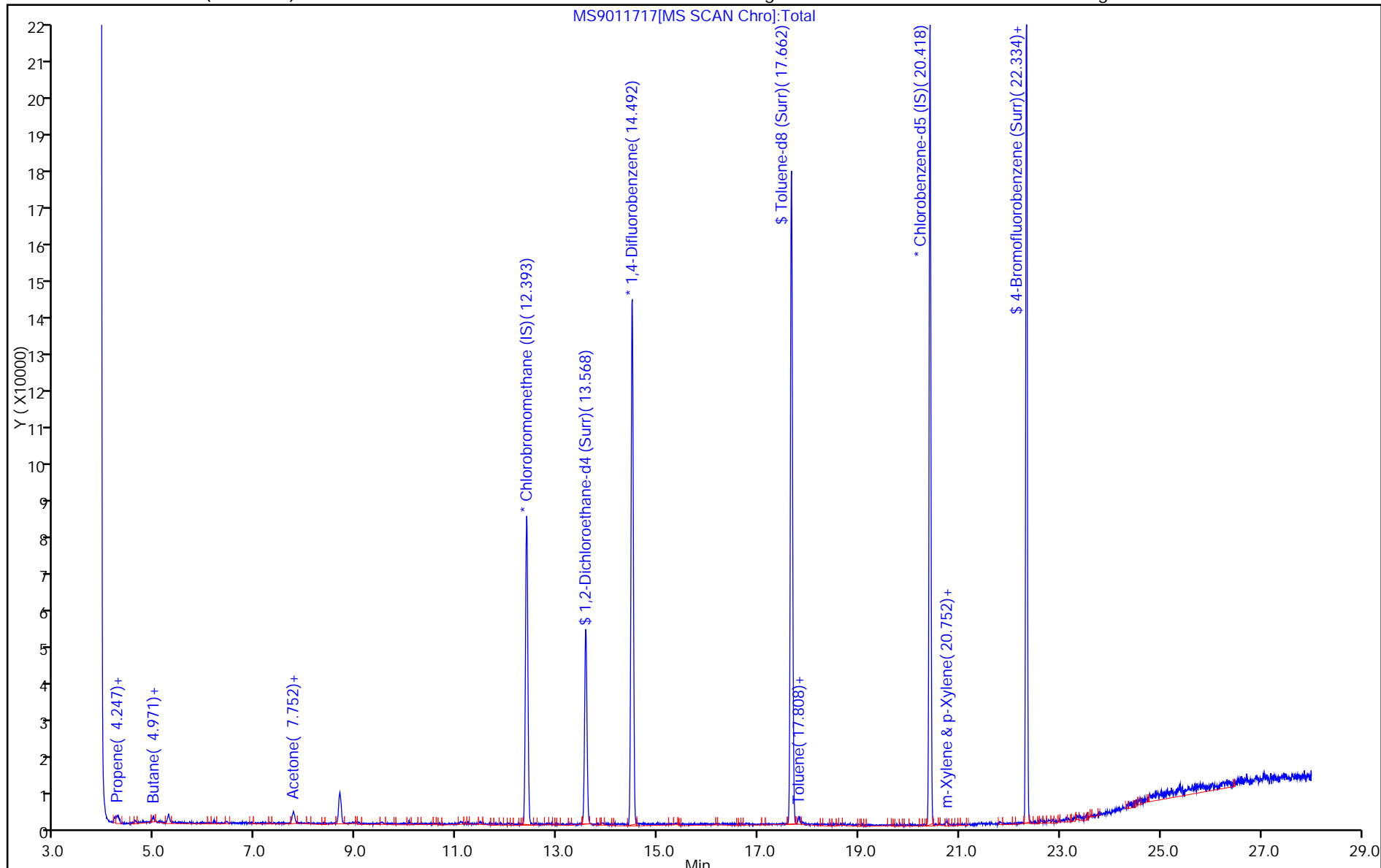
ALS Bottle#: 9

Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011717.D

Injection Date: 18-Jan-2017 02:01:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-6

Lab Sample ID: 320-25033-6

Client ID: 34000003

Operator ID: SV

ALS Bottle#: 9 Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

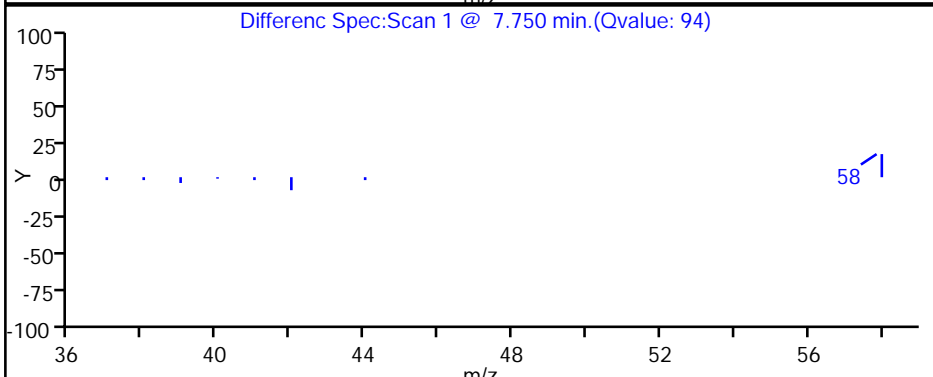
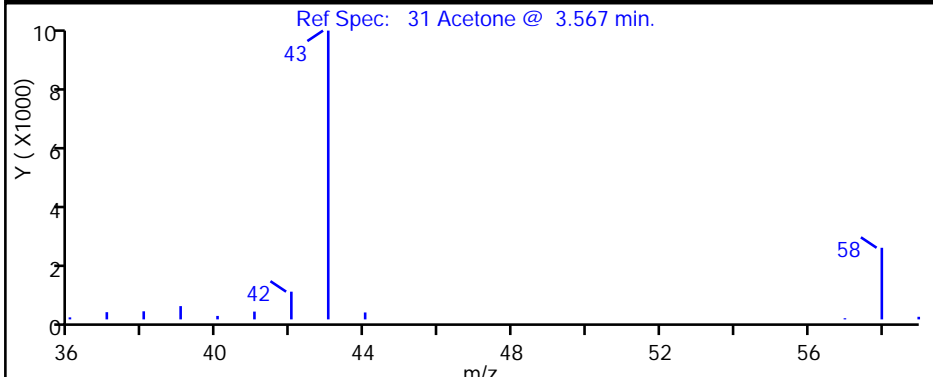
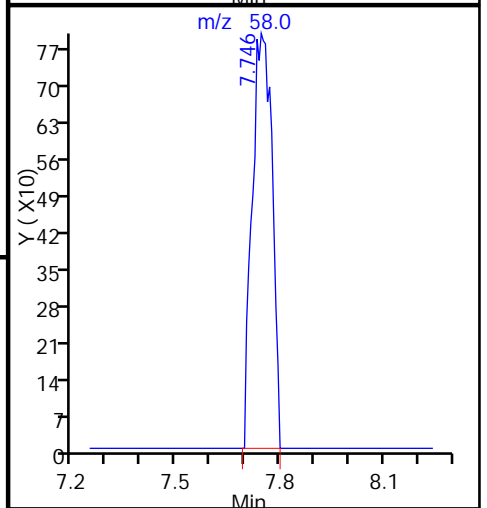
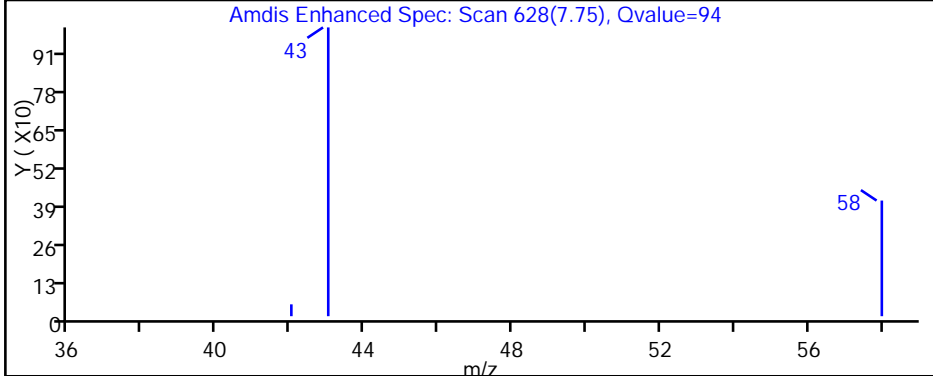
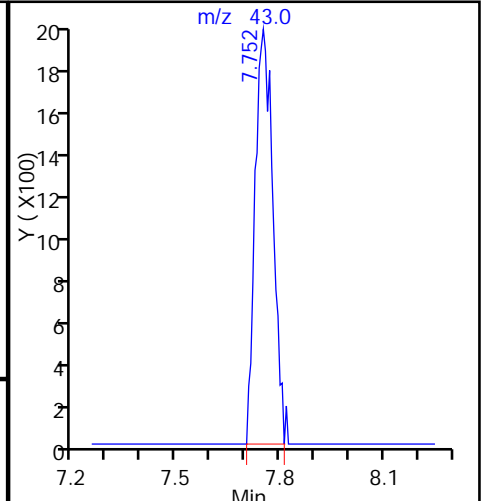
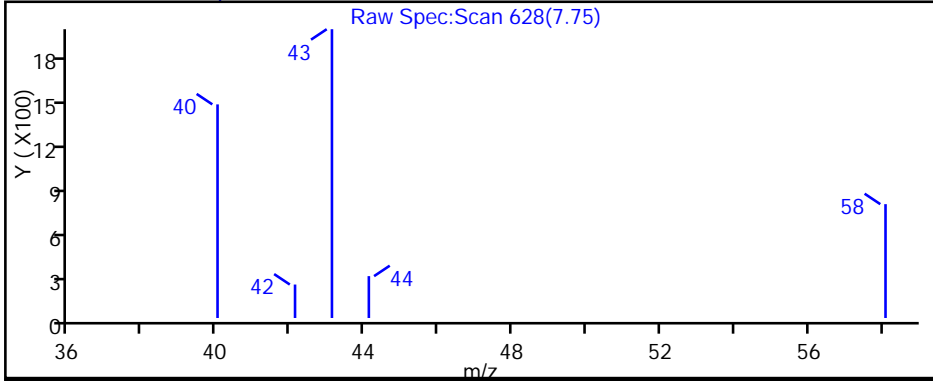
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011717.D

Injection Date: 18-Jan-2017 02:01:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-6

Lab Sample ID: 320-25033-6

Client ID: 34000003

Operator ID: SV

ALS Bottle#: 9 Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

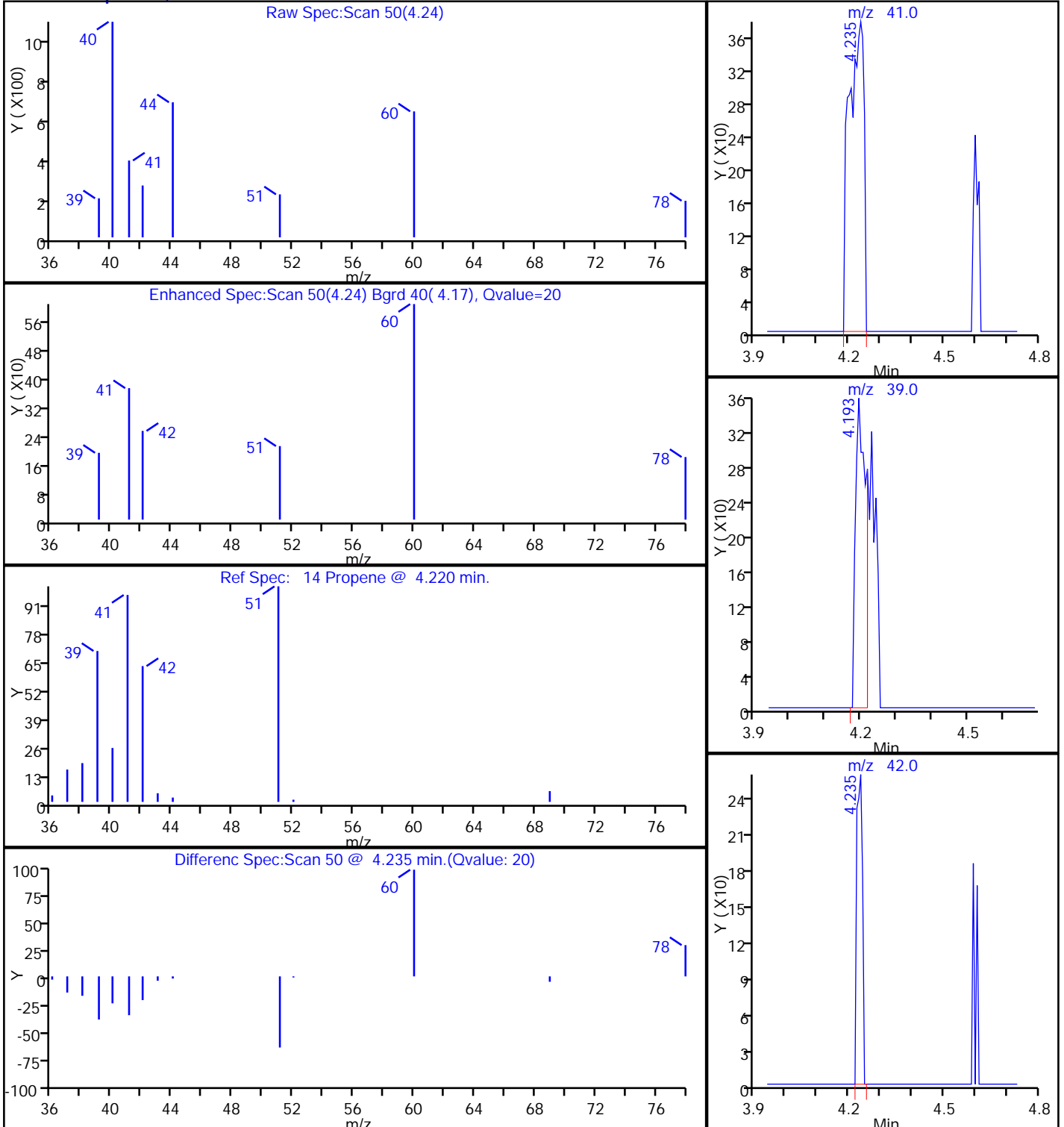
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

14 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011717.D

Injection Date: 18-Jan-2017 02:01:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-6

Lab Sample ID: 320-25033-6

Client ID: 34000003

Operator ID: SV

ALS Bottle#: 9 Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

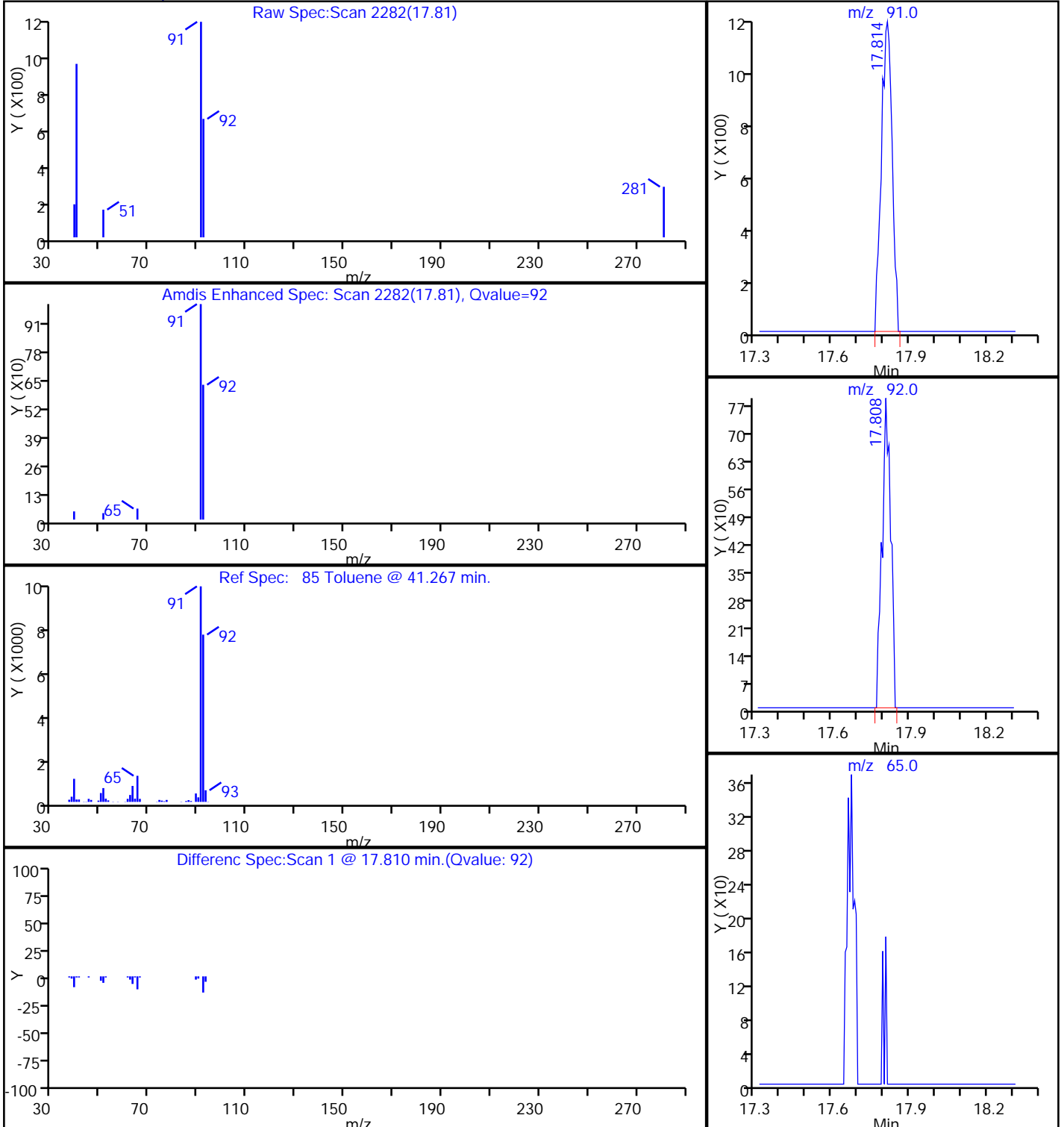
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

85 Toluene, CAS: 108-88-3



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 7964 Lab Sample ID: 320-25033-7
 Matrix: Air Lab File ID: MS9011718.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 02:56
 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.: 146679 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.22	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 7964 Lab Sample ID: 320-25033-7
 Matrix: Air Lab File ID: MS9011718.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 02:56
 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.: 146679 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	0.12
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	0.13	J	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	0.21
108-88-3	Toluene	0.062	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 7964 Lab Sample ID: 320-25033-7
 Matrix: Air Lab File ID: MS9011718.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 250 (mL) Date Analyzed: 01/18/2017 02:56
 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.: 146679 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)	99		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011718.D
 Lims ID: 320-25033-A-7
 Client ID: 7964
 Sample Type: Client
 Inject. Date: 18-Jan-2017 02:56:30 ALS Bottle#: 10 Worklist Smp#: 19
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-7
 Misc. Info.: 500 CAN CERT
 Operator ID: SV Instrument ID: ATMS9
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\TO15_ATMS9N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 18-Jan-2017 18:54:16 Calib Date: 05-Jan-2017 23:38:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20170106-38533.b\MS9010512.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK033

First Level Reviewer: phanthasena

Date: 18-Jan-2017 18:54:16

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.387	12.400	-0.013	96	52863	4.00	
* 2 1,4-Difluorobenzene	114	14.492	14.498	-0.006	94	216884	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.412	20.418	-0.006	86	190514	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.568	13.580	-0.012	97	61904	3.95	
\$ 5 Toluene-d8 (Surr)	100	17.662	17.662	0.000	99	128345	4.08	
\$ 6 4-Bromofluorobenzene (Surr	174	22.340	22.340	0.000	93	104954	3.80	
14 Propene	41	4.235	4.181	0.054	27	1251	0.1284	
15 Dichlorodifluoromethane	85	4.296	4.248	0.048	95	1590	0.0498	
22 Butane	43	4.978	4.941	0.037	87	1529	0.0923	
31 Acetone	43	7.746	7.673	0.073	89	4557	0.2213	
85 Toluene	91	17.814	17.814	0.000	88	3507	0.0624	

Reagents:

VAMSIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011718.D

Injection Date: 18-Jan-2017 02:56:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-25033-A-7

Lab Sample ID: 320-25033-7

Worklist Smp#: 19

Client ID: 7964

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

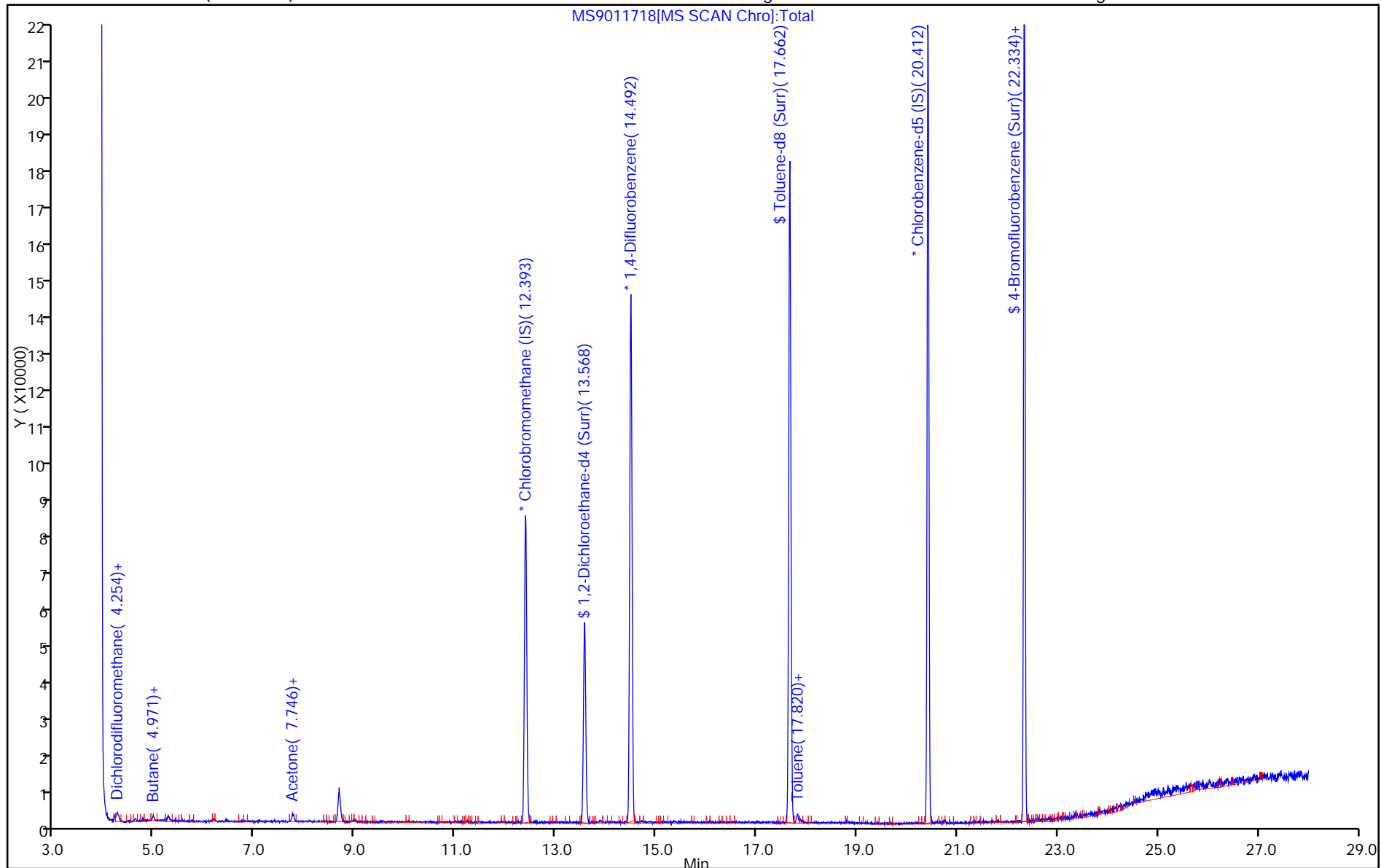
ALS Bottle#: 10

Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011718.D

Injection Date: 18-Jan-2017 02:56:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-7

Lab Sample ID: 320-25033-7

Client ID: 7964

Operator ID: SV

ALS Bottle#: 10 Worklist Smp#: 19

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

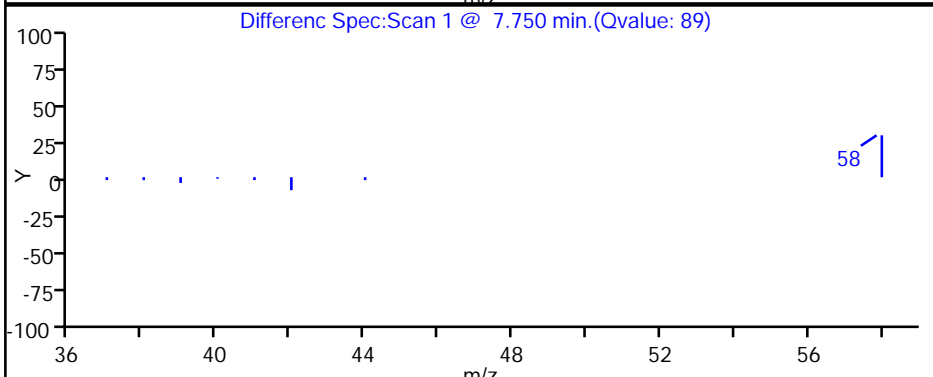
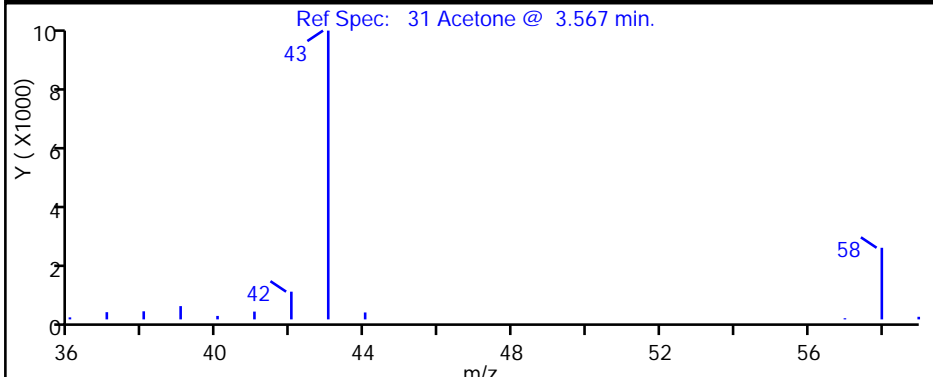
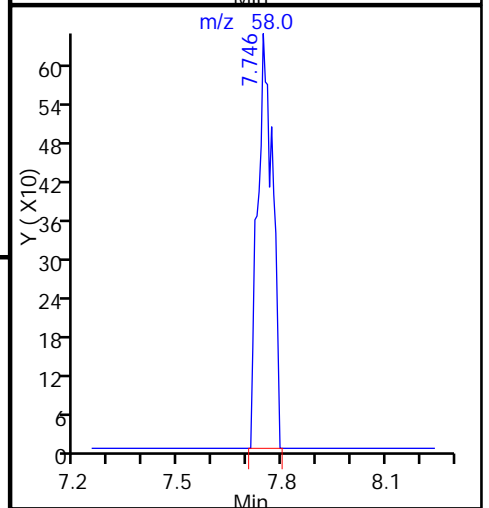
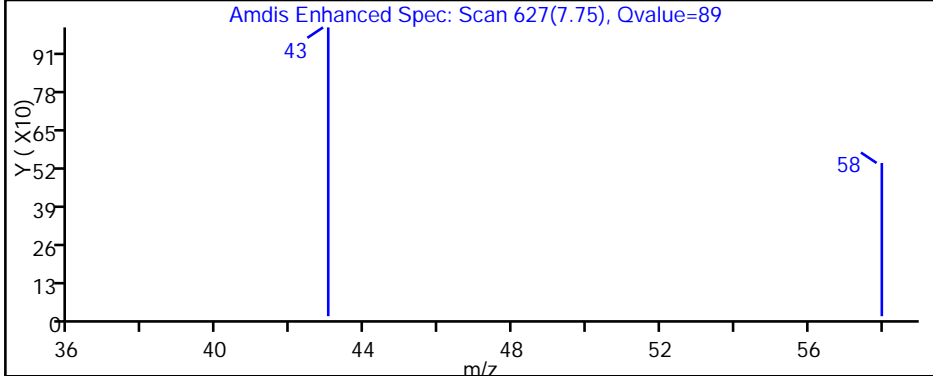
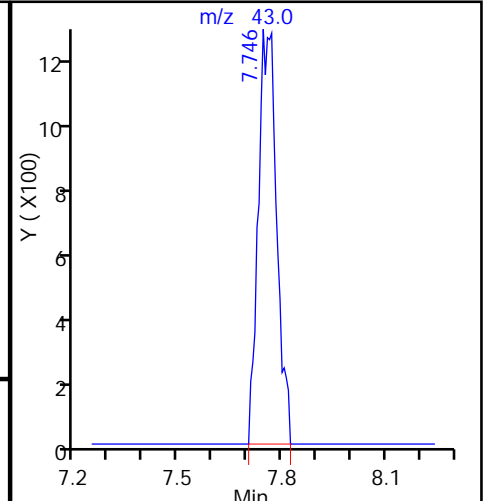
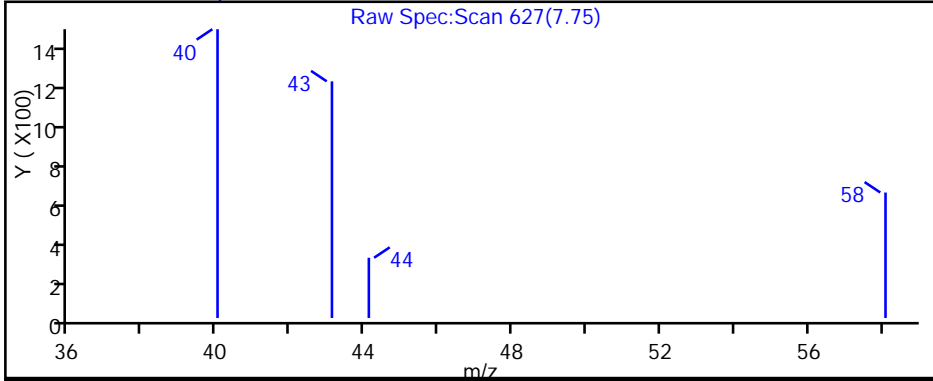
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011718.D

Injection Date: 18-Jan-2017 02:56:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-7

Lab Sample ID: 320-25033-7

Client ID: 7964

Operator ID: SV

ALS Bottle#: 10 Worklist Smp#: 19

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

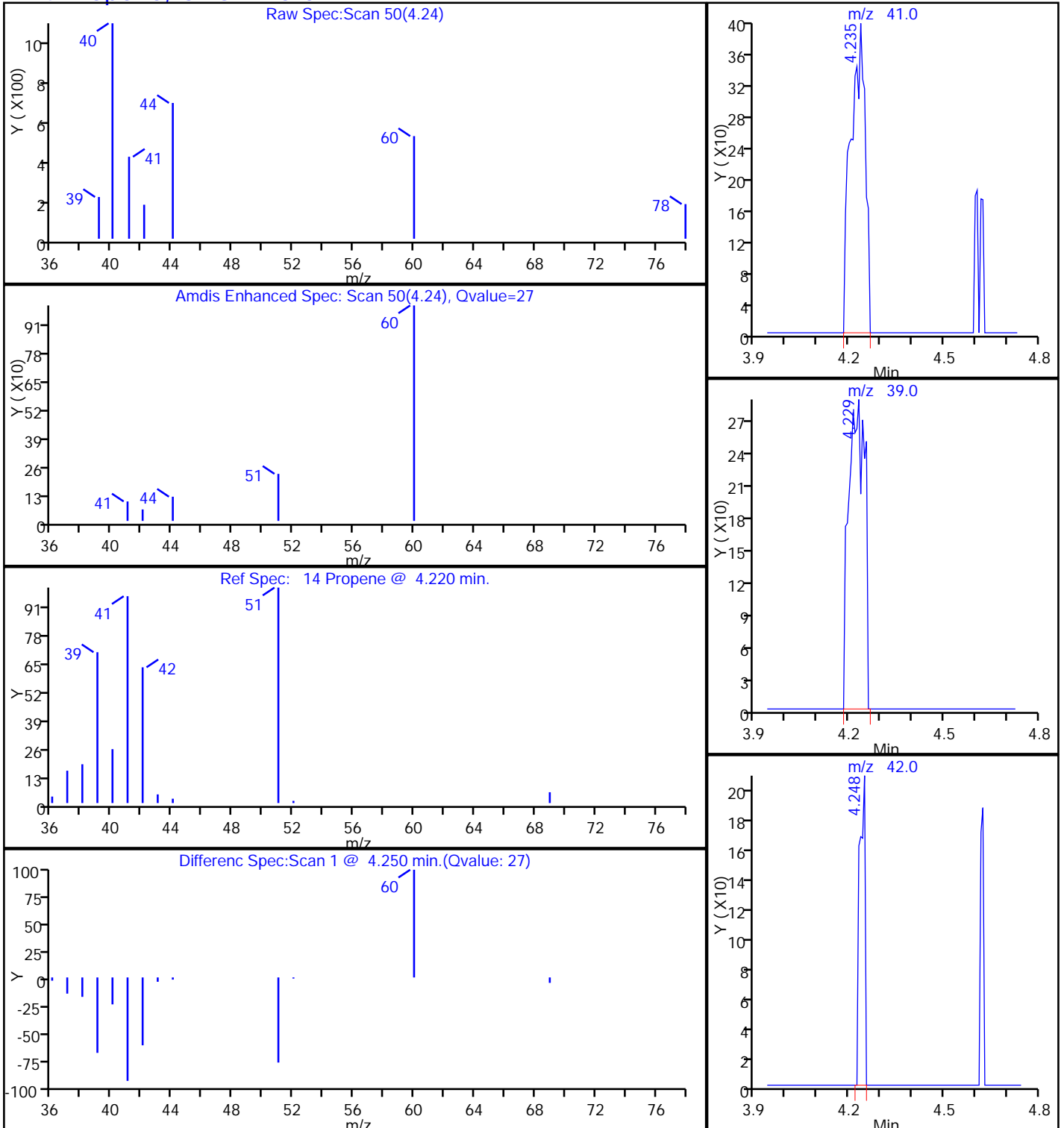
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

14 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170117-38893.b\MS9011718.D

Injection Date: 18-Jan-2017 02:56:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-7

Lab Sample ID: 320-25033-7

Client ID: 7964

Operator ID: SV

ALS Bottle#: 10 Worklist Smp#: 19

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

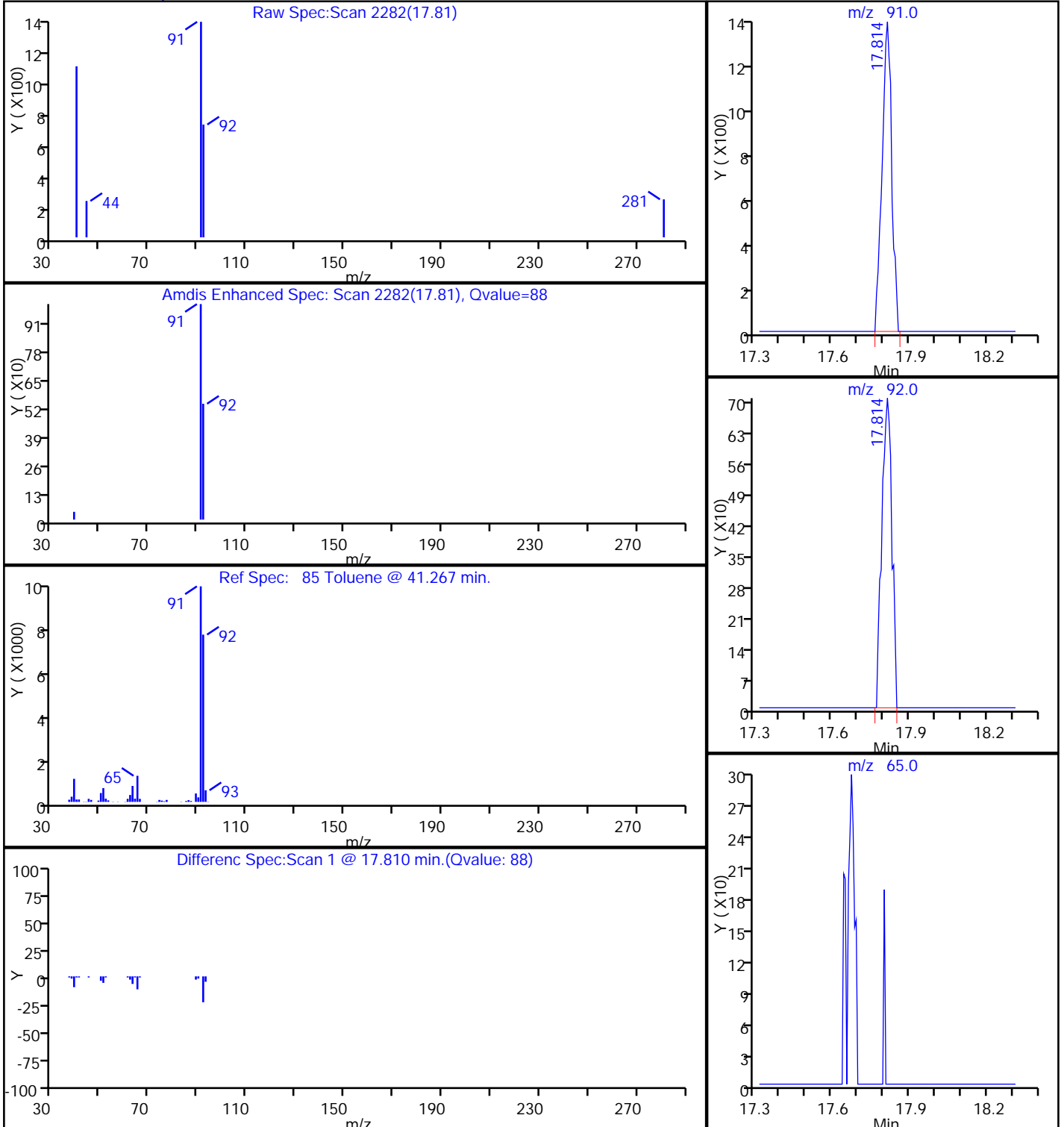
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

85 Toluene, CAS: 108-88-3



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34002158 Lab Sample ID: 320-25033-8
 Matrix: Air Lab File ID: MS7011821.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 03:59
 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.: 146814 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	4.9	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34002158 Lab Sample ID: 320-25033-8
 Matrix: Air Lab File ID: MS7011821.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 03:59
 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.: 146814 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	0.33	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	0.12
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	0.15	J	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	0.21
108-88-3	Toluene	0.059	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34002158 Lab Sample ID: 320-25033-8
 Matrix: Air Lab File ID: MS7011821.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 03:59
 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.: 146814 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)	89		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		70-130
2037-26-5	Toluene-d8 (Surr)	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011821.D
 Lims ID: 320-25033-A-8
 Client ID: 34002158
 Sample Type: Client
 Inject. Date: 19-Jan-2017 03:59:30 ALS Bottle#: 1 Worklist Smp#: 21
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-8
 Misc. Info.: 500 mL CAN CERT
 Operator ID: LHS Instrument ID: ATMS7
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\TO15_ATMS7N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 19-Jan-2017 07:58:42 Calib Date: 11-Jan-2017 11:01:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20170110-38676.b\MS7011024.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK009

First Level Reviewer: leeh Date: 19-Jan-2017 07:57:29

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.345	12.369	-0.024	95	19433	4.00	
* 2 1,4-Difluorobenzene	114	14.505	14.517	-0.012	96	87112	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.178	21.178	0.000	92	91593	4.00	
\$ 4 1,2-Dichloroethane-d4 (Surr	65	13.550	13.568	-0.018	100	40481	4.04	
\$ 5 Toluene-d8 (Surr)	100	17.905	17.917	-0.012	97	59425	3.98	
\$ 6 4-Bromofluorobenzene (Surr	95	23.721	23.721	0.000	86	57689	3.55	
11 Propene	41	3.913	3.870	0.043	69	510	0.1519	
32 Acetone	43	7.423	7.369	0.055	99	40919	4.87	
69 1,4-Dioxane	88	16.068	16.013	0.055	70	1328	0.3306	
75 Toluene	91	18.088	18.063	0.025	87	1334	0.0587	

Reagents:

VAMIS20_00002 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011821.D

Injection Date: 19-Jan-2017 03:59:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-25033-A-8

Lab Sample ID: 320-25033-8

Worklist Smp#: 21

Client ID: 34002158

Purge Vol: 5.000 mL

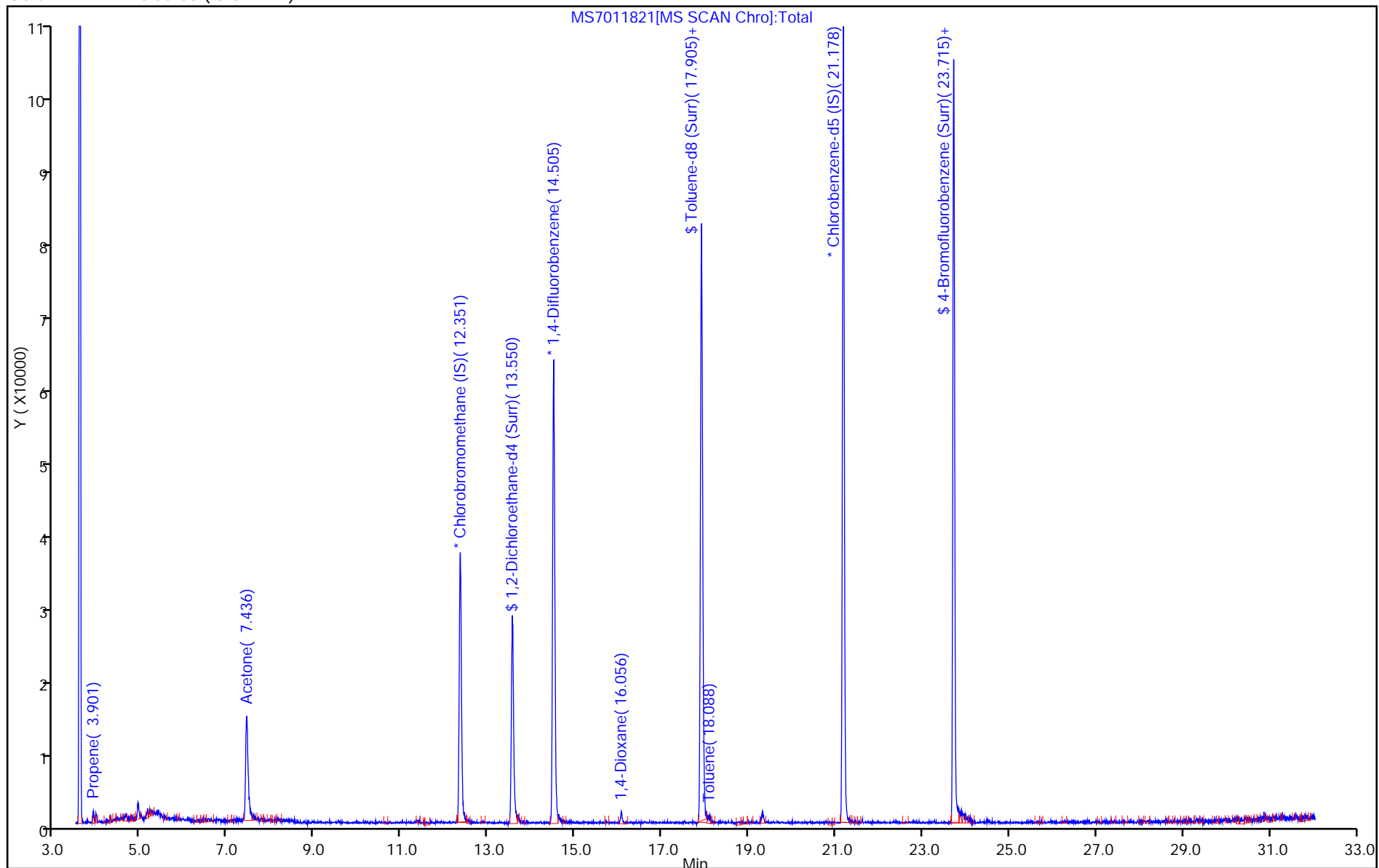
Dil. Factor: 1.0000

ALS Bottle#: 1

Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011821.D

Injection Date: 19-Jan-2017 03:59:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-8

Lab Sample ID: 320-25033-8

Client ID: 34002158

Operator ID: LHS

ALS Bottle#: 1 Worklist Smp#: 21

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

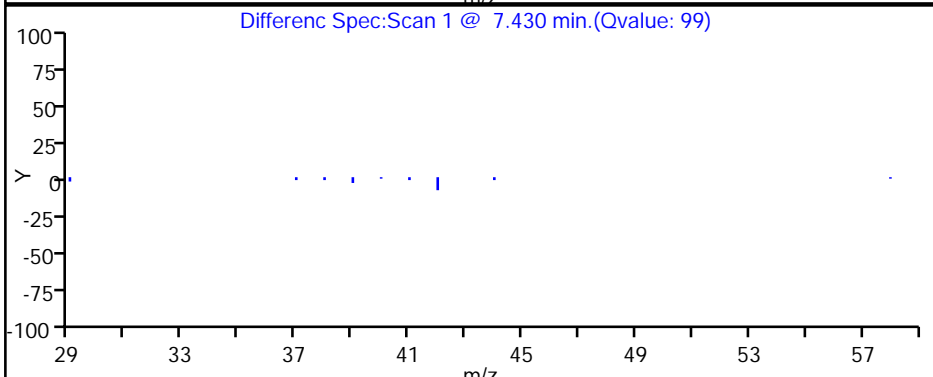
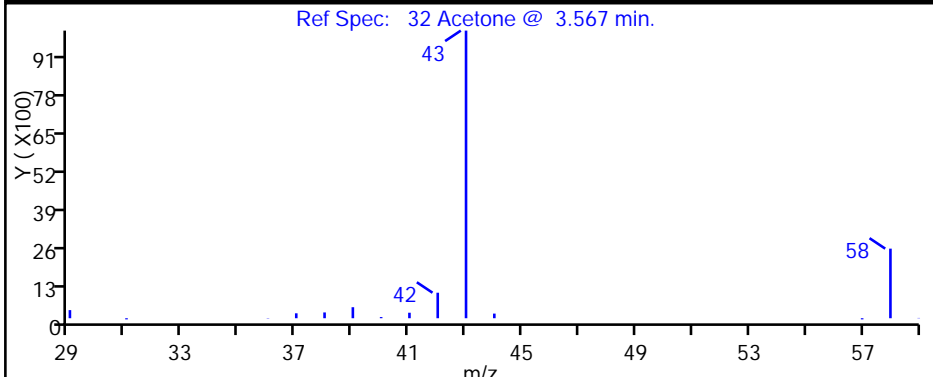
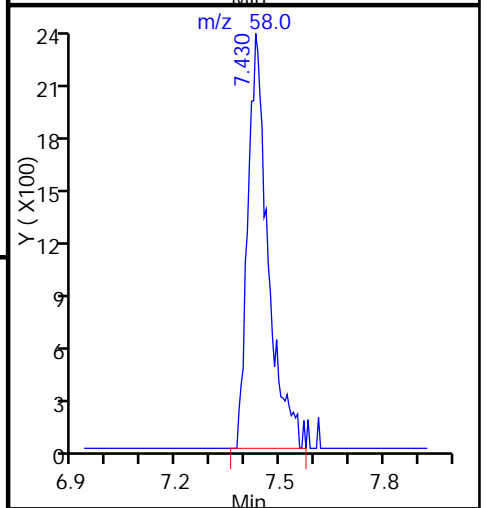
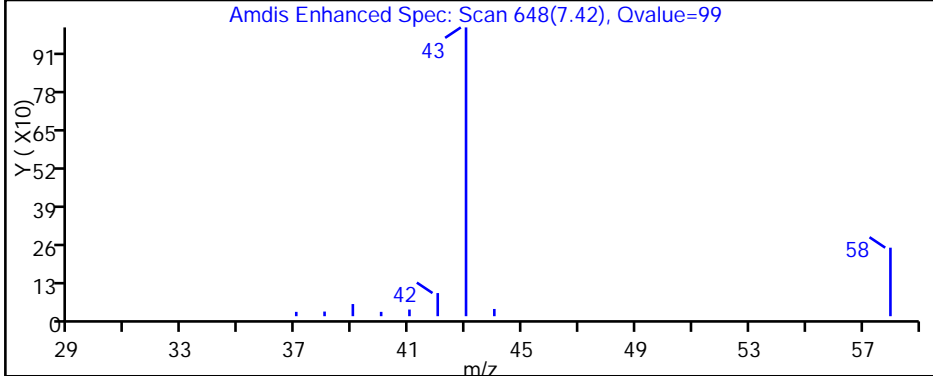
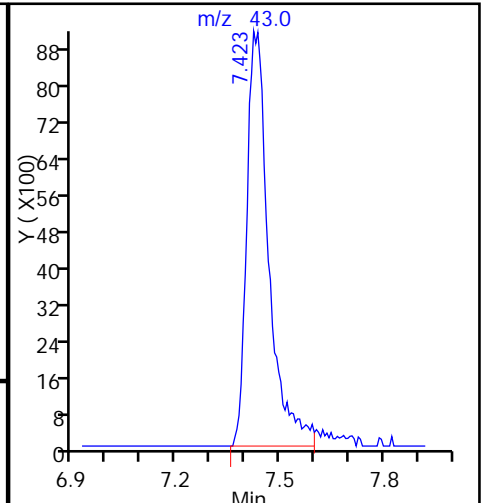
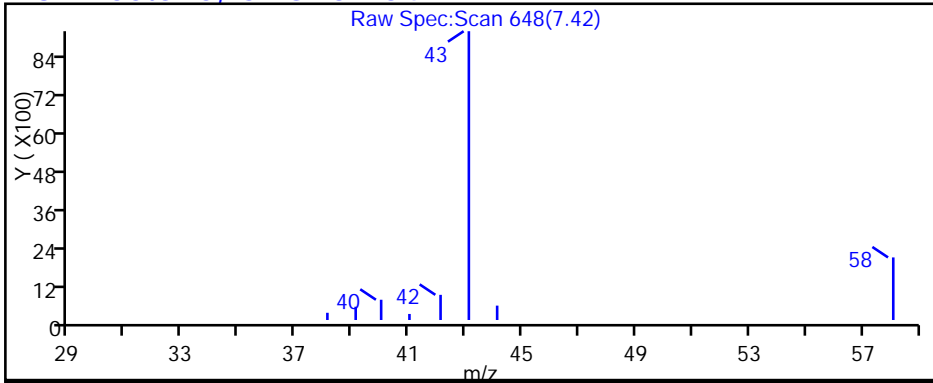
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011821.D

Injection Date: 19-Jan-2017 03:59:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-8

Lab Sample ID: 320-25033-8

Client ID: 34002158

Operator ID: LHS

ALS Bottle#: 1 Worklist Smp#: 21

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

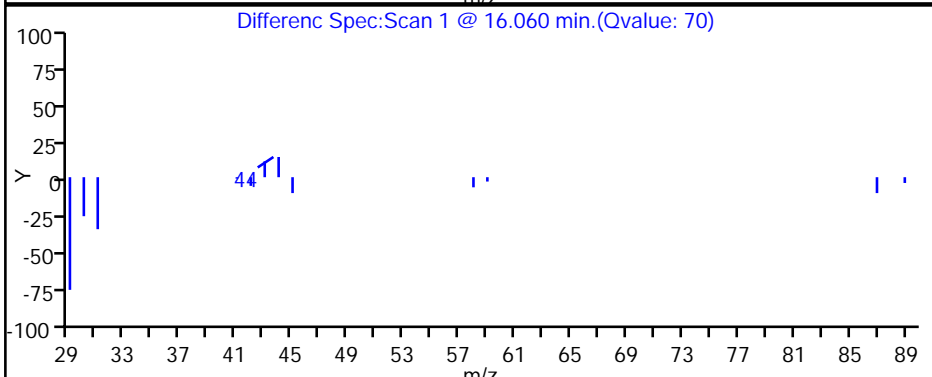
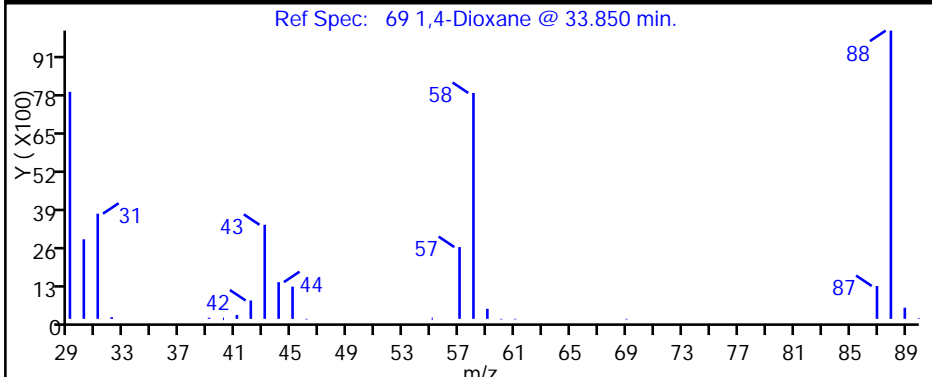
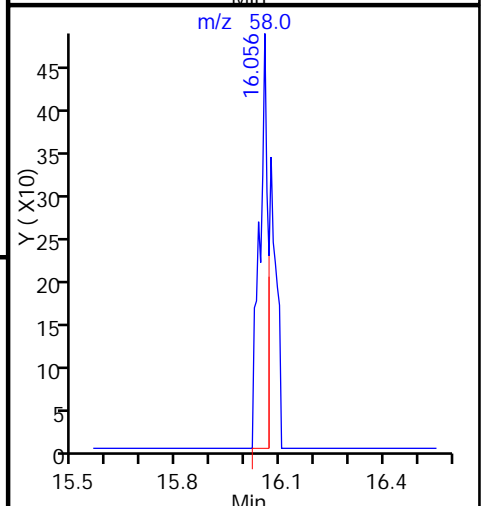
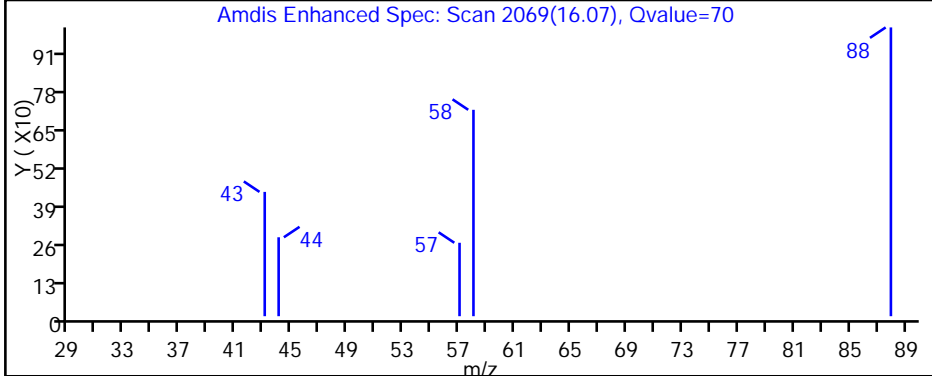
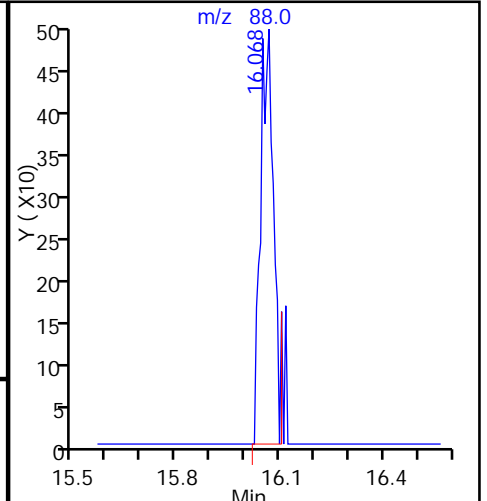
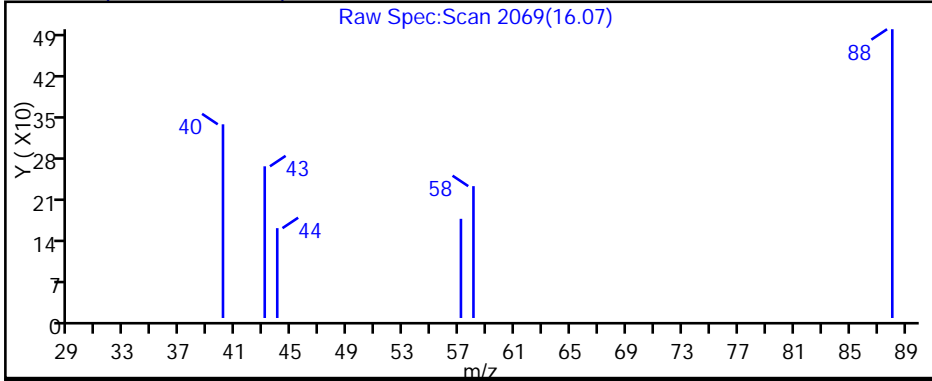
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

69 1,4-Dioxane, CAS: 123-91-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011821.D

Injection Date: 19-Jan-2017 03:59:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-8

Lab Sample ID: 320-25033-8

Client ID: 34002158

Operator ID: LHS

ALS Bottle#: 1 Worklist Smp#: 21

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

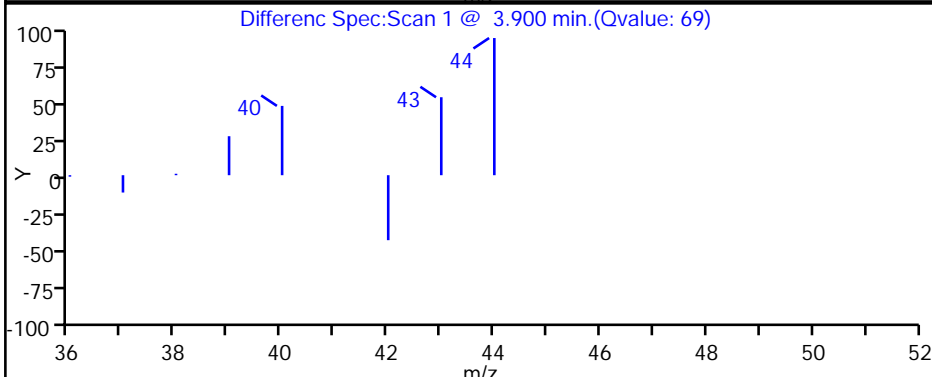
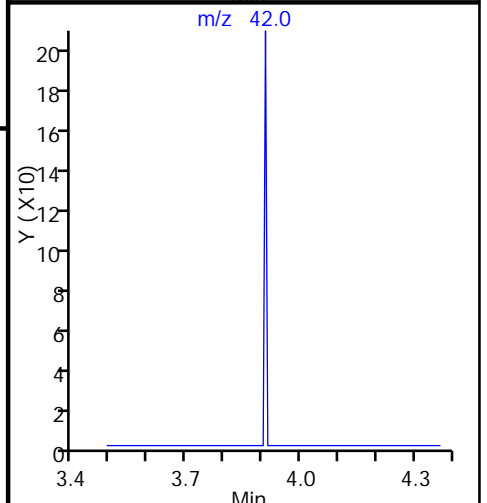
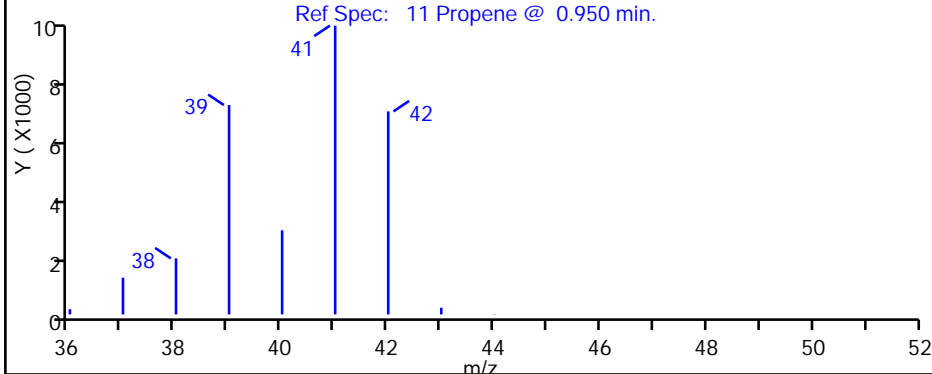
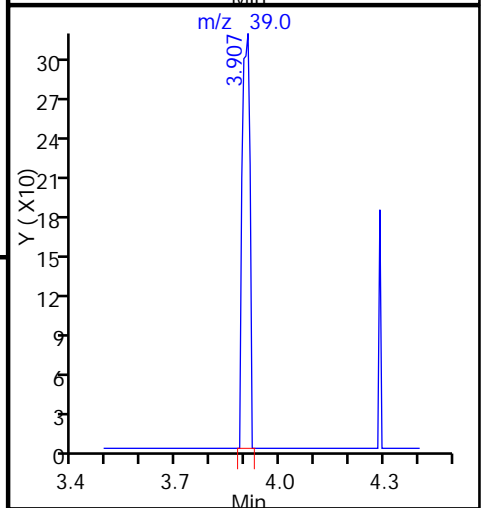
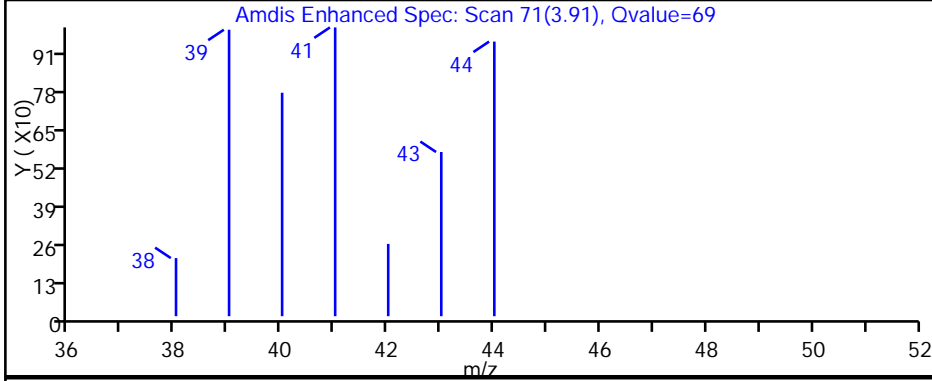
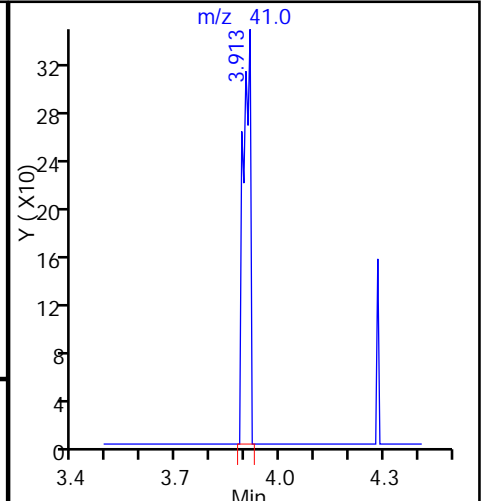
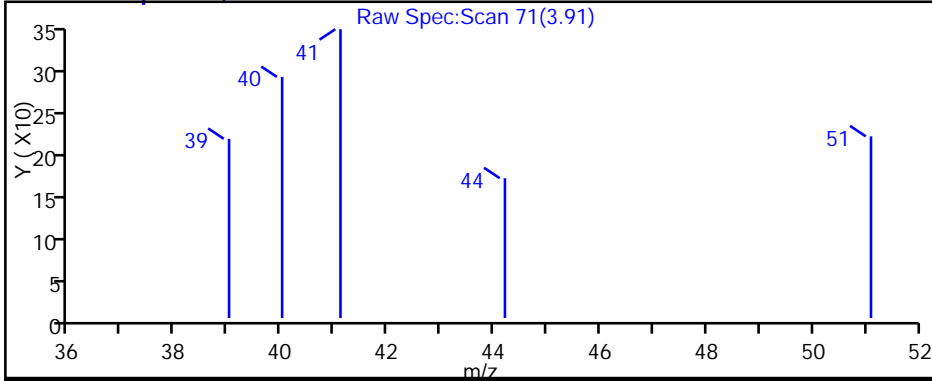
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

11 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011821.D

Injection Date: 19-Jan-2017 03:59:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-8

Lab Sample ID: 320-25033-8

Client ID: 34002158

Operator ID: LHS

ALS Bottle#: 1 Worklist Smp#: 21

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

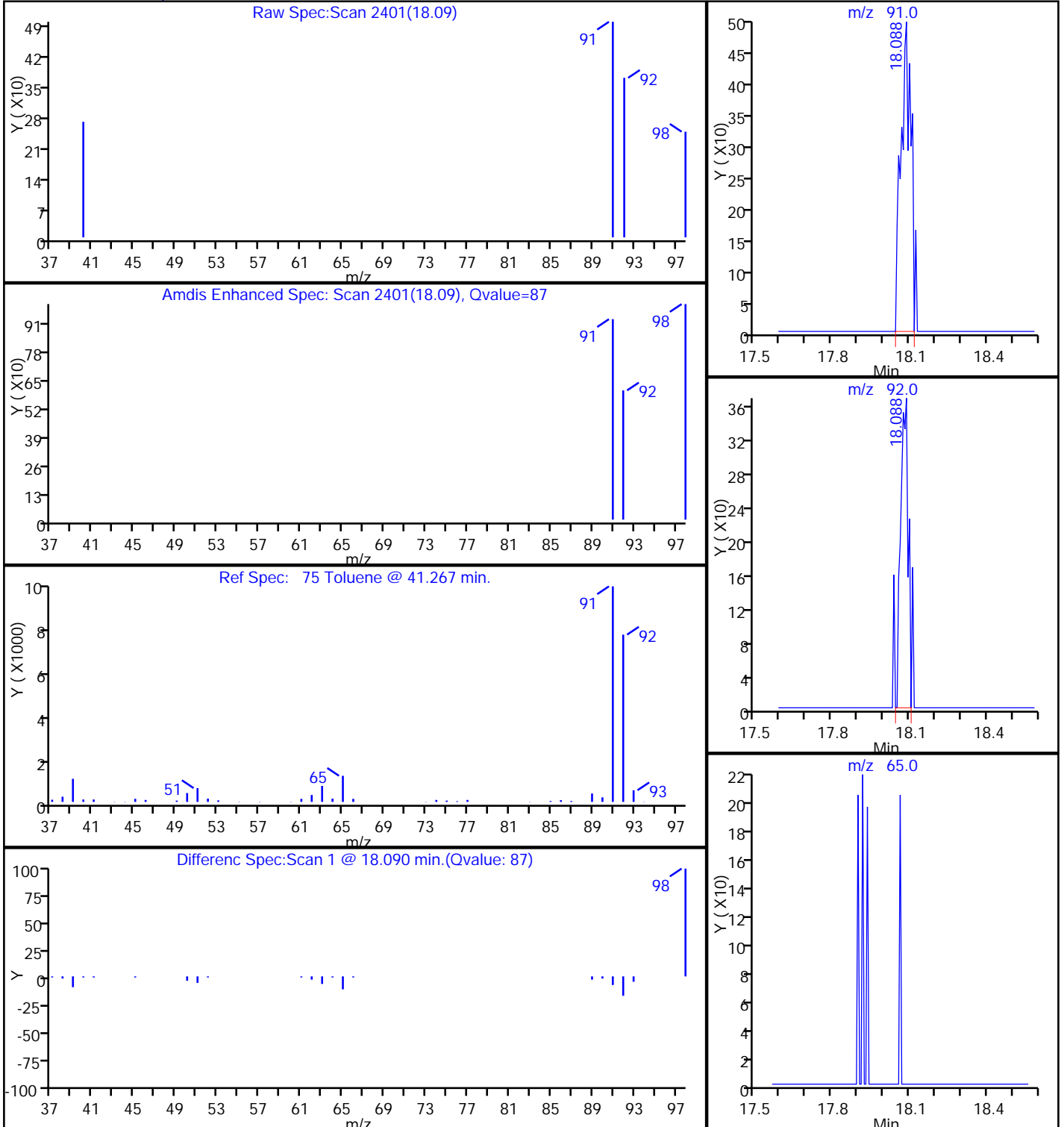
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

75 Toluene, CAS: 108-88-3



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34001346 Lab Sample ID: 320-25033-9
 Matrix: Air Lab File ID: MS7011822.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 04:55
 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.: 146814 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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34001346 Lab Sample ID: 320-25033-9
 Matrix: Air Lab File ID: MS7011822.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 04:55
 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.: 146814 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	0.12
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	0.18	J	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	0.21
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34001346 Lab Sample ID: 320-25033-9
 Matrix: Air Lab File ID: MS7011822.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 04:55
 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.: 146814 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)	106		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011822.D
 Lims ID: 320-25033-A-9
 Client ID: 34001346
 Sample Type: Client
 Inject. Date: 19-Jan-2017 04:55:30 ALS Bottle#: 4 Worklist Smp#: 22
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-9
 Misc. Info.: 500 mL CAN CERT
 Operator ID: LHS Instrument ID: ATMS7
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\TO15_ATMS7N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 19-Jan-2017 07:58:42 Calib Date: 11-Jan-2017 11:01:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20170110-38676.b\MS7011024.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK009

First Level Reviewer: leeh

Date: 19-Jan-2017 07:58:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.339	12.369	-0.030	94	18647	4.00	
* 2 1,4-Difluorobenzene	114	14.499	14.517	-0.018	96	81286	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.172	21.178	-0.006	93	88429	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.543	13.568	-0.025	100	39588	4.23	
\$ 5 Toluene-d8 (Surr)	100	17.905	17.917	-0.012	96	57369	4.12	
\$ 6 4-Bromofluorobenzene (Surr	95	23.715	23.721	-0.006	87	57749	3.68	
11 Propene	41	3.889	3.870	0.019	88	581	0.1803	
75 Toluene	91	18.063	18.063	0.000	16	857	0.0404	

Reagents:

VAMIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011822.D

Injection Date: 19-Jan-2017 04:55:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-25033-A-9

Lab Sample ID: 320-25033-9

Worklist Smp#: 22

Client ID: 34001346

Purge Vol: 5.000 mL

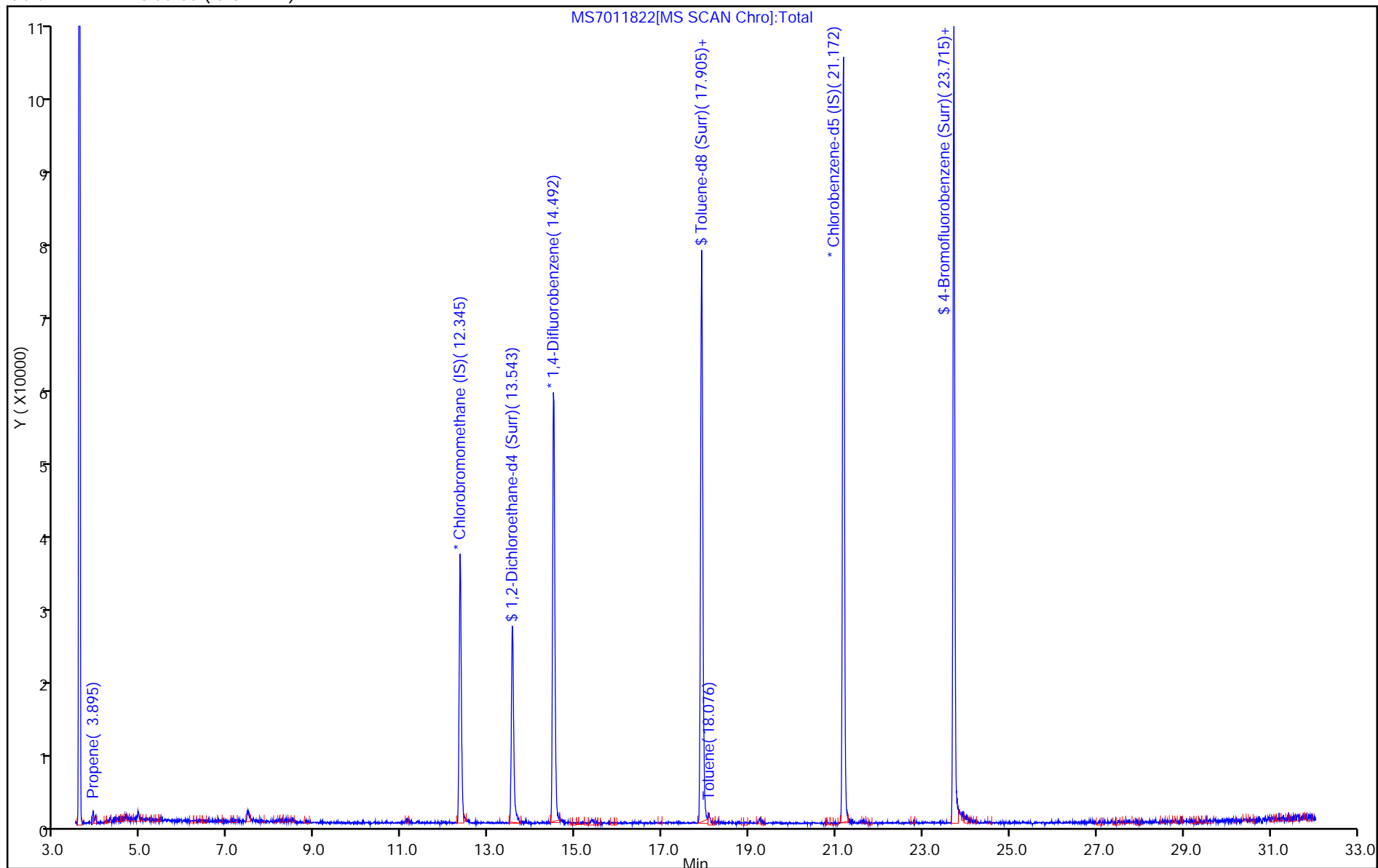
Dil. Factor: 1.0000

ALS Bottle#: 4

Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011822.D

Injection Date: 19-Jan-2017 04:55:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-9

Lab Sample ID: 320-25033-9

Client ID: 34001346

Operator ID: LHS

ALS Bottle#: 4 Worklist Smp#: 22

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

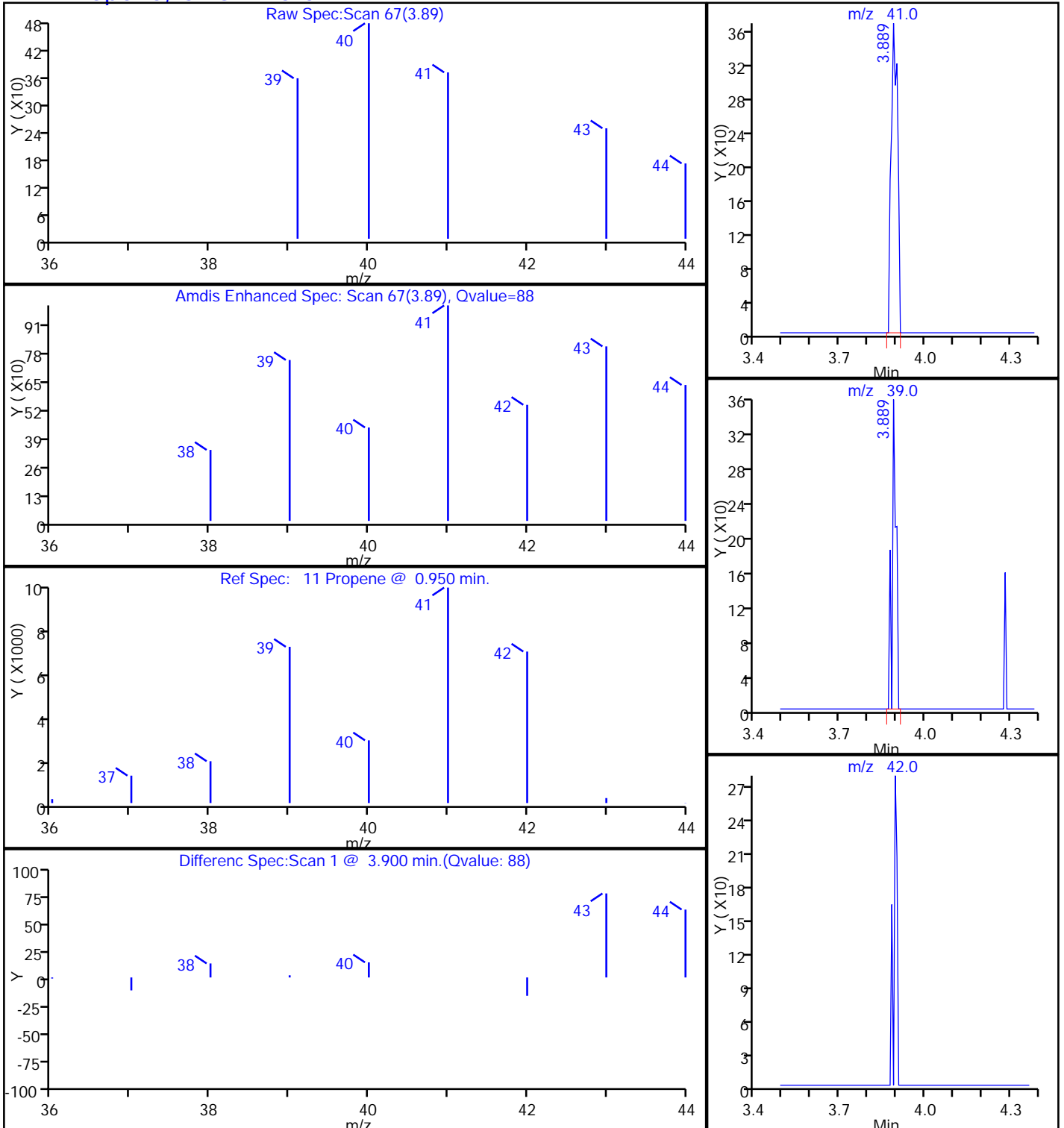
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

11 Propene, CAS: 115-07-1



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 8043 Lab Sample ID: 320-25033-10
 Matrix: Air Lab File ID: MS7011824.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 06:59
 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.: 146814 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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 8043 Lab Sample ID: 320-25033-10
 Matrix: Air Lab File ID: MS7011824.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 06:59
 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.: 146814 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	0.12
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	0.13	J	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	0.21
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 8043 Lab Sample ID: 320-25033-10
 Matrix: Air Lab File ID: MS7011824.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 06:59
 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.: 146814 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)	89		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	108		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011824.D
 Lims ID: 320-25033-A-10
 Client ID: 8043
 Sample Type: Client
 Inject. Date: 19-Jan-2017 06:59:30 ALS Bottle#: 1 Worklist Smp#: 24
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-10
 Misc. Info.: 500 mL CAN CERT
 Operator ID: LHS Instrument ID: ATMS7
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\TO15_ATMS7N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 19-Jan-2017 07:59:30 Calib Date: 11-Jan-2017 11:01:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20170110-38676.b\MS7011024.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK009

First Level Reviewer: leeh

Date: 19-Jan-2017 07:59:30

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.333	12.369	-0.036	94	18051	4.00	
* 2 1,4-Difluorobenzene	114	14.486	14.517	-0.031	97	79417	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.154	21.178	-0.024	92	87104	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.531	13.568	-0.037	100	39677	4.34	
\$ 5 Toluene-d8 (Surr)	100	17.881	17.917	-0.036	96	55327	4.07	
\$ 6 4-Bromofluorobenzene (Surr	95	23.703	23.721	-0.018	85	55074	3.56	
11 Propene	41	3.883	3.870	0.013	71	417	0.1337	
75 Toluene	91	18.057	18.063	-0.006	68	820	0.0396	

Reagents:

VAMIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011824.D

Injection Date: 19-Jan-2017 06:59:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-25033-A-10

Lab Sample ID: 320-25033-10

Worklist Smp#: 24

Client ID: 8043

Purge Vol: 5.000 mL

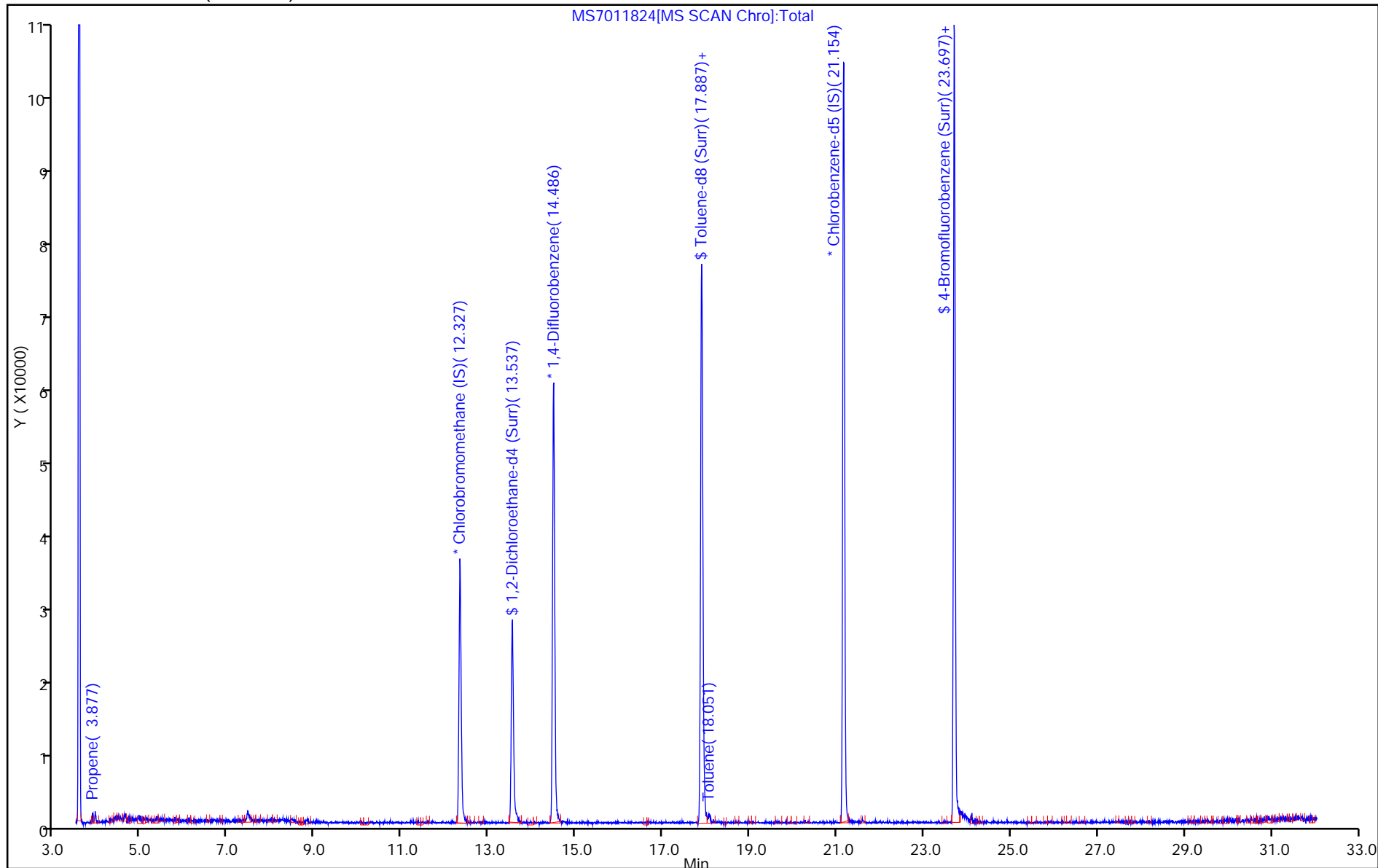
Dil. Factor: 1.0000

ALS Bottle#: 1

Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011824.D

Injection Date: 19-Jan-2017 06:59:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-10

Lab Sample ID: 320-25033-10

Client ID: 8043

Operator ID: LHS

ALS Bottle#: 1 Worklist Smp#: 24

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

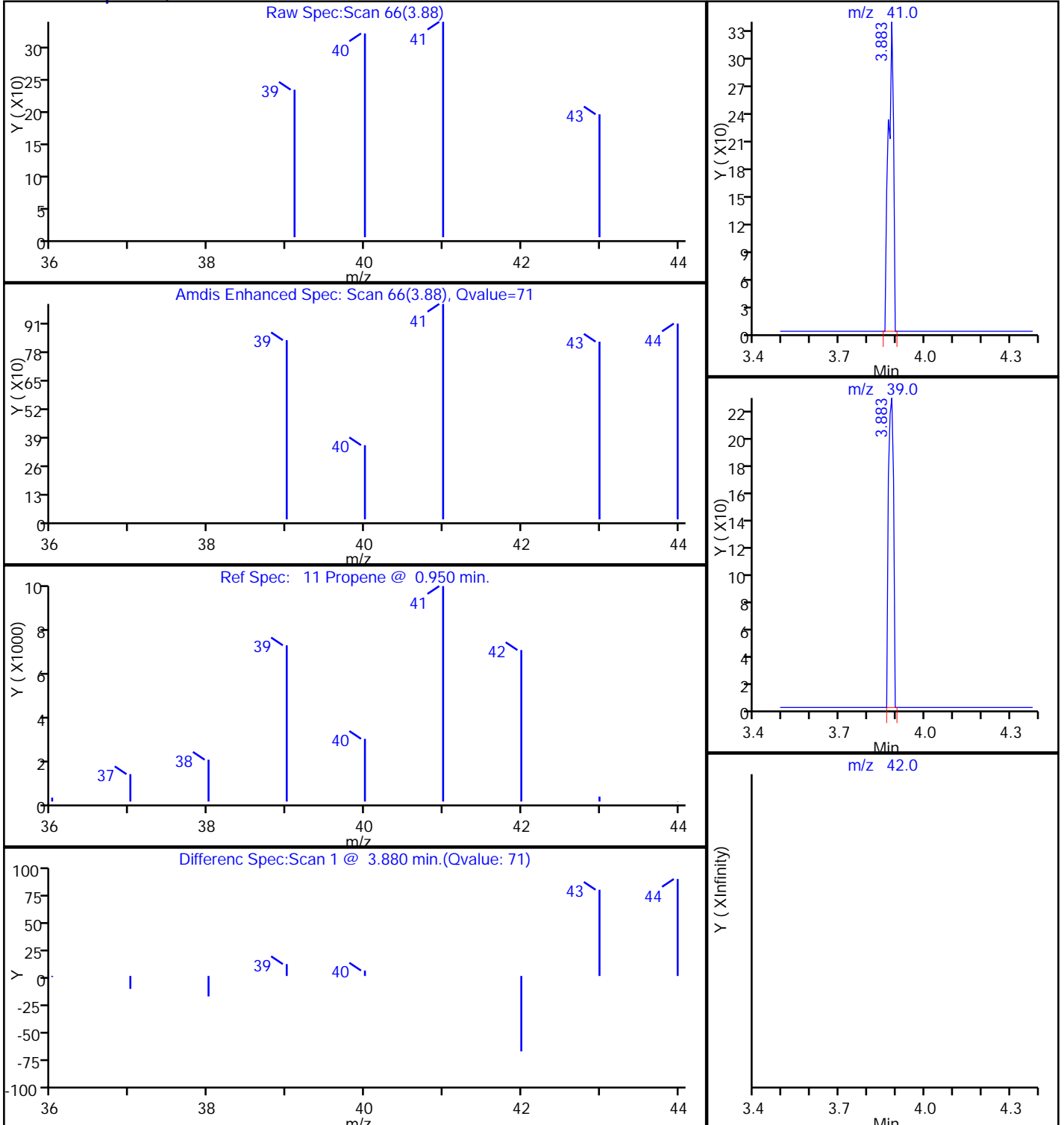
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

11 Propene, CAS: 115-07-1



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 8087 Lab Sample ID: 320-25033-11
 Matrix: Air Lab File ID: MS7011825.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 07:55
 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.: 146814 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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 8087 Lab Sample ID: 320-25033-11
 Matrix: Air Lab File ID: MS7011825.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 07:55
 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.: 146814 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	0.12
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	0.14	J	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	0.21
108-88-3	Toluene	0.072	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 8087 Lab Sample ID: 320-25033-11
 Matrix: Air Lab File ID: MS7011825.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 07:55
 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.: 146814 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)	90		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	106		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011825.D
 Lims ID: 320-25033-A-11
 Client ID: 8087
 Sample Type: Client
 Inject. Date: 19-Jan-2017 07:55:30 ALS Bottle#: 4 Worklist Smp#: 25
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-11
 Misc. Info.: 500 mL CAN CERT
 Operator ID: LHS Instrument ID: ATMS7
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\TO15_ATMS7N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 19-Jan-2017 08:36:09 Calib Date: 11-Jan-2017 11:01:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20170110-38676.b\MS7011024.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK009

First Level Reviewer: leeh Date: 19-Jan-2017 08:36:09

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.339	12.369	-0.030	95	17890	4.00	
* 2 1,4-Difluorobenzene	114	14.493	14.517	-0.024	96	81864	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.166	21.178	-0.012	93	87765	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.537	13.568	-0.031	99	40128	4.26	
\$ 5 Toluene-d8 (Surr)	100	17.893	17.917	-0.024	97	57479	4.10	
\$ 6 4-Bromofluorobenzene (Surr	95	23.709	23.721	-0.012	85	56298	3.61	
11 Propene	41	3.889	3.870	0.019	65	443	0.1433	
17 Butane	43	4.643	4.625	0.018	16	480	0.1055	
75 Toluene	91	18.076	18.063	0.013	69	1548	0.0725	
86 Ethylbenzene	91	21.403	21.403	0.000	86	1715	0.0556	

Reagents:

VAMIS20_00002 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011825.D

Injection Date: 19-Jan-2017 07:55:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-25033-A-11

Lab Sample ID: 320-25033-11

Worklist Smp#: 25

Client ID: 8087

Purge Vol: 5.000 mL

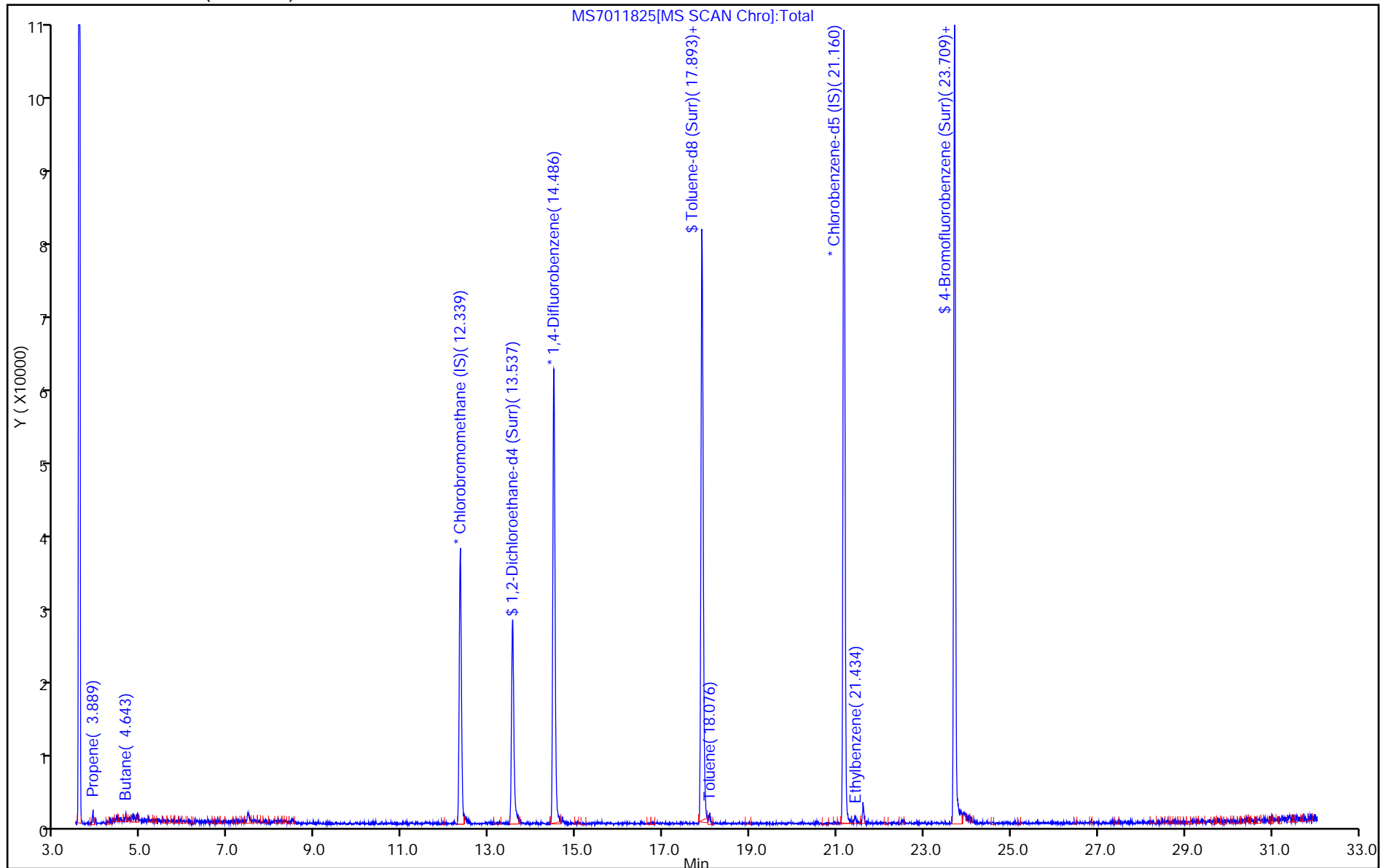
Dil. Factor: 1.0000

ALS Bottle#: 4

Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011825.D

Injection Date: 19-Jan-2017 07:55:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-11

Lab Sample ID: 320-25033-11

Client ID: 8087

Operator ID: LHS

ALS Bottle#: 4 Worklist Smp#: 25

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

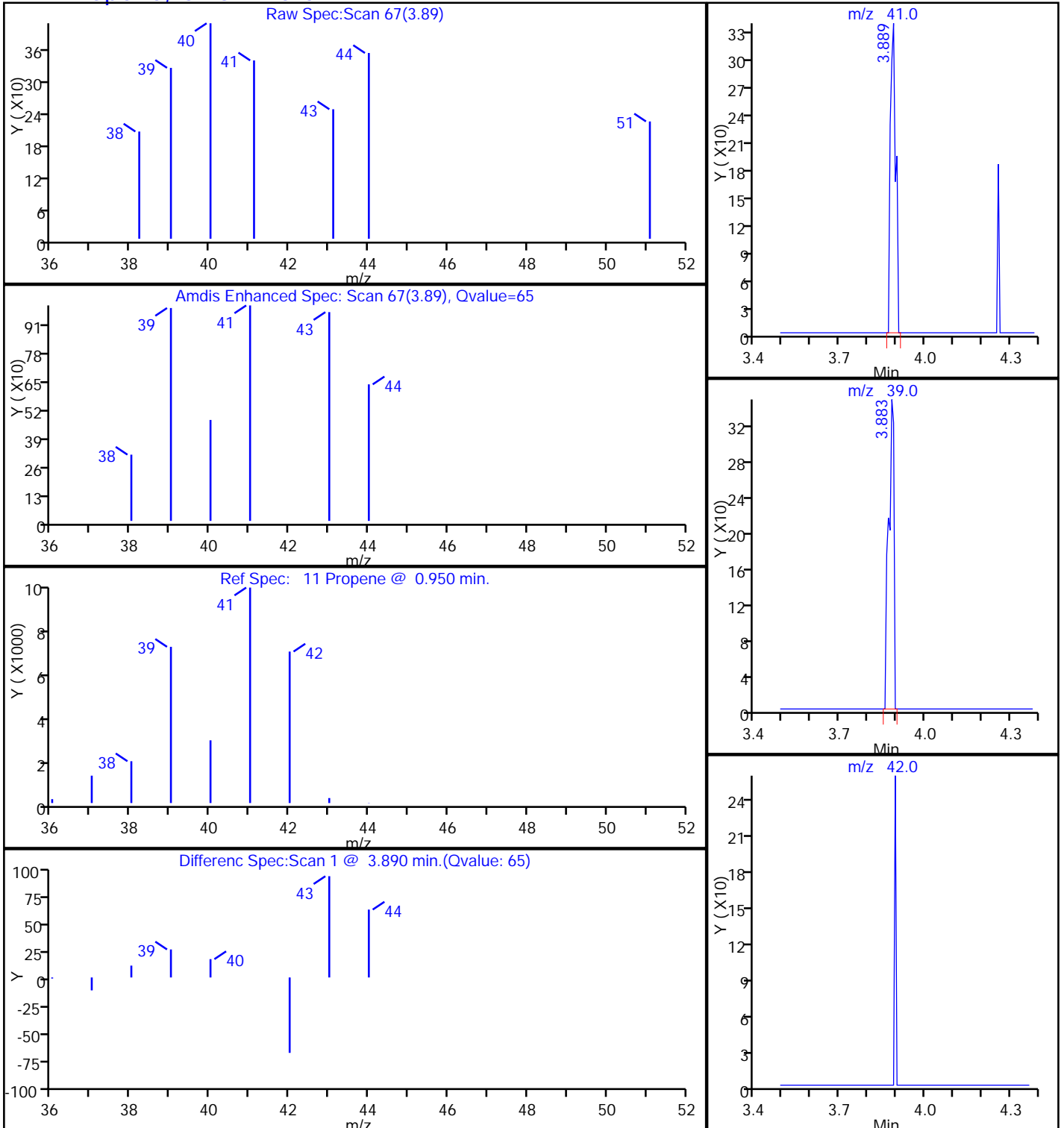
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

11 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170118-38928.b\MS7011825.D

Injection Date: 19-Jan-2017 07:55:30

Instrument ID: ATMS7

Lims ID: 320-25033-A-11

Lab Sample ID: 320-25033-11

Client ID: 8087

Operator ID: LHS

ALS Bottle#: 4 Worklist Smp#: 25

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

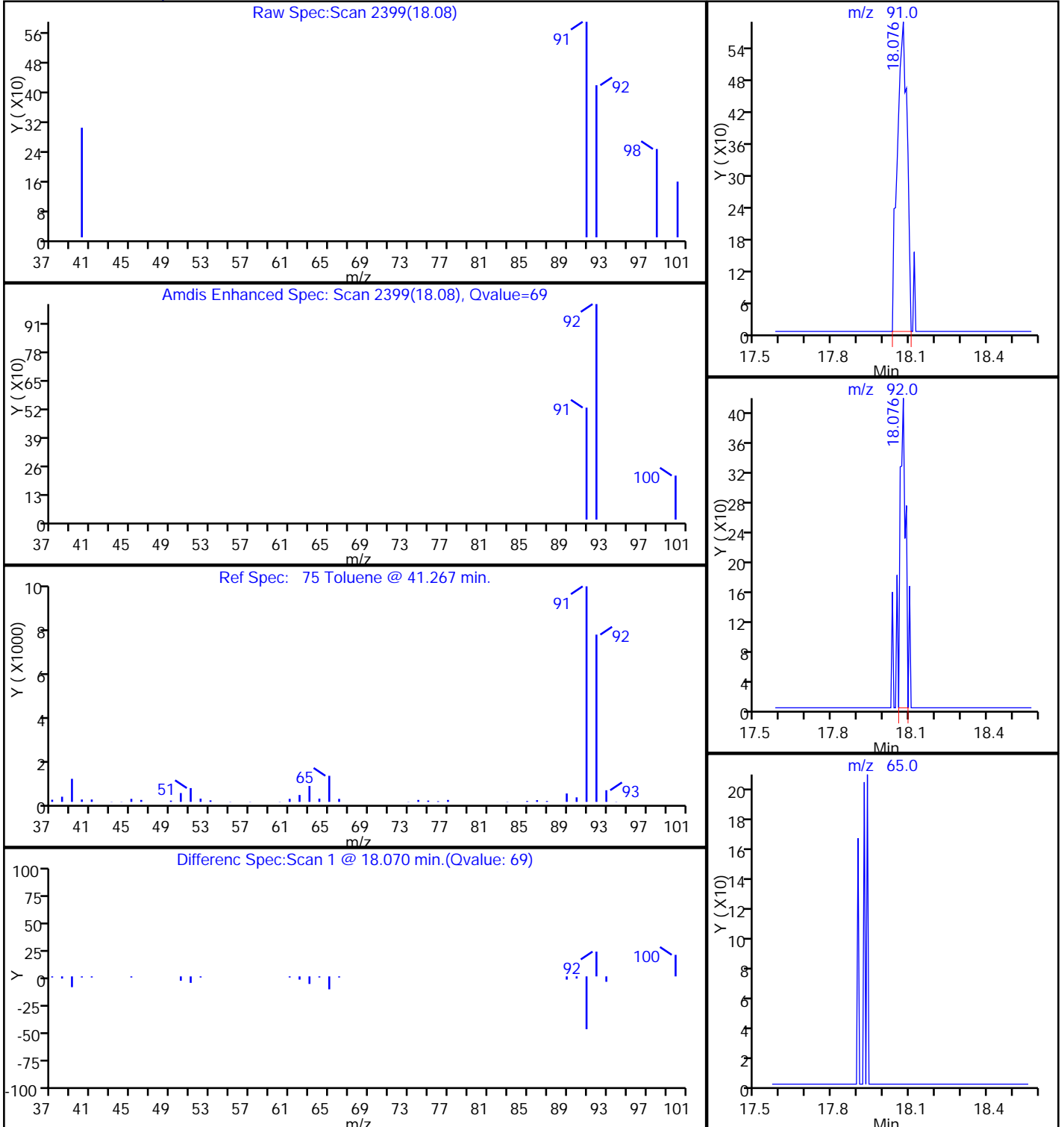
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

75 Toluene, CAS: 108-88-3



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000305 Lab Sample ID: 320-25033-12
 Matrix: Air Lab File ID: MS9011820.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 07:20
 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.: 146793 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.32	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	0.13	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	0.27
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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000305 Lab Sample ID: 320-25033-12
 Matrix: Air Lab File ID: MS9011820.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 07:20
 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.: 146793 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	0.12
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	0.21
108-88-3	Toluene	0.064	J	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.: 320-25033-1
 SDG No.: _____
 Client Sample ID: 34000305 Lab Sample ID: 320-25033-12
 Matrix: Air Lab File ID: MS9011820.D
 Analysis Method: TO-15 Date Collected: 01/13/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 01/19/2017 07:20
 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.: 146793 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)	103		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170118-38922.b\MS9011820.D
 Lims ID: 320-25033-A-12
 Client ID: 34000305
 Sample Type: Client
 Inject. Date: 19-Jan-2017 07:20:30 ALS Bottle#: 2 Worklist Smp#: 20
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25033-A-12
 Misc. Info.: 500 CAN CERT
 Operator ID: SV Instrument ID: ATMS9
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20170118-38922.b\TO15_ATMS9N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 19-Jan-2017 08:21:59 Calib Date: 05-Jan-2017 23:38:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20170106-38533.b\MS9010512.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK003

First Level Reviewer: vanommens

Date: 19-Jan-2017 08:21:59

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.393	12.406	-0.013	96	51253	4.00	
* 2 1,4-Difluorobenzene	114	14.492	14.505	-0.012	94	212919	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.418	20.418	0.000	86	189525	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.568	13.574	-0.006	99	62622	4.12	
\$ 5 Toluene-d8 (Surr)	100	17.656	17.662	-0.006	100	126257	4.09	
\$ 6 4-Bromofluorobenzene (Surr	174	22.340	22.340	0.000	94	108760	3.96	
15 Dichlorodifluoromethane	85	4.296	4.248	0.048	92	1783	0.0576	
22 Butane	43	4.971	4.941	0.030	88	1661	0.1034	
31 Acetone	43	7.752	7.673	0.079	94	6433	0.3222	
48 Carbon disulfide	76	8.999	8.981	0.018	99	4732	0.1337	
85 Toluene	91	17.808	17.814	-0.006	89	3504	0.0636	

Reagents:

VAMSIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170118-38922.b\MS9011820.D

Injection Date: 19-Jan-2017 07:20:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-25033-A-12

Lab Sample ID: 320-25033-12

Worklist Smp#: 20

Client ID: 34000305

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

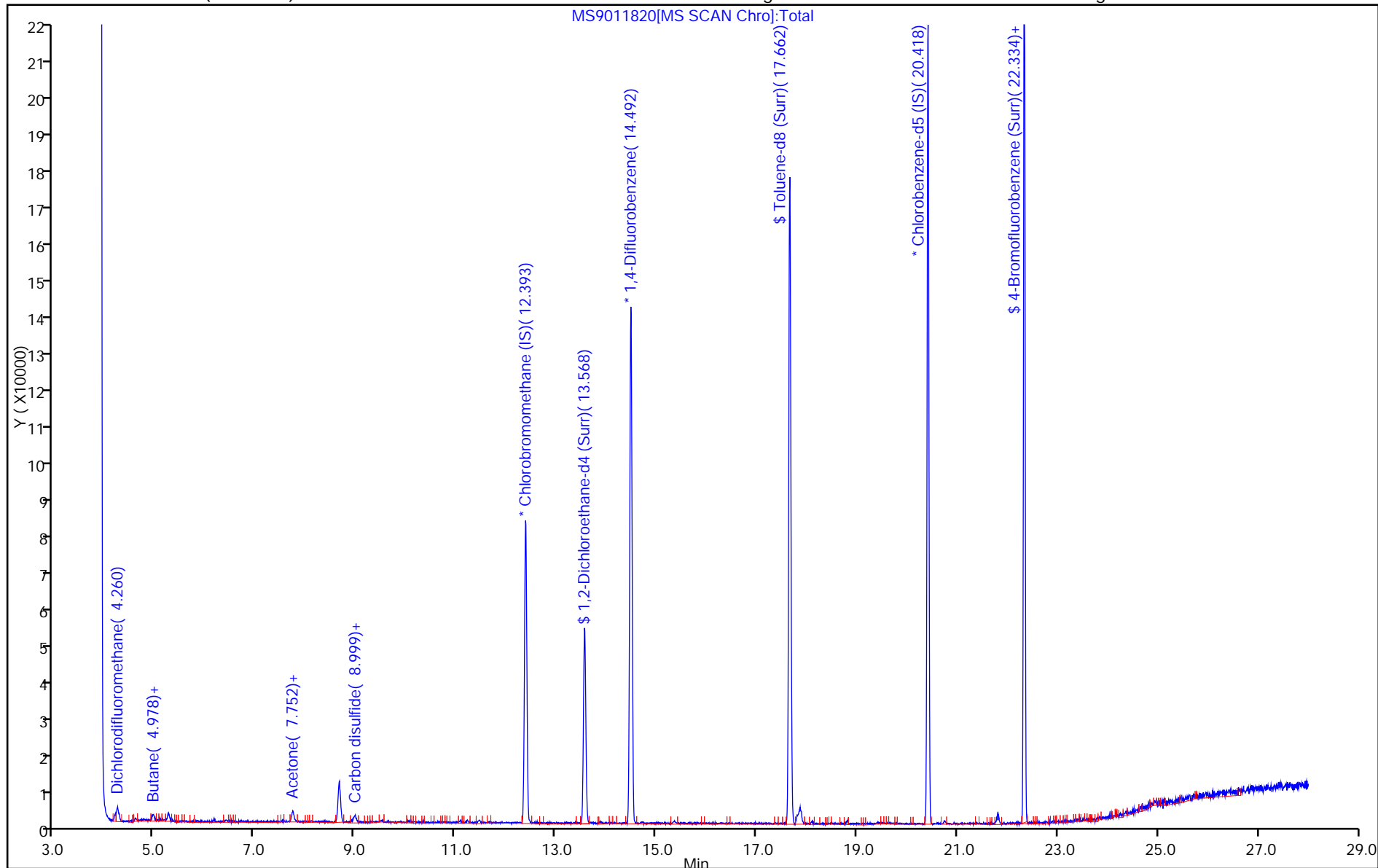
ALS Bottle#: 2

Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170118-38922.b\MS9011820.D

Injection Date: 19-Jan-2017 07:20:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-12

Lab Sample ID: 320-25033-12

Client ID: 34000305

Operator ID: SV

ALS Bottle#: 2 Worklist Smp#: 20

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

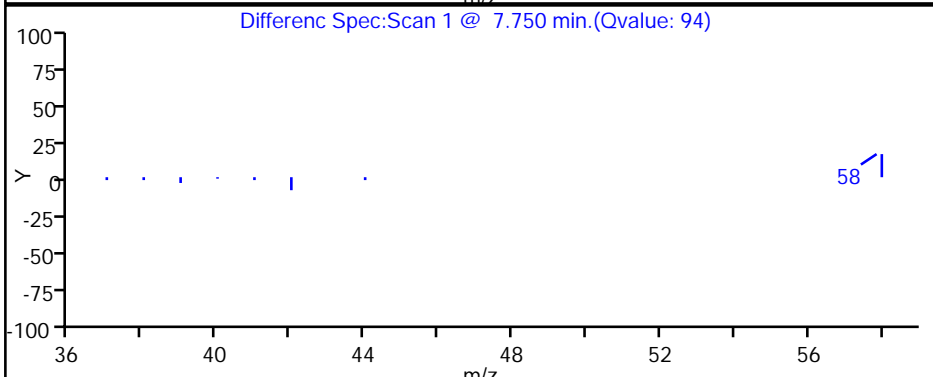
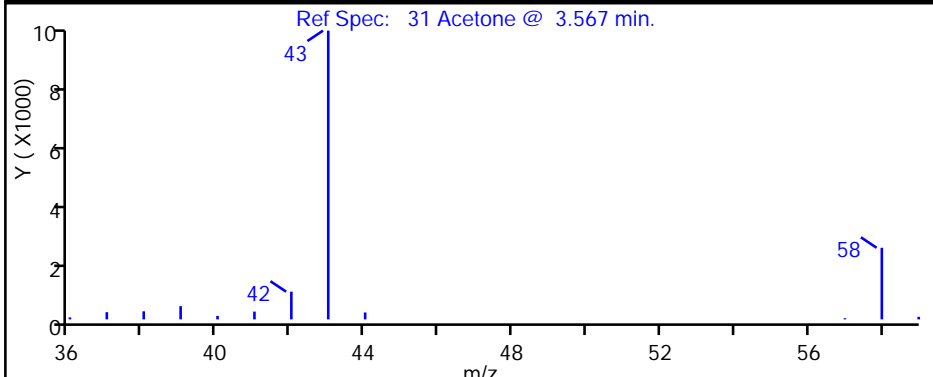
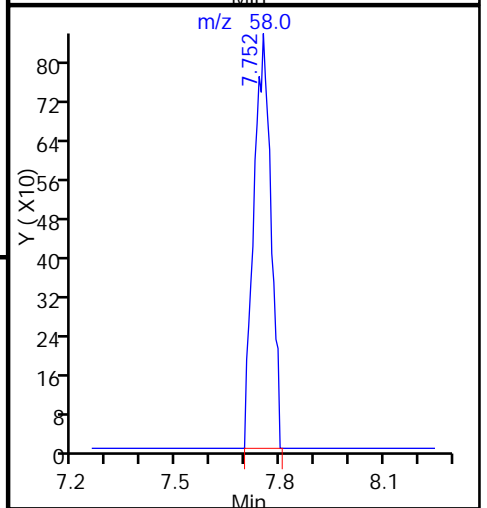
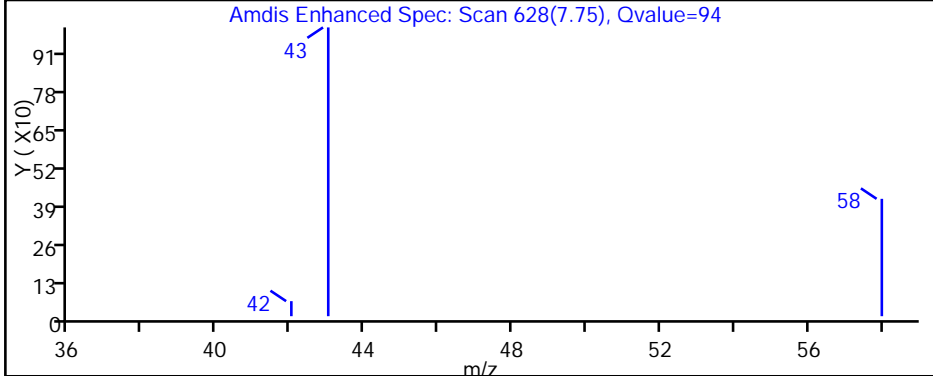
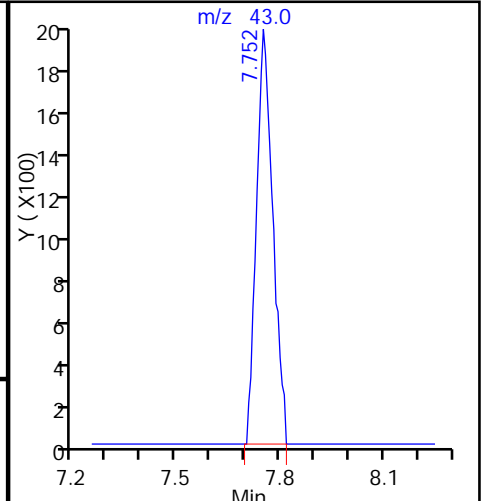
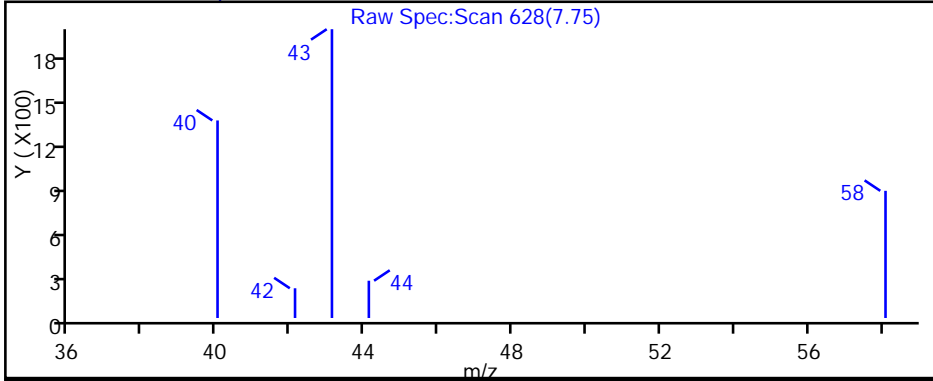
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170118-38922.b\MS9011820.D

Injection Date: 19-Jan-2017 07:20:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-12

Lab Sample ID: 320-25033-12

Client ID: 34000305

Operator ID: SV

ALS Bottle#: 2 Worklist Smp#: 20

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

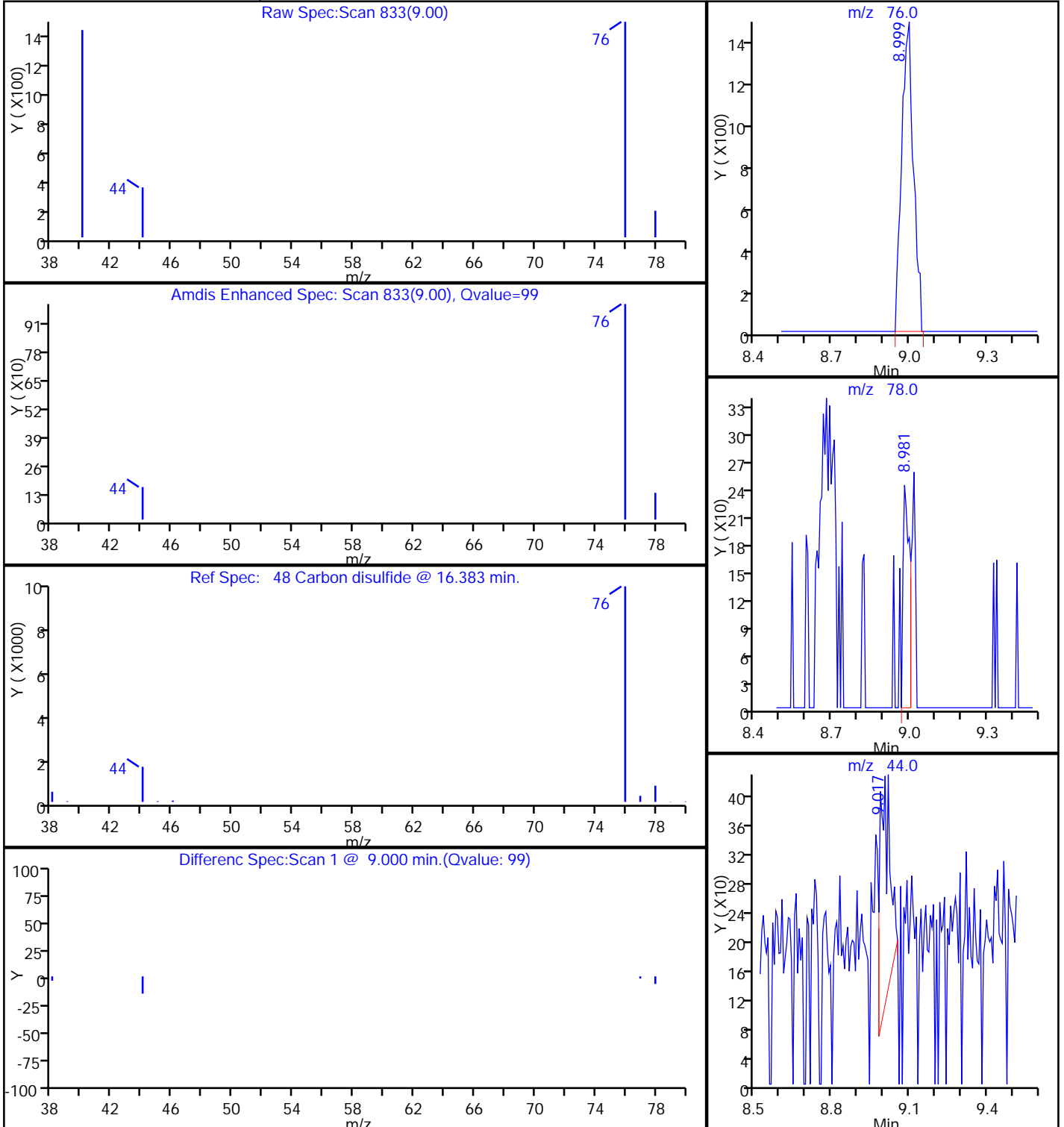
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

48 Carbon disulfide, CAS: 75-15-0



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20170118-38922.b\MS9011820.D

Injection Date: 19-Jan-2017 07:20:30

Instrument ID: ATMS9

Lims ID: 320-25033-A-12

Lab Sample ID: 320-25033-12

Client ID: 34000305

Operator ID: SV

ALS Bottle#: 2 Worklist Smp#: 20

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

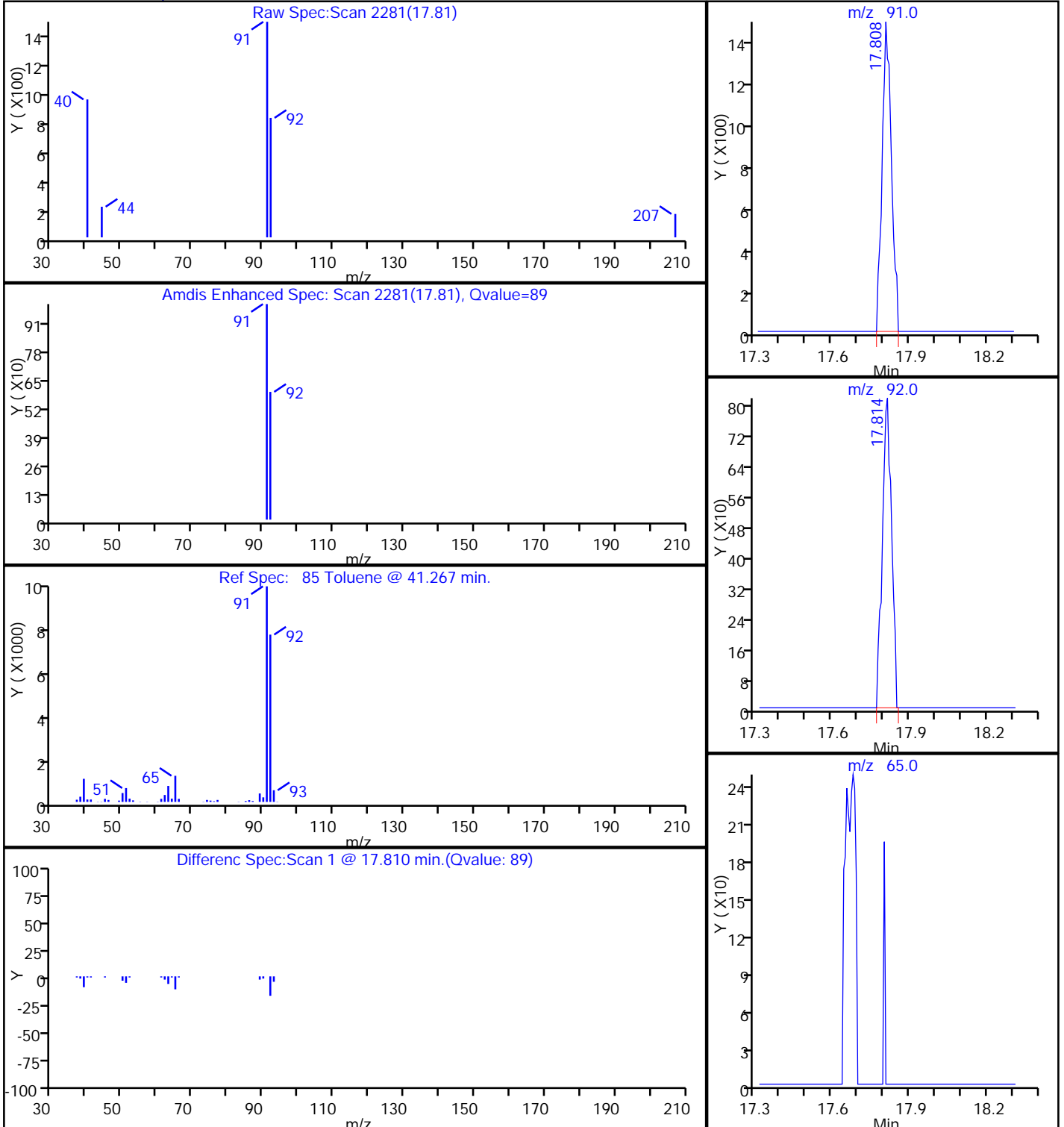
Method: TO15_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

85 Toluene, CAS: 108-88-3



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: 320-26384-1
Client Project/Site: NuStar Vancouver REM

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

Attn: Stephanie Salisbury



Authorized for release by:
3/17/2017 10:31:12 AM

Cathy Gamble, Project Manager I
(253)922-2310
cathy.gamble@testamericainc.com

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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 Vancouver REM

TestAmerica Job ID: 320-26384-1

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 Vancouver REM

TestAmerica Job ID: 320-26384-1

Job ID: 320-26384-1

Laboratory: TestAmerica Sacramento

Narrative

Receipt

The sample was received on 3/8/2017 9:30 AM; the sample 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 REM

TestAmerica Job ID: 320-26384-1

Client Sample ID: SVE_NORTH_EFFLUENT_022817

Lab Sample ID: 320-26384-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,3-Dichlorobenzene	1.4		0.40		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.52		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.87		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,3-Dichlorobenzene	8.3		2.4		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.6		2.0		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	5.9		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 REM

TestAmerica Job ID: 320-26384-1

Client Sample ID: SVE_NORTH_EFFLUENT_022817

Lab Sample ID: 320-26384-1

Date Collected: 02/28/17 11:45

Matrix: Air

Date Received: 03/08/17 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		5.0		ppb v/v			03/14/17 15:30	1
Benzene	ND		0.40		ppb v/v			03/14/17 15:30	1
Benzyl chloride	ND		0.80		ppb v/v			03/14/17 15:30	1
Bromodichloromethane	ND		0.30		ppb v/v			03/14/17 15:30	1
Bromoform	ND		0.40		ppb v/v			03/14/17 15:30	1
Bromomethane	ND		0.80		ppb v/v			03/14/17 15:30	1
2-Butanone (MEK)	ND		0.80		ppb v/v			03/14/17 15:30	1
Carbon disulfide	ND		0.80		ppb v/v			03/14/17 15:30	1
Carbon tetrachloride	ND		0.80		ppb v/v			03/14/17 15:30	1
Chlorobenzene	ND		0.30		ppb v/v			03/14/17 15:30	1
Dibromochloromethane	ND		0.40		ppb v/v			03/14/17 15:30	1
Chloroethane	ND		0.80		ppb v/v			03/14/17 15:30	1
Chloroform	ND		0.30		ppb v/v			03/14/17 15:30	1
Chloromethane	ND		0.80		ppb v/v			03/14/17 15:30	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			03/14/17 15:30	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			03/14/17 15:30	1
1,3-Dichlorobenzene	1.4		0.40		ppb v/v			03/14/17 15:30	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			03/14/17 15:30	1
Dichlorodifluoromethane	0.52		0.40		ppb v/v			03/14/17 15:30	1
1,1-Dichloroethane	ND		0.30		ppb v/v			03/14/17 15:30	1
1,2-Dichloroethane	ND		0.80		ppb v/v			03/14/17 15:30	1
1,1-Dichloroethene	ND		0.80		ppb v/v			03/14/17 15:30	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			03/14/17 15:30	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			03/14/17 15:30	1
1,2-Dichloropropane	ND		0.40		ppb v/v			03/14/17 15:30	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			03/14/17 15:30	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			03/14/17 15:30	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			03/14/17 15:30	1
Ethylbenzene	ND		0.40		ppb v/v			03/14/17 15:30	1
4-Ethyltoluene	ND		0.40		ppb v/v			03/14/17 15:30	1
Hexachlorobutadiene	ND		2.0		ppb v/v			03/14/17 15:30	1
2-Hexanone	ND		0.40		ppb v/v			03/14/17 15:30	1
Methylene Chloride	ND		0.40		ppb v/v			03/14/17 15:30	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			03/14/17 15:30	1
Styrene	ND		0.40		ppb v/v			03/14/17 15:30	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			03/14/17 15:30	1
Tetrachloroethene	0.87		0.40		ppb v/v			03/14/17 15:30	1
Toluene	ND		0.40		ppb v/v			03/14/17 15:30	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			03/14/17 15:30	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			03/14/17 15:30	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			03/14/17 15:30	1
Trichloroethene	ND		0.40		ppb v/v			03/14/17 15:30	1
Trichlorofluoromethane	ND		0.40		ppb v/v			03/14/17 15:30	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			03/14/17 15:30	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			03/14/17 15:30	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			03/14/17 15:30	1
Vinyl acetate	ND		0.80		ppb v/v			03/14/17 15:30	1
Vinyl chloride	ND		0.40		ppb v/v			03/14/17 15:30	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

Client Sample ID: SVE_NORTH_EFFLUENT_022817

Lab Sample ID: 320-26384-1

Date Collected: 02/28/17 11:45

Matrix: Air

Date Received: 03/08/17 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		0.80		ppb v/v			03/14/17 15:30	1
o-Xylene	ND		0.40		ppb v/v			03/14/17 15:30	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			03/14/17 15:30	1
Benzene	ND		1.3		ug/m3 Air			03/14/17 15:30	1
Benzyl chloride	ND		4.1		ug/m3 Air			03/14/17 15:30	1
Bromodichloromethane	ND		2.0		ug/m3 Air			03/14/17 15:30	1
Bromoform	ND		4.1		ug/m3 Air			03/14/17 15:30	1
Bromomethane	ND		3.1		ug/m3 Air			03/14/17 15:30	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			03/14/17 15:30	1
Carbon disulfide	ND		2.5		ug/m3 Air			03/14/17 15:30	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			03/14/17 15:30	1
Chlorobenzene	ND		1.4		ug/m3 Air			03/14/17 15:30	1
Dibromochloromethane	ND		3.4		ug/m3 Air			03/14/17 15:30	1
Chloroethane	ND		2.1		ug/m3 Air			03/14/17 15:30	1
Chloroform	ND		1.5		ug/m3 Air			03/14/17 15:30	1
Chloromethane	ND		1.7		ug/m3 Air			03/14/17 15:30	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			03/14/17 15:30	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			03/14/17 15:30	1
1,3-Dichlorobenzene	8.3		2.4		ug/m3 Air			03/14/17 15:30	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			03/14/17 15:30	1
Dichlorodifluoromethane	2.6		2.0		ug/m3 Air			03/14/17 15:30	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			03/14/17 15:30	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			03/14/17 15:30	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			03/14/17 15:30	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/14/17 15:30	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/14/17 15:30	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			03/14/17 15:30	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/14/17 15:30	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/14/17 15:30	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			03/14/17 15:30	1
Ethylbenzene	ND		1.7		ug/m3 Air			03/14/17 15:30	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			03/14/17 15:30	1
Hexachlorobutadiene	ND		21		ug/m3 Air			03/14/17 15:30	1
2-Hexanone	ND		1.6		ug/m3 Air			03/14/17 15:30	1
Methylene Chloride	ND		1.4		ug/m3 Air			03/14/17 15:30	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			03/14/17 15:30	1
Styrene	ND		1.7		ug/m3 Air			03/14/17 15:30	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			03/14/17 15:30	1
Tetrachloroethene	5.9		2.7		ug/m3 Air			03/14/17 15:30	1
Toluene	ND		1.5		ug/m3 Air			03/14/17 15:30	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			03/14/17 15:30	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			03/14/17 15:30	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			03/14/17 15:30	1
Trichloroethene	ND		2.1		ug/m3 Air			03/14/17 15:30	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			03/14/17 15:30	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			03/14/17 15:30	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			03/14/17 15:30	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

Client Sample ID: SVE_NORTH_EFFLUENT_022817

Lab Sample ID: 320-26384-1

Date Collected: 02/28/17 11:45

Matrix: Air

Date Received: 03/08/17 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		2.0		ug/m3 Air			03/14/17 15:30	1
Vinyl acetate	ND		2.8		ug/m3 Air			03/14/17 15:30	1
Vinyl chloride	ND		1.0		ug/m3 Air			03/14/17 15:30	1
m,p-Xylene	ND		3.5		ug/m3 Air			03/14/17 15:30	1
o-Xylene	ND		1.7		ug/m3 Air			03/14/17 15:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		70 - 130		03/14/17 15:30	1
1,2-Dichloroethane-d4 (Surr)	91		70 - 130		03/14/17 15:30	1
Toluene-d8 (Surr)	97		70 - 130		03/14/17 15:30	1

Surrogate Summary

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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)
320-26384-1	SVE_NORTH_EFFLUENT_0228	98	91	97
LCS 320-154785/3	Lab Control Sample	110	86	94
LCSD 320-154785/4	Lab Control Sample Dup	109	86	96
MB 320-154785/6	Method Blank	88	88	97

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 REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: MB 320-154785/6

Matrix: Air

Analysis Batch: 154785

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			03/14/17 13:45	1
Benzene	ND		0.40		ppb v/v			03/14/17 13:45	1
Benzyl chloride	ND		0.80		ppb v/v			03/14/17 13:45	1
Bromodichloromethane	ND		0.30		ppb v/v			03/14/17 13:45	1
Bromoform	ND		0.40		ppb v/v			03/14/17 13:45	1
Bromomethane	ND		0.80		ppb v/v			03/14/17 13:45	1
2-Butanone (MEK)	ND		0.80		ppb v/v			03/14/17 13:45	1
Carbon disulfide	ND		0.80		ppb v/v			03/14/17 13:45	1
Carbon tetrachloride	ND		0.80		ppb v/v			03/14/17 13:45	1
Chlorobenzene	ND		0.30		ppb v/v			03/14/17 13:45	1
Dibromochloromethane	ND		0.40		ppb v/v			03/14/17 13:45	1
Chloroethane	ND		0.80		ppb v/v			03/14/17 13:45	1
Chloroform	ND		0.30		ppb v/v			03/14/17 13:45	1
Chloromethane	ND		0.80		ppb v/v			03/14/17 13:45	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			03/14/17 13:45	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			03/14/17 13:45	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			03/14/17 13:45	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			03/14/17 13:45	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			03/14/17 13:45	1
1,1-Dichloroethane	ND		0.30		ppb v/v			03/14/17 13:45	1
1,2-Dichloroethane	ND		0.80		ppb v/v			03/14/17 13:45	1
1,1-Dichloroethene	ND		0.80		ppb v/v			03/14/17 13:45	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			03/14/17 13:45	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			03/14/17 13:45	1
1,2-Dichloropropane	ND		0.40		ppb v/v			03/14/17 13:45	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			03/14/17 13:45	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			03/14/17 13:45	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			03/14/17 13:45	1
Ethylbenzene	ND		0.40		ppb v/v			03/14/17 13:45	1
4-Ethyltoluene	ND		0.40		ppb v/v			03/14/17 13:45	1
Hexachlorobutadiene	ND		2.0		ppb v/v			03/14/17 13:45	1
2-Hexanone	ND		0.40		ppb v/v			03/14/17 13:45	1
Methylene Chloride	ND		0.40		ppb v/v			03/14/17 13:45	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			03/14/17 13:45	1
Styrene	ND		0.40		ppb v/v			03/14/17 13:45	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			03/14/17 13:45	1
Tetrachloroethene	ND		0.40		ppb v/v			03/14/17 13:45	1
Toluene	ND		0.40		ppb v/v			03/14/17 13:45	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			03/14/17 13:45	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			03/14/17 13:45	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			03/14/17 13:45	1
Trichloroethene	ND		0.40		ppb v/v			03/14/17 13:45	1
Trichlorofluoromethane	ND		0.40		ppb v/v			03/14/17 13:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			03/14/17 13:45	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			03/14/17 13:45	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			03/14/17 13:45	1
Vinyl acetate	ND		0.80		ppb v/v			03/14/17 13:45	1
Vinyl chloride	ND		0.40		ppb v/v			03/14/17 13:45	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: MB 320-154785/6
Matrix: Air
Analysis Batch: 154785

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			03/14/17 13:45	1
o-Xylene	ND		0.40		ppb v/v			03/14/17 13:45	1
Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		12		ug/m3 Air			03/14/17 13:45	1
Benzene	ND		1.3		ug/m3 Air			03/14/17 13:45	1
Benzyl chloride	ND		4.1		ug/m3 Air			03/14/17 13:45	1
Bromodichloromethane	ND		2.0		ug/m3 Air			03/14/17 13:45	1
Bromoform	ND		4.1		ug/m3 Air			03/14/17 13:45	1
Bromomethane	ND		3.1		ug/m3 Air			03/14/17 13:45	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			03/14/17 13:45	1
Carbon disulfide	ND		2.5		ug/m3 Air			03/14/17 13:45	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			03/14/17 13:45	1
Chlorobenzene	ND		1.4		ug/m3 Air			03/14/17 13:45	1
Dibromochloromethane	ND		3.4		ug/m3 Air			03/14/17 13:45	1
Chloroethane	ND		2.1		ug/m3 Air			03/14/17 13:45	1
Chloroform	ND		1.5		ug/m3 Air			03/14/17 13:45	1
Chloromethane	ND		1.7		ug/m3 Air			03/14/17 13:45	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			03/14/17 13:45	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			03/14/17 13:45	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			03/14/17 13:45	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			03/14/17 13:45	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			03/14/17 13:45	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			03/14/17 13:45	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			03/14/17 13:45	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			03/14/17 13:45	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/14/17 13:45	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			03/14/17 13:45	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			03/14/17 13:45	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/14/17 13:45	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			03/14/17 13:45	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			03/14/17 13:45	1
Ethylbenzene	ND		1.7		ug/m3 Air			03/14/17 13:45	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			03/14/17 13:45	1
Hexachlorobutadiene	ND		21		ug/m3 Air			03/14/17 13:45	1
2-Hexanone	ND		1.6		ug/m3 Air			03/14/17 13:45	1
Methylene Chloride	ND		1.4		ug/m3 Air			03/14/17 13:45	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			03/14/17 13:45	1
Styrene	ND		1.7		ug/m3 Air			03/14/17 13:45	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			03/14/17 13:45	1
Tetrachloroethene	ND		2.7		ug/m3 Air			03/14/17 13:45	1
Toluene	ND		1.5		ug/m3 Air			03/14/17 13:45	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			03/14/17 13:45	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			03/14/17 13:45	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			03/14/17 13:45	1
Trichloroethene	ND		2.1		ug/m3 Air			03/14/17 13:45	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			03/14/17 13:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			03/14/17 13:45	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: MB 320-154785/6
Matrix: Air
Analysis Batch: 154785

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			03/14/17 13:45	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			03/14/17 13:45	1
Vinyl acetate	ND		2.8		ug/m3 Air			03/14/17 13:45	1
Vinyl chloride	ND		1.0		ug/m3 Air			03/14/17 13:45	1
m,p-Xylene	ND		3.5		ug/m3 Air			03/14/17 13:45	1
o-Xylene	ND		1.7		ug/m3 Air			03/14/17 13:45	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		70 - 130					03/14/17 13:45	1
1,2-Dichloroethane-d4 (Surr)	88		70 - 130					03/14/17 13:45	1
Toluene-d8 (Surr)	97		70 - 130					03/14/17 13:45	1

Lab Sample ID: LCS 320-154785/3
Matrix: Air
Analysis Batch: 154785

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	16.5		ppb v/v		83	71 - 131
Benzene	20.0	18.4		ppb v/v		92	68 - 128
Benzyl chloride	20.0	17.4		ppb v/v		87	58 - 120
Bromodichloromethane	20.0	18.5		ppb v/v		92	65 - 130
Bromoform	20.0	19.3		ppb v/v		96	64 - 144
Bromomethane	20.0	20.5		ppb v/v		102	70 - 131
2-Butanone (MEK)	20.0	17.9		ppb v/v		90	71 - 131
Carbon disulfide	20.0	17.5		ppb v/v		88	63 - 123
Carbon tetrachloride	20.0	17.7		ppb v/v		88	67 - 127
Chlorobenzene	20.0	19.4		ppb v/v		97	70 - 132
Dibromochloromethane	20.0	19.2		ppb v/v		96	68 - 128
Chloroethane	20.0	19.3		ppb v/v		96	70 - 131
Chloroform	20.0	17.9		ppb v/v		90	69 - 129
Chloromethane	20.0	18.8		ppb v/v		94	67 - 127
1,2-Dibromoethane (EDB)	20.0	19.7		ppb v/v		98	68 - 131
1,2-Dichlorobenzene	20.0	21.0		ppb v/v		105	73 - 143
1,3-Dichlorobenzene	20.0	20.9		ppb v/v		105	77 - 136
1,4-Dichlorobenzene	20.0	21.0		ppb v/v		105	73 - 143
Dichlorodifluoromethane	20.0	19.4		ppb v/v		97	69 - 129
1,1-Dichloroethane	20.0	17.7		ppb v/v		88	65 - 125
1,2-Dichloroethane	20.0	17.7		ppb v/v		89	71 - 131
1,1-Dichloroethene	20.0	16.0		ppb v/v		80	53 - 128
cis-1,2-Dichloroethene	20.0	18.2		ppb v/v		91	68 - 128
trans-1,2-Dichloroethene	20.0	17.1		ppb v/v		85	70 - 130
1,2-Dichloropropane	20.0	19.5		ppb v/v		98	74 - 128
cis-1,3-Dichloropropene	20.0	20.0		ppb v/v		100	78 - 132
trans-1,3-Dichloropropene	20.0	18.0		ppb v/v		90	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.5		ppb v/v		102	64 - 124
Ethylbenzene	20.0	19.2		ppb v/v		96	76 - 136
4-Ethyltoluene	20.0	20.2		ppb v/v		101	62 - 136

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: LCS 320-154785/3

Matrix: Air

Analysis Batch: 154785

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	18.5		ppb v/v		93	42 - 150
2-Hexanone	20.0	17.6		ppb v/v		88	70 - 128
Methylene Chloride	20.0	16.1		ppb v/v		80	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	16.9		ppb v/v		85	73 - 133
Styrene	20.0	19.8		ppb v/v		99	76 - 144
1,1,2,2-Tetrachloroethane	20.0	20.3		ppb v/v		102	75 - 135
Tetrachloroethene	20.0	19.1		ppb v/v		96	56 - 138
Toluene	20.0	18.6		ppb v/v		93	71 - 132
1,2,4-Trichlorobenzene	20.0	17.0		ppb v/v		85	59 - 150
1,1,1-Trichloroethane	20.0	18.0		ppb v/v		90	65 - 124
1,1,2-Trichloroethane	20.0	19.7		ppb v/v		98	71 - 131
Trichloroethene	20.0	18.9		ppb v/v		94	64 - 127
Trichlorofluoromethane	20.0	18.7		ppb v/v		93	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	20.8		ppb v/v		104	61 - 145
1,3,5-Trimethylbenzene	20.0	20.7		ppb v/v		103	65 - 136
Vinyl acetate	20.0	19.3		ppb v/v		96	77 - 134
Vinyl chloride	20.0	19.2		ppb v/v		96	69 - 129
m,p-Xylene	40.0	39.3		ppb v/v		98	75 - 138
o-Xylene	20.0	19.9		ppb v/v		99	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	39.2		ug/m3 Air		83	71 - 131
Benzene	64	58.7		ug/m3 Air		92	68 - 128
Benzyl chloride	100	90.3		ug/m3 Air		87	58 - 120
Bromodichloromethane	130	124		ug/m3 Air		92	65 - 130
Bromoform	210	199		ug/m3 Air		96	64 - 144
Bromomethane	78	79.6		ug/m3 Air		102	70 - 131
2-Butanone (MEK)	59	52.9		ug/m3 Air		90	71 - 131
Carbon disulfide	62	54.5		ug/m3 Air		88	63 - 123
Carbon tetrachloride	130	111		ug/m3 Air		88	67 - 127
Chlorobenzene	92	89.5		ug/m3 Air		97	70 - 132
Dibromochloromethane	170	164		ug/m3 Air		96	68 - 128
Chloroethane	53	50.9		ug/m3 Air		96	70 - 131
Chloroform	98	87.6		ug/m3 Air		90	69 - 129
Chloromethane	41	38.9		ug/m3 Air		94	67 - 127
1,2-Dibromoethane (EDB)	150	151		ug/m3 Air		98	68 - 131
1,2-Dichlorobenzene	120	126		ug/m3 Air		105	73 - 143
1,3-Dichlorobenzene	120	126		ug/m3 Air		105	77 - 136
1,4-Dichlorobenzene	120	126		ug/m3 Air		105	73 - 143
Dichlorodifluoromethane	99	95.8		ug/m3 Air		97	69 - 129
1,1-Dichloroethane	81	71.6		ug/m3 Air		88	65 - 125
1,2-Dichloroethane	81	71.8		ug/m3 Air		89	71 - 131
1,1-Dichloroethene	79	63.6		ug/m3 Air		80	53 - 128
cis-1,2-Dichloroethene	79	72.0		ug/m3 Air		91	68 - 128
trans-1,2-Dichloroethene	79	67.7		ug/m3 Air		85	70 - 130
1,2-Dichloropropane	92	90.3		ug/m3 Air		98	74 - 128

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: LCS 320-154785/3
Matrix: Air
Analysis Batch: 154785

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	90.6		ug/m3 Air		100	78 - 132
trans-1,3-Dichloropropene	91	81.8		ug/m3 Air		90	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	143		ug/m3 Air		102	64 - 124
Ethylbenzene	87	83.3		ug/m3 Air		96	76 - 136
4-Ethyltoluene	98	99.2		ug/m3 Air		101	62 - 136
Hexachlorobutadiene	210	197		ug/m3 Air		93	42 - 150
2-Hexanone	82	72.2		ug/m3 Air		88	70 - 128
Methylene Chloride	69	55.8		ug/m3 Air		80	65 - 125
4-Methyl-2-pentanone (MIBK)	82	69.4		ug/m3 Air		85	73 - 133
Styrene	85	84.2		ug/m3 Air		99	76 - 144
1,1,2,2-Tetrachloroethane	140	140		ug/m3 Air		102	75 - 135
Tetrachloroethene	140	130		ug/m3 Air		96	56 - 138
Toluene	75	70.2		ug/m3 Air		93	71 - 132
1,2,4-Trichlorobenzene	150	126		ug/m3 Air		85	59 - 150
1,1,1-Trichloroethane	110	98.3		ug/m3 Air		90	65 - 124
1,1,2-Trichloroethane	110	107		ug/m3 Air		98	71 - 131
Trichloroethene	110	101		ug/m3 Air		94	64 - 127
Trichlorofluoromethane	110	105		ug/m3 Air		93	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	131		ug/m3 Air		85	50 - 132
1,2,4-Trimethylbenzene	98	102		ug/m3 Air		104	61 - 145
1,3,5-Trimethylbenzene	98	102		ug/m3 Air		103	65 - 136
Vinyl acetate	70	67.8		ug/m3 Air		96	77 - 134
Vinyl chloride	51	49.0		ug/m3 Air		96	69 - 129
m,p-Xylene	170	171		ug/m3 Air		98	75 - 138
o-Xylene	87	86.3		ug/m3 Air		99	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	110		70 - 130
1,2-Dichloroethane-d4 (Surr)	86		70 - 130
Toluene-d8 (Surr)	94		70 - 130

Lab Sample ID: LCSD 320-154785/4
Matrix: Air
Analysis Batch: 154785

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	16.2		ppb v/v		81	71 - 131	2	25
Benzene	20.0	18.7		ppb v/v		93	68 - 128	2	25
Benzyl chloride	20.0	17.4		ppb v/v		87	58 - 120	0	25
Bromodichloromethane	20.0	18.6		ppb v/v		93	65 - 130	1	25
Bromoform	20.0	19.2		ppb v/v		96	64 - 144	1	25
Bromomethane	20.0	20.2		ppb v/v		101	70 - 131	2	25
2-Butanone (MEK)	20.0	17.7		ppb v/v		88	71 - 131	2	25
Carbon disulfide	20.0	17.3		ppb v/v		87	63 - 123	1	25
Carbon tetrachloride	20.0	17.8		ppb v/v		89	67 - 127	0	25
Chlorobenzene	20.0	19.4		ppb v/v		97	70 - 132	0	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: LCSD 320-154785/4

Matrix: Air

Analysis Batch: 154785

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	19.2		ppb v/v		96	68 - 128	0	25
Chloroethane	20.0	19.2		ppb v/v		96	70 - 131	0	25
Chloroform	20.0	17.7		ppb v/v		89	69 - 129	1	25
Chloromethane	20.0	18.5		ppb v/v		92	67 - 127	2	25
1,2-Dibromoethane (EDB)	20.0	19.6		ppb v/v		98	68 - 131	0	25
1,2-Dichlorobenzene	20.0	20.8		ppb v/v		104	73 - 143	1	25
1,3-Dichlorobenzene	20.0	20.9		ppb v/v		105	77 - 136	0	25
1,4-Dichlorobenzene	20.0	20.9		ppb v/v		105	73 - 143	0	25
Dichlorodifluoromethane	20.0	18.8		ppb v/v		94	69 - 129	3	25
1,1-Dichloroethane	20.0	17.5		ppb v/v		88	65 - 125	1	25
1,2-Dichloroethane	20.0	17.8		ppb v/v		89	71 - 131	0	25
1,1-Dichloroethene	20.0	15.9		ppb v/v		79	53 - 128	1	25
cis-1,2-Dichloroethene	20.0	17.9		ppb v/v		89	68 - 128	2	25
trans-1,2-Dichloroethene	20.0	16.9		ppb v/v		84	70 - 130	1	25
1,2-Dichloropropane	20.0	19.5		ppb v/v		98	74 - 128	0	25
cis-1,3-Dichloropropene	20.0	20.3		ppb v/v		102	78 - 132	2	25
trans-1,3-Dichloropropene	20.0	18.2		ppb v/v		91	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.2		ppb v/v		101	64 - 124	2	25
Ethylbenzene	20.0	18.9		ppb v/v		95	76 - 136	1	25
4-Ethyltoluene	20.0	19.4		ppb v/v		97	62 - 136	4	25
Hexachlorobutadiene	20.0	18.3		ppb v/v		91	42 - 150	1	25
2-Hexanone	20.0	17.7		ppb v/v		89	70 - 128	1	25
Methylene Chloride	20.0	15.9		ppb v/v		79	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	20.0	17.0		ppb v/v		85	73 - 133	0	25
Styrene	20.0	19.7		ppb v/v		98	76 - 144	1	25
1,1,2,2-Tetrachloroethane	20.0	20.4		ppb v/v		102	75 - 135	0	25
Tetrachloroethene	20.0	19.2		ppb v/v		96	56 - 138	0	25
Toluene	20.0	18.8		ppb v/v		94	71 - 132	1	25
1,2,4-Trichlorobenzene	20.0	17.4		ppb v/v		87	59 - 150	2	25
1,1,1-Trichloroethane	20.0	17.7		ppb v/v		89	65 - 124	2	25
1,1,2-Trichloroethane	20.0	19.7		ppb v/v		99	71 - 131	0	25
Trichloroethene	20.0	19.0		ppb v/v		95	64 - 127	1	25
Trichlorofluoromethane	20.0	18.4		ppb v/v		92	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.8		ppb v/v		84	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	18.8		ppb v/v		94	61 - 145	10	25
1,3,5-Trimethylbenzene	20.0	20.2		ppb v/v		101	65 - 136	3	25
Vinyl acetate	20.0	18.9		ppb v/v		95	77 - 134	2	25
Vinyl chloride	20.0	19.1		ppb v/v		96	69 - 129	0	25
m,p-Xylene	40.0	39.1		ppb v/v		98	75 - 138	1	25
o-Xylene	20.0	19.7		ppb v/v		98	77 - 132	1	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	38.5		ug/m3 Air		81	71 - 131	2	25
Benzene	64	59.6		ug/m3 Air		93	68 - 128	2	25
Benzyl chloride	100	90.0		ug/m3 Air		87	58 - 120	0	25
Bromodichloromethane	130	125		ug/m3 Air		93	65 - 130	1	25
Bromoform	210	198		ug/m3 Air		96	64 - 144	1	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: LCSD 320-154785/4
Matrix: Air
Analysis Batch: 154785

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	78.4		ug/m3 Air		101	70 - 131	2	25
2-Butanone (MEK)	59	52.1		ug/m3 Air		88	71 - 131	2	25
Carbon disulfide	62	53.9		ug/m3 Air		87	63 - 123	1	25
Carbon tetrachloride	130	112		ug/m3 Air		89	67 - 127	0	25
Chlorobenzene	92	89.2		ug/m3 Air		97	70 - 132	0	25
Dibromochloromethane	170	163		ug/m3 Air		96	68 - 128	0	25
Chloroethane	53	50.7		ug/m3 Air		96	70 - 131	0	25
Chloroform	98	86.4		ug/m3 Air		89	69 - 129	1	25
Chloromethane	41	38.2		ug/m3 Air		92	67 - 127	2	25
1,2-Dibromoethane (EDB)	150	151		ug/m3 Air		98	68 - 131	0	25
1,2-Dichlorobenzene	120	125		ug/m3 Air		104	73 - 143	1	25
1,3-Dichlorobenzene	120	126		ug/m3 Air		105	77 - 136	0	25
1,4-Dichlorobenzene	120	126		ug/m3 Air		105	73 - 143	0	25
Dichlorodifluoromethane	99	93.0		ug/m3 Air		94	69 - 129	3	25
1,1-Dichloroethane	81	71.0		ug/m3 Air		88	65 - 125	1	25
1,2-Dichloroethane	81	71.8		ug/m3 Air		89	71 - 131	0	25
1,1-Dichloroethene	79	63.0		ug/m3 Air		79	53 - 128	1	25
cis-1,2-Dichloroethene	79	70.8		ug/m3 Air		89	68 - 128	2	25
trans-1,2-Dichloroethene	79	66.9		ug/m3 Air		84	70 - 130	1	25
1,2-Dichloropropane	92	90.2		ug/m3 Air		98	74 - 128	0	25
cis-1,3-Dichloropropene	91	92.3		ug/m3 Air		102	78 - 132	2	25
trans-1,3-Dichloropropene	91	82.5		ug/m3 Air		91	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	141		ug/m3 Air		101	64 - 124	2	25
Ethylbenzene	87	82.2		ug/m3 Air		95	76 - 136	1	25
4-Ethyltoluene	98	95.6		ug/m3 Air		97	62 - 136	4	25
Hexachlorobutadiene	210	195		ug/m3 Air		91	42 - 150	1	25
2-Hexanone	82	72.7		ug/m3 Air		89	70 - 128	1	25
Methylene Chloride	69	55.2		ug/m3 Air		79	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	82	69.6		ug/m3 Air		85	73 - 133	0	25
Styrene	85	83.7		ug/m3 Air		98	76 - 144	1	25
1,1,2,2-Tetrachloroethane	140	140		ug/m3 Air		102	75 - 135	0	25
Tetrachloroethene	140	130		ug/m3 Air		96	56 - 138	0	25
Toluene	75	70.9		ug/m3 Air		94	71 - 132	1	25
1,2,4-Trichlorobenzene	150	129		ug/m3 Air		87	59 - 150	2	25
1,1,1-Trichloroethane	110	96.8		ug/m3 Air		89	65 - 124	2	25
1,1,2-Trichloroethane	110	108		ug/m3 Air		99	71 - 131	0	25
Trichloroethene	110	102		ug/m3 Air		95	64 - 127	1	25
Trichlorofluoromethane	110	103		ug/m3 Air		92	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	129		ug/m3 Air		84	50 - 132	1	25
1,2,4-Trimethylbenzene	98	92.6		ug/m3 Air		94	61 - 145	10	25
1,3,5-Trimethylbenzene	98	99.1		ug/m3 Air		101	65 - 136	3	25
Vinyl acetate	70	66.7		ug/m3 Air		95	77 - 134	2	25
Vinyl chloride	51	48.9		ug/m3 Air		96	69 - 129	0	25
m,p-Xylene	170	170		ug/m3 Air		98	75 - 138	1	25
o-Xylene	87	85.4		ug/m3 Air		98	77 - 132	1	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

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

Lab Sample ID: LCSD 320-154785/4

Matrix: Air

Analysis Batch: 154785

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)	86		70 - 130
Toluene-d8 (Surr)	96		70 - 130

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QC Association Summary

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

Air - GC/MS VOA

Analysis Batch: 154785

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-26384-1	SVE_NORTH_EFFLUENT_022817	Total/NA	Air	TO-15	
MB 320-154785/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-154785/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-154785/4	Lab Control Sample Dup	Total/NA	Air	TO-15	

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Lab Chronicle

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

Client Sample ID: SVE_NORTH_EFFLUENT_022817

Lab Sample ID: 320-26384-1

Date Collected: 02/28/17 11:45

Matrix: Air

Date Received: 03/08/17 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		1	450 mL	250 mL	154785	03/14/17 15:30	SRV	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 Vancouver REM

TestAmerica Job ID: 320-26384-1

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
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

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
USDA	Federal		P330-11-00092	04-17-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-26384-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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 REM

TestAmerica Job ID: 320-26384-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-26384-1	SVE_NORTH_EFFLUENT_022817	Air	02/28/17 11:45	03/08/17 09:30

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Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-26384-1

Login Number: 26384

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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 (excluding tests with immediate HTs)	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 T0-15 Scan
 Date Cleaned/Batch ID 2/4/17 320-25559
 Date of QC 2/7/2017
 Data File Number C:\MSDCHEM\1\DATA\170207\



→ MS6020707.d
CANISTER ID NUMBERS

<u>34000448 *</u>	<u>8301</u>	
<u>34002020</u>	<u>8047</u>	
<u>34000888</u>	<u>7523</u>	
<u>34001375</u>	<u>8241</u>	
<u>34000556</u>		
<u>34000530</u>		
<u>34002115</u>		
<u>34002057</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.

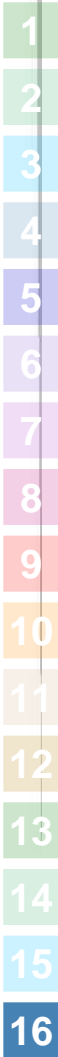
"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

[Signature]
 1st level Reviewed By:

2/8/17
 Date:

[Signature]
 2nd level Reviewed By:

2/8/17
 Date:



FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25559-1
 SDG No.: _____
 Client Sample ID: 34000448 Lab Sample ID: 320-25559-1
 Matrix: Air Lab File ID: MS6020707.D
 Analysis Method: TO-15 Date Collected: 02/04/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 02/07/2017 15:31
 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.: 149353 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	1.0	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)	0.41	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	0.27
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.: 320-25559-1
 SDG No.: _____
 Client Sample ID: 34000448 Lab Sample ID: 320-25559-1
 Matrix: Air Lab File ID: MS6020707.D
 Analysis Method: TO-15 Date Collected: 02/04/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 02/07/2017 15:31
 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.: 149353 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	0.12
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	0.16	J	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	0.21
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.: 320-25559-1
 SDG No.: _____
 Client Sample ID: 34000448 Lab Sample ID: 320-25559-1
 Matrix: Air Lab File ID: MS6020707.D
 Analysis Method: TO-15 Date Collected: 02/04/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 02/07/2017 15:31
 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.: 149353 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)	107		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	110		70-130
2037-26-5	Toluene-d8 (Surr)	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20170207-39571.b\MS6020707.D
 Lims ID: 320-25559-A-1
 Client ID: 34000448
 Sample Type: Client
 Inject. Date: 07-Feb-2017 15:31:30 ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 25.000 mL Dil. Factor: 1.0000
 Sample Info: 320-25559-A-1
 Misc. Info.: 500 mL CAN CERT
 Operator ID: LHS Instrument ID: ATMS6
 Method: \\ChromNA\Sacramento\ChromData\ATMS6\20170207-39571.b\TO15_ATMS6.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 08-Feb-2017 09:41:28 Calib Date: 06-Jan-2017 14:12:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS6\20170105-38520.b\MS6010523.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK013

First Level Reviewer: phanthasena

Date: 08-Feb-2017 09:41:28

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	13.102	13.102	0.000	96	34701	4.00	
* 2 1,4-Difluorobenzene	114	15.243	15.244	-0.001	96	134095	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.984	21.990	-0.006	90	109053	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	14.307	14.307	0.000	99	57890	4.42	
\$ 5 Toluene-d8 (Surr)	100	18.705	18.699	0.006	97	75220	4.31	
\$ 6 4-Bromofluorobenzene (Surr	95	24.551	24.552	-0.001	87	63618	4.27	
11 Propene	41	4.500	4.457	0.043	95	1405	0.1553	
32 Acetone	43	8.266	8.266	0.116	74	21295	1.04	
48 2-Butanone (MEK)	72	12.098	12.019	0.079	94	2078	0.4072	
71 4-Methyl-2-pentanone (MIBK	43	17.683	17.641	0.042	89	2636	0.0711	
109 4-Isopropyltoluene	119	26.754	26.754	0.000	94	1830	0.0248	

Reagents:

VAMSIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20170207-39571.b\MS6020707.D

Injection Date: 07-Feb-2017 15:31:30

Instrument ID: ATMS6

Operator ID: LHS

Lims ID: 320-25559-A-1

Lab Sample ID: 320-25559-1

Worklist Smp#: 7

Client ID: 34000448

Purge Vol: 25.000 mL

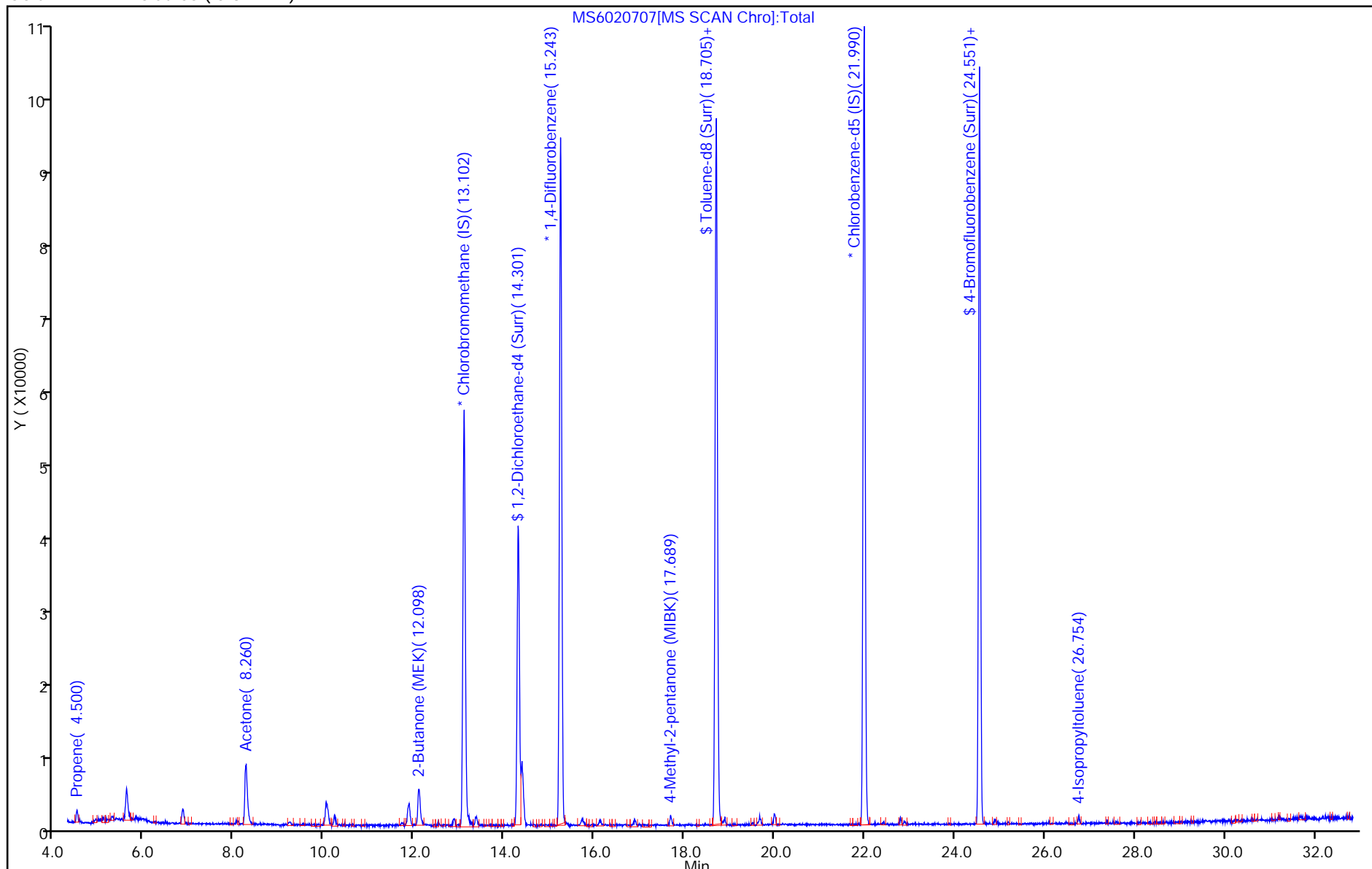
Dil. Factor: 1.0000

ALS Bottle#: 6

Method: TO15_ATMS6

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20170207-39571.b\MS6020707.D

Injection Date: 07-Feb-2017 15:31:30

Instrument ID: ATMS6

Lims ID: 320-25559-A-1

Lab Sample ID: 320-25559-1

Client ID: 34000448

Operator ID: LHS

ALS Bottle#: 6 Worklist Smp#: 7

Purge Vol: 25.000 mL

Dil. Factor: 1.0000

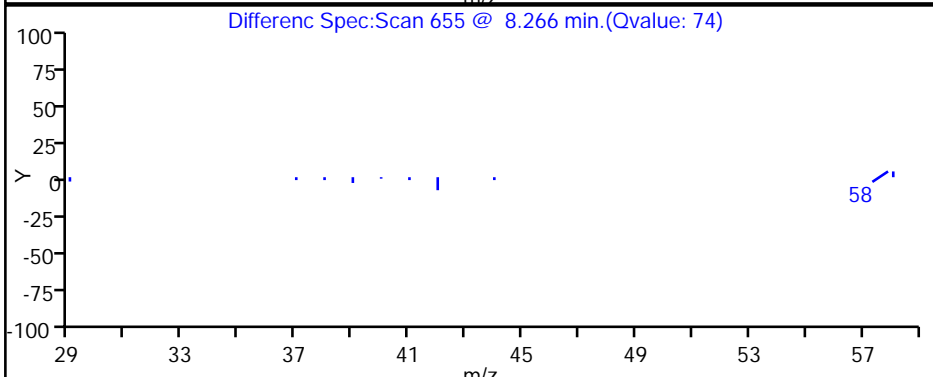
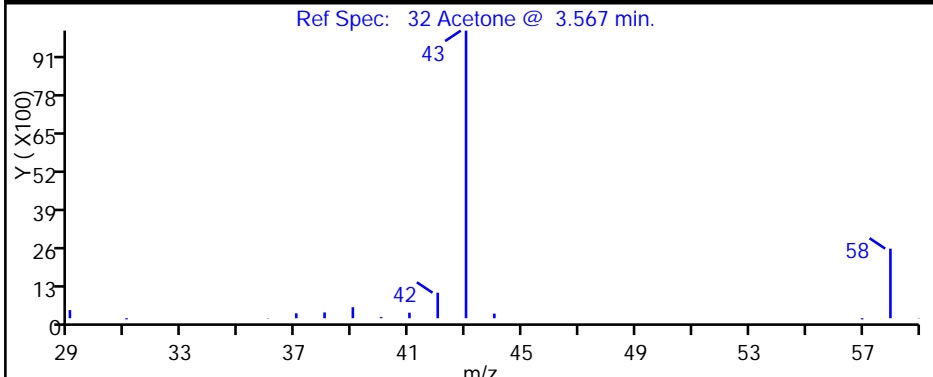
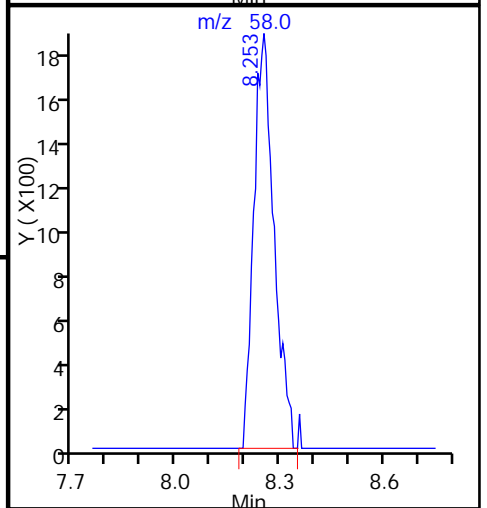
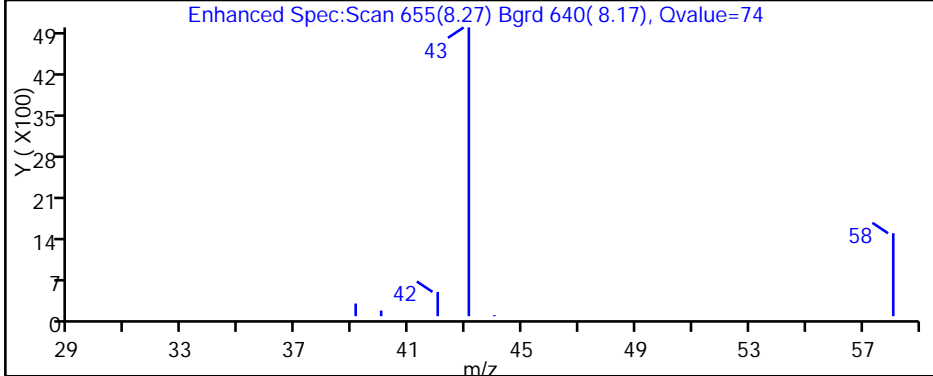
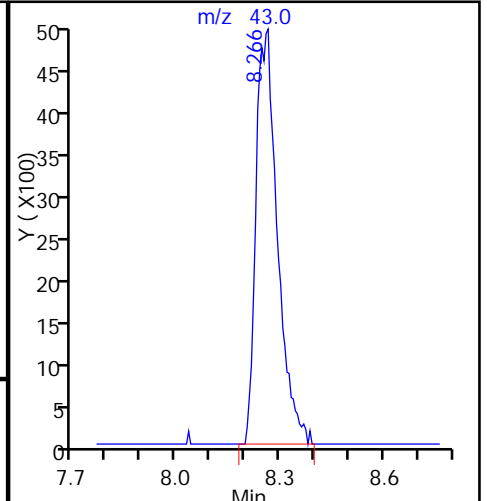
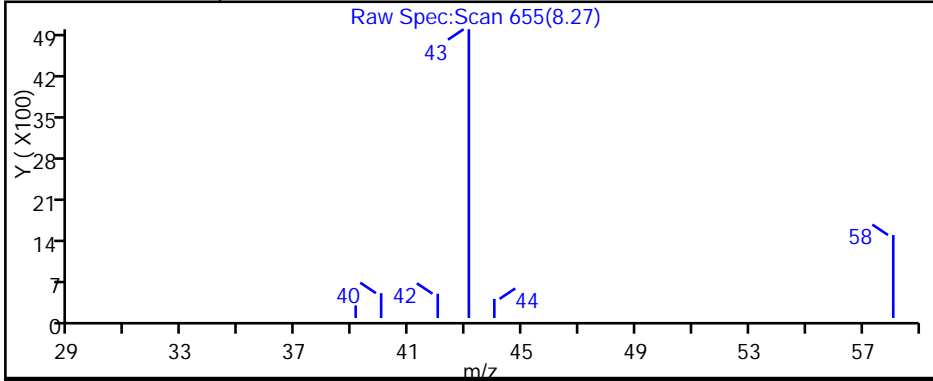
Method: TO15_ATMS6

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20170207-39571.b\MS6020707.D

Injection Date: 07-Feb-2017 15:31:30

Instrument ID: ATMS6

Lims ID: 320-25559-A-1

Lab Sample ID: 320-25559-1

Client ID: 34000448

Operator ID: LHS

ALS Bottle#: 6 Worklist Smp#: 7

Purge Vol: 25.000 mL

Dil. Factor: 1.0000

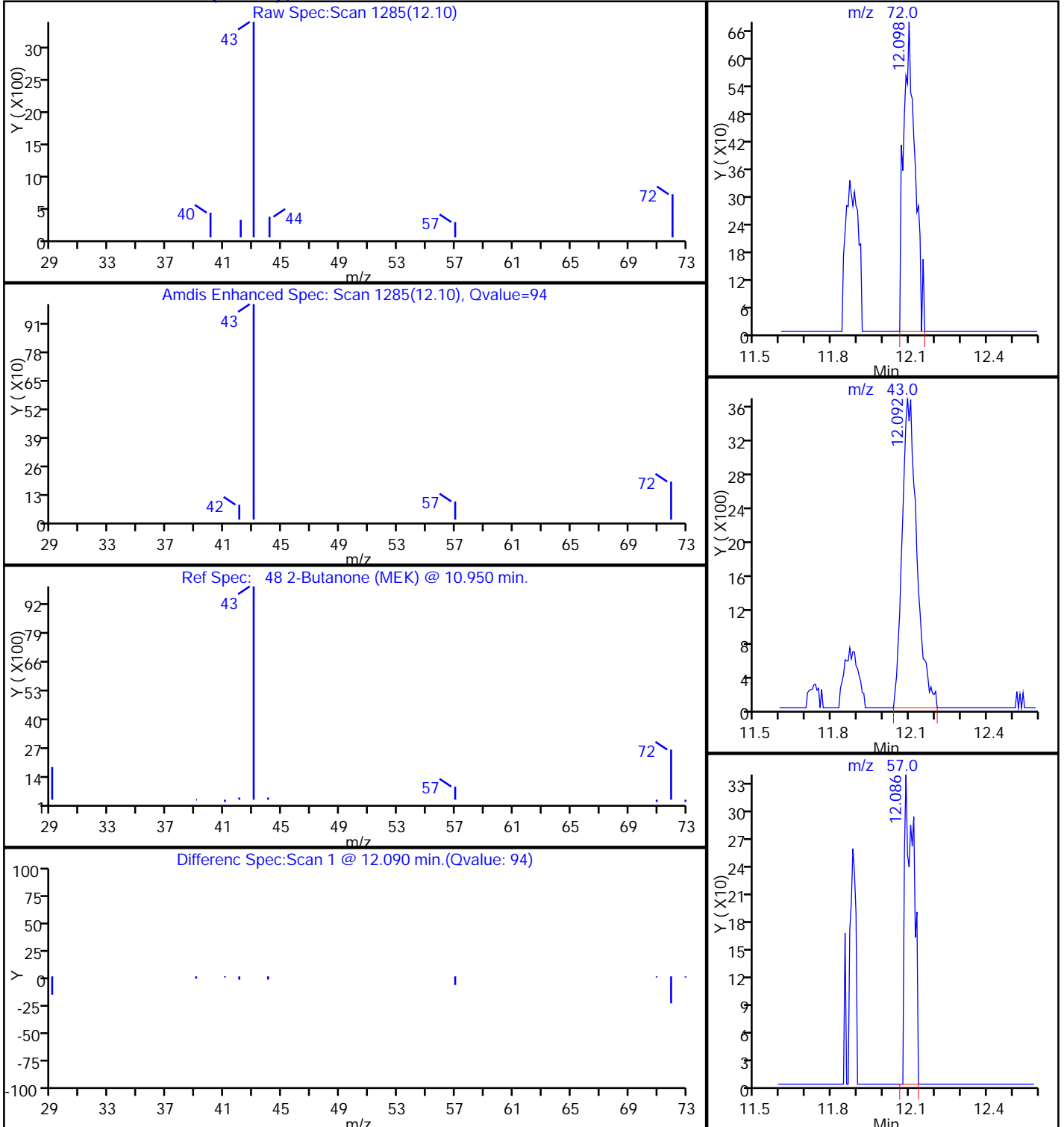
Method: TO15_ATMS6

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

48 2-Butanone (MEK), CAS: 78-93-3



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20170207-39571.b\MS6020707.D

Injection Date: 07-Feb-2017 15:31:30

Instrument ID: ATMS6

Lims ID: 320-25559-A-1

Lab Sample ID: 320-25559-1

Client ID: 34000448

Operator ID: LHS

ALS Bottle#: 6

Worklist Smp#: 7

Purge Vol: 25.000 mL

Dil. Factor: 1.0000

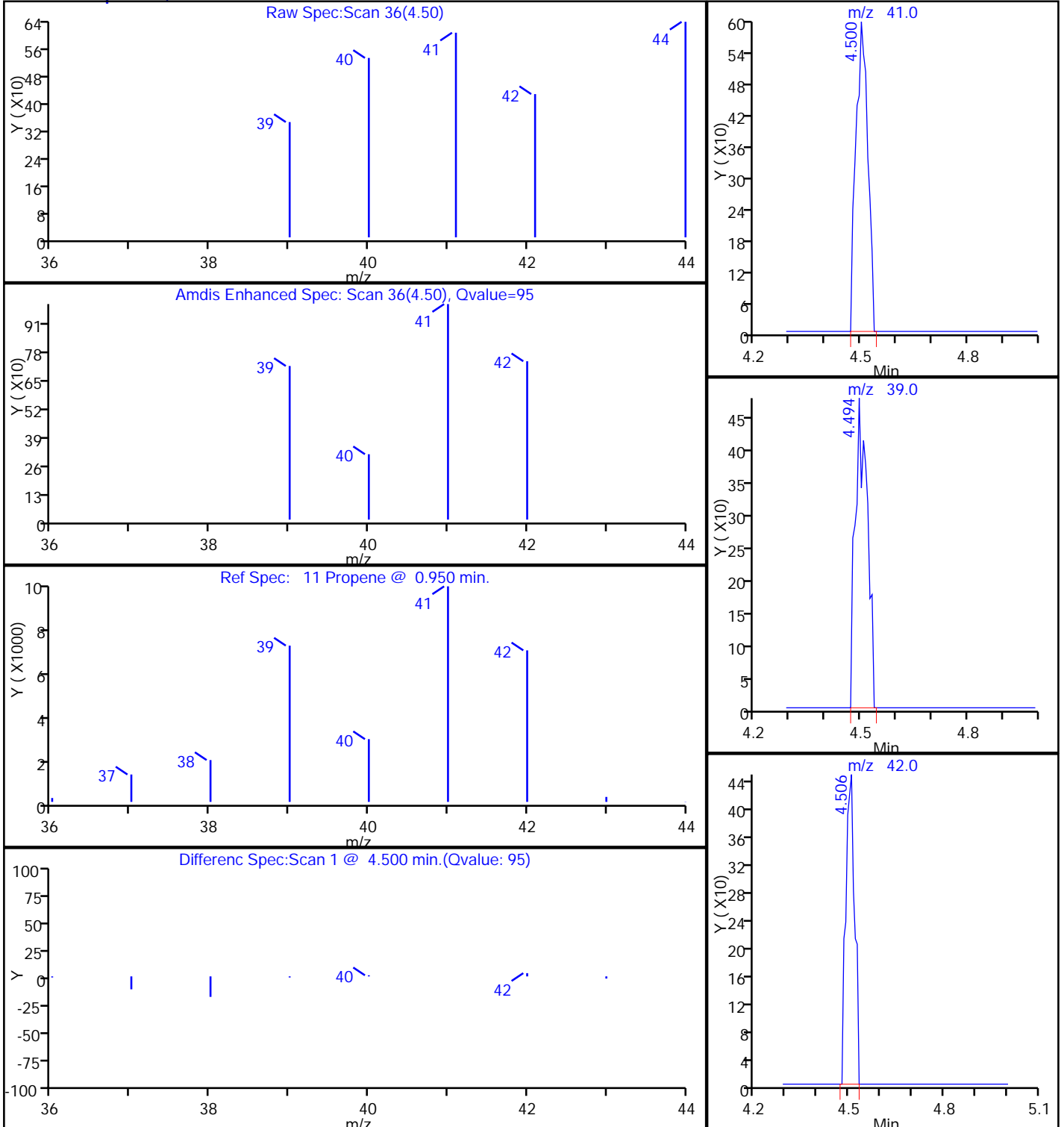
Method: TO15_ATMS6

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

11 Propene, CAS: 115-07-1



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: 320-27201-1
Client Project/Site: NuStar Vancouver REM

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

Attn: Stephanie Salisbury



Authorized for release by:
4/19/2017 2:02:43 PM

Cathy Gamble, Project Manager I
(253)922-2310
cathy.gamble@testamericainc.com

LINKS

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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 Vancouver REM

TestAmerica Job ID: 320-27201-1

Qualifiers

Air - GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance 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)

Case Narrative

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Job ID: 320-27201-1

Laboratory: TestAmerica Sacramento

Narrative

Receipt

The sample was received on 4/5/2017 10:00 AM; the sample arrived in good condition, properly preserved and, where required, on ice.

Air - GC/MS VOA

Method(s) TO-15: The following analyte recovered outside control limits for the LCSD associated with analytical batch 320-160049: Vinyl acetate. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results 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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Detection Summary

Client: Apex Companies LLC
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Client Sample ID: SVE_NORTH_EFFLUENT_032817

Lab Sample ID: 320-27201-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.43		0.40		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.46		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.47		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	0.77		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.4		1.3		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.3		2.0		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	3.2		2.7		ug/m3 Air	1		TO-15	Total/NA
Toluene	2.9		1.5		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 REM

TestAmerica Job ID: 320-27201-1

Client Sample ID: SVE_NORTH_EFFLUENT_032817

Lab Sample ID: 320-27201-1

Date Collected: 03/28/17 13:06

Matrix: Air

Date Received: 04/05/17 10:00

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		5.0		ppb v/v			04/18/17 21:30	1
Benzene	0.43		0.40		ppb v/v			04/18/17 21:30	1
Benzyl chloride	ND		0.80		ppb v/v			04/18/17 21:30	1
Bromodichloromethane	ND		0.30		ppb v/v			04/18/17 21:30	1
Bromoform	ND		0.40		ppb v/v			04/18/17 21:30	1
Bromomethane	ND		0.80		ppb v/v			04/18/17 21:30	1
2-Butanone (MEK)	ND		0.80		ppb v/v			04/18/17 21:30	1
Carbon disulfide	ND		0.80		ppb v/v			04/18/17 21:30	1
Carbon tetrachloride	ND		0.80		ppb v/v			04/18/17 21:30	1
Chlorobenzene	ND		0.30		ppb v/v			04/18/17 21:30	1
Dibromochloromethane	ND		0.40		ppb v/v			04/18/17 21:30	1
Chloroethane	ND		0.80		ppb v/v			04/18/17 21:30	1
Chloroform	ND		0.30		ppb v/v			04/18/17 21:30	1
Chloromethane	ND		0.80		ppb v/v			04/18/17 21:30	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			04/18/17 21:30	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			04/18/17 21:30	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			04/18/17 21:30	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			04/18/17 21:30	1
Dichlorodifluoromethane	0.46		0.40		ppb v/v			04/18/17 21:30	1
1,1-Dichloroethane	ND		0.30		ppb v/v			04/18/17 21:30	1
1,2-Dichloroethane	ND		0.80		ppb v/v			04/18/17 21:30	1
1,1-Dichloroethene	ND		0.80		ppb v/v			04/18/17 21:30	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			04/18/17 21:30	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			04/18/17 21:30	1
1,2-Dichloropropane	ND		0.40		ppb v/v			04/18/17 21:30	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			04/18/17 21:30	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			04/18/17 21:30	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			04/18/17 21:30	1
Ethylbenzene	ND		0.40		ppb v/v			04/18/17 21:30	1
4-Ethyltoluene	ND		0.40		ppb v/v			04/18/17 21:30	1
Hexachlorobutadiene	ND		2.0		ppb v/v			04/18/17 21:30	1
2-Hexanone	ND		0.40		ppb v/v			04/18/17 21:30	1
Methylene Chloride	ND		0.40		ppb v/v			04/18/17 21:30	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			04/18/17 21:30	1
Styrene	ND		0.40		ppb v/v			04/18/17 21:30	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			04/18/17 21:30	1
Tetrachloroethene	0.47		0.40		ppb v/v			04/18/17 21:30	1
Toluene	0.77		0.40		ppb v/v			04/18/17 21:30	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			04/18/17 21:30	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			04/18/17 21:30	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			04/18/17 21:30	1
Trichloroethene	ND		0.40		ppb v/v			04/18/17 21:30	1
Trichlorofluoromethane	ND		0.40		ppb v/v			04/18/17 21:30	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			04/18/17 21:30	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			04/18/17 21:30	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			04/18/17 21:30	1
Vinyl acetate	ND *		0.80		ppb v/v			04/18/17 21:30	1
Vinyl chloride	ND		0.40		ppb v/v			04/18/17 21:30	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Client Sample ID: SVE_NORTH_EFFLUENT_032817

Lab Sample ID: 320-27201-1

Date Collected: 03/28/17 13:06

Matrix: Air

Date Received: 04/05/17 10:00

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
m,p-Xylene	ND		0.80		ppb v/v			04/18/17 21:30	1
o-Xylene	ND		0.40		ppb v/v			04/18/17 21:30	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			04/18/17 21:30	1
Benzene	1.4		1.3		ug/m3 Air			04/18/17 21:30	1
Benzyl chloride	ND		4.1		ug/m3 Air			04/18/17 21:30	1
Bromodichloromethane	ND		2.0		ug/m3 Air			04/18/17 21:30	1
Bromoform	ND		4.1		ug/m3 Air			04/18/17 21:30	1
Bromomethane	ND		3.1		ug/m3 Air			04/18/17 21:30	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			04/18/17 21:30	1
Carbon disulfide	ND		2.5		ug/m3 Air			04/18/17 21:30	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			04/18/17 21:30	1
Chlorobenzene	ND		1.4		ug/m3 Air			04/18/17 21:30	1
Dibromochloromethane	ND		3.4		ug/m3 Air			04/18/17 21:30	1
Chloroethane	ND		2.1		ug/m3 Air			04/18/17 21:30	1
Chloroform	ND		1.5		ug/m3 Air			04/18/17 21:30	1
Chloromethane	ND		1.7		ug/m3 Air			04/18/17 21:30	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			04/18/17 21:30	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			04/18/17 21:30	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			04/18/17 21:30	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			04/18/17 21:30	1
Dichlorodifluoromethane	2.3		2.0		ug/m3 Air			04/18/17 21:30	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			04/18/17 21:30	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			04/18/17 21:30	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			04/18/17 21:30	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/18/17 21:30	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/18/17 21:30	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			04/18/17 21:30	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/18/17 21:30	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/18/17 21:30	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			04/18/17 21:30	1
Ethylbenzene	ND		1.7		ug/m3 Air			04/18/17 21:30	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			04/18/17 21:30	1
Hexachlorobutadiene	ND		21		ug/m3 Air			04/18/17 21:30	1
2-Hexanone	ND		1.6		ug/m3 Air			04/18/17 21:30	1
Methylene Chloride	ND		1.4		ug/m3 Air			04/18/17 21:30	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			04/18/17 21:30	1
Styrene	ND		1.7		ug/m3 Air			04/18/17 21:30	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			04/18/17 21:30	1
Tetrachloroethene	3.2		2.7		ug/m3 Air			04/18/17 21:30	1
Toluene	2.9		1.5		ug/m3 Air			04/18/17 21:30	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			04/18/17 21:30	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			04/18/17 21:30	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			04/18/17 21:30	1
Trichloroethene	ND		2.1		ug/m3 Air			04/18/17 21:30	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			04/18/17 21:30	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			04/18/17 21:30	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			04/18/17 21:30	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Client Sample ID: SVE_NORTH_EFFLUENT_032817

Lab Sample ID: 320-27201-1

Date Collected: 03/28/17 13:06

Matrix: Air

Date Received: 04/05/17 10:00

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
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			04/18/17 21:30	1
Vinyl acetate	ND	*	2.8		ug/m3 Air			04/18/17 21:30	1
Vinyl chloride	ND		1.0		ug/m3 Air			04/18/17 21:30	1
m,p-Xylene	ND		3.5		ug/m3 Air			04/18/17 21:30	1
o-Xylene	ND		1.7		ug/m3 Air			04/18/17 21:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		70 - 130		04/18/17 21:30	1
1,2-Dichloroethane-d4 (Surr)	83		70 - 130		04/18/17 21:30	1
Toluene-d8 (Surr)	98		70 - 130		04/18/17 21:30	1

Surrogate Summary

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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)
320-27201-1	SVE_NORTH_EFFLUENT_0328	93	83	98
LCS 320-160049/7	Lab Control Sample	102	82	101
LCSD 320-160049/8	Lab Control Sample Dup	102	82	101
MB 320-160049/10	Method Blank	94	83	98

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 REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: MB 320-160049/10
Matrix: Air
Analysis Batch: 160049

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			04/18/17 18:26	1
Benzene	ND		0.40		ppb v/v			04/18/17 18:26	1
Benzyl chloride	ND		0.80		ppb v/v			04/18/17 18:26	1
Bromodichloromethane	ND		0.30		ppb v/v			04/18/17 18:26	1
Bromoform	ND		0.40		ppb v/v			04/18/17 18:26	1
Bromomethane	ND		0.80		ppb v/v			04/18/17 18:26	1
2-Butanone (MEK)	ND		0.80		ppb v/v			04/18/17 18:26	1
Carbon disulfide	ND		0.80		ppb v/v			04/18/17 18:26	1
Carbon tetrachloride	ND		0.80		ppb v/v			04/18/17 18:26	1
Chlorobenzene	ND		0.30		ppb v/v			04/18/17 18:26	1
Dibromochloromethane	ND		0.40		ppb v/v			04/18/17 18:26	1
Chloroethane	ND		0.80		ppb v/v			04/18/17 18:26	1
Chloroform	ND		0.30		ppb v/v			04/18/17 18:26	1
Chloromethane	ND		0.80		ppb v/v			04/18/17 18:26	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			04/18/17 18:26	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			04/18/17 18:26	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			04/18/17 18:26	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			04/18/17 18:26	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			04/18/17 18:26	1
1,1-Dichloroethane	ND		0.30		ppb v/v			04/18/17 18:26	1
1,2-Dichloroethane	ND		0.80		ppb v/v			04/18/17 18:26	1
1,1-Dichloroethene	ND		0.80		ppb v/v			04/18/17 18:26	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			04/18/17 18:26	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			04/18/17 18:26	1
1,2-Dichloropropane	ND		0.40		ppb v/v			04/18/17 18:26	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			04/18/17 18:26	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			04/18/17 18:26	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			04/18/17 18:26	1
Ethylbenzene	ND		0.40		ppb v/v			04/18/17 18:26	1
4-Ethyltoluene	ND		0.40		ppb v/v			04/18/17 18:26	1
Hexachlorobutadiene	ND		2.0		ppb v/v			04/18/17 18:26	1
2-Hexanone	ND		0.40		ppb v/v			04/18/17 18:26	1
Methylene Chloride	ND		0.40		ppb v/v			04/18/17 18:26	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			04/18/17 18:26	1
Styrene	ND		0.40		ppb v/v			04/18/17 18:26	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			04/18/17 18:26	1
Tetrachloroethene	ND		0.40		ppb v/v			04/18/17 18:26	1
Toluene	ND		0.40		ppb v/v			04/18/17 18:26	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			04/18/17 18:26	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			04/18/17 18:26	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			04/18/17 18:26	1
Trichloroethene	ND		0.40		ppb v/v			04/18/17 18:26	1
Trichlorofluoromethane	ND		0.40		ppb v/v			04/18/17 18:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			04/18/17 18:26	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			04/18/17 18:26	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			04/18/17 18:26	1
Vinyl acetate	ND		0.80		ppb v/v			04/18/17 18:26	1
Vinyl chloride	ND		0.40		ppb v/v			04/18/17 18:26	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: MB 320-160049/10
Matrix: Air
Analysis Batch: 160049

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			04/18/17 18:26	1
o-Xylene	ND		0.40		ppb v/v			04/18/17 18:26	1
Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		12		ug/m3 Air			04/18/17 18:26	1
Benzene	ND		1.3		ug/m3 Air			04/18/17 18:26	1
Benzyl chloride	ND		4.1		ug/m3 Air			04/18/17 18:26	1
Bromodichloromethane	ND		2.0		ug/m3 Air			04/18/17 18:26	1
Bromoform	ND		4.1		ug/m3 Air			04/18/17 18:26	1
Bromomethane	ND		3.1		ug/m3 Air			04/18/17 18:26	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			04/18/17 18:26	1
Carbon disulfide	ND		2.5		ug/m3 Air			04/18/17 18:26	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			04/18/17 18:26	1
Chlorobenzene	ND		1.4		ug/m3 Air			04/18/17 18:26	1
Dibromochloromethane	ND		3.4		ug/m3 Air			04/18/17 18:26	1
Chloroethane	ND		2.1		ug/m3 Air			04/18/17 18:26	1
Chloroform	ND		1.5		ug/m3 Air			04/18/17 18:26	1
Chloromethane	ND		1.7		ug/m3 Air			04/18/17 18:26	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			04/18/17 18:26	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			04/18/17 18:26	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			04/18/17 18:26	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			04/18/17 18:26	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			04/18/17 18:26	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			04/18/17 18:26	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			04/18/17 18:26	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			04/18/17 18:26	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/18/17 18:26	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			04/18/17 18:26	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			04/18/17 18:26	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/18/17 18:26	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			04/18/17 18:26	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			04/18/17 18:26	1
Ethylbenzene	ND		1.7		ug/m3 Air			04/18/17 18:26	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			04/18/17 18:26	1
Hexachlorobutadiene	ND		21		ug/m3 Air			04/18/17 18:26	1
2-Hexanone	ND		1.6		ug/m3 Air			04/18/17 18:26	1
Methylene Chloride	ND		1.4		ug/m3 Air			04/18/17 18:26	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			04/18/17 18:26	1
Styrene	ND		1.7		ug/m3 Air			04/18/17 18:26	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			04/18/17 18:26	1
Tetrachloroethene	ND		2.7		ug/m3 Air			04/18/17 18:26	1
Toluene	ND		1.5		ug/m3 Air			04/18/17 18:26	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			04/18/17 18:26	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			04/18/17 18:26	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			04/18/17 18:26	1
Trichloroethene	ND		2.1		ug/m3 Air			04/18/17 18:26	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			04/18/17 18:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			04/18/17 18:26	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: MB 320-160049/10
Matrix: Air
Analysis Batch: 160049

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			04/18/17 18:26	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			04/18/17 18:26	1
Vinyl acetate	ND		2.8		ug/m3 Air			04/18/17 18:26	1
Vinyl chloride	ND		1.0		ug/m3 Air			04/18/17 18:26	1
m,p-Xylene	ND		3.5		ug/m3 Air			04/18/17 18:26	1
o-Xylene	ND		1.7		ug/m3 Air			04/18/17 18:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130		04/18/17 18:26	1
1,2-Dichloroethane-d4 (Surr)	83		70 - 130		04/18/17 18:26	1
Toluene-d8 (Surr)	98		70 - 130		04/18/17 18:26	1

Lab Sample ID: LCS 320-160049/7
Matrix: Air
Analysis Batch: 160049

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	18.1		ppb v/v		90	71 - 131
Benzene	20.0	20.2		ppb v/v		101	68 - 128
Benzyl chloride	20.0	18.5		ppb v/v		92	58 - 120
Bromodichloromethane	20.0	18.6		ppb v/v		93	65 - 130
Bromoform	20.0	20.7		ppb v/v		104	64 - 144
Bromomethane	20.0	24.0		ppb v/v		120	70 - 131
2-Butanone (MEK)	20.0	24.0		ppb v/v		120	71 - 131
Carbon disulfide	20.0	19.3		ppb v/v		96	63 - 123
Carbon tetrachloride	20.0	16.8		ppb v/v		84	67 - 127
Chlorobenzene	20.0	20.1		ppb v/v		101	70 - 132
Dibromochloromethane	20.0	19.4		ppb v/v		97	68 - 128
Chloroethane	20.0	23.5		ppb v/v		118	70 - 131
Chloroform	20.0	18.7		ppb v/v		94	69 - 129
Chloromethane	20.0	22.5		ppb v/v		113	67 - 127
1,2-Dibromoethane (EDB)	20.0	21.0		ppb v/v		105	68 - 131
1,2-Dichlorobenzene	20.0	20.4		ppb v/v		102	73 - 143
1,3-Dichlorobenzene	20.0	21.0		ppb v/v		105	77 - 136
1,4-Dichlorobenzene	20.0	21.5		ppb v/v		108	73 - 143
Dichlorodifluoromethane	20.0	20.6		ppb v/v		103	69 - 129
1,1-Dichloroethane	20.0	19.1		ppb v/v		95	65 - 125
1,2-Dichloroethane	20.0	17.2		ppb v/v		86	71 - 131
1,1-Dichloroethene	20.0	17.1		ppb v/v		86	53 - 128
cis-1,2-Dichloroethene	20.0	20.7		ppb v/v		103	68 - 128
trans-1,2-Dichloroethene	20.0	19.5		ppb v/v		97	70 - 130
1,2-Dichloropropane	20.0	19.1		ppb v/v		96	74 - 128
cis-1,3-Dichloropropene	20.0	21.8		ppb v/v		109	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	21.2		ppb v/v		106	64 - 124
Ethylbenzene	20.0	19.6		ppb v/v		98	76 - 136
4-Ethyltoluene	20.0	19.3		ppb v/v		96	62 - 136

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: LCS 320-160049/7

Matrix: Air

Analysis Batch: 160049

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	25.6		ppb v/v		128	70 - 128
Methylene Chloride	20.0	17.2		ppb v/v		86	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	21.3		ppb v/v		107	73 - 133
Styrene	20.0	20.8		ppb v/v		104	76 - 144
1,1,2,2-Tetrachloroethane	20.0	21.8		ppb v/v		109	75 - 135
Tetrachloroethene	20.0	20.4		ppb v/v		102	56 - 138
Toluene	20.0	20.2		ppb v/v		101	71 - 132
1,2,4-Trichlorobenzene	20.0	24.7		ppb v/v		124	59 - 150
1,1,1-Trichloroethane	20.0	17.8		ppb v/v		89	65 - 124
1,1,2-Trichloroethane	20.0	21.6		ppb v/v		108	71 - 131
Trichloroethene	20.0	19.5		ppb v/v		97	64 - 127
Trichlorofluoromethane	20.0	18.5		ppb v/v		92	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.8		ppb v/v		94	50 - 132
1,2,4-Trimethylbenzene	20.0	19.0		ppb v/v		95	61 - 145
1,3,5-Trimethylbenzene	20.0	19.7		ppb v/v		99	65 - 136
Vinyl acetate	20.0	18.4		ppb v/v		92	77 - 134
Vinyl chloride	20.0	24.1		ppb v/v		121	69 - 129
m,p-Xylene	40.0	39.0		ppb v/v		98	75 - 138
o-Xylene	20.0	19.8		ppb v/v		99	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	42.9		ug/m3 Air		90	71 - 131
Benzene	64	64.5		ug/m3 Air		101	68 - 128
Benzyl chloride	100	95.7		ug/m3 Air		92	58 - 120
Bromodichloromethane	130	125		ug/m3 Air		93	65 - 130
Bromoform	210	214		ug/m3 Air		104	64 - 144
Bromomethane	78	93.2		ug/m3 Air		120	70 - 131
2-Butanone (MEK)	59	70.7		ug/m3 Air		120	71 - 131
Carbon disulfide	62	60.1		ug/m3 Air		96	63 - 123
Carbon tetrachloride	130	105		ug/m3 Air		84	67 - 127
Chlorobenzene	92	92.6		ug/m3 Air		101	70 - 132
Dibromochloromethane	170	165		ug/m3 Air		97	68 - 128
Chloroethane	53	62.1		ug/m3 Air		118	70 - 131
Chloroform	98	91.4		ug/m3 Air		94	69 - 129
Chloromethane	41	46.5		ug/m3 Air		113	67 - 127
1,2-Dibromoethane (EDB)	150	161		ug/m3 Air		105	68 - 131
1,2-Dichlorobenzene	120	123		ug/m3 Air		102	73 - 143
1,3-Dichlorobenzene	120	126		ug/m3 Air		105	77 - 136
1,4-Dichlorobenzene	120	129		ug/m3 Air		108	73 - 143
Dichlorodifluoromethane	99	102		ug/m3 Air		103	69 - 129
1,1-Dichloroethane	81	77.2		ug/m3 Air		95	65 - 125
1,2-Dichloroethane	81	69.6		ug/m3 Air		86	71 - 131
1,1-Dichloroethene	79	67.8		ug/m3 Air		86	53 - 128
cis-1,2-Dichloroethene	79	81.9		ug/m3 Air		103	68 - 128
trans-1,2-Dichloroethene	79	77.3		ug/m3 Air		97	70 - 130
1,2-Dichloropropane	92	88.3		ug/m3 Air		96	74 - 128

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: LCS 320-160049/7

Matrix: Air

Analysis Batch: 160049

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	99.0		ug/m3 Air		109	78 - 132
trans-1,3-Dichloropropene	91	82.4		ug/m3 Air		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	148		ug/m3 Air		106	64 - 124
Ethylbenzene	87	85.1		ug/m3 Air		98	76 - 136
4-Ethyltoluene	98	94.6		ug/m3 Air		96	62 - 136
Hexachlorobutadiene	210	185		ug/m3 Air		87	42 - 150
2-Hexanone	82	105		ug/m3 Air		128	70 - 128
Methylene Chloride	69	59.7		ug/m3 Air		86	65 - 125
4-Methyl-2-pentanone (MIBK)	82	87.4		ug/m3 Air		107	73 - 133
Styrene	85	88.5		ug/m3 Air		104	76 - 144
1,1,2,2-Tetrachloroethane	140	150		ug/m3 Air		109	75 - 135
Tetrachloroethene	140	138		ug/m3 Air		102	56 - 138
Toluene	75	76.1		ug/m3 Air		101	71 - 132
1,2,4-Trichlorobenzene	150	184		ug/m3 Air		124	59 - 150
1,1,1-Trichloroethane	110	97.3		ug/m3 Air		89	65 - 124
1,1,2-Trichloroethane	110	118		ug/m3 Air		108	71 - 131
Trichloroethene	110	105		ug/m3 Air		97	64 - 127
Trichlorofluoromethane	110	104		ug/m3 Air		92	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	144		ug/m3 Air		94	50 - 132
1,2,4-Trimethylbenzene	98	93.6		ug/m3 Air		95	61 - 145
1,3,5-Trimethylbenzene	98	97.1		ug/m3 Air		99	65 - 136
Vinyl acetate	70	64.7		ug/m3 Air		92	77 - 134
Vinyl chloride	51	61.7		ug/m3 Air		121	69 - 129
m,p-Xylene	170	169		ug/m3 Air		98	75 - 138
o-Xylene	87	86.0		ug/m3 Air		99	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		70 - 130
1,2-Dichloroethane-d4 (Surr)	82		70 - 130
Toluene-d8 (Surr)	101		70 - 130

Lab Sample ID: LCSD 320-160049/8

Matrix: Air

Analysis Batch: 160049

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	14.9		ppb v/v		74	71 - 131	20	25
Benzene	20.0	18.4		ppb v/v		92	68 - 128	9	25
Benzyl chloride	20.0	15.8		ppb v/v		79	58 - 120	16	25
Bromodichloromethane	20.0	17.0		ppb v/v		85	65 - 130	9	25
Bromoform	20.0	18.8		ppb v/v		94	64 - 144	10	25
Bromomethane	20.0	22.2		ppb v/v		111	70 - 131	8	25
2-Butanone (MEK)	20.0	20.0		ppb v/v		100	71 - 131	18	25
Carbon disulfide	20.0	18.0		ppb v/v		90	63 - 123	7	25
Carbon tetrachloride	20.0	15.3		ppb v/v		76	67 - 127	9	25
Chlorobenzene	20.0	18.3		ppb v/v		92	70 - 132	9	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: LCSD 320-160049/8

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 160049

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	17.6		ppb v/v		88	68 - 128	9	25
Chloroethane	20.0	21.3		ppb v/v		106	70 - 131	10	25
Chloroform	20.0	16.8		ppb v/v		84	69 - 129	11	25
Chloromethane	20.0	20.5		ppb v/v		102	67 - 127	10	25
1,2-Dibromoethane (EDB)	20.0	19.0		ppb v/v		95	68 - 131	10	25
1,2-Dichlorobenzene	20.0	18.3		ppb v/v		91	73 - 143	11	25
1,3-Dichlorobenzene	20.0	19.1		ppb v/v		96	77 - 136	9	25
1,4-Dichlorobenzene	20.0	19.7		ppb v/v		98	73 - 143	9	25
Dichlorodifluoromethane	20.0	18.6		ppb v/v		93	69 - 129	10	25
1,1-Dichloroethane	20.0	17.1		ppb v/v		86	65 - 125	11	25
1,2-Dichloroethane	20.0	15.6		ppb v/v		78	71 - 131	10	25
1,1-Dichloroethene	20.0	15.6		ppb v/v		78	53 - 128	9	25
cis-1,2-Dichloroethene	20.0	18.5		ppb v/v		92	68 - 128	11	25
trans-1,2-Dichloroethene	20.0	17.6		ppb v/v		88	70 - 130	10	25
1,2-Dichloropropane	20.0	17.4		ppb v/v		87	74 - 128	9	25
cis-1,3-Dichloropropene	20.0	19.9		ppb v/v		100	78 - 132	9	25
trans-1,3-Dichloropropene	20.0	16.5		ppb v/v		82	56 - 136	10	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.7		ppb v/v		98	64 - 124	8	25
Ethylbenzene	20.0	17.7		ppb v/v		89	76 - 136	10	25
4-Ethyltoluene	20.0	17.1		ppb v/v		85	62 - 136	12	25
Hexachlorobutadiene	20.0	15.3		ppb v/v		77	42 - 150	13	25
2-Hexanone	20.0	22.1		ppb v/v		111	70 - 128	15	25
Methylene Chloride	20.0	15.4		ppb v/v		77	65 - 125	11	25
4-Methyl-2-pentanone (MIBK)	20.0	17.9		ppb v/v		90	73 - 133	17	25
Styrene	20.0	18.6		ppb v/v		93	76 - 144	11	25
1,1,2,2-Tetrachloroethane	20.0	19.2		ppb v/v		96	75 - 135	13	25
Tetrachloroethene	20.0	18.6		ppb v/v		93	56 - 138	9	25
Toluene	20.0	18.3		ppb v/v		92	71 - 132	10	25
1,2,4-Trichlorobenzene	20.0	21.4		ppb v/v		107	59 - 150	14	25
1,1,1-Trichloroethane	20.0	15.9		ppb v/v		80	65 - 124	11	25
1,1,2-Trichloroethane	20.0	19.7		ppb v/v		98	71 - 131	9	25
Trichloroethene	20.0	17.7		ppb v/v		88	64 - 127	10	25
Trichlorofluoromethane	20.0	17.1		ppb v/v		86	68 - 128	8	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.9		ppb v/v		85	50 - 132	11	25
1,2,4-Trimethylbenzene	20.0	17.9		ppb v/v		90	61 - 145	6	25
1,3,5-Trimethylbenzene	20.0	16.8		ppb v/v		84	65 - 136	16	25
Vinyl acetate	20.0	15.3	*	ppb v/v		76	77 - 134	18	25
Vinyl chloride	20.0	22.2		ppb v/v		111	69 - 129	9	25
m,p-Xylene	40.0	34.8		ppb v/v		87	75 - 138	11	25
o-Xylene	20.0	17.5		ppb v/v		88	77 - 132	12	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	35.3		ug/m3 Air		74	71 - 131	20	25
Benzene	64	58.7		ug/m3 Air		92	68 - 128	9	25
Benzyl chloride	100	81.6		ug/m3 Air		79	58 - 120	16	25
Bromodichloromethane	130	114		ug/m3 Air		85	65 - 130	9	25
Bromoform	210	195		ug/m3 Air		94	64 - 144	10	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: LCSD 320-160049/8

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 160049

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	86.4		ug/m3 Air		111	70 - 131	8	25
2-Butanone (MEK)	59	59.0		ug/m3 Air		100	71 - 131	18	25
Carbon disulfide	62	56.1		ug/m3 Air		90	63 - 123	7	25
Carbon tetrachloride	130	96.0		ug/m3 Air		76	67 - 127	9	25
Chlorobenzene	92	84.3		ug/m3 Air		92	70 - 132	9	25
Dibromochloromethane	170	150		ug/m3 Air		88	68 - 128	9	25
Chloroethane	53	56.1		ug/m3 Air		106	70 - 131	10	25
Chloroform	98	81.8		ug/m3 Air		84	69 - 129	11	25
Chloromethane	41	42.3		ug/m3 Air		102	67 - 127	10	25
1,2-Dibromoethane (EDB)	150	146		ug/m3 Air		95	68 - 131	10	25
1,2-Dichlorobenzene	120	110		ug/m3 Air		91	73 - 143	11	25
1,3-Dichlorobenzene	120	115		ug/m3 Air		96	77 - 136	9	25
1,4-Dichlorobenzene	120	118		ug/m3 Air		98	73 - 143	9	25
Dichlorodifluoromethane	99	92.2		ug/m3 Air		93	69 - 129	10	25
1,1-Dichloroethane	81	69.4		ug/m3 Air		86	65 - 125	11	25
1,2-Dichloroethane	81	63.2		ug/m3 Air		78	71 - 131	10	25
1,1-Dichloroethene	79	61.7		ug/m3 Air		78	53 - 128	9	25
cis-1,2-Dichloroethene	79	73.3		ug/m3 Air		92	68 - 128	11	25
trans-1,2-Dichloroethene	79	69.9		ug/m3 Air		88	70 - 130	10	25
1,2-Dichloropropane	92	80.5		ug/m3 Air		87	74 - 128	9	25
cis-1,3-Dichloropropene	91	90.5		ug/m3 Air		100	78 - 132	9	25
trans-1,3-Dichloropropene	91	74.8		ug/m3 Air		82	56 - 136	10	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	137		ug/m3 Air		98	64 - 124	8	25
Ethylbenzene	87	77.1		ug/m3 Air		89	76 - 136	10	25
4-Ethyltoluene	98	84.0		ug/m3 Air		85	62 - 136	12	25
Hexachlorobutadiene	210	163		ug/m3 Air		77	42 - 150	13	25
2-Hexanone	82	90.7		ug/m3 Air		111	70 - 128	15	25
Methylene Chloride	69	53.6		ug/m3 Air		77	65 - 125	11	25
4-Methyl-2-pentanone (MIBK)	82	73.5		ug/m3 Air		90	73 - 133	17	25
Styrene	85	79.3		ug/m3 Air		93	76 - 144	11	25
1,1,2,2-Tetrachloroethane	140	132		ug/m3 Air		96	75 - 135	13	25
Tetrachloroethene	140	126		ug/m3 Air		93	56 - 138	9	25
Toluene	75	69.1		ug/m3 Air		92	71 - 132	10	25
1,2,4-Trichlorobenzene	150	159		ug/m3 Air		107	59 - 150	14	25
1,1,1-Trichloroethane	110	86.9		ug/m3 Air		80	65 - 124	11	25
1,1,2-Trichloroethane	110	107		ug/m3 Air		98	71 - 131	9	25
Trichloroethene	110	94.9		ug/m3 Air		88	64 - 127	10	25
Trichlorofluoromethane	110	96.1		ug/m3 Air		86	68 - 128	8	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	130		ug/m3 Air		85	50 - 132	11	25
1,2,4-Trimethylbenzene	98	88.2		ug/m3 Air		90	61 - 145	6	25
1,3,5-Trimethylbenzene	98	82.7		ug/m3 Air		84	65 - 136	16	25
Vinyl acetate	70	53.8	*	ug/m3 Air		76	77 - 134	18	25
Vinyl chloride	51	56.7		ug/m3 Air		111	69 - 129	9	25
m,p-Xylene	170	151		ug/m3 Air		87	75 - 138	11	25
o-Xylene	87	76.1		ug/m3 Air		88	77 - 132	12	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

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

Lab Sample ID: LCSD 320-160049/8

Matrix: Air

Analysis Batch: 160049

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	102		70 - 130
1,2-Dichloroethane-d4 (Surr)	82		70 - 130
Toluene-d8 (Surr)	101		70 - 130

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QC Association Summary

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Air - GC/MS VOA

Analysis Batch: 160049

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-27201-1	SVE_NORTH_EFFLUENT_032817	Total/NA	Air	TO-15	
MB 320-160049/10	Method Blank	Total/NA	Air	TO-15	
LCS 320-160049/7	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-160049/8	Lab Control Sample Dup	Total/NA	Air	TO-15	

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Lab Chronicle

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Client Sample ID: SVE_NORTH_EFFLUENT_032817

Lab Sample ID: 320-27201-1

Date Collected: 03/28/17 13:06

Matrix: Air

Date Received: 04/05/17 10:00

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	440 mL	250 mL	160049	04/18/17 21:30	AP1	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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Accreditation/Certification Summary

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

Laboratory: TestAmerica Portland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
N/A	N/A	N/A	None on record.	

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Apex Companies LLC
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-27201-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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 Vancouver REM

TestAmerica Job ID: 320-27201-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-27201-1	SVE_NORTH_EFFLUENT_032817	Air	03/28/17 13:06	04/05/17 10:00

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TestAmerica Sacramento
880 Riverside Parkway

West Sacramento, CA 95605
phone 916.374.4378 fax 916.372.1059

Canister Samples Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

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: Mustar Vancouver REM Site/Location: Mustar Vancouver P O #: 1126-20		Project Manager: Stephanie Salisbury Phone: 503-224-4704 x1925 Email: SSalisbury@APEXCOS.COM Site Contact: TA Contact: Analysis Turnaround Time Standard (Specific): X Rush (Specify): _____		Samples Collected By: Kyle Kline COC No: _____ of _____ COCs							
Sample Identification SVE-north-effluent_032817	Sample Date(s) 3/28/17 1305	Time Start 1306	Time Stop 1304	Canister Vacuum in Field, 'Hg (Start) -30	Canister Vacuum in Field, 'Hg (Stop) -4	Flow Controller ID -	Canister ID 34008 548	TO-15 (Med / Std / Low / SIM) X	MA-APH EPA 3C EPA 25C / 25.3 ASTM D-1946 / 1945 / 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)	Other (Please specify in notes section)
	Sample Specific Notes: 										
Special Instructions/OC Requirements & Comments: Email Results to: SSalisbury@apexcos.com south system was not working, so did not take samples. Shipped bag back unused as is.											
Samples Shipped by: Kyle Kline						Samples Received by: [Signature]					
Date / Time: 4/17/17 1500						Date / Time: 4/17/17 1200 M.E.					
Relinquished by: Kyle Kline / Apex						Received by: [Signature]					
Relinquished by: [Signature]						Received by: [Signature]					
Lab Use Only: Shipper Name: [Signature]						Condition: _____					



Form No. CAC-WI-003, Rev. 1, dated 05/10/2013

4/17 1700 JAP Rec: KPM Nelson 4/15/17 1000 M.E.

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Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-27201-1

Login Number: 27201

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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 (excluding tests with immediate HTs)	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 3/3/17 320-26282
 Date of QC 3/13/2017
 Data File Number C:\MSDCRM\1\DATA\170313\



320-26282 Chain of Custody

MS7031321.d
CANISTER ID NUMBERS

<u>34001063</u>	<u>34001141</u>	
<u>34001214</u>	<u>34001364</u>	
<u>34000774</u>	<u>34000542</u>	
<u>34000777</u>	<u>34000548</u>	
* <u>34001277</u>		
<u>34002038</u>		
<u>8085</u>		
<u>34001384</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]
1st level Reviewed By:

3/14/17
Date:

[Signature]
2nd level Reviewed By:

3/14/17
Date:

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-26282-1
 SDG No.: _____
 Client Sample ID: 34001277 Lab Sample ID: 320-26282-5
 Matrix: Air Lab File ID: MS7031321.D
 Analysis Method: TO-15 Date Collected: 03/03/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 03/14/2017 07:28
 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.: 154578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.81	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	0.27
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.: 320-26282-1
 SDG No.: _____
 Client Sample ID: 34001277 Lab Sample ID: 320-26282-5
 Matrix: Air Lab File ID: MS7031321.D
 Analysis Method: TO-15 Date Collected: 03/03/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 03/14/2017 07:28
 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.: 154578 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	0.12
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	0.11	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	0.21
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.: 320-26282-1
 SDG No.: _____
 Client Sample ID: 34001277 Lab Sample ID: 320-26282-5
 Matrix: Air Lab File ID: MS7031321.D
 Analysis Method: TO-15 Date Collected: 03/03/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 03/14/2017 07:28
 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.: 154578 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)	93		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170313-40754.b\MS7031321.D
 Lims ID: 320-26282-A-5
 Client ID: 34001277
 Sample Type: Client
 Inject. Date: 14-Mar-2017 07:28:30 ALS Bottle#: 4 Worklist Smp#: 21
 Purge Vol: 5.000 mL Dil. Factor: 1.0000
 Sample Info: 320-26282-A-5
 Misc. Info.: 500 mL CAN CERT
 Operator ID: LHS Instrument ID: ATMS7
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20170313-40754.b\TO15_ATMS7N.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 14-Mar-2017 08:36:20 Calib Date: 27-Jan-2017 09:31:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20170126-39221.b\MS7012625.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: leeh

Date: 14-Mar-2017 08:36:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.315	12.296	0.019	96	31378	4.00	
* 2 1,4-Difluorobenzene	114	14.462	14.444	0.018	96	132357	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.124	21.111	0.013	92	149740	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.507	13.495	0.012	98	71047	4.15	
\$ 5 Toluene-d8 (Surr)	100	17.863	17.851	0.012	96	88821	4.11	
\$ 6 4-Bromofluorobenzene (Surr	95	23.673	23.654	0.019	92	105553	3.72	
11 Propene	41	3.877	3.877	0.000	55	366	0.0856	
32 Acetone	43	7.411	7.350	0.061	99	12184	0.8127	
39 Methylene Chloride	49	8.750	8.725	0.025	24	1089	0.1096	
75 Toluene	91	18.045	18.021	0.024	10	1694	0.0447	

Reagents:

VAMSIS20_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170313-40754.b\MS7031321.D

Injection Date: 14-Mar-2017 07:28:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-26282-A-5

Lab Sample ID: 320-26282-5

Worklist Smp#: 21

Client ID: 34001277

Purge Vol: 5.000 mL

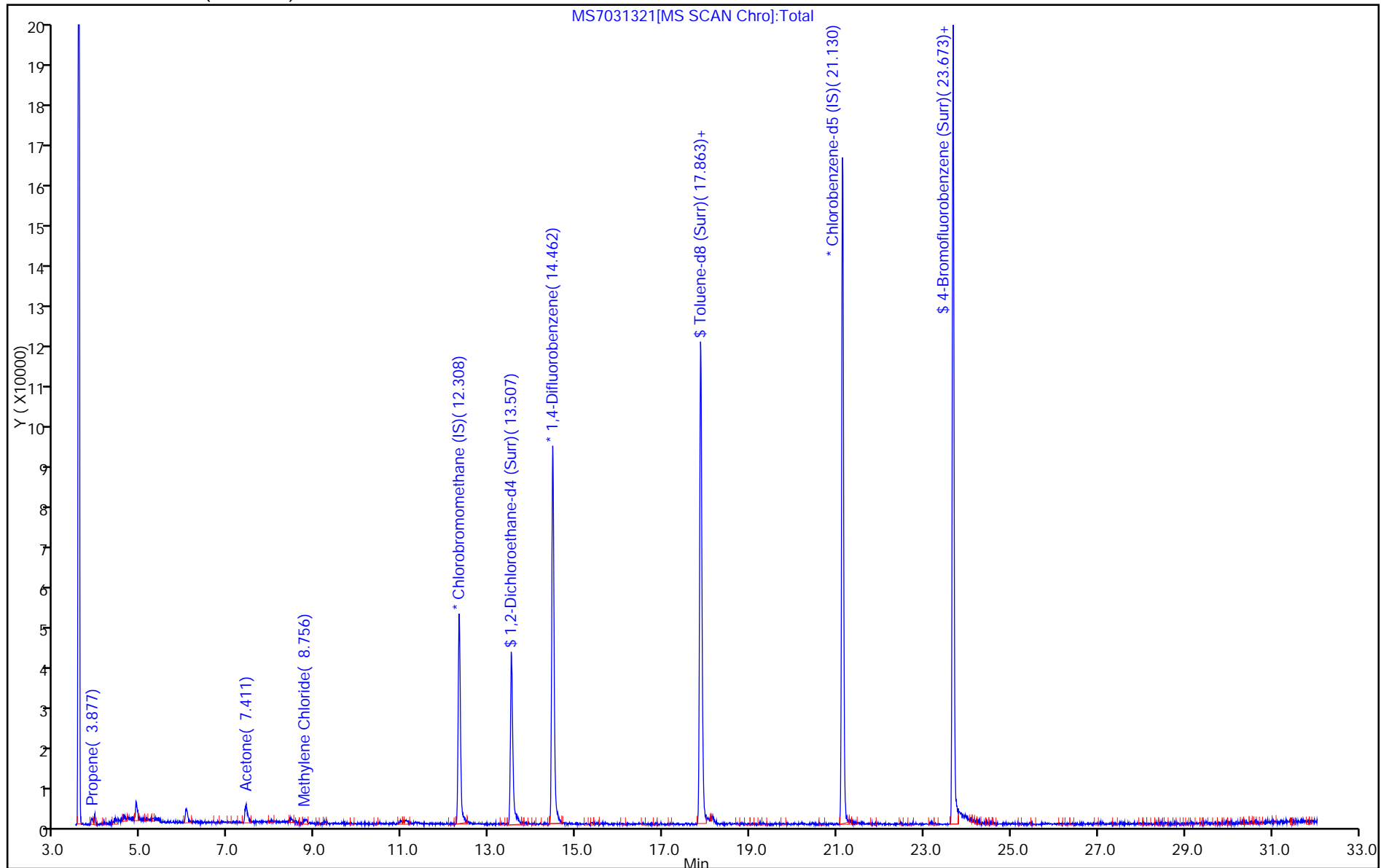
Dil. Factor: 1.0000

ALS Bottle#: 4

Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170313-40754.b\MS7031321.D

Injection Date: 14-Mar-2017 07:28:30

Instrument ID: ATMS7

Lims ID: 320-26282-A-5

Lab Sample ID: 320-26282-5

Client ID: 34001277

Operator ID: LHS

ALS Bottle#: 4 Worklist Smp#: 21

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

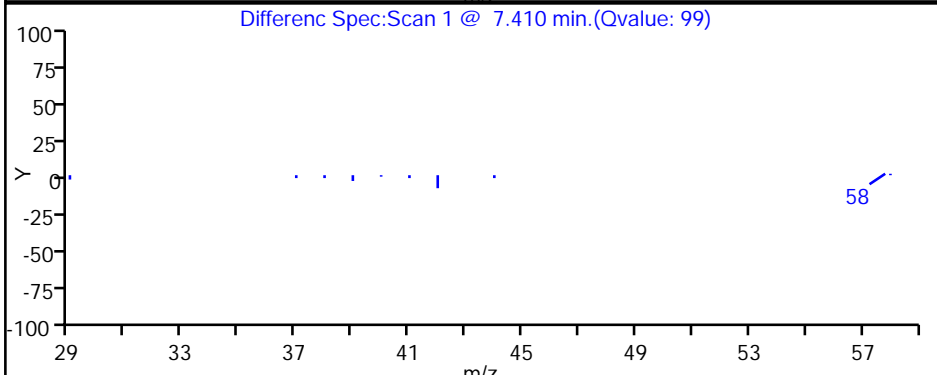
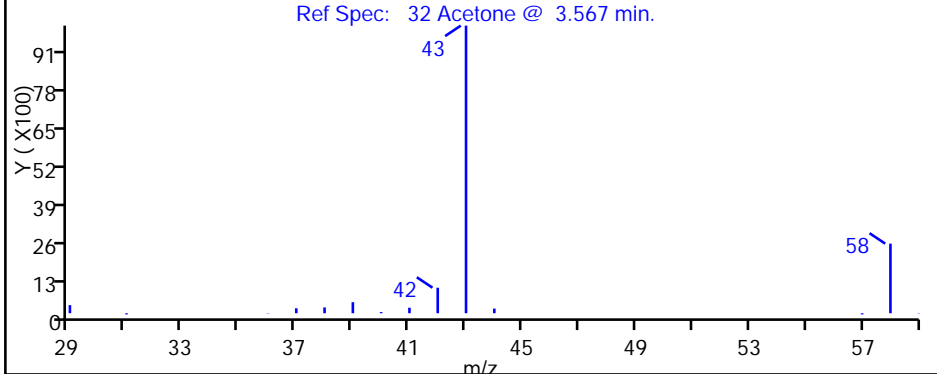
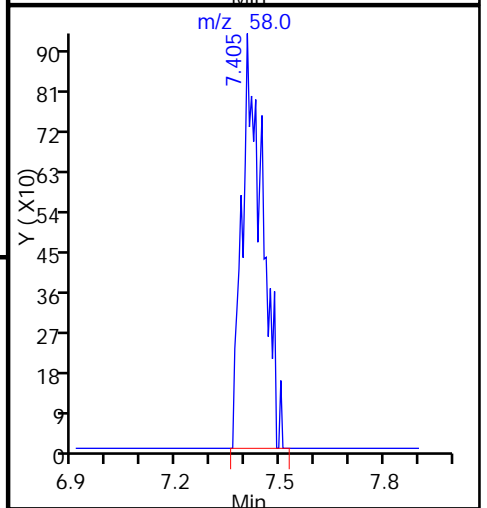
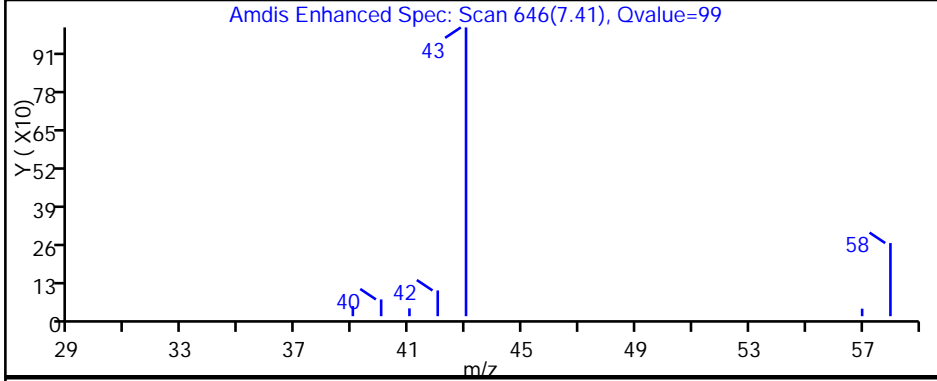
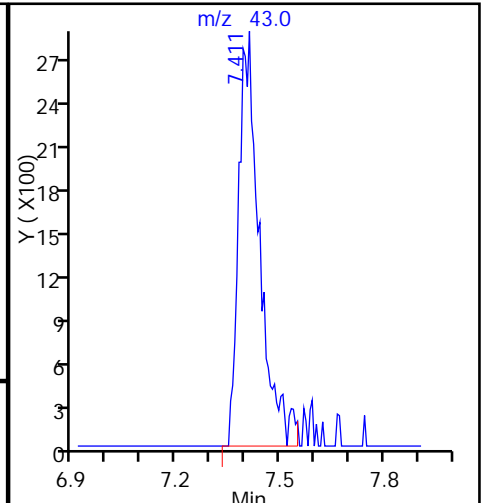
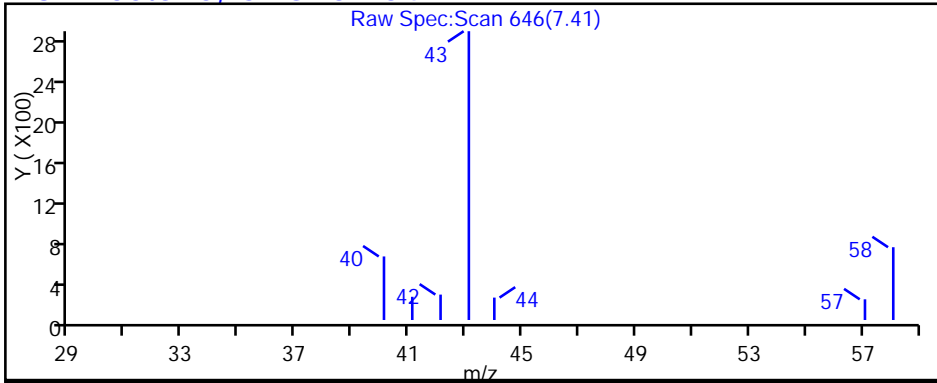
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20170313-40754.b\MS7031321.D

Injection Date: 14-Mar-2017 07:28:30

Instrument ID: ATMS7

Lims ID: 320-26282-A-5

Lab Sample ID: 320-26282-5

Client ID: 34001277

Operator ID: LHS

ALS Bottle#: 4 Worklist Smp#: 21

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

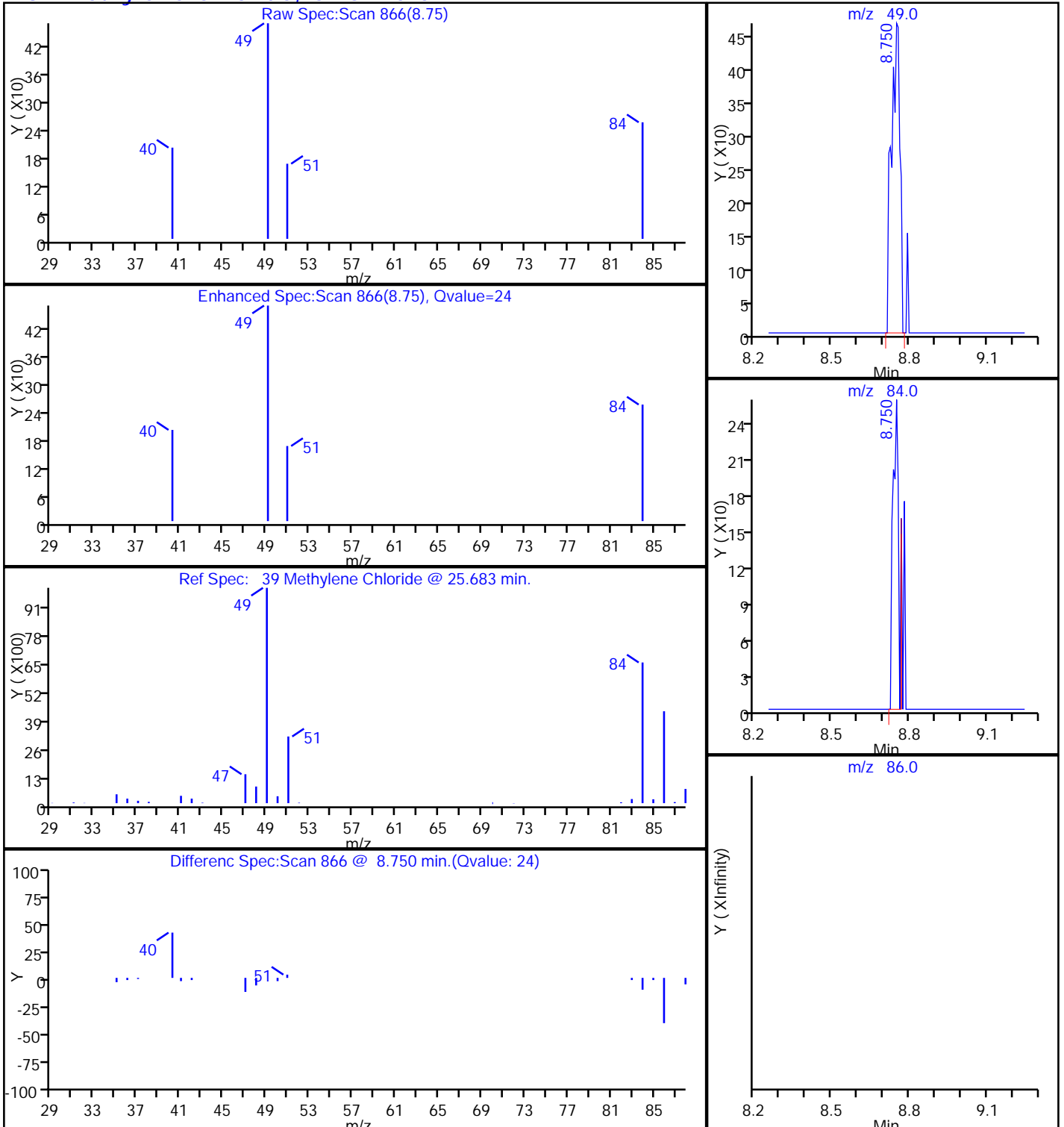
Method: TO15_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

39 Methylene Chloride, CAS: 75-09-2



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: 320-27847-1
Client Project/Site: NuStar Vapor Testing

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

Attn: Stephanie Salisbury



Authorized for release by:
5/11/2017 4:16:41 PM

Cathy Gamble, Project Manager I
(253)922-2310
cathy.gamble@testamericainc.com

LINKS

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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: 320-27847-1

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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: 320-27847-1

Job ID: 320-27847-1

Laboratory: TestAmerica Sacramento

Narrative

Receipt

The sample was received on 5/1/2017 9:00 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: 320-27847-1

Client Sample ID: SVE_North_Effluent

Lab Sample ID: 320-27847-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK)	1.1		0.80		ppb v/v	1		TO-15	Total/NA
Carbon disulfide	2.5		0.80		ppb v/v	1		TO-15	Total/NA
1,3-Dichlorobenzene	0.49		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.58		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	0.98		0.40		ppb v/v	1		TO-15	Total/NA
m,p-Xylene	1.4		0.80		ppb v/v	1		TO-15	Total/NA
o-Xylene	0.47		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)	3.1		2.4		ug/m3 Air	1		TO-15	Total/NA
Carbon disulfide	7.7		2.5		ug/m3 Air	1		TO-15	Total/NA
1,3-Dichlorobenzene	2.9		2.4		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	3.9		2.7		ug/m3 Air	1		TO-15	Total/NA
Toluene	3.7		1.5		ug/m3 Air	1		TO-15	Total/NA
m,p-Xylene	6.2		3.5		ug/m3 Air	1		TO-15	Total/NA
o-Xylene	2.0		1.7		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 Vapor Testing

TestAmerica Job ID: 320-27847-1

Client Sample ID: SVE_North_Effluent

Lab Sample ID: 320-27847-1

Date Collected: 04/24/17 16:26

Matrix: Air

Date Received: 05/01/17 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		5.0		ppb v/v			05/09/17 15:42	1
Benzene	ND		0.40		ppb v/v			05/09/17 15:42	1
Benzyl chloride	ND		0.80		ppb v/v			05/09/17 15:42	1
Bromodichloromethane	ND		0.30		ppb v/v			05/09/17 15:42	1
Bromoform	ND		0.40		ppb v/v			05/09/17 15:42	1
Bromomethane	ND		0.80		ppb v/v			05/09/17 15:42	1
2-Butanone (MEK)	1.1		0.80		ppb v/v			05/09/17 15:42	1
Carbon disulfide	2.5		0.80		ppb v/v			05/09/17 15:42	1
Carbon tetrachloride	ND		0.80		ppb v/v			05/09/17 15:42	1
Chlorobenzene	ND		0.30		ppb v/v			05/09/17 15:42	1
Dibromochloromethane	ND		0.40		ppb v/v			05/09/17 15:42	1
Chloroethane	ND		0.80		ppb v/v			05/09/17 15:42	1
Chloroform	ND		0.30		ppb v/v			05/09/17 15:42	1
Chloromethane	ND		0.80		ppb v/v			05/09/17 15:42	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			05/09/17 15:42	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			05/09/17 15:42	1
1,3-Dichlorobenzene	0.49		0.40		ppb v/v			05/09/17 15:42	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			05/09/17 15:42	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			05/09/17 15:42	1
1,1-Dichloroethane	ND		0.30		ppb v/v			05/09/17 15:42	1
1,2-Dichloroethane	ND		0.80		ppb v/v			05/09/17 15:42	1
1,1-Dichloroethene	ND		0.80		ppb v/v			05/09/17 15:42	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			05/09/17 15:42	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			05/09/17 15:42	1
1,2-Dichloropropane	ND		0.40		ppb v/v			05/09/17 15:42	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			05/09/17 15:42	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			05/09/17 15:42	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			05/09/17 15:42	1
Ethylbenzene	ND		0.40		ppb v/v			05/09/17 15:42	1
4-Ethyltoluene	ND		0.40		ppb v/v			05/09/17 15:42	1
Hexachlorobutadiene	ND		2.0		ppb v/v			05/09/17 15:42	1
2-Hexanone	ND		0.40		ppb v/v			05/09/17 15:42	1
Methylene Chloride	ND		0.40		ppb v/v			05/09/17 15:42	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			05/09/17 15:42	1
Styrene	ND		0.40		ppb v/v			05/09/17 15:42	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			05/09/17 15:42	1
Tetrachloroethene	0.58		0.40		ppb v/v			05/09/17 15:42	1
Toluene	0.98		0.40		ppb v/v			05/09/17 15:42	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			05/09/17 15:42	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			05/09/17 15:42	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			05/09/17 15:42	1
Trichloroethene	ND		0.40		ppb v/v			05/09/17 15:42	1
Trichlorofluoromethane	ND		0.40		ppb v/v			05/09/17 15:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			05/09/17 15:42	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			05/09/17 15:42	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			05/09/17 15:42	1
Vinyl acetate	ND		0.80		ppb v/v			05/09/17 15:42	1
Vinyl chloride	ND		0.40		ppb v/v			05/09/17 15:42	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

Client Sample ID: SVE_North_Effluent

Lab Sample ID: 320-27847-1

Date Collected: 04/24/17 16:26

Matrix: Air

Date Received: 05/01/17 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
m,p-Xylene	1.4		0.80		ppb v/v			05/09/17 15:42	1
o-Xylene	0.47		0.40		ppb v/v			05/09/17 15:42	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			05/09/17 15:42	1
Benzene	ND		1.3		ug/m3 Air			05/09/17 15:42	1
Benzyl chloride	ND		4.1		ug/m3 Air			05/09/17 15:42	1
Bromodichloromethane	ND		2.0		ug/m3 Air			05/09/17 15:42	1
Bromoform	ND		4.1		ug/m3 Air			05/09/17 15:42	1
Bromomethane	ND		3.1		ug/m3 Air			05/09/17 15:42	1
2-Butanone (MEK)	3.1		2.4		ug/m3 Air			05/09/17 15:42	1
Carbon disulfide	7.7		2.5		ug/m3 Air			05/09/17 15:42	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			05/09/17 15:42	1
Chlorobenzene	ND		1.4		ug/m3 Air			05/09/17 15:42	1
Dibromochloromethane	ND		3.4		ug/m3 Air			05/09/17 15:42	1
Chloroethane	ND		2.1		ug/m3 Air			05/09/17 15:42	1
Chloroform	ND		1.5		ug/m3 Air			05/09/17 15:42	1
Chloromethane	ND		1.7		ug/m3 Air			05/09/17 15:42	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			05/09/17 15:42	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			05/09/17 15:42	1
1,3-Dichlorobenzene	2.9		2.4		ug/m3 Air			05/09/17 15:42	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			05/09/17 15:42	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			05/09/17 15:42	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			05/09/17 15:42	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			05/09/17 15:42	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			05/09/17 15:42	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/09/17 15:42	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/09/17 15:42	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			05/09/17 15:42	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/09/17 15:42	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/09/17 15:42	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			05/09/17 15:42	1
Ethylbenzene	ND		1.7		ug/m3 Air			05/09/17 15:42	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			05/09/17 15:42	1
Hexachlorobutadiene	ND		21		ug/m3 Air			05/09/17 15:42	1
2-Hexanone	ND		1.6		ug/m3 Air			05/09/17 15:42	1
Methylene Chloride	ND		1.4		ug/m3 Air			05/09/17 15:42	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			05/09/17 15:42	1
Styrene	ND		1.7		ug/m3 Air			05/09/17 15:42	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			05/09/17 15:42	1
Tetrachloroethene	3.9		2.7		ug/m3 Air			05/09/17 15:42	1
Toluene	3.7		1.5		ug/m3 Air			05/09/17 15:42	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			05/09/17 15:42	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			05/09/17 15:42	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			05/09/17 15:42	1
Trichloroethene	ND		2.1		ug/m3 Air			05/09/17 15:42	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			05/09/17 15:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			05/09/17 15:42	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			05/09/17 15:42	1

TestAmerica Sacramento

Client Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

Client Sample ID: SVE_North_Effluent

Lab Sample ID: 320-27847-1

Date Collected: 04/24/17 16:26

Matrix: Air

Date Received: 05/01/17 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
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			05/09/17 15:42	1
Vinyl acetate	ND		2.8		ug/m3 Air			05/09/17 15:42	1
Vinyl chloride	ND		1.0		ug/m3 Air			05/09/17 15:42	1
m,p-Xylene	6.2		3.5		ug/m3 Air			05/09/17 15:42	1
o-Xylene	2.0		1.7		ug/m3 Air			05/09/17 15:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		70 - 130		05/09/17 15:42	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		05/09/17 15:42	1
Toluene-d8 (Surr)	102		70 - 130		05/09/17 15:42	1

Surrogate Summary

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

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)
320-27847-1	SVE_North_Effluent	101	103	102
LCS 320-163512/3	Lab Control Sample	105	98	99
LCSD 320-163512/4	Lab Control Sample Dup	103	97	98
MB 320-163512/6	Method Blank	102	101	103

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: 320-27847-1

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

Lab Sample ID: MB 320-163512/6

Matrix: Air

Analysis Batch: 163512

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			05/09/17 14:45	1
Benzene	ND		0.40		ppb v/v			05/09/17 14:45	1
Benzyl chloride	ND		0.80		ppb v/v			05/09/17 14:45	1
Bromodichloromethane	ND		0.30		ppb v/v			05/09/17 14:45	1
Bromoform	ND		0.40		ppb v/v			05/09/17 14:45	1
Bromomethane	ND		0.80		ppb v/v			05/09/17 14:45	1
2-Butanone (MEK)	ND		0.80		ppb v/v			05/09/17 14:45	1
Carbon disulfide	ND		0.80		ppb v/v			05/09/17 14:45	1
Carbon tetrachloride	ND		0.80		ppb v/v			05/09/17 14:45	1
Chlorobenzene	ND		0.30		ppb v/v			05/09/17 14:45	1
Dibromochloromethane	ND		0.40		ppb v/v			05/09/17 14:45	1
Chloroethane	ND		0.80		ppb v/v			05/09/17 14:45	1
Chloroform	ND		0.30		ppb v/v			05/09/17 14:45	1
Chloromethane	ND		0.80		ppb v/v			05/09/17 14:45	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			05/09/17 14:45	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			05/09/17 14:45	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			05/09/17 14:45	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			05/09/17 14:45	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			05/09/17 14:45	1
1,1-Dichloroethane	ND		0.30		ppb v/v			05/09/17 14:45	1
1,2-Dichloroethane	ND		0.80		ppb v/v			05/09/17 14:45	1
1,1-Dichloroethene	ND		0.80		ppb v/v			05/09/17 14:45	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			05/09/17 14:45	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			05/09/17 14:45	1
1,2-Dichloropropane	ND		0.40		ppb v/v			05/09/17 14:45	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			05/09/17 14:45	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			05/09/17 14:45	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			05/09/17 14:45	1
Ethylbenzene	ND		0.40		ppb v/v			05/09/17 14:45	1
4-Ethyltoluene	ND		0.40		ppb v/v			05/09/17 14:45	1
Hexachlorobutadiene	ND		2.0		ppb v/v			05/09/17 14:45	1
2-Hexanone	ND		0.40		ppb v/v			05/09/17 14:45	1
Methylene Chloride	ND		0.40		ppb v/v			05/09/17 14:45	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			05/09/17 14:45	1
Styrene	ND		0.40		ppb v/v			05/09/17 14:45	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			05/09/17 14:45	1
Tetrachloroethene	ND		0.40		ppb v/v			05/09/17 14:45	1
Toluene	ND		0.40		ppb v/v			05/09/17 14:45	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			05/09/17 14:45	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			05/09/17 14:45	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			05/09/17 14:45	1
Trichloroethene	ND		0.40		ppb v/v			05/09/17 14:45	1
Trichlorofluoromethane	ND		0.40		ppb v/v			05/09/17 14:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			05/09/17 14:45	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			05/09/17 14:45	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			05/09/17 14:45	1
Vinyl acetate	ND		0.80		ppb v/v			05/09/17 14:45	1
Vinyl chloride	ND		0.40		ppb v/v			05/09/17 14:45	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

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

Lab Sample ID: MB 320-163512/6

Matrix: Air

Analysis Batch: 163512

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			05/09/17 14:45	1
o-Xylene	ND		0.40		ppb v/v			05/09/17 14:45	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			05/09/17 14:45	1
Benzene	ND		1.3		ug/m3 Air			05/09/17 14:45	1
Benzyl chloride	ND		4.1		ug/m3 Air			05/09/17 14:45	1
Bromodichloromethane	ND		2.0		ug/m3 Air			05/09/17 14:45	1
Bromoform	ND		4.1		ug/m3 Air			05/09/17 14:45	1
Bromomethane	ND		3.1		ug/m3 Air			05/09/17 14:45	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			05/09/17 14:45	1
Carbon disulfide	ND		2.5		ug/m3 Air			05/09/17 14:45	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			05/09/17 14:45	1
Chlorobenzene	ND		1.4		ug/m3 Air			05/09/17 14:45	1
Dibromochloromethane	ND		3.4		ug/m3 Air			05/09/17 14:45	1
Chloroethane	ND		2.1		ug/m3 Air			05/09/17 14:45	1
Chloroform	ND		1.5		ug/m3 Air			05/09/17 14:45	1
Chloromethane	ND		1.7		ug/m3 Air			05/09/17 14:45	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			05/09/17 14:45	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			05/09/17 14:45	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			05/09/17 14:45	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			05/09/17 14:45	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			05/09/17 14:45	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			05/09/17 14:45	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			05/09/17 14:45	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			05/09/17 14:45	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/09/17 14:45	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			05/09/17 14:45	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			05/09/17 14:45	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/09/17 14:45	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			05/09/17 14:45	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			05/09/17 14:45	1
Ethylbenzene	ND		1.7		ug/m3 Air			05/09/17 14:45	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			05/09/17 14:45	1
Hexachlorobutadiene	ND		21		ug/m3 Air			05/09/17 14:45	1
2-Hexanone	ND		1.6		ug/m3 Air			05/09/17 14:45	1
Methylene Chloride	ND		1.4		ug/m3 Air			05/09/17 14:45	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			05/09/17 14:45	1
Styrene	ND		1.7		ug/m3 Air			05/09/17 14:45	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			05/09/17 14:45	1
Tetrachloroethene	ND		2.7		ug/m3 Air			05/09/17 14:45	1
Toluene	ND		1.5		ug/m3 Air			05/09/17 14:45	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			05/09/17 14:45	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			05/09/17 14:45	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			05/09/17 14:45	1
Trichloroethene	ND		2.1		ug/m3 Air			05/09/17 14:45	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			05/09/17 14:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			05/09/17 14:45	1

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

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

Lab Sample ID: MB 320-163512/6
Matrix: Air
Analysis Batch: 163512

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			05/09/17 14:45	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			05/09/17 14:45	1
Vinyl acetate	ND		2.8		ug/m3 Air			05/09/17 14:45	1
Vinyl chloride	ND		1.0		ug/m3 Air			05/09/17 14:45	1
m,p-Xylene	ND		3.5		ug/m3 Air			05/09/17 14:45	1
o-Xylene	ND		1.7		ug/m3 Air			05/09/17 14:45	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		70 - 130					05/09/17 14:45	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 130					05/09/17 14:45	1
Toluene-d8 (Surr)	103		70 - 130					05/09/17 14:45	1

Lab Sample ID: LCS 320-163512/3
Matrix: Air
Analysis Batch: 163512

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	17.2		ppb v/v		86	71 - 131
Benzene	20.0	18.0		ppb v/v		90	68 - 128
Benzyl chloride	20.0	18.2		ppb v/v		91	58 - 120
Bromodichloromethane	20.0	18.8		ppb v/v		94	65 - 130
Bromoform	20.0	21.2		ppb v/v		106	64 - 144
Bromomethane	20.0	19.8		ppb v/v		99	70 - 131
2-Butanone (MEK)	20.0	15.8		ppb v/v		79	71 - 131
Carbon disulfide	20.0	17.2		ppb v/v		86	63 - 123
Carbon tetrachloride	20.0	20.7		ppb v/v		104	67 - 127
Chlorobenzene	20.0	19.2		ppb v/v		96	70 - 132
Dibromochloromethane	20.0	19.5		ppb v/v		98	68 - 128
Chloroethane	20.0	19.3		ppb v/v		96	70 - 131
Chloroform	20.0	18.1		ppb v/v		91	69 - 129
Chloromethane	20.0	19.8		ppb v/v		99	67 - 127
1,2-Dibromoethane (EDB)	20.0	19.7		ppb v/v		98	68 - 131
1,2-Dichlorobenzene	20.0	20.3		ppb v/v		101	73 - 143
1,3-Dichlorobenzene	20.0	20.5		ppb v/v		102	77 - 136
1,4-Dichlorobenzene	20.0	20.4		ppb v/v		102	73 - 143
Dichlorodifluoromethane	20.0	20.3		ppb v/v		101	69 - 129
1,1-Dichloroethane	20.0	18.0		ppb v/v		90	65 - 125
1,2-Dichloroethane	20.0	19.1		ppb v/v		95	71 - 131
1,1-Dichloroethene	20.0	16.7		ppb v/v		83	53 - 128
cis-1,2-Dichloroethene	20.0	18.3		ppb v/v		92	68 - 128
trans-1,2-Dichloroethene	20.0	17.8		ppb v/v		89	70 - 130
1,2-Dichloropropane	20.0	19.0		ppb v/v		95	74 - 128
cis-1,3-Dichloropropene	20.0	20.3		ppb v/v		101	78 - 132
trans-1,3-Dichloropropene	20.0	17.8		ppb v/v		89	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.3		ppb v/v		97	64 - 124
Ethylbenzene	20.0	18.9		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

TestAmerica Job ID: 320-27847-1

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

Lab Sample ID: LCS 320-163512/3

Matrix: Air

Analysis Batch: 163512

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	23.5		ppb v/v		117	42 - 150
2-Hexanone	20.0	15.7		ppb v/v		78	70 - 128
Methylene Chloride	20.0	17.1		ppb v/v		85	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	16.2		ppb v/v		81	73 - 133
Styrene	20.0	19.6		ppb v/v		98	76 - 144
1,1,2,2-Tetrachloroethane	20.0	19.3		ppb v/v		97	75 - 135
Tetrachloroethene	20.0	19.9		ppb v/v		99	56 - 138
Toluene	20.0	18.7		ppb v/v		94	71 - 132
1,2,4-Trichlorobenzene	20.0	23.0		ppb v/v		115	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	19.6		ppb v/v		98	64 - 127
Trichlorofluoromethane	20.0	19.5		ppb v/v		97	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.1		ppb v/v		86	50 - 132
1,2,4-Trimethylbenzene	20.0	18.9		ppb v/v		95	61 - 145
1,3,5-Trimethylbenzene	20.0	19.2		ppb v/v		96	65 - 136
Vinyl acetate	20.0	20.9		ppb v/v		104	77 - 134
Vinyl chloride	20.0	19.4		ppb v/v		97	69 - 129
m,p-Xylene	40.0	38.3		ppb v/v		96	75 - 138
o-Xylene	20.0	19.2		ppb v/v		96	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	40.9		ug/m3 Air		86	71 - 131
Benzene	64	57.6		ug/m3 Air		90	68 - 128
Benzyl chloride	100	94.1		ug/m3 Air		91	58 - 120
Bromodichloromethane	130	126		ug/m3 Air		94	65 - 130
Bromoform	210	219		ug/m3 Air		106	64 - 144
Bromomethane	78	76.8		ug/m3 Air		99	70 - 131
2-Butanone (MEK)	59	46.5		ug/m3 Air		79	71 - 131
Carbon disulfide	62	53.4		ug/m3 Air		86	63 - 123
Carbon tetrachloride	130	130		ug/m3 Air		104	67 - 127
Chlorobenzene	92	88.5		ug/m3 Air		96	70 - 132
Dibromochloromethane	170	166		ug/m3 Air		98	68 - 128
Chloroethane	53	50.9		ug/m3 Air		96	70 - 131
Chloroform	98	88.5		ug/m3 Air		91	69 - 129
Chloromethane	41	40.8		ug/m3 Air		99	67 - 127
1,2-Dibromoethane (EDB)	150	151		ug/m3 Air		98	68 - 131
1,2-Dichlorobenzene	120	122		ug/m3 Air		101	73 - 143
1,3-Dichlorobenzene	120	123		ug/m3 Air		102	77 - 136
1,4-Dichlorobenzene	120	123		ug/m3 Air		102	73 - 143
Dichlorodifluoromethane	99	100		ug/m3 Air		101	69 - 129
1,1-Dichloroethane	81	72.7		ug/m3 Air		90	65 - 125
1,2-Dichloroethane	81	77.3		ug/m3 Air		95	71 - 131
1,1-Dichloroethene	79	66.2		ug/m3 Air		83	53 - 128
cis-1,2-Dichloroethene	79	72.7		ug/m3 Air		92	68 - 128
trans-1,2-Dichloroethene	79	70.7		ug/m3 Air		89	70 - 130
1,2-Dichloropropane	92	88.0		ug/m3 Air		95	74 - 128

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

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

Lab Sample ID: LCS 320-163512/3

Matrix: Air

Analysis Batch: 163512

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	92.0		ug/m3 Air		101	78 - 132
trans-1,3-Dichloropropene	91	81.0		ug/m3 Air		89	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	135		ug/m3 Air		97	64 - 124
Ethylbenzene	87	82.1		ug/m3 Air		95	76 - 136
4-Ethyltoluene	98	91.5		ug/m3 Air		93	62 - 136
Hexachlorobutadiene	210	250		ug/m3 Air		117	42 - 150
2-Hexanone	82	64.3		ug/m3 Air		78	70 - 128
Methylene Chloride	69	59.3		ug/m3 Air		85	65 - 125
4-Methyl-2-pentanone (MIBK)	82	66.5		ug/m3 Air		81	73 - 133
Styrene	85	83.6		ug/m3 Air		98	76 - 144
1,1,2,2-Tetrachloroethane	140	133		ug/m3 Air		97	75 - 135
Tetrachloroethene	140	135		ug/m3 Air		99	56 - 138
Toluene	75	70.6		ug/m3 Air		94	71 - 132
1,2,4-Trichlorobenzene	150	170		ug/m3 Air		115	59 - 150
1,1,1-Trichloroethane	110	104		ug/m3 Air		95	65 - 124
1,1,2-Trichloroethane	110	107		ug/m3 Air		98	71 - 131
Trichloroethene	110	105		ug/m3 Air		98	64 - 127
Trichlorofluoromethane	110	109		ug/m3 Air		97	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	131		ug/m3 Air		86	50 - 132
1,2,4-Trimethylbenzene	98	93.1		ug/m3 Air		95	61 - 145
1,3,5-Trimethylbenzene	98	94.3		ug/m3 Air		96	65 - 136
Vinyl acetate	70	73.5		ug/m3 Air		104	77 - 134
Vinyl chloride	51	49.7		ug/m3 Air		97	69 - 129
m,p-Xylene	170	166		ug/m3 Air		96	75 - 138
o-Xylene	87	83.6		ug/m3 Air		96	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		70 - 130
1,2-Dichloroethane-d4 (Surr)	98		70 - 130
Toluene-d8 (Surr)	99		70 - 130

Lab Sample ID: LCSD 320-163512/4

Matrix: Air

Analysis Batch: 163512

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	17.6		ppb v/v		88	71 - 131	2	25
Benzene	20.0	18.3		ppb v/v		92	68 - 128	2	25
Benzyl chloride	20.0	18.2		ppb v/v		91	58 - 120	0	25
Bromodichloromethane	20.0	19.0		ppb v/v		95	65 - 130	1	25
Bromoform	20.0	21.2		ppb v/v		106	64 - 144	0	25
Bromomethane	20.0	20.5		ppb v/v		102	70 - 131	3	25
2-Butanone (MEK)	20.0	16.4		ppb v/v		82	71 - 131	4	25
Carbon disulfide	20.0	17.8		ppb v/v		89	63 - 123	4	25
Carbon tetrachloride	20.0	20.7		ppb v/v		103	67 - 127	0	25
Chlorobenzene	20.0	19.5		ppb v/v		97	70 - 132	1	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

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

Lab Sample ID: LCSD 320-163512/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 163512

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	19.8		ppb v/v		99	68 - 128	1	25
Chloroethane	20.0	20.1		ppb v/v		100	70 - 131	4	25
Chloroform	20.0	18.7		ppb v/v		93	69 - 129	3	25
Chloromethane	20.0	19.7		ppb v/v		99	67 - 127	0	25
1,2-Dibromoethane (EDB)	20.0	19.9		ppb v/v		100	68 - 131	1	25
1,2-Dichlorobenzene	20.0	20.3		ppb v/v		101	73 - 143	0	25
1,3-Dichlorobenzene	20.0	20.6		ppb v/v		103	77 - 136	1	25
1,4-Dichlorobenzene	20.0	20.4		ppb v/v		102	73 - 143	0	25
Dichlorodifluoromethane	20.0	20.6		ppb v/v		103	69 - 129	2	25
1,1-Dichloroethane	20.0	18.4		ppb v/v		92	65 - 125	3	25
1,2-Dichloroethane	20.0	19.1		ppb v/v		96	71 - 131	0	25
1,1-Dichloroethene	20.0	17.1		ppb v/v		86	53 - 128	3	25
cis-1,2-Dichloroethene	20.0	19.1		ppb v/v		96	68 - 128	4	25
trans-1,2-Dichloroethene	20.0	18.4		ppb v/v		92	70 - 130	3	25
1,2-Dichloropropane	20.0	19.4		ppb v/v		97	74 - 128	2	25
cis-1,3-Dichloropropene	20.0	20.3		ppb v/v		101	78 - 132	0	25
trans-1,3-Dichloropropene	20.0	17.7		ppb v/v		89	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.4		ppb v/v		97	64 - 124	0	25
Ethylbenzene	20.0	19.2		ppb v/v		96	76 - 136	1	25
4-Ethyltoluene	20.0	18.8		ppb v/v		94	62 - 136	1	25
Hexachlorobutadiene	20.0	23.6		ppb v/v		118	42 - 150	1	25
2-Hexanone	20.0	15.8		ppb v/v		79	70 - 128	0	25
Methylene Chloride	20.0	17.5		ppb v/v		88	65 - 125	3	25
4-Methyl-2-pentanone (MIBK)	20.0	16.1		ppb v/v		80	73 - 133	1	25
Styrene	20.0	19.8		ppb v/v		99	76 - 144	1	25
1,1,2,2-Tetrachloroethane	20.0	19.4		ppb v/v		97	75 - 135	0	25
Tetrachloroethene	20.0	20.0		ppb v/v		100	56 - 138	1	25
Toluene	20.0	19.2		ppb v/v		96	71 - 132	3	25
1,2,4-Trichlorobenzene	20.0	23.1		ppb v/v		115	59 - 150	0	25
1,1,1-Trichloroethane	20.0	19.7		ppb v/v		99	65 - 124	4	25
1,1,2-Trichloroethane	20.0	19.7		ppb v/v		99	71 - 131	1	25
Trichloroethene	20.0	19.9		ppb v/v		99	64 - 127	1	25
Trichlorofluoromethane	20.0	20.0		ppb v/v		100	68 - 128	3	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.7		ppb v/v		88	50 - 132	3	25
1,2,4-Trimethylbenzene	20.0	19.1		ppb v/v		95	61 - 145	1	25
1,3,5-Trimethylbenzene	20.0	19.3		ppb v/v		97	65 - 136	1	25
Vinyl acetate	20.0	21.2		ppb v/v		106	77 - 134	2	25
Vinyl chloride	20.0	19.3		ppb v/v		96	69 - 129	1	25
m,p-Xylene	40.0	38.8		ppb v/v		97	75 - 138	1	25
o-Xylene	20.0	19.3		ppb v/v		97	77 - 132	1	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	41.7		ug/m3 Air		88	71 - 131	2	25
Benzene	64	58.5		ug/m3 Air		92	68 - 128	2	25
Benzyl chloride	100	94.5		ug/m3 Air		91	58 - 120	0	25
Bromodichloromethane	130	127		ug/m3 Air		95	65 - 130	1	25
Bromoform	210	219		ug/m3 Air		106	64 - 144	0	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

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

Lab Sample ID: LCSD 320-163512/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 163512

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	79.5		ug/m3 Air		102	70 - 131	3	25
2-Butanone (MEK)	59	48.5		ug/m3 Air		82	71 - 131	4	25
Carbon disulfide	62	55.4		ug/m3 Air		89	63 - 123	4	25
Carbon tetrachloride	130	130		ug/m3 Air		103	67 - 127	0	25
Chlorobenzene	92	89.6		ug/m3 Air		97	70 - 132	1	25
Dibromochloromethane	170	169		ug/m3 Air		99	68 - 128	1	25
Chloroethane	53	52.9		ug/m3 Air		100	70 - 131	4	25
Chloroform	98	91.3		ug/m3 Air		93	69 - 129	3	25
Chloromethane	41	40.7		ug/m3 Air		99	67 - 127	0	25
1,2-Dibromoethane (EDB)	150	153		ug/m3 Air		100	68 - 131	1	25
1,2-Dichlorobenzene	120	122		ug/m3 Air		101	73 - 143	0	25
1,3-Dichlorobenzene	120	124		ug/m3 Air		103	77 - 136	1	25
1,4-Dichlorobenzene	120	123		ug/m3 Air		102	73 - 143	0	25
Dichlorodifluoromethane	99	102		ug/m3 Air		103	69 - 129	2	25
1,1-Dichloroethane	81	74.5		ug/m3 Air		92	65 - 125	3	25
1,2-Dichloroethane	81	77.4		ug/m3 Air		96	71 - 131	0	25
1,1-Dichloroethene	79	68.0		ug/m3 Air		86	53 - 128	3	25
cis-1,2-Dichloroethene	79	75.8		ug/m3 Air		96	68 - 128	4	25
trans-1,2-Dichloroethene	79	73.0		ug/m3 Air		92	70 - 130	3	25
1,2-Dichloropropane	92	89.5		ug/m3 Air		97	74 - 128	2	25
cis-1,3-Dichloropropene	91	91.9		ug/m3 Air		101	78 - 132	0	25
trans-1,3-Dichloropropene	91	80.5		ug/m3 Air		89	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	135		ug/m3 Air		97	64 - 124	0	25
Ethylbenzene	87	83.2		ug/m3 Air		96	76 - 136	1	25
4-Ethyltoluene	98	92.5		ug/m3 Air		94	62 - 136	1	25
Hexachlorobutadiene	210	252		ug/m3 Air		118	42 - 150	1	25
2-Hexanone	82	64.6		ug/m3 Air		79	70 - 128	0	25
Methylene Chloride	69	60.9		ug/m3 Air		88	65 - 125	3	25
4-Methyl-2-pentanone (MIBK)	82	65.8		ug/m3 Air		80	73 - 133	1	25
Styrene	85	84.4		ug/m3 Air		99	76 - 144	1	25
1,1,2,2-Tetrachloroethane	140	133		ug/m3 Air		97	75 - 135	0	25
Tetrachloroethene	140	136		ug/m3 Air		100	56 - 138	1	25
Toluene	75	72.4		ug/m3 Air		96	71 - 132	3	25
1,2,4-Trichlorobenzene	150	171		ug/m3 Air		115	59 - 150	0	25
1,1,1-Trichloroethane	110	108		ug/m3 Air		99	65 - 124	4	25
1,1,2-Trichloroethane	110	108		ug/m3 Air		99	71 - 131	1	25
Trichloroethene	110	107		ug/m3 Air		99	64 - 127	1	25
Trichlorofluoromethane	110	113		ug/m3 Air		100	68 - 128	3	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	135		ug/m3 Air		88	50 - 132	3	25
1,2,4-Trimethylbenzene	98	93.7		ug/m3 Air		95	61 - 145	1	25
1,3,5-Trimethylbenzene	98	95.0		ug/m3 Air		97	65 - 136	1	25
Vinyl acetate	70	74.8		ug/m3 Air		106	77 - 134	2	25
Vinyl chloride	51	49.3		ug/m3 Air		96	69 - 129	1	25
m,p-Xylene	170	168		ug/m3 Air		97	75 - 138	1	25
o-Xylene	87	84.0		ug/m3 Air		97	77 - 132	1	25

TestAmerica Sacramento

QC Sample Results

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

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

Lab Sample ID: LCSD 320-163512/4

Matrix: Air

Analysis Batch: 163512

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	103		70 - 130
1,2-Dichloroethane-d4 (Surr)	97		70 - 130
Toluene-d8 (Surr)	98		70 - 130

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QC Association Summary

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

Air - GC/MS VOA

Analysis Batch: 163512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-27847-1	SVE_North_Effluent	Total/NA	Air	TO-15	
MB 320-163512/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-163512/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-163512/4	Lab Control Sample Dup	Total/NA	Air	TO-15	

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Lab Chronicle

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

Client Sample ID: SVE_North_Effluent

Lab Sample ID: 320-27847-1

Date Collected: 04/24/17 16:26

Matrix: Air

Date Received: 05/01/17 09:00

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	505 mL	250 mL	163512	05/09/17 15:42	SRV	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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Accreditation/Certification Summary

Client: Apex Companies LLC
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

Laboratory: TestAmerica Portland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
N/A	N/A	N/A	None on record.	

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Apex Companies LLC
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-27847-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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: 320-27847-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-27847-1	SVE_North_Effluent	Air	04/24/17 16:26	05/01/17 09:00

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Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-27847-1

Login Number: 27847

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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 (excluding tests with immediate HTs)	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 TO-15 SCAN
 Date Cleaned/Batch ID 4-10-17 320-27349
 Date of QC 4/12/17
 Data File Number C:\MSDCHEM\1\DATA\170412\



320-27349 Chain of Custody

MS6041207.d
CANISTER ID NUMBERS

<u>34001223 *</u>	<u>34001282</u>	
<u>7151</u>	<u>34001210</u>	
<u>34000175</u>	<u>34000528</u>	
<u>34001421</u>	<u>34001273</u>	
<u>34000265</u>		
<u>34001402</u>		
<u>34001255</u>		
<u>34000216</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]
1st level Reviewed By:

4/13/17
Date:

[Signature]
2nd level Reviewed By:

4/14/17
Date:

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-27349-1
 SDG No.: _____
 Client Sample ID: 34001223 Lab Sample ID: 320-27349-1
 Matrix: Air Lab File ID: MS6041207.D
 Analysis Method: TO-15 Date Collected: 04/10/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 04/12/2017 12:45
 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.: 159185 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	0.27
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.: 320-27349-1
 SDG No.: _____
 Client Sample ID: 34001223 Lab Sample ID: 320-27349-1
 Matrix: Air Lab File ID: MS6041207.D
 Analysis Method: TO-15 Date Collected: 04/10/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 04/12/2017 12:45
 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.: 159185 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	0.12
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	0.21
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.: 320-27349-1
 SDG No.: _____
 Client Sample ID: 34001223 Lab Sample ID: 320-27349-1
 Matrix: Air Lab File ID: MS6041207.D
 Analysis Method: TO-15 Date Collected: 04/10/2017 00:00
 Sample wt/vol: 500 (mL) Date Analyzed: 04/12/2017 12:45
 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.: 159185 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)	109		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: \\ChromNA\Sacramento\ChromData\ATMS6\20170412-41817.b\MS6041207.D
 Lims ID: 320-27349-A-1
 Client ID: 34001223
 Sample Type: Client
 Inject. Date: 12-Apr-2017 12:45:30 ALS Bottle#: 7 Worklist Smp#: 7
 Purge Vol: 25.000 mL Dil. Factor: 1.0000
 Sample Info: 320-27349-A-1
 Misc. Info.: 500 mL CAN CERT
 Operator ID: LHS Instrument ID: ATMS6
 Method: \\ChromNA\Sacramento\ChromData\ATMS6\20170412-41817.b\TO15_ATMS6.m
 Limit Group: MSA - TO15 - ICAL
 Last Update: 13-Apr-2017 10:48:26 Calib Date: 02-Mar-2017 08:41:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS6\20170301-40364.b\MS6030123.D
 Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
 Process Host: XAWRK022

First Level Reviewer: leeh Date: 13-Apr-2017 10:47:58

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	13.088	13.106	-0.018	96	26389	4.00	
* 2 1,4-Difluorobenzene	114	15.242	15.248	-0.006	96	104880	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.982	21.988	-0.006	91	93673	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	14.305	14.305	0.000	98	55713	4.34	
\$ 5 Toluene-d8 (Surr)	100	18.697	18.703	-0.006	97	62487	4.20	
\$ 6 4-Bromofluorobenzene (Surr	95	24.550	24.550	0.000	85	63013	4.36	

Reagents:

VAMSIS20_00002 Amount Added: 50.00 Units: mL Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20170412-41817.b\MS6041207.D

Injection Date: 12-Apr-2017 12:45:30

Instrument ID: ATMS6

Operator ID: LHS

Lims ID: 320-27349-A-1

Lab Sample ID: 320-27349-1

Worklist Smp#: 7

Client ID: 34001223

Purge Vol: 25.000 mL

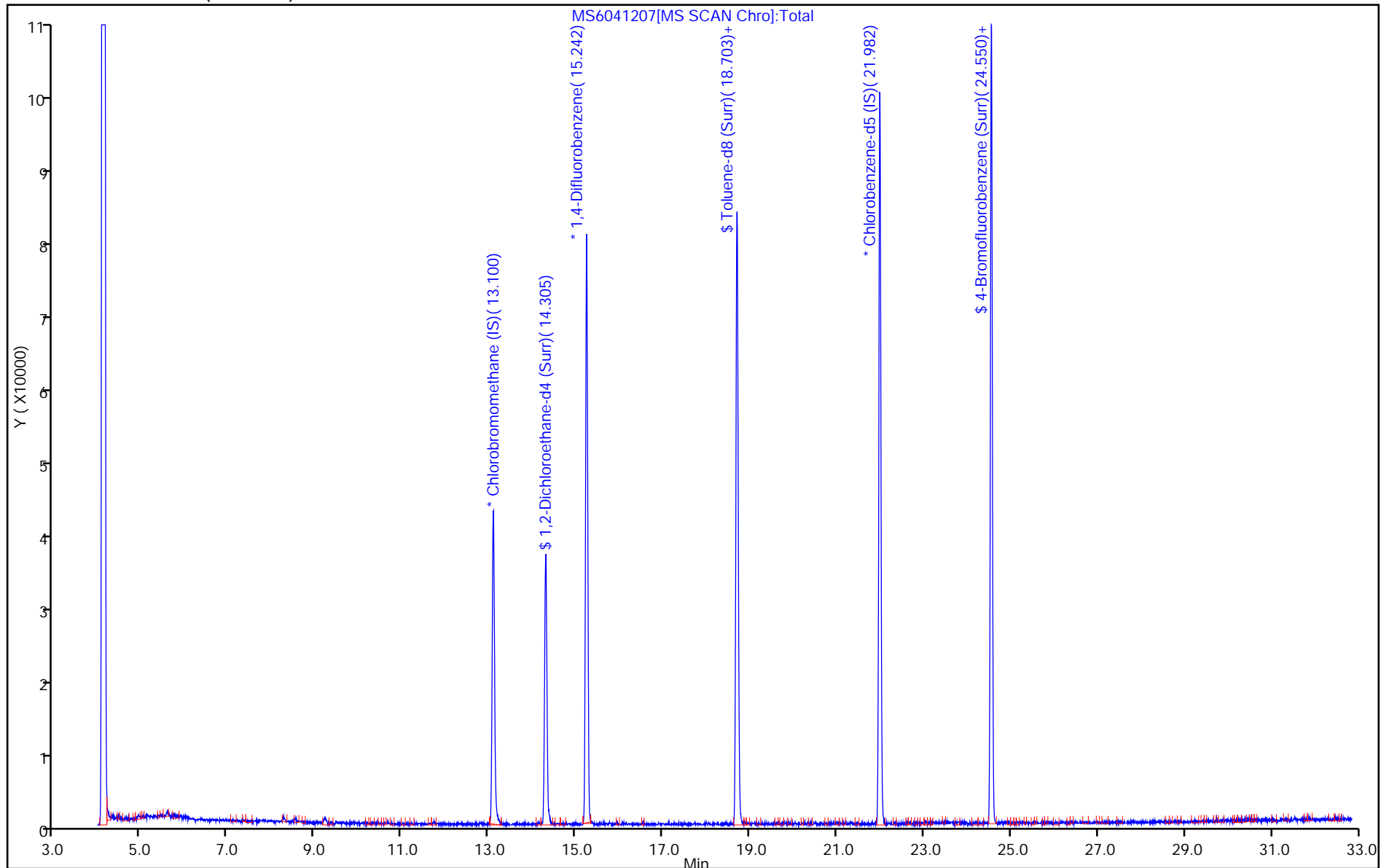
Dil. Factor: 1.0000

ALS Bottle#: 7

Method: TO15_ATMS6

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



June 28, 2017

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

RE: Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Dear Stephanie Bosze-Salisbury:

Enclosed are the analytical results for sample(s) received by the laboratory on June 16, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC 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
(530) 297-4800
Project Manager

Enclosures

cc: Kelsi Evans, Apex Companies, LLC



REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792

California Certification #2973

California Certification #2973

Montana Certificate #CERT0103

Alaska Certification UST-107

Alaska Certification UST-107

Alaska Certification #MN01084

Arizona Department of Health Certification #AZ0785

Minnesota Dept of Health Certification #: 027-137-445

North Dakota Certification: # R-203

Wisconsin DNR Certification #: 998027470

WA Department of Ecology Lab ID# C1007

Nevada DNR #MN010842015-1

Oklahoma Department of Environmental Quality

California Certification #2973

Davis Certification IDs

2795 Second Street Suite 300 Davis, CA 95618

North Dakota Certification #: R-214

Oregon Certification #: CA300002

Washington Certification #: C926-15a

California Certification #: 08263CA

Minnesota Department of Health Certification #: 006-999-465

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1289722001	MW-25i	Water	06/15/17 07:48	06/16/17 09:55
1289722002	MW-24i	Water	06/15/17 08:24	06/16/17 09:55
1289722003	MW-24d	Water	06/15/17 09:06	06/16/17 09:55
1289722004	MW-13	Water	06/15/17 09:56	06/16/17 09:55
1289722005	MGMS2-40	Water	06/15/17 10:37	06/16/17 09:55
1289722006	MGMS2-60	Water	06/15/17 11:00	06/16/17 09:55
1289722007	MW-1	Water	06/12/17 12:30	06/16/17 09:55
1289722008	MGMS1-43	Water	06/12/17 13:10	06/16/17 09:55
1289722009	MGMS1-60	Water	06/12/17 13:36	06/16/17 09:55
1289722010	MGMS3-40	Water	06/12/17 14:00	06/16/17 09:55
1289722011	MGMS3-60	Water	06/12/17 14:20	06/16/17 09:55
1289722012	MW-12	Water	06/12/17 14:50	06/16/17 09:55
1289722013	MW-12 DUP	Water	06/12/17 14:50	06/16/17 09:55
1289722014	MP-1	Water	06/14/17 14:50	06/16/17 09:55
1289722015	EX	Water	06/14/17 14:18	06/16/17 09:55
1289722016	MW-19	Water	06/14/17 13:36	06/16/17 09:55
1289722017	MW-19 DUP	Water	06/14/17 13:36	06/16/17 09:55
1289722018	MW-16	Water	06/14/17 12:32	06/16/17 09:55
1289722019	MW-19i	Water	06/14/17 11:52	06/16/17 09:55
1289722020	MW-20i	Water	06/14/17 11:18	06/16/17 09:55
1289722021	MW-32s	Water	06/14/17 10:33	06/16/17 09:55
1289722022	MW-5	Water	06/14/17 09:50	06/16/17 09:55
1289722023	MW-7	Water	06/14/17 09:05	06/16/17 09:55
1289722024	MW-7 DUP	Water	06/14/17 09:05	06/16/17 09:55
1289722025	MW-9	Water	06/14/17 08:13	06/16/17 09:55
1289722026	MW-3	Water	06/14/17 07:45	06/16/17 09:55
1289722027	MW-18i	Water	06/13/17 14:42	06/16/17 09:55
1289722028	MW-21i-40	Water	06/13/17 14:10	06/16/17 09:55
1289722029	MW-21i-105	Water	06/13/17 13:32	06/16/17 09:55
1289722030	MW-22i	Water	06/13/17 12:45	06/16/17 09:55
1289722031	MW-26	Water	06/13/17 11:40	06/16/17 09:55
1289722032	MW-23i	Water	06/13/17 10:34	06/16/17 09:55
1289722033	MW-14	Water	06/13/17 10:02	06/16/17 09:55
1289722034	S-2	Water	06/13/17 09:15	06/16/17 09:55
1289722035	S-1	Water	06/13/17 08:40	06/16/17 09:55
1289722036	MW-8	Water	06/13/17 08:03	06/16/17 09:55
1289722037	Field Blank	Water	06/12/17 15:40	06/16/17 09:55

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1289722038	Field Blank	Water	06/13/17 15:00	06/16/17 09:55
1289722039	Field Blank	Water	06/14/17 15:10	06/16/17 09:55
1289722040	Field Blank	Water	06/15/17 09:30	06/16/17 09:55
1289722041	Equipment Blank	Water	06/15/17 09:32	06/16/17 09:55
1289722042	Trip Blank	Water	06/12/17 00:00	06/16/17 09:55

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1289722001	MW-25i	EPA 8260B	JCP	31	PASI-DAV
1289722002	MW-24i	RSK 175	MJL	3	PASI-DAV
		EPA 8260B	SJ1	31	PASI-DAV
		SM 5310B	MCT	1	PASI-V
1289722003	MW-24d	EPA 8260B	SJ1	31	PASI-DAV
1289722004	MW-13	EPA 8260B	JCP	31	PASI-DAV
1289722005	MGMS2-40	RSK 175	MJL	3	PASI-DAV
		EPA 8260B	JCP, SJ1	31	PASI-DAV
		SM 5310B	MCT	1	PASI-V
1289722006	MGMS2-60	EPA 8260B	SJ1	31	PASI-DAV
1289722007	MW-1	EPA 8260B	SJ1	31	PASI-DAV
1289722008	MGMS1-43	EPA 8260B	JCP	31	PASI-DAV
1289722009	MGMS1-60	EPA 8260B	SJ1	31	PASI-DAV
1289722010	MGMS3-40	EPA 8260B	JCP	31	PASI-DAV
1289722011	MGMS3-60	EPA 8260B	JCP	31	PASI-DAV
1289722012	MW-12	RSK 175	MJL	3	PASI-DAV
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-V
1289722013	MW-12 DUP	EPA 8260B	JCP	31	PASI-DAV
1289722014	MP-1	RSK 175	MJL	3	PASI-DAV
		EPA 8260B	SJ1	31	PASI-DAV
		SM 5310B	MCT	1	PASI-V
1289722015	EX	RSK 175	MJL	3	PASI-DAV
		EPA 8260B	SJ1	31	PASI-DAV
		SM 5310B	MCT	1	PASI-V
1289722016	MW-19	EPA 8260B	JCP	31	PASI-DAV
1289722017	MW-19 DUP	EPA 8260B	JCP	31	PASI-DAV
1289722018	MW-16	EPA 8260B	SJ1	31	PASI-DAV
1289722019	MW-19i	EPA 8260B	SJ1	31	PASI-DAV
1289722020	MW-20i	EPA 8260B	SJ1	31	PASI-DAV
1289722021	MW-32s	EPA 8260B	SJ1	31	PASI-DAV
1289722022	MW-5	EPA 8260B	SJ1	31	PASI-DAV
1289722023	MW-7	RSK 175	MJL	3	PASI-DAV
		EPA 8260B	SJ1	31	PASI-DAV
		SM 5310B	MCT	1	PASI-V
1289722024	MW-7 DUP	EPA 8260B	SJ1	31	PASI-DAV
1289722025	MW-9	EPA 8260B	SJ1	31	PASI-DAV

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SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1289722026	MW-3	EPA 8260B	SJ1	31	PASI-DAV
1289722027	MW-18i	EPA 8260B	SJ1	31	PASI-DAV
1289722028	MW-21i-40	EPA 8260B	SJ1	31	PASI-DAV
1289722029	MW-21i-105	EPA 8260B	SJ1	31	PASI-DAV
1289722030	MW-22i	EPA 8260B	SJ1	31	PASI-DAV
1289722031	MW-26	EPA 8260B	SJ1	31	PASI-DAV
1289722032	MW-23i	EPA 8260B	SJ1	31	PASI-DAV
1289722033	MW-14	EPA 8260B	SJ1	31	PASI-DAV
1289722034	S-2	EPA 8260B	SJ1	31	PASI-DAV
1289722035	S-1	EPA 8260B	SJ1	31	PASI-DAV
1289722036	MW-8	EPA 8260B	SJ1	31	PASI-DAV
1289722037	Field Blank	EPA 8260B	SJ1	31	PASI-DAV
1289722038	Field Blank	EPA 8260B	SJ1	31	PASI-DAV
1289722039	Field Blank	EPA 8260B	SJ1	31	PASI-DAV
1289722040	Field Blank	EPA 8260B	SJ1	31	PASI-DAV
1289722041	Equipment Blank	EPA 8260B	JCP	31	PASI-DAV

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-25i		Lab ID: 1289722001		Collected: 06/15/17 07:48		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/20/17 23:47	75-27-4		
Bromoform	ND	ug/L	0.50	1		06/20/17 23:47	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/20/17 23:47	74-83-9	L1	
Carbon tetrachloride	ND	ug/L	0.50	1		06/20/17 23:47	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/20/17 23:47	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/20/17 23:47	75-00-3	L1	
Chloroform	ND	ug/L	0.50	1		06/20/17 23:47	67-66-3		
Chloromethane	ND	ug/L	2.0	1		06/20/17 23:47	74-87-3	L1	
Dibromochloromethane	ND	ug/L	0.50	1		06/20/17 23:47	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 23:47	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 23:47	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 23:47	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/20/17 23:47	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		06/20/17 23:47	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/20/17 23:47	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/17 23:47	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/17 23:47	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/20/17 23:47	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 23:47	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 23:47	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/20/17 23:47	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/17 23:47	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		06/20/17 23:47	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/20/17 23:47	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/17 23:47	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		06/20/17 23:47	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/20/17 23:47	75-69-4	L1	
Vinyl chloride	ND	ug/L	0.50	1		06/20/17 23:47	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	102	%	75-125	1		06/20/17 23:47	17060-07-0		
Toluene-d8 (S)	93	%	75-125	1		06/20/17 23:47	2037-26-5		
4-Bromofluorobenzene (S)	93	%	75-125	1		06/20/17 23:47	460-00-4		

Sample: MW-24i		Lab ID: 1289722002		Collected: 06/15/17 08:24		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
RSK 175 AIR Headspace		Analytical Method: RSK 175							
Ethane	ND	ug/L	10.0	1		06/20/17 14:07	74-84-0		
Ethene	ND	ug/L	10.0	1		06/20/17 14:07	74-85-1		
Methane	ND	ug/L	10.0	1		06/20/17 14:07	74-82-8		
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/16/17 23:21	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/16/17 23:21	75-25-2		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-24i		Lab ID: 1289722002		Collected: 06/15/17 08:24		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromomethane	ND	ug/L	20.0	1		06/16/17 23:21	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/16/17 23:21	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/16/17 23:21	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/16/17 23:21	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/16/17 23:21	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/16/17 23:21	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/16/17 23:21	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:21	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:21	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:21	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/16/17 23:21	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/16/17 23:21	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/16/17 23:21	75-35-4		
cis-1,2-Dichloroethene	3.2	ug/L	0.50	1		06/16/17 23:21	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/16/17 23:21	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/16/17 23:21	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/16/17 23:21	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/16/17 23:21	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/16/17 23:21	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/16/17 23:21	79-34-5		
Tetrachloroethene	6.6	ug/L	0.50	1		06/16/17 23:21	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/16/17 23:21	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/16/17 23:21	79-00-5		
Trichloroethene	2.8	ug/L	0.50	1		06/16/17 23:21	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/16/17 23:21	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/16/17 23:21	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	85	%	75-125	1		06/16/17 23:21	17060-07-0		
Toluene-d8 (S)	96	%	75-125	1		06/16/17 23:21	2037-26-5		
4-Bromofluorobenzene (S)	96	%	75-125	1		06/16/17 23:21	460-00-4		

Sample: MW-24d		Lab ID: 1289722003		Collected: 06/15/17 09:06		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Total Organic Carbon	1.2	mg/L	1.0	1		06/19/17 14:33	7440-44-0		

Sample: MW-24d		Lab ID: 1289722003		Collected: 06/15/17 09:06		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/16/17 23:40	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/16/17 23:40	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/16/17 23:40	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/16/17 23:40	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/16/17 23:40	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/16/17 23:40	75-00-3		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-24d		Lab ID: 1289722003		Collected: 06/15/17 09:06		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Chloroform	ND	ug/L	0.50	1		06/16/17 23:40	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/16/17 23:40	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/16/17 23:40	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:40	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:40	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:40	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/16/17 23:40	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/16/17 23:40	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/16/17 23:40	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/16/17 23:40	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/16/17 23:40	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/16/17 23:40	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/16/17 23:40	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/16/17 23:40	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/16/17 23:40	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/16/17 23:40	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		06/16/17 23:40	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/16/17 23:40	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/16/17 23:40	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		06/16/17 23:40	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/16/17 23:40	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/16/17 23:40	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	86	%	75-125	1		06/16/17 23:40	17060-07-0		
Toluene-d8 (S)	97	%	75-125	1		06/16/17 23:40	2037-26-5		
4-Bromofluorobenzene (S)	93	%	75-125	1		06/16/17 23:40	460-00-4		

Sample: MW-13		Lab ID: 1289722004		Collected: 06/15/17 09:56		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	1.0	2		06/21/17 22:14	75-27-4		
Bromoform	ND	ug/L	1.0	2		06/21/17 22:14	75-25-2		
Bromomethane	ND	ug/L	40.0	2		06/21/17 22:14	74-83-9		
Carbon tetrachloride	ND	ug/L	1.0	2		06/21/17 22:14	56-23-5		
Chlorobenzene	ND	ug/L	1.0	2		06/21/17 22:14	108-90-7		
Chloroethane	ND	ug/L	4.0	2		06/21/17 22:14	75-00-3		
Chloroform	ND	ug/L	1.0	2		06/21/17 22:14	67-66-3		
Chloromethane	ND	ug/L	4.0	2		06/21/17 22:14	74-87-3		
Dibromochloromethane	ND	ug/L	1.0	2		06/21/17 22:14	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	1.0	2		06/21/17 22:14	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	1.0	2		06/21/17 22:14	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	1.0	2		06/21/17 22:14	106-46-7		
1,1-Dichloroethane	ND	ug/L	1.0	2		06/21/17 22:14	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	2		06/21/17 22:14	107-06-2		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-13	Lab ID: 1289722004	Collected: 06/15/17 09:56	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1-Dichloroethene	1.2	ug/L	1.0	2		06/21/17 22:14	75-35-4	
cis-1,2-Dichloroethene	272	ug/L	1.0	2		06/21/17 22:14	156-59-2	
trans-1,2-Dichloroethene	1.6	ug/L	1.0	2		06/21/17 22:14	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	2		06/21/17 22:14	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	1.0	2		06/21/17 22:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	2		06/21/17 22:14	10061-02-6	
Methylene Chloride	ND	ug/L	10.0	2		06/21/17 22:14	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	2		06/21/17 22:14	79-34-5	
Tetrachloroethene	97.7	ug/L	1.0	2		06/21/17 22:14	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	1.0	2		06/21/17 22:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	2		06/21/17 22:14	79-00-5	
Trichloroethene	56.3	ug/L	1.0	2		06/21/17 22:14	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	2		06/21/17 22:14	75-69-4	
Vinyl chloride	4.1	ug/L	1.0	2		06/21/17 22:14	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%	75-125	2		06/21/17 22:14	17060-07-0	
Toluene-d8 (S)	93	%	75-125	2		06/21/17 22:14	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125	2		06/21/17 22:14	460-00-4	

Sample: MGMS2-40	Lab ID: 1289722005	Collected: 06/15/17 10:37	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	132	ug/L	10.0	1		06/20/17 14:14	74-84-0	
Ethene	128	ug/L	10.0	1		06/20/17 14:14	74-85-1	
Methane	5070	ug/L	10.0	1		06/20/17 14:14	74-82-8	
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 00:07	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/21/17 00:07	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 00:07	74-83-9	L1
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 00:07	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 00:07	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 00:07	75-00-3	L1
Chloroform	ND	ug/L	0.50	1		06/21/17 00:07	67-66-3	
Chloromethane	ND	ug/L	2.0	1		06/21/17 00:07	74-87-3	L1
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 00:07	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 00:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 00:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 00:07	106-46-7	
1,1-Dichloroethane	38.6	ug/L	0.50	1		06/21/17 00:07	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/21/17 00:07	107-06-2	
1,1-Dichloroethene	3.5	ug/L	0.50	1		06/21/17 00:07	75-35-4	
cis-1,2-Dichloroethene	46.2	ug/L	0.50	1		06/21/17 00:07	156-59-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MGMS2-40		Lab ID: 1289722005		Collected: 06/15/17 10:37	Received: 06/16/17 09:55	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 00:07	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 00:07	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 00:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 00:07	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 00:07	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 00:07	79-34-5	
Tetrachloroethene	5.1	ug/L	0.50	1		06/21/17 00:07	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 00:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 00:07	79-00-5	
Trichloroethene	4.9	ug/L	0.50	1		06/21/17 00:07	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 00:07	75-69-4	L1
Vinyl chloride	98.9	ug/L	5.0	10		06/20/17 02:28	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	75-125	1		06/21/17 00:07	17060-07-0	
Toluene-d8 (S)	92	%	75-125	1		06/21/17 00:07	2037-26-5	
4-Bromofluorobenzene (S)	94	%	75-125	1		06/21/17 00:07	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	7.0	mg/L	1.0	1		06/19/17 14:52	7440-44-0	

Sample: MGMS2-60		Lab ID: 1289722006		Collected: 06/15/17 11:00	Received: 06/16/17 09:55	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/16/17 23:59	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/16/17 23:59	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/16/17 23:59	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/16/17 23:59	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/16/17 23:59	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/16/17 23:59	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/16/17 23:59	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/16/17 23:59	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/16/17 23:59	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:59	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:59	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/16/17 23:59	106-46-7	
1,1-Dichloroethane	0.88	ug/L	0.50	1		06/16/17 23:59	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/16/17 23:59	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/16/17 23:59	75-35-4	
cis-1,2-Dichloroethene	20.7	ug/L	0.50	1		06/16/17 23:59	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/16/17 23:59	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/16/17 23:59	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/16/17 23:59	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/16/17 23:59	10061-02-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MGMS2-60		Lab ID: 1289722006	Collected: 06/15/17 11:00	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Methylene Chloride	ND	ug/L	5.0	1		06/16/17 23:59	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/16/17 23:59	79-34-5	
Tetrachloroethene	40.4	ug/L	0.50	1		06/16/17 23:59	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/16/17 23:59	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/16/17 23:59	79-00-5	
Trichloroethene	17.3	ug/L	0.50	1		06/16/17 23:59	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/16/17 23:59	75-69-4	
Vinyl chloride	1.3	ug/L	0.50	1		06/16/17 23:59	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%	75-125	1		06/16/17 23:59	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/16/17 23:59	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125	1		06/16/17 23:59	460-00-4	

Sample: MW-1		Lab ID: 1289722007	Collected: 06/12/17 12:30	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/17/17 00:18	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/17/17 00:18	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/17/17 00:18	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/17/17 00:18	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/17/17 00:18	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/17/17 00:18	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/17/17 00:18	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/17/17 00:18	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/17/17 00:18	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/17/17 00:18	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/17/17 00:18	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/17/17 00:18	106-46-7	
1,1-Dichloroethane	2.1	ug/L	0.50	1		06/17/17 00:18	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/17/17 00:18	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/17/17 00:18	75-35-4	
cis-1,2-Dichloroethene	9.9	ug/L	0.50	1		06/17/17 00:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/17/17 00:18	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/17/17 00:18	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/17/17 00:18	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/17/17 00:18	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/17/17 00:18	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/17/17 00:18	79-34-5	
Tetrachloroethene	4.4	ug/L	0.50	1		06/17/17 00:18	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/17/17 00:18	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/17/17 00:18	79-00-5	
Trichloroethene	3.1	ug/L	0.50	1		06/17/17 00:18	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/17/17 00:18	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/17/17 00:18	75-01-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MW-1		Lab ID: 1289722007	Collected: 06/12/17 12:30	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%	75-125	1		06/17/17 00:18	17060-07-0	
Toluene-d8 (S)	97	%	75-125	1		06/17/17 00:18	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125	1		06/17/17 00:18	460-00-4	

Sample: MGMS1-43		Lab ID: 1289722008	Collected: 06/12/17 13:10	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	8.3	16.67		06/21/17 23:54	75-27-4	
Bromoform	ND	ug/L	8.3	16.67		06/21/17 23:54	75-25-2	
Bromomethane	ND	ug/L	333	16.67		06/21/17 23:54	74-83-9	
Carbon tetrachloride	ND	ug/L	8.3	16.67		06/21/17 23:54	56-23-5	
Chlorobenzene	ND	ug/L	8.3	16.67		06/21/17 23:54	108-90-7	
Chloroethane	ND	ug/L	33.3	16.67		06/21/17 23:54	75-00-3	
Chloroform	ND	ug/L	8.3	16.67		06/21/17 23:54	67-66-3	
Chloromethane	ND	ug/L	33.3	16.67		06/21/17 23:54	74-87-3	
Dibromochloromethane	ND	ug/L	8.3	16.67		06/21/17 23:54	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	8.3	16.67		06/21/17 23:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	8.3	16.67		06/21/17 23:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	8.3	16.67		06/21/17 23:54	106-46-7	
1,1-Dichloroethane	173	ug/L	8.3	16.67		06/21/17 23:54	75-34-3	
1,2-Dichloroethane	ND	ug/L	8.3	16.67		06/21/17 23:54	107-06-2	
1,1-Dichloroethene	16.7	ug/L	8.3	16.67		06/21/17 23:54	75-35-4	
cis-1,2-Dichloroethene	2620	ug/L	8.3	16.67		06/21/17 23:54	156-59-2	
trans-1,2-Dichloroethene	18.7	ug/L	8.3	16.67		06/21/17 23:54	156-60-5	
1,2-Dichloropropane	ND	ug/L	8.3	16.67		06/21/17 23:54	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	8.3	16.67		06/21/17 23:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	8.3	16.67		06/21/17 23:54	10061-02-6	
Methylene Chloride	ND	ug/L	83.4	16.67		06/21/17 23:54	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	8.3	16.67		06/21/17 23:54	79-34-5	
Tetrachloroethene	24.4	ug/L	8.3	16.67		06/21/17 23:54	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	8.3	16.67		06/21/17 23:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	8.3	16.67		06/21/17 23:54	79-00-5	
Trichloroethene	116	ug/L	8.3	16.67		06/21/17 23:54	79-01-6	
Trichlorofluoromethane	ND	ug/L	8.3	16.67		06/21/17 23:54	75-69-4	
Vinyl chloride	681	ug/L	8.3	16.67		06/21/17 23:54	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%	75-125	16.67		06/21/17 23:54	17060-07-0	
Toluene-d8 (S)	92	%	75-125	16.67		06/21/17 23:54	2037-26-5	
4-Bromofluorobenzene (S)	92	%	75-125	16.67		06/21/17 23:54	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MGMS1-60		Lab ID: 1289722009		Collected: 06/12/17 13:36		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/17/17 00:37	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/17/17 00:37	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/17/17 00:37	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/17/17 00:37	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/17/17 00:37	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/17/17 00:37	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/17/17 00:37	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/17/17 00:37	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/17/17 00:37	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/17/17 00:37	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/17/17 00:37	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/17/17 00:37	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/17/17 00:37	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/17/17 00:37	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/17/17 00:37	75-35-4		
cis-1,2-Dichloroethene	6.0	ug/L	0.50	1		06/17/17 00:37	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/17/17 00:37	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/17/17 00:37	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/17/17 00:37	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/17/17 00:37	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/17/17 00:37	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/17/17 00:37	79-34-5		
Tetrachloroethene	12.8	ug/L	0.50	1		06/17/17 00:37	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/17/17 00:37	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/17/17 00:37	79-00-5		
Trichloroethene	7.1	ug/L	0.50	1		06/17/17 00:37	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/17/17 00:37	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/17/17 00:37	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	87	%	75-125	1		06/17/17 00:37	17060-07-0		
Toluene-d8 (S)	96	%	75-125	1		06/17/17 00:37	2037-26-5		
4-Bromofluorobenzene (S)	93	%	75-125	1		06/17/17 00:37	460-00-4		

Sample: MGMS3-40		Lab ID: 1289722010		Collected: 06/12/17 14:00		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/20/17 21:08	75-27-4		
Bromoform	ND	ug/L	0.50	1		06/20/17 21:08	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/20/17 21:08	74-83-9	L1	
Carbon tetrachloride	ND	ug/L	0.50	1		06/20/17 21:08	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/20/17 21:08	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/20/17 21:08	75-00-3	L1	
Chloroform	ND	ug/L	0.50	1		06/20/17 21:08	67-66-3		
Chloromethane	ND	ug/L	2.0	1		06/20/17 21:08	74-87-3	L1	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MGMS3-40	Lab ID: 1289722010	Collected: 06/12/17 14:00	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		06/20/17 21:08	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 21:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 21:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 21:08	106-46-7	
1,1-Dichloroethane	3.3	ug/L	0.50	1		06/20/17 21:08	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/20/17 21:08	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/20/17 21:08	75-35-4	
cis-1,2-Dichloroethene	1.7	ug/L	0.50	1		06/20/17 21:08	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/17 21:08	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/20/17 21:08	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 21:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 21:08	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/20/17 21:08	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/17 21:08	79-34-5	
Tetrachloroethene	0.97	ug/L	0.50	1		06/20/17 21:08	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/20/17 21:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/17 21:08	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/20/17 21:08	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/20/17 21:08	75-69-4	L1
Vinyl chloride	ND	ug/L	0.50	1		06/20/17 21:08	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	75-125	1		06/20/17 21:08	17060-07-0	
Toluene-d8 (S)	92	%	75-125	1		06/20/17 21:08	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125	1		06/20/17 21:08	460-00-4	

Sample: MGMS3-60	Lab ID: 1289722011	Collected: 06/12/17 14:20	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/20/17 21:28	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/20/17 21:28	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/20/17 21:28	74-83-9	L1
Carbon tetrachloride	ND	ug/L	0.50	1		06/20/17 21:28	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/20/17 21:28	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/20/17 21:28	75-00-3	L1
Chloroform	ND	ug/L	0.50	1		06/20/17 21:28	67-66-3	
Chloromethane	ND	ug/L	2.0	1		06/20/17 21:28	74-87-3	L1
Dibromochloromethane	ND	ug/L	0.50	1		06/20/17 21:28	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 21:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 21:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 21:28	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/20/17 21:28	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/20/17 21:28	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/20/17 21:28	75-35-4	
cis-1,2-Dichloroethene	2.3	ug/L	0.50	1		06/20/17 21:28	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MGMS3-60		Lab ID: 1289722011	Collected: 06/12/17 14:20	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/17 21:28	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/20/17 21:28	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 21:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 21:28	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/20/17 21:28	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/17 21:28	79-34-5	
Tetrachloroethene	1.3	ug/L	0.50	1		06/20/17 21:28	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/20/17 21:28	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/17 21:28	79-00-5	
Trichloroethene	0.64	ug/L	0.50	1		06/20/17 21:28	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/20/17 21:28	75-69-4	L1
Vinyl chloride	ND	ug/L	0.50	1		06/20/17 21:28	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	75-125	1		06/20/17 21:28	17060-07-0	
Toluene-d8 (S)	92	%	75-125	1		06/20/17 21:28	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125	1		06/20/17 21:28	460-00-4	

Sample: MW-12		Lab ID: 1289722012	Collected: 06/12/17 14:50	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	11.0	ug/L	10.0	1		06/19/17 08:08	74-84-0	
Ethene	120	ug/L	10.0	1		06/19/17 08:08	74-85-1	
Methane	8200	ug/L	10.0	1		06/19/17 08:08	74-82-8	
8260 MSV Med Water		Analytical Method: EPA 8260B						
Chloromethane	ND	ug/L	12.5	6.25		06/21/17 16:33	74-87-3	
Vinyl chloride	48.4	ug/L	3.1	6.25		06/21/17 16:33	75-01-4	
Bromomethane	ND	ug/L	125	6.25		06/21/17 16:33	74-83-9	
Chloroethane	ND	ug/L	12.5	6.25		06/21/17 16:33	75-00-3	
Trichlorofluoromethane	ND	ug/L	3.1	6.25		06/21/17 16:33	75-69-4	
1,1-Dichloroethene	4.7	ug/L	3.1	6.25		06/21/17 16:33	75-35-4	
Methylene Chloride	ND	ug/L	31.2	6.25		06/21/17 16:33	75-09-2	
trans-1,2-Dichloroethene	7.6	ug/L	3.1	6.25		06/21/17 16:33	156-60-5	
1,1-Dichloroethane	14.0	ug/L	3.1	6.25		06/21/17 16:33	75-34-3	
cis-1,2-Dichloroethene	893	ug/L	3.1	6.25		06/21/17 16:33	156-59-2	M6
Chloroform	ND	ug/L	3.1	6.25		06/21/17 16:33	67-66-3	
Carbon tetrachloride	ND	ug/L	3.1	6.25		06/21/17 16:33	56-23-5	
1,1,1-Trichloroethane	ND	ug/L	3.1	6.25		06/21/17 16:33	71-55-6	
1,2-Dichloroethane	ND	ug/L	3.1	6.25		06/21/17 16:33	107-06-2	
Trichloroethene	18.1	ug/L	3.1	6.25		06/21/17 16:33	79-01-6	
1,2-Dichloropropane	ND	ug/L	3.1	6.25		06/21/17 16:33	78-87-5	
Bromodichloromethane	ND	ug/L	3.1	6.25		06/21/17 16:33	75-27-4	
cis-1,3-Dichloropropene	ND	ug/L	3.1	6.25		06/21/17 16:33	10061-01-5	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MW-12		Lab ID: 1289722012		Collected: 06/12/17 14:50		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Tetrachloroethene	42.4	ug/L	3.1	6.25		06/21/17 16:33	127-18-4		
trans-1,3-Dichloropropene	ND	ug/L	3.1	6.25		06/21/17 16:33	10061-02-6		
1,1,2-Trichloroethane	ND	ug/L	3.1	6.25		06/21/17 16:33	79-00-5		
Dibromochloromethane	ND	ug/L	3.1	6.25		06/21/17 16:33	124-48-1		
Chlorobenzene	ND	ug/L	3.1	6.25		06/21/17 16:33	108-90-7		
Bromoform	ND	ug/L	3.1	6.25		06/21/17 16:33	75-25-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	3.1	6.25		06/21/17 16:33	79-34-5		
1,3-Dichlorobenzene	ND	ug/L	3.1	6.25		06/21/17 16:33	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	3.1	6.25		06/21/17 16:33	106-46-7		
1,2-Dichlorobenzene	ND	ug/L	3.1	6.25		06/21/17 16:33	95-50-1		
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%	75-125	6.25		06/21/17 16:33	17060-07-0		
Toluene-d8 (S)	93	%	75-125	6.25		06/21/17 16:33	2037-26-5		
4-Bromofluorobenzene (S)	101	%	75-125	6.25		06/21/17 16:33	460-00-4		
5310B TOC		Analytical Method: SM 5310B							
Total Organic Carbon	530	mg/L	100	100		06/23/17 15:04	7440-44-0		

Sample: MW-12 DUP		Lab ID: 1289722013		Collected: 06/12/17 14:50		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	3.1	6.25		06/21/17 23:34	75-27-4		
Bromoform	ND	ug/L	3.1	6.25		06/21/17 23:34	75-25-2		
Bromomethane	ND	ug/L	125	6.25		06/21/17 23:34	74-83-9		
Carbon tetrachloride	ND	ug/L	3.1	6.25		06/21/17 23:34	56-23-5		
Chlorobenzene	ND	ug/L	3.1	6.25		06/21/17 23:34	108-90-7		
Chloroethane	ND	ug/L	12.5	6.25		06/21/17 23:34	75-00-3		
Chloroform	ND	ug/L	3.1	6.25		06/21/17 23:34	67-66-3		
Chloromethane	ND	ug/L	12.5	6.25		06/21/17 23:34	74-87-3		
Dibromochloromethane	ND	ug/L	3.1	6.25		06/21/17 23:34	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	3.1	6.25		06/21/17 23:34	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	3.1	6.25		06/21/17 23:34	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	3.1	6.25		06/21/17 23:34	106-46-7		
1,1-Dichloroethane	12.8	ug/L	3.1	6.25		06/21/17 23:34	75-34-3		
1,2-Dichloroethane	ND	ug/L	3.1	6.25		06/21/17 23:34	107-06-2		
1,1-Dichloroethene	ND	ug/L	3.1	6.25		06/21/17 23:34	75-35-4		
cis-1,2-Dichloroethene	860	ug/L	3.1	6.25		06/21/17 23:34	156-59-2		
trans-1,2-Dichloroethene	7.1	ug/L	3.1	6.25		06/21/17 23:34	156-60-5		
1,2-Dichloropropane	ND	ug/L	3.1	6.25		06/21/17 23:34	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	3.1	6.25		06/21/17 23:34	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	3.1	6.25		06/21/17 23:34	10061-02-6		
Methylene Chloride	ND	ug/L	31.2	6.25		06/21/17 23:34	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	3.1	6.25		06/21/17 23:34	79-34-5		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-12 DUP		Lab ID: 1289722013	Collected: 06/12/17 14:50	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Tetrachloroethene	40.0	ug/L	3.1	6.25		06/21/17 23:34	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	3.1	6.25		06/21/17 23:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	3.1	6.25		06/21/17 23:34	79-00-5	
Trichloroethene	16.5	ug/L	3.1	6.25		06/21/17 23:34	79-01-6	
Trichlorofluoromethane	ND	ug/L	3.1	6.25		06/21/17 23:34	75-69-4	
Vinyl chloride	47.4	ug/L	3.1	6.25		06/21/17 23:34	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%	75-125	6.25		06/21/17 23:34	17060-07-0	
Toluene-d8 (S)	93	%	75-125	6.25		06/21/17 23:34	2037-26-5	
4-Bromofluorobenzene (S)	95	%	75-125	6.25		06/21/17 23:34	460-00-4	

Sample: MP-1		Lab ID: 1289722014	Collected: 06/14/17 14:50	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	52.5	ug/L	10.0	1		06/20/17 13:45	74-84-0	
Ethene	83.2	ug/L	10.0	1		06/20/17 13:45	74-85-1	
Methane	18700	ug/L	10.0	1		06/20/17 13:45	74-82-8	
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/19/17 17:47	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/19/17 17:47	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/19/17 17:47	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/19/17 17:47	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/19/17 17:47	108-90-7	
Chloroethane	4.0	ug/L	2.0	1		06/19/17 17:47	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/19/17 17:47	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/19/17 17:47	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/19/17 17:47	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 17:47	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 17:47	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 17:47	106-46-7	
1,1-Dichloroethane	2.3	ug/L	0.50	1		06/19/17 17:47	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/19/17 17:47	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/19/17 17:47	75-35-4	
cis-1,2-Dichloroethene	143	ug/L	0.50	1		06/19/17 17:47	156-59-2	
trans-1,2-Dichloroethene	1.9	ug/L	0.50	1		06/19/17 17:47	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/19/17 17:47	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 17:47	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 17:47	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/19/17 17:47	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/19/17 17:47	79-34-5	
Tetrachloroethene	16.2	ug/L	0.50	1		06/19/17 17:47	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/19/17 17:47	71-55-6	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MP-1		Lab ID: 1289722014	Collected: 06/14/17 14:50	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/19/17 17:47	79-00-5	
Trichloroethene	8.5	ug/L	0.50	1		06/19/17 17:47	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/19/17 17:47	75-69-4	
Vinyl chloride	29.4	ug/L	0.50	1		06/19/17 17:47	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%	75-125	1		06/19/17 17:47	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/19/17 17:47	2037-26-5	
4-Bromofluorobenzene (S)	95	%	75-125	1		06/19/17 17:47	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	38.9	mg/L	1.0	1		06/19/17 15:30	7440-44-0	

Sample: EX		Lab ID: 1289722015	Collected: 06/14/17 14:18	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	19.7	ug/L	10.0	1		06/20/17 13:52	74-84-0	
Ethene	11.2	ug/L	10.0	1		06/20/17 13:52	74-85-1	
Methane	4760	ug/L	10.0	1		06/20/17 13:52	74-82-8	
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/19/17 23:35	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/19/17 23:35	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/19/17 23:35	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/19/17 23:35	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/19/17 23:35	108-90-7	
Chloroethane	10.2	ug/L	2.0	1		06/19/17 23:35	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/19/17 23:35	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/19/17 23:35	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/19/17 23:35	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 23:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 23:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 23:35	106-46-7	
1,1-Dichloroethane	10.7	ug/L	0.50	1		06/19/17 23:35	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/19/17 23:35	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/19/17 23:35	75-35-4	
cis-1,2-Dichloroethene	11.7	ug/L	0.50	1		06/19/17 23:35	156-59-2	
trans-1,2-Dichloroethene	0.56	ug/L	0.50	1		06/19/17 23:35	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/19/17 23:35	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 23:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 23:35	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/19/17 23:35	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/19/17 23:35	79-34-5	
Tetrachloroethene	9.5	ug/L	0.50	1		06/19/17 23:35	127-18-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: EX		Lab ID: 1289722015	Collected: 06/14/17 14:18	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/19/17 23:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/19/17 23:35	79-00-5	
Trichloroethene	3.0	ug/L	0.50	1		06/19/17 23:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/19/17 23:35	75-69-4	
Vinyl chloride	1.3	ug/L	0.50	1		06/19/17 23:35	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%	75-125	1		06/19/17 23:35	17060-07-0	
Toluene-d8 (S)	95	%	75-125	1		06/19/17 23:35	2037-26-5	
4-Bromofluorobenzene (S)	92	%	75-125	1		06/19/17 23:35	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	14.0	mg/L	1.0	1		06/19/17 15:49	7440-44-0	

Sample: MW-19		Lab ID: 1289722016	Collected: 06/14/17 13:36	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	2.5	5		06/21/17 22:54	75-27-4	
Bromoform	ND	ug/L	2.5	5		06/21/17 22:54	75-25-2	
Bromomethane	ND	ug/L	100	5		06/21/17 22:54	74-83-9	
Carbon tetrachloride	ND	ug/L	2.5	5		06/21/17 22:54	56-23-5	
Chlorobenzene	ND	ug/L	2.5	5		06/21/17 22:54	108-90-7	
Chloroethane	ND	ug/L	10.0	5		06/21/17 22:54	75-00-3	
Chloroform	ND	ug/L	2.5	5		06/21/17 22:54	67-66-3	
Chloromethane	ND	ug/L	10.0	5		06/21/17 22:54	74-87-3	
Dibromochloromethane	ND	ug/L	2.5	5		06/21/17 22:54	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	2.5	5		06/21/17 22:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	2.5	5		06/21/17 22:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	2.5	5		06/21/17 22:54	106-46-7	
1,1-Dichloroethane	40.6	ug/L	2.5	5		06/21/17 22:54	75-34-3	
1,2-Dichloroethane	ND	ug/L	2.5	5		06/21/17 22:54	107-06-2	
1,1-Dichloroethene	15.4	ug/L	2.5	5		06/21/17 22:54	75-35-4	
cis-1,2-Dichloroethene	481	ug/L	2.5	5		06/21/17 22:54	156-59-2	
trans-1,2-Dichloroethene	6.1	ug/L	2.5	5		06/21/17 22:54	156-60-5	
1,2-Dichloropropane	ND	ug/L	2.5	5		06/21/17 22:54	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	2.5	5		06/21/17 22:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	2.5	5		06/21/17 22:54	10061-02-6	
Methylene Chloride	ND	ug/L	25.0	5		06/21/17 22:54	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	2.5	5		06/21/17 22:54	79-34-5	
Tetrachloroethene	531	ug/L	2.5	5		06/21/17 22:54	127-18-4	
1,1,1-Trichloroethane	8.1	ug/L	2.5	5		06/21/17 22:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	2.5	5		06/21/17 22:54	79-00-5	
Trichloroethene	481	ug/L	2.5	5		06/21/17 22:54	79-01-6	
Trichlorofluoromethane	ND	ug/L	2.5	5		06/21/17 22:54	75-69-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-19		Lab ID: 1289722016		Collected: 06/14/17 13:36		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Vinyl chloride	16.5	ug/L	2.5	5		06/21/17 22:54	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-125	5		06/21/17 22:54	17060-07-0		
Toluene-d8 (S)	94	%.	75-125	5		06/21/17 22:54	2037-26-5		
4-Bromofluorobenzene (S)	94	%.	75-125	5		06/21/17 22:54	460-00-4		

Sample: MW-19 DUP		Lab ID: 1289722017		Collected: 06/14/17 13:36		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	2.5	5		06/21/17 23:14	75-27-4		
Bromoform	ND	ug/L	2.5	5		06/21/17 23:14	75-25-2		
Bromomethane	ND	ug/L	100	5		06/21/17 23:14	74-83-9		
Carbon tetrachloride	ND	ug/L	2.5	5		06/21/17 23:14	56-23-5		
Chlorobenzene	ND	ug/L	2.5	5		06/21/17 23:14	108-90-7		
Chloroethane	ND	ug/L	10.0	5		06/21/17 23:14	75-00-3		
Chloroform	ND	ug/L	2.5	5		06/21/17 23:14	67-66-3		
Chloromethane	ND	ug/L	10.0	5		06/21/17 23:14	74-87-3		
Dibromochloromethane	ND	ug/L	2.5	5		06/21/17 23:14	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	2.5	5		06/21/17 23:14	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	2.5	5		06/21/17 23:14	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	2.5	5		06/21/17 23:14	106-46-7		
1,1-Dichloroethane	41.8	ug/L	2.5	5		06/21/17 23:14	75-34-3		
1,2-Dichloroethane	ND	ug/L	2.5	5		06/21/17 23:14	107-06-2		
1,1-Dichloroethene	15.8	ug/L	2.5	5		06/21/17 23:14	75-35-4		
cis-1,2-Dichloroethene	486	ug/L	2.5	5		06/21/17 23:14	156-59-2		
trans-1,2-Dichloroethene	6.2	ug/L	2.5	5		06/21/17 23:14	156-60-5		
1,2-Dichloropropane	ND	ug/L	2.5	5		06/21/17 23:14	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	2.5	5		06/21/17 23:14	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	2.5	5		06/21/17 23:14	10061-02-6		
Methylene Chloride	ND	ug/L	25.0	5		06/21/17 23:14	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	2.5	5		06/21/17 23:14	79-34-5		
Tetrachloroethene	566	ug/L	2.5	5		06/21/17 23:14	127-18-4		
1,1,1-Trichloroethane	8.2	ug/L	2.5	5		06/21/17 23:14	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	2.5	5		06/21/17 23:14	79-00-5		
Trichloroethene	506	ug/L	2.5	5		06/21/17 23:14	79-01-6		
Trichlorofluoromethane	ND	ug/L	2.5	5		06/21/17 23:14	75-69-4		
Vinyl chloride	17.2	ug/L	2.5	5		06/21/17 23:14	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%.	75-125	5		06/21/17 23:14	17060-07-0		
Toluene-d8 (S)	93	%.	75-125	5		06/21/17 23:14	2037-26-5		
4-Bromofluorobenzene (S)	92	%.	75-125	5		06/21/17 23:14	460-00-4		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-16		Lab ID: 1289722018		Collected: 06/14/17 12:32		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/19/17 23:54	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/19/17 23:54	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/19/17 23:54	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/19/17 23:54	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/19/17 23:54	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/19/17 23:54	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/19/17 23:54	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/19/17 23:54	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/19/17 23:54	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 23:54	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 23:54	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 23:54	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/19/17 23:54	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/19/17 23:54	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/19/17 23:54	75-35-4		
cis-1,2-Dichloroethene	6.4	ug/L	0.50	1		06/19/17 23:54	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/19/17 23:54	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/19/17 23:54	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 23:54	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 23:54	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/19/17 23:54	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/19/17 23:54	79-34-5		
Tetrachloroethene	53.7	ug/L	0.50	1		06/19/17 23:54	127-18-4		
1,1,1-Trichloroethane	0.66	ug/L	0.50	1		06/19/17 23:54	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/19/17 23:54	79-00-5		
Trichloroethene	5.4	ug/L	0.50	1		06/19/17 23:54	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/19/17 23:54	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/19/17 23:54	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%	75-125	1		06/19/17 23:54	17060-07-0		
Toluene-d8 (S)	95	%	75-125	1		06/19/17 23:54	2037-26-5		
4-Bromofluorobenzene (S)	96	%	75-125	1		06/19/17 23:54	460-00-4		

Sample: MW-19i		Lab ID: 1289722019		Collected: 06/14/17 11:52		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/20/17 00:14	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/20/17 00:14	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/20/17 00:14	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/20/17 00:14	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/20/17 00:14	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/20/17 00:14	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/20/17 00:14	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/20/17 00:14	74-87-3		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MW-19i	Lab ID: 1289722019	Collected: 06/14/17 11:52	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		06/20/17 00:14	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 00:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 00:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 00:14	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/20/17 00:14	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/20/17 00:14	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/20/17 00:14	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/17 00:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/17 00:14	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/20/17 00:14	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 00:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 00:14	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/20/17 00:14	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/17 00:14	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		06/20/17 00:14	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/20/17 00:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/17 00:14	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/20/17 00:14	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/20/17 00:14	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/20/17 00:14	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%	75-125	1		06/20/17 00:14	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/20/17 00:14	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125	1		06/20/17 00:14	460-00-4	

Sample: MW-20i	Lab ID: 1289722020	Collected: 06/14/17 11:18	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 12:20	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 12:20	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 12:20	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 12:20	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 12:20	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 12:20	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 12:20	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 12:20	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 12:20	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:20	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 12:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 12:20	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 12:20	75-35-4	
cis-1,2-Dichloroethene	5.6	ug/L	0.50	1		06/21/17 12:20	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-20i		Lab ID: 1289722020		Collected: 06/14/17 11:18		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 12:20	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 12:20	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 12:20	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 12:20	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 12:20	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 12:20	79-34-5	L1	
Tetrachloroethene	1.5	ug/L	0.50	1		06/21/17 12:20	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 12:20	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 12:20	79-00-5	L1	
Trichloroethene	0.84	ug/L	0.50	1		06/21/17 12:20	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 12:20	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 12:20	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%	75-125	1		06/21/17 12:20	17060-07-0		
Toluene-d8 (S)	95	%	75-125	1		06/21/17 12:20	2037-26-5		
4-Bromofluorobenzene (S)	95	%	75-125	1		06/21/17 12:20	460-00-4		

Sample: MW-32s		Lab ID: 1289722021		Collected: 06/14/17 10:33		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 12:39	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 12:39	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 12:39	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 12:39	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 12:39	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 12:39	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 12:39	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 12:39	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 12:39	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:39	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:39	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:39	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 12:39	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 12:39	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 12:39	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 12:39	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 12:39	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 12:39	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 12:39	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 12:39	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 12:39	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 12:39	79-34-5	L1	
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 12:39	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 12:39	71-55-6		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MW-32s		Lab ID: 1289722021	Collected: 06/14/17 10:33	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 12:39	79-00-5	L1
Trichloroethene	ND	ug/L	0.50	1		06/21/17 12:39	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 12:39	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 12:39	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	110	%.	75-125	1		06/21/17 12:39	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		06/21/17 12:39	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	75-125	1		06/21/17 12:39	460-00-4	

Sample: MW-5		Lab ID: 1289722022	Collected: 06/14/17 09:50	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 12:58	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 12:58	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 12:58	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 12:58	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 12:58	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 12:58	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 12:58	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 12:58	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 12:58	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 12:58	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 12:58	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 12:58	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 12:58	75-35-4	
cis-1,2-Dichloroethene	4.2	ug/L	0.50	1		06/21/17 12:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 12:58	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 12:58	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 12:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 12:58	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 12:58	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 12:58	79-34-5	L1
Tetrachloroethene	16.3	ug/L	0.50	1		06/21/17 12:58	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 12:58	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 12:58	79-00-5	L1
Trichloroethene	6.8	ug/L	0.50	1		06/21/17 12:58	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 12:58	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 12:58	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	109	%.	75-125	1		06/21/17 12:58	17060-07-0	
Toluene-d8 (S)	95	%.	75-125	1		06/21/17 12:58	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	75-125	1		06/21/17 12:58	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-7	Lab ID: 1289722023	Collected: 06/14/17 09:05	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	18.8	ug/L	10.0	1		06/20/17 13:59	74-84-0	
Ethene	ND	ug/L	10.0	1		06/20/17 13:59	74-85-1	
Methane	11200	ug/L	10.0	1		06/20/17 13:59	74-82-8	
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 13:17	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 13:17	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 13:17	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 13:17	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 13:17	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 13:17	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 13:17	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 13:17	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 13:17	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:17	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:17	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 13:17	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 13:17	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 13:17	75-35-4	
cis-1,2-Dichloroethene	2.5	ug/L	0.50	1		06/21/17 13:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 13:17	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 13:17	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 13:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 13:17	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 13:17	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 13:17	79-34-5	L1
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 13:17	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 13:17	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 13:17	79-00-5	L1
Trichloroethene	0.55	ug/L	0.50	1		06/21/17 13:17	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 13:17	75-69-4	
Vinyl chloride	2.5	ug/L	0.50	1		06/21/17 13:17	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%	75-125	1		06/21/17 13:17	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/21/17 13:17	2037-26-5	
4-Bromofluorobenzene (S)	93	%	75-125	1		06/21/17 13:17	460-00-4	
5310B TOC		Analytical Method: SM 5310B						
Total Organic Carbon	9.1	mg/L	1.0	1		06/19/17 16:08	7440-44-0	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-7 DUP		Lab ID: 1289722024	Collected: 06/14/17 09:05	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 13:36	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 13:36	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 13:36	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 13:36	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 13:36	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 13:36	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 13:36	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 13:36	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 13:36	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:36	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 13:36	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 13:36	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 13:36	75-35-4	
cis-1,2-Dichloroethene	2.4	ug/L	0.50	1		06/21/17 13:36	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 13:36	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 13:36	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 13:36	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 13:36	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 13:36	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 13:36	79-34-5	L1
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 13:36	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 13:36	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 13:36	79-00-5	L1
Trichloroethene	ND	ug/L	0.50	1		06/21/17 13:36	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 13:36	75-69-4	
Vinyl chloride	2.5	ug/L	0.50	1		06/21/17 13:36	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	110	%	75-125	1		06/21/17 13:36	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/21/17 13:36	2037-26-5	
4-Bromofluorobenzene (S)	93	%	75-125	1		06/21/17 13:36	460-00-4	

Sample: MW-9		Lab ID: 1289722025	Collected: 06/14/17 08:13	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 13:56	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 13:56	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 13:56	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 13:56	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 13:56	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 13:56	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 13:56	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 13:56	74-87-3	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MW-9	Lab ID: 1289722025	Collected: 06/14/17 08:13	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 13:56	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 13:56	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 13:56	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 13:56	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 13:56	75-35-4	
cis-1,2-Dichloroethene	17.5	ug/L	0.50	1		06/21/17 13:56	156-59-2	
trans-1,2-Dichloroethene	0.60	ug/L	0.50	1		06/21/17 13:56	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 13:56	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 13:56	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 13:56	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 13:56	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 13:56	79-34-5	L1
Tetrachloroethene	104	ug/L	0.50	1		06/21/17 13:56	127-18-4	
1,1,1-Trichloroethane	1.3	ug/L	0.50	1		06/21/17 13:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 13:56	79-00-5	L1
Trichloroethene	47.2	ug/L	0.50	1		06/21/17 13:56	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 13:56	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 13:56	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%	75-125	1		06/21/17 13:56	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/21/17 13:56	2037-26-5	
4-Bromofluorobenzene (S)	93	%	75-125	1		06/21/17 13:56	460-00-4	

Sample: MW-3	Lab ID: 1289722026	Collected: 06/14/17 07:45	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 14:15	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 14:15	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 14:15	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 14:15	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 14:15	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 14:15	75-00-3	
Chloroform	1.0	ug/L	0.50	1		06/21/17 14:15	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 14:15	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 14:15	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:15	106-46-7	
1,1-Dichloroethane	2.1	ug/L	0.50	1		06/21/17 14:15	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 14:15	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 14:15	75-35-4	
cis-1,2-Dichloroethene	39.0	ug/L	0.50	1		06/21/17 14:15	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-3		Lab ID: 1289722026		Collected: 06/14/17 07:45		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	1.5	ug/L	0.50	1		06/21/17 14:15	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 14:15	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 14:15	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 14:15	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 14:15	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 14:15	79-34-5	L1	
Tetrachloroethene	163	ug/L	0.50	1		06/21/17 14:15	127-18-4		
1,1,1-Trichloroethane	1.7	ug/L	0.50	1		06/21/17 14:15	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 14:15	79-00-5	L1	
Trichloroethene	30.4	ug/L	0.50	1		06/21/17 14:15	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 14:15	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 14:15	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%	75-125	1		06/21/17 14:15	17060-07-0		
Toluene-d8 (S)	95	%	75-125	1		06/21/17 14:15	2037-26-5		
4-Bromofluorobenzene (S)	90	%	75-125	1		06/21/17 14:15	460-00-4		

Sample: MW-18i		Lab ID: 1289722027		Collected: 06/13/17 14:42		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 14:34	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 14:34	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 14:34	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 14:34	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 14:34	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 14:34	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 14:34	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 14:34	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 14:34	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:34	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:34	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:34	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 14:34	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 14:34	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 14:34	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 14:34	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 14:34	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 14:34	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 14:34	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 14:34	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 14:34	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 14:34	79-34-5	L1	
Tetrachloroethene	1.1	ug/L	0.50	1		06/21/17 14:34	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 14:34	71-55-6		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MW-18i		Lab ID: 1289722027	Collected: 06/13/17 14:42	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 14:34	79-00-5	L1
Trichloroethene	0.66	ug/L	0.50	1		06/21/17 14:34	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 14:34	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 14:34	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	108	%	75-125	1		06/21/17 14:34	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/21/17 14:34	2037-26-5	
4-Bromofluorobenzene (S)	94	%	75-125	1		06/21/17 14:34	460-00-4	

Sample: MW-21i-40		Lab ID: 1289722028	Collected: 06/13/17 14:10	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 14:54	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 14:54	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 14:54	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 14:54	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 14:54	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 14:54	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 14:54	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 14:54	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 14:54	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 14:54	106-46-7	
1,1-Dichloroethane	2.3	ug/L	0.50	1		06/21/17 14:54	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 14:54	107-06-2	
1,1-Dichloroethene	0.63	ug/L	0.50	1		06/21/17 14:54	75-35-4	
cis-1,2-Dichloroethene	63.6	ug/L	0.50	1		06/21/17 14:54	156-59-2	
trans-1,2-Dichloroethene	0.56	ug/L	0.50	1		06/21/17 14:54	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 14:54	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 14:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 14:54	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 14:54	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 14:54	79-34-5	L1
Tetrachloroethene	24.1	ug/L	0.50	1		06/21/17 14:54	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 14:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 14:54	79-00-5	L1
Trichloroethene	15.1	ug/L	0.50	1		06/21/17 14:54	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 14:54	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 14:54	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	109	%	75-125	1		06/21/17 14:54	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/21/17 14:54	2037-26-5	
4-Bromofluorobenzene (S)	91	%	75-125	1		06/21/17 14:54	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-21i-105		Lab ID: 1289722029		Collected: 06/13/17 13:32		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 15:13	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 15:13	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 15:13	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 15:13	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 15:13	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 15:13	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 15:13	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 15:13	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 15:13	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 15:13	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 15:13	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 15:13	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 15:13	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 15:13	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 15:13	75-35-4		
cis-1,2-Dichloroethene	4.7	ug/L	0.50	1		06/21/17 15:13	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 15:13	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 15:13	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 15:13	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 15:13	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 15:13	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 15:13	79-34-5	L1	
Tetrachloroethene	7.6	ug/L	0.50	1		06/21/17 15:13	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 15:13	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 15:13	79-00-5	L1	
Trichloroethene	4.1	ug/L	0.50	1		06/21/17 15:13	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 15:13	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 15:13	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%	75-125	1		06/21/17 15:13	17060-07-0		
Toluene-d8 (S)	97	%	75-125	1		06/21/17 15:13	2037-26-5		
4-Bromofluorobenzene (S)	94	%	75-125	1		06/21/17 15:13	460-00-4		

Sample: MW-22i		Lab ID: 1289722030		Collected: 06/13/17 12:45		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/20/17 00:33	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/20/17 00:33	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/20/17 00:33	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/20/17 00:33	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/20/17 00:33	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/20/17 00:33	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/20/17 00:33	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/20/17 00:33	74-87-3		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-22i	Lab ID: 1289722030	Collected: 06/13/17 12:45	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		06/20/17 00:33	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 00:33	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 00:33	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 00:33	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/20/17 00:33	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/20/17 00:33	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/20/17 00:33	75-35-4	
cis-1,2-Dichloroethene	9.6	ug/L	0.50	1		06/20/17 00:33	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/17 00:33	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/20/17 00:33	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 00:33	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 00:33	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/20/17 00:33	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/17 00:33	79-34-5	
Tetrachloroethene	0.63	ug/L	0.50	1		06/20/17 00:33	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/20/17 00:33	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/17 00:33	79-00-5	
Trichloroethene	6.2	ug/L	0.50	1		06/20/17 00:33	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/20/17 00:33	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/20/17 00:33	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%	75-125	1		06/20/17 00:33	17060-07-0	
Toluene-d8 (S)	96	%	75-125	1		06/20/17 00:33	2037-26-5	
4-Bromofluorobenzene (S)	94	%	75-125	1		06/20/17 00:33	460-00-4	

Sample: MW-26	Lab ID: 1289722031	Collected: 06/13/17 11:40	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/20/17 10:55	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/20/17 10:55	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/20/17 10:55	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/20/17 10:55	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/20/17 10:55	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/20/17 10:55	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/20/17 10:55	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/20/17 10:55	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/20/17 10:55	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 10:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 10:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/20/17 10:55	106-46-7	
1,1-Dichloroethane	6.7	ug/L	0.50	1		06/20/17 10:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/20/17 10:55	107-06-2	
1,1-Dichloroethene	1.9	ug/L	0.50	1		06/20/17 10:55	75-35-4	
cis-1,2-Dichloroethene	113	ug/L	0.50	1		06/20/17 10:55	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-26		Lab ID: 1289722031		Collected: 06/13/17 11:40		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	2.0	ug/L	0.50	1		06/20/17 10:55	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/20/17 10:55	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 10:55	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/17 10:55	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/20/17 10:55	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/17 10:55	79-34-5		
Tetrachloroethene	160	ug/L	0.50	1		06/20/17 10:55	127-18-4		
1,1,1-Trichloroethane	2.1	ug/L	0.50	1		06/20/17 10:55	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/17 10:55	79-00-5		
Trichloroethene	311	ug/L	0.50	1		06/20/17 10:55	79-01-6	E,M1	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/20/17 10:55	75-69-4		
Vinyl chloride	0.65	ug/L	0.50	1		06/20/17 10:55	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	91	%	75-125	1		06/20/17 10:55	17060-07-0		
Toluene-d8 (S)	94	%	75-125	1		06/20/17 10:55	2037-26-5		
4-Bromofluorobenzene (S)	93	%	75-125	1		06/20/17 10:55	460-00-4		

Sample: MW-23i		Lab ID: 1289722032		Collected: 06/13/17 10:34		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 10:44	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 10:44	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 10:44	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 10:44	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 10:44	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 10:44	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 10:44	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 10:44	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 10:44	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 10:44	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 10:44	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 10:44	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 10:44	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 10:44	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 10:44	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 10:44	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 10:44	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 10:44	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 10:44	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 10:44	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 10:44	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 10:44	79-34-5	L1,M0	
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 10:44	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 10:44	71-55-6		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: MW-23i		Lab ID: 1289722032	Collected: 06/13/17 10:34	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 10:44	79-00-5	L1,MO
Trichloroethene	ND	ug/L	0.50	1		06/21/17 10:44	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 10:44	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 10:44	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	109	%.	75-125	1		06/21/17 10:44	17060-07-0	
Toluene-d8 (S)	95	%.	75-125	1		06/21/17 10:44	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	75-125	1		06/21/17 10:44	460-00-4	

Sample: MW-14		Lab ID: 1289722033	Collected: 06/13/17 10:02	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 15:32	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 15:32	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 15:32	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 15:32	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 15:32	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 15:32	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 15:32	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 15:32	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 15:32	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 15:32	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 15:32	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 15:32	106-46-7	
1,1-Dichloroethane	10	ug/L	0.50	1		06/21/17 15:32	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 15:32	107-06-2	
1,1-Dichloroethene	5.3	ug/L	0.50	1		06/21/17 15:32	75-35-4	
cis-1,2-Dichloroethene	432	ug/L	2.5	5		06/22/17 18:03	156-59-2	
trans-1,2-Dichloroethene	2.7	ug/L	0.50	1		06/21/17 15:32	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 15:32	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 15:32	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 15:32	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 15:32	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 15:32	79-34-5	L1
Tetrachloroethene	58.3	ug/L	0.50	1		06/21/17 15:32	127-18-4	
1,1,1-Trichloroethane	2.1	ug/L	0.50	1		06/21/17 15:32	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 15:32	79-00-5	L1
Trichloroethene	204	ug/L	2.5	5		06/22/17 18:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 15:32	75-69-4	
Vinyl chloride	2.5	ug/L	0.50	1		06/21/17 15:32	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1		06/21/17 15:32	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		06/21/17 15:32	2037-26-5	
4-Bromofluorobenzene (S)	90	%.	75-125	1		06/21/17 15:32	460-00-4	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: S-2		Lab ID: 1289722034		Collected: 06/13/17 09:15		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/22/17 12:55	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/22/17 12:55	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/22/17 12:55	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/22/17 12:55	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/22/17 12:55	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/22/17 12:55	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/22/17 12:55	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/22/17 12:55	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/22/17 12:55	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/22/17 12:55	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/22/17 12:55	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/22/17 12:55	106-46-7		
1,1-Dichloroethane	3.3	ug/L	0.50	1		06/22/17 12:55	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/22/17 12:55	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/22/17 12:55	75-35-4		
cis-1,2-Dichloroethene	4.3	ug/L	0.50	1		06/22/17 12:55	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/22/17 12:55	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/22/17 12:55	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/22/17 12:55	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/22/17 12:55	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/22/17 12:55	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/22/17 12:55	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		06/22/17 12:55	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/22/17 12:55	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/22/17 12:55	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		06/22/17 12:55	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/22/17 12:55	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/22/17 12:55	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	113	%	75-125	1		06/22/17 12:55	17060-07-0		
Toluene-d8 (S)	97	%	75-125	1		06/22/17 12:55	2037-26-5		
4-Bromofluorobenzene (S)	90	%	75-125	1		06/22/17 12:55	460-00-4		

Sample: S-1		Lab ID: 1289722035		Collected: 06/13/17 08:40		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 16:11	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 16:11	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 16:11	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 16:11	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 16:11	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 16:11	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 16:11	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 16:11	74-87-3		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: S-1		Lab ID: 1289722035		Collected: 06/13/17 08:40		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 16:11	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:11	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:11	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:11	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 16:11	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 16:11	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:11	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:11	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:11	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 16:11	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 16:11	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 16:11	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 16:11	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 16:11	79-34-5	L1	
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 16:11	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 16:11	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 16:11	79-00-5	L1	
Trichloroethene	ND	ug/L	0.50	1		06/21/17 16:11	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 16:11	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 16:11	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%	75-125	1		06/21/17 16:11	17060-07-0		
Toluene-d8 (S)	97	%	75-125	1		06/21/17 16:11	2037-26-5		
4-Bromofluorobenzene (S)	92	%	75-125	1		06/21/17 16:11	460-00-4		

Sample: MW-8		Lab ID: 1289722036		Collected: 06/13/17 08:03		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 16:30	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 16:30	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 16:30	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 16:30	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 16:30	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 16:30	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 16:30	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 16:30	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 16:30	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:30	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:30	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:30	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 16:30	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 16:30	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:30	75-35-4		
cis-1,2-Dichloroethene	14.3	ug/L	0.50	1		06/21/17 16:30	156-59-2		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: MW-8		Lab ID: 1289722036		Collected: 06/13/17 08:03		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:30	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 16:30	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 16:30	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 16:30	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 16:30	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 16:30	79-34-5	L1	
Tetrachloroethene	4.3	ug/L	0.50	1		06/21/17 16:30	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 16:30	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 16:30	79-00-5	L1	
Trichloroethene	0.56	ug/L	0.50	1		06/21/17 16:30	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 16:30	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 16:30	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%	75-125	1		06/21/17 16:30	17060-07-0		
Toluene-d8 (S)	97	%	75-125	1		06/21/17 16:30	2037-26-5		
4-Bromofluorobenzene (S)	92	%	75-125	1		06/21/17 16:30	460-00-4		

Sample: Field Blank		Lab ID: 1289722037		Collected: 06/12/17 15:40		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/19/17 17:28	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/19/17 17:28	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/19/17 17:28	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/19/17 17:28	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/19/17 17:28	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/19/17 17:28	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/19/17 17:28	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/19/17 17:28	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/19/17 17:28	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 17:28	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 17:28	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/19/17 17:28	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/19/17 17:28	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/19/17 17:28	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/19/17 17:28	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/19/17 17:28	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/19/17 17:28	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/19/17 17:28	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 17:28	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/19/17 17:28	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/19/17 17:28	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/19/17 17:28	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		06/19/17 17:28	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/19/17 17:28	71-55-6		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: Field Blank		Lab ID: 1289722037	Collected: 06/12/17 15:40	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/19/17 17:28	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/19/17 17:28	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/19/17 17:28	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/19/17 17:28	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%	75-125	1		06/19/17 17:28	17060-07-0	
Toluene-d8 (S)	95	%	75-125	1		06/19/17 17:28	2037-26-5	
4-Bromofluorobenzene (S)	92	%	75-125	1		06/19/17 17:28	460-00-4	

Sample: Field Blank		Lab ID: 1289722038	Collected: 06/13/17 15:00	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 16:50	75-27-4	
Bromoform	ND	ug/L	2.0	1		06/21/17 16:50	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 16:50	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 16:50	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 16:50	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 16:50	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 16:50	67-66-3	
Chloromethane	ND	ug/L	0.50	1		06/21/17 16:50	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 16:50	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 16:50	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 16:50	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 16:50	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:50	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:50	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 16:50	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 16:50	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 16:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 16:50	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 16:50	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 16:50	79-34-5	L1
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 16:50	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 16:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 16:50	79-00-5	L1
Trichloroethene	ND	ug/L	0.50	1		06/21/17 16:50	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 16:50	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 16:50	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	115	%	75-125	1		06/21/17 16:50	17060-07-0	
Toluene-d8 (S)	97	%	75-125	1		06/21/17 16:50	2037-26-5	
4-Bromofluorobenzene (S)	93	%	75-125	1		06/21/17 16:50	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Sample: Field Blank		Lab ID: 1289722039		Collected: 06/14/17 15:10		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 17:09	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 17:09	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 17:09	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 17:09	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 17:09	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 17:09	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 17:09	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 17:09	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 17:09	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 17:09	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 17:09	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 17:09	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 17:09	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 17:09	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 17:09	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 17:09	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 17:09	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 17:09	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 17:09	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 17:09	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 17:09	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 17:09	79-34-5	L1	
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 17:09	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 17:09	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 17:09	79-00-5	L1	
Trichloroethene	ND	ug/L	0.50	1		06/21/17 17:09	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 17:09	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 17:09	75-01-4		
Surrogates									
1,2-Dichloroethane-d4 (S)	114	%	75-125	1		06/21/17 17:09	17060-07-0		
Toluene-d8 (S)	97	%	75-125	1		06/21/17 17:09	2037-26-5		
4-Bromofluorobenzene (S)	92	%	75-125	1		06/21/17 17:09	460-00-4		

Sample: Field Blank		Lab ID: 1289722040		Collected: 06/15/17 09:30		Received: 06/16/17 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Med Water		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 17:29	75-27-4		
Bromoform	ND	ug/L	2.0	1		06/21/17 17:29	75-25-2		
Bromomethane	ND	ug/L	20.0	1		06/21/17 17:29	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 17:29	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 17:29	108-90-7		
Chloroethane	ND	ug/L	2.0	1		06/21/17 17:29	75-00-3		
Chloroform	ND	ug/L	0.50	1		06/21/17 17:29	67-66-3		
Chloromethane	ND	ug/L	0.50	1		06/21/17 17:29	74-87-3		

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: Field Blank	Lab ID: 1289722040	Collected: 06/15/17 09:30	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 17:29	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 17:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 17:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 17:29	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 17:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/21/17 17:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 17:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 17:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 17:29	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 17:29	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 17:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 17:29	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 17:29	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 17:29	79-34-5	L1
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 17:29	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 17:29	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 17:29	79-00-5	L1
Trichloroethene	ND	ug/L	0.50	1		06/21/17 17:29	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 17:29	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 17:29	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	110	%.	75-125	1		06/21/17 17:29	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		06/21/17 17:29	2037-26-5	
4-Bromofluorobenzene (S)	92	%.	75-125	1		06/21/17 17:29	460-00-4	

Sample: Equipment Blank	Lab ID: 1289722041	Collected: 06/15/17 09:32	Received: 06/16/17 09:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		06/21/17 18:34	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/21/17 18:34	75-25-2	
Bromomethane	ND	ug/L	20.0	1		06/21/17 18:34	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		06/21/17 18:34	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/21/17 18:34	108-90-7	
Chloroethane	ND	ug/L	2.0	1		06/21/17 18:34	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/21/17 18:34	67-66-3	
Chloromethane	ND	ug/L	2.0	1		06/21/17 18:34	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		06/21/17 18:34	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 18:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 18:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/21/17 18:34	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/21/17 18:34	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/21/17 18:34	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/21/17 18:34	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 18:34	156-59-2	

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ANALYTICAL RESULTS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Sample: Equipment Blank		Lab ID: 1289722041	Collected: 06/15/17 09:32	Received: 06/16/17 09:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Water		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/21/17 18:34	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/21/17 18:34	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 18:34	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/21/17 18:34	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		06/21/17 18:34	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/21/17 18:34	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		06/21/17 18:34	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/21/17 18:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/21/17 18:34	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/21/17 18:34	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		06/21/17 18:34	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		06/21/17 18:34	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%	75-125	1		06/21/17 18:34	17060-07-0	
Toluene-d8 (S)	92	%	75-125	1		06/21/17 18:34	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125	1		06/21/17 18:34	460-00-4	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

QC Batch: 480223 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 1289722012

METHOD BLANK: 2616190 Matrix: Water
Associated Lab Samples: 1289722012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	06/19/17 07:45	
Ethene	ug/L	ND	10.0	06/19/17 07:45	
Methane	ug/L	ND	10.0	06/19/17 07:45	

LABORATORY CONTROL SAMPLE & LCSD: 2616191

Parameter	Units	2616192								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	121	127	107	112	85-115	5	20	
Ethene	ug/L	106	114	119	108	112	85-115	4	20	
Methane	ug/L	60.7	63.6	66.6	105	110	85-115	5	20	

SAMPLE DUPLICATE: 2616193

Parameter	Units	1289722012		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	11.0	10.6	4	20	
Ethene	ug/L	120	115	4	20	
Methane	ug/L	8200	7820	5	20	

SAMPLE DUPLICATE: 2616195

Parameter	Units	60246529003		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	3.7J		20	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

QC Batch: 480560 Analysis Method: RSK 175
 QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
 Associated Lab Samples: 1289722002, 1289722005, 1289722014, 1289722015, 1289722023

METHOD BLANK: 2617533 Matrix: Water
 Associated Lab Samples: 1289722002, 1289722005, 1289722014, 1289722015, 1289722023

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	06/20/17 13:07	
Ethene	ug/L	ND	10.0	06/20/17 13:07	
Methane	ug/L	ND	10.0	06/20/17 13:07	

LABORATORY CONTROL SAMPLE & LCSD: 2617534

Parameter	Units	2617535					% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec				
Ethane	ug/L	114	125	128	110	113	85-115	3	20	
Ethene	ug/L	106	117	121	110	114	85-115	4	20	
Methane	ug/L	60.7	65.6	67.1	108	111	85-115	2	20	

SAMPLE DUPLICATE: 2617536

Parameter	Units	10392468001		Max RPD	Qualifiers
		Result	Dup Result		
Ethane	ug/L	<10.0	ND	20	
Ethene	ug/L	<10.0	ND	20	
Methane	ug/L	<10.0	1.6J	20	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

QC Batch: 116839 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722001, 1289722002, 1289722003, 1289722006, 1289722007, 1289722009

METHOD BLANK: 461548 Matrix: Water
Associated Lab Samples: 1289722001, 1289722002, 1289722003, 1289722006, 1289722007, 1289722009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/16/17 18:33	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/16/17 18:33	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/16/17 18:33	
1,1-Dichloroethane	ug/L	ND	0.50	06/16/17 18:33	
1,1-Dichloroethene	ug/L	ND	0.50	06/16/17 18:33	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/16/17 18:33	
1,2-Dichloroethane	ug/L	ND	1.0	06/16/17 18:33	
1,2-Dichloropropane	ug/L	ND	0.50	06/16/17 18:33	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/16/17 18:33	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/16/17 18:33	
Bromodichloromethane	ug/L	ND	0.50	06/16/17 18:33	
Bromoform	ug/L	ND	2.0	06/16/17 18:33	
Bromomethane	ug/L	ND	20.0	06/16/17 18:33	
Carbon tetrachloride	ug/L	ND	0.50	06/16/17 18:33	
Chlorobenzene	ug/L	ND	0.50	06/16/17 18:33	
Chloroethane	ug/L	ND	2.0	06/16/17 18:33	
Chloroform	ug/L	ND	0.50	06/16/17 18:33	
Chloromethane	ug/L	ND	0.50	06/16/17 18:33	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/16/17 18:33	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/16/17 18:33	
Dibromochloromethane	ug/L	ND	0.50	06/16/17 18:33	
Methylene Chloride	ug/L	ND	5.0	06/16/17 18:33	
Tetrachloroethene	ug/L	ND	0.50	06/16/17 18:33	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/16/17 18:33	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/16/17 18:33	
Trichloroethene	ug/L	ND	0.50	06/16/17 18:33	
Trichlorofluoromethane	ug/L	ND	0.50	06/16/17 18:33	
Vinyl chloride	ug/L	ND	0.50	06/16/17 18:33	
1,2-Dichloroethane-d4 (S)	%	97	75-125	06/16/17 18:33	
4-Bromofluorobenzene (S)	%	96	75-125	06/16/17 18:33	
Toluene-d8 (S)	%	95	75-125	06/16/17 18:33	

LABORATORY CONTROL SAMPLE: 461549

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	43.0	108	75-125	
1,1,2,2-Tetrachloroethane	ug/L	40	39.3	98	75-125	
1,1,2-Trichloroethane	ug/L	40	41.2	103	75-125	
1,1-Dichloroethane	ug/L	40	42.4	106	75-125	
1,1-Dichloroethene	ug/L	40	46.0	115	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 461549

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	38.8	97	75-125	
1,2-Dichloroethane	ug/L	40	37.7	94	75-125	
1,2-Dichloropropane	ug/L	40	41.2	103	75-125	
1,3-Dichlorobenzene	ug/L	40	41.3	103	75-125	
1,4-Dichlorobenzene	ug/L	40	39.9	100	75-125	
Bromodichloromethane	ug/L	40	41.2	103	75-125	
Bromoform	ug/L	40	33.7	84	75-128	
Bromomethane	ug/L	40	37.7	94	30-150	
Carbon tetrachloride	ug/L	40	42.2	105	75-125	
Chlorobenzene	ug/L	40	41.4	103	75-125	
Chloroethane	ug/L	40	42.1	105	75-125	
Chloroform	ug/L	40	42.9	107	75-125	
Chloromethane	ug/L	40	39.6	99	44-132	
cis-1,2-Dichloroethene	ug/L	40	43.7	109	75-125	
cis-1,3-Dichloropropene	ug/L	40	38.8	97	75-125	
Dibromochloromethane	ug/L	40	36.4	91	74-135	
Methylene Chloride	ug/L	40	41.9	105	75-125	
Tetrachloroethene	ug/L	40	44.0	110	75-125	
trans-1,2-Dichloroethene	ug/L	40	44.0	110	75-125	
trans-1,3-Dichloropropene	ug/L	40	37.7	94	75-125	
Trichloroethene	ug/L	40	43.2	108	75-125	
Trichlorofluoromethane	ug/L	40	47.0	117	72-125	
Vinyl chloride	ug/L	40	39.3	98	69-130	
1,2-Dichloroethane-d4 (S)	%			93	75-125	
4-Bromofluorobenzene (S)	%			101	75-125	
Toluene-d8 (S)	%			94	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 461550 461551

Parameter	Units	1289647002		461551		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
1,1,1-Trichloroethane	ug/L	ND	40	40	44.1	43.6	110	109	75-125	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	39.0	39.0	98	97	75-125	0	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	41.5	41.2	104	103	75-125	1	30	
1,1-Dichloroethane	ug/L	ND	40	40	43.3	42.8	108	107	75-125	1	30	
1,1-Dichloroethene	ug/L	ND	40	40	47.3	46.2	118	115	69-136	3	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	39.0	39.4	98	99	75-125	1	30	
1,2-Dichloroethane	ug/L	ND	40	40	37.9	37.8	95	94	75-125	0	30	
1,2-Dichloropropane	ug/L	ND	40	40	42.2	42.0	106	105	75-125	1	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	41.3	41.3	103	103	70-125	0	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	39.9	40.3	100	101	73-125	1	30	
Bromodichloromethane	ug/L	ND	40	40	41.1	41.0	103	103	72-132	0	30	
Bromoform	ug/L	ND	40	40	33.7	33.3	84	83	75-125	1	30	
Bromomethane	ug/L	ND	40	40	39.7	40.6	99	102	30-150	2	30	
Carbon tetrachloride	ug/L	ND	40	40	42.8	42.4	107	106	75-127	1	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Parameter	Units	1289647002		461550		461551		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
Chlorobenzene	ug/L	ND	40	40	41.7	41.1	104	103	75-125	1	30			
Chloroethane	ug/L	ND	40	40	42.5	42.0	106	105	75-125	1	30			
Chloroform	ug/L	1.1	40	40	45.0	44.6	110	109	75-125	1	30			
Chloromethane	ug/L	ND	40	40	40.3	40.9	101	102	54-125	2	30			
cis-1,2-Dichloroethene	ug/L	ND	40	40	44.3	43.7	111	109	75-125	1	30			
cis-1,3-Dichloropropene	ug/L	ND	40	40	38.7	38.8	97	97	75-125	0	30			
Dibromochloromethane	ug/L	ND	40	40	36.3	36.4	91	91	64-150	0	30			
Methylene Chloride	ug/L	ND	40	40	43.0	43.1	107	108	75-125	0	30			
Tetrachloroethene	ug/L	ND	40	40	45.0	44.2	112	110	68-126	2	30			
trans-1,2-Dichloroethene	ug/L	ND	40	40	45.1	44.5	113	111	73-127	1	30			
trans-1,3-Dichloropropene	ug/L	ND	40	40	37.5	37.8	94	94	75-128	1	30			
Trichloroethene	ug/L	ND	40	40	43.8	43.1	109	108	71-125	2	30			
Trichlorofluoromethane	ug/L	ND	40	40	47.0	42.5	118	106	70-125	10	30			
Vinyl chloride	ug/L	ND	40	40	39.6	39.3	99	98	72-129	1	30			
1,2-Dichloroethane-d4 (S)	%						92	93	75-125					
4-Bromofluorobenzene (S)	%						100	102	75-125					
Toluene-d8 (S)	%						95	95	75-125					

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

QC Batch: 116899 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722014, 1289722037

METHOD BLANK: 461774 Matrix: Water

Associated Lab Samples: 1289722014, 1289722037

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/19/17 10:37	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/19/17 10:37	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/19/17 10:37	
1,1-Dichloroethane	ug/L	ND	0.50	06/19/17 10:37	
1,1-Dichloroethene	ug/L	ND	0.50	06/19/17 10:37	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/19/17 10:37	
1,2-Dichloroethane	ug/L	ND	1.0	06/19/17 10:37	
1,2-Dichloropropane	ug/L	ND	0.50	06/19/17 10:37	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/19/17 10:37	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/19/17 10:37	
Bromodichloromethane	ug/L	ND	0.50	06/19/17 10:37	
Bromoform	ug/L	ND	2.0	06/19/17 10:37	
Bromomethane	ug/L	ND	20.0	06/19/17 10:37	
Carbon tetrachloride	ug/L	ND	0.50	06/19/17 10:37	
Chlorobenzene	ug/L	ND	0.50	06/19/17 10:37	
Chloroethane	ug/L	ND	2.0	06/19/17 10:37	
Chloroform	ug/L	ND	0.50	06/19/17 10:37	
Chloromethane	ug/L	ND	0.50	06/19/17 10:37	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/19/17 10:37	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/19/17 10:37	
Dibromochloromethane	ug/L	ND	0.50	06/19/17 10:37	
Methylene Chloride	ug/L	ND	5.0	06/19/17 10:37	
Tetrachloroethene	ug/L	ND	0.50	06/19/17 10:37	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/19/17 10:37	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/19/17 10:37	
Trichloroethene	ug/L	ND	0.50	06/19/17 10:37	
Trichlorofluoromethane	ug/L	ND	0.50	06/19/17 10:37	
Vinyl chloride	ug/L	ND	0.50	06/19/17 10:37	
1,2-Dichloroethane-d4 (S)	%	94	75-125	06/19/17 10:37	
4-Bromofluorobenzene (S)	%	97	75-125	06/19/17 10:37	
Toluene-d8 (S)	%	95	75-125	06/19/17 10:37	

LABORATORY CONTROL SAMPLE: 461775

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	42.6	106	75-125	
1,1,2,2-Tetrachloroethane	ug/L	40	46.1	115	75-125	
1,1,2-Trichloroethane	ug/L	40	47.5	119	75-125	
1,1-Dichloroethane	ug/L	40	42.1	105	75-125	
1,1-Dichloroethene	ug/L	40	44.8	112	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 461775

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	40.2	101	75-125	
1,2-Dichloroethane	ug/L	40	41.7	104	75-125	
1,2-Dichloropropane	ug/L	40	43.7	109	75-125	
1,3-Dichlorobenzene	ug/L	40	41.7	104	75-125	
1,4-Dichlorobenzene	ug/L	40	39.7	99	75-125	
Bromodichloromethane	ug/L	40	44.3	111	75-125	
Bromoform	ug/L	40	40.8	102	75-128	
Bromomethane	ug/L	40	37.2	93	30-150	
Carbon tetrachloride	ug/L	40	41.4	104	75-125	
Chlorobenzene	ug/L	40	40.8	102	75-125	
Chloroethane	ug/L	40	40.1	100	75-125	
Chloroform	ug/L	40	43.3	108	75-125	
Chloromethane	ug/L	40	36.5	91	44-132	
cis-1,2-Dichloroethene	ug/L	40	43.8	110	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.6	107	75-125	
Dibromochloromethane	ug/L	40	42.3	106	74-135	
Methylene Chloride	ug/L	40	44.2	111	75-125	
Tetrachloroethene	ug/L	40	43.5	109	75-125	
trans-1,2-Dichloroethene	ug/L	40	42.8	107	75-125	
trans-1,3-Dichloropropene	ug/L	40	43.9	110	75-125	
Trichloroethene	ug/L	40	42.1	105	75-125	
Trichlorofluoromethane	ug/L	40	44.6	111	72-125	
Vinyl chloride	ug/L	40	36.6	92	69-130	
1,2-Dichloroethane-d4 (S)	%			106	75-125	
4-Bromofluorobenzene (S)	%			104	75-125	
Toluene-d8 (S)	%			95	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 461776 461777

Parameter	Units	1289739002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
1,1,1-Trichloroethane	ug/L	ND	40	40	42.0	42.2	105	105	75-125	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	39.3	39.5	98	99	75-125	0	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	40.6	39.8	102	99	75-125	2	30		
1,1-Dichloroethane	ug/L	ND	40	40	41.4	41.4	103	103	75-125	0	30		
1,1-Dichloroethene	ug/L	ND	40	40	44.0	44.4	110	111	69-136	1	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	39.2	39.5	98	99	75-125	1	30		
1,2-Dichloroethane	ug/L	ND	40	40	36.6	36.8	92	92	75-125	1	30		
1,2-Dichloropropane	ug/L	ND	40	40	40.9	40.4	102	101	75-125	1	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	41.5	41.1	104	103	70-125	1	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	39.9	39.9	100	100	73-125	0	30		
Bromodichloromethane	ug/L	ND	40	40	40.5	40.9	101	102	72-132	1	30		
Bromoform	ug/L	ND	40	40	34.5	34.6	86	87	75-125	1	30		
Bromomethane	ug/L	ND	40	40	35.7	37.1	89	93	30-150	4	30		
Carbon tetrachloride	ug/L	ND	40	40	41.2	41.0	103	103	75-127	0	30		

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Parameter	Units	1289739002		461776		461777		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Chlorobenzene	ug/L	ND	40	40	40.9	40.6	102	102	75-125	1	30			
Chloroethane	ug/L	ND	40	40	39.4	39.6	99	99	75-125	1	30			
Chloroform	ug/L	ND	40	40	42.2	41.7	105	104	75-125	1	30			
Chloromethane	ug/L	ND	40	40	35.4	36.3	89	91	54-125	2	30			
cis-1,2-Dichloroethene	ug/L	ND	40	40	42.3	42.0	106	105	75-125	1	30			
cis-1,3-Dichloropropene	ug/L	ND	40	40	38.0	37.9	95	95	75-125	0	30			
Dibromochloromethane	ug/L	ND	40	40	36.2	36.7	91	92	64-150	1	30			
Methylene Chloride	ug/L	ND	40	40	40.3	41.2	101	103	75-125	2	30			
Tetrachloroethene	ug/L	ND	40	40	43.0	42.7	108	107	68-126	1	30			
trans-1,2-Dichloroethene	ug/L	ND	40	40	42.6	42.1	106	105	73-127	1	30			
trans-1,3-Dichloropropene	ug/L	ND	40	40	37.5	37.2	94	93	75-128	1	30			
Trichloroethene	ug/L	ND	40	40	41.8	41.5	105	104	71-125	1	30			
Trichlorofluoromethane	ug/L	ND	40	40	40.3	44.6	101	111	70-125	10	30			
Vinyl chloride	ug/L	ND	40	40	36.0	35.8	90	90	72-129	0	30			
1,2-Dichloroethane-d4 (S)	%						94	95	75-125					
4-Bromofluorobenzene (S)	%						101	99	75-125					
Toluene-d8 (S)	%						94	95	75-125					

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

QC Batch: 116955 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722005, 1289722015, 1289722018, 1289722019, 1289722030

METHOD BLANK: 462158 Matrix: Water
Associated Lab Samples: 1289722005, 1289722015, 1289722018, 1289722019, 1289722030

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/19/17 19:45	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/19/17 19:45	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/19/17 19:45	
1,1-Dichloroethane	ug/L	ND	0.50	06/19/17 19:45	
1,1-Dichloroethene	ug/L	ND	0.50	06/19/17 19:45	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/19/17 19:45	
1,2-Dichloroethane	ug/L	ND	1.0	06/19/17 19:45	
1,2-Dichloropropane	ug/L	ND	0.50	06/19/17 19:45	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/19/17 19:45	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/19/17 19:45	
Bromodichloromethane	ug/L	ND	0.50	06/19/17 19:45	
Bromoform	ug/L	ND	2.0	06/19/17 19:45	
Bromomethane	ug/L	ND	20.0	06/19/17 19:45	
Carbon tetrachloride	ug/L	ND	0.50	06/19/17 19:45	
Chlorobenzene	ug/L	ND	0.50	06/19/17 19:45	
Chloroethane	ug/L	ND	2.0	06/19/17 19:45	
Chloroform	ug/L	ND	0.50	06/19/17 19:45	
Chloromethane	ug/L	ND	0.50	06/19/17 19:45	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/19/17 19:45	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/19/17 19:45	
Dibromochloromethane	ug/L	ND	0.50	06/19/17 19:45	
Methylene Chloride	ug/L	ND	5.0	06/19/17 19:45	
Tetrachloroethene	ug/L	ND	0.50	06/19/17 19:45	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/19/17 19:45	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/19/17 19:45	
Trichloroethene	ug/L	ND	0.50	06/19/17 19:45	
Trichlorofluoromethane	ug/L	ND	0.50	06/19/17 19:45	
Vinyl chloride	ug/L	ND	0.50	06/19/17 19:45	
1,2-Dichloroethane-d4 (S)	%	99	75-125	06/19/17 19:45	
4-Bromofluorobenzene (S)	%	94	75-125	06/19/17 19:45	
Toluene-d8 (S)	%	95	75-125	06/19/17 19:45	

LABORATORY CONTROL SAMPLE: 462159

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	40.9	102	75-125	
1,1,2,2-Tetrachloroethane	ug/L	40	39.5	99	75-125	
1,1,2-Trichloroethane	ug/L	40	38.6	97	75-125	
1,1-Dichloroethane	ug/L	40	40.0	100	75-125	
1,1-Dichloroethene	ug/L	40	37.8	94	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 462159

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	39.4	99	75-125	
1,2-Dichloroethane	ug/L	40	35.2	88	75-125	
1,2-Dichloropropane	ug/L	40	39.8	99	75-125	
1,3-Dichlorobenzene	ug/L	40	42.1	105	75-125	
1,4-Dichlorobenzene	ug/L	40	41.0	102	75-125	
Bromodichloromethane	ug/L	40	39.8	99	75-125	
Bromoform	ug/L	40	34.0	85	75-128	
Bromomethane	ug/L	40	34.8	87	30-150	
Carbon tetrachloride	ug/L	40	39.9	100	75-125	
Chlorobenzene	ug/L	40	41.7	104	75-125	
Chloroethane	ug/L	40	38.0	95	75-125	
Chloroform	ug/L	40	41.2	103	75-125	
Chloromethane	ug/L	40	33.8	85	44-132	
cis-1,2-Dichloroethene	ug/L	40	41.3	103	75-125	
cis-1,3-Dichloropropene	ug/L	40	37.2	93	75-125	
Dibromochloromethane	ug/L	40	34.9	87	74-135	
Methylene Chloride	ug/L	40	39.4	99	75-125	
Tetrachloroethene	ug/L	40	42.6	106	75-125	
trans-1,2-Dichloroethene	ug/L	40	41.7	104	75-125	
trans-1,3-Dichloropropene	ug/L	40	36.1	90	75-125	
Trichloroethene	ug/L	40	40.7	102	75-125	
Trichlorofluoromethane	ug/L	40	42.8	107	72-125	
Vinyl chloride	ug/L	40	34.4	86	69-130	
1,2-Dichloroethane-d4 (S)	%			92	75-125	
4-Bromofluorobenzene (S)	%			102	75-125	
Toluene-d8 (S)	%			94	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462162 462163

Parameter	Units	1289647010		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
1,1,1-Trichloroethane	ug/L	ND	40	40	40.4	40.0	101	100	75-125	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	38.6	39.1	96	98	75-125	1	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	39.4	38.8	99	97	75-125	2	30		
1,1-Dichloroethane	ug/L	ND	40	40	39.7	39.5	99	99	75-125	1	30		
1,1-Dichloroethene	ug/L	ND	40	40	42.1	41.5	105	104	69-136	1	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	39.4	39.7	99	99	75-125	1	30		
1,2-Dichloroethane	ug/L	ND	40	40	35.4	35.3	89	88	75-125	0	30		
1,2-Dichloropropane	ug/L	ND	40	40	39.7	39.2	99	98	75-125	1	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	40.7	41.0	102	102	70-125	1	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	40.4	40.4	101	101	73-125	0	30		
Bromodichloromethane	ug/L	ND	40	40	39.3	38.8	98	97	72-132	1	30		
Bromoform	ug/L	ND	40	40	33.1	33.7	83	84	75-125	2	30		
Bromomethane	ug/L	ND	40	40	34.8	35.9	87	90	30-150	3	30		
Carbon tetrachloride	ug/L	ND	40	40	39.3	38.9	98	97	75-127	1	30		

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462162		462163		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1289647010 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	40.8	40.7	102	102	75-125	0	30		
Chloroethane	ug/L	ND	40	40	37.7	37.3	94	93	75-125	1	30		
Chloroform	ug/L	0.72	40	40	41.8	41.2	103	101	75-125	1	30		
Chloromethane	ug/L	ND	40	40	33.8	34.2	85	85	54-125	1	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	40.6	40.6	101	102	75-125	0	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	36.9	36.4	92	91	75-125	2	30		
Dibromochloromethane	ug/L	ND	40	40	35.4	35.0	89	87	64-150	1	30		
Methylene Chloride	ug/L	ND	40	40	39.3	39.0	98	98	75-125	1	30		
Tetrachloroethene	ug/L	ND	40	40	41.6	41.5	104	104	68-126	0	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	40.2	40.3	101	101	73-127	0	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	35.7	36.0	89	90	75-128	1	30		
Trichloroethene	ug/L	ND	40	40	40.5	40.0	101	100	71-125	1	30		
Trichlorofluoromethane	ug/L	ND	40	40	37.6	41.6	94	104	70-125	10	30		
Vinyl chloride	ug/L	ND	40	40	33.8	33.8	85	84	72-129	0	30		
1,2-Dichloroethane-d4 (S)	%						93	92	75-125				
4-Bromofluorobenzene (S)	%						98	99	75-125				
Toluene-d8 (S)	%						94	95	75-125				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

QC Batch: 117005 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722031

METHOD BLANK: 462353 Matrix: Water
Associated Lab Samples: 1289722031

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/20/17 10:36	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/20/17 10:36	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/20/17 10:36	
1,1-Dichloroethane	ug/L	ND	0.50	06/20/17 10:36	
1,1-Dichloroethene	ug/L	ND	0.50	06/20/17 10:36	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/20/17 10:36	
1,2-Dichloroethane	ug/L	ND	1.0	06/20/17 10:36	
1,2-Dichloropropane	ug/L	ND	0.50	06/20/17 10:36	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/20/17 10:36	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/20/17 10:36	
Bromodichloromethane	ug/L	ND	0.50	06/20/17 10:36	
Bromoform	ug/L	ND	2.0	06/20/17 10:36	
Bromomethane	ug/L	ND	20.0	06/20/17 10:36	
Carbon tetrachloride	ug/L	ND	0.50	06/20/17 10:36	
Chlorobenzene	ug/L	ND	0.50	06/20/17 10:36	
Chloroethane	ug/L	ND	2.0	06/20/17 10:36	
Chloroform	ug/L	ND	0.50	06/20/17 10:36	
Chloromethane	ug/L	ND	0.50	06/20/17 10:36	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/20/17 10:36	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/20/17 10:36	
Dibromochloromethane	ug/L	ND	0.50	06/20/17 10:36	
Methylene Chloride	ug/L	ND	5.0	06/20/17 10:36	
Tetrachloroethene	ug/L	ND	0.50	06/20/17 10:36	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/20/17 10:36	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/20/17 10:36	
Trichloroethene	ug/L	ND	0.50	06/20/17 10:36	
Trichlorofluoromethane	ug/L	ND	0.50	06/20/17 10:36	
Vinyl chloride	ug/L	ND	0.50	06/20/17 10:36	
1,2-Dichloroethane-d4 (S)	%	109	75-125	06/20/17 10:36	
4-Bromofluorobenzene (S)	%	95	75-125	06/20/17 10:36	
Toluene-d8 (S)	%	95	75-125	06/20/17 10:36	

LABORATORY CONTROL SAMPLE: 462354

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	40.8	102	75-125	
1,1,2,2-Tetrachloroethane	ug/L	40	43.2	108	75-125	
1,1,2-Trichloroethane	ug/L	40	43.8	110	75-125	
1,1-Dichloroethane	ug/L	40	40.2	100	75-125	
1,1-Dichloroethene	ug/L	40	42.2	105	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 462354

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	42.1	105	75-125	
1,2-Dichloroethane	ug/L	40	37.7	94	75-125	
1,2-Dichloropropane	ug/L	40	41.3	103	75-125	
1,3-Dichlorobenzene	ug/L	40	42.8	107	75-125	
1,4-Dichlorobenzene	ug/L	40	42.3	106	75-125	
Bromodichloromethane	ug/L	40	42.2	106	75-125	
Bromoform	ug/L	40	36.9	92	75-128	
Bromomethane	ug/L	40	35.7	89	30-150	
Carbon tetrachloride	ug/L	40	39.7	99	75-125	
Chlorobenzene	ug/L	40	41.3	103	75-125	
Chloroethane	ug/L	40	37.9	95	75-125	
Chloroform	ug/L	40	42.0	105	75-125	
Chloromethane	ug/L	40	33.8	84	44-132	
cis-1,2-Dichloroethene	ug/L	40	41.9	105	75-125	
cis-1,3-Dichloropropene	ug/L	40	39.6	99	75-125	
Dibromochloromethane	ug/L	40	39.0	98	74-135	
Methylene Chloride	ug/L	40	41.0	103	75-125	
Tetrachloroethene	ug/L	40	42.3	106	75-125	
trans-1,2-Dichloroethene	ug/L	40	41.3	103	75-125	
trans-1,3-Dichloropropene	ug/L	40	39.7	99	75-125	
Trichloroethene	ug/L	40	41.4	103	75-125	
Trichlorofluoromethane	ug/L	40	42.3	106	72-125	
Vinyl chloride	ug/L	40	33.9	85	69-130	
1,2-Dichloroethane-d4 (S)	%			98	75-125	
4-Bromofluorobenzene (S)	%			99	75-125	
Toluene-d8 (S)	%			94	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462355 462356

Parameter	Units	1289722031		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
1,1,1-Trichloroethane	ug/L	2.1	40	40	45.2	45.4	108	108	75-125	0	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	38.3	38.8	96	97	75-125	1	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	39.8	39.8	100	100	75-125	0	30		
1,1-Dichloroethane	ug/L	6.7	40	40	49.5	50.2	107	109	75-125	2	30		
1,1-Dichloroethene	ug/L	1.9	40	40	47.4	48.9	114	117	69-136	3	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	39.0	40.0	97	100	75-125	3	30		
1,2-Dichloroethane	ug/L	ND	40	40	36.7	37.4	92	94	75-125	2	30		
1,2-Dichloropropane	ug/L	ND	40	40	40.8	41.5	102	104	75-125	2	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	41.2	41.1	103	103	70-125	0	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	40.0	40.6	100	101	73-125	2	30		
Bromodichloromethane	ug/L	ND	40	40	40.2	40.5	100	101	72-132	1	30		
Bromoform	ug/L	ND	40	40	32.8	33.2	82	83	75-125	1	30		
Bromomethane	ug/L	ND	40	40	30.9	35.7	77	89	30-150	15	30		
Carbon tetrachloride	ug/L	ND	40	40	42.0	42.0	105	105	75-127	0	30		

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462355		462356		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1289722031 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	41.6	41.7	104	104	75-125	0	30		
Chloroethane	ug/L	ND	40	40	42.0	42.4	105	106	75-125	1	30		
Chloroform	ug/L	ND	40	40	43.1	43.3	107	108	75-125	1	30		
Chloromethane	ug/L	ND	40	40	36.2	38.0	90	95	54-125	5	30		
cis-1,2-Dichloroethene	ug/L	113	40	40	157	162	110	121	75-125	3	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	37.7	37.5	94	94	75-125	1	30		
Dibromochloromethane	ug/L	ND	40	40	34.8	35.0	87	88	64-150	1	30		
Methylene Chloride	ug/L	ND	40	40	41.8	42.6	104	107	75-125	2	30		
Tetrachloroethene	ug/L	160	40	40	197	202	92	104	68-126	2	30	E	
trans-1,2-Dichloroethene	ug/L	2.0	40	40	46.4	47.2	111	113	73-127	2	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	35.9	36.3	90	91	75-128	1	30		
Trichloroethene	ug/L	311	40	40	351	362	100	127	71-125	3	30	E,M0	
Trichlorofluoromethane	ug/L	ND	40	40	45.7	41.6	114	104	70-125	10	30		
Vinyl chloride	ug/L	0.65	40	40	37.7	38.9	93	95	72-129	3	30		
1,2-Dichloroethane-d4 (S)	%						91	91	75-125				
4-Bromofluorobenzene (S)	%						100	100	75-125				
Toluene-d8 (S)	%						94	94	75-125				

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

QC Batch: 117047 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722001, 1289722005, 1289722008, 1289722010, 1289722011, 1289722012

METHOD BLANK: 462617 Matrix: Water
Associated Lab Samples: 1289722001, 1289722005, 1289722008, 1289722010, 1289722011, 1289722012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/20/17 19:08	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/20/17 19:08	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/20/17 19:08	
1,1-Dichloroethane	ug/L	ND	0.50	06/20/17 19:08	
1,1-Dichloroethene	ug/L	ND	0.50	06/20/17 19:08	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/20/17 19:08	
1,2-Dichloroethane	ug/L	ND	0.50	06/20/17 19:08	
1,2-Dichloropropane	ug/L	ND	0.50	06/20/17 19:08	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/20/17 19:08	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/20/17 19:08	
Bromodichloromethane	ug/L	ND	0.50	06/20/17 19:08	
Bromoform	ug/L	ND	0.50	06/20/17 19:08	
Bromomethane	ug/L	ND	20.0	06/20/17 19:08	
Carbon tetrachloride	ug/L	ND	0.50	06/20/17 19:08	
Chlorobenzene	ug/L	ND	0.50	06/20/17 19:08	
Chloroethane	ug/L	ND	2.0	06/20/17 19:08	
Chloroform	ug/L	ND	0.50	06/20/17 19:08	
Chloromethane	ug/L	ND	2.0	06/20/17 19:08	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/20/17 19:08	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/20/17 19:08	
Dibromochloromethane	ug/L	ND	0.50	06/20/17 19:08	
Methylene Chloride	ug/L	ND	5.0	06/20/17 19:08	
Tetrachloroethene	ug/L	ND	0.50	06/20/17 19:08	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/20/17 19:08	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/20/17 19:08	
Trichloroethene	ug/L	ND	0.50	06/20/17 19:08	
Trichlorofluoromethane	ug/L	ND	0.50	06/20/17 19:08	
Vinyl chloride	ug/L	ND	0.50	06/20/17 19:08	
1,2-Dichloroethane-d4 (S)	%	101	75-125	06/20/17 19:08	
4-Bromofluorobenzene (S)	%	96	75-125	06/20/17 19:08	
Toluene-d8 (S)	%	93	75-125	06/20/17 19:08	

LABORATORY CONTROL SAMPLE: 462618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	42.1	105	75-125	
1,1,2,2-Tetrachloroethane	ug/L	40	46.0	115	75-125	
1,1,2-Trichloroethane	ug/L	40	43.2	108	75-125	
1,1-Dichloroethane	ug/L	40	44.6	112	75-125	
1,1-Dichloroethene	ug/L	40	43.1	108	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 462618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	41.5	104	75-125	
1,2-Dichloroethane	ug/L	40	43.8	110	75-125	
1,2-Dichloropropane	ug/L	40	44.9	112	75-125	
1,3-Dichlorobenzene	ug/L	40	42.5	106	75-125	
1,4-Dichlorobenzene	ug/L	40	40.7	102	75-125	
Bromodichloromethane	ug/L	40	43.6	109	75-125	
Bromoform	ug/L	40	44.2	111	75-128	
Bromomethane	ug/L	40	62.4	156	30-150 L1	
Carbon tetrachloride	ug/L	40	43.3	108	75-125	
Chlorobenzene	ug/L	40	42.9	107	75-125	
Chloroethane	ug/L	40	55.2	138	75-125 L1	
Chloroform	ug/L	40	43.9	110	75-125	
Chloromethane	ug/L	40	54.3	136	44-132 L1	
cis-1,2-Dichloroethene	ug/L	40	43.9	110	75-125	
cis-1,3-Dichloropropene	ug/L	40	45.1	113	75-125	
Dibromochloromethane	ug/L	40	44.8	112	74-135	
Methylene Chloride	ug/L	40	43.5	109	75-125	
Tetrachloroethene	ug/L	40	40.7	102	75-125	
trans-1,2-Dichloroethene	ug/L	40	44.1	110	75-125	
trans-1,3-Dichloropropene	ug/L	40	44.3	111	75-125	
Trichloroethene	ug/L	40	42.8	107	75-125	
Trichlorofluoromethane	ug/L	40	51.1	128	72-125 L1	
Vinyl chloride	ug/L	40	49.7	124	69-130	
1,2-Dichloroethane-d4 (S)	%			102	75-125	
4-Bromofluorobenzene (S)	%			102	75-125	
Toluene-d8 (S)	%			93	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462619 462620

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1289722012	Spike Conc.	MSD Spike Conc.	MS Result								
1,1,1-Trichloroethane	ug/L	ND	250	250	270	268	108	107	75-125	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	250	250	276	297	110	119	75-125	7	30		
1,1,2-Trichloroethane	ug/L	ND	250	250	265	274	106	110	75-125	3	30		
1,1-Dichloroethane	ug/L	14.0	250	250	287	289	108	109	75-125	1	30		
1,1-Dichloroethene	ug/L	4.7	250	250	280	274	110	107	69-136	2	30		
1,2-Dichlorobenzene	ug/L	ND	250	250	260	261	104	104	75-125	0	30		
1,2-Dichloroethane	ug/L	ND	250	250	265	277	106	111	75-125	4	30		
1,2-Dichloropropane	ug/L	ND	250	250	279	279	112	112	75-125	0	30		
1,3-Dichlorobenzene	ug/L	ND	250	250	260	265	104	106	70-125	2	30		
1,4-Dichlorobenzene	ug/L	ND	250	250	257	256	103	103	73-125	0	30		
Bromodichloromethane	ug/L	ND	250	250	269	270	108	108	72-132	1	30		
Bromoform	ug/L	ND	250	250	272	285	109	114	75-125	5	30		
Bromomethane	ug/L	ND	250	250	398	394	159	157	30-150	1	30	M6	
Carbon tetrachloride	ug/L	ND	250	250	273	277	109	111	75-127	1	30		

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462619		462620		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1289722012 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	250	250	265	268	106	107	75-125	1	30		
Chloroethane	ug/L	ND	250	250	319	343	128	137	75-125	7	30	M6	
Chloroform	ug/L	ND	250	250	277	273	111	109	75-125	2	30		
Chloromethane	ug/L	ND	250	250	337	351	135	140	54-125	4	30	M6	
cis-1,2-Dichloroethene	ug/L	893	250	250	1250	1200	83	64	75-125	4	30	M6	
cis-1,3-Dichloropropene	ug/L	ND	250	250	279	278	112	111	75-125	0	30		
Dibromochloromethane	ug/L	ND	250	250	278	281	111	112	64-150	1	30		
Methylene Chloride	ug/L	ND	250	250	275	279	110	111	75-125	1	30		
Tetrachloroethene	ug/L	42.4	250	250	298	288	100	96	68-126	3	30		
trans-1,2-Dichloroethene	ug/L	7.6	250	250	275	279	107	108	73-127	2	30		
trans-1,3-Dichloropropene	ug/L	ND	250	250	275	278	110	111	75-128	1	30		
Trichloroethene	ug/L	18.1	250	250	281	284	105	106	71-125	1	30		
Trichlorofluoromethane	ug/L	ND	250	250	315	319	126	128	70-125	1	30	M6	
Vinyl chloride	ug/L	48.4	250	250	375	369	123	121	72-129	2	30		
1,2-Dichloroethane-d4 (S)	%						101	103	75-125				
4-Bromofluorobenzene (S)	%						103	103	75-125				
Toluene-d8 (S)	%						93	93	75-125				

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

QC Batch: 117116 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722020, 1289722021, 1289722022, 1289722023, 1289722024, 1289722025, 1289722026, 1289722027, 1289722028, 1289722029, 1289722032, 1289722033, 1289722034, 1289722035, 1289722036, 1289722038, 1289722039, 1289722040

METHOD BLANK: 462947 Matrix: Water
Associated Lab Samples: 1289722020, 1289722021, 1289722022, 1289722023, 1289722024, 1289722025, 1289722026, 1289722027, 1289722028, 1289722029, 1289722032, 1289722033, 1289722034, 1289722035, 1289722036, 1289722038, 1289722039, 1289722040

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/21/17 10:24	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/21/17 10:24	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/21/17 10:24	
1,1-Dichloroethane	ug/L	ND	0.50	06/21/17 10:24	
1,1-Dichloroethene	ug/L	ND	0.50	06/21/17 10:24	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/21/17 10:24	
1,2-Dichloroethane	ug/L	ND	1.0	06/21/17 10:24	
1,2-Dichloropropane	ug/L	ND	0.50	06/21/17 10:24	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/21/17 10:24	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/21/17 10:24	
Bromodichloromethane	ug/L	ND	0.50	06/21/17 10:24	
Bromoform	ug/L	ND	2.0	06/21/17 10:24	
Bromomethane	ug/L	ND	20.0	06/21/17 10:24	
Carbon tetrachloride	ug/L	ND	0.50	06/21/17 10:24	
Chlorobenzene	ug/L	ND	0.50	06/21/17 10:24	
Chloroethane	ug/L	ND	2.0	06/21/17 10:24	
Chloroform	ug/L	ND	0.50	06/21/17 10:24	
Chloromethane	ug/L	ND	0.50	06/21/17 10:24	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/21/17 10:24	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/21/17 10:24	
Dibromochloromethane	ug/L	ND	0.50	06/21/17 10:24	
Methylene Chloride	ug/L	ND	5.0	06/21/17 10:24	
Tetrachloroethene	ug/L	ND	0.50	06/21/17 10:24	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/21/17 10:24	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/21/17 10:24	
Trichloroethene	ug/L	ND	0.50	06/21/17 10:24	
Trichlorofluoromethane	ug/L	ND	0.50	06/21/17 10:24	
Vinyl chloride	ug/L	ND	0.50	06/21/17 10:24	
1,2-Dichloroethane-d4 (S)	%	114	75-125	06/21/17 10:24	
4-Bromofluorobenzene (S)	%	95	75-125	06/21/17 10:24	
Toluene-d8 (S)	%	95	75-125	06/21/17 10:24	

LABORATORY CONTROL SAMPLE: 462948

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	42.3	106	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 462948

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,2,2-Tetrachloroethane	ug/L	40	51.4	128	75-125	L1
1,1,2-Trichloroethane	ug/L	40	50.3	126	75-125	L1
1,1-Dichloroethane	ug/L	40	42.4	106	75-125	
1,1-Dichloroethene	ug/L	40	45.5	114	75-125	
1,2-Dichlorobenzene	ug/L	40	41.8	105	75-125	
1,2-Dichloroethane	ug/L	40	44.6	112	75-125	
1,2-Dichloropropane	ug/L	40	44.2	110	75-125	
1,3-Dichlorobenzene	ug/L	40	43.0	108	75-125	
1,4-Dichlorobenzene	ug/L	40	40.2	100	75-125	
Bromodichloromethane	ug/L	40	45.3	113	75-125	
Bromoform	ug/L	40	44.2	111	75-128	
Bromomethane	ug/L	40	43.8	109	30-150	
Carbon tetrachloride	ug/L	40	40.7	102	75-125	
Chlorobenzene	ug/L	40	41.5	104	75-125	
Chloroethane	ug/L	40	41.7	104	75-125	
Chloroform	ug/L	40	43.6	109	75-125	
Chloromethane	ug/L	40	36.1	90	44-132	
cis-1,2-Dichloroethene	ug/L	40	43.9	110	75-125	
cis-1,3-Dichloropropene	ug/L	40	44.0	110	75-125	
Dibromochloromethane	ug/L	40	43.8	109	74-135	
Methylene Chloride	ug/L	40	44.6	111	75-125	
Tetrachloroethene	ug/L	40	43.3	108	75-125	
trans-1,2-Dichloroethene	ug/L	40	43.1	108	75-125	
trans-1,3-Dichloropropene	ug/L	40	45.5	114	75-125	
Trichloroethene	ug/L	40	42.7	107	75-125	
Trichlorofluoromethane	ug/L	40	45.1	113	72-125	
Vinyl chloride	ug/L	40	36.3	91	69-130	
1,2-Dichloroethane-d4 (S)	%			112	75-125	
4-Bromofluorobenzene (S)	%			104	75-125	
Toluene-d8 (S)	%			94	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462949 462950

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1289722032 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	ND	40	40	42.7	41.2	107	103	75-125	4	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	52.0	47.9	130	120	75-125	8	30	M0
1,1,2-Trichloroethane	ug/L	ND	40	40	50.9	48.1	127	120	75-125	6	30	M0
1,1-Dichloroethane	ug/L	ND	40	40	42.5	41.8	106	104	75-125	2	30	
1,1-Dichloroethene	ug/L	ND	40	40	45.3	44.3	113	111	69-136	2	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	41.3	40.1	103	100	75-125	3	30	
1,2-Dichloroethane	ug/L	ND	40	40	44.2	42.3	111	106	75-125	5	30	
1,2-Dichloropropane	ug/L	ND	40	40	44.4	43.0	111	107	75-125	3	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	42.5	41.3	106	103	70-125	3	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	40.3	39.0	101	98	73-125	3	30	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 462949		462950		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1289722032 Result	MS Spike Conc.	MSD Spike Conc.									
Bromodichloromethane	ug/L	ND	40	40	44.8	43.4	112	109	72-132	3	30		
Bromoform	ug/L	ND	40	40	42.4	39.2	106	98	75-125	8	30		
Bromomethane	ug/L	ND	40	40	42.2	42.2	106	105	30-150	0	30		
Carbon tetrachloride	ug/L	ND	40	40	40.5	39.5	101	99	75-127	3	30		
Chlorobenzene	ug/L	ND	40	40	41.8	40.4	104	101	75-125	3	30		
Chloroethane	ug/L	ND	40	40	41.5	40.9	104	102	75-125	1	30		
Chloroform	ug/L	ND	40	40	43.7	42.8	109	107	75-125	2	30		
Chloromethane	ug/L	ND	40	40	35.4	36.0	88	90	54-125	2	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	44.5	43.2	111	108	75-125	3	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	42.8	40.8	107	102	75-125	5	30		
Dibromochloromethane	ug/L	ND	40	40	43.2	41.1	108	103	64-150	5	30		
Methylene Chloride	ug/L	ND	40	40	46.0	44.4	115	111	75-125	4	30		
Tetrachloroethene	ug/L	ND	40	40	42.7	41.5	107	104	68-126	3	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	44.1	42.5	110	106	73-127	4	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	44.6	42.2	111	105	75-128	5	30		
Trichloroethene	ug/L	ND	40	40	42.3	41.0	106	103	71-125	3	30		
Trichlorofluoromethane	ug/L	ND	40	40	41.2	40.0	103	100	70-125	3	30		
Vinyl chloride	ug/L	ND	40	40	36.7	36.3	92	91	72-129	1	30		
1,2-Dichloroethane-d4 (S)	%						111	108	75-125				
4-Bromofluorobenzene (S)	%						103	103	75-125				
Toluene-d8 (S)	%						93	94	75-125				

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

QC Batch: 117173 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722004, 1289722008, 1289722012, 1289722013, 1289722016, 1289722017, 1289722041

METHOD BLANK: 463236 Matrix: Water
Associated Lab Samples: 1289722004, 1289722008, 1289722012, 1289722013, 1289722016, 1289722017, 1289722041

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/21/17 16:13	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/21/17 16:13	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/21/17 16:13	
1,1-Dichloroethane	ug/L	ND	0.50	06/21/17 16:13	
1,1-Dichloroethene	ug/L	ND	0.50	06/21/17 16:13	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/21/17 16:13	
1,2-Dichloroethane	ug/L	ND	0.50	06/21/17 16:13	
1,2-Dichloropropane	ug/L	ND	0.50	06/21/17 16:13	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/21/17 16:13	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/21/17 16:13	
Bromodichloromethane	ug/L	ND	0.50	06/21/17 16:13	
Bromoform	ug/L	ND	0.50	06/21/17 16:13	
Bromomethane	ug/L	ND	20.0	06/21/17 16:13	
Carbon tetrachloride	ug/L	ND	0.50	06/21/17 16:13	
Chlorobenzene	ug/L	ND	0.50	06/21/17 16:13	
Chloroethane	ug/L	ND	2.0	06/21/17 16:13	
Chloroform	ug/L	ND	0.50	06/21/17 16:13	
Chloromethane	ug/L	ND	2.0	06/21/17 16:13	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/21/17 16:13	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/21/17 16:13	
Dibromochloromethane	ug/L	ND	0.50	06/21/17 16:13	
Methylene Chloride	ug/L	ND	5.0	06/21/17 16:13	
Tetrachloroethene	ug/L	ND	0.50	06/21/17 16:13	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/21/17 16:13	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/21/17 16:13	
Trichloroethene	ug/L	ND	0.50	06/21/17 16:13	
Trichlorofluoromethane	ug/L	ND	0.50	06/21/17 16:13	
Vinyl chloride	ug/L	ND	0.50	06/21/17 16:13	
1,2-Dichloroethane-d4 (S)	%	101	75-125	06/21/17 16:13	
4-Bromofluorobenzene (S)	%	98	75-125	06/21/17 16:13	
Toluene-d8 (S)	%	92	75-125	06/21/17 16:13	

LABORATORY CONTROL SAMPLE: 463237

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	42.2	106	75-125	
1,1,2,2-Tetrachloroethane	ug/L	40	39.9	100	75-125	
1,1,2-Trichloroethane	ug/L	40	39.2	98	75-125	
1,1-Dichloroethane	ug/L	40	39.9	100	75-125	
1,1-Dichloroethene	ug/L	40	39.1	98	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 463237

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	38.1	95	75-125	
1,2-Dichloroethane	ug/L	40	40.7	102	75-125	
1,2-Dichloropropane	ug/L	40	40.3	101	75-125	
1,3-Dichlorobenzene	ug/L	40	40.2	101	75-125	
1,4-Dichlorobenzene	ug/L	40	40.6	102	75-125	
Bromodichloromethane	ug/L	40	41.2	103	75-125	
Bromoform	ug/L	40	41.4	104	75-128	
Bromomethane	ug/L	40	36.3	91	30-150	
Carbon tetrachloride	ug/L	40	42.1	105	75-125	
Chlorobenzene	ug/L	40	40.1	100	75-125	
Chloroethane	ug/L	40	47.0	118	75-125	
Chloroform	ug/L	40	41.7	104	75-125	
Chloromethane	ug/L	40	42.3	106	44-132	
cis-1,2-Dichloroethene	ug/L	40	40.0	100	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.5	106	75-125	
Dibromochloromethane	ug/L	40	41.0	102	74-135	
Methylene Chloride	ug/L	40	40.2	101	75-125	
Tetrachloroethene	ug/L	40	41.2	103	75-125	
trans-1,2-Dichloroethene	ug/L	40	40.7	102	75-125	
trans-1,3-Dichloropropene	ug/L	40	40.9	102	75-125	
Trichloroethene	ug/L	40	40.6	101	75-125	
Trichlorofluoromethane	ug/L	40	42.3	106	72-125	
Vinyl chloride	ug/L	40	39.5	99	69-130	
1,2-Dichloroethane-d4 (S)	%			101	75-125	
4-Bromofluorobenzene (S)	%			104	75-125	
Toluene-d8 (S)	%			93	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 463238 463239

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1289722012	Spike Conc.	MSD Spike Conc.	MS Result								
1,1,1-Trichloroethane	ug/L	ND	250	250	257	260	103	104	75-125	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	250	250	260	261	104	104	75-125	0	30		
1,1,2-Trichloroethane	ug/L	ND	250	250	246	250	98	100	75-125	2	30		
1,1-Dichloroethane	ug/L	14.0	250	250	263	261	99	99	75-125	1	30		
1,1-Dichloroethene	ug/L	4.7	250	250	243	247	95	97	69-136	2	30		
1,2-Dichlorobenzene	ug/L	ND	250	250	238	236	95	95	75-125	1	30		
1,2-Dichloroethane	ug/L	ND	250	250	252	253	101	101	75-125	1	30		
1,2-Dichloropropane	ug/L	ND	250	250	249	247	99	99	75-125	1	30		
1,3-Dichlorobenzene	ug/L	ND	250	250	248	247	99	99	70-125	0	30		
1,4-Dichlorobenzene	ug/L	ND	250	250	249	248	100	99	73-125	0	30		
Bromodichloromethane	ug/L	ND	250	250	255	257	102	103	72-132	1	30		
Bromoform	ug/L	ND	250	250	257	260	103	104	75-125	1	30		
Bromomethane	ug/L	ND	250	250	222	234	89	94	30-150	5	30		
Carbon tetrachloride	ug/L	ND	250	250	261	257	104	103	75-127	2	30		

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 463238		463239		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1289722012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chlorobenzene	ug/L	ND	250	250	247	251	99	100	75-125	1	30		
Chloroethane	ug/L	ND	250	250	293	301	117	121	75-125	3	30		
Chloroform	ug/L	ND	250	250	254	256	102	102	75-125	1	30		
Chloromethane	ug/L	ND	250	250	264	260	106	104	54-125	2	30		
cis-1,2-Dichloroethene	ug/L	893	250	250	1040	1050	58	64	75-125	1	30	M6	
cis-1,3-Dichloropropene	ug/L	ND	250	250	262	265	105	106	75-125	1	30		
Dibromochloromethane	ug/L	ND	250	250	258	259	103	104	64-150	0	30		
Methylene Chloride	ug/L	ND	250	250	254	250	102	100	75-125	2	30		
Tetrachloroethene	ug/L	42.4	250	250	285	288	97	98	68-126	1	30		
trans-1,2-Dichloroethene	ug/L	7.6	250	250	261	253	101	98	73-127	3	30		
trans-1,3-Dichloropropene	ug/L	ND	250	250	251	256	100	102	75-128	2	30		
Trichloroethene	ug/L	18.1	250	250	267	267	99	100	71-125	0	30		
Trichlorofluoromethane	ug/L	ND	250	250	259	274	104	110	70-125	6	30		
Vinyl chloride	ug/L	48.4	250	250	281	287	93	95	72-129	2	30		
1,2-Dichloroethane-d4 (S)	%						102	103	75-125				
4-Bromofluorobenzene (S)	%						104	105	75-125				
Toluene-d8 (S)	%						93	93	75-125				

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

QC Batch: 117288 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water
Associated Lab Samples: 1289722033, 1289722034

METHOD BLANK: 463657 Matrix: Water
Associated Lab Samples: 1289722033, 1289722034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	06/22/17 11:19	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/22/17 11:19	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/22/17 11:19	
1,1-Dichloroethane	ug/L	ND	0.50	06/22/17 11:19	
1,1-Dichloroethene	ug/L	ND	0.50	06/22/17 11:19	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/22/17 11:19	
1,2-Dichloroethane	ug/L	ND	1.0	06/22/17 11:19	
1,2-Dichloropropane	ug/L	ND	0.50	06/22/17 11:19	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/22/17 11:19	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/22/17 11:19	
Bromodichloromethane	ug/L	ND	0.50	06/22/17 11:19	
Bromoform	ug/L	ND	2.0	06/22/17 11:19	
Bromomethane	ug/L	ND	20.0	06/22/17 11:19	
Carbon tetrachloride	ug/L	ND	0.50	06/22/17 11:19	
Chlorobenzene	ug/L	ND	0.50	06/22/17 11:19	
Chloroethane	ug/L	ND	2.0	06/22/17 11:19	
Chloroform	ug/L	ND	0.50	06/22/17 11:19	
Chloromethane	ug/L	ND	0.50	06/22/17 11:19	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/22/17 11:19	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/22/17 11:19	
Dibromochloromethane	ug/L	ND	0.50	06/22/17 11:19	
Methylene Chloride	ug/L	ND	5.0	06/22/17 11:19	
Tetrachloroethene	ug/L	ND	0.50	06/22/17 11:19	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/22/17 11:19	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/22/17 11:19	
Trichloroethene	ug/L	ND	0.50	06/22/17 11:19	
Trichlorofluoromethane	ug/L	ND	0.50	06/22/17 11:19	
Vinyl chloride	ug/L	ND	0.50	06/22/17 11:19	
1,2-Dichloroethane-d4 (S)	%	118	75-125	06/22/17 11:19	
4-Bromofluorobenzene (S)	%	87	75-125	06/22/17 11:19	
Toluene-d8 (S)	%	96	75-125	06/22/17 11:19	

LABORATORY CONTROL SAMPLE: 463658

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	43.5	109	75-125	
1,1,2,2-Tetrachloroethane	ug/L	40	49.2	123	75-125	
1,1,2-Trichloroethane	ug/L	40	49.2	123	75-125	
1,1-Dichloroethane	ug/L	40	44.2	111	75-125	
1,1-Dichloroethene	ug/L	40	44.2	111	75-125	

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

LABORATORY CONTROL SAMPLE: 463658

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	41.0	103	75-125	
1,2-Dichloroethane	ug/L	40	44.8	112	75-125	
1,2-Dichloropropane	ug/L	40	45.2	113	75-125	
1,3-Dichlorobenzene	ug/L	40	41.7	104	75-125	
1,4-Dichlorobenzene	ug/L	40	39.7	99	75-125	
Bromodichloromethane	ug/L	40	45.5	114	75-125	
Bromoform	ug/L	40	39.6	99	75-128	
Bromomethane	ug/L	40	41.7	104	30-150	
Carbon tetrachloride	ug/L	40	42.0	105	75-125	
Chlorobenzene	ug/L	40	40.9	102	75-125	
Chloroethane	ug/L	40	44.4	111	75-125	
Chloroform	ug/L	40	45.3	113	75-125	
Chloromethane	ug/L	40	41.3	103	44-132	
cis-1,2-Dichloroethene	ug/L	40	43.7	109	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.9	107	75-125	
Dibromochloromethane	ug/L	40	41.6	104	74-135	
Methylene Chloride	ug/L	40	45.3	113	75-125	
Tetrachloroethene	ug/L	40	40.9	102	75-125	
trans-1,2-Dichloroethene	ug/L	40	44.1	110	75-125	
trans-1,3-Dichloropropene	ug/L	40	44.5	111	75-125	
Trichloroethene	ug/L	40	41.7	104	75-125	
Trichlorofluoromethane	ug/L	40	48.5	121	72-125	
Vinyl chloride	ug/L	40	39.0	98	69-130	
1,2-Dichloroethane-d4 (S)	%			110	75-125	
4-Bromofluorobenzene (S)	%			99	75-125	
Toluene-d8 (S)	%			95	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 463664 463665

Parameter	Units	1289935001		463665		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
1,1,1-Trichloroethane	ug/L	ND	40	15.4	28.1	38	70	75-125	59	30	M1,R1
1,1,2,2-Tetrachloroethane	ug/L	ND	40	17.0	31.8	42	79	75-125	61	30	M1,R1
1,1,2-Trichloroethane	ug/L	ND	40	17.4	32.4	43	81	75-125	60	30	M1,R1
1,1-Dichloroethane	ug/L	ND	40	16.1	29.4	40	73	75-125	59	30	M1,R1
1,1-Dichloroethene	ug/L	ND	40	15.4	28.8	38	72	69-136	61	30	M1,R1
1,2-Dichlorobenzene	ug/L	ND	40	13.8	26.5	35	66	75-125	63	30	M1,R1
1,2-Dichloroethane	ug/L	ND	40	16.7	29.7	42	74	75-125	56	30	M1,R1
1,2-Dichloropropane	ug/L	ND	40	15.8	29.9	40	75	75-125	62	30	M1,R1
1,3-Dichlorobenzene	ug/L	ND	40	13.1	26.3	33	66	70-125	67	30	M1,R1
1,4-Dichlorobenzene	ug/L	ND	40	13.1	25.5	33	64	73-125	65	30	M1,R1
Bromodichloromethane	ug/L	ND	40	15.9	29.4	40	73	72-132	59	30	M1,R1
Bromoform	ug/L	ND	40	12.3	24.1	31	60	75-125	65	30	M1,R1
Bromomethane	ug/L	ND	40	14.6J	27.1	36	68	30-150		30	
Carbon tetrachloride	ug/L	ND	40	14.4	26.9	36	67	75-127	61	30	M1,R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 463664		463665		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1289935001 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	14.3	26.9	36	67	75-125	61	30	M1,R1	
Chloroethane	ug/L	ND	40	40	16.3	29.2	41	73	75-125	57	30	M1,R1	
Chloroform	ug/L	ND	40	40	16.3	29.9	41	75	75-125	59	30	M1,R1	
Chloromethane	ug/L	ND	40	40	15.7	27.5	39	69	54-125	54	30	M1,R1	
cis-1,2-Dichloroethene	ug/L	ND	40	40	15.9	29.3	40	73	75-125	59	30	M1,R1	
cis-1,3-Dichloropropene	ug/L	ND	40	40	14.7	27.4	37	68	75-125	61	30	M1,R1	
Dibromochloromethane	ug/L	ND	40	40	14.0	26.5	35	66	64-150	62	30	M1,R1	
Methylene Chloride	ug/L	ND	40	40	17.3	30.4	43	76	75-125	55	30	M1,R1	
Tetrachloroethene	ug/L	ND	40	40	13.3	26.4	33	66	68-126	66	30	M1,R1	
trans-1,2-Dichloroethene	ug/L	ND	40	40	16.2	29.0	40	72	73-127	57	30	M1,R1	
trans-1,3-Dichloropropene	ug/L	ND	40	40	14.7	28.4	37	71	75-128	64	30	M1,R1	
Trichloroethene	ug/L	ND	40	40	14.5	27.4	36	68	71-125	62	30	M1,R1	
Trichlorofluoromethane	ug/L	ND	40	40	15.0	31.2	37	78	70-125	70	30	M1,R1	
Vinyl chloride	ug/L	ND	40	40	14.7	26.1	37	65	72-129	55	30	M1,R1	
1,2-Dichloroethane-d4 (S)	%						110	112	75-125				
4-Bromofluorobenzene (S)	%						96	98	75-125				
Toluene-d8 (S)	%						95	95	75-125				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

QC Batch: 82886 Analysis Method: SM 5310B
QC Batch Method: SM 5310B Analysis Description: 5310B TOC
Associated Lab Samples: 1289722002, 1289722005, 1289722014, 1289722015, 1289722023

METHOD BLANK: 352940 Matrix: Water
Associated Lab Samples: 1289722002, 1289722005, 1289722014, 1289722015, 1289722023

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	06/19/17 10:08	

LABORATORY CONTROL SAMPLE: 352941

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	31.6	30.7	97	90-110	

MATRIX SPIKE SAMPLE: 352943

Parameter	Units	2056140003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	3.8	20	21.7	89	75-125	

SAMPLE DUPLICATE: 352942

Parameter	Units	2056140003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	3.8	2.8	33	20	D6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

QC Batch: 83305	Analysis Method: SM 5310B
QC Batch Method: SM 5310B	Analysis Description: 5310B TOC
Associated Lab Samples: 1289722012	

METHOD BLANK: 354863 Matrix: Water

Associated Lab Samples: 1289722012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	06/23/17 14:45	

LABORATORY CONTROL SAMPLE: 354864

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	31.6	29.4	93	90-110	

MATRIX SPIKE SAMPLE: 354866

Parameter	Units	2056552005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	6.1	20	26.9	104	75-125	

SAMPLE DUPLICATE: 354865

Parameter	Units	2056552005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	6.1	6.0	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: NuStar Vancouver GWM
Pace Project No.: 1289722

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-V Pace Analytical Services - Virginia

BATCH QUALIFIERS

Batch: 117005
[1] Samples 10392389007, 10392389008, 10392389009 were decanted prior to analysis due to levels of sediment in the sample containers.
Batch: 117047
[1] The continuing calibration for Dichlorodifluoromethane, Dichlorofluoromethane, Chloromethane, Vinyl Chloride, Bromomethane, Chloroethane, Trichlorofluoromethane, 2-Hexanone, and Naphthalene is outside of Pace Analytical acceptance limits. The results for the listed analytes may be biased high.
[2] Results for samples 1289722004 and 1289722005 are from a previously used sample container.

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.
E Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
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.
M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
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.: 1289722

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1289722002	MW-24i	RSK 175	480560		
1289722005	MGMS2-40	RSK 175	480560		
1289722012	MW-12	RSK 175	480223		
1289722014	MP-1	RSK 175	480560		
1289722015	EX	RSK 175	480560		
1289722023	MW-7	RSK 175	480560		
1289722001	MW-25i	EPA 8260B	116839		
1289722001	MW-25i	EPA 8260B	117047		
1289722002	MW-24i	EPA 8260B	116839		
1289722003	MW-24d	EPA 8260B	116839		
1289722004	MW-13	EPA 8260B	117173		
1289722005	MGMS2-40	EPA 8260B	116955		
1289722005	MGMS2-40	EPA 8260B	117047		
1289722006	MGMS2-60	EPA 8260B	116839		
1289722007	MW-1	EPA 8260B	116839		
1289722008	MGMS1-43	EPA 8260B	117047		
1289722008	MGMS1-43	EPA 8260B	117173		
1289722009	MGMS1-60	EPA 8260B	116839		
1289722010	MGMS3-40	EPA 8260B	117047		
1289722011	MGMS3-60	EPA 8260B	117047		
1289722012	MW-12	EPA 8260B	117047		
1289722012	MW-12	EPA 8260B	117173		
1289722013	MW-12 DUP	EPA 8260B	117173		
1289722014	MP-1	EPA 8260B	116899		
1289722015	EX	EPA 8260B	116955		
1289722016	MW-19	EPA 8260B	117173		
1289722017	MW-19 DUP	EPA 8260B	117173		
1289722018	MW-16	EPA 8260B	116955		
1289722019	MW-19i	EPA 8260B	116955		
1289722020	MW-20i	EPA 8260B	117116		
1289722021	MW-32s	EPA 8260B	117116		
1289722022	MW-5	EPA 8260B	117116		
1289722023	MW-7	EPA 8260B	117116		
1289722024	MW-7 DUP	EPA 8260B	117116		
1289722025	MW-9	EPA 8260B	117116		
1289722026	MW-3	EPA 8260B	117116		
1289722027	MW-18i	EPA 8260B	117116		
1289722028	MW-21i-40	EPA 8260B	117116		
1289722029	MW-21i-105	EPA 8260B	117116		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver GWM

Pace Project No.: 1289722

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1289722030	MW-22i	EPA 8260B	116955		
1289722031	MW-26	EPA 8260B	117005		
1289722032	MW-23i	EPA 8260B	117116		
1289722033	MW-14	EPA 8260B	117116		
1289722033	MW-14	EPA 8260B	117288		
1289722034	S-2	EPA 8260B	117116		
1289722034	S-2	EPA 8260B	117288		
1289722035	S-1	EPA 8260B	117116		
1289722036	MW-8	EPA 8260B	117116		
1289722037	Field Blank	EPA 8260B	116899		
1289722038	Field Blank	EPA 8260B	117116		
1289722039	Field Blank	EPA 8260B	117116		
1289722040	Field Blank	EPA 8260B	117116		
1289722041	Equipment Blank	EPA 8260B	117173		
1289722002	MW-24i	SM 5310B	82886		
1289722005	MGMS2-40	SM 5310B	82886		
1289722012	MW-12	SM 5310B	83305		
1289722014	MP-1	SM 5310B	82886		
1289722015	EX	SM 5310B	82886		
1289722023	MW-7	SM 5310B	82886		

REPORT OF LABORATORY ANALYSIS

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

SRG # / Lab No. 1289722

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 1913 Fax Number: 503-924-4707 Project #: 320001126-20 Project Name: NuStar Vancouver GWM Project Address:		California EDF Report? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes CRA EQUIS Required <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes XLS Report Required <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		Global ID: EDD Deliverable To (Email Address): <u>Heather.Gosack@apexcos.com</u> Bill to: Apex Companies Sampler Name & Signature: Kyle Kline and Chris Clough		Chain-of-Custody Record and Analysis Request									
Sample Designation	Date	Time	Container			Preservative			Matrix			Analysis Request Other: Please Specify	TAT <input type="checkbox"/> 12 hr <input type="checkbox"/> 24 hr <input type="checkbox"/> 48hr <input type="checkbox"/> 72hr <input checked="" type="checkbox"/> 1 wk		
			40 ml VOA	Glove	Poly	250 ml Glass	Tedar	HCl	HNO ₃	H ₂ SO ₄	None			Water	Soil
MW-25i	6/15/2017	0748	3			3				X				X	
MW-24i	6/15/2017	0824	7			3	2	2		X				X	
MW-24d	6/15/2017	906	3			3				X				X	
MW-13	6/15/2017	956	3			3				X				X	
MGMS2-40	6/15/2017	1037	7			3	2	2		X				X	
MGMS2-60	6/15/2017	1100	3			3				X				X	
MW-1	6/12/2017	1230	3			3				X				X	
MGMS1-43	6/12/2017	1310	3			3				X				X	
MGMS1-60	6/12/2017	1336	3			3				X				X	
MGMS3-40	6/12/2017	1400	3			3				X				X	
MGMS3-60	6/12/2017	1420	3			3				X				X	
MW-12	6/12/2017	1450	7			3	2	2		X				X	
MW-12 DUP	6/12/2017	1450	3			3				X				X	
Sample Designation		Date		Time		Received by:		Time		Remarks:		MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)			
MW-25i		6/15/17		1416		<i>[Signature]</i>		1416		MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)					
Relinquished by:		Date		Time		Received by:		Time		Temp °C		Initials		Date	
KYLE KLINE		6/15/17		1416		<i>[Signature]</i>		1416		5.1		DSD		06/16/17	
Relinquished by:		Date		Time		Received by Laboratory:		Time		Therm. ID #		Coulant Present		Yes / No	
<i>[Signature]</i>						Received by Laboratory:				DA1534		Yes / No		Yes / No	



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 Davis, CA 95618
 Lab: 530.297.4800
 Fax: 530.297.4802

SRG # / Lab No.

128922

Chain-of-Custody Record and Analysis Request

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 1913
 Fax Number: 503-924-4707
 Project #: 320001126-20
 Project Name: NuStar Vancouver GWM
 Project Address: [Blank]

California EDF Report? Yes No
 CRA EQUIS Required Yes No
 XLS Report Required Yes No

Global ID: [Blank]
 EDD Deliverable To (Email Address): Heather.Gosack@apexcos.com
 Bill to: Apex Companies
 Sampler Name & Signature: Kyle Kline and Chris Clough

Sample Designation	Sampling		Container				Preservative			Matrix			TAT
	Date	Time	Sleeve	Poly	250 mL Glass	Tedlar	HCl	HNO ₃	H ₂ SO ₄	Water	Soil	Air	
MW-12 MS	06/12/17	1450	3				3			X			X
MW-12 MSD	06/12/17	1450	3				3			X			X
MP-1	06/14/17	1450	7				3	2	2	X			X
EX	06/14/17	1418	7				3	2	2	X			X
MW-19	06/14/17	1336	3				3			X			X
MW-19 DUP	06/14/17	1336	3				3			X			X
MW-16	06/14/17	1232	3				3			X			X
MW-19i	06/14/17	1152	3				3			X			X
MW-20i	06/14/17	1118	3				3			X			X
MW-32s	06/14/17	1033	3				3			X			X
MW-5	06/14/17	950	3				3			X			X
MW-7	06/14/17	905	7				3	2	2	X			X
MW-7 DUP	06/14/17	905	3				3			X			X

Other: Please Specify

Analysis Request

Temp °C: 3.1
 Initials: DJD
 Date: 06/16/17
 Time: 0455
 Therm. ID #: DA434
 Coolant Present: Yes / No

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

Relinquished by: Kyle Kline
 Date: 6/15/17
 Time: 1410

Received by: [Signature]
 Date: [Blank]
 Time: [Blank]

Relinquished by: [Blank]
 Date: [Blank]
 Time: [Blank]

Received by Laboratory: [Blank]
 Date: [Blank]
 Time: [Blank]

For Lab Use Only: Sample Receipt



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

SRG # / Lab No. 1289722

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 1913

Fax Number:

503-924-4707

Project #:

320001126-20

Project Name:

NuStar Vancouver GWM

Project Address:

NuStar Vancouver GWM

Bill to:

Apex Companies

Sampler Name & Signature:

Kyle Kline and Chris Clough

Global ID:

EDD Deliverable To (Email Address):

Heather.Gosack@apexcoos.com

California EDF Report?

Yes No

CRA EQUIS Required

Yes No

XLS Report Required

Yes No

Chain-of-Custody Record and Analysis Request

Analysis Request

Other: Please Specify

Sample Designation	Date	Time	Container				Preservative				Matrix			Volatile Halocarbons (EPA 8260B)	TOC	Methane, Ethane, Ethene	HOLD	TAT	
			40 ml VOA	Sleeve	Poly	Tedlar	HCl	HNO ₃	H ₂ O ₄	None	Water	Soil	Air						
MW-9	6/14/2017	813	3					3					X					X	077 005
MW-3	6/14/2017	745	3					3					X					X	078 005
MW-18i	6/13/2017	1442	3					3					X					X	079 005
MW-21i-40	6/13/2017	1410	3					3					X					X	031 005
MW-21i-105	6/13/2017	1332	3					3					X					X	031 005
MW-22i	6/13/2017	1245	3					3					X					X	037 005
MW-26	6/13/2017	1140	3					3					X					X	033 005
MW-23i	6/13/2017	1034	3					3					X					X	034 005
MW-14	6/13/2017	1002	3					3					X					X	035 005
S-2	6/13/2017	915	3					3					X					X	036 005
S-1	6/13/2017	840	3					3					X					X	037 005
MW-8	6/13/2017	803	3					3					X					X	038 005

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
3.1	DJD	061617	0955	17424	Yes

Relinquished by: Kyle Kline
 Relinquished by: [Signature]
 Relinquished by: [Signature]

Received by Laboratory: [Signature]
 Date: 6/15/17
 Time: 1410



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 Lab: 530.297.4800
 Fax: 530.297.4802

SRG # / Lab No.

1289722

Page 4 of 4

Chain-of-Custody Record and Analysis Request

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. 1913
 Fax Number: 503-924-4707
 Project #: 320001126-20
 P.O. #: [Blank]
 EDD Deliverable To (Email Address): Heather.Gosack@apexcos.com
 Bill to: Apex Companies
 Project Name: NuStar Vancouver GWM
 Project Address: [Blank]
 Sampler Name & Signature: Kyle Kline and Chris Clough

Sample Designation	Sampling		Container			Preservative				Matrix			TAT	Other, Please Specify
	Date	Time	40 ml VOA	250 mL Glass	Tedlar	TL	HCl	HNO ₃	H ₂ SO ₄	None	Water	Gill		
Field Blank	6/12/2017	1540	3				3				X			
Field Blank	6/13/2017	1500	3				3				X			
Field Blank	6/14/2017	1510	3				3				X			
Field Blank	6/15/2017	930	3				3				X			
Equipment Blank	6/15/2017	932	3				3				X			
Trip Blank	-	-	2								X			

Relinquished by: *Kyle Kline*
 Date: 6/15/17
 Time: 1410
 Received by: *[Signature]*
 Date: [Blank]
 Time: [Blank]

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

Temp °C: 8.1
 Initials: DST
 Date: 06/16/17
 Time: 061617
 Therm. ID #: PA1634
 Clogging Present: Yes / No

037
 035
 039
 040
 041
 042



Document Name:
Sample Condition Upon Receipt Form
 Document No.:
F-DAV-C-002-rev.02

Document Revised: 25Feb2015
 Page 1 of 1
 Issuing Authority:
 Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Ape + Companies Project #: _____

WO# : 1289722

 1289722

Courier: Fed Ex UPS USPS Client
 Commercial Pace OnTrac Other: _____
 Tracking Number: 8099 9440 4482

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): 2.4 Cooler Temp Corrected(°C): 3.1 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: +0.7 Date and Initials of Person Examining Contents: DJ0061617

			Comments:	
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	<u>Samples 007, 025, 036, 042 and 044 have containers with >6mm headspace</u>	
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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.		
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.		
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.		
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" 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 checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.		<input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl Sample # _____ Initial when completed: _____ Lot # of added preservative: _____
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH >12 Cyanide) 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			
Headspace in VOA Vials (>6mm)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.		
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.		
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A			
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____ Field Data Required? Yes No
 Comments/Resolution: _____

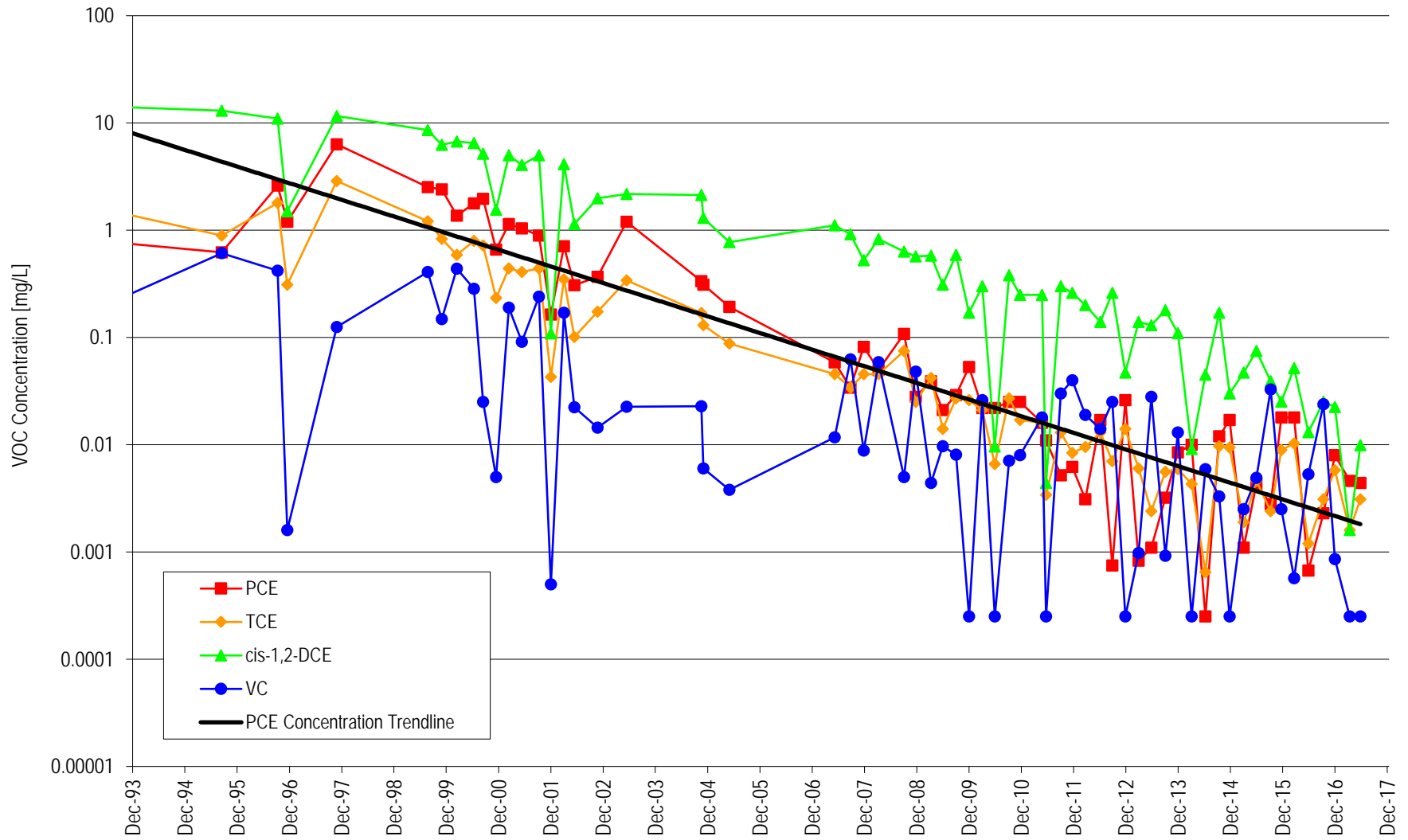
Project Manager Review: Scott Johns Date: 2/16/17

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)

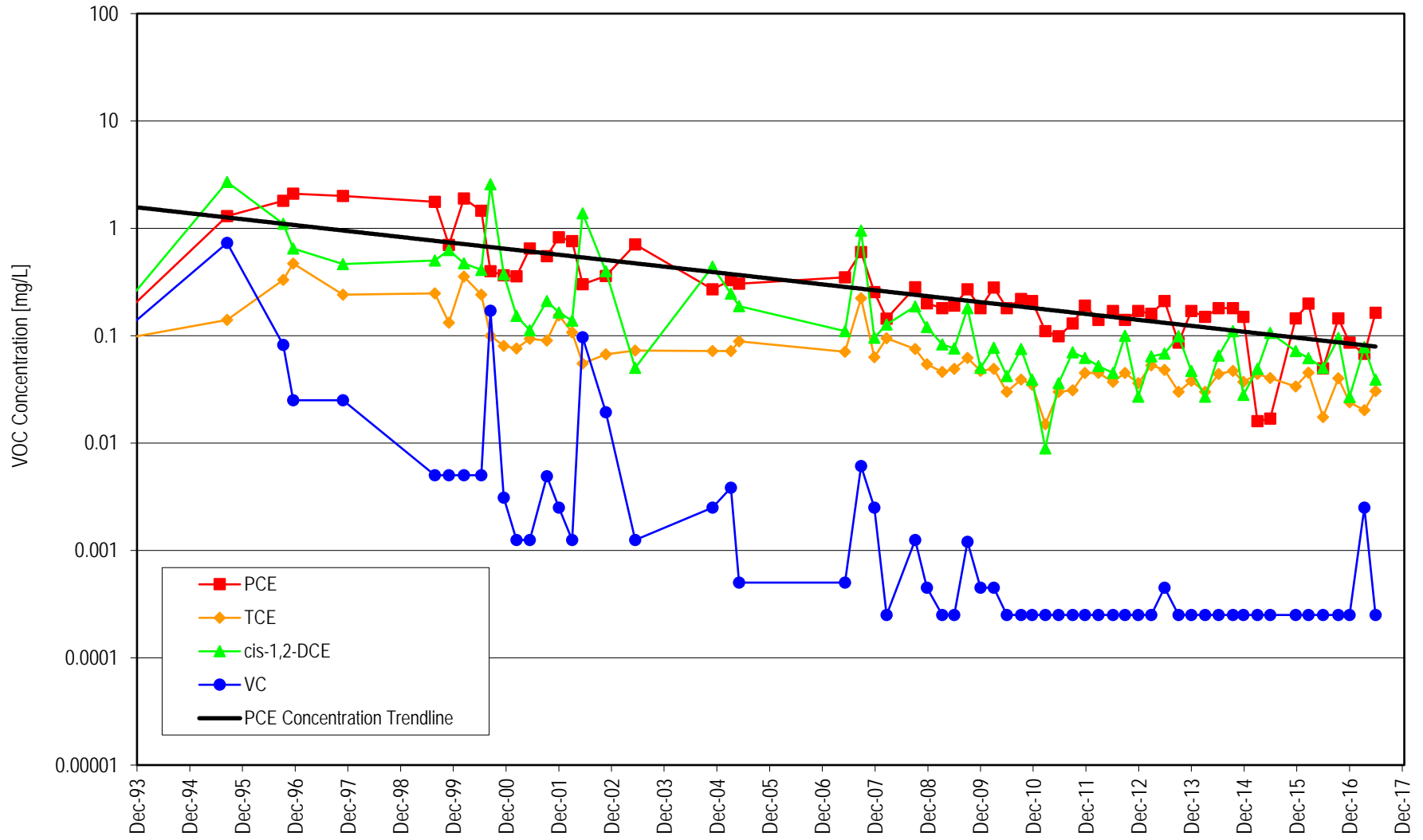
Appendix D

Concentration Trend Plots

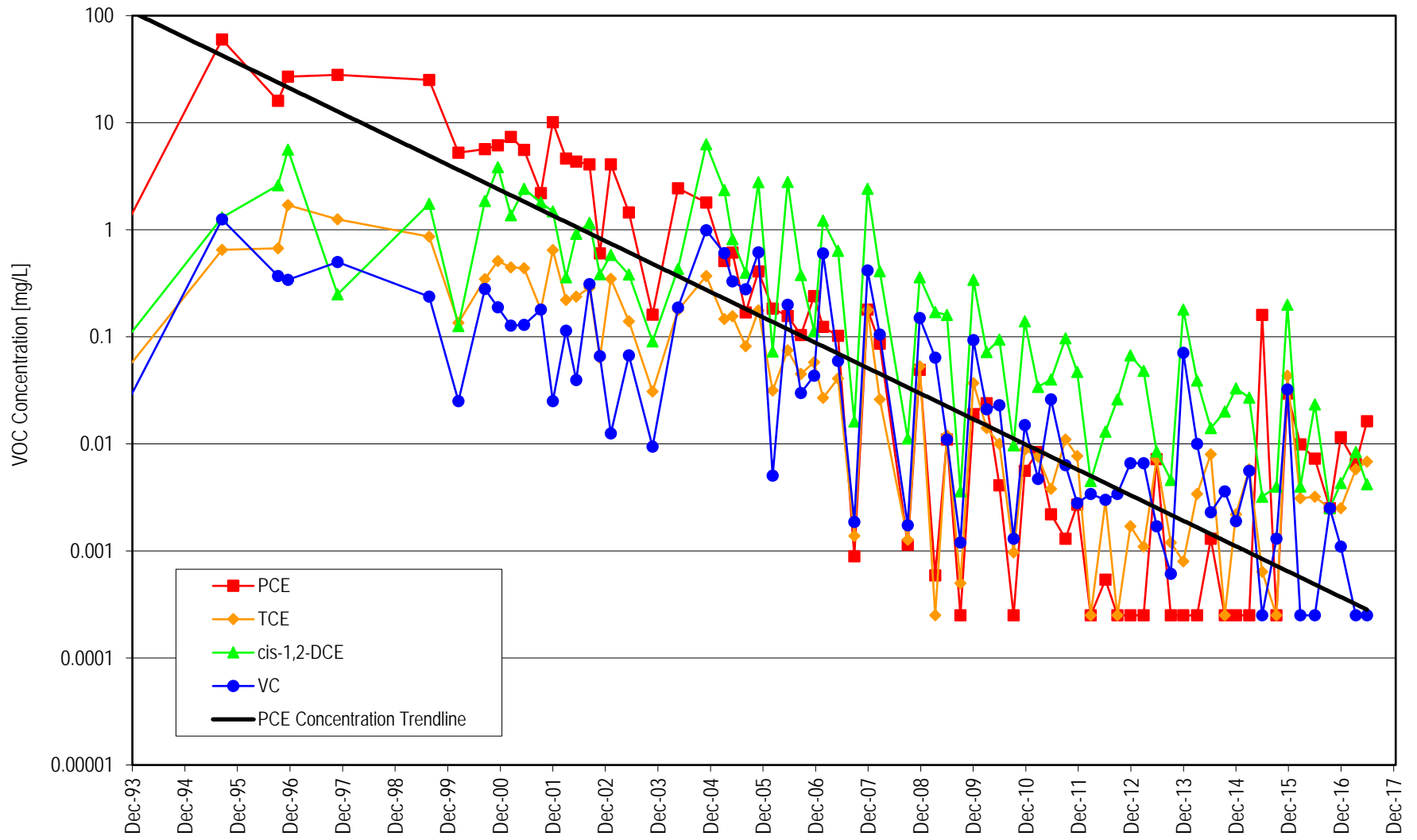
VOC Concentrations in MW-1



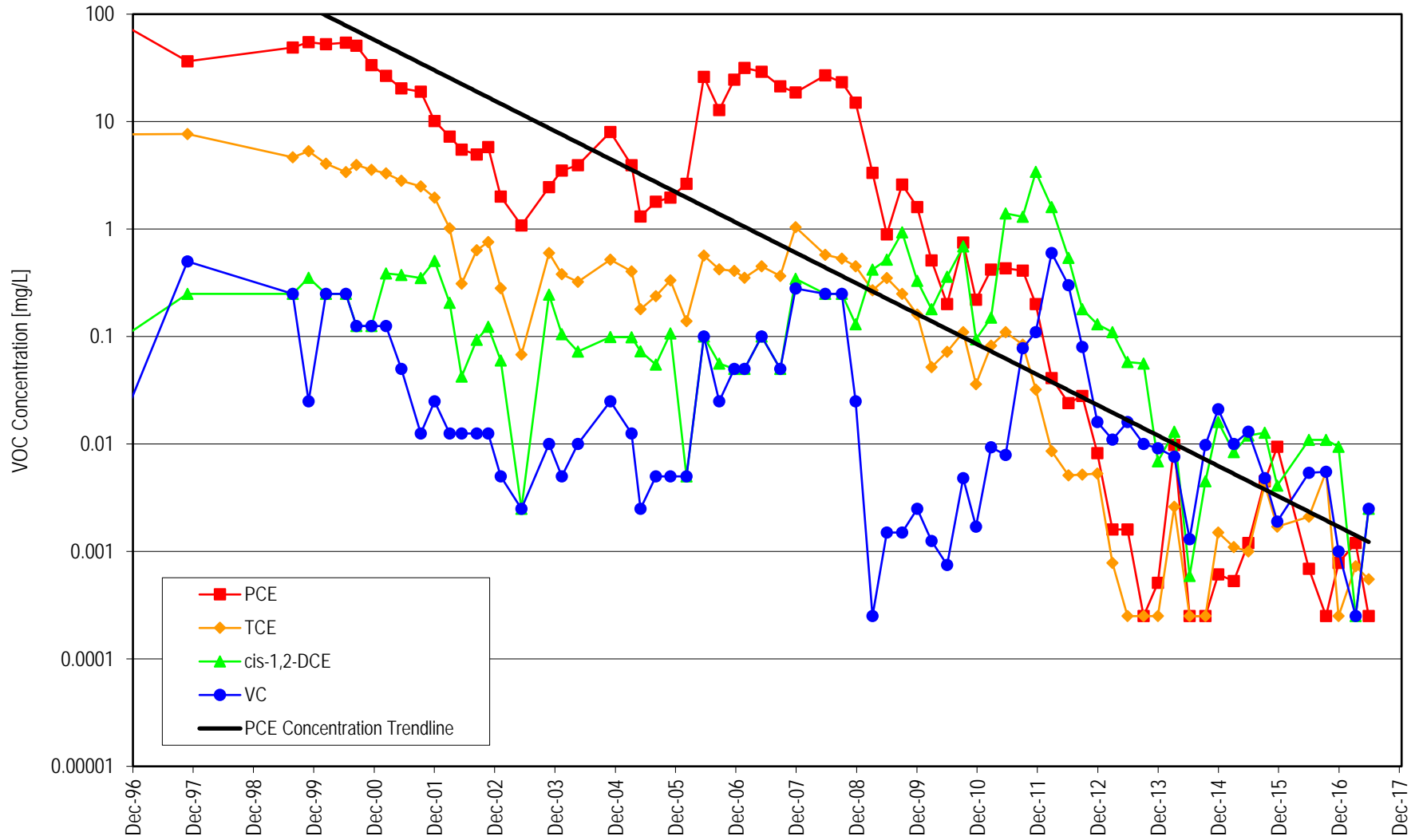
VOC Concentrations in MW-3



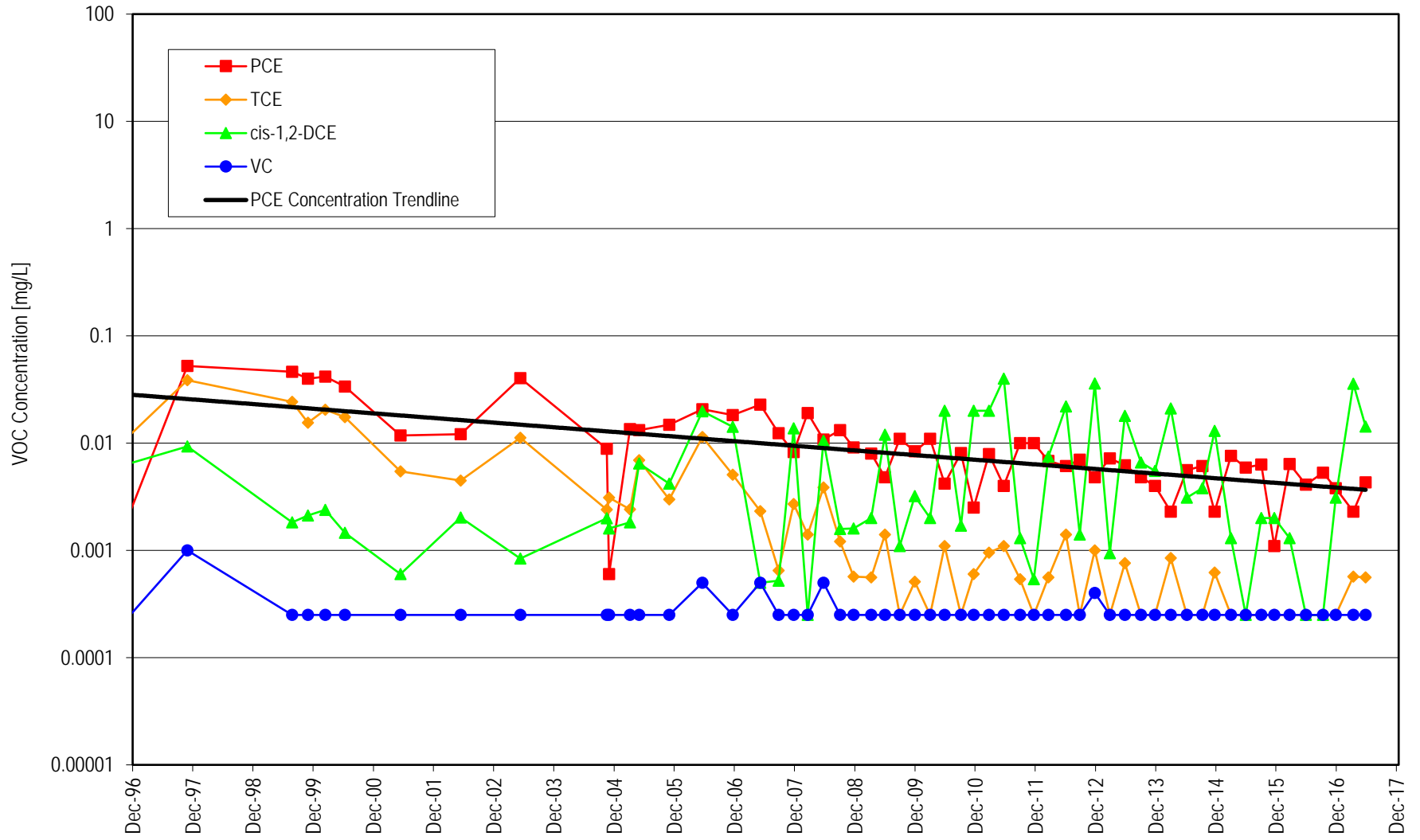
VOC Concentrations in MW-5



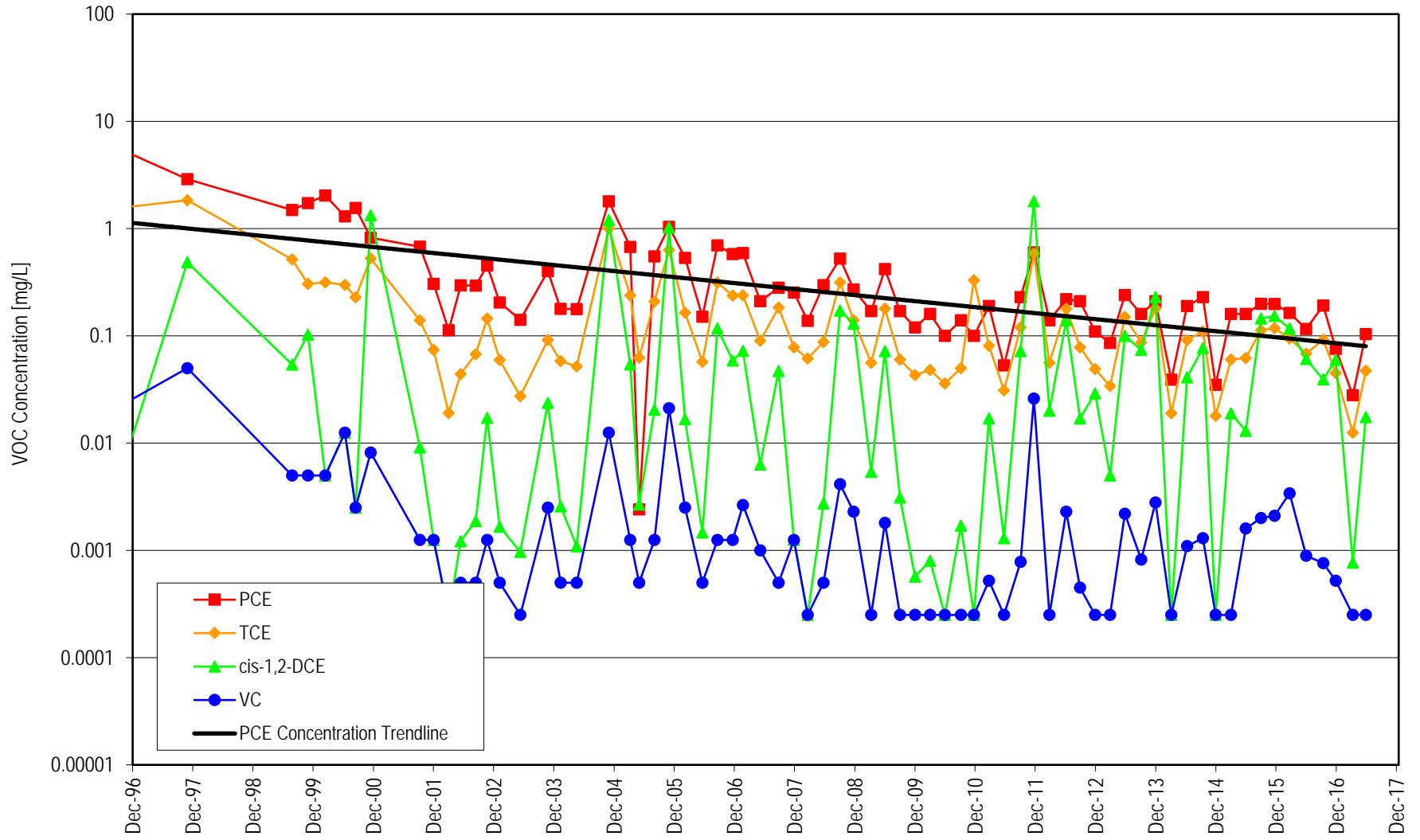
VOC Concentrations in MW-7



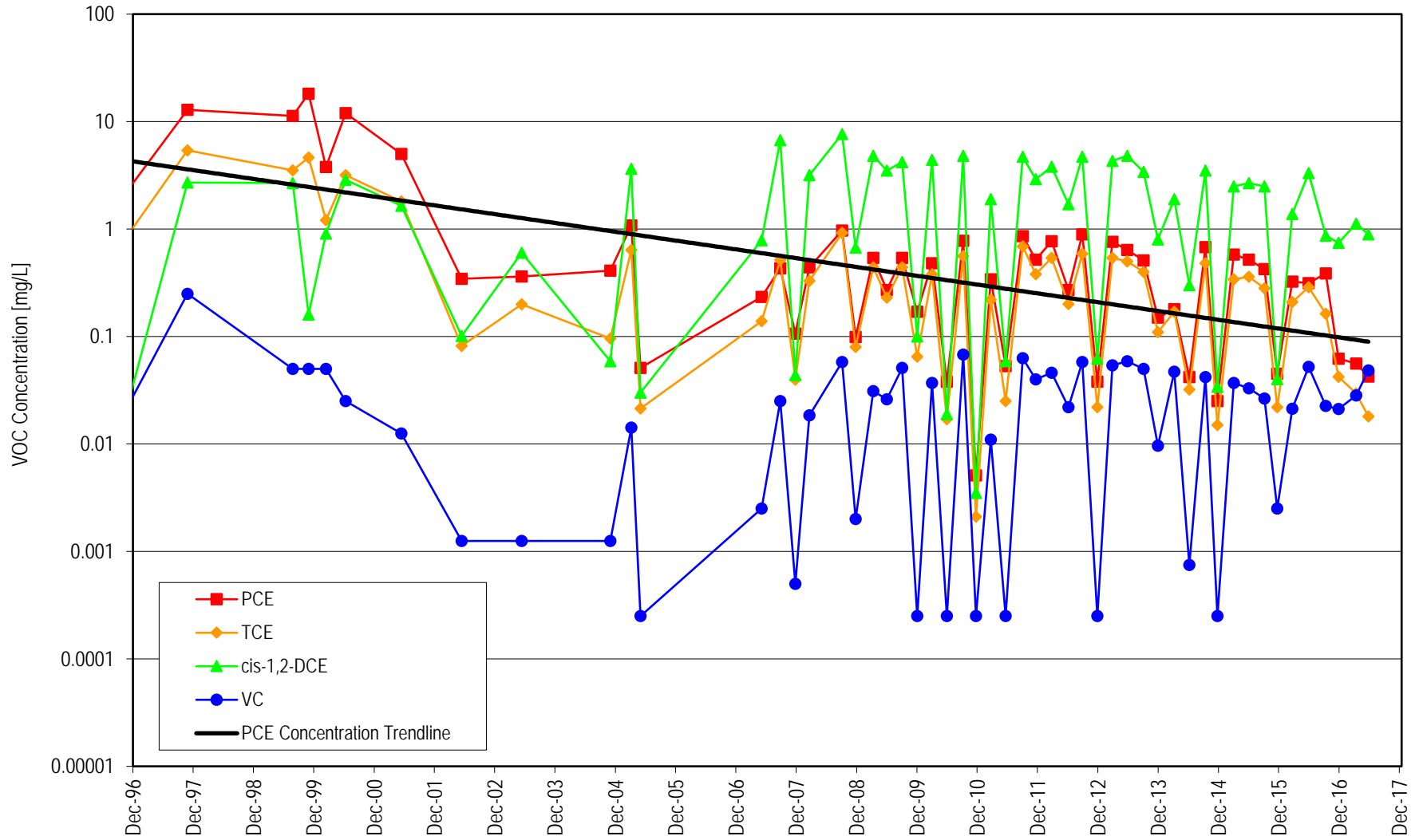
VOC Concentrations in MW-8



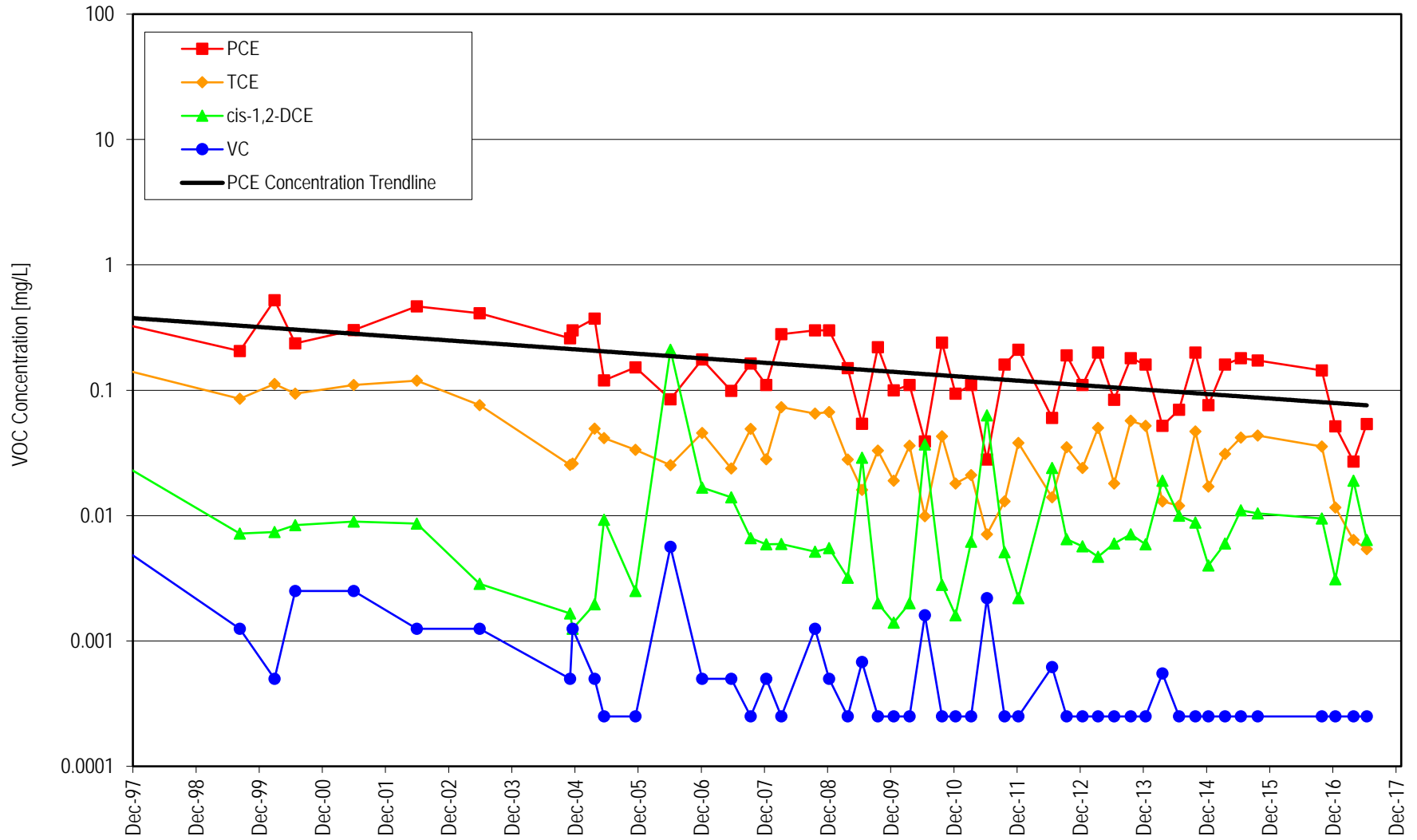
VOC Concentrations in MW-9



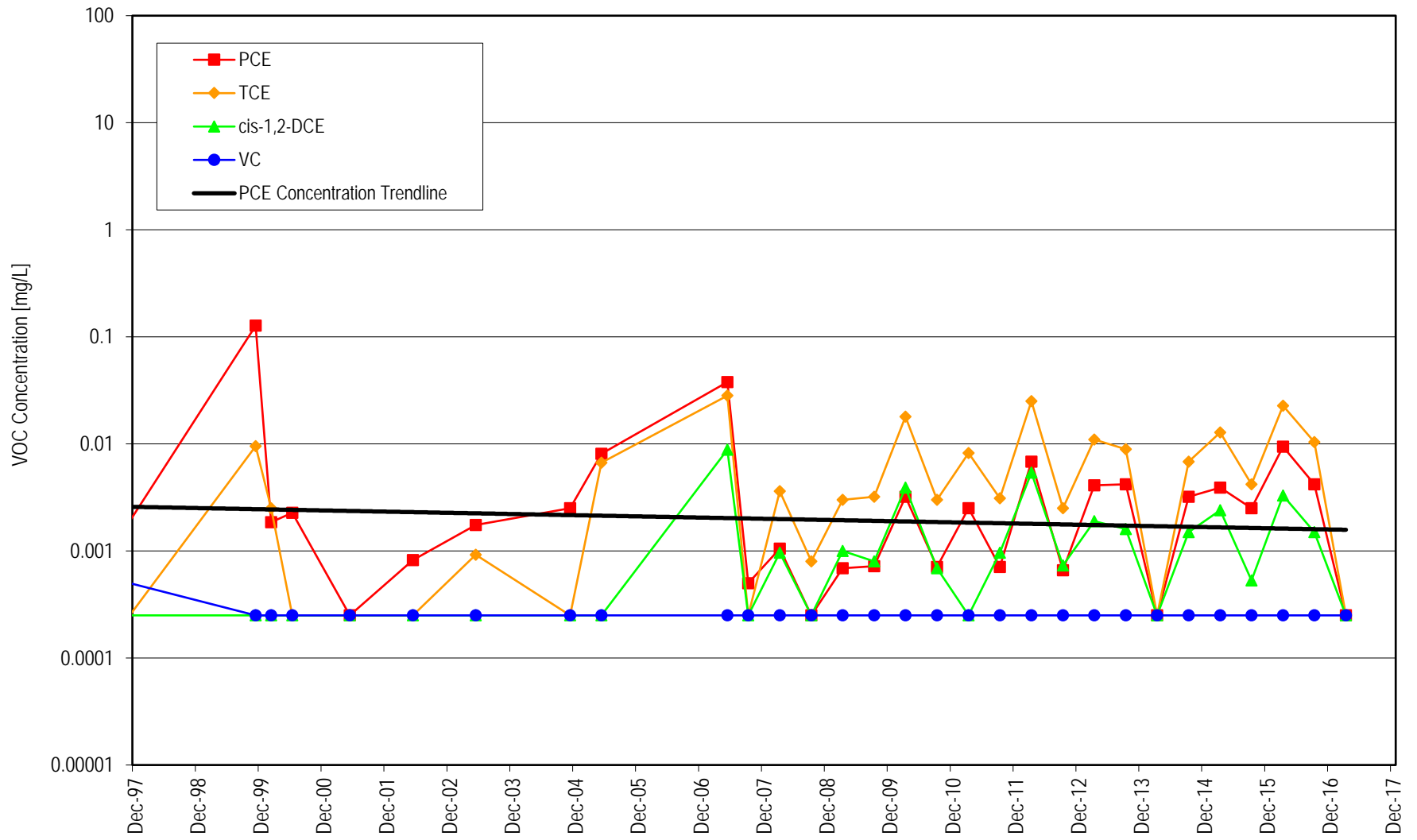
VOC Concentrations in MW-12



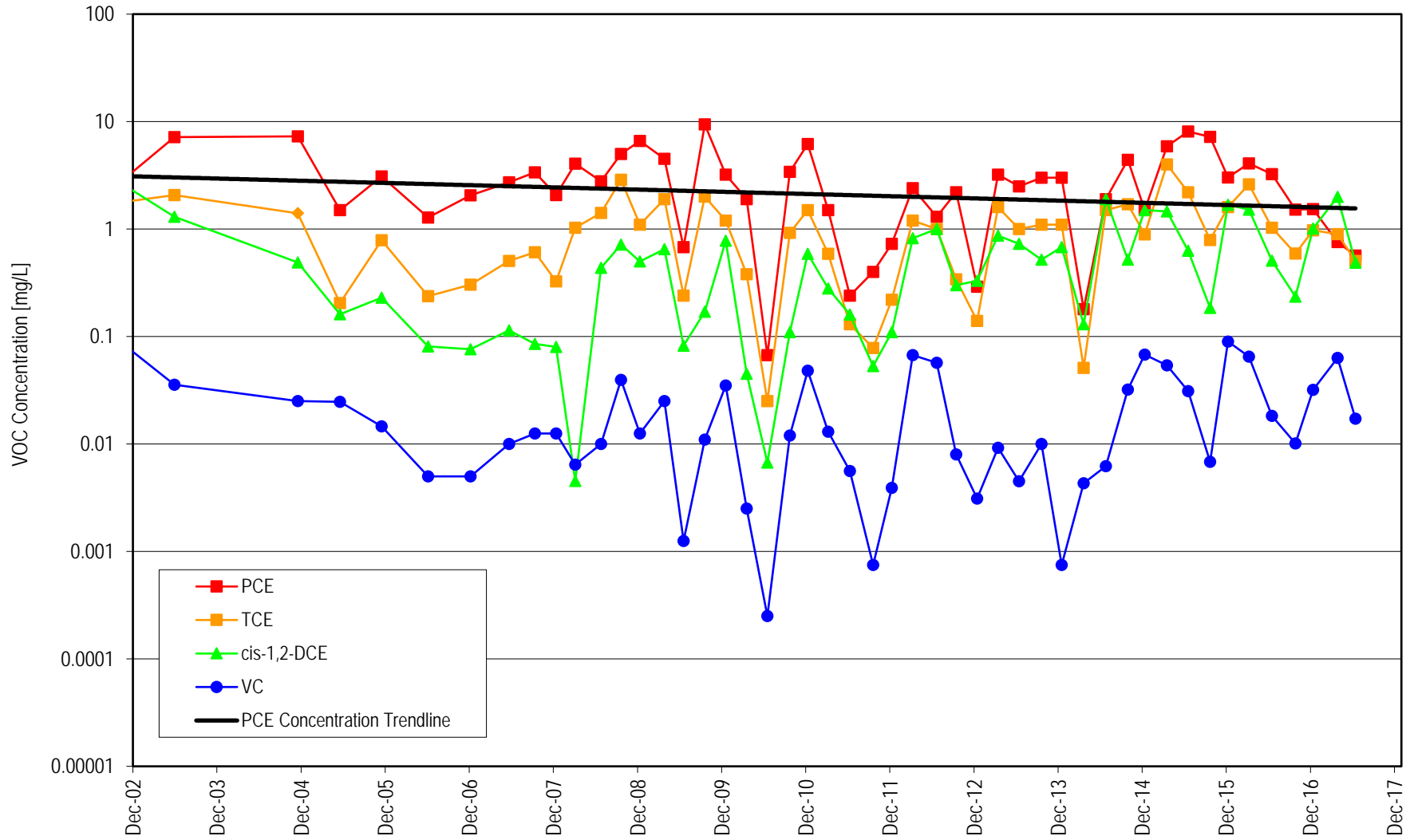
VOC Concentrations in MW-16



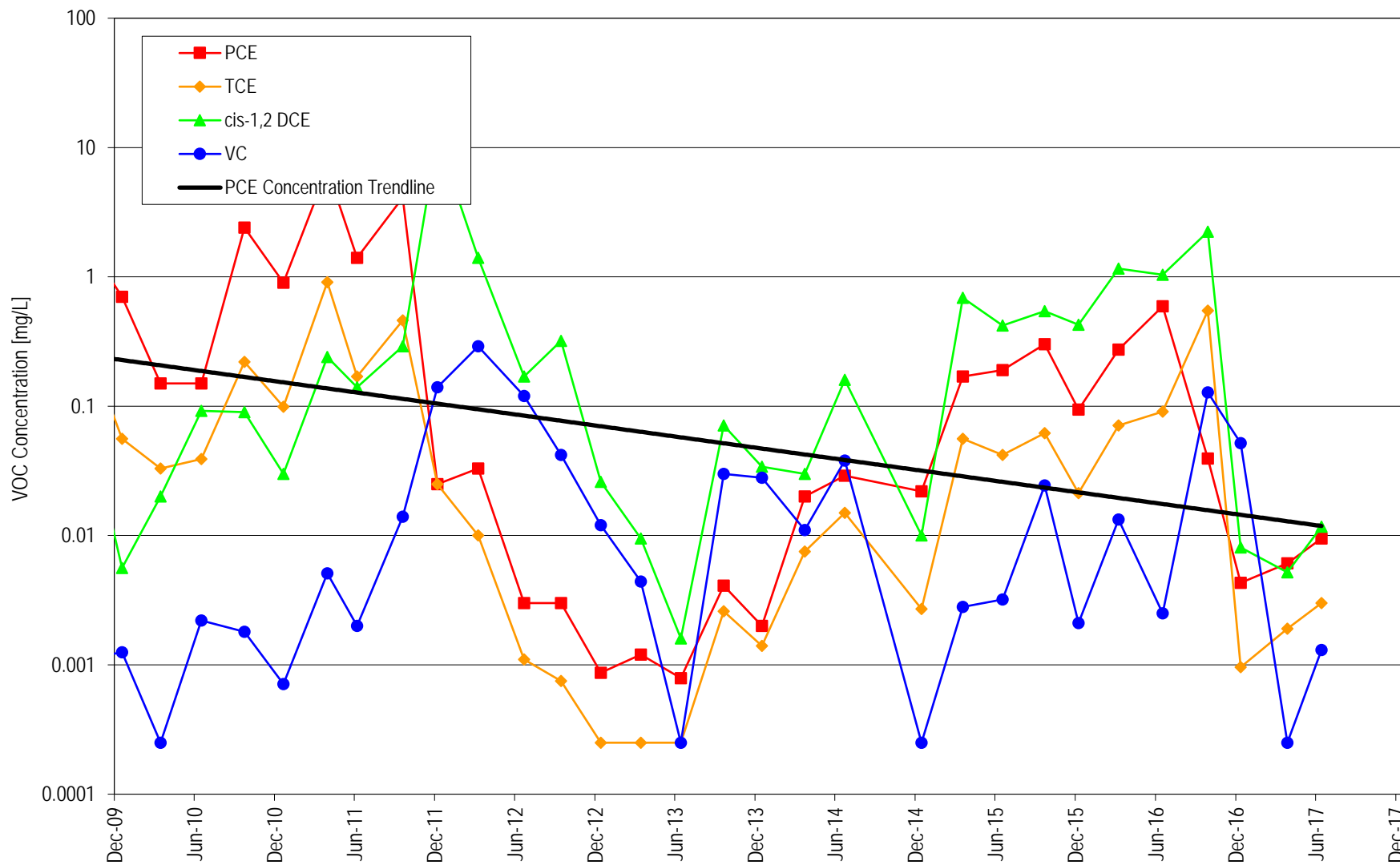
VOC Concentrations in MW-17



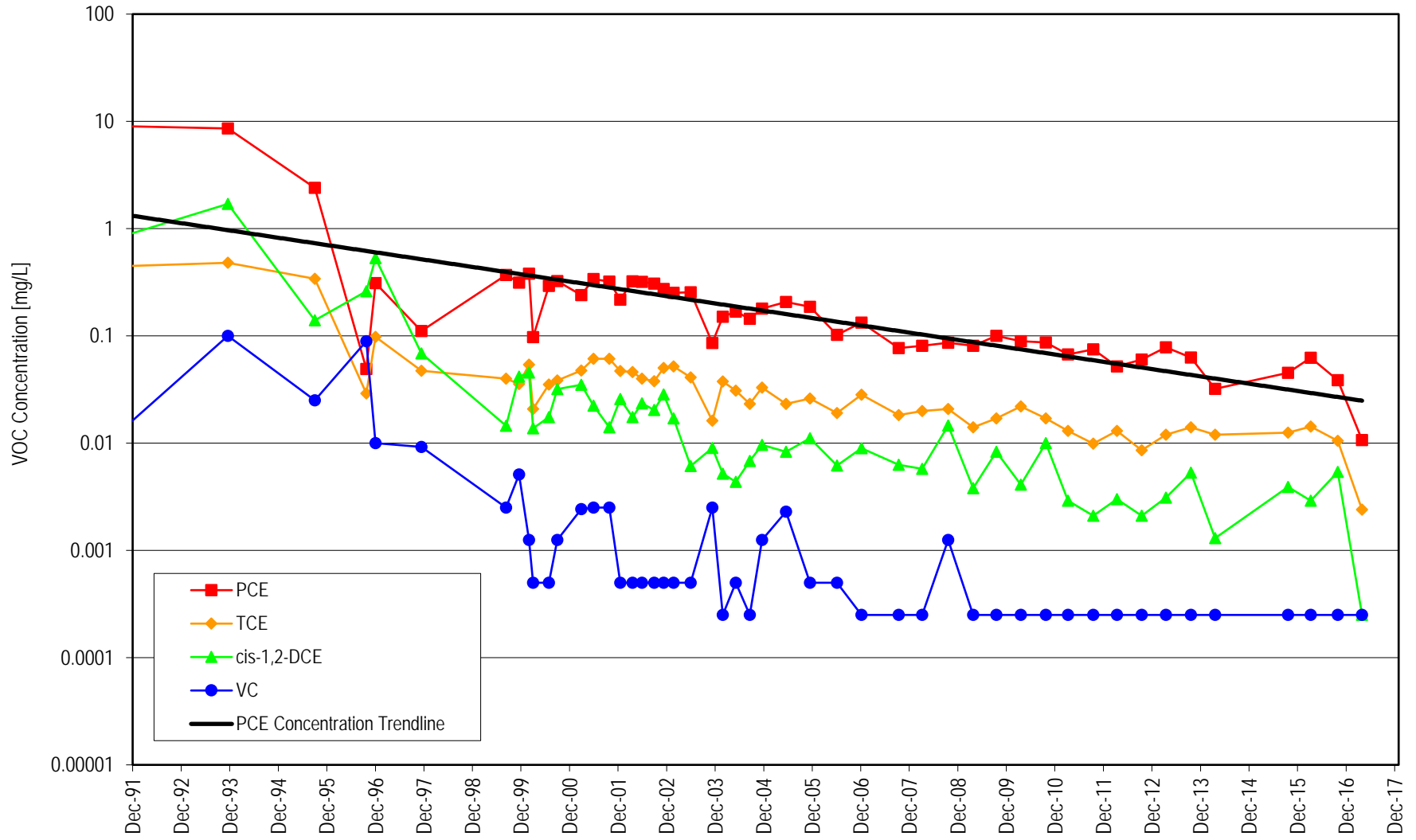
VOC Concentrations in MW-19



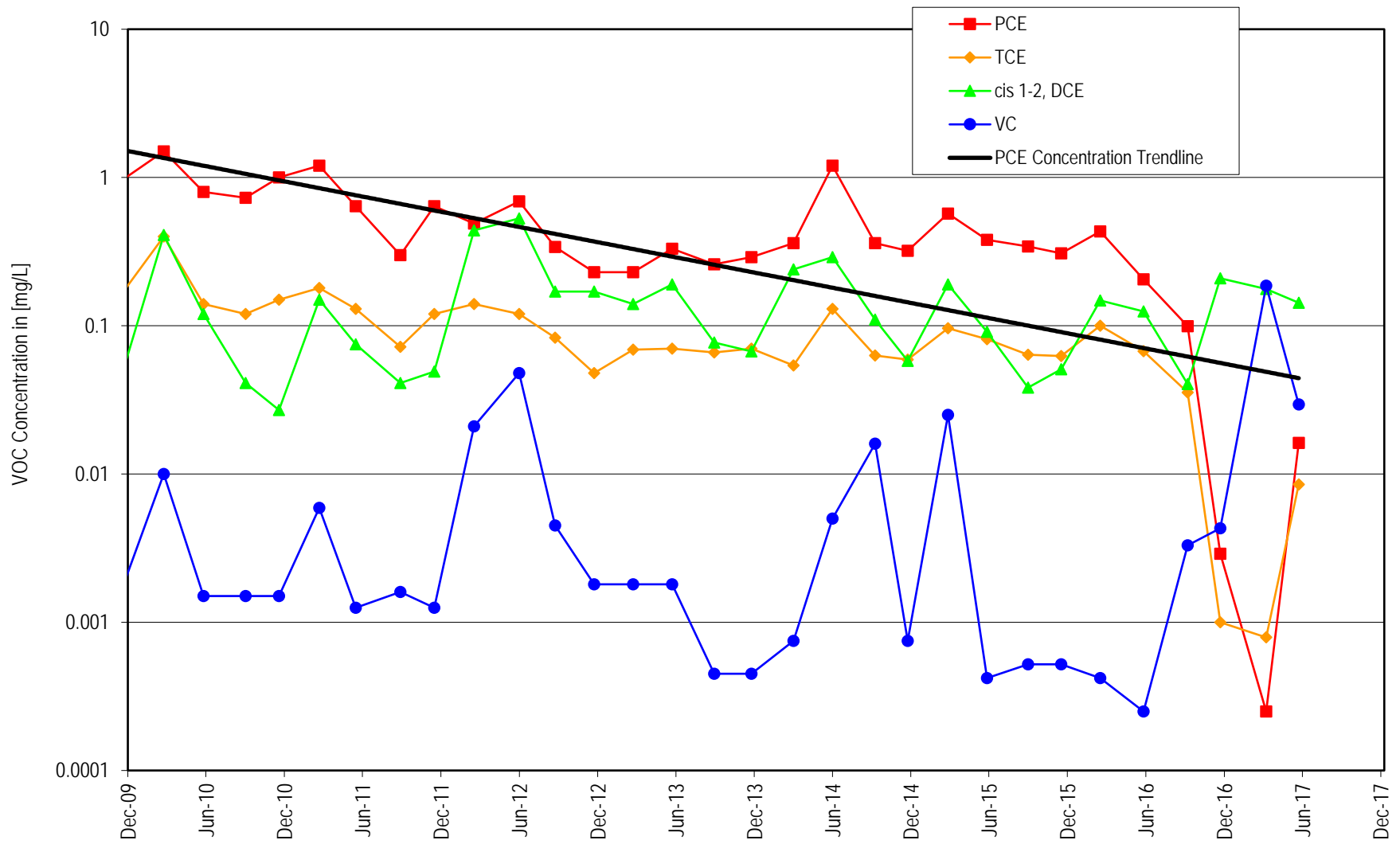
VOC Concentrations in EX



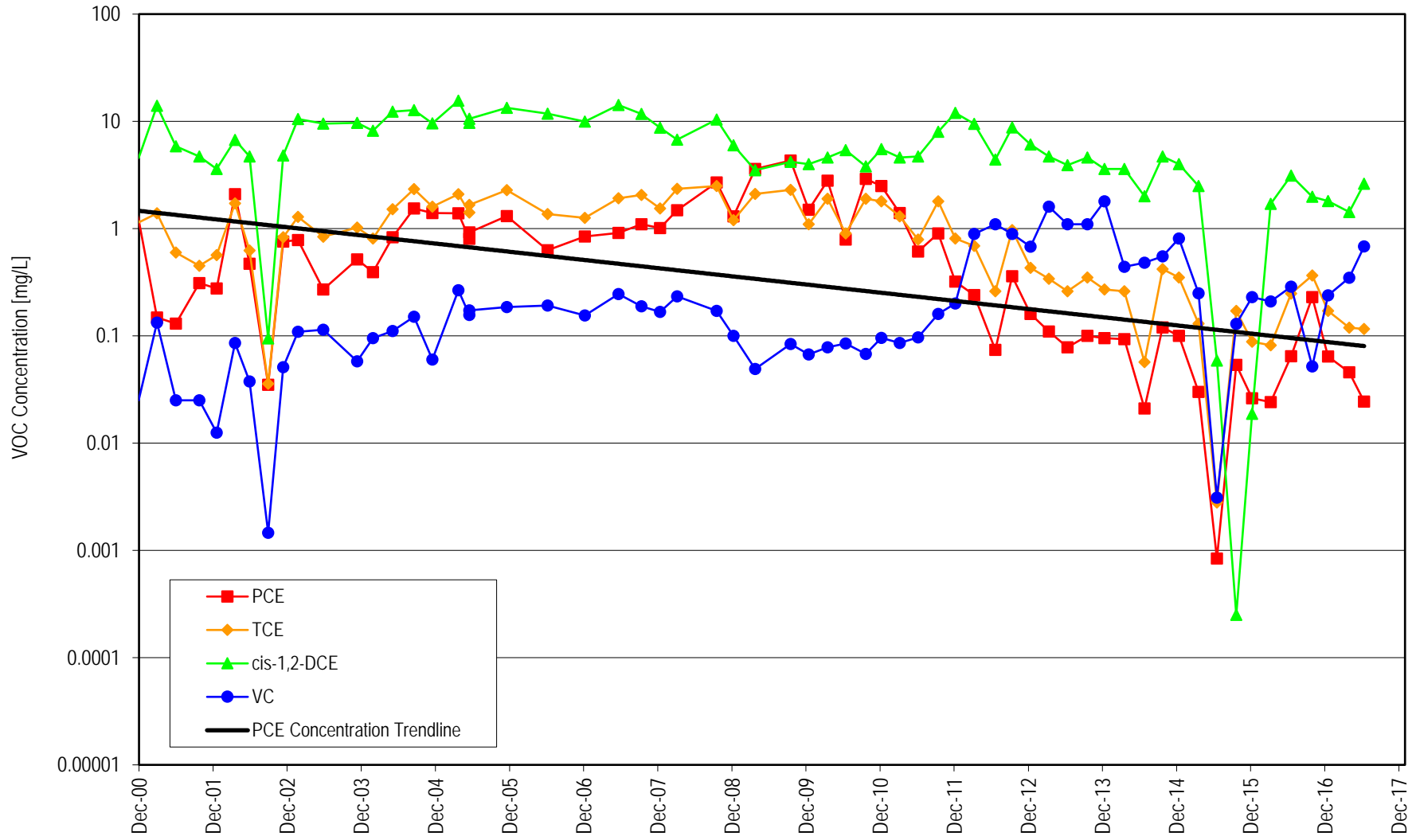
VOC Concentrations in EW-1



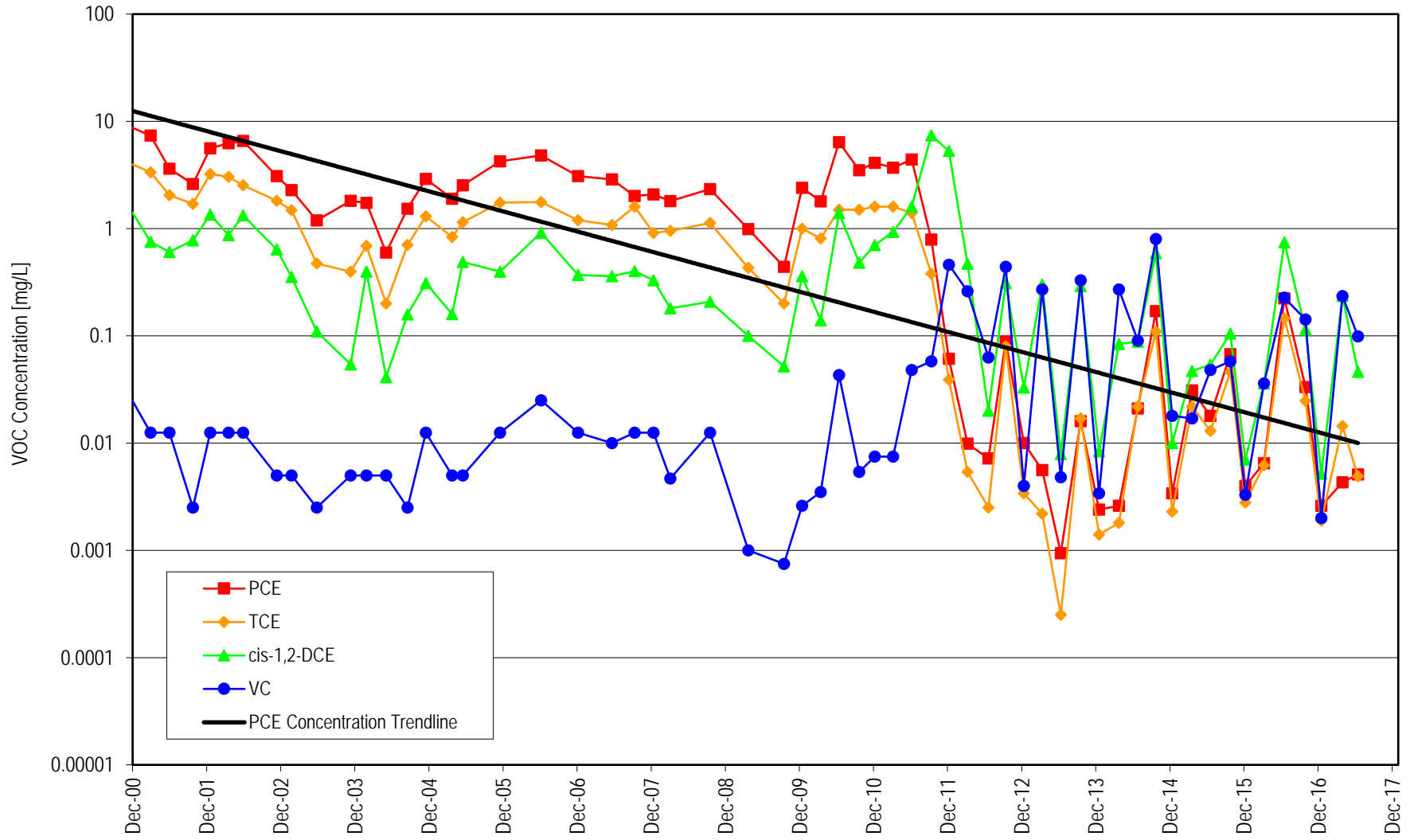
VOC Concentrations in MP-1



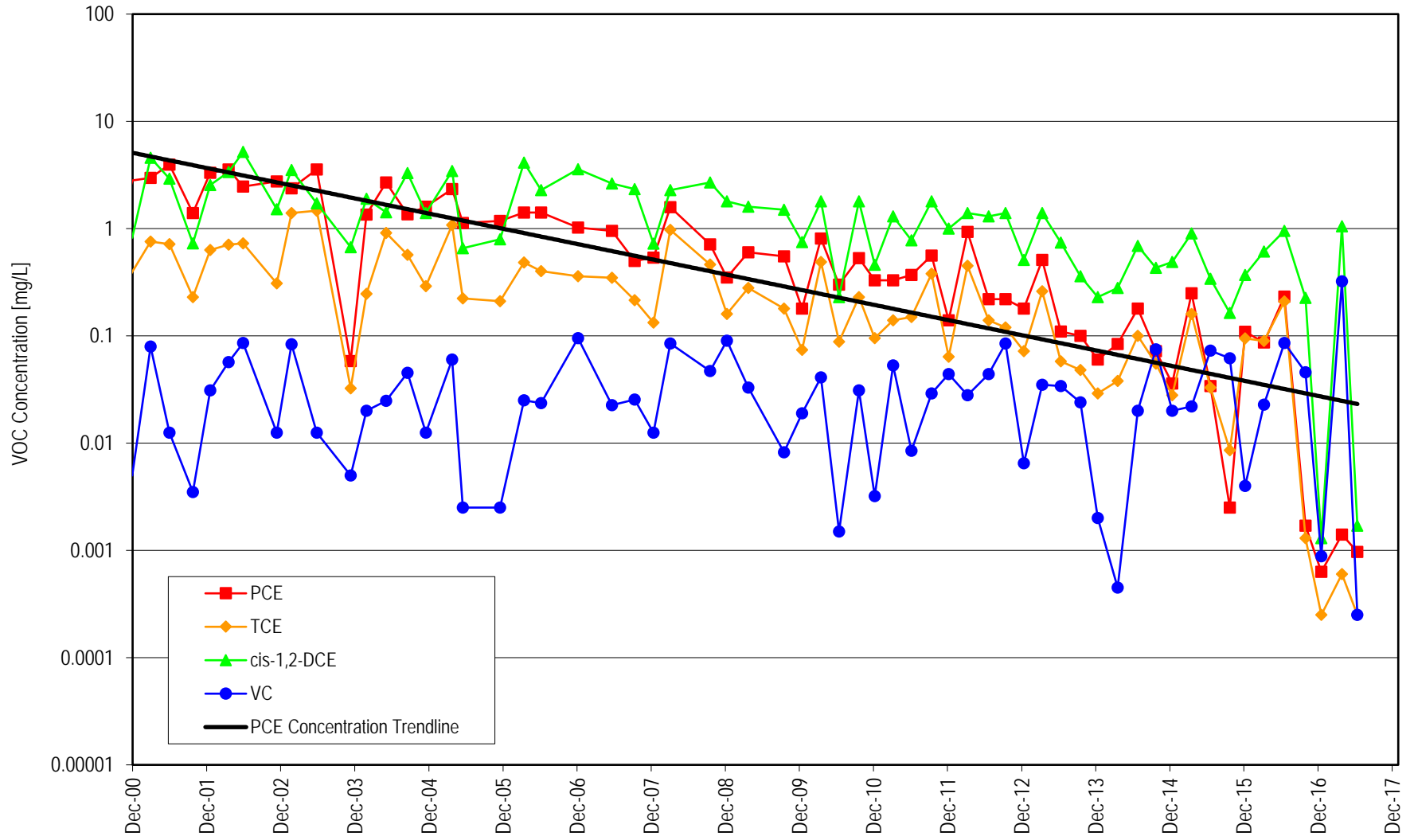
VOC Concentrations in MGMS1-43



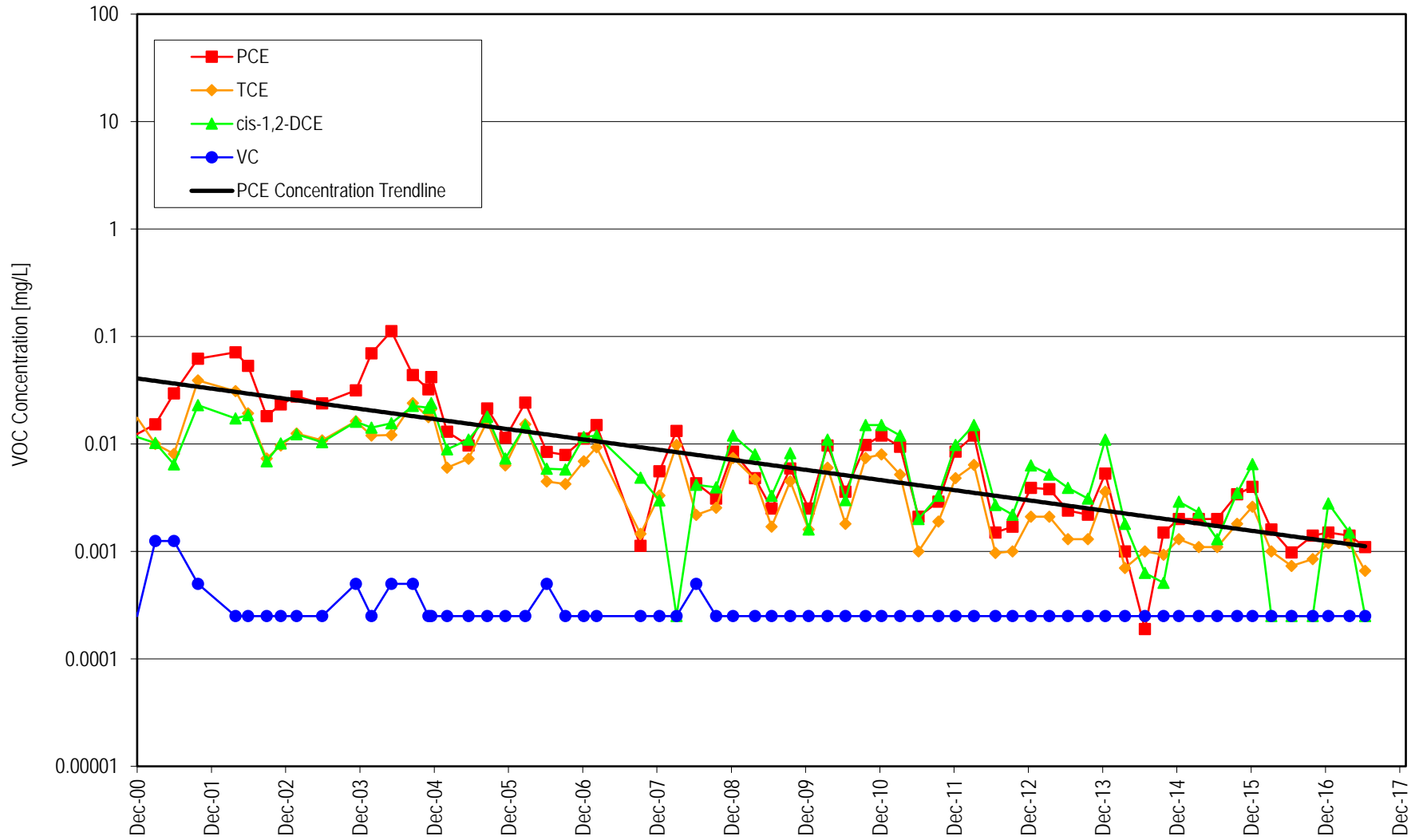
VOC Concentrations in MGMS2-40



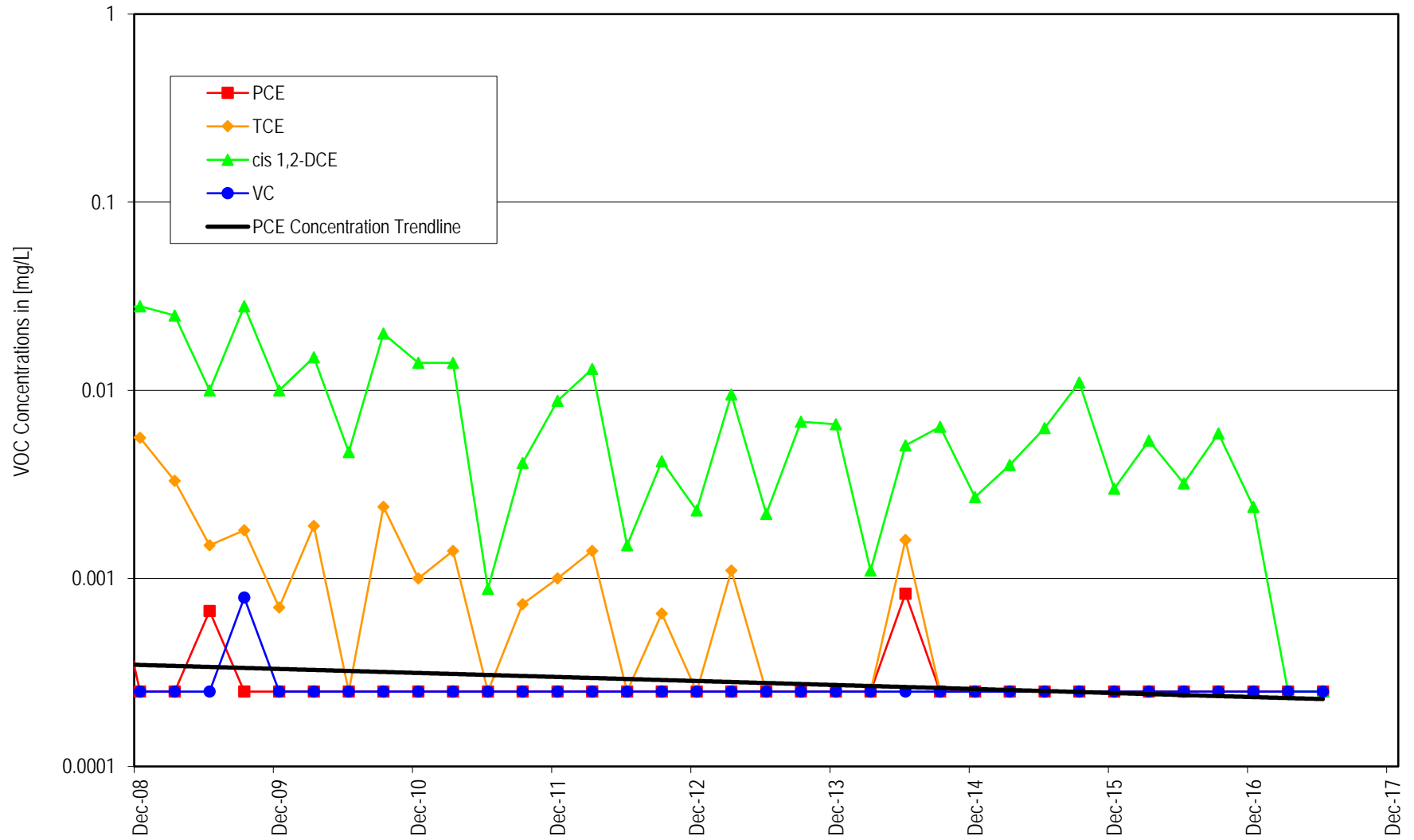
VOC Concentrations in MGMS3-40



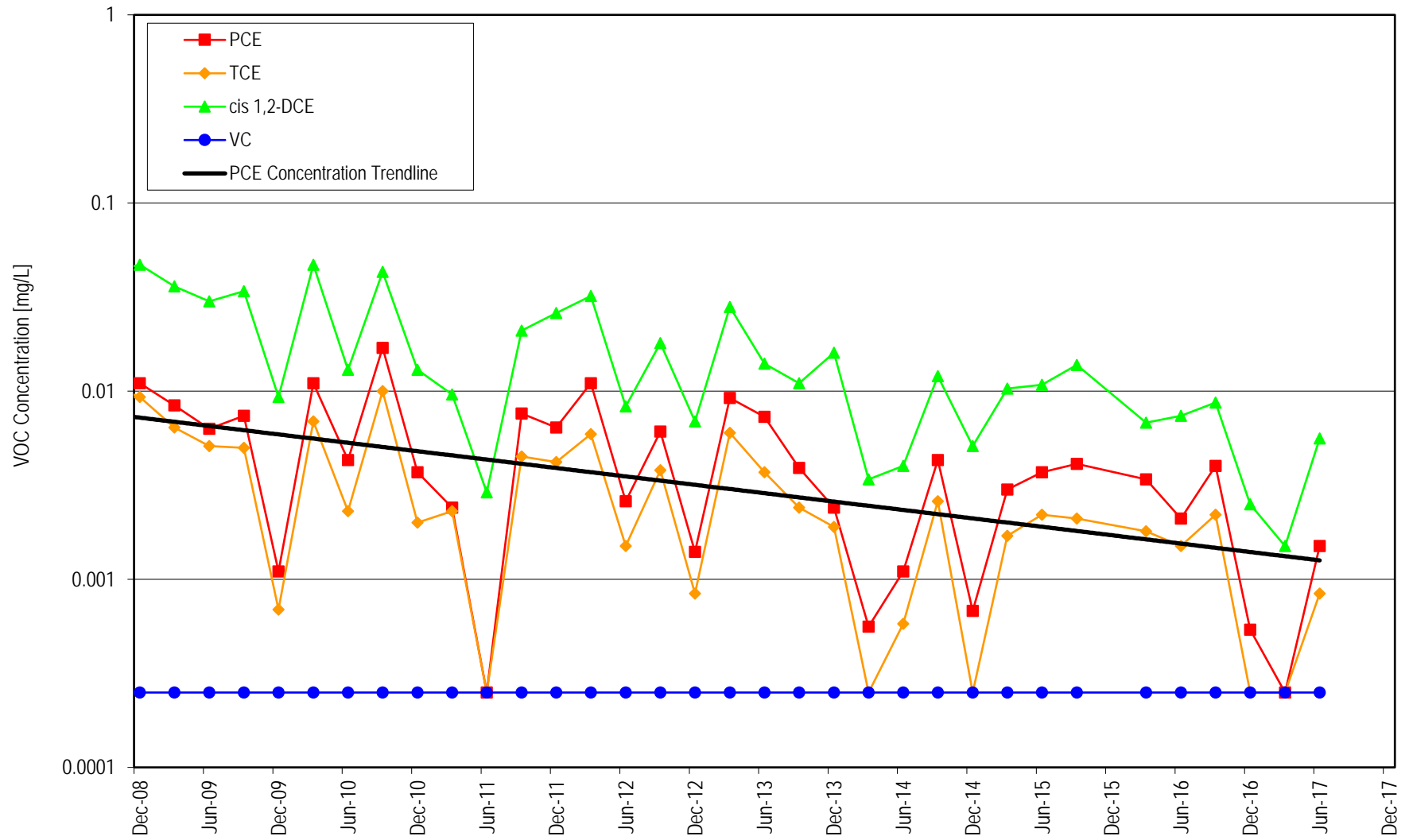
VOC Concentrations in MW-18i



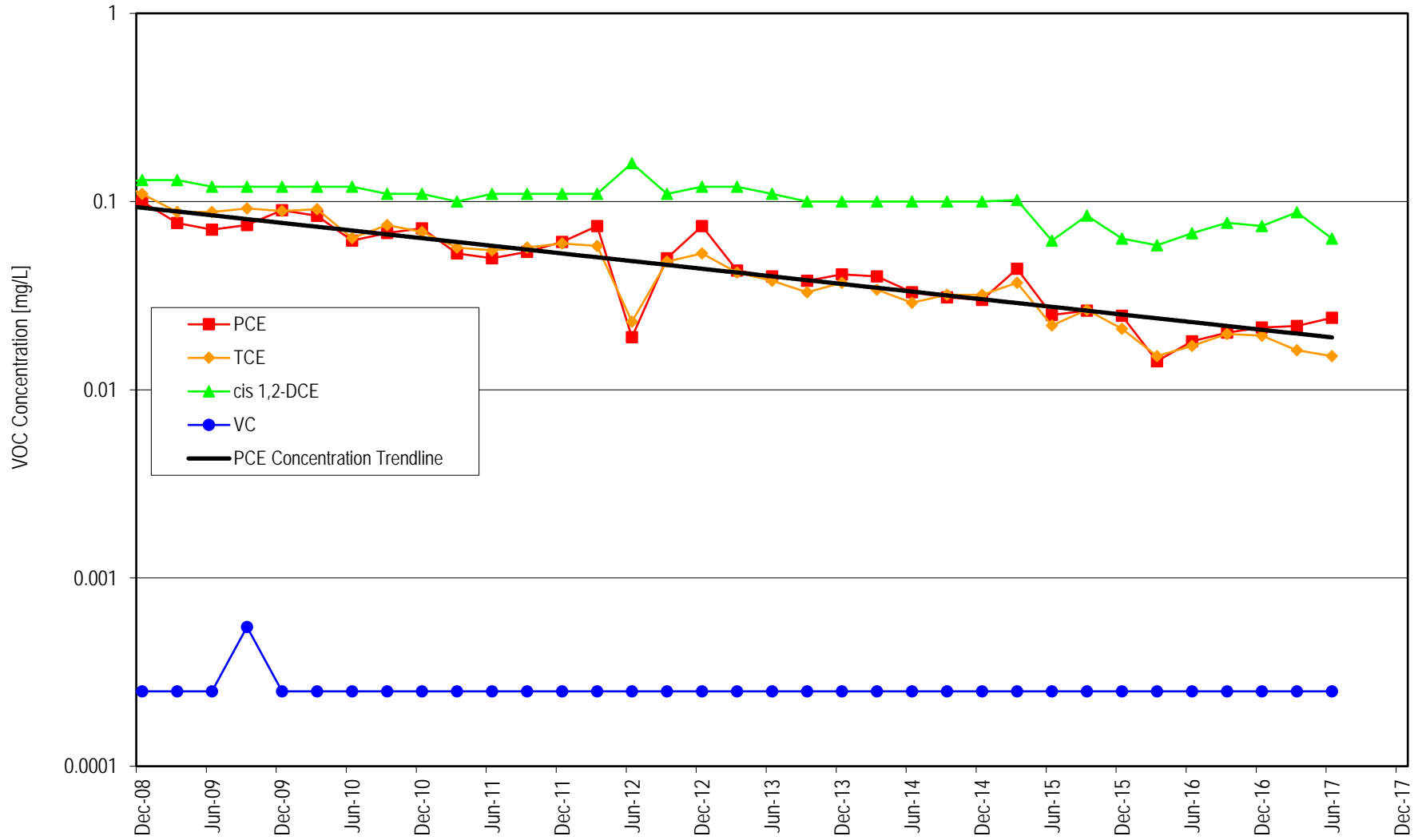
VOC Concentrations in MW-19i



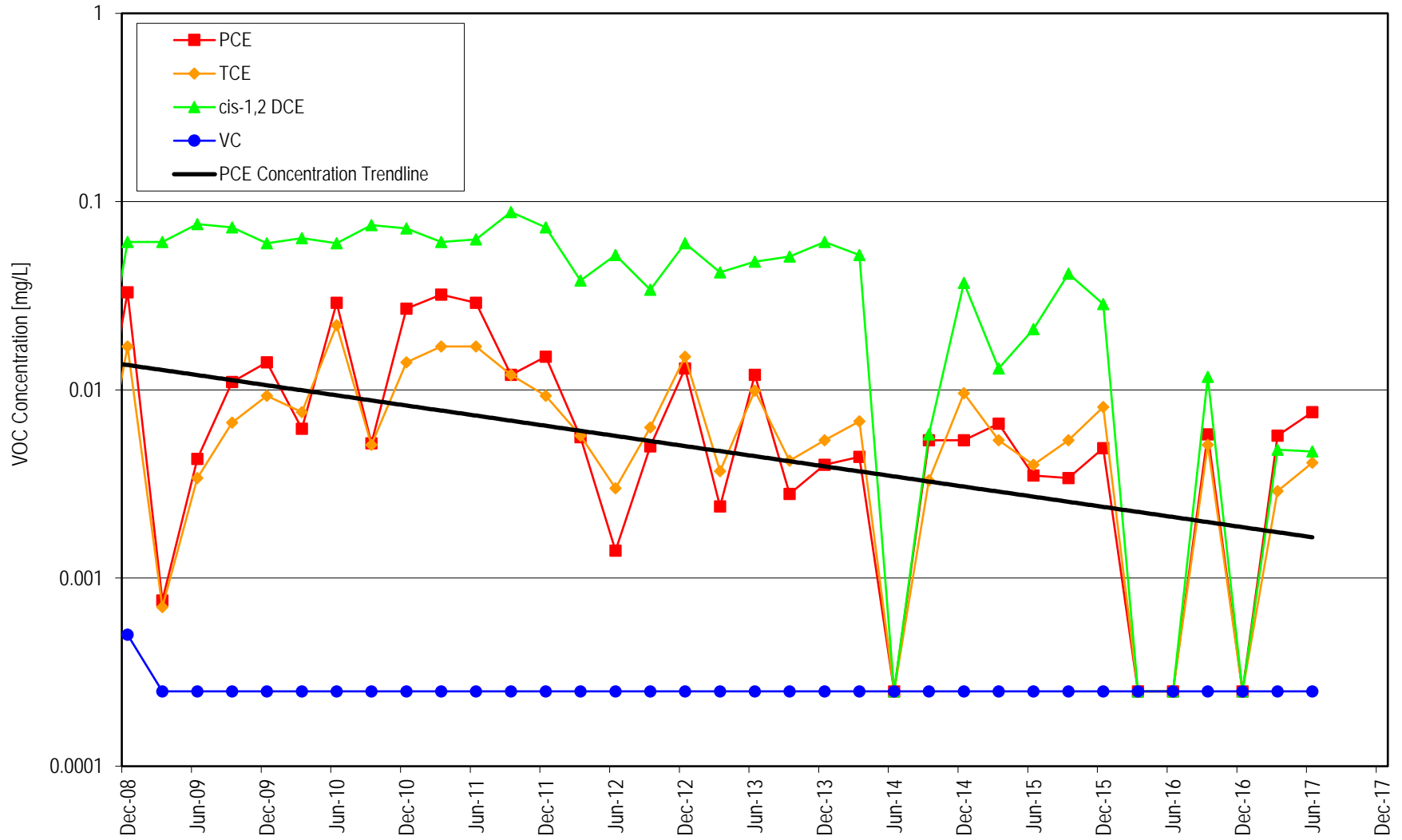
VOC Concentrations in MW-20i



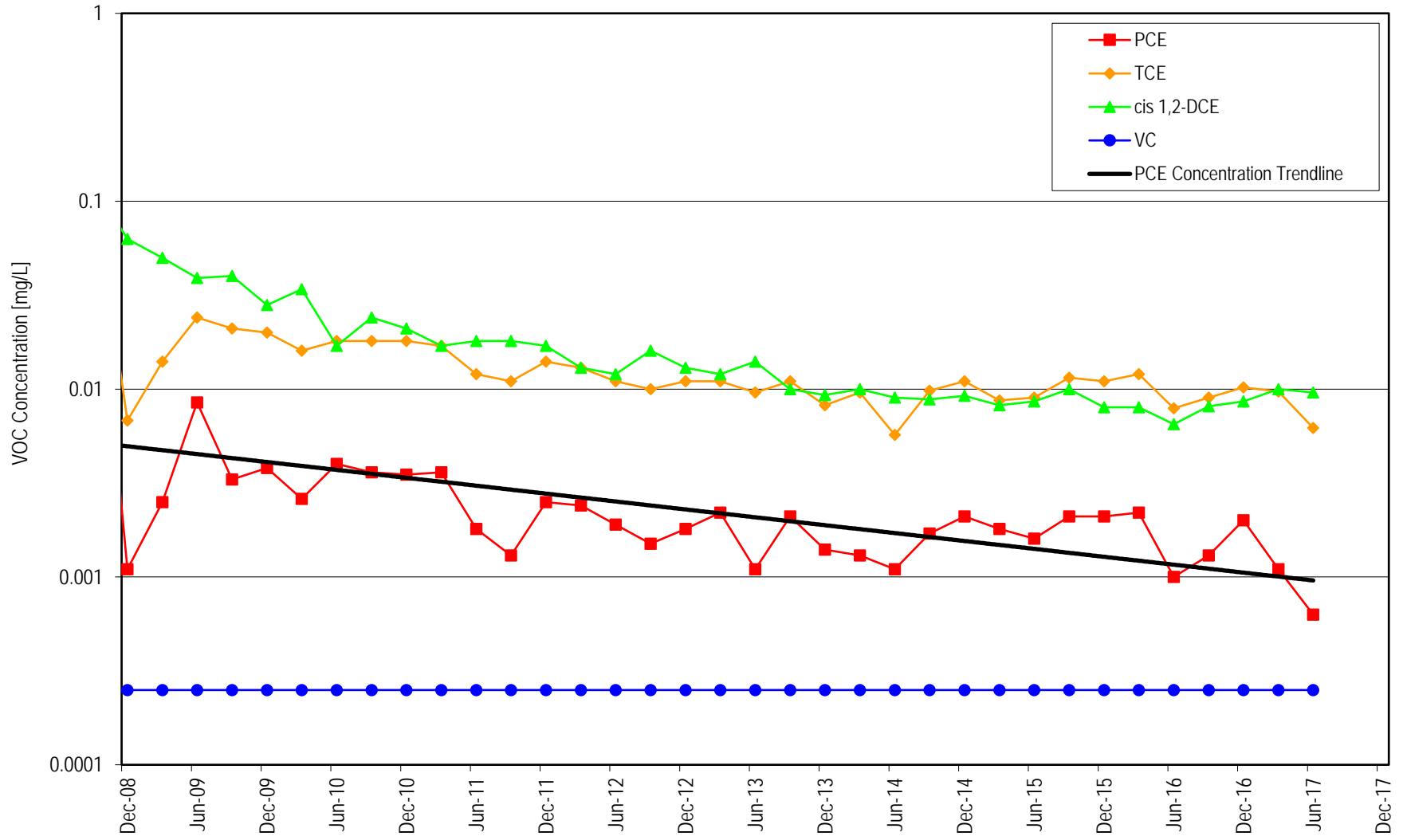
VOC Concentrations in MW-21i-40



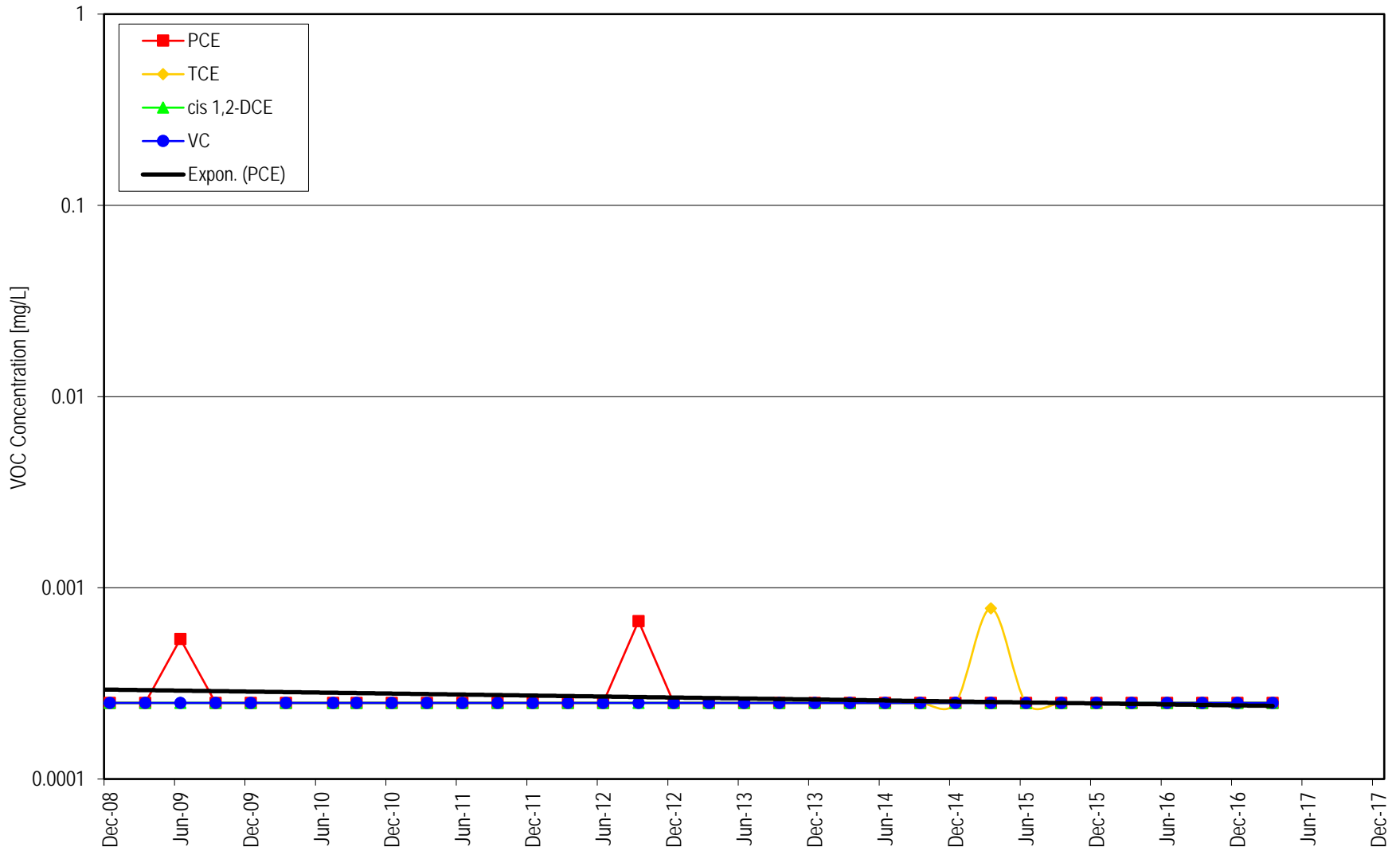
VOC Concentrations in MW-21i-105



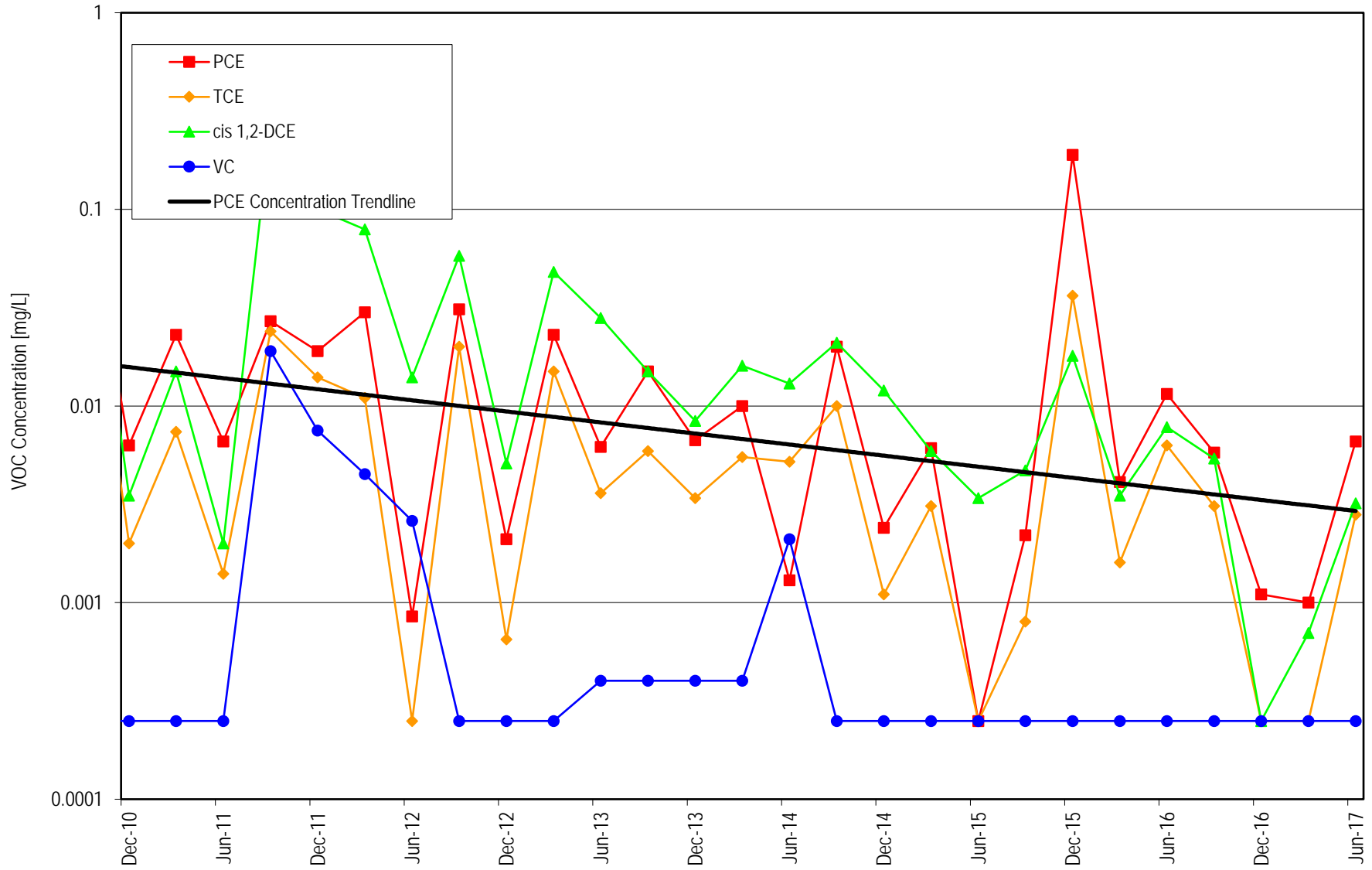
VOC Concentrations in MW-22i



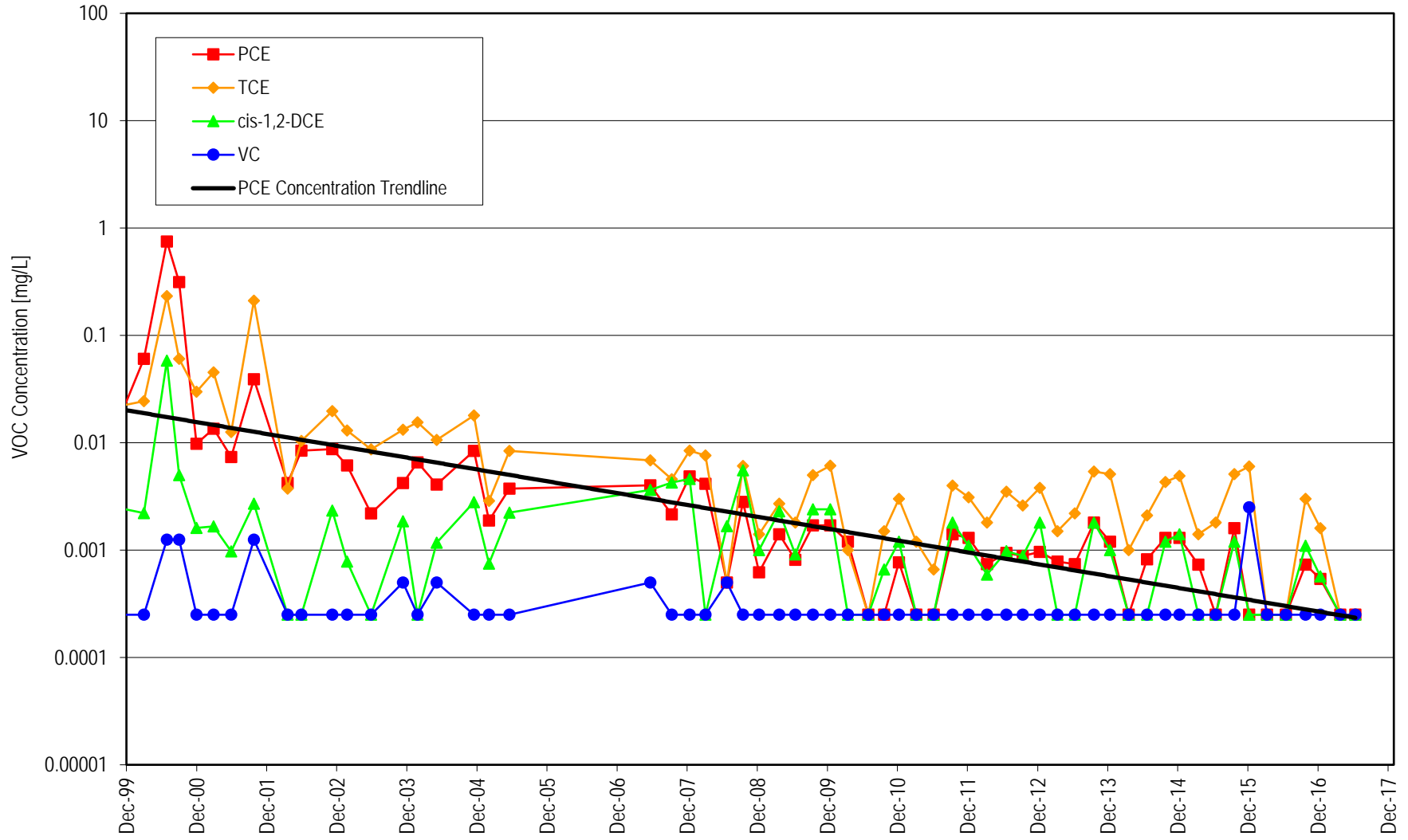
VOC Concentrations in MW-23i



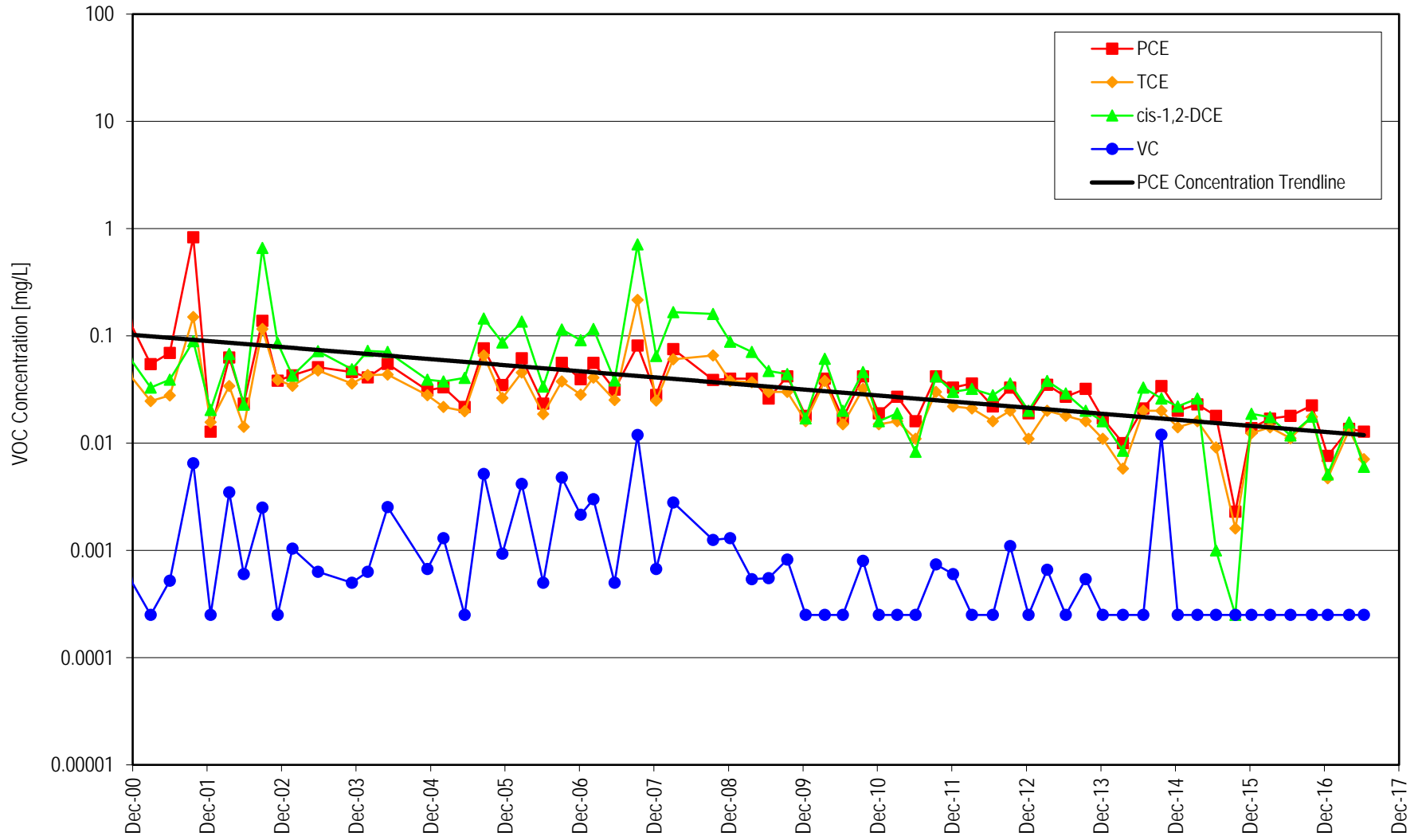
VOC Concentrations in MW-24i



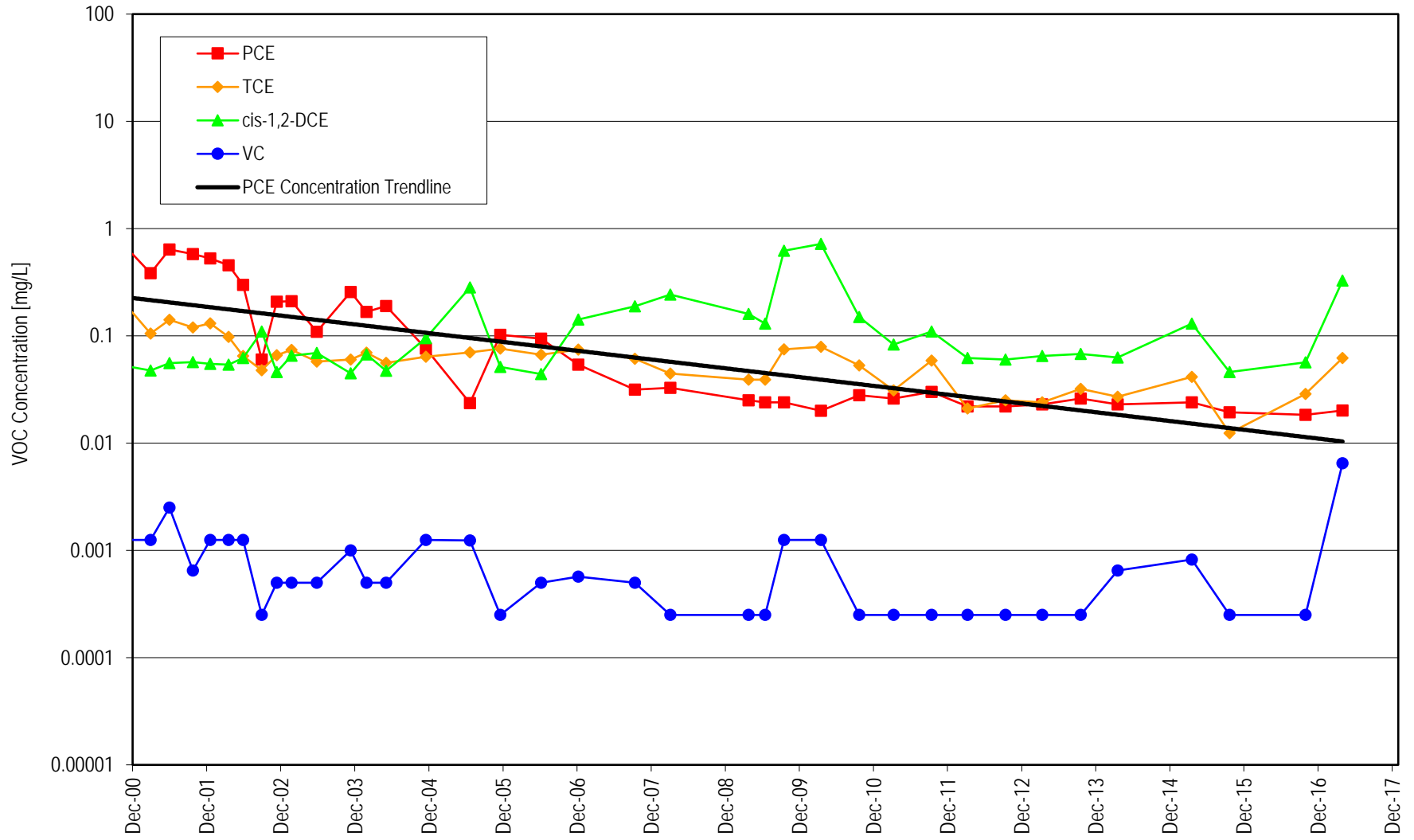
VOC Concentrations in S-1



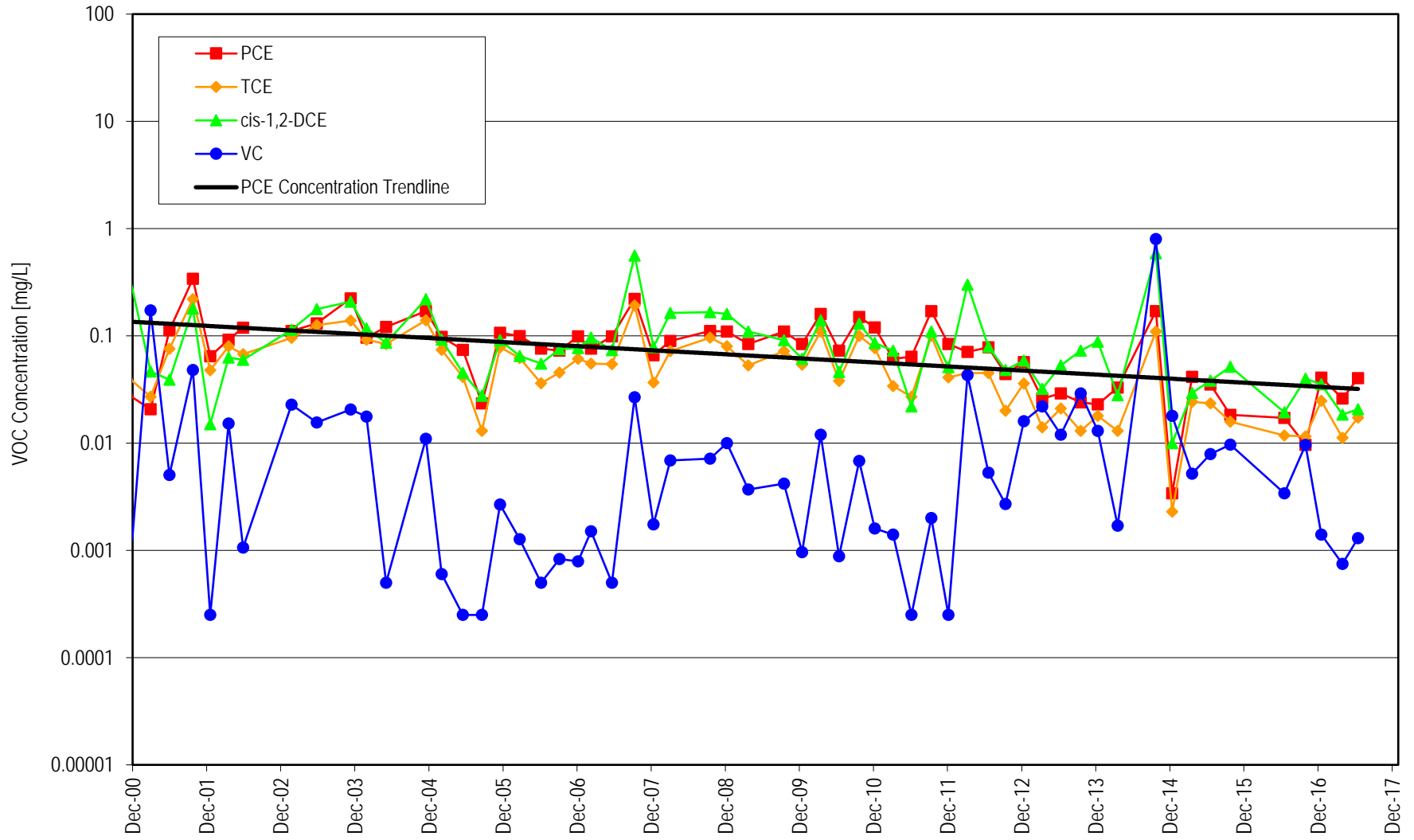
VOC Concentrations in MGMTS1-60



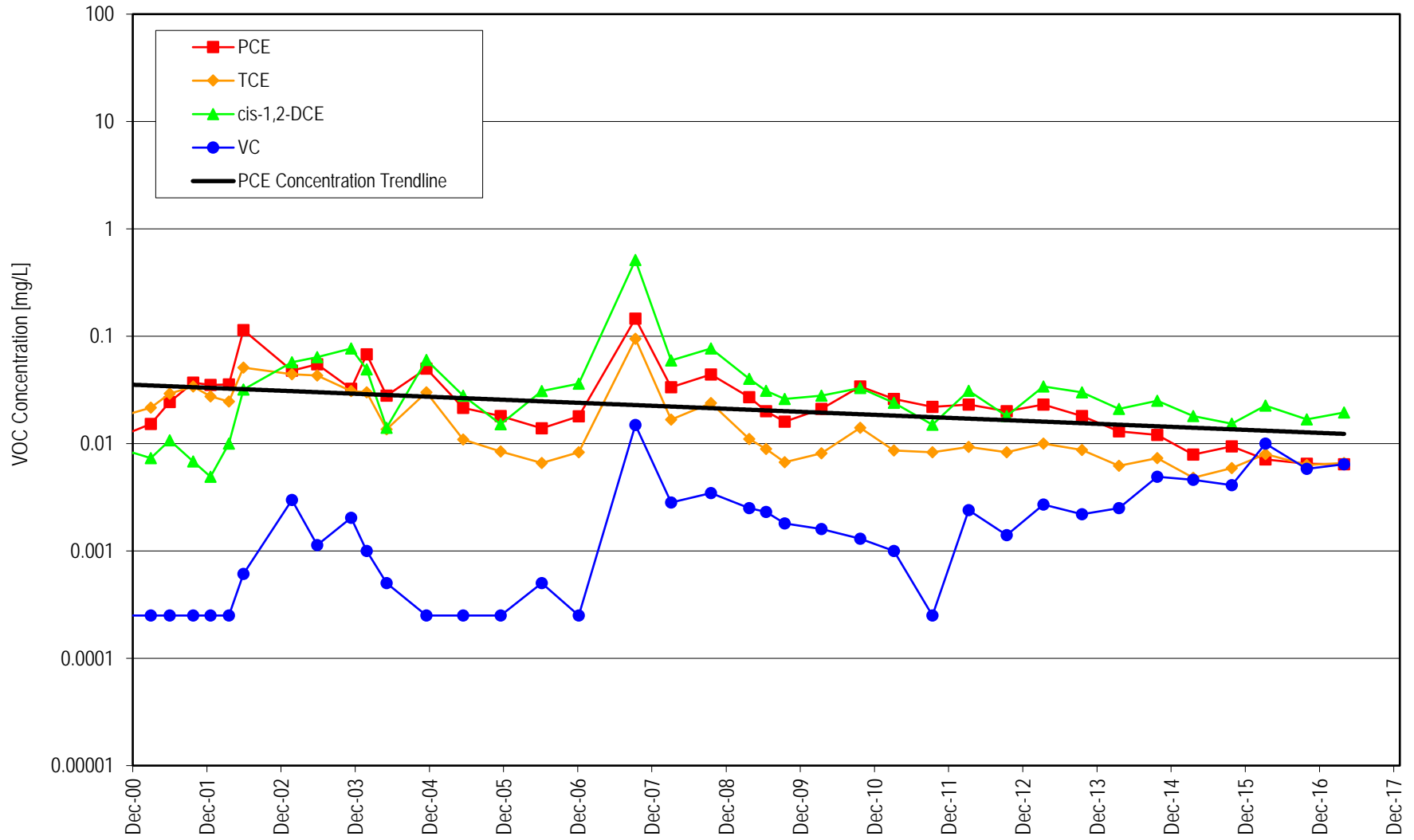
VOC Concentrations in MGMS1-110



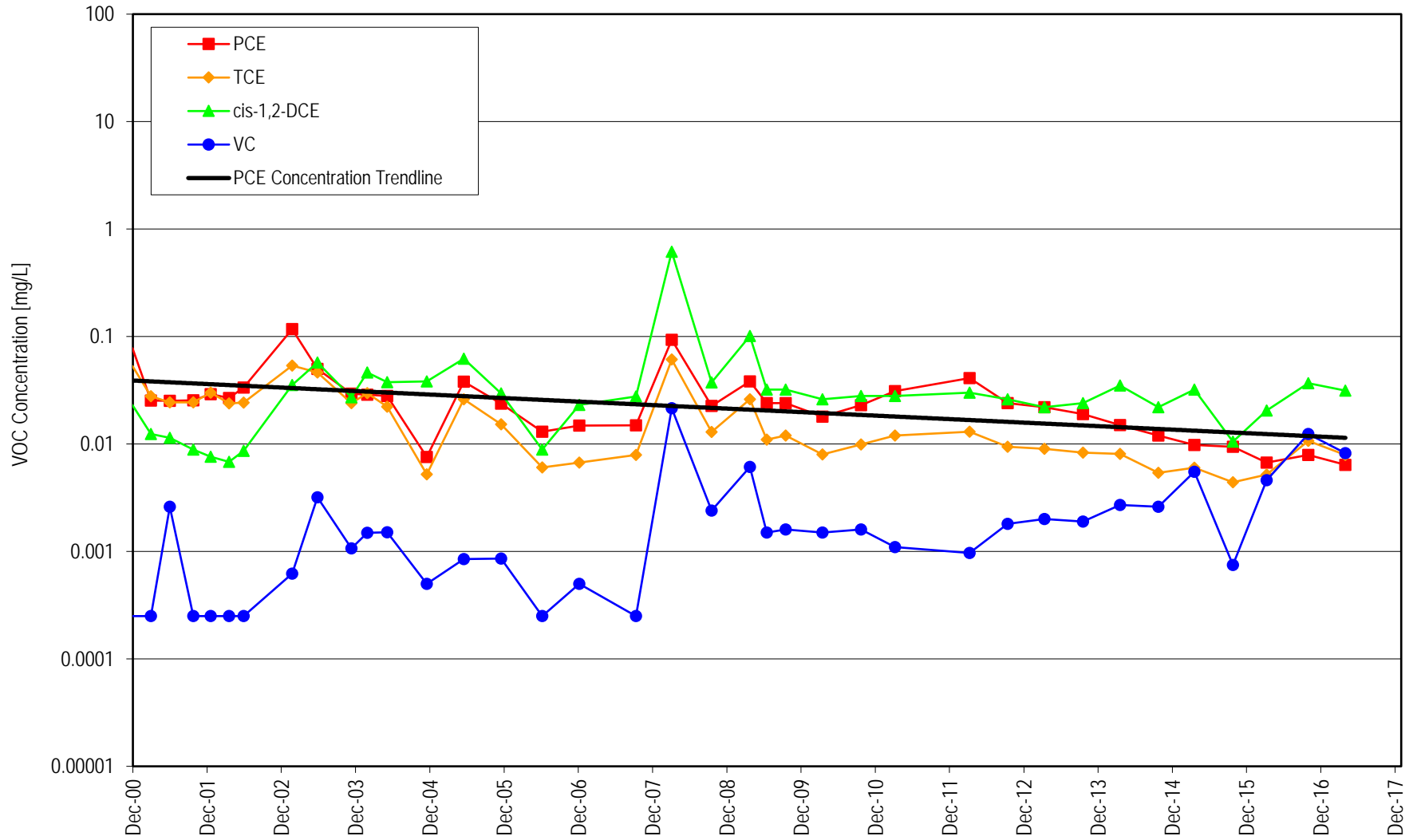
VOC Concentrations in MGMS2-60



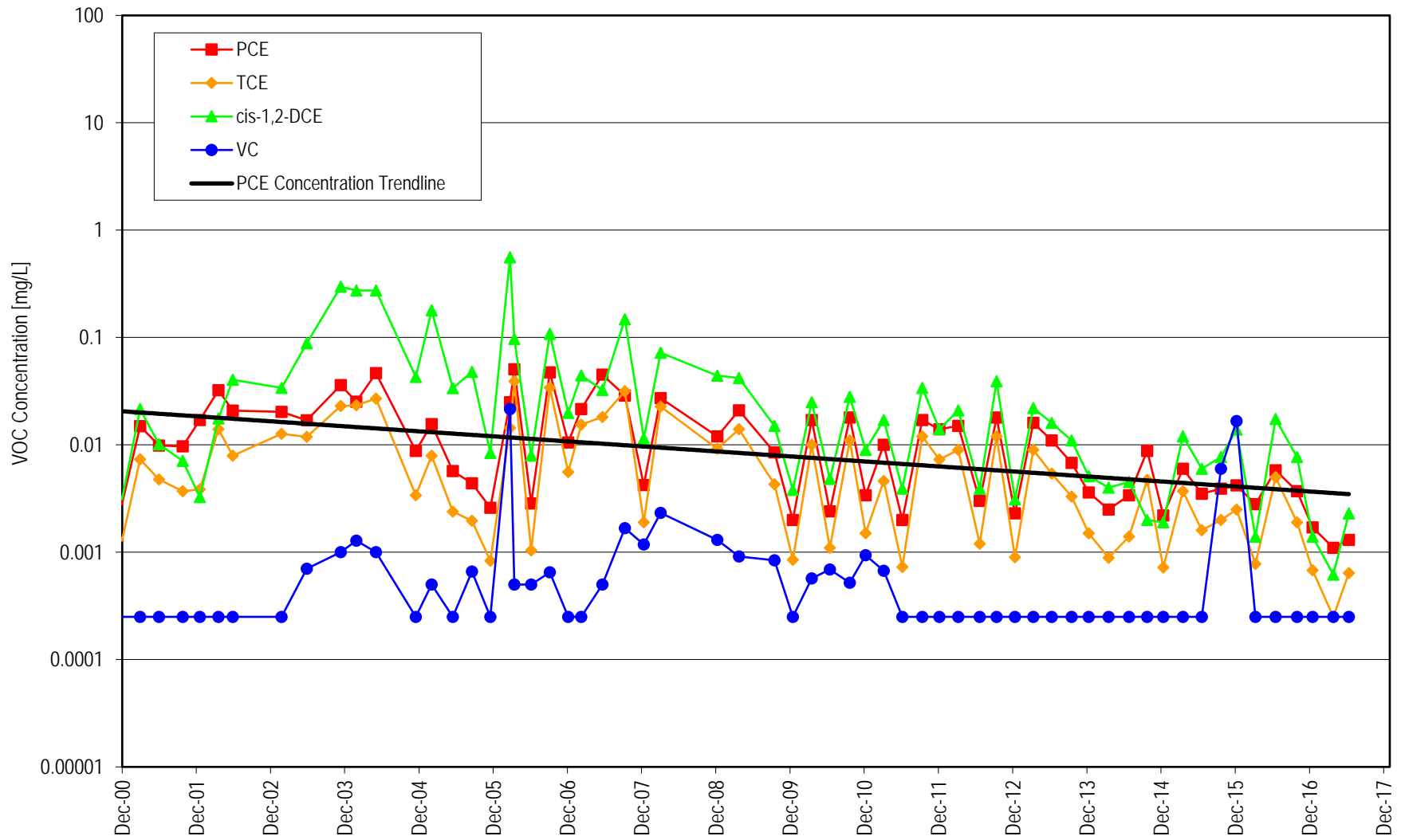
VOC Concentrations in MGMS2-110



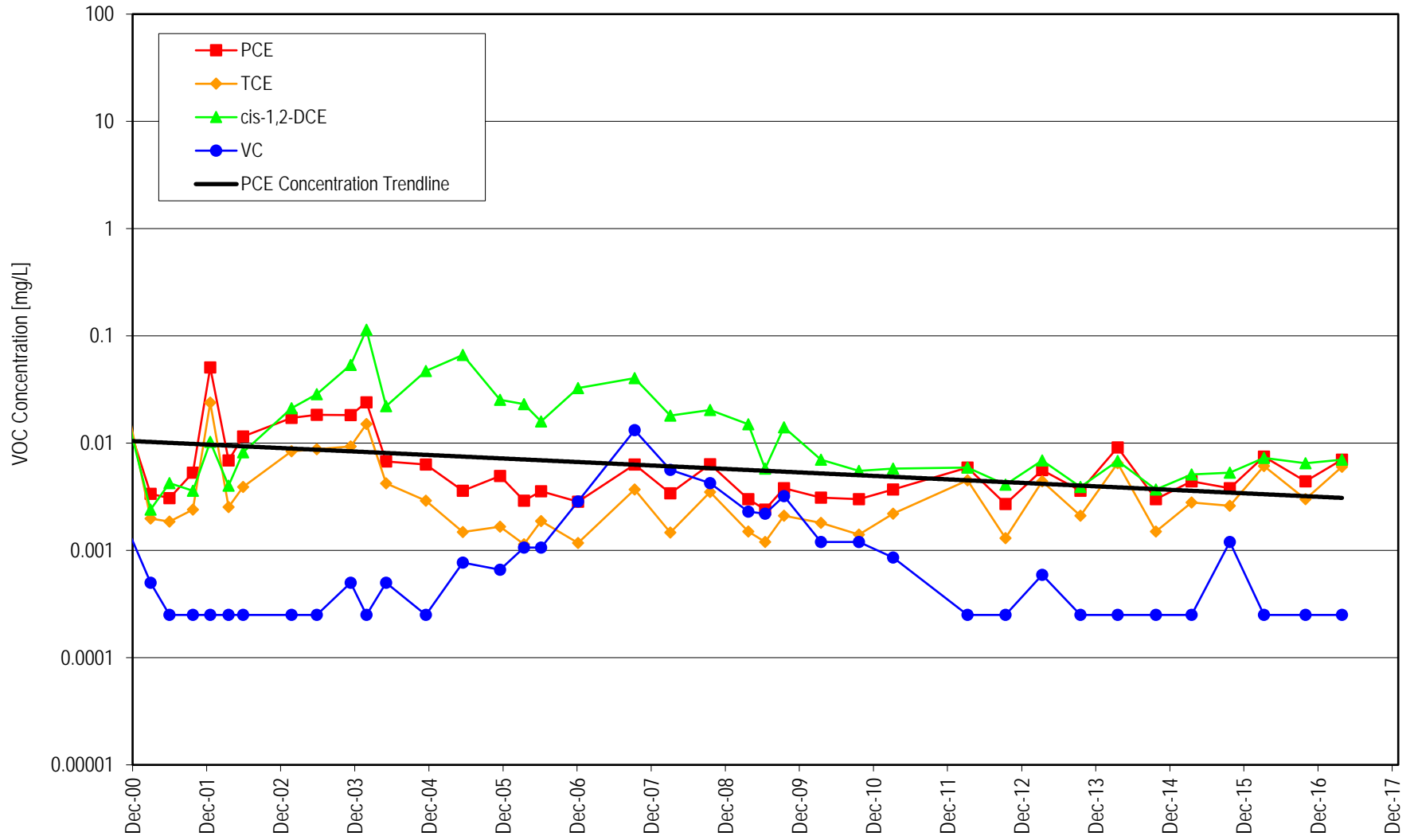
VOC Concentrations in MGMS2-132



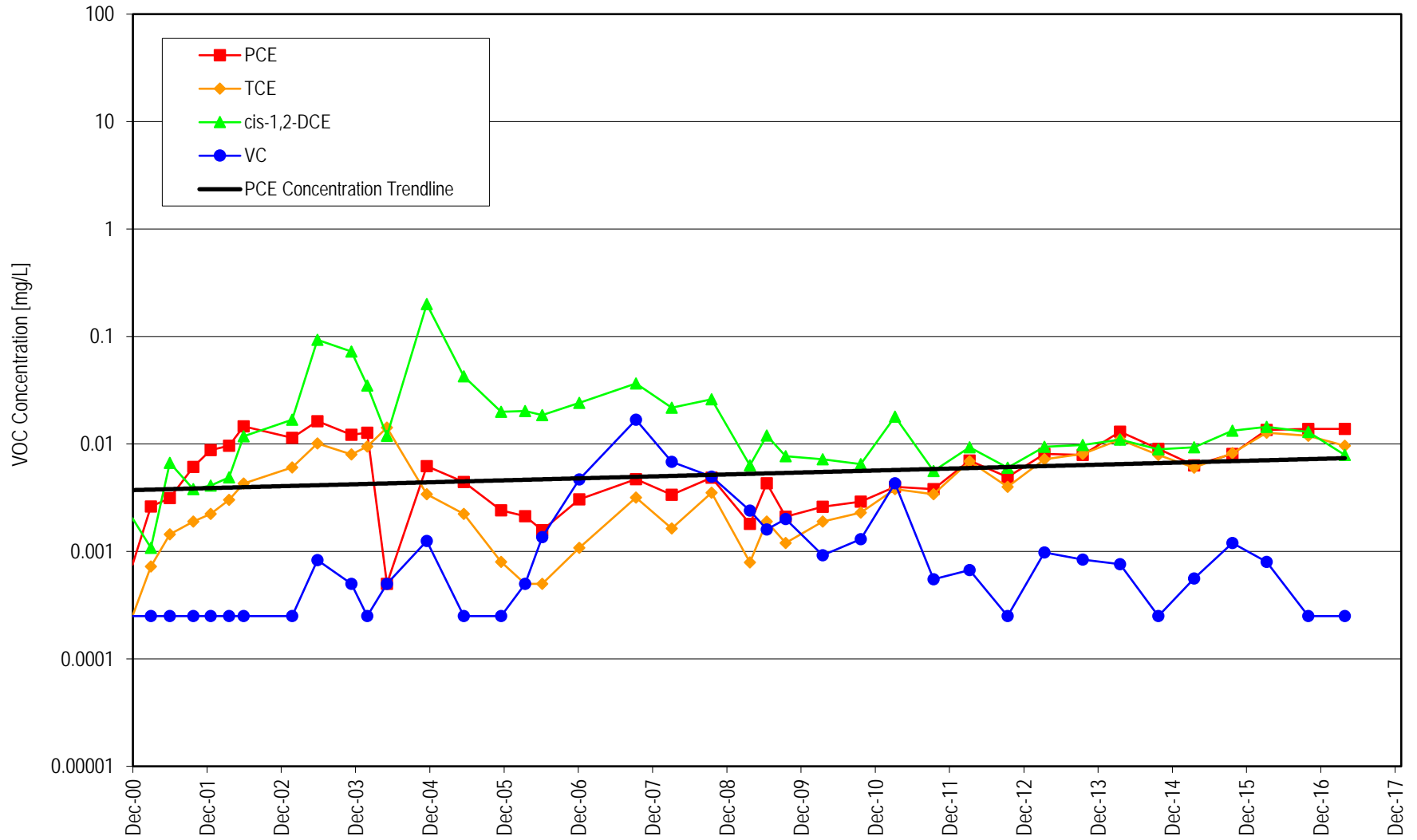
VOC Concentrations in MGMS3-60



VOC Concentrations in MGMS3-101

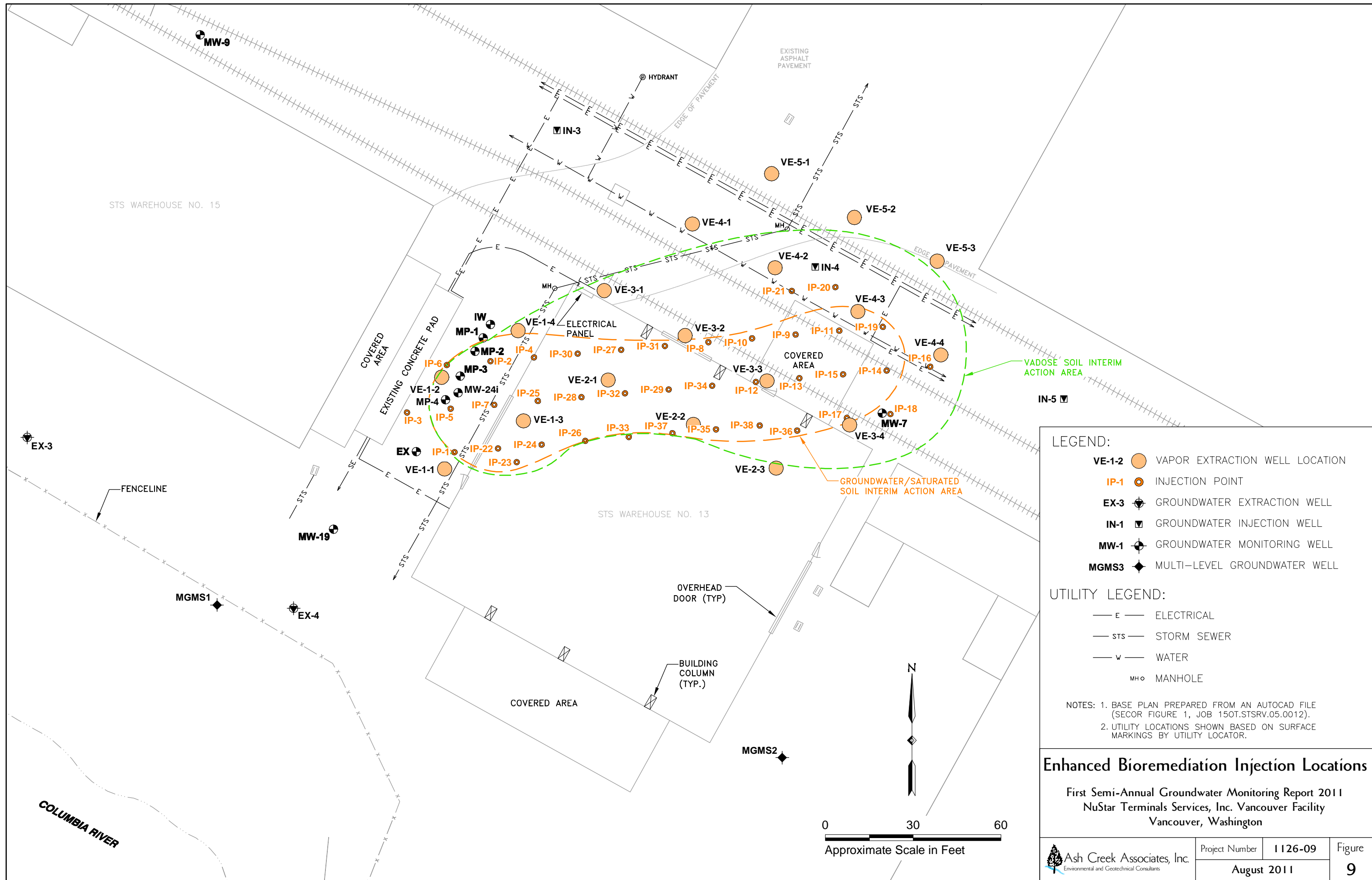


VOC Concentrations in MGMS3-132



Appendix E

**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:

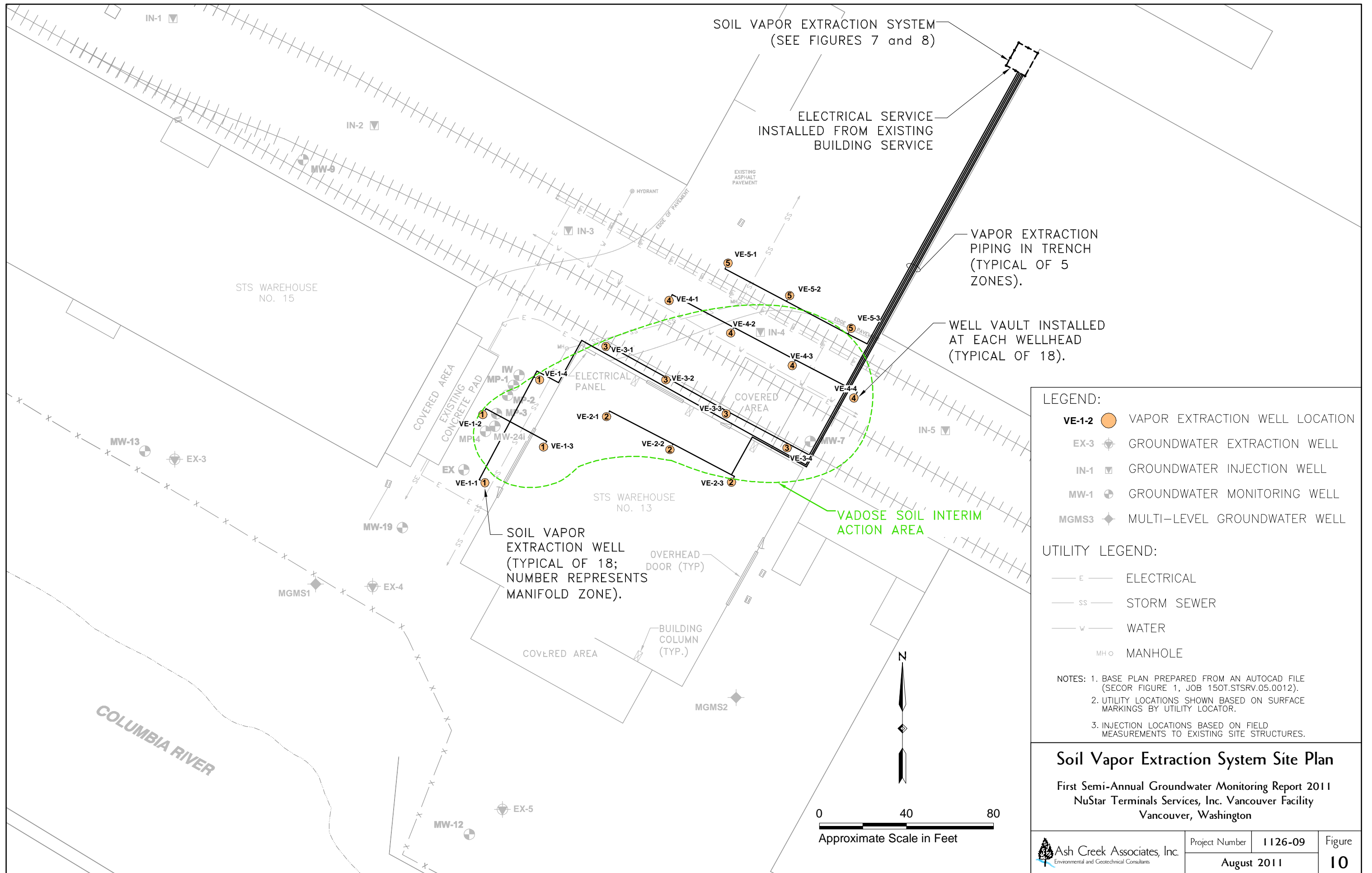
- E — ELECTRICAL
- STS — STORM SEWER
- W — WATER
- MH ⊕ MANHOLE

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

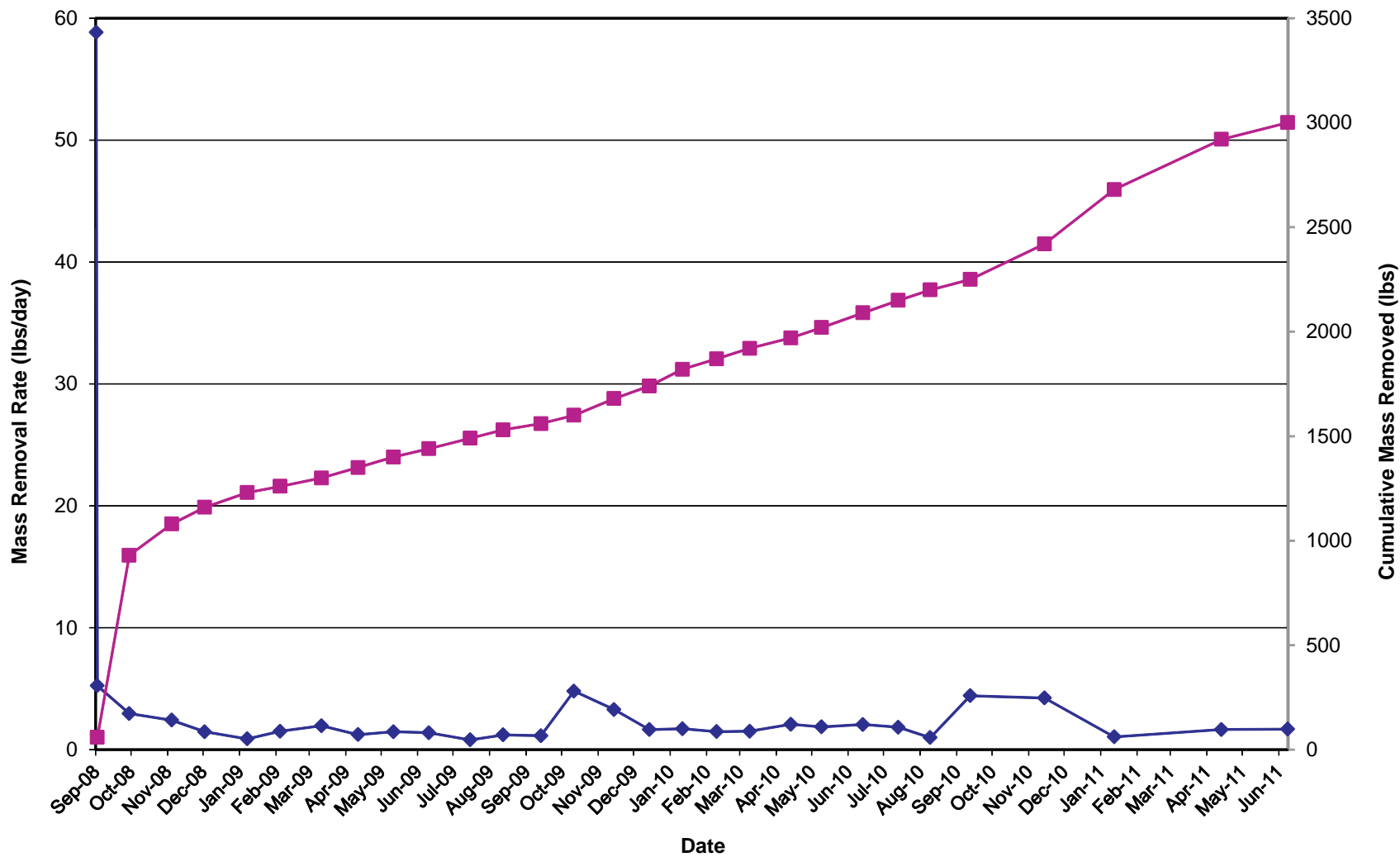
UTILITY LEGEND:

- 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

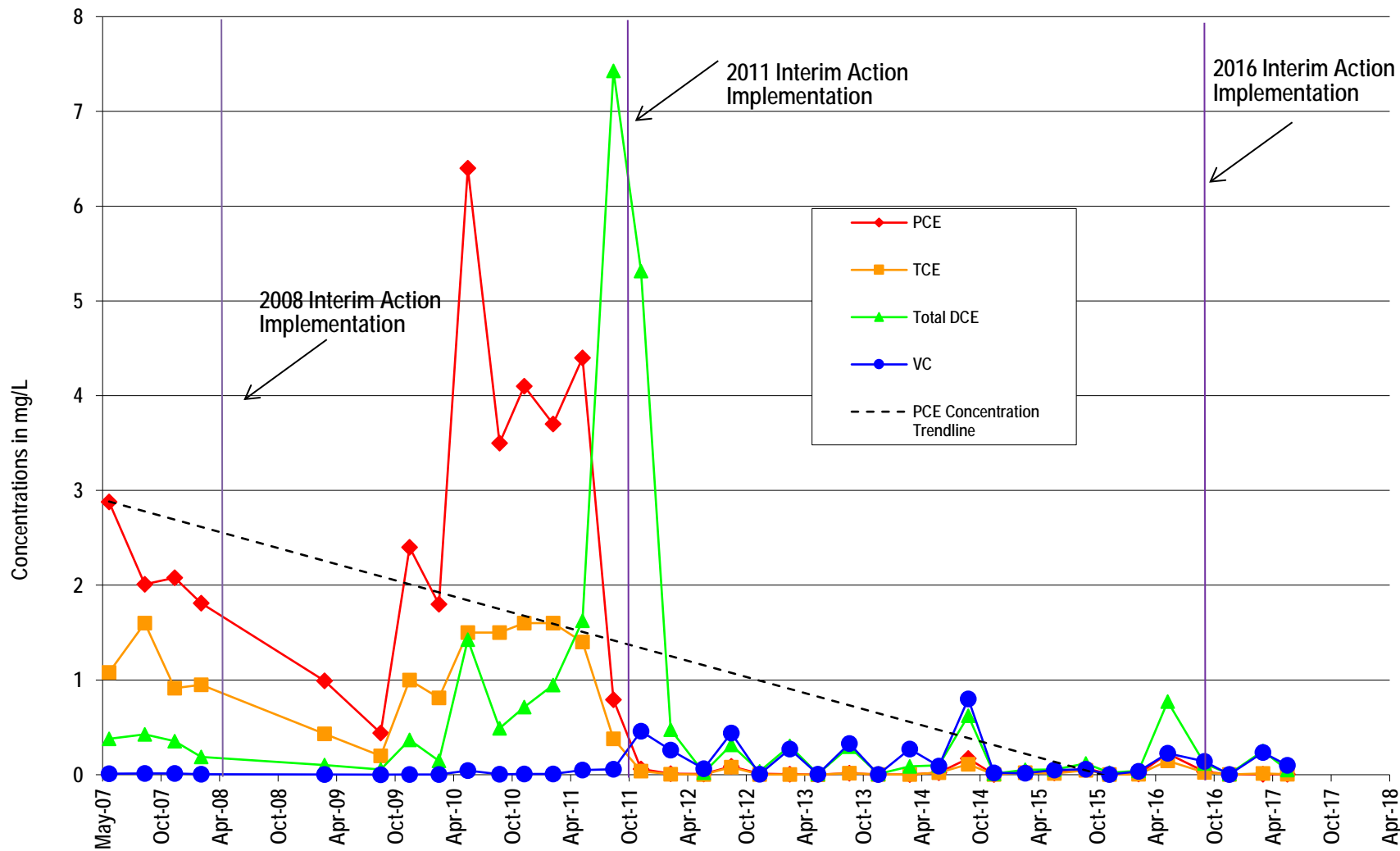


Project Number	1126-09	Figure 11
January 2012		

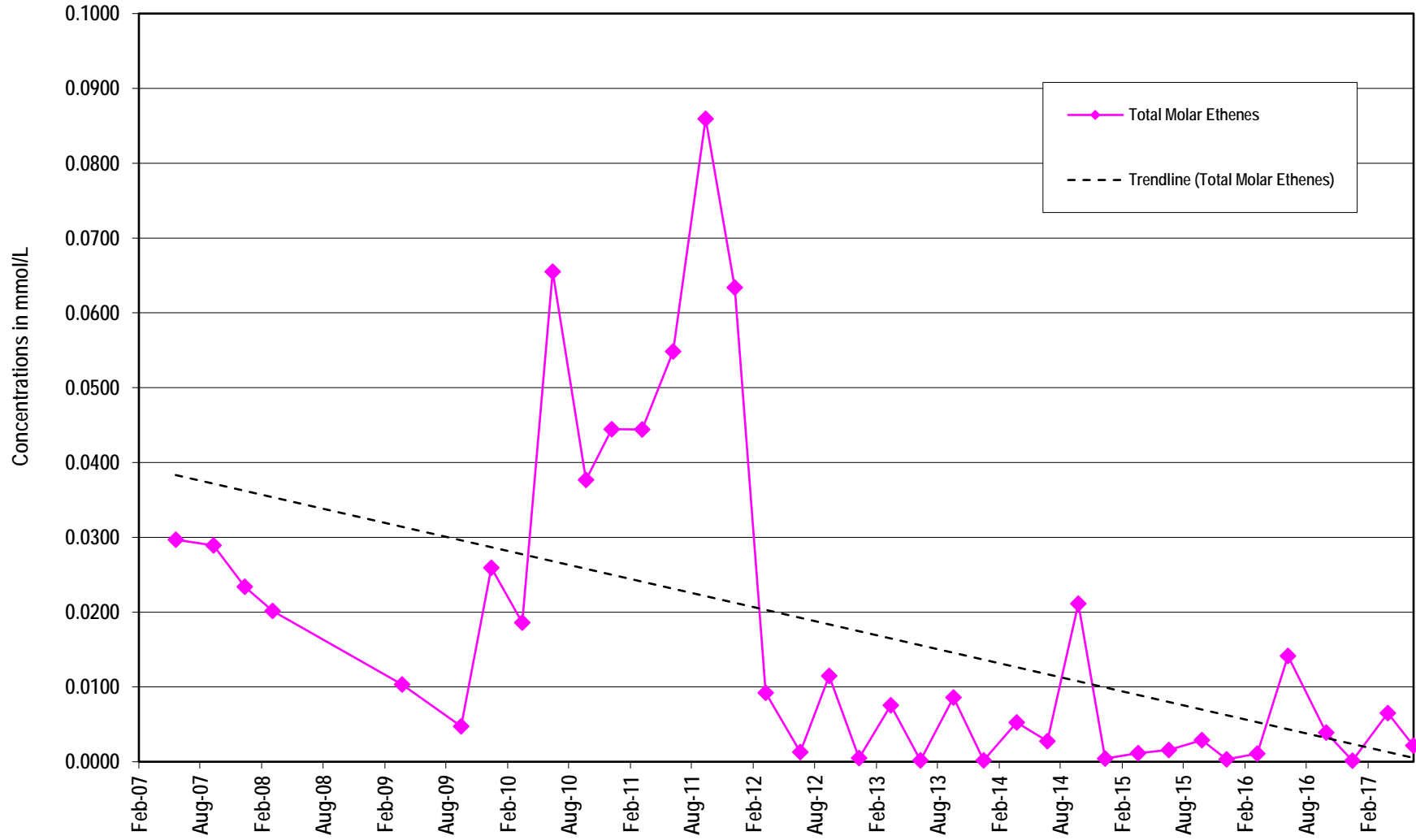
Appendix F

Molar Concentration Trend Plots – Interim Action Wells

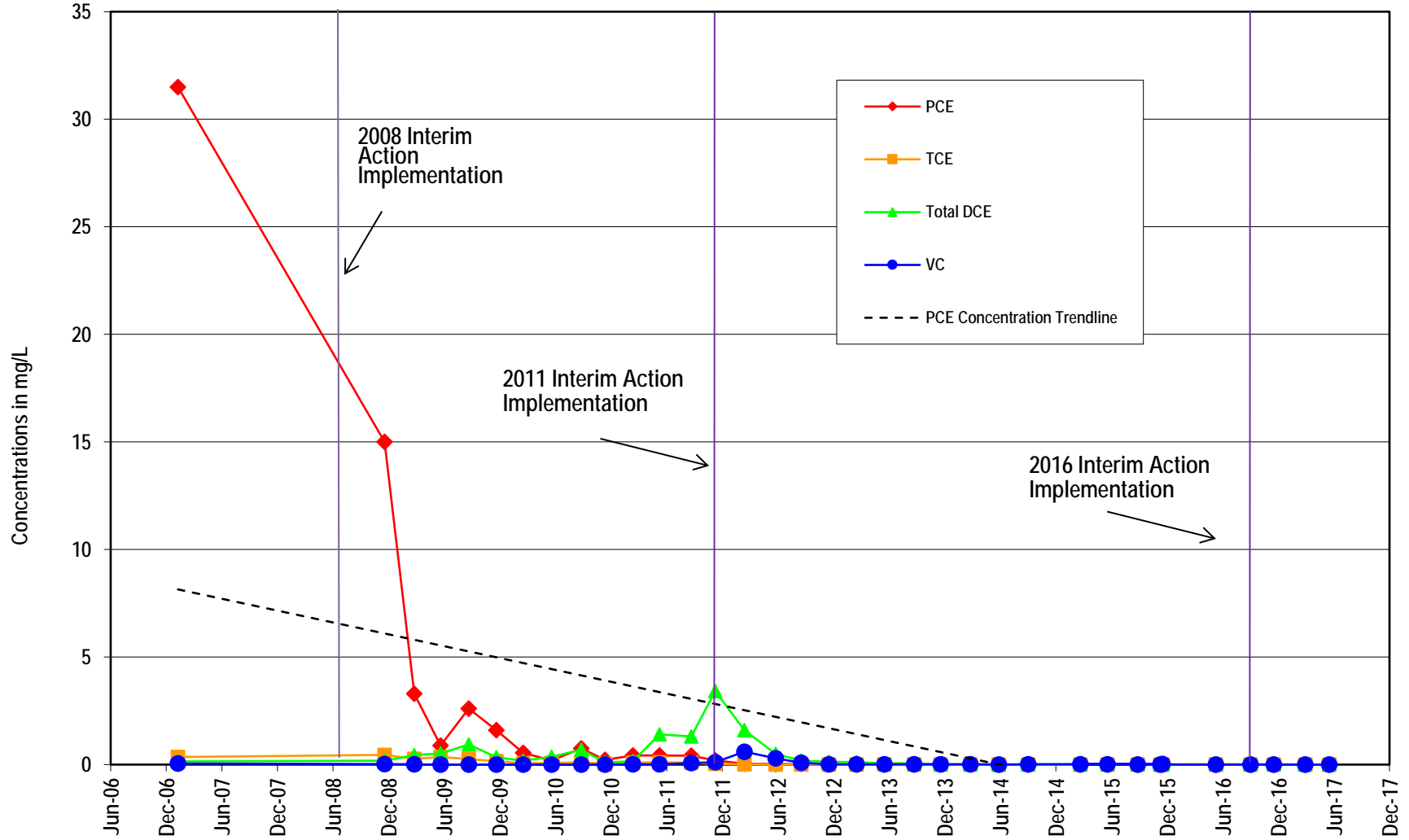
Interim Action Area - VOC Trends: MGMTS2-40



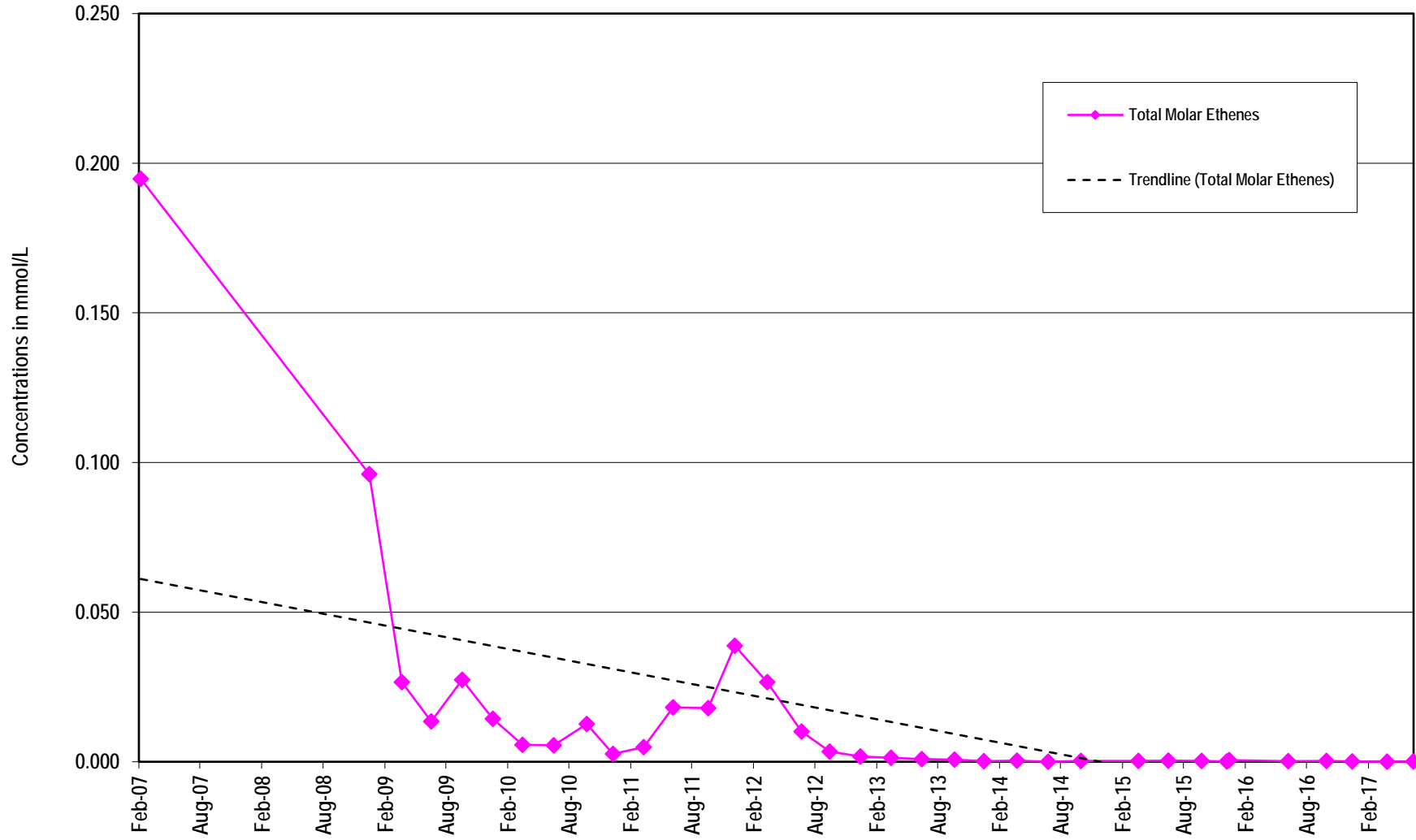
Total Molar Ethenes in MGMS2-40



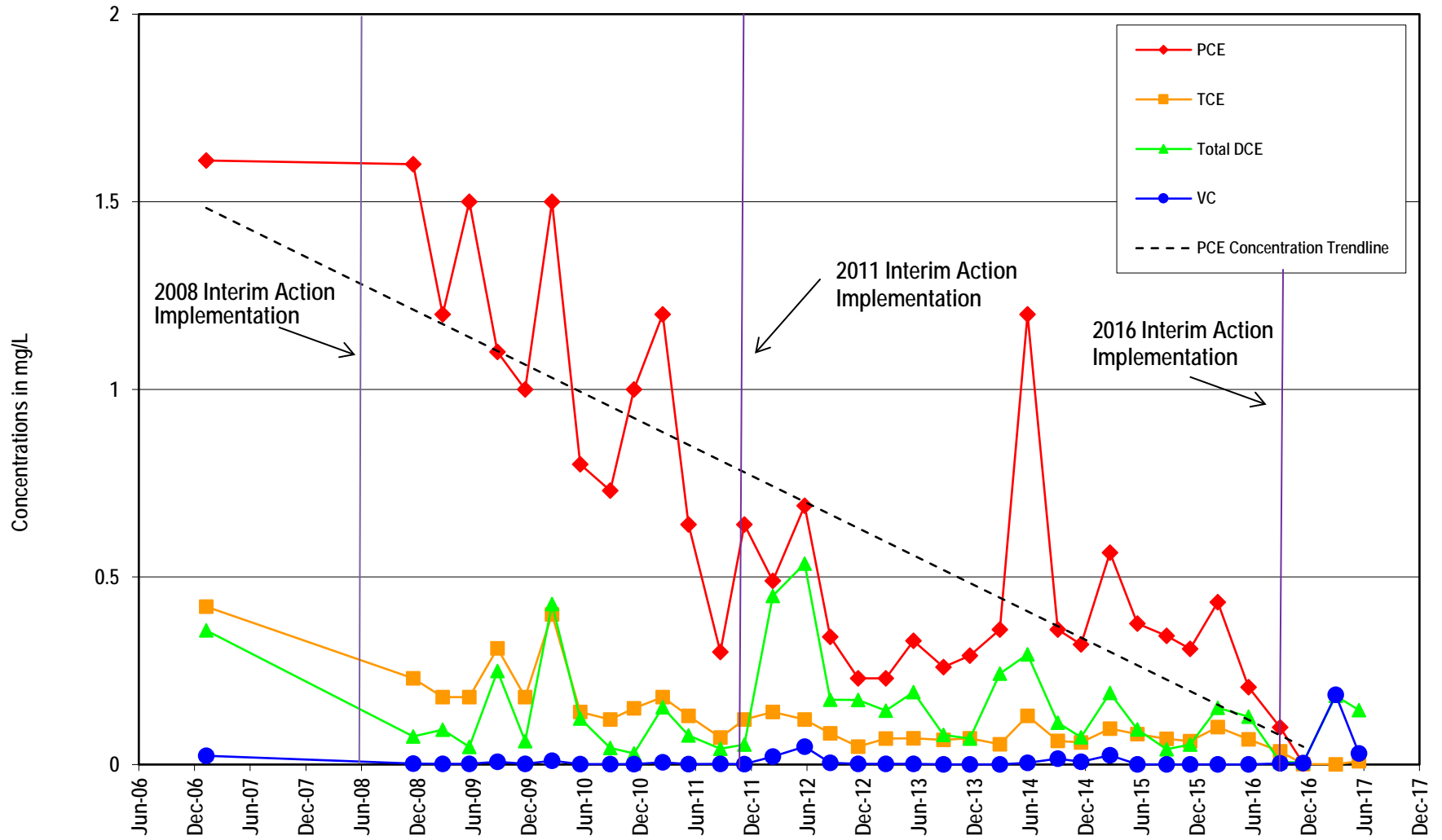
Interim Action Area - VOC Trends: MW-7



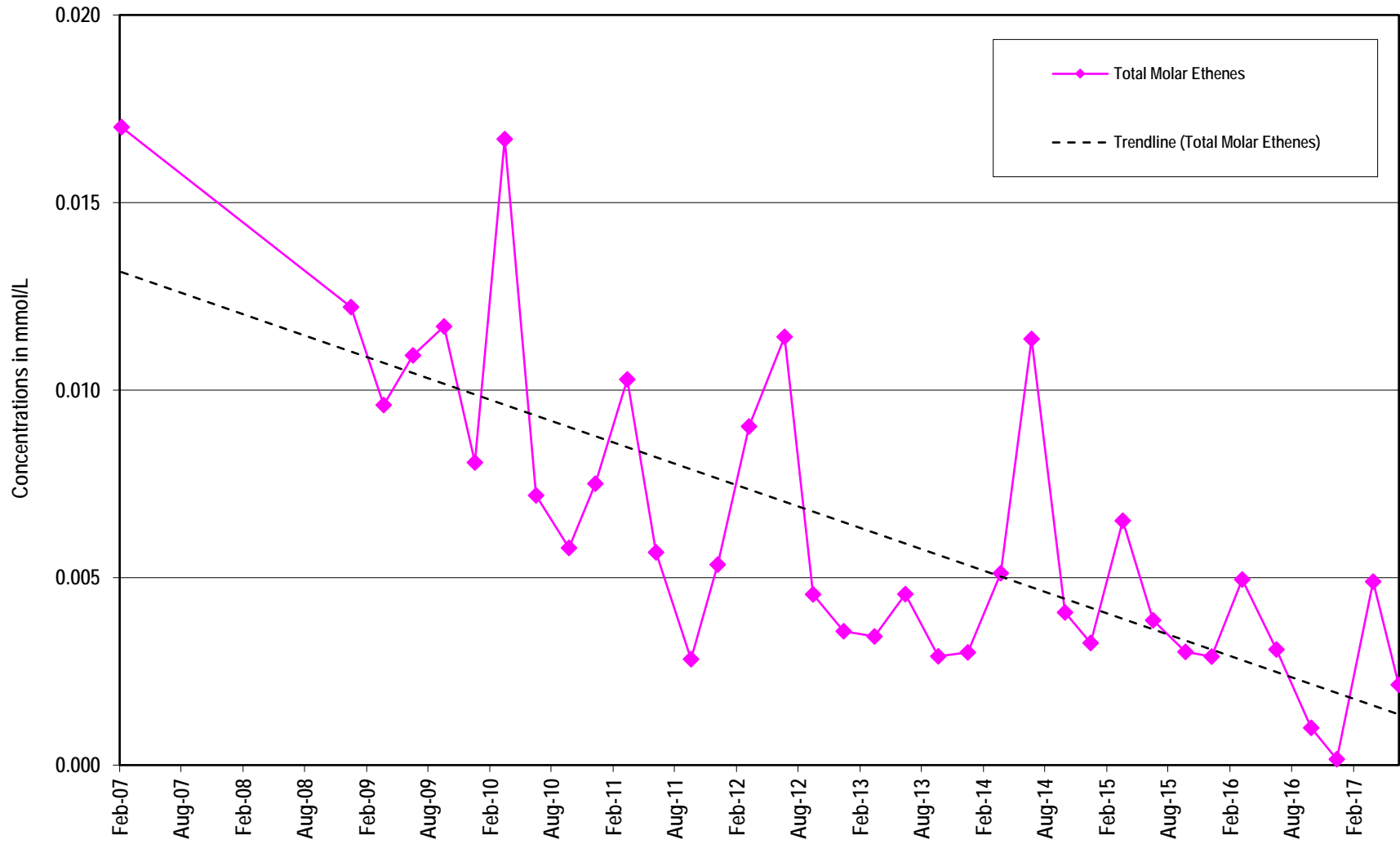
Total Molar Ethenes in MW-7



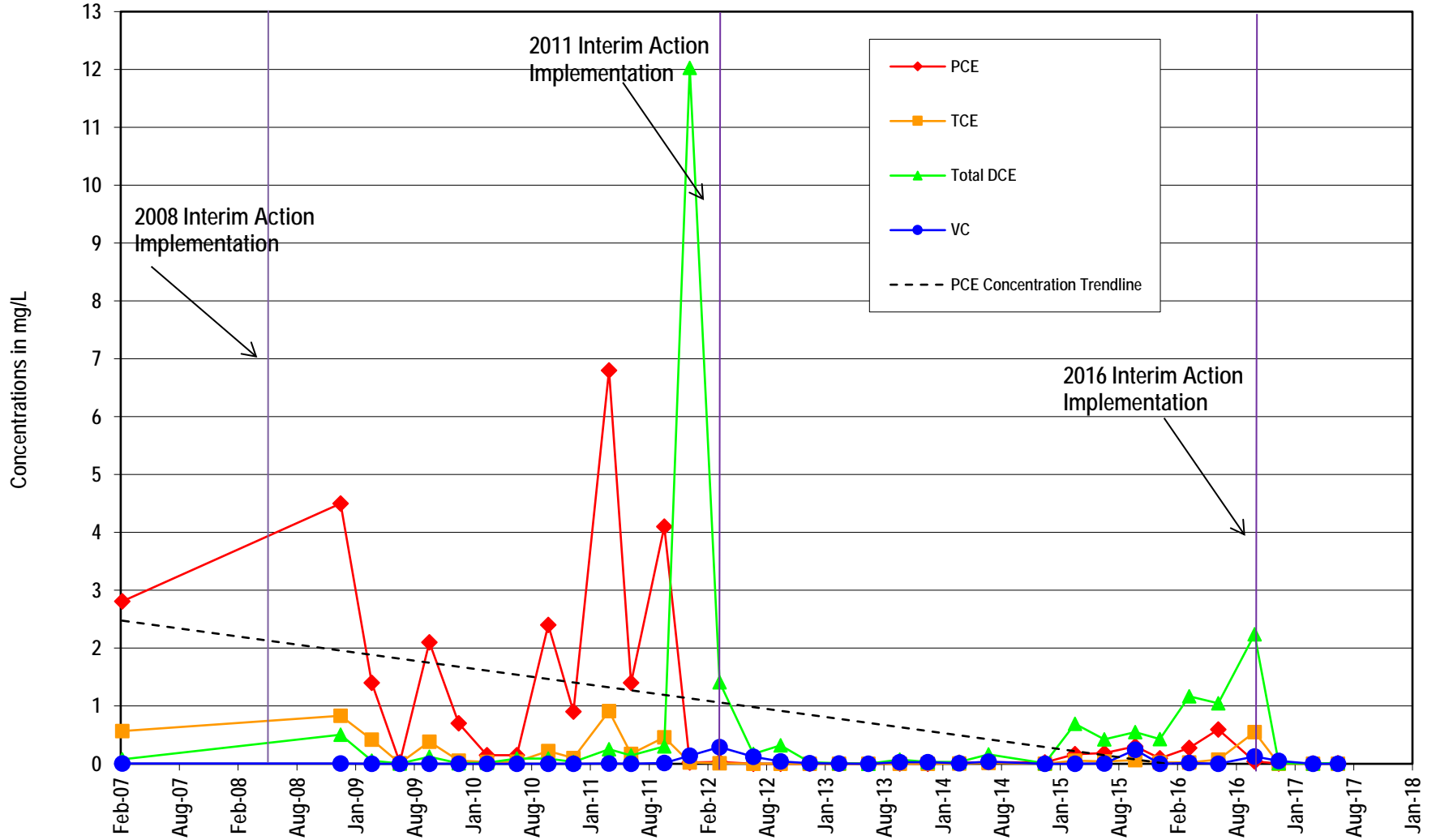
Interim Action Area - VOC Trends: MP-1



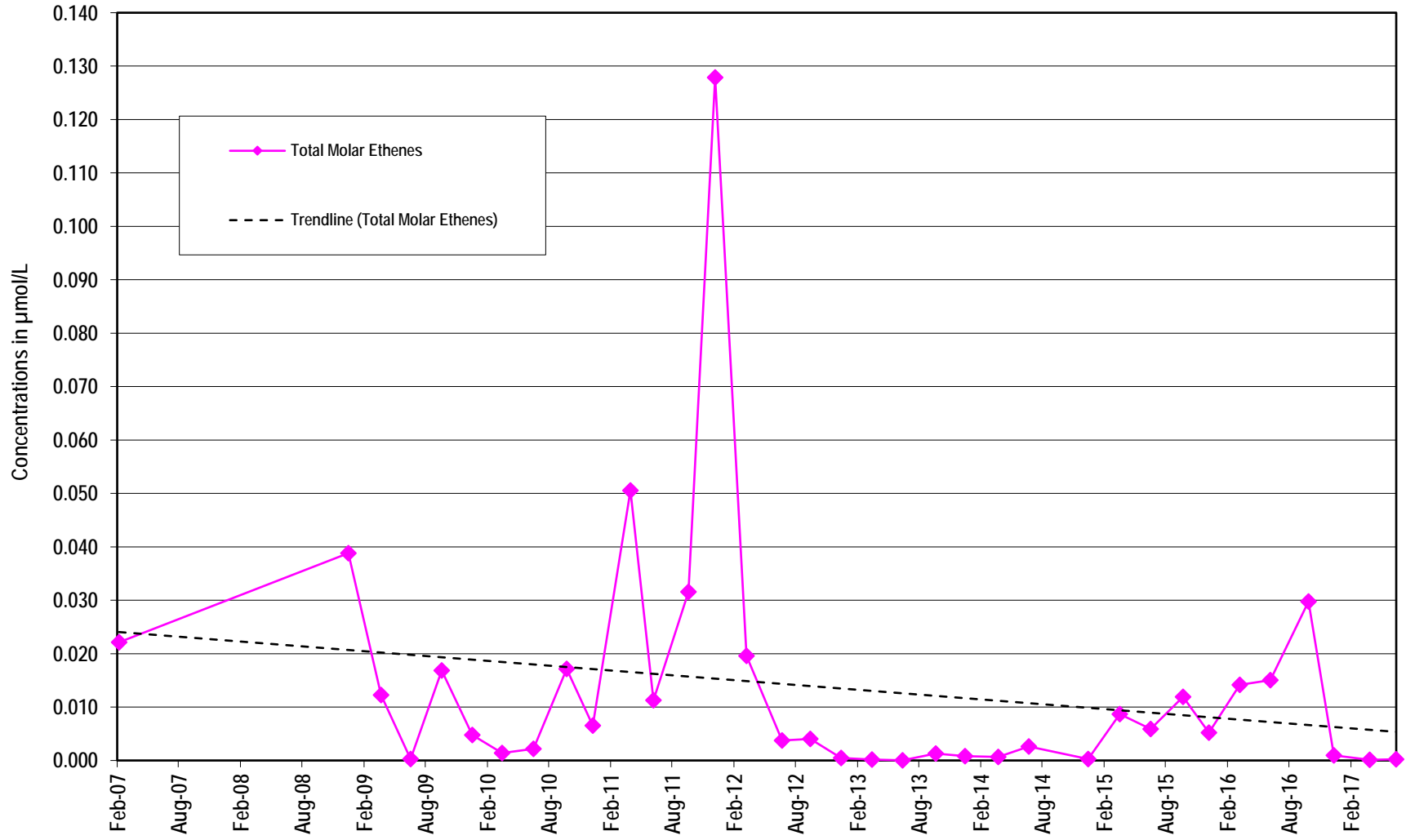
Total Molar Ethenes in MP-1



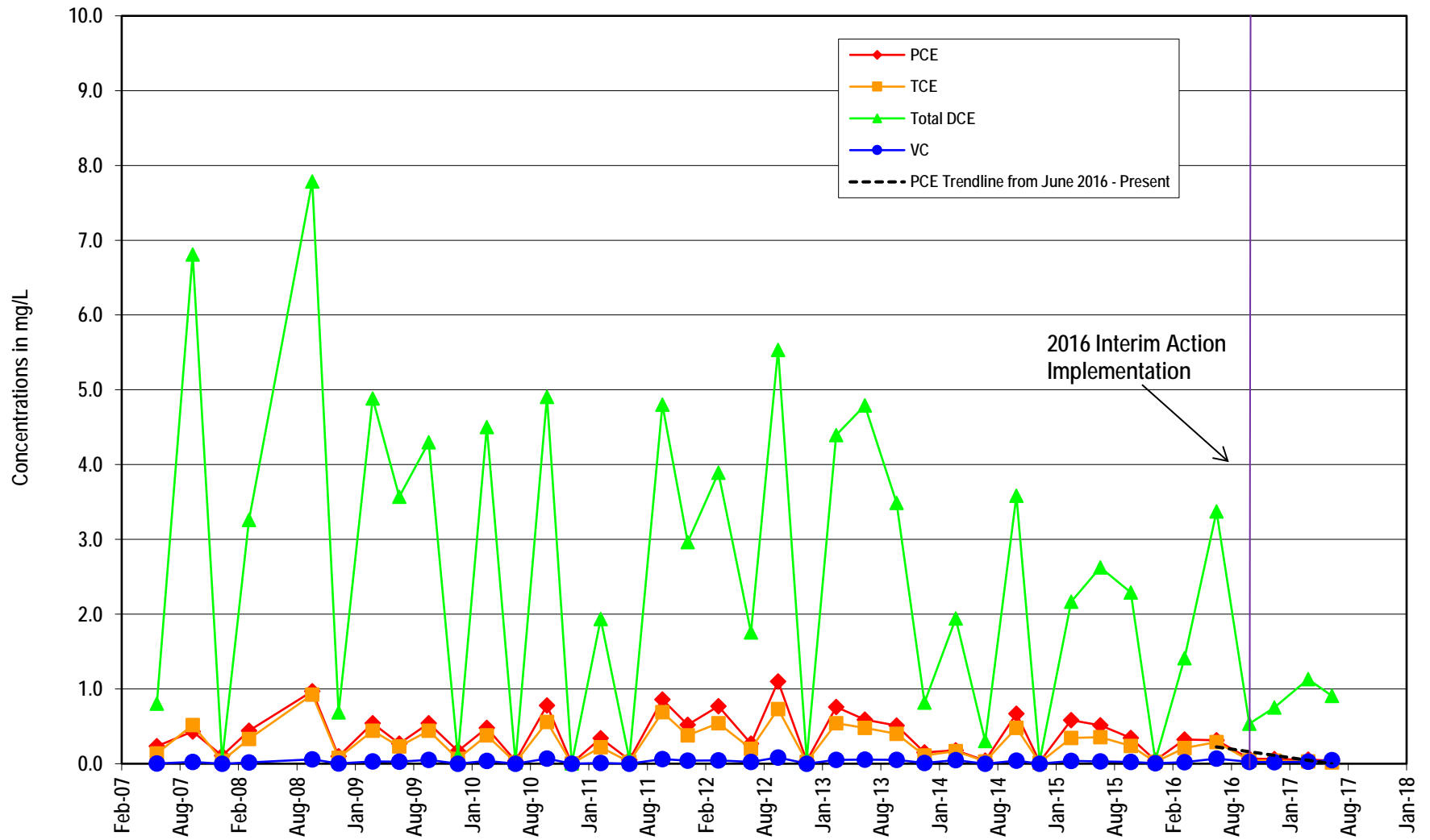
Interim Action Area - VOC Trends: EX



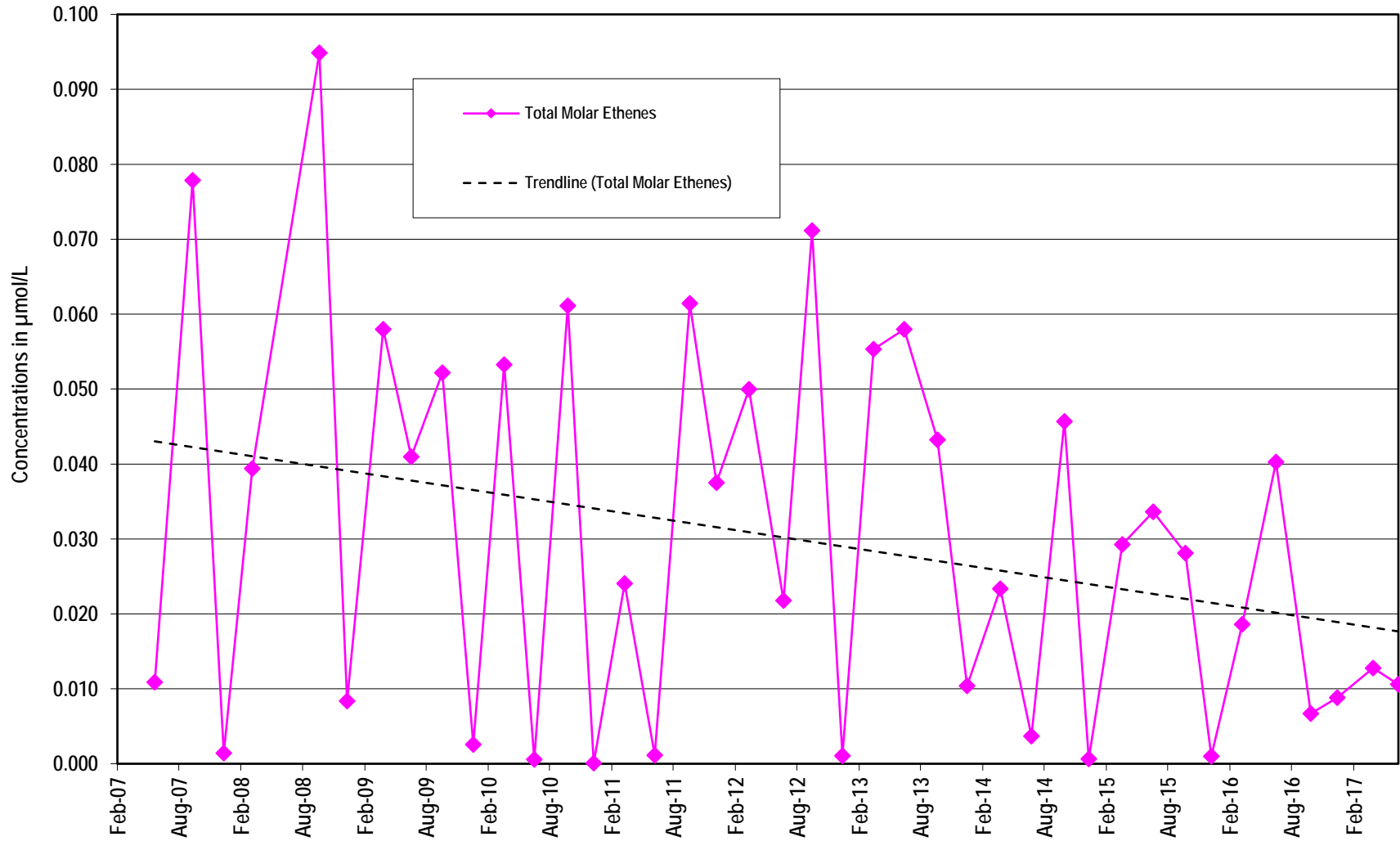
Total Molar Ethenes in EX



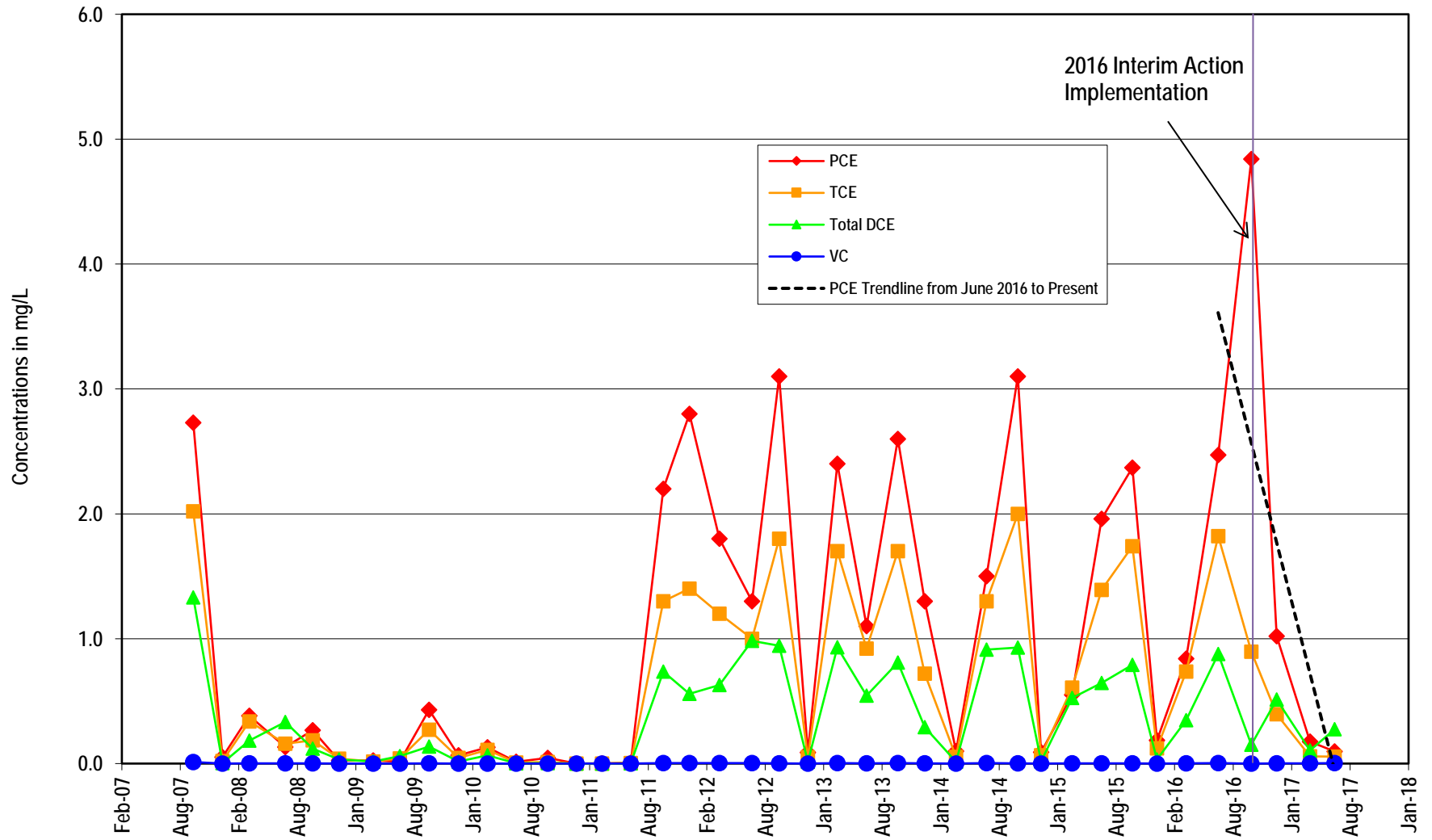
Interim Action Area - VOC Trends: MW-12



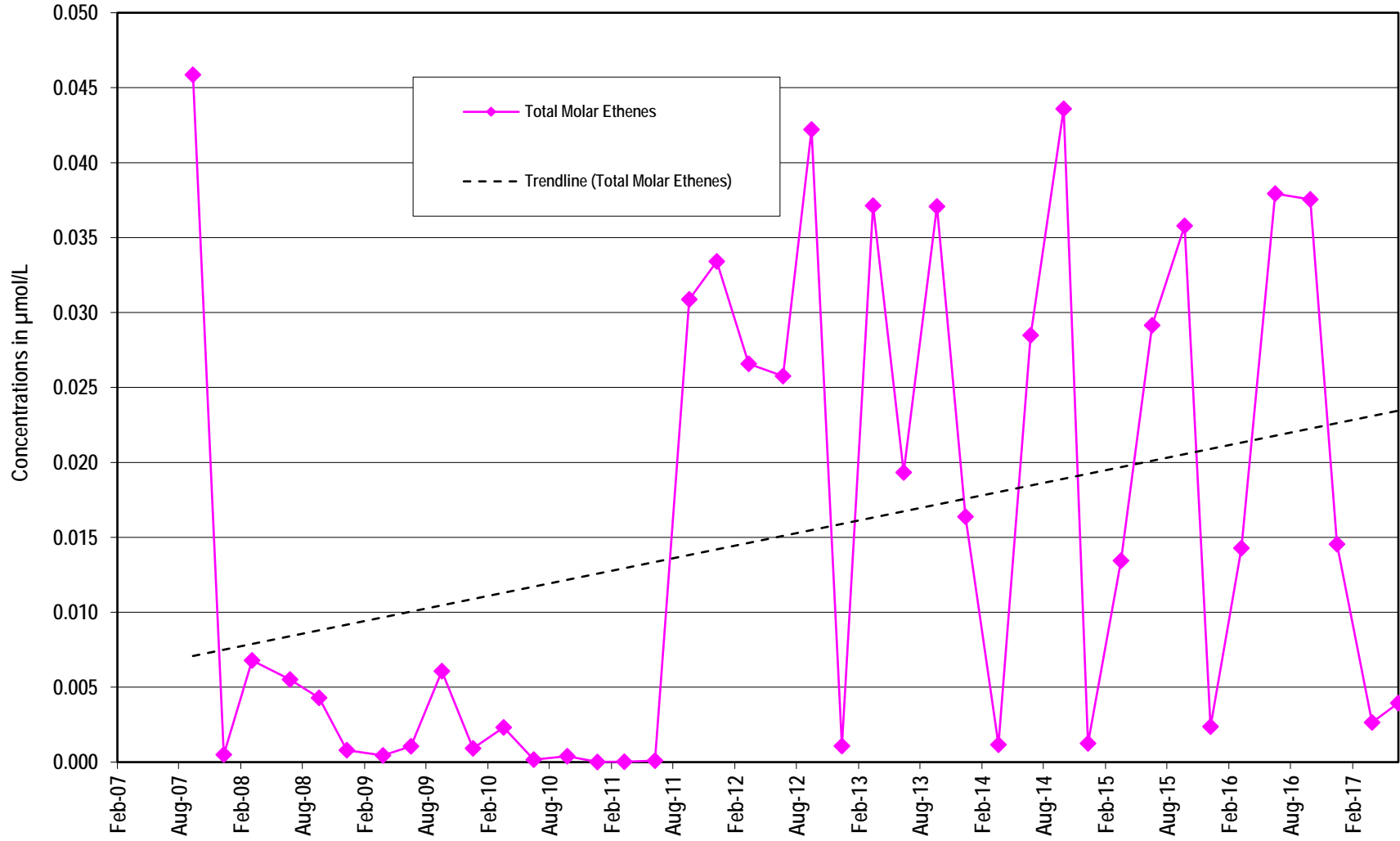
Total Molar Ethenes in MW-12



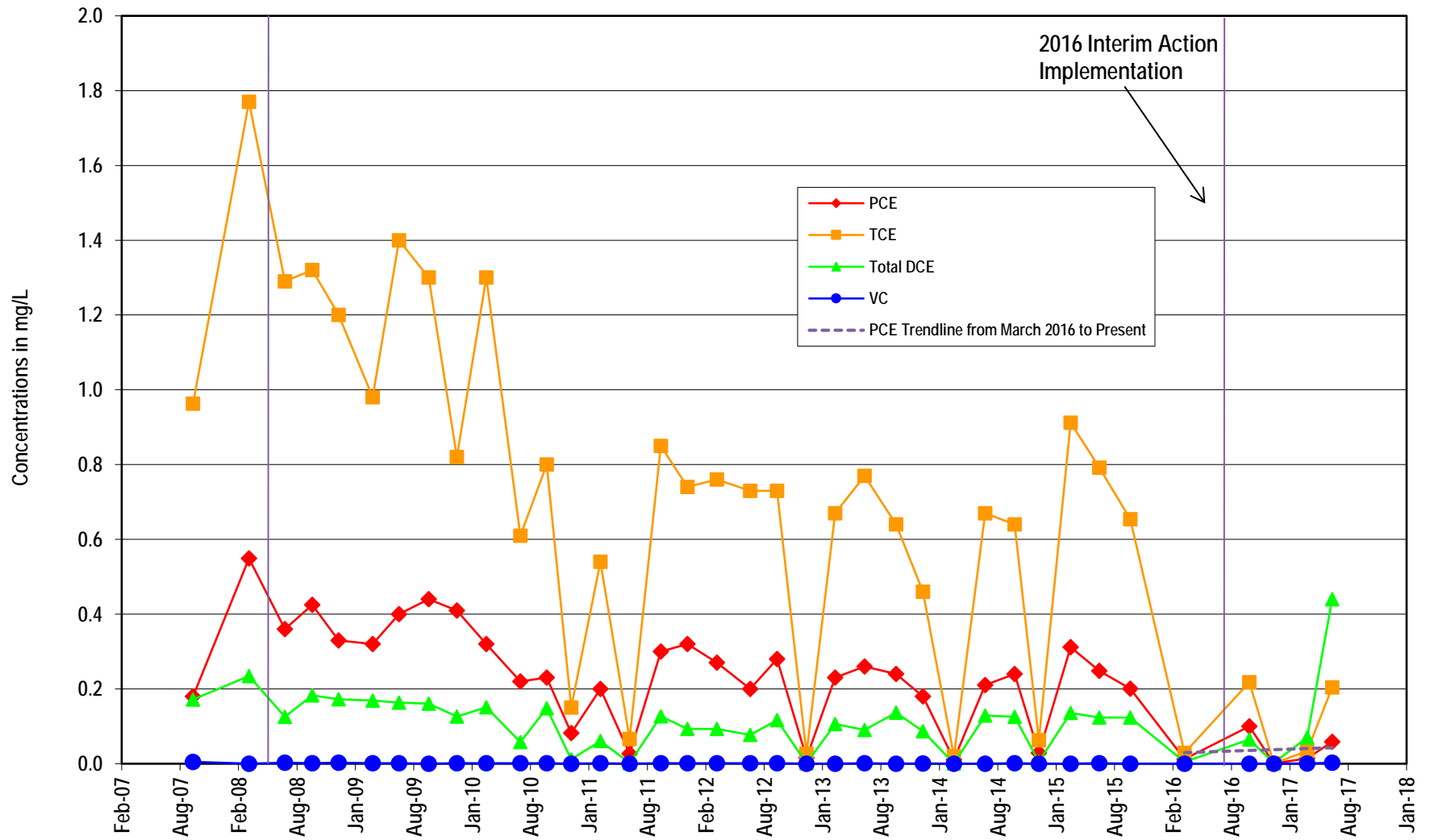
Interim Action Area - VOC Trends: MW-13



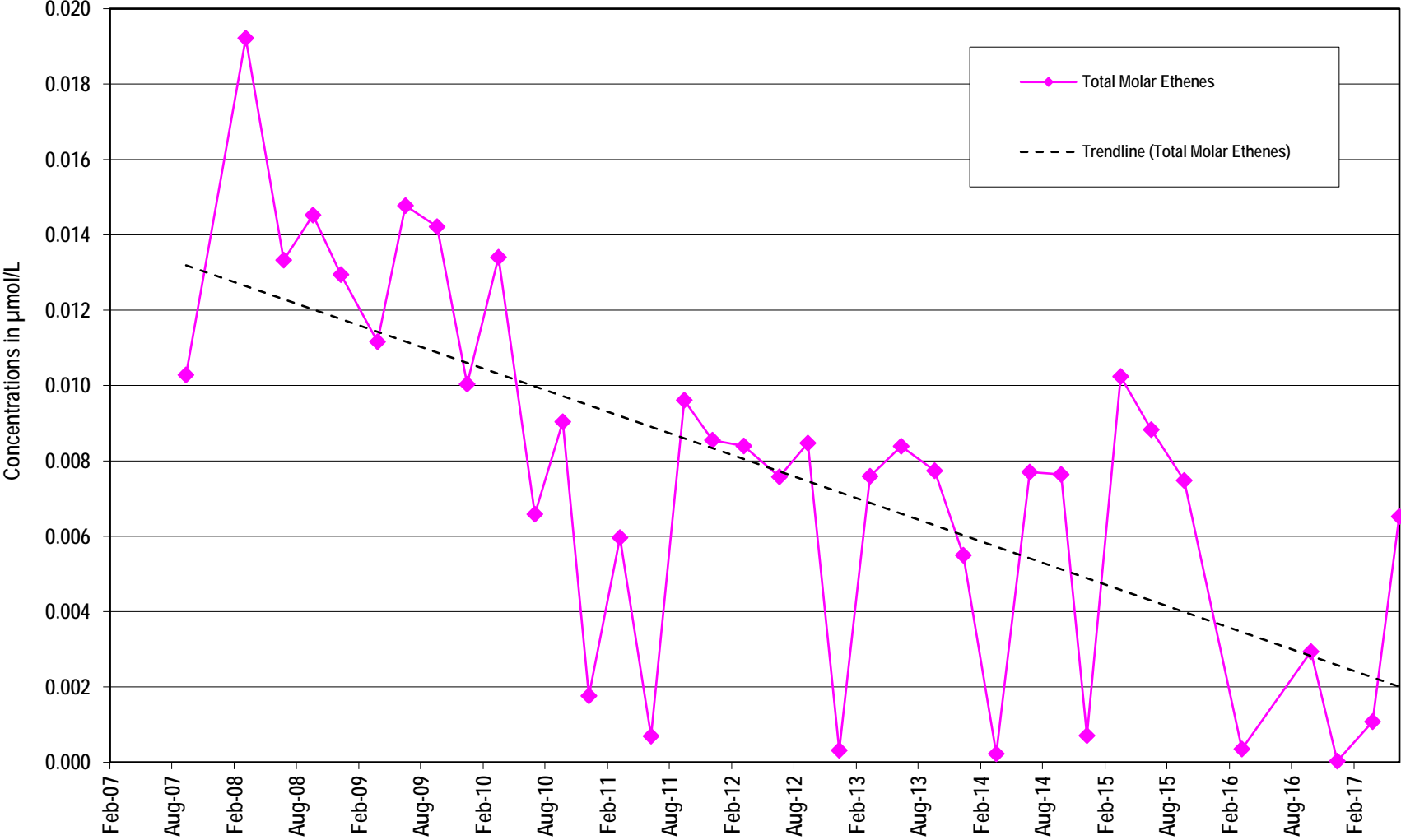
Total Molar Ethenes in MW-13



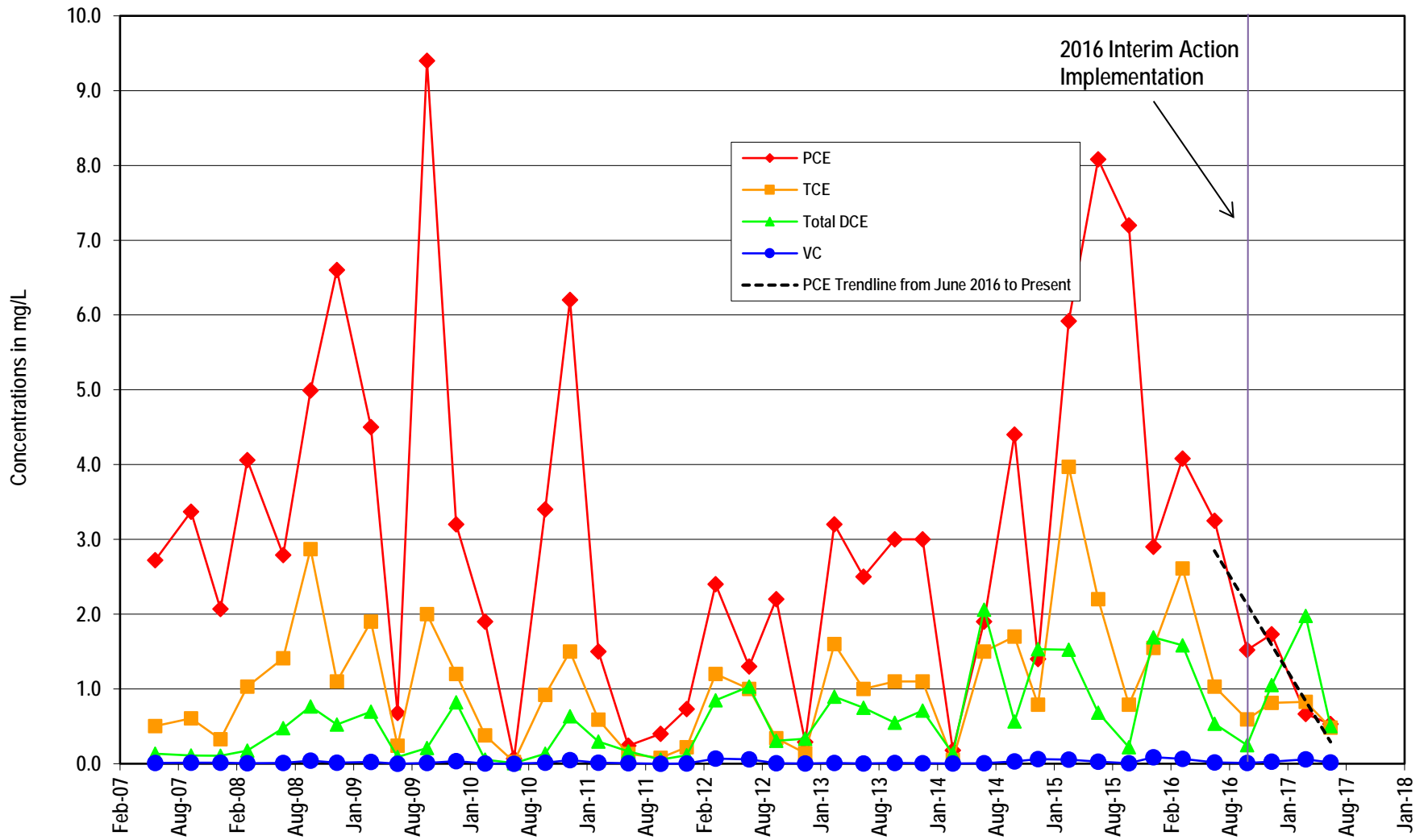
Interim Action Area - VOC Trends: MW-14



Total Molar Ethenes in MW-14



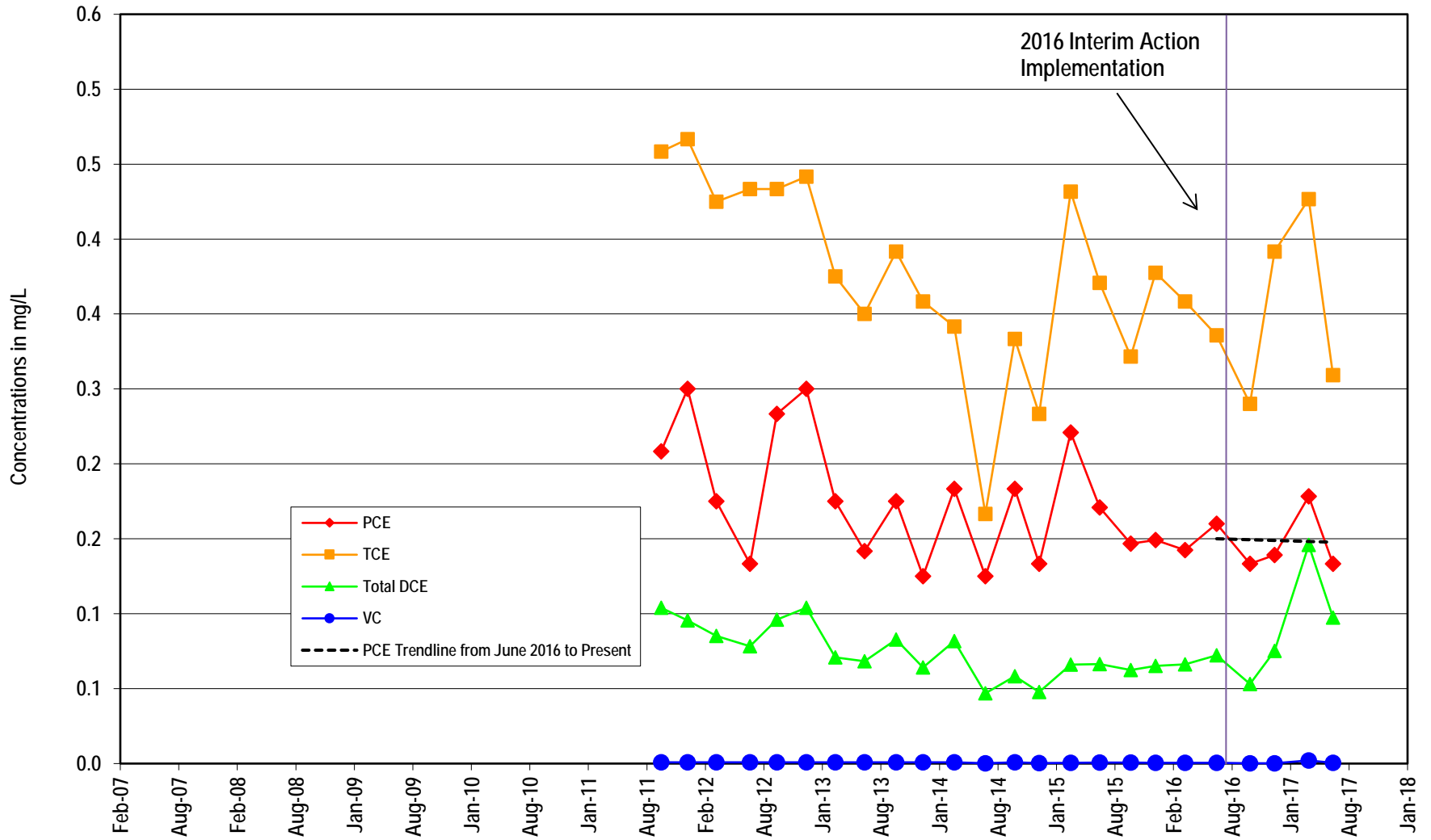
Interim Action Area - VOC Trends: MW-19



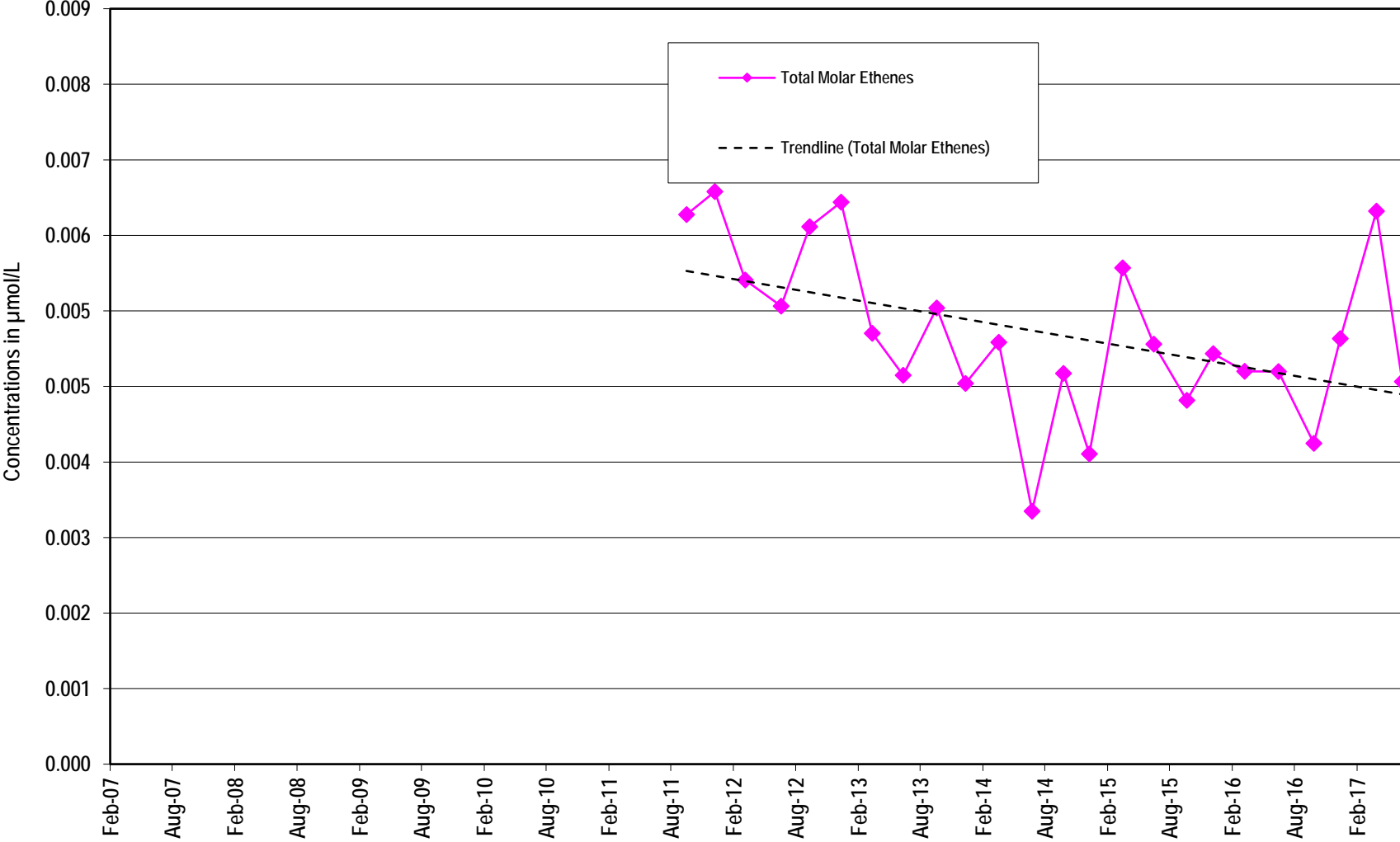
Total Molar Ethenes in MW-19



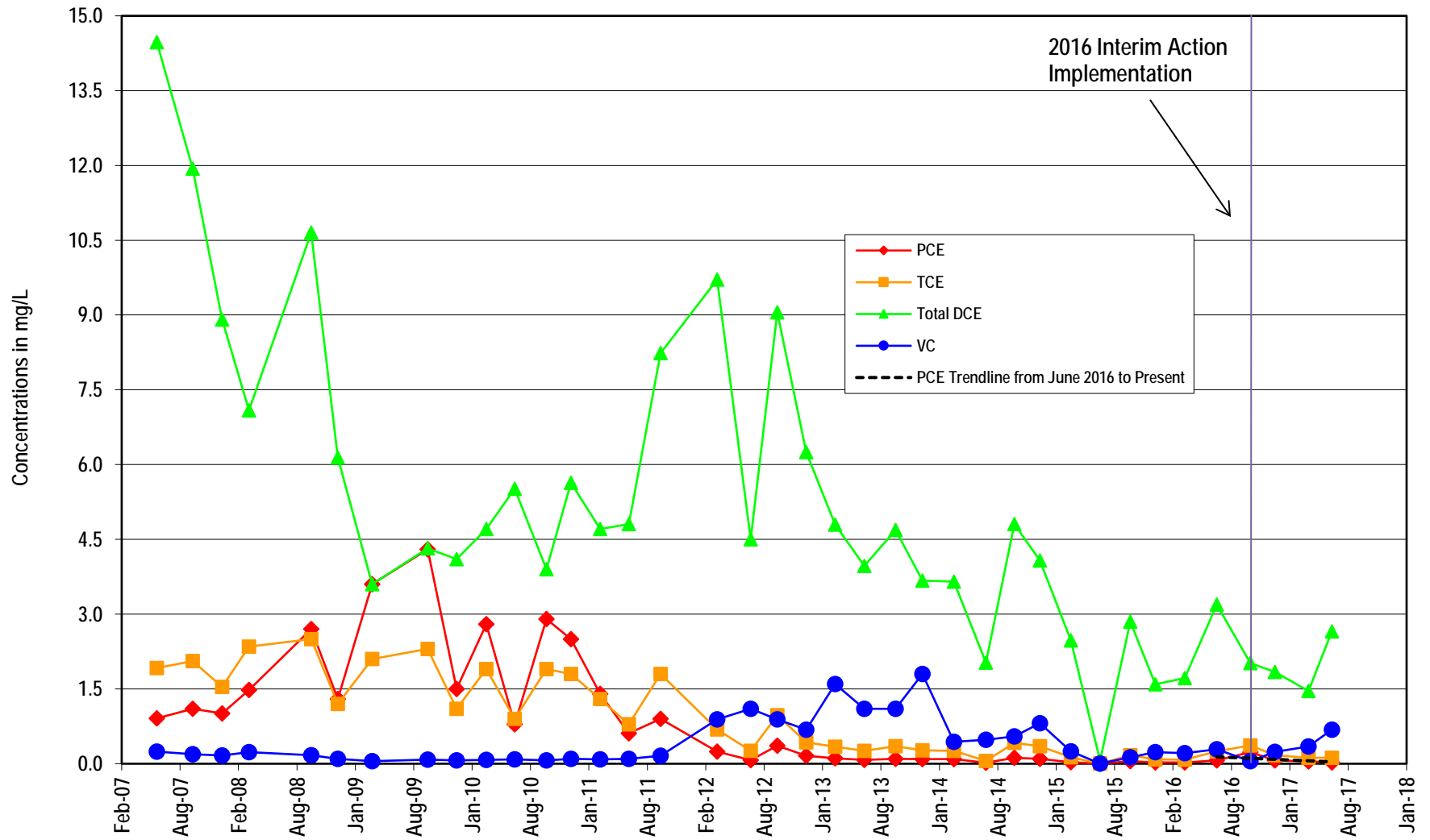
Interim Action Area - VOC Trends: MW-26



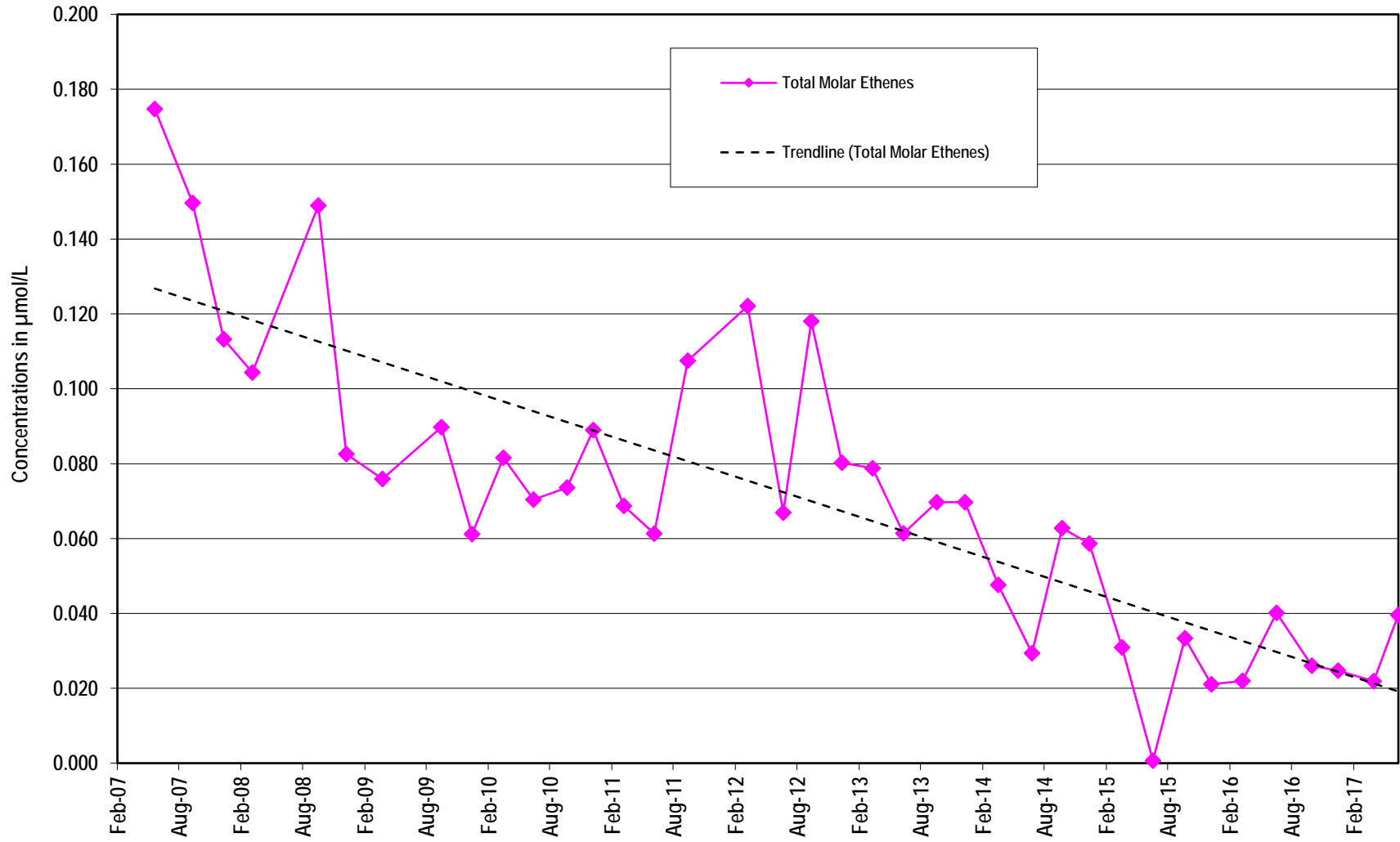
Total Molar Ethenes in MW-26



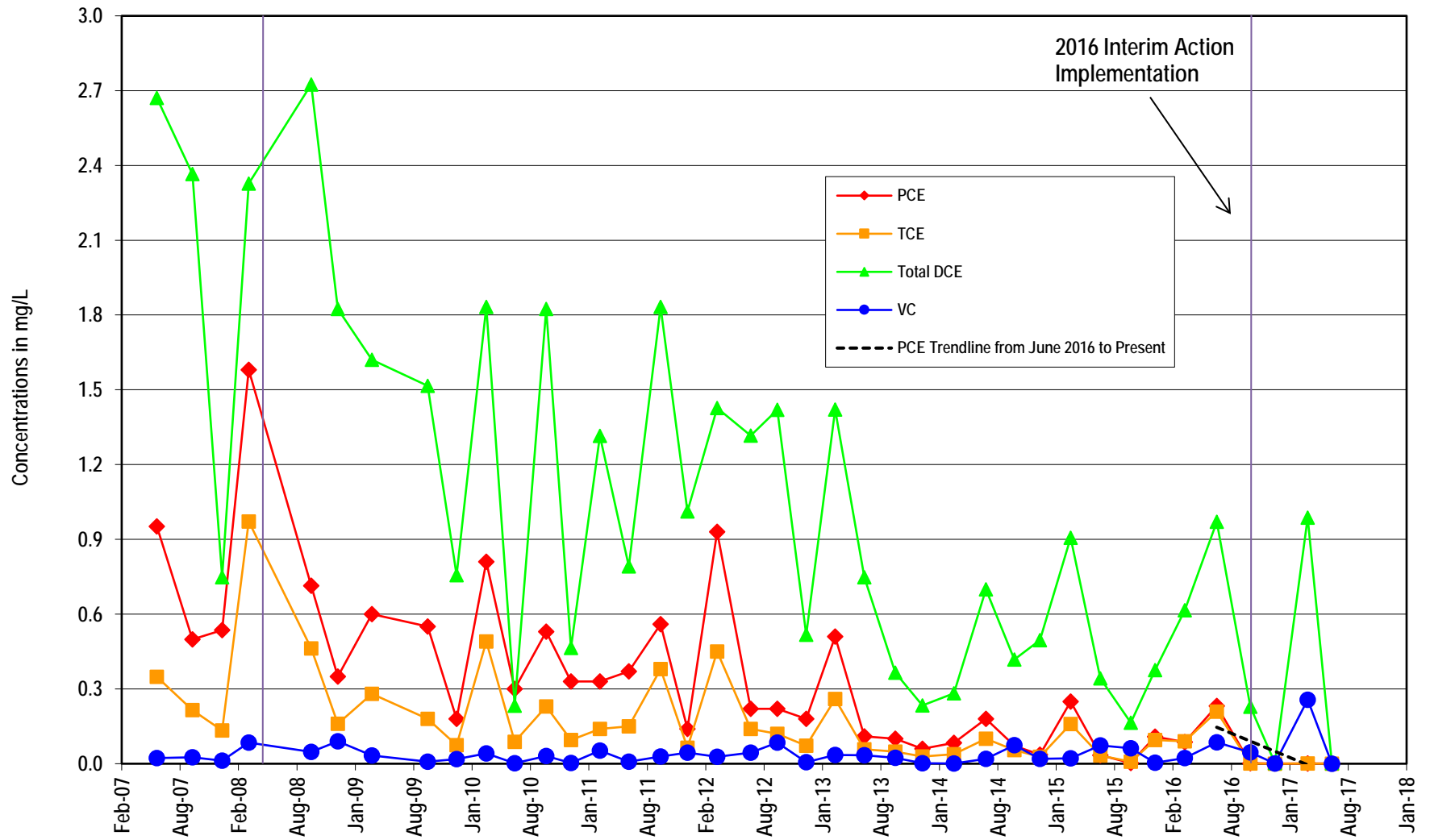
Interim Action Area - VOC Trends: MGMS1-43



Total Molar Ethenes in MGMS1-43



Interim Action Area - VOC Trends: MGMS3-40



Total Molar Ethenes in MGMS3-40

