

# 2015 Annual Environmental Monitoring Report SMC and Cadet Sites Port of Vancouver

Prepared for  
Port of Vancouver USA



March 2016

Prepared by  
**Parametrix**



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# CITATION

Parametrix. 2016. 2015 Annual Environmental Monitoring Report  
SMC and Cadet Sites  
Port of Vancouver. Prepared by Parametrix, Portland, Oregon.  
March 2016.

## CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional hydrogeologist licensed to practice as such, is affixed below.



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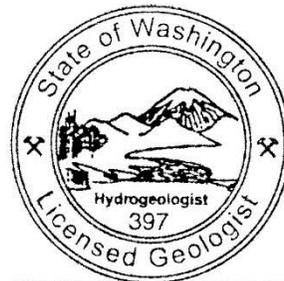
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Richard Roché



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## ACRONYMS

1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,1,1-TCA	1,1,1-trichloroethane
µg/L	micrograms per liter
AEMR	Annual Environmental Monitoring Report
AO	Agreed Order
AS/SVE	air sparging/soil vapor extraction
Cadet	Cadet Manufacturing Company
cis-1,2-DCE	cis-1,2-dichloroethene
Ecology	Washington State Department of Ecology
GWM	Great Western Malting
gpm	gallons per minute
GPTIA	groundwater pump and treat interim action
MTCA	Model Toxics Control Act
PCE	tetrachloroethene
Port	Port of Vancouver
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
SMC	Swan Manufacturing Company
SVE	Soil Vapor Extraction
TCE	trichloroethene
TGA	Troutdale gravel aquifer
USA	unconsolidated sedimentary aquifer
USGS	U.S. Geological Survey
VOC	volatile organic compound



# 1. INTRODUCTION

This 2015 Annual Environmental Monitoring Report (AEMR) for the Swan Manufacturing Company (SMC) site (a.k.a. SMC site or former Building 2220 site) and the Cadet Manufacturing Company (Cadet) site was prepared by Parametrix on behalf of the Port of Vancouver (Port). The SMC and Cadet sites are located near the intersection of Fourth Plain Boulevard (or Lower River Road) and Mill Plain Boulevard in Vancouver, Washington (Figure 1-1).

This report summarizes environmental monitoring data collected during 2015 as part of the remedial investigation and feasibility study (RI/FS) and interim cleanup actions at the SMC and Cadet sites. The Port has been conducting the RI/FS at the SMC and Cadet sites to address trichloroethene (TCE) and other related volatile organic compounds (VOCs) in soil and groundwater. The RI for the SMC site was completed in 2009 (Parametrix 2009a) and approved by Ecology in a letter dated May 8, 2009 (Ecology 2009). The RI for the Cadet site was completed in 2010 (Parametrix 2010) and approved by Ecology in a letter dated May 26, 2010 (Ecology 2010). The Port acquired the Cadet property in 2006 as part of a settlement agreement and assumed responsibility for cleanup of the Cadet site at that time. Contamination from the Cadet source has commingled with the SMC contaminant plume in the Port area east of the SMC site. Soil gas, outdoor air, and indoor air sampling were previously completed in the vicinity of the SMC and Cadet sites as an element of the remedial investigations and interim cleanup actions.

An RI/FS is also being conducted at the NuStar Vancouver Terminal facility to address TCE and related VOCs in soil, sediments, and groundwater. The RI for the NuStar site was completed in 2013. The NuStar site is located south of the SMC and Cadet sites adjacent to the north shore of the Columbia River (Figure 1-1).

A jointly prepared final draft FS Report for the NuStar, Cadet, and SMC sites (Parametrix & Apex 2015) was submitted to Ecology in January 2015.

The Port entered into Agreed Order (AO) 07-TC-S DE-5189 on May 1, 2008, which replaced and combined the SMC and Cadet sites into a single AO. This AO was amended effective January 24, 2014, to incorporate the area-wide groundwater plume and address the collaborative nature of the FS conducted for the SMC, Cadet, and NuStar sites. A new AO (DE 11137) effective March 12, 2015, supersedes prior AOs and requires POV and NuStar to prepare a preliminary Cleanup Action Plan.

The term *project area* is used in this report to describe the delineated extent of groundwater contamination from the SMC, Cadet, and NuStar source areas. The project area includes Port-owned property and property owned by others. Although the project area includes the NuStar source, this report focuses on the nature and extent of contamination originating at the SMC and Cadet sites only.

## 1.1 Purpose

This report documents groundwater data and interpretations for monitoring completed during 2015 as part of the SMC and Cadet RI/FS.

Monitoring of the SMC and Cadet sites has included groundwater, soil gas, indoor air and outdoor air. As documented in prior AEMRs, interim treatment actions completed at the SMC and Cadet sites have resulted in substantial reduction in VOC concentrations. The monitoring program associated with the SMC and Cadet sites has been, and will continue to be, optimized as contaminant issues and risks are

reduced or eliminated. Examples of optimization include discontinuation of air and vapor monitoring and reduction of groundwater monitoring frequency.

The Final Indoor Air Monitoring Evaluation was approved by Ecology in a letter dated March 8, 2013 (Ecology 2013). As summarized in Ecology's approval letter, indoor air monitoring, outdoor air, and soil vapor monitoring were discontinued in 2011 based on the results of additional monitoring conducted from 2009 to 2011. Consequently, since 2012, monitoring associated with the SMC and Cadet sites has been limited to groundwater.

Site-wide groundwater monitoring frequency changed from quarterly to a semi-annual beginning in late 2012 as approved by Ecology in a letter dated September 12, 2012 (Ecology 2012). During 2014, monitoring of SMC source area shallow wells was completed at a quarterly frequency to support the evaluation of interim actions and remedial alternatives assessed in the FS.

During 2015 the Port proposed modification of the groundwater monitoring program to reflect continued reductions of contaminant extent and concentrations. These modifications included reducing the frequency and/or discontinuing sampling at specific Port and Cadet monitoring well locations. These modifications were approved by Ecology (Ecology 2016) and are discussed in more detail in Section 2.

A Groundwater Pump and Treatment Interim Action (GPTIA) was implemented in June 2009 to capture the commingled dissolved VOC plumes sourced from the SMC and Cadet sites and to reduce the concentrations of VOCs in groundwater in the project area. Operation of the GPTIA has been continuous with the exception of periods when maintenance required the system to be shut down. Consistent with Ecology-mandated remedial action objectives, the GPTIA is used to:

- Achieve hydraulic containment of the SMC/Cadet dissolved-phase VOC plume
- Remove dissolved-phase VOCs in groundwater

Hydraulic containment of the plume prevents further migration of contaminants in the aquifer. Removal of the dissolved-phase VOCs remediates the aquifer.

The GPTIA consists of a groundwater extraction well located at the former SMC site and a treatment system using air stripping technology to reduce VOCs to acceptable levels for discharge. Additional details regarding the rationale for selecting and implementing the interim action are summarized in the project Work Plan (Parametrix 2007).

## 2. GROUNDWATER MONITORING ACTIVITIES

The SMC and Cadet groundwater monitoring well networks are shown on Figures 2-1 and 2-2, respectively. Table 2-1 identifies SMC and Cadet groundwater monitoring wells sampled during 2015 and the proposed schedule for 2016. The active groundwater monitoring networks for the SMC and Cadet sites currently consist of 37 and 56 well locations, respectively (as of the third quarter of 2015). The Cadet site network includes a number of multi-port wells with each port counted as one well. Groundwater monitoring well completion data are summarized in Table 2-2.

As shown in Table 2-1, the first and third quarter sampling events represent site-wide monitoring events with the objective to provide a comprehensive assessment of groundwater quality conditions at the two sites. The first quarter event is the most comprehensive of the two semi-annual events. The third quarter event focuses on wells within the plume and those that define its edges. In addition, specific shallow SMC source area wells were sampled during the second quarter to provide additional data for assessment of the source area cleanup.

The Ecology-approved modified groundwater monitoring program was implemented prior to the third quarter sampling event. Proposed modifications included the following:

- Discontinue sampling at all Troutdale gravel aquifer (TGA) wells except for CM-MW-29TGA. CM-MW-29TGA will continue to be sampled annually during the first quarter sampling event.
- Discontinue sampling at 26 unconsolidated sedimentary aquifer (USA) monitoring wells.
- Reduce sampling frequency at 6 USA monitoring wells from quarterly to semi-annually.
- Reduce sampling frequency at 25 USA monitoring wells from semi-annually to annually.

A draft optimization proposal, which provided technical justification for the modifications, was submitted to Ecology on August 6, 2015, and was verbally approved by Ecology on September 3, 2015, immediately preceding the third quarter sampling event. A final optimization plan (Parametrix 2016) and written approval (Ecology 2016) were completed in early 2016. These changes are reflected in the monitoring schedule for 2016 as presented on Table 2-1.

### 2.1 Groundwater Level Measurements

Due to the dynamic behavior of the groundwater system in the project area, caused by a combination of conditions including high transmissivity, relatively flat groundwater gradients, high river interconnectivity coupled with river stage change (tidal, regional precipitation, and dam discharge), groundwater level data used to develop potentiometric contour maps in the project area have been measured using a network of 16 pressure transducers located in intermediate zone wells since 2006.

Using data collected from the 16 SMC and Cadet pressure transducers, 72-hour rolling averages of groundwater levels were calculated and used to produce the potentiometric surface maps for the semi-annual monitoring events discussed in Section 3. Calculation of rolling averages aids in normalizing the influence of tidal fluctuations on groundwater levels (Serfes 1991). This method depicts the mean potentiometric surface (groundwater gradients) in the aquifer for the time period considered. The method and rationale to use 72-hour rolling averages of groundwater levels to produce potentiometric contour maps for the project area is presented in the Final SMC RI Report (Parametrix 2009a).

As of 2015, a majority of the transducer network had been deployed for almost 10 years and had begun to experience operational issues primarily related to datalogger battery life. As a result, data from all water level monitoring locations was not available for 2015.

## 2.2 Groundwater Quality Sampling Activities

Groundwater quality samples collected from SMC and Cadet monitoring wells during the first quarter of 2015 were submitted to TestAmerica located in Beaverton, Oregon. All subsequent samples collected during 2015 were submitted to Apex Laboratories located in Tigard, Oregon. Submitted samples were analyzed for VOCs by EPA Method 8260B. Groundwater quality samples were collected during the following time periods:

- First Quarter event – March 1 through 20
- Second Quarter event – June 30
- Third Quarter event – September 2 through 25

Sampling during the second quarter event was limited to shallow wells associated with the SMC source area.

Table 2-1 identifies monitoring wells sampled during each sampling event. Appendix A contains a summary of historical groundwater VOC analytical results for the SMC and Cadet sites. All appendices are provided on a CD attached to the back cover of this report. Appendix B contains the Quality Assurance Plan for sample collection, laboratory analysis, and data reporting. Laboratory analytical reports, chain-of-custody documents, and a data quality assurance review of samples collected during 2015 are included in Appendix C. The data quality assurance review includes a summary of sample data quality and deviations, if any, from the quality control criteria established in the RI/FS Work Plan (Parametrix 1999). The quality assurance review indicates that the data are of sufficient quality to meet project objectives.

SMC and Cadet monitoring wells are sampled using low-flow sampling techniques with limited use of dedicated dual-valve pump or a peristaltic pump at locations where bladder pumps could not be accommodated. Water levels in shallower wells on occasion have been found to be below the intake of the dedicated bladder pump. A peristaltic pump is then used to sample the well. Field methods are documented in Appendix D, and completed field sampling data sheets are included in Appendix F.

The presence of low water levels during the third quarter sampling event resulted in scheduled samples from shallow wells VMW-08 and VMW-09 at the SMC site and CM-MW-04s, CM-MW-08s, and CM-MW-20s at the Cadet site not being collected. In addition, a number of shallow and intermediate zone wells were inadvertently not sampled during the third-quarter sampling event.

### 3. GROUNDWATER LEVEL RESULTS AND ANALYSIS

Groundwater level data collected from the transducer network described in Section 2.1 were used to develop potentiometric surface maps for the project area. As noted, due to datalogger battery declines, water level data from 2015 are limited. As a result, no potentiometric surface map for the third quarter sampling event was produced. Figure 3-1 shows the calculated 72-hour rolling averages of transducer data for the first quarter of 2015.

As documented in several reports (Parametrix 2009a, 2010, 2011), estimating existing groundwater flow directions in the project area is difficult using conventional methods due to the following conditions:

- The groundwater gradient (potentiometric surface) in the project area, in general, is extremely flat due to a combination of high transmissivity and generally flat topography.
- The dominant influences on groundwater flow in the USA in the project area are tidal fluctuations in the Columbia River and pumping at the GPTIA extraction well. Water level measurements indicate that the USA responds rapidly to changes in river stage. There is a high connectivity between the USA and the river.
- Upstream dam releases, regional runoff events, pumping at the Great Western Malting (GWM)/Port well field, and pumping at City of Vancouver water stations 1 and 3 also influence groundwater flow in the project area.

Pumping wells located in and outside of the project area influence groundwater flow over relatively large areas due to the presence of a flat groundwater gradient and high aquifer transmissivity. As indicated in Section 2.1, groundwater level data obtained from a network of 16 pressure transducers are used to develop potentiometric contour maps based a 72-hour rolling average. This method aids in normalizing the influence of tidal fluctuations in groundwater flow and depicts the mean potentiometric surface for the 72-hour period considered (Serfes 1991). Capture zones in the project area are difficult to delineate based on groundwater elevations alone due to the conditions noted above. The Vancouver Lake lowlands groundwater flow model (Parametrix et al. 2008), which considers pumping stresses and river stage conditions, provides a means to best delineate capture zones.

Figure 3-2 displays Columbia River stage data for 2015. Consistent with the 2006 transducer study completed in coordination with Clark Public Utilities (Parametrix et al. 2008), Columbia River stage levels are obtained at the I-5 bridge gaging station (USGS station 1414700) equipped with a transducer owned and maintained by the National Weather Service. Research and survey work completed as part of the 2006 transducer study established a correction required to calibrate the monitoring well transducer survey datum with the I-5 bridge gaging station datum. The 72-hour rolling average river stage elevation also is presented on Figure 3-1.

As shown on Figure 3-2, river stage changes can be significant (more than 4.5 feet during the first quarter sampling event in 2015) during the course of a sampling event and between events. River stage changes are manifested in variable water levels occurring in monitoring wells and in the apparent groundwater flow direction during short periods (e.g., less than an hour) in the project area. Water levels in wells located closest to the river tend to change most rapidly in response to river stage change. In contrast, wells located farther away from the river tend to have a more muted and lagged response to river stage change. The influence of river stage changes in addition to production and extraction well pumping affects groundwater flow in the project area.

General observations of Columbia River stage and groundwater levels include:

- Groundwater levels in the project area vary seasonally throughout the period of record. Generally, seasonal low groundwater elevations occur between July and December, while seasonal high groundwater elevations occur between January and June. These low and high groundwater elevation periods correspond to seasonal Columbia River stage conditions. The highest river stage in 2015 occurred in early December (18.87 feet on December 10th) resulting from a series of significant regional precipitation events.
- Groundwater elevations measured during each semi-annual event of 2015 are generally consistent with historical elevations observed since 2002, suggesting a similar yearly pattern of high and low elevations during the periods of January through June and July through December, respectively.

Groundwater gradient and flow directions based on transducer data collected in the project area during 2015 are summarized as follows:

- First quarter 2015 monitoring event: Overall groundwater flow in the project area was toward the GPTIA extraction well with a generally flat area northeast of the Columbia River between Lower River Road and the Port area. Rolling average groundwater flow directions for the first quarter 2015 event are shown on Figure 3-1. During the period represented on Figure 3-1, the river stage elevation was lower than groundwater elevations at wells located closest to the river. Due to the absence of water level data in the eastern portion of the project area, the historical water level was taken into consideration when portraying flow direction in this area.
- Third quarter 2015 monitoring event: As noted above, due to battery issues in the aging dataloggers, sufficient water level data to create a third quarter potentiometric surface map were not available.

In general, the above potentiometric surfaces and their associated groundwater flow directions are consistent with flow directions observed since operation of the GPTIA commenced in 2009. Observed flow directions are generally toward the GPTIA extraction well from the river and the northwestern and eastern portions of the project area. Project area lows are observed near the river typically when river stage elevation is lower than all observed groundwater levels.

## 4. GROUNDWATER QUALITY RESULTS AND EVALUATION

VOC analytical results for groundwater samples collected at the SMC and Cadet sites during 2015 are summarized in Table 4-1. Only compounds detected during 2015 are summarized in Table 4-1. Appendix A contains historical and current groundwater VOC analytical data for the two sites. Laboratory analytical reports, chain-of-custody documents, and data validation reports are included in Appendix C.

The overall distribution of VOC contamination in the project area has been defined using analytical results of groundwater samples collected for more than 15 years as part of the SMC, Cadet, and NuStar investigations. Data collected during 2015 indicate continued decline of contaminant concentrations in groundwater.

The evaluation of VOCs in groundwater in the project area was primarily based on use of concentration trends and isoconcentration maps for each USA monitoring zone (e.g., shallow, intermediate, and deep). As indicated in Table 4-1, 11 different VOCs were detected in groundwater samples collected during 2015. The evaluation of groundwater results focused on the distribution of TCE and tetrachloroethene (PCE), because these two compounds best represent the extent of chlorinated solvent contamination associated with the SMC and Cadet sites. Wherever TCE-related compounds such as cis-1,2-dichloroethene (cis-1,2-DCE) or 1,1-dichloroethene (1,1-DCE) were detected, TCE and/or PCE were also detected and at higher concentrations, with the exception of wells located north of the NuStar site. The distribution of TCE-related compounds was similar to that of TCE and PCE, but concentrations of these related compounds were typically lower in samples collected from the SMC and Cadet monitoring wells.

### 4.1 Results

TCE and PCE isoconcentration maps for the shallow, intermediate, and deep USA zone wells are presented on Figures 4-1 through 4-14; isoconcentration maps are based on data collected during the first and third quarters of 2015. VOC detections (PCE and TCE) associated with the NuStar site source are also included on the isoconcentration maps. The TCE plume is defined by a 4-micrograms per liter ( $\mu\text{g}/\text{L}$ ) contour representing the Model Toxics Control Act (MTCA) Method B cleanup level for TCE. The PCE plume is defined by a 5  $\mu\text{g}/\text{L}$  contour representing the Federal Drinking Water Maximum Contaminant Level as the MTCA Method B cleanup level is higher.

The analysis for this report focuses on the contaminant distribution associated with the SMC and Cadet sites and not the NuStar site. The isoconcentration maps also consider historical detections at well locations that were not sampled during the first and third quarters of 2015. A separate figure displaying concentrations in the TGA is not included in this report as PCE and/or TCE were detected in only one TGA well in 2015.

TCE and PCE concentration trends (time series plots) for individual wells are included in Appendix E. Two sets of time series plots are provided in Appendix E: full period and short period. The following is a description of these two types of time series plots:

- Full period: January 1997 to September 2015 – These plots show the full TCE and PCE concentration record for each well. Soil and groundwater interim actions completed at the SMC and Cadet sites from 2002 through 2004 resulted in significant VOC reductions.

- Short period: January 2009 to September 2015 – These plots show the TCE and PCE concentration record for each well since 2009 showing concentrations at reduced scales to provide better resolution of contaminant reductions. These plots also include an indicator marking the beginning of GPTIA operation in June 2009. Significant reductions in groundwater VOC concentrations and the overall extent of the commingled Cadet and SMC plume has since occurred.

## 4.2 Evaluation

The analytical results for samples collected from monitoring wells during 2015 are discussed for each groundwater quality zone. Results specific to the SMC site and Cadet site are presented to provide an understanding of cleanup progress occurring at each site, particularly with regard to source area reduction.

### 4.2.1 Shallow USA Zone

Shallow well TCE and PCE concentrations in 2015 were generally consistent with results from 2014. Overall, the data indicate a continued decrease in VOC concentrations in response to continued operation of the GPTIA. With the exception of wells located in the SMC source area, concentrations of TCE and PCE in shallow wells have been reduced to below 10 µg/L. Concentrations of TCE and PCE in shallow source area wells have decreased significantly since startup of the GPTIA in June 2009, as indicated in time series plots. Figure 4-5 shows changes in the intermediate zone TCE plume since 2009.

#### 4.2.1.1 SMC

TCE and/or PCE were detected in 15 of 27 shallow SMC (not including SMC shallow wells with contamination associated with the NuStar site) wells in 2015. The only other related breakdown product detected was cis-1,2-DCE in SMC shallow source area wells VMW-08, VMW-09, and MW-05. Consistent with historical analytical results, the highest concentrations of TCE (2,694.2 µg/L during the second quarter) and PCE (144.8 µg/L during the first quarter) during 2015 were detected in shallow source area well MW 05. The highest concentration of cis-1,2-DCE (19.6 µg/L) was detected in MW-05 during the second quarter.

TCE concentrations in SMC shallow source area wells appear to be relatively stable or declining and are consistent with results from 2014. As TCE is the primary contaminant at the SMC site, trends and plume geometry are discussed in terms of the extent of this compound. In 2015, the shallow TCE plume extended in a generally east-southeast direction from the SMC source with its eastern boundary in the vicinity of MW-10 and MW-16 (Figures 4-1 and 4-2). In areas on Figures 4-2 and 4-4, which are absent of data due to a field error resulting in several wells not being sampled during the third quarter sampling event, recent historical concentrations were taken into account.

#### 4.2.1.2 CADET

TCE and/or PCE were detected in 21 of 28 shallow Cadet wells in 2015. The only other VOC detected in 2015 was 1,1,1-TCA at CM-DPW-01 located adjacent to the east side of the Cadet facility parking lot. Chloroform was detected in CM-MW-19s but is not considered a contaminant associated with the Cadet site. Chloroform has been consistently detected in CM-MW-19s since early 2008, with concentrations slowly decreasing since early 2009. The highest concentrations of TCE (13.28 µg/L) and PCE (3.12 µg/L)

were detected during the third quarter in CM-DPW-01 and during the first quarter in CM-MW-01d-040, respectively.

VOC concentrations in all Cadet shallow wells have declined significantly since startup of the GPTIA in June 2009. However, Cadet source area shallow wells CM-DPW-01 and CM-DPW-06 have exhibited slightly increasing TCE concentrations since 2012.

In 2015, the shallow plume associated with the Cadet site as defined by a 4 µg/L contour is generally confined to the east side of the Cadet facility with lower concentrations extending farther east and northeast (Figures 4-1 and 4-2). As noted in Section 2.2, low water levels did not allow for samples to be collected from wells CM-MW-04s, CM-MW-08s, and CM-MW-20s.

## 4.2.2 Intermediate USA Zone

TCE and PCE isoconcentration maps for intermediate wells during the 2015 first and third quarter sampling events are presented on Figures 4-6 through 4-9. Overall, TCE and PCE concentrations detected in intermediate zone wells associated with the SMC site and Cadet site continue to decline, with a few wells remaining stable. The Cadet intermediate zone plume is approximately the same in extent compared to 2014 with concentrations within the plume also remaining relatively stable. Figure 4-10 shows changes in the intermediate zone TCE plume since 2009.

### 4.2.2.1 SMC

TCE and/or PCE were detected in 11 of 13 intermediate SMC (not including intermediate wells with contamination associated with the NuStar site) wells in 2015. Additional VOCs cis-1,2-DCE, 1,1,1-TCA, 1,1-DCA, and 1,1-DCE were also detected in the intermediate zone in MW-05i. These additional VOCs were not detected in intermediate SMC wells that do not have contamination associated with the NuStar site. The highest concentration of TCE, or any other VOC, in an intermediate zone SMC well during 2015 was detected in MW-37i (TCE 42.32 µg/L) during the first quarter. This well is located east of GWM with detected TCE interpreted as coming from a source other than SMC or Cadet. Historically, the highest concentrations of TCE were detected in samples collected from well MW-07i, located directly down-gradient of the SMC source area. VOC concentrations detected in groundwater samples collected from MW-07i have decreased significantly since the start of the GPTIA. Currently the highest SMC-related concentrations in the intermediate zone occur at source area well MW-05i, which has seen higher concentrations since the implementation of the GPTIA.

In 2015, the intermediate plume associated with the SMC source extended in a north-northeast direction with a southern extent just south of MW-07i. What is understood to be a remnant portion of the plume is still present in the vicinity of GWM. The intermediate zone plume continued to contract slightly between 2014 and 2015, with concentrations within the defined plume also decreasing.

### 4.2.2.2 CADET

TCE and/or PCE were detected in 19 of 20 intermediate Cadet wells in 2015. Additional VOCs cis-1,2-DCE (seven wells) and 1,1-DCA (one well) were also detected in the intermediate zone. The highest concentration of any VOC in an intermediate zone Cadet well during 2015 was detected in CM-MW-23i (TCE 15.8 µg/L) during the first quarter. CM-MW-23i is located northeast of the Cadet source area in the Fruit Valley Neighborhood. The TCE concentration in the third quarter event sample from CM-MW-23i decreased to 12.68 µg/L.

Just prior to startup of GPTIA operation in 2009, CM-MW-04i displayed the highest TCE concentrations in the intermediate USA. Following startup of the GPTIA, TCE concentrations in intermediate zone Cadet wells decreased notably with increasing concentrations observed at CM-MW-20i, which is located just north of the GPTIA extraction well. Consistent concentration declines have since occurred at CM-MW-20i.

### 4.2.3 Deep USA Zone

TCE and PCE isoconcentration maps for deep wells during the 2015 first and third quarter sampling events are presented on Figures 4-11 through 4-14. Concentrations of TCE and PCE detected in deep zone wells have slowly decreased since startup of the GPTIA in 2009. Figure 4-15 shows changes in the intermediate zone TCE plume since 2009.

#### 4.2.3.1 SMC

TCE, PCE, and cis-1,2-DCE were detected in four of six deep SMC wells in 2015. In addition, 1,1,1-TCA, 1,1-DCA, and/or 1,1-DCE were detected in two of those four wells where TCE, PCE, and cis-1,2-DCE were detected.

#### 4.2.3.2 CADET

TCE and PCE were detected in 11 of 12 deep Cadet wells in 2015. In addition, 1,1,1-TCA, cis-1,2-DCE, 1,1-DCA, and/or 1,1-DCE were detected in 10 of those 11 wells where TCE and PCE were detected.

### 4.2.4 TGA

VOC analytical results for TGA wells are presented in Table 4-1. Concentrations of TCE and PCE detected in CM-MW-29TGA have decreased since startup of the GPTIA in 2009.

#### 4.2.4.1 SMC

VOCs were not detected in SMC TGA wells (MW-02d, MW-13d, MW-16d, and MW-17d) during 2015. These results are consistent with previous monitoring results.

#### 4.2.4.2 CADET

Consistent with past results, TCE, PCE, and cis-1,2-DCE were detected in CM-MW-29TGA. VOCs were not detected in TGA well CM-MW-10d. Toluene, consistent with historical results, was detected in CM-MW-28TGA. Benzene was detected at a low concentration of 0.25 µg/L in CM-MW-27TGA. The method reporting limit is 0.25 µg/L. It is the first detection of benzene in this well. The detection of toluene and benzene in the two TGA wells is assumed not to be associated with the Cadet or SMC VOC site sources.

## 5. INTERIM ACTION STATUS SUMMARIES

As documented in the Remedial Investigation reports (Parametrix 2009a, 2010), interim actions were implemented at the SMC and Cadet sites to remediate VOC concentrations in soil, groundwater, and indoor air. Most of these interim actions were completed prior to 2015, with the exception of the GPTIA, which was installed at the SMC site and started operation in June 2009 and has continued to operate since. The following sections summarize the status of the remaining operating interim action (GPTIA) and the inactive Air Sparge/Soil Vapor Extraction (AS/SVE) system at the Cadet site source area.

### 5.1 Groundwater Pump and Treat Interim Action System

The GPTIA was installed to reduce VOC concentrations in the USA and to provide hydraulic capture for the commingled Cadet and SMC plumes. Operation of the GPTIA was initiated on June 22, 2009. Hydraulic capture is provided by a groundwater extraction well (EW-1) located in the SMC source area (Figure 2-1) which currently operates at an average flow rate of approximately 2,500 gallons per minute (gpm). Extracted groundwater is treated ex-situ (i.e., above ground) by an air stripping process prior to discharge in accordance with a National Pollutant Discharge Elimination System permit.

The GPTIA extracted and treated approximately 1.266 billion gallons of groundwater and removed approximately 75 pounds of VOCs during 2015. The following table summarizes monthly operation of the GPTIA system during 2015.

**GPTIA Monthly Monitoring for 2015**

Month	Total flow (million gallons)	VOCs removed (pounds)
January 2015	112.7	7.69
February 2015	103.1	7.31
March 2015	114.1	8.20
April 2015	110.4	6.75
May 2015	114.0	6.67
June 2015	109.1	5.34
July 2015	113.9	6.37
August 2015	113.9	5.99
September 2015	110.3	6.23
October 2015	86.2	4.99
November 2015	106.3	5.59
December 2015	71.9	4.03

The GPTIA system experienced minor operational issues in October and December associated with significant precipitation that resulted in reduced flows and mass removal during those months.

The GPTIA system has pumped a total of 8.29 billion gallons and removed approximately 1,060 pounds of VOCs since beginning operation in 2009 through the end of 2015.

GPTIA operation is scheduled to continue at an approximate flow rate of 2,500 gpm. System O&M will occur on an as-needed basis, and sampling in support of GPTIA-associated National Pollutant Discharge Elimination System and Southwest Clean Air Agency permits will be performed on a monthly basis.

## 5.2 Air Sparge/Soil Vapor Extraction System

An SVE system associated with the Cadet facility was initiated in May 2002, and the associated AS portion of the AS/SVE system began operation in October 2003. The system consists of 41 SVE wells and 73 AS wells and associated contaminant removal equipment. The purpose of this system was to reduce concentrations of VOCs in groundwater and soil gas beneath the Cadet site and indoor air within the Cadet building through a process of stripping VOCs out of groundwater with the AS wells and removing VOCs from the subsurface via the SVE wells.

As documented in the AS/SVE Performance Evaluation Report (Parametrix 2009b), the AS/SVE system has effectively remediated groundwater and soil gas beneath the Cadet site and indoor air within the Cadet building. Ecology approved shut-down of the system in July 2011. An evaluation and decommissioning memorandum was submitted to Ecology in December 2014 (Parametrix 2014) and was approved by Ecology in April 2015 (Ecology 2015).

## 6. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on field and analytical data collected during 2015 sampling events and previous site data.

### 6.1 Conclusions

Results of 2015 sampling of groundwater indicate continued overall decline of VOC concentrations in groundwater. Declines in concentrations in 2015 are attributed to the continued operation of the GPTIA. More specific conclusions include:

- The overall extent of the SMC and Cadet VOC plume continues to contract.
- VOC concentrations in the SMC and Cadet shallow groundwater monitoring wells appear to be relatively stable with continuing overall declining trends. Former and current interim actions including soil source removal, SVE, injection of oxidizers, and most recently, operation of the GPTIA have greatly improved the overall quality of the shallow groundwater in the SMC and Cadet project area.
- VOC concentrations in a majority of the SMC and Cadet intermediate USA zone wells continue to decline. The more recent significant reductions in intermediate zone wells are attributed to the GPTIA.
- VOC concentrations in a majority of the SMC and Cadet deep USA zone wells are declining slowly as a result of the GPTIA.
- TCE was not detected in the TGA monitoring wells in 2015 with the exception of low concentrations in CM-MW-29TGA. Concentrations of TCE detected in this well continue to decline which appears to be a result of the GPTIA.

### 6.2 Recommendations

The following recommendations are based on the findings of the 2015 monitoring program:

- Continue operation of the GPTIA to further reduce VOC concentrations in the project area.
- Continue groundwater monitoring to evaluate GPTIA effectiveness. Semi-annual site-wide monitoring (including recent optimizations) consistent with Table 2-1 should be completed during 2016.
- Replace batteries in pressure transducers as needed to maintain collection of groundwater level measurements. Evaluate management and deployment of the transducers to best meet project requirements.
- Continue to coordinate SMC and Cadet groundwater monitoring events with monitoring at the NuStar site.

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Tables





Table 2-1 - Groundwater Monitoring Schedule - 2016

Well Name	2014				2015				2016				Notes	Sample Schedule Rationale (for 2016)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
<b>Swan Site Monitoring Wells</b>														
IMW-05	X	X	X	X	X	X	-		X		X		Source area. Declining trend since GPTIA, <b>not sampled Q3 2015</b>	Semi-annual sampling. Additional source area data.
MW-01	X		X		X		IA	IA	IA	IA	IA	IA	Usually NDs, outside of plume.	Inactive monitoring point.
MW-01d	X		X		X		X		X		X		Regular fairly consistent detects. Deep USA well. Possible downward trend.	Semi-annual. Regular detects. Confirmation sampling.
MW-02	X		X		X		-		X		X		Downgradient of source area. Slight downward trend, <b>not sampled Q3 2015</b>	Semi-annual sampling for GPTIA monitoring.
MW-02d	X				X		IA	IA	IA	IA	IA	IA	TGA well. Historically NDs. Previously classified as deep USA well.	Inactive monitoring point.
MW-03	D	D	D	D	D	D	D	D	D	D	D	D	Well decommissioned on 9/18/08.	Well decommissioned.
MW-04	X		X		X		IA	IA	IA	IA	IA	IA	Below 1 ppb or ND. Declining trend since GPTIA.	Inactive monitoring point.
MW-04i	X				X				X				Historically NDs. TCE detected 2014 Q1.	Annual sampling. Outside of plume. Confirmation sampling.
MW-04d	X				X		IA	IA	IA	IA	IA	IA	Historically NDs. Deep USA well.	Inactive monitoring point.
MW-05	X	X	X	X	X	X	X		X		X		Source area. Showing GPTIA decline.	Semi-annual sampling for GPTIA monitoring. Source area well.
MW-05i	X		X		X		X		X		X		Historically NDs. Regular detects beginning with GPTIA.	Semi-annual sampling. Source area well. Monitor GPTIA changes.
MW-05d*****	D	D	D	D	D	D	D	D	D	D	D	D	Peaking variable behavior. Well decommissioned in 11/06.	Well decommissioned.
MW-05dR	X		X		X		X		X		X		Replacement well for MW-5d, declining trend, below 20 µg/l TCE.	Semi-annual sampling. Monitor GPTIA changes.
MW-06	X		X		X		-		X		X		Regular fairly consistent detects. Stable, <b>not sampled Q3 2015</b>	Semi-annual sampling. Stable conditions. Monitor GPTIA changes.
MW-07	X		X		X		-		X		X		Regular fairly consistent detects. Stable, <b>not sampled Q3 2015</b>	Semi-annual sampling. Stable conditions. Monitor GPTIA changes.
MW-07i	X		X		X		-		X		-		Regular fairly consistent detects. Declining trend, <b>not sampled Q3 2015</b>	Semi-annual sampling. Declining levels. Monitor GPTIA changes.
MW-08	X		X		X		-		X		X		Regular fairly consistent detects. Stable, <b>not sampled Q3 2015</b>	Semi-annual sampling. Monitor GPTIA changes.
MW-08i	X				X		IA	IA	IA	IA	IA	IA	Historically NDs.	Inactive monitoring point.
MW-09	X		X		X		X		X		X		Downward trend since GPTIA.	Semi-annual sampling. Showing GPTIA change.
MW-10	X		X		X		-		X		X		Regular fairly consistent detects. Stable, <b>not sampled Q3 2015</b>	Semi-annual sampling. Monitor GPTIA changes.
MW-11	X		X		X		IA	IA	IA	IA	IA	IA	PCE detects below 1ppb. Source uncertain - NuStar?	Inactive monitoring point.
MW-12	X				X		IA	IA	IA	IA	IA	IA	Historically NDs	Inactive monitoring point.
MW-12d	X		X		X		X		X		X		Regular fairly consistent detects. Stable below 15ppb. Deep USA well	Semi-annual sampling. Monitor GPTIA changes.
MW-13*	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	Not sampled. Perched gw zone well. NDs.	Inactive monitoring point.
MW-13d	X				X		IA	IA	IA	IA	IA	IA	TGA well. Historically NDs.	Inactive monitoring point.
MW-14d	X		X		X		X		X		X		Regular fairly consistent detects. Stable below 15ppb. Deep USA well	Semi-annual sampling. Regular detects; stable. GPTIA change?.
MW-15	X				X		IA	IA	IA	IA	IA	IA	Historically NDs	Inactive monitoring point.
MW-15i	X		X		X		X		X		X		Historically below 5 ppb. Recently increasing. Inter USA well.	Semi-annual sampling. Showing GPTIA change?
MW-16	X		X		X		X		X		X		Stable since GPTIA.	Semi-annual sampling. GPTIA monitoring.
MW-16d	X				X		IA	IA	IA	IA	IA	IA	Historically NDs. TGA well	Inactive monitoring point.
MW-17	X				X		IA	IA	IA	IA	IA	IA	Historically NDs	Inactive monitoring point.
MW-17d	X				X		IA	IA	IA	IA	IA	IA	Historically NDs. TGA well	Inactive monitoring point.
MW-18	X				X		IA	IA	IA	IA	IA	IA	NDs for over 8 years.	Inactive monitoring point.
MW-18i	X		X		X		X		X		X		Regular detections. Stable below 10ppb.	Semi-annual sampling. GPTIA monitoring.
MW-19s	X				X		IA	IA	IA	IA	IA	IA	ND for over 6 years. Near GWM-5 well.	Inactive monitoring point.
MW-19i	X		X		X		-		X		X		Regular detections. Declining trend, <b>not sampled Q3 2015</b>	Semi-annual sampling. GPTIA monitoring and GWM influence.
MW-20	X		X		X		-		X		X		Stable. Notable decline since GPTIA, <b>not sampled Q3 2015</b>	Semi-annual sampling. GPTIA monitoring.
MW-21	X		X		X		-		X		X		Stable. Notable decline since GPTIA, <b>not sampled Q3 2015</b>	Semi-annual sampling. GPTIA monitoring.
MW-22**	D	D	D	D	D	D	D	D	D	D	D	D	Well decommissioned.	
MW-23	X				X		IA	IA	IA	IA	IA	IA	NDs for over 8 years.	Inactive monitoring point.
MW-24	X				X		IA	IA	IA	IA	IA	IA	Historically NDs.	Inactive monitoring point.
MW-24i	X		X		X		IA	IA	IA	IA	IA	IA	ND since 2011.	Inactive monitoring point.
MW-25	X		X		X		IA	IA	IA	IA	IA	IA	Variable. Historically below 5 ppb. ND in 2012.	Inactive monitoring point.
MW-26i	X		X		X		IA	IA	IA	IA	IA	IA	Variable. ND in 2014. Below 5 ppb.	Inactive monitoring point.
MW-28s	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	One detection. Rest NDs. Outside of plume.	Sampling discontinued 2008. Inactive monitoring point.
MW-28i	X		X		X		X		X				Variable. Declining trend. GPTIA influence?	Semi-annual sampling. Monitor GPTIA changes.
MW-29i	X				X				X				Historically NDs. Recent detections.	Annual sampling. Outside of plume. Confirmation sampling.
MW-30i	X		X		X		X		X				Some variability. GPTIA influence on NT plume.	Semi-annual sampling. Some variability; downgradient of NT source. Monitor GPTIA changes
MW-31i	X		X		X		X		X		X		Variable concentrations over time. GPTIA influence on NT source.	Semi-annual sampling. Some variability; downgradient of NT source. Monitor GPTIA changes

Table 2-1 - Groundwater Monitoring Schedule - 2016

Well Name	2014				2015				2016				Notes	Sample Schedule Rationale (for 2016)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
MW-32s	X		X		X		IA	IA	IA	IA	IA	IA	Historically NDs. Well screened in silt overbank deposit.	Inactive monitoring point.
MW-32i	X		X		X		X		X		X		Variable concentrations over time. GPTIA influence.	Semi-annual sampling. Downgradient of NT source. Monitor GPTIA changes. Ash Creek (NS site) samples well quarterly.
MW-33s	X		X		X		IA	IA	IA	IA	IA	IA	Historically NDs. Recent detection. Below 5 ppb.	Inactive monitoring point.
MW-33i	X		X		X		X		X		X		Variable concentrations over time. GPTIA influence.	Semi-annual sampling. Some variability; downgradient of NT source. Monitor GPTIA changes.
MW-34i	X		X		X		X		X				Some variability. Declining due to GPTIA?	Annual sampling. Some variability; Cross-gradient of NT source. Monitor GPTIA changes
MW-35s	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	Historically NDs. Screened above plume.	Sampling discontinued 2008. Inactive monitoring point.
MW-35i	X		X		X		X		X		X		Some variability. Some decline due to GPTIA?	Semi-annual sampling. Monitor GPTIA change.
MW-36s	X				X		IA	IA	IA	IA	IA	IA	Mostly NDs. Below 5 ppb with exception.	Inactive monitoring point.
MW-36i	X		X		X		X		X				Some variability. Possible decline due to GPTIA.	Annual sampling. Monitor GPTIA changes
MW-37s	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	Historically NDs. Screened above plume.	Sampling discontinued 2008. Inactive monitoring point.
MW-37i	X		X		X		X		X		X		Regular TCE only detections; stable. Another source?	Semi-annual sampling. Regular detections. Stable. TCE only detected. Monitor GPTIA changes.
MW-38i	X		X		X		X		X		X		Regular almost only TCE detections. Same source as MW-37i? Apparent downward TCE trend.	Semi-annual sampling. Monitor GPTIA changes.
MW-39s	D	D	D	D	D	D	D	D	D	D	D	D	Decommissioned February 2011	
MW-E	X		X	X	X		X		X		X		Variable concentrations. Shallow well screened below silt north of NT site.	Semi-annual sampling. Some variability; downgradient of NT source. Monitor GPTIA and NS interim action changes.
MW-F	X		X		X		IA	IA	IA	IA	IA	IA	No detections since 2012. Above and possibly cross-gradient of NT plume.	Inactive monitoring point.
MW-G	X		X		X		IA	IA	IA	IA	IA	IA	Some variability. No detections in 2014.	Inactive monitoring point.
VMW-08	X	X	-	X	X	X	-		X		X		Source area. Dry during 2015 Q3 event. Variable.	Semi-annual sampling. Additional source area data.
VMW-09	X	X	X	X	X	X	-		X		X		Source area. Dry during 2015 Q3 event. Variable.	Semi-annual sampling. Additional source area data.
VMW-10 <sup>i</sup>	X	X	-	X	X	X	-		X		X		Source area. Variable, <b>not sampled Q3 2015</b>	Semi-annual sampling. Additional source area data.
VMW-11 <sup>i</sup>	X	X	X	X	X	X	-		X		X		Source area. Variable, <b>not sampled Q3 2015</b>	Semi-annual sampling. Additional source area data.

Cadet Site Monitoring Wells													Notes	Sample Schedule Rationale (for 2016)
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
CM-MW-01s	X		X		X		X		X		X		Occasional use of peristaltic when WL is low. Noisy data.	Semi-annual sampling. Declining trend since GPTIA. Downgradient of source.
CM-MW-01i	X		X		X		X		X		X		Recent concentration < 10 ug/l. GPTIA decreasing trend. Downgradient of source.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-01d-040	X		X		X				X				Decreasing to stable concentrations.	Annual sampling. Declining trend since GPTIA.
CM-MW-01d-121	X		X		X		X		X		X		Recent concentration < 20 ug/l. Decreasing trend. Downgradient of source.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-01d-161	X		X		X		X		X				Fairly stable.	Annual sampling. Monitor GPTIA changes.
CM-MW-01d-194	X		X		X		X		X		X		Fairly stable.	Semi-annual sampling. Check TCE trend. Monitor GPTIA changes.
CM-MW-01d-224	X		X		X		X		X				Fairly stable.	Annual sampling. Fairly stable. Monitor GPTIA changes.
CM-MW-02s	X				X		IA	IA	IA	IA	IA	IA	Has been NDs for several years.	Inactive monitoring point.
CM-MW-02d	X				X		X		X		X		Fairly stable. Possible upward trend.	Semi-annual sampling as of 2015. Deep well. Confirmation sampling.
CM-MW-03s	IA		X		X		X		X		X		Concentrations below 5 ug/l.	Semi-annual sampling. Monitoring GPTIA change.
CM-MW-03d-060	IA	Showing GPTIA declining trend. Low concentrations. Port since 2009.	Port inoperable. Inactive monitoring point.											
CM-MW-03d-100	X		X		X		X		X				Concentrations lower and stable since GPTIA.	Annual sampling. Monitoring GPTIA change.
CM-MW-03d-141	X		X		X		X		X				Possible downward trend. Low concentrations. Deep well.	Annual sampling. Generally stable levels.
CM-MW-03d-181	X		X		X		X		X				Possible downward trend. Low concentrations. Deep well.	Annual sampling. Generally stable levels.
CM-MW-03d-227	X		X		X		X		X		X		Low concentrations. Deep well.	Semi-annual sampling. Generally stable levels.
CM-MW-04s	X		-		X		-		X		X		Need to use peristaltic pump when WL is low. Stable around 5ppb. Dry 2015 Q3.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-04i	X		X		X		X		X		X		Notable decrease since GPTIA. Below 20 ug/l.	Semi-annual sampling. Monitor GPTIA changes.

Table 2-1 - Groundwater Monitoring Schedule - 2016

Well Name	2014				2015				2016				Notes	Sample Schedule Rationale (for 2016)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
CM-MW-05s	X		-	X		X		X		X		X	Need to use of peristaltic pump when WL is low. Showing GPTIA change. Dry 2014 Q3.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-05i	X	X		X		X		X		X		X	Fairly stable and low concentrations.	Semi-annual sampling.
CM-MW-05d	X	X	X	X		X		X		X		X	Slight variability but generally stable.	Semi-annual. Generally stable conditions.
CM-MW-06s***	X	X		X		X		X		X		X	Stable below 5ppb.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-07s	X	X		X		X		X		X		X	Generally low concentrations. Located near plume boundary. Stable below 2ppb.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-07i	X	X		X		X		X		X		X	Stable concentrations.	Semi-annual sampling. Stable. Monitor GPTIA changes.
CM-MW-07d	X			X		IA		IA		IA		IA	Below 1 ppb since 2005. Stable deep well.	Inactive monitoring point.
CM-MW-08s	X	-		X		-		X		X		X	Need to use a peristaltic pump when WL is low. Dry 2015 Q3.	Annual sampling. Monitor GPTIA changes.
CM-MW-09s	X			X		IA		IA		IA		IA	Usually NDs.	Inactive monitoring point.
CM-MW-10s	X			X		X		X		X		X	Fairly stable. Below 5 ppb. Near plume boundary.	Annual sampling. Historically <5 ppb. Confirmation sampling.
CM-MW-10d	X			X		IA		IA		IA		IA	Historically NDs. TGA well.	Inactive monitoring point.
CM-MW-15s	X		X	X		X		X		X		X	Showing delining trend. < 5 ppb. An intermediate depth well. Cross-gradient location. ND in 2014 Q3.	Annual sampling. Monitor GPTIA changes.
CM-MW-16s****	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	Iron fouling. Well eliminated from sample list. NDs.	Inactive monitoring point.
CM-MW-17i	X	X		X		X		X		X		X	Well located beneath Cadet facility. Recent < 5 ppb. Showing GPTIA influence.	Annual sampling. Monitor GPTIA changes.
CM-MW-18s	X	X		X		IA		IA		IA		IA	ND since 2012.	Inactive monitoring point.
CM-MW-18i	X	X		X		X		X		X		X	Low concentrations < 10 ppb. Variable. Located outer area of plume. PCE ND.	Semi-annual sampling. Edge of plume location. Variable and low concentrations.
CM-MW-18d	X	X		X		X		X		X		X	Stable with slight variability. Possible downward trend.	Semi-annual sampling. Stable, northern lobe deep well.
CM-MW-19s	X	X		X		X		X		X		X	Historically ND. Recent detections in 2013 and 2014.	Annual sampling.
CM-MW-19i	X	X		X		X		X		X		X	Low concentrations < 5 ppb. Showing GPTIA influence? Increasing trend prior to GPTIA.	Semi-annual sampling. Some variability.
CM-MW-19d	X	X		X		X		X		X		X	Deep zone well. Stable with slight variability. Concentrations < 15 ppb. Possible downward trend.	Semi-annual sampling. Stable, northern lobe deep well.
CM-MW-20s	X	X		X		-		X		X		X	Need to use a peristaltic pump when WL is low. Located between Cadet site and GPTIA. Showing declining concentration. Dry 2015 Q3.	Semi-annual sampling. Monitor GPTIA changes
CM-MW-20i	X	X		X		X		X		X		X	Intermediate well located between Cadet source and GPTIA. Declining since GPTIA.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-21s	X			X		IA		IA		IA		IA	Usually NDs. Outside of plume.	Inactive monitoring point.
CM-MW-21i	X			X		IA		IA		IA		IA	Generally NDs. Well inaccessible in 2013. PCE detected in 2014 Q1.	Inactive monitoring point.
CM-MW-22s	X		X	X		X		X		X		X	Well located near Cadet source area. Intermediate zone well. Showing declining trend.	Annual sampling. Monitor GPTIA changes.
CM-MW-23s	X	X		X		X		X		X		X	Has been showing possible decreasing trend.	Semi-annual sampling. Monitor GPTIA changes
CM-MW-23i	X	X		X		X		X		X		X	Slight decreasing trend. Higher concentration zone.	Semi-annual sampling. Monitor GPTIA change.
CM-MW-24s	X	X		X		X		X		X		X	Decreasing trend < 5 ppb. Recent NDs.	Annual sampling. Monitor GPTIA change.
CM-MW-24i	X	X		X		X		X		X		X	Decreasing trend. Recently above 5 ppb.	Semi-annual sampling.
CM-MW-25s	X	X		X		X		X		X		X	Declining trend since GPTIA.	Semi-annual sampling. Monitor GPTIA changes.
CM-MW-26s	X	X		X		X		X		X		X	Decline since GPTIA.	Annual sampling. Monitor GPTIA changes.
CM-MW-27TGA	X			X		IA		IA		IA		IA	Usually NDs. TGA.	Inactive monitoring point.
CM-MW-27USA-049.5	X		X	X		X		X		X		X	Variable since GPTIA. ND 2014 Q3.	Semi-annual sampling. Monitor GPTIA changes
CM-MW-27USA-090	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	Port has never worked per 2005 Cadet RI Report.	Inactive monitoring point.
CM-MW-27USA-127	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	Port has never worked per 2005 Cadet RI Report.	Inactive monitoring point.
CM-MW-28TGA	X			X		IA		IA		IA		IA	Historically NDs.	Inactive monitoring point.
CM-MW-28USA-050	X		X	X		X		X		X		X	Inermediate depth zone well. Generally below 5 ppb. Stable since GPTIA.	Annual sampling. Northern plume monitoring point.
CM-MW-28USA-120.5	X	X		X		X		X		X		X	Some variability. Appears declining since GPTIA.	Semi-annual sampling. Northern plume monitoring point.
CM-MW-28USA-180	X	X		X		X		X		X		X	Stable, remains below 5 ppb.	Semi-annual sampling. Northern plume monitoring point.
CM-MW-29TGA	X	X		X				X		X		X	Regular detections. Fairly stable. Only TGA well with regular detections. Declining trend.	Annual sampling.
CM-MW-29USA-060.5	X	X		X		X		X		X		X	Showing some variability. Decreasing trend, GPTIA influence? <5 ppb.	Annual sampling. Monitor GPTIA changes.
CM-MW-29USA-100	X	X		X		X		X		X		X	Showing some variability. Decreasing trend, GPTIA influence? <5 ppb.	Annual sampling. Monitor GPTIA changes.

**Table 2-1 - Groundwater Monitoring Schedule - 2016**

Well Name	2014				2015				2016				Notes	Sample Schedule Rationale (for 2016)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
CM-MW-29USA-140.5	X		X		X		X		X		X		Showing some variability. Decreasing trend, GPTIA influence? <5 ppb.	Semi-annual sampling. Monitor GPTIA changes.
CM-VE-09	X		X		X		X		X		X		Variable below 10ppb. Cadet source area location.	Semi-annual sampling. Monitor GPTIA changes.
CM-VE-10	X		X		X		X		X		X		Variable below 10ppb. Cadet source area location.	Annual sampling. Monitor GPTIA changes.
CM-VE-11	X		X		X		X		X		X		Variable below 10ppb. Cadet source area location.	Semi-annual sampling. Monitor GPTIA changes.
CM-VE-12	X		X		X		X		X		X		Variable below 10ppb. Cadet source area location.	Annual sampling. Monitor GPTIA changes.
CM-DPW-01	X		X		X		X		X		X		Decline since GPTIA. Cadet source area location.	Semi-annual sampling. Monitor GPTIA changes.
CM-DPW-06	X		X		X		X		X		X		Decline since GPTIA. Cadet source area location.	Semi-annual sampling. Monitor GPTIA changes.
CM-DPW-10	X		X		X		X		X		X		Decline since GPTIA. Cadet source area location.	Annual sampling. Monitor GPTIA changes.
CM-DPW-16	X		X		X		X		X		X		Decline since GPTIA. Cadet source area location.	Annual sampling. Monitor GPTIA changes.
CM-MW-Ui	X				X				X				Well installed by Cadet for legal purpose. TCE detected below 10ppb. Detecting same TCE source as MW-37i and -38i.	Annual sampling. Off-site monitoring point for POV wellfield. VOCs at well not from SMC/Cadet.

Notes:

Green highlighted cells - Represent future sampling events  
 Elevations denoted "MSL" are in the vertical datum NGVD 29

X = groundwater quality sample (VOCs) collected or will be collected

- = location was scheduled to be sampled but a sample was not collected during event. See sample location notes for details.

D = Well has been decommissioned.

IA = Inactive well. Well is not an active monitoring location.

Sampling Periods for Each Quarter: Q1 - 1st quarter (Jan. - Mar.); Q2 - 2nd quarter (Apr. - Jun.); Q3 - 3rd quarter (Jul. - Sept.); Q4 - 4th quarter (Oct. - Dec.)

Sampling Method: Low flow method using dedicated bladder pumps or dedicated dual valve pumps (DVP) equipped with bladders. Select wells sampled using peristaltic pump.

Elevations based on NGVD.

NM indicates that elevation at the well has not been established. Estimated elevations have been applied as indicated by "est".

na = not applicable. This is a multiport well that does not use a screen interval, just a sample port.

\* - MW-13 is not currently sampled because it is screened in a perched water zone

\*\* - MW-22 was abandoned in June 2002

\*\*\* - CM-MW-06 was originally completed on 6/12/00 to a depth of 26.5 ft bgs. It was subsequently deepened on 2/21/01 to a total depth of 34.5 ft bgs.

\*\*\*\* - CM-MW-16s dropped from sampling due to NDs and close proximity to MW-15s.

\*\*\*\*\* - MW-05d was decommissioned in November 2006 and replaced with MW-05dR.

1 - Top of Casing elevations for VMW-10 and VMW-11 are approximations taken from nearby wells.









**Table 4-1 - Summary of Groundwater Analytical Results - 2015 (ug/L)**

Well Name	QC Code	Sample Depth (ft bgs)	Sampling Event/Quarter	Sample Date	Sample Time	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	Benzene	Bromo-dichloro-methane	Chloro-form	cis-1,2-Dichloro-ethene	Tetra-chloro-ethene	Toluene	trans-1,2-Dichloro-ethene	Trichloro-ethene
CM-MW-18d		193.5	2015Q3	09/02/15	14:27	0.62	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.55	0.67	0.5 U	0.5 U	5.39
CM-MW-19d		173	2015Q1	03/18/15	14:51	1.08	0.59	0.88	0.25 U	0.5 U	0.5 U	1.65	1.38	0.5 U	0.5 U	9.96
CM-MW-19d		173	2015Q3	09/02/15	17:51	1.09	0.59	0.9	0.25 U	0.5 U	0.5 U	1.92	1.45	0.5 U	0.5 U	9.46
CM-MW-28USA		180	2015Q1	03/09/15	12:16	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.2
CM-MW-28USA		180	2015Q3	09/02/15	12:01	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.92
MW-01d		216	2015Q1	03/04/15	15:05	0.92	0.76	0.91	0.25 U	0.5 U	0.5 U	4.33	4.63	0.5 U	0.5 U	20.18
MW-01d		216	2015Q3	09/09/15	11:05	0.91	0.88	1.04	0.25 U	0.5 U	0.5 U	6.27	4.66	0.5 U	0.5 U	20.9
MW-04d		227	2015Q1	03/16/15	11:10	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-05dR		221	2015Q1	03/04/15	11:16	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	1.82	3.49	0.5 U	0.5 U	11.83
MW-05dr		221	2015Q3	09/09/15	13:22	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	2.71	3.33	0.5 U	0.5 U	13
MW-08i		125	2015Q1	03/01/15	10:18	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-12d		211	2015Q1	03/02/15	12:02	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	2.18	2.82	0.5 U	0.5 U	8.98
MW-12d		211	2015Q3	09/09/15	15:21	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	2.53	2.52	0.5 U	0.5 U	8.18
MW-14d		216	2015Q1	03/01/15	14:00	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	1.25	1.48	0.5 U	0.5 U	5.77
MW-14d	DP	216	2015Q3	09/03/15	13:40	0.5 U	0.58	0.5 U	0.25 U	0.5 U	0.5 U	2.71	1.94	0.5 U	0.5 U	8.44
MW-14d	D	216	2015Q3	09/03/15	0:00	0.5 U	0.55	0.5 U	0.25 U	0.5 U	0.5 U	2.65	1.87	0.5 U	0.5 U	8.26
<b>Troutdale Gravel Aquifer Monitoring Wells</b>																
CM-MW-10d		225	2015Q1	03/10/15	13:35	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CM-MW-27TGA		165	2015Q1	03/18/15	16:45	0.5 U	0.5 U	0.5 U	0.25	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CM-MW-28TGA		206	2015Q1	03/09/15	12:50	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	1.44	0.5 U	0.5 U
CM-MW-29TGA	DP	155	2015Q1	03/10/15	10:02	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	3.1	6.28	0.5 U	0.5 U	11.83
CM-MW-29TGA	D	155	2015Q1	03/10/15	10:02	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	3.1	5.6	0.5 U	0.5 U	11.47
CM-MW-29TGA		155	2015Q3	09/23/15	13:05	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	3.93	6.24	0.5 U	0.5 U	11.73
MW-02d		212	2015Q1	03/12/15	13:39	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-13d		257	2015Q1	03/16/15	10:20	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-16d		225	2015Q1	03/12/15	9:46	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-17d		190	2015Q1	03/02/15	13:27	0.5 U	0.5 U	0.5 U	0.25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

**Notes**

Table includes constituents present above detection limits in at least one well.  
 Groundwater samples were analyzed for VOCs using Method 8021B/8260B.  
 Blue font indicates most recent data: Third quarter 2015 sampling event.

**Abbreviations**

QC Code: D = field duplicate sample; DP = associated field sample (the duplicate pair); ASC = sample preserved with ascorbic acid; R = resampled  
 Water Quality Zones: SH = Unconsolidated Sedimentary Aquifer Shallow Zone; IN = Unconsolidated Sedimentary Aquifer Intermediate Zone; DP = Unconsolidated Sedimentary Aquifer Deep Zone; TGA = Troutdale Gravel Aquifer  
 ft bgs - feet below ground surface  
 ug/L = micrograms per liter

**Data Qualifiers**

U = Not detected at or above the method reporting limit).  
 UJ = Not detected at or above the method reporting limit. However, the method reporting limit value is uncertain.  
 UB - Result qualified as undetected due to a concentration less than 5 times the concentration detected in a QC blank.  
 J = The analyte was positively identified but the associated value is approximate.  
 N = Indicates an analyte has been tentatively identified but not all required identification criteria were met. The associated result is both qualitatively and quantitatively uncertain.  
 R = The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.



## Figures

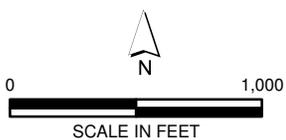






Parametrix

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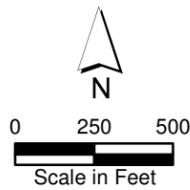


**Figure 1-1  
Site Location Map**

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Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDF\AEMR\_2015\Fig\_2\_1\_SMC\_Well\_Locations.mxd



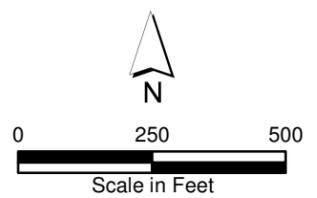
- ▲ Shallow USA Groundwater Monitoring Well
- Intermediate USA Groundwater Monitoring Well
- Deep USA Groundwater Monitoring Well
- TGA Monitoring Well
- ◆ GPTIA Extraction Well

**Figure 2-1**  
**SMC Site Groundwater Monitoring**  
**Well Locations**

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Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDFAEMR\_2015\Fig\_2\_2\_Cadet\_Well\_Locations.mxd



Note: Wells shown in italics have been decommissioned.

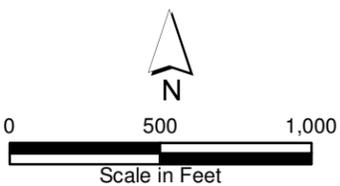
- ▲ Shallow USA Groundwater Monitoring Well
- Intermediate USA Groundwater Monitoring Well
- ⊗ Deep USA Groundwater Monitoring Well
- TGA Monitoring Well

**Figure 2-2  
Cadet Site Groundwater Monitoring  
Well Locations**

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Parametrix DATE: 2/23/2016 FILE: P:\GIS\POV\MXD\_PDF\AEMR\_2015\Fig\_3\_1\_Q1\_Surface\_Map.mxd



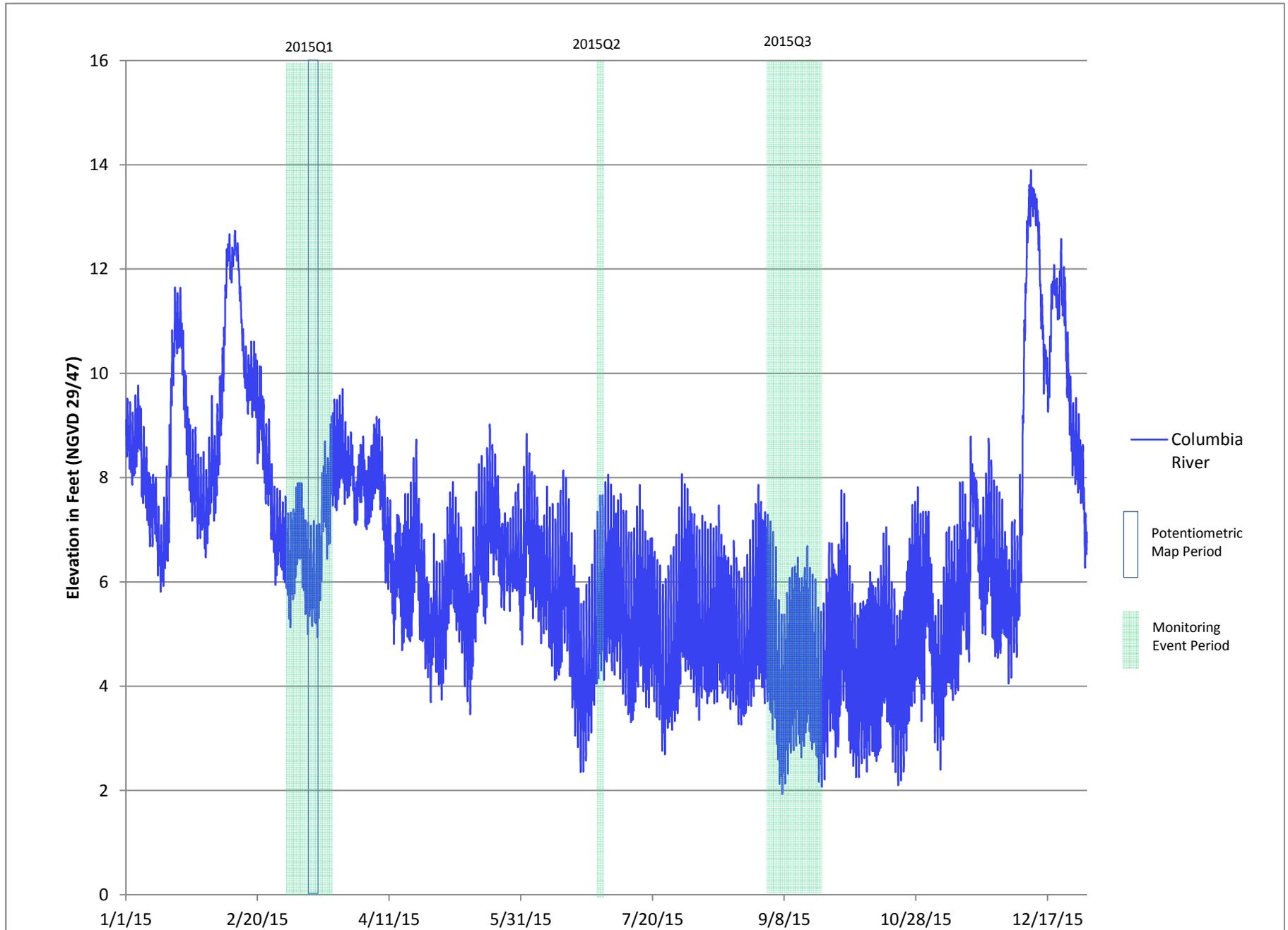
- Transducer location with groundwater elevation in feet
- Equipotential line in feet      - - - Presumed Equipotential line
- Direction of groundwater flow      - - - Presumed Direction of groundwater flow
- ND = No Data

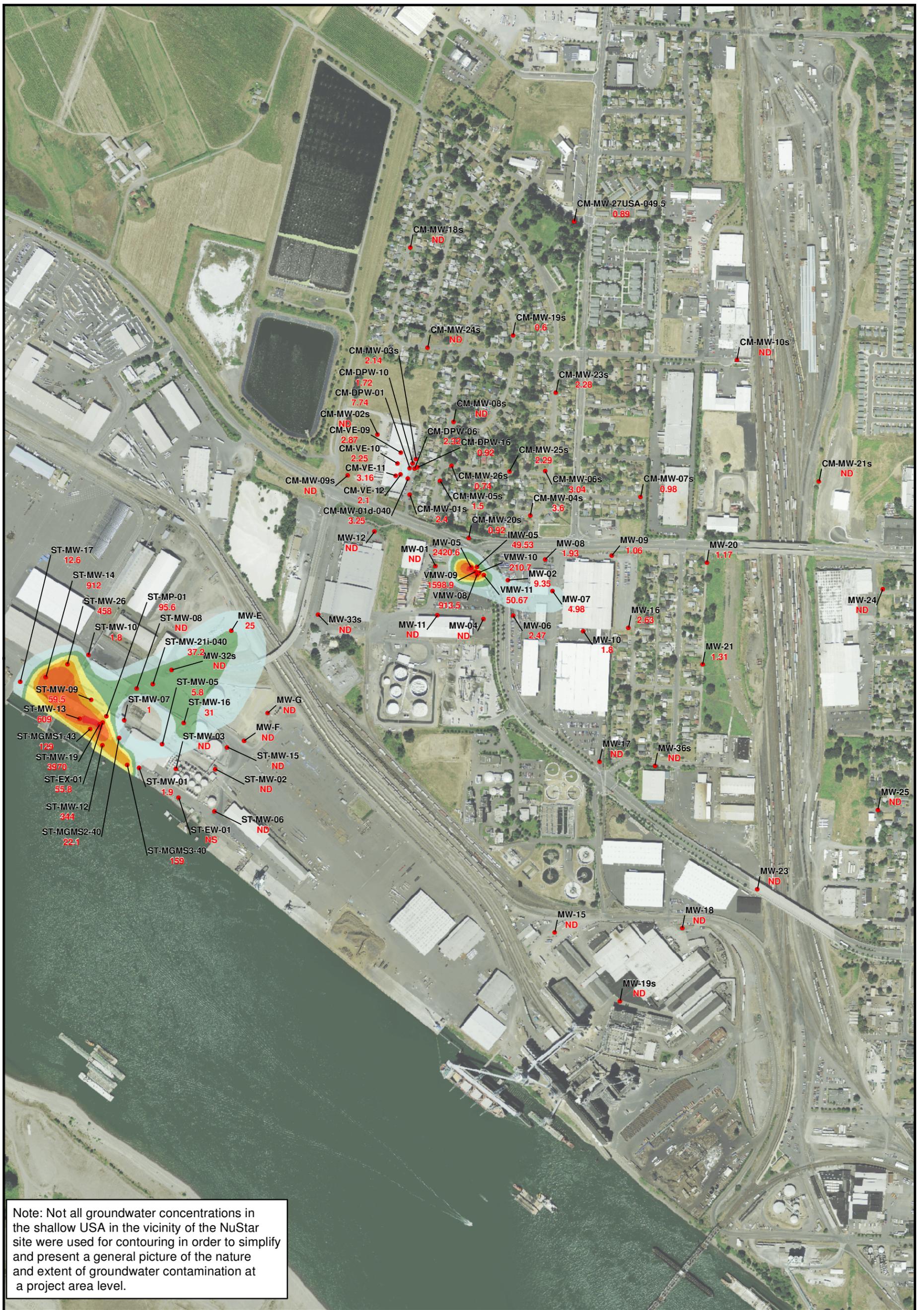
Note: Rolling average of groundwater elevations from 3/11/15 to 3/13/15

**Figure 3-1  
Potentiometric Surface Map  
Rolling Average  
1st Quarter 2015**

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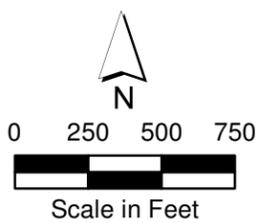
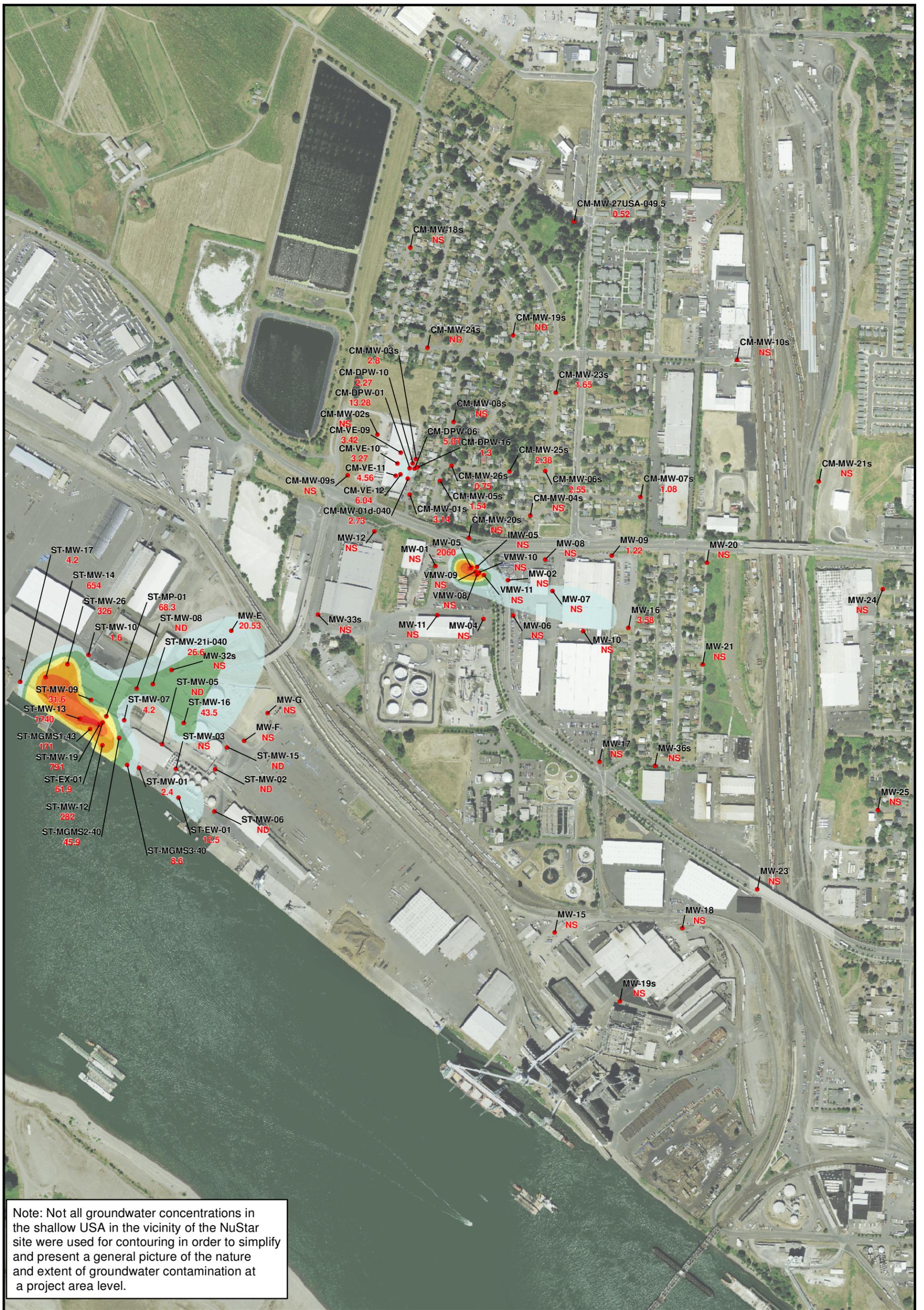
Figure 3-2 - Columbia River Stage Data, 2015



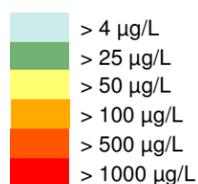


**Figure 4-1**  
**TCE Isoconcentrations in**  
**Shallow USA Zone Groundwater**  
**1st Quarter 2015**

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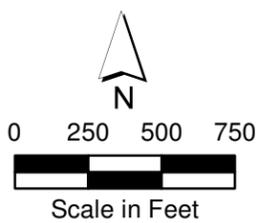
● MW-10  
 23  
 Well Location Name  
 Concentration Value (µg/l)  
 ND = Non-Detect  
 NS = Not sampled



**Figure 4-2**  
**TCE Isoconcentrations in**  
**Shallow USA Zone Groundwater**  
**3rd Quarter 2015**

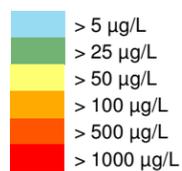


Note: Not all groundwater concentrations in the shallow USA in the vicinity of the NuStar site were used for contouring in order to simplify and present a general picture of the nature and extent of groundwater contamination at a project area level.

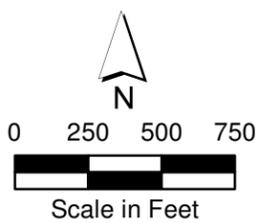


● MW-10  
23  
Well Location Name  
Concentration Value (µg/l)

ND = Non-Detect  
NS = Not sampled

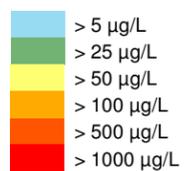


**Figure 4-3**  
**PCE Isoconcentrations in**  
**Shallow USA Zone Groundwater**  
**1st Quarter 2015**



● MW-10  
23  
Well Location Name  
Concentration Value (µg/l)

ND = Non-Detect  
NS = Not sampled

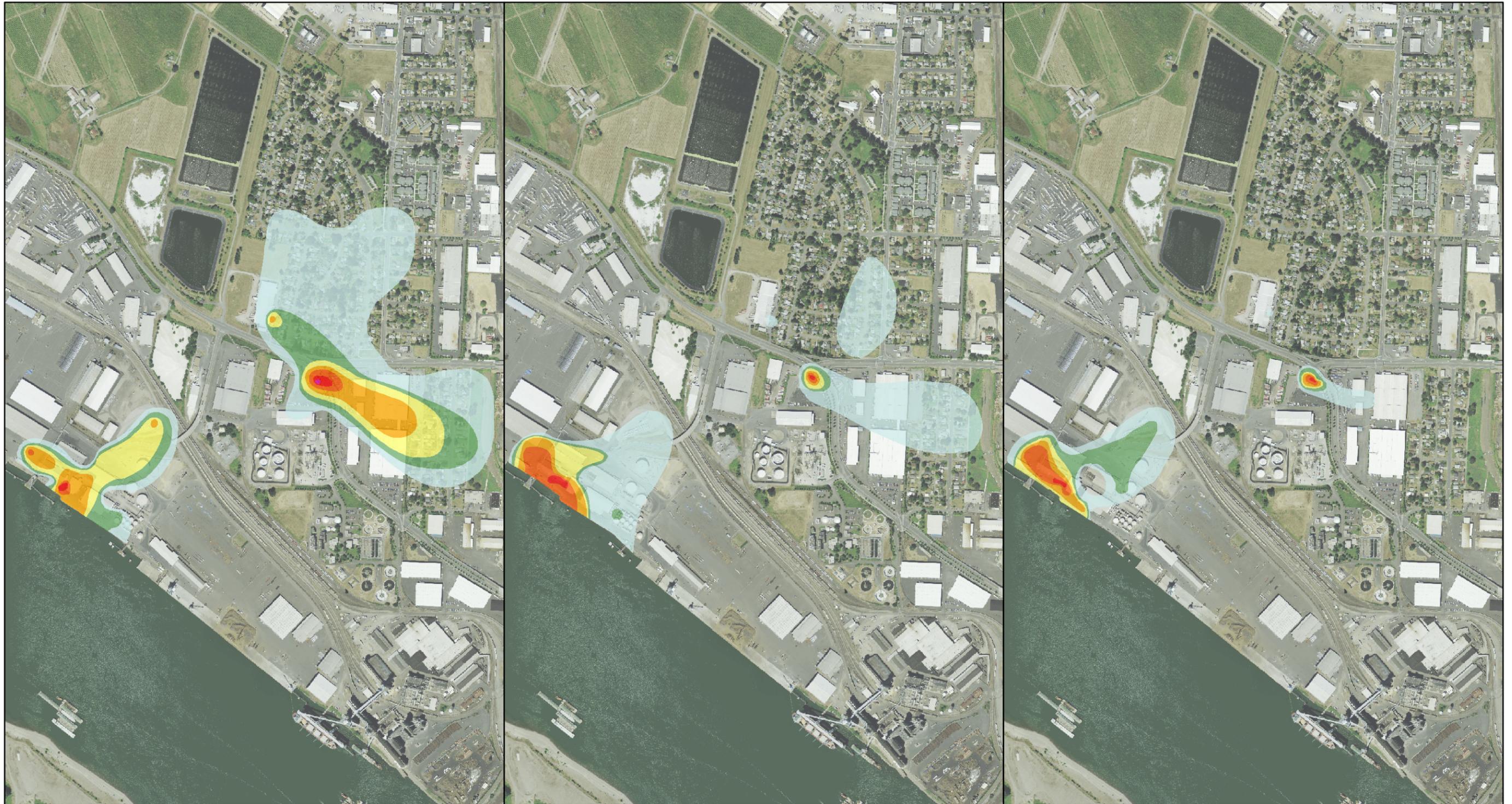


**Figure 4-4**  
**PCE Isoconcentrations in**  
**Shallow USA Zone Groundwater**  
**3rd Quarter 2015**

2009 Q1

2012 Q1

2015 Q1



Parametrix

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 Feet

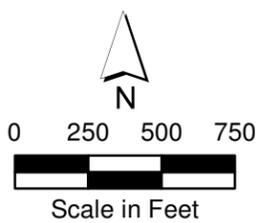


**Figure 4-5**  
**TCE Isoconcentrations in**  
**Shallow USA Zone Groundwater**  
**2009, 2012, and 2015**

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Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDF\Isoconcentrations\POV\_Isoconcentrations\_TCE\_Intermediate4\_Q1\_2015.mxd



MW-10  
23  
Well Location Name  
Concentration Value (µg/l)

ND = Non-Detect  
NS = Not sampled

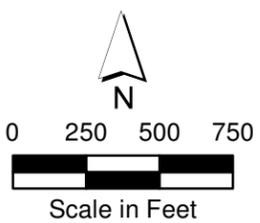
> 4 µg/L  
> 25 µg/L

**Figure 4-6**  
**TCE Isoconcentrations in Intermediate USA Zone Groundwater 1st Quarter 2015**

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Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDF\Isoconcentrations\POV\_Isoconcentrations\_TCE\_Intermediate4\_Q3\_2015.mxd



MW-10  
23  
Well Location Name  
Concentration Value (µg/L)

ND = Non-Detect  
NS = Not sampled

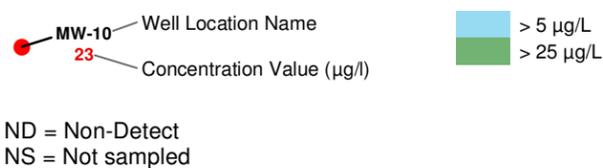
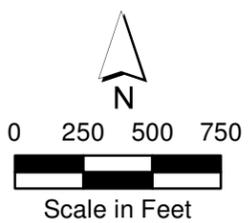
> 4 µg/L  
> 25 µg/L

**Figure 4-7**  
**TCE Isoconcentrations in Intermediate USA Zone Groundwater 3rd Quarter 2015**

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Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDF\Isoconcentrations\POV\_Isoconcentrations\_PCE\_Intermediate5\_Q1\_2015.mxd

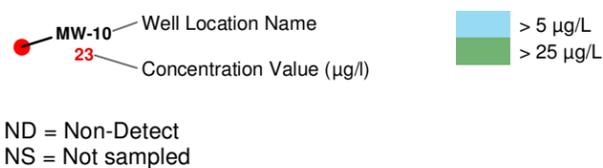
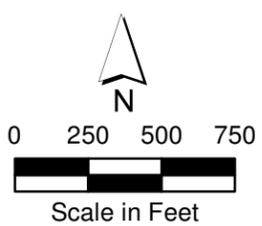


**Figure 4-8**  
**PCE Isoconcentrations in**  
**Intermediate USA Zone Groundwater**  
**1st Quarter 2015**

2015 ANNUAL ENVIRONMENTAL  
MONITORING REPORT  
SMC AND CADET SITES  
PORT OF VANCOUVER, WASHINGTON



Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDF\Isoconcentrations\POV\_Isoconcentrations\_PCE\_Intermediate5\_Q3\_2015.mxd



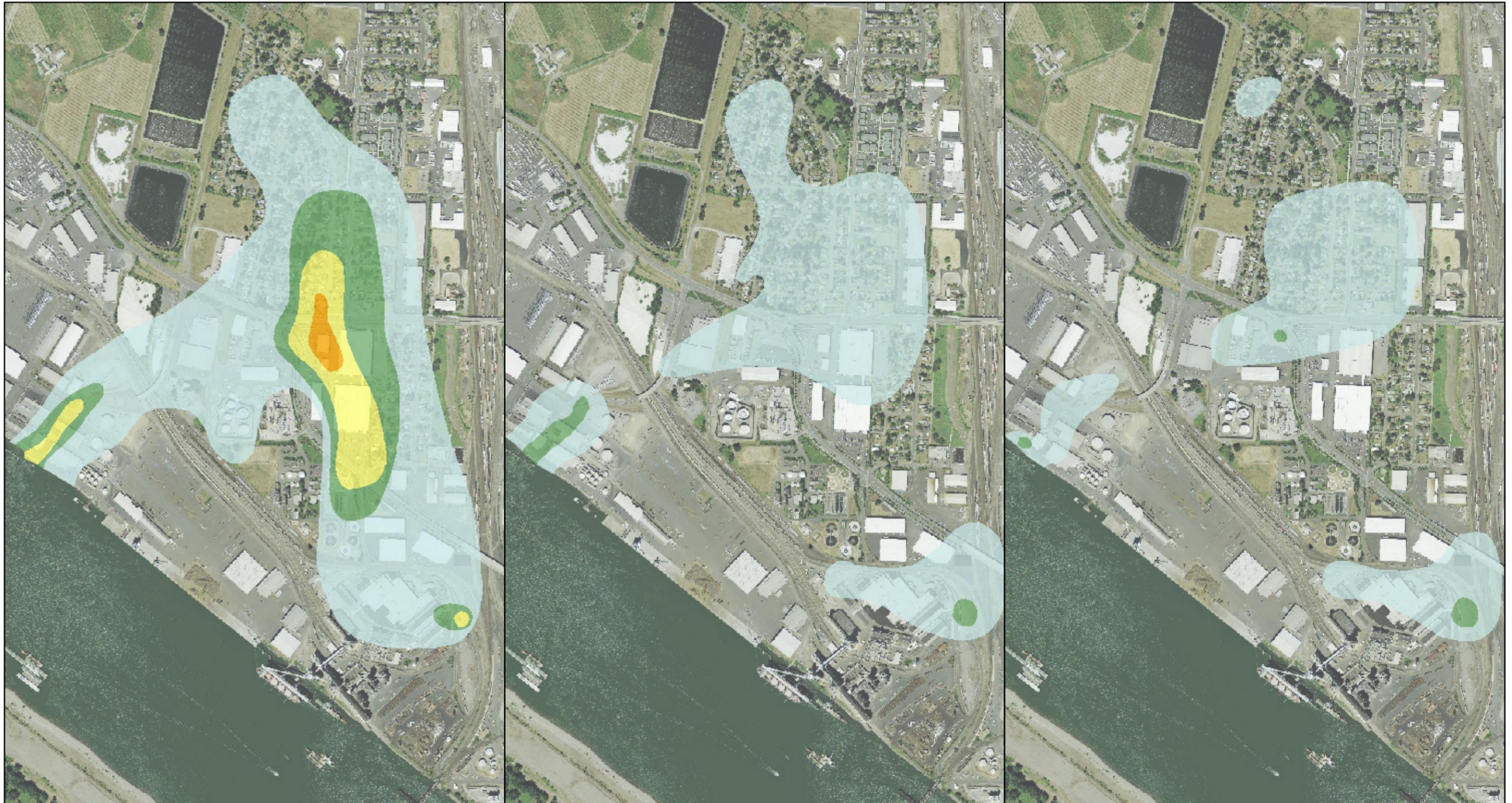
**Figure 4-9**  
PCE Isoconcentrations in Intermediate USA Zone Groundwater 3rd Quarter 2015

2015 ANNUAL ENVIRONMENTAL MONITORING REPORT  
SMC AND CADET SITES  
PORT OF VANCOUVER, WASHINGTON

2009 Q1

2012 Q1

2015 Q1



Parametrix

Date: 2/3/2016 Path: P:\GIS\POV\MXD\_PDF\AEMR\_2015\Fig\_4\_10\_int\_compare.mxd

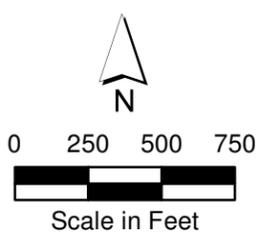


0 500 1,000 2,000  
 Feet



**Figure 4-10**  
**TCE Isoconcentrations in**  
**Intermediate USA Zone Groundwater**  
**2009, 2012, and 2015**

2015 ANNUAL ENVIRONMENTAL  
 MONITORING REPORT  
 SMC AND CADET SITES  
 PORT OF VANCOUVER, WASHINGTON



● Well Location Name  
 ● Concentration Value (µg/L)

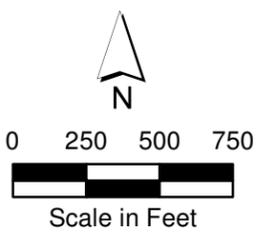
ND = Non-Detect  
 NS = Not sampled

■ > 4 µg/L  
 ■ > 25 µg/L

**Figure 4-11**  
**TCE Isoconcentrations in**  
**Deep USA Zone Groundwater**  
**1st Quarter 2015**



**Figure 4-12**  
**TCE Isoconcentrations in**  
**Deep USA Zone Groundwater**  
**3rd Quarter 2015**



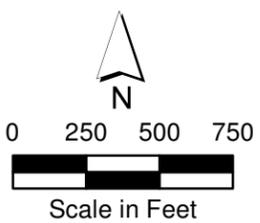
● MW-10  
 23  
 Well Location Name  
 Concentration Value (µg/L)

ND = Non-Detect  
 NS = Not sampled

■ > 4 µg/L  
 ■ > 25 µg/L



Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDF\Isoconcentrations\POV\_Isoconcentrations\_PCE\_Deep5\_Q1\_2015.mxd



● MW-10-23 Well Location Name  
 ● 23 Concentration Value (µg/l)

ND = Non-Detect  
 NS = Not sampled

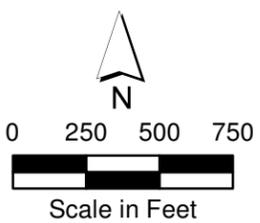
■ > 5 µg/L

**Figure 4-13**  
**PCE Isoconcentrations in**  
**Deep USA Zone Groundwater**  
**1st Quarter 2014**

2015 ANNUAL ENVIRONMENTAL  
 MONITORING REPORT  
 SMC AND CADET SITES  
 PORT OF VANCOUVER, WASHINGTON



Parametrix Date: 2/2/2016 Path: P:\GIS\POV\MXD\_PDF\Isoconcentrations\POV\_Isoconcentrations\_PCE\_Deep5\_Q3\_2015.mxd



● MW-10-23 Well Location Name  
● Concentration Value (µg/l)  
ND = Non-Detect  
NS = Not sampled

■ > 5 µg/L

**Figure 4-14**  
**PCE Isoconcentrations in**  
**Deep USA Zone Groundwater**  
**3rd Quarter 2015**

2015 ANNUAL ENVIRONMENTAL  
MONITORING REPORT  
SMC AND CADET SITES  
PORT OF VANCOUVER, WASHINGTON

2009 Q1

2012 Q1

2015 Q1



Parametrix

Date: 3/4/2016 Path: P:\GIS\POV\MXD\_PDF\AEMR\_2015\Fig\_4\_15\_dp\_compare.mxd



0 500 1,000 2,000  
 Feet

> 4 µg/L  
 > 25 µg/L

**Figure 4-15**  
**TCE Isoconcentrations in**  
**Deep USA Zone Groundwater**  
**2009, 2012, and 2015**

2015 ANNUAL ENVIRONMENTAL  
 MONITORING REPORT  
 SMC AND CADET SITES  
 PORT OF VANCOUVER, WASHINGTON

# Appendix A

## Summary of Historical Groundwater Analytical Results









































































































































































































































































































































































































































































































































































































































































# Parametrix, Inc.

Well/Sample #: MW-06

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/12/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>KScudl</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>23.14</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>N/A 29.0</u>	Date Purged	<u>3/12/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1206 / 1225</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/12/15 / 1226</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1210</u>	<u>1.2</u>	<u>23.12</u>	<u>7.23</u>	<u>14.35</u>	<u>118</u>	<u>7.32</u>	<u>-22.2</u>	<u>N/A</u>
<u>1213</u>	<u>2.1</u>	<u>23.13</u>	<u>6.87</u>	<u>14.36</u>	<u>117</u>	<u>7.23</u>	<u>-17.8</u>	<u>clear</u>
<u>1216</u>	<u>3.14</u>	<u>23.14</u>	<u>6.65</u>	<u>14.41</u>	<u>119</u>	<u>7.23</u>	<u>-17.7</u>	<u>clear</u>
<u>1219</u>	<u>4.1</u>	<u>23.14</u>	<u>6.58</u>	<u>14.46</u>	<u>120</u>	<u>7.10</u>	<u>-19.3</u>	<u>clear</u>
<u>1222</u>	<u>5.1</u>	<u>23.14</u>	<u>6.53</u>	<u>14.28</u>	<u>120</u>	<u>7.14</u>	<u>-20.1</u>	<u>clear</u>
<u>1225</u>	<u>6.1</u>	<u>23.14</u>	<u>6.49</u>	<u>14.29</u>	<u>123</u>	<u>7.13</u>	<u>-19.2</u>	<u>clear</u>
<u>1226</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity COMPRESSOR

Remarks: ON 0 sec / OFF 12 sec / Pressure - 20 psi

Flow rate - 0.345 L/min

MS/MSD POV - FD - 031215 = Dup

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-09

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/12/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Saul</u>

Casing Diameter: (2") 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>27.08</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>32.0</u>	Date Purged	<u>3/12/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1110 - 1126</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/12/15 / 1127</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1114</u>	<u>1.1</u>	<u>27.09</u>	<u>7.14</u>	<u>14.07</u>	<u>154</u>	<u>6.87</u>	<u>-49.8</u>	<u>N/A</u>
<u>1117</u>	<u>2.1</u>	<u>27.09</u>	<u>6.69</u>	<u>14.00</u>	<u>153</u>	<u>6.59</u>	<u>-40.2</u>	<u>clear</u>
<u>1120</u>	<u>3.0</u>	<u>27.09</u>	<u>6.59</u>	<u>14.09</u>	<u>153</u>	<u>6.46</u>	<u>-39.6</u>	<u>clear</u>
<u>1123</u>	<u>3.9</u>	<u>27.08</u>	<u>6.57</u>	<u>14.04</u>	<u>153</u>	<u>6.45</u>	<u>-40.6</u>	<u>clear</u>
<u>1126</u>	<u>4.8</u>	<u>27.08</u>	<u>6.57</u>	<u>14.11</u>	<u>153</u>	<u>6.39</u>	<u>-41.8</u>	<u>cloud</u>
<u>1127</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Compressor

Remarks: on 8 Sec / off 12 Sec / Pressure 20 psi

Flow rate - 0.32 L/min

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-16

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/12/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Squil</u>

Casing Diameter:	<u>(2")</u>	<u>4"</u>	<u>Other</u>
------------------	-------------	-----------	--------------

Depth to Water (feet)	<u>31.00</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>36.0</u>	Date Purged	<u>3/12/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0955 - 1010</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/12/15 / 1011</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>0958</u>	<u>1.2</u>	<u>31.29</u>	<u>6.97</u>	<u>13.02</u>	<u>167</u>	<u>6.56</u>	<u>-51.3</u>	<u>N/A</u>
<u>1001</u>	<u>2.2</u>	<u>31.29</u>	<u>6.68</u>	<u>13.05</u>	<u>167</u>	<u>6.39</u>	<u>-50.0</u>	<u>clear</u>
<u>1004</u>	<u>3.16</u>	<u>31.29</u>	<u>6.66</u>	<u>13.05</u>	<u>167</u>	<u>6.33</u>	<u>-49.8</u>	<u>clear</u>
<u>1007</u>	<u>4.1</u>	<u>31.29</u>	<u>6.51</u>	<u>13.05</u>	<u>167</u>	<u>6.30</u>	<u>-49.5</u>	<u>clear</u>
<u>1010</u>	<u>5.02</u>	<u>31.29</u>	<u>6.47</u>	<u>13.04</u>	<u>167</u>	<u>6.32</u>	<u>-49.0</u>	<u>clear</u>
<u>1011</u>	<u>Sample</u>							

Purge Equipment	<u>Dedicated Bladder pump</u>	Sampling Equipment	<u>Dedicated Bladder pump</u>
-----------------	-------------------------------	--------------------	-------------------------------

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity	<u>Tank Pressure - 500 psi</u>
Remarks:	<u>on 8 sec / off 10 sec / Pressure - 25 psi</u>
	<u>Flow Rate - 0.345 L/min</u>
Signature	

# Parametrix, Inc.

Well/Sample #: MW-16d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/12/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>F. S. [unclear]</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>30.19</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>230.0</u>	Date Purged	<u>3/12/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0924 - 0945</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/12/15 / 0946</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>0927</u>	<u>1.52</u>	<u>30.48</u>	<u>5.97</u>	<u>12.53</u>	<u>116</u>	<u>105</u>	<u>-147.6</u>	<u>N/A</u>
<u>0930</u>	<u>2.9</u>	<u>30.53</u>	<u>6.36</u>	<u>12.44</u>	<u>117</u>	<u>0.43</u>	<u>-153.7</u>	<u>clear</u>
<u>0933</u>	<u>3.9</u>	<u>30.55</u>	<u>6.63</u>	<u>12.41</u>	<u>117</u>	<u>0.31</u>	<u>-144.9</u>	<u>clear</u>
<u>0936</u>	<u>5.8</u>	<u>30.53</u>	<u>6.93</u>	<u>12.38</u>	<u>118</u>	<u>0.24</u>	<u>-141.6</u>	<u>clear</u>
<u>0939</u>	<u>6.8</u>	<u>30.53</u>	<u>7.12</u>	<u>12.41</u>	<u>117</u>	<u>0.22</u>	<u>-143.7</u>	<u>clear</u>
<u>0942</u>	<u>7.9</u>	<u>30.53</u>	<u>7.29</u>	<u>12.41</u>	<u>118</u>	<u>0.18</u>	<u>-146.5</u>	<u>clear</u>
<u>0945</u>	<u>9.1</u>	<u>30.53</u>	<u>7.44</u>	<u>12.43</u>	<u>117</u>	<u>0.15</u>	<u>-148.4</u>	<u>clear</u>
<u>0946</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump      Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Tank Pressure 700 psi

Remarks: ON 10 sec / OFF 10 sec / Pressure - 35 psi  
Flow rate - 0.35 L/min

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-371

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/12/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Scull</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>27.18</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>125.0</u>	Date Purged	<u>3/12/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1505 - 1527</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/12/15 / 1528</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1509	0.9	27.19	7.96	14.00	190	1.93	-53.2	N/A
1512	1.9	27.20	7.76	13.88	192	1.18	-57.6	clear
1515	2.8	27.20	7.73	13.83	193	0.80	-59.2	clear
1518	3.9	27.20	7.73	13.75	192	0.61	-60.8	clear
1521	5.0	27.20	7.75	13.72	191	0.80	-63.5	clear
1524	5.9	27.1	7.76	13.70	190	0.53	-65.6	clear
1527	7.0	27.1	7.76	13.69	190	0.53	-67.7	clear
1528	Sample							

Purge Equipment Dedicated Bladder pump      Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Compression  
 Remarks: ON 10 sec / OFF 10 sec / Pressure - 55 psi  
Flow Rate - 0.35 l/min

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-13d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/16/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>29.36</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>262.0</u>	Date Purged	<u>3/16/14</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u><del>10:00</del> - 09:58</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/16/15 10:20</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (GAL)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1003	0.7	29.40	6.60	12.11	274	0.56	-184.6	N/A
1006	1.1	29.40	6.70	12.04	275	0.44	-182.4	clear
1007	1.5	29.40	6.78	12.03	275	0.36	-178.7	clear
1012	1.9	29.40	6.88	12.05	275	0.34	-177.7	cl.
1015	2.3	29.40	6.96	11.99	275	0.30	-177.8	cl.
1018	2.7	29.40	6.98	12.08	275	0.32	-177.7	cl
/								

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity OK - Monument LID hinge rusted / Broken

Remarks: \_\_\_\_\_

Purge Rate ~ 500ml/min

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-Ø4 d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/16/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>20.55</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>232.0</u>	Date Purged	<u>3/16/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1045 - 1108</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/16/15 1110</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (gals)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1050	0.4	20.60	6.79	12.20	249	1.28	-155.4	N/A
1053	0.7	20.60	6.77	12.15	250	0.64	-176.0	sl. turbid
1056	0.9	20.60	6.95	12.12	252	0.49	-186.0	sl. turbid
1059	1.2	20.60	7.11	12.10	251	0.42	-193.0	sl. turbid
1102	1.4	20.61	7.22	12.10	251	0.31	-195.8	clear
1105	1.7	20.61	7.29	12.08	250	0.28	-196.7	clear
1108	1.9	20.61	7.31	12.07	249	0.29	-196.9	clear

Purge Equipment Dedicated Bladder pump      Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Good - PMX Lock on Access Gate is Gone

Remarks: Purge Rate = 300 ml/min

Signature: [Signature]

# Parametrix, Inc.

Well/Sample #: MW-23

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/16/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2013 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>39.70</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>45.0</u>	Date Purged	<u>3/16/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1236-1253</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/16/15 1255</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1241</u>	<u>2.0</u>	<u>39.70</u>	<u>6.40</u>	<u>12.91</u>	<u>286</u>	<u>5.11</u>	<u>1.6</u>	<u>N/A</u>
<u>1244</u>	<u>3.2</u>	<u>39.70</u>	<u>6.09</u>	<u>12.90</u>	<u>278</u>	<u>5.22</u>	<u>12.7</u>	<u>clear</u>
<u>1247</u>	<u>4.4</u>	<u>39.70</u>	<u>6.02</u>	<u>12.89</u>	<u>274</u>	<u>5.40</u>	<u>16.1</u>	<u>clear</u>
<u>1250</u>	<u>5.6</u>	<u>39.70</u>	<u>6.04</u>	<u>12.90</u>	<u>272</u>	<u>5.53</u>	<u>16.7</u>	<u>clear</u>
<u>1253</u>	<u>6.8</u>	<u>39.70</u>	<u>6.07</u>	<u>12.90</u>	<u>270</u>	<u>5.65</u>	<u>17.5</u>	<u>clear</u>

Purge Equipment Dedicated Bladder pump      Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity ? significant airflow emanating from well  
 Remarks: Purge Rate 400 ml/min  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Signature AR

# Parametrix, Inc.

Well/Sample #: MW-19i

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/16/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 01</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>28.77</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>130.0</u>	Date Purged	<u>3/16/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1336 - 1356</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/16/15 1400</u>
3 Pure Volumes (gals)	<u>N/A</u>		

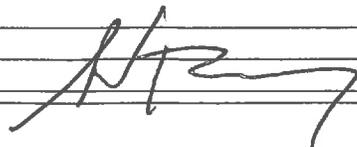
Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1341</u>	<u>1.6</u>	<u>28.85</u>	<u>6.97</u>	<u>15.71</u>	<u>271</u>	<u>3.91</u>	<u>55.1</u>	<u>N/A</u>
<u>1344</u>	<u>2.6</u>	<u>28.89</u>	<u>6.78</u>	<u>15.51</u>	<u>257</u>	<u>3.84</u>	<u>49.2</u>	<u>clear</u>
<u>1347</u>	<u>3.5</u>	<u>28.82</u>	<u>6.71</u>	<u>15.39</u>	<u>252</u>	<u>3.80</u>	<u>43.7</u>	<u>clear</u>
<u>1350</u>	<u>4.5</u>	<u>28.85</u>	<u>6.69</u>	<u>15.32</u>	<u>251</u>	<u>3.76</u>	<u>37.6</u>	<u>clear</u>
<u>1353</u>	<u>5.4</u>	<u>28.82</u>	<u>6.68</u>	<u>15.26</u>	<u>251</u>	<u>3.74</u>	<u>32.2</u>	<u>clear</u>
<u>1356</u>	<u>6.4</u>	<u>28.89</u>	<u>6.67</u>	<u>15.23</u>	<u>251</u>	<u>3.74</u>	<u>27.8</u>	<u>clear</u>

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity OK

Remarks: purge rate ~ 320 ml/min

Signature 

# Parametrix, Inc.

Well/Sample #: MW-195

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/16/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>MR</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>26.97</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>33.0</u>	Date Purged	<u>3/16/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1410-1433</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/16/15 1435</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1415</u>	<u>2.2</u>	<u>27.01</u>	<u>6.49</u>	<u>17.07</u>	<u>314</u>	<u>0.61</u>	<u>30.5</u>	<u>N/A</u>
<u>1418</u>	<u>3.5</u>	<u>27.01</u>	<u>6.42</u>	<u>17.07</u>	<u>315</u>	<u>0.40</u>	<u>24.9</u>	<u>cl.</u>
<u>1421</u>	<u>4.8</u>	<u>27.01</u>	<u>6.39</u>	<u>17.09</u>	<u>315</u>	<u>0.34</u>	<u>18.7</u>	<u>cl</u>
<u>1424</u>	<u>6.0</u>	<u>27.01</u>	<u>6.36</u>	<u>17.11</u>	<u>315</u>	<u>0.30</u>	<u>13.0</u>	<u>cl</u>
<u>1427</u>	<u>7.3</u>	<u>27.03</u>	<u>6.35</u>	<u>17.11</u>	<u>315</u>	<u>0.26</u>	<u>6.4</u>	<u>cl</u>
<u>1430</u>	<u>8.6</u>	<u>27.02</u>	<u>6.34</u>	<u>17.11</u>	<u>315</u>	<u>0.26</u>	<u>1.0</u>	<u>cl</u>
<u>1433</u>	<u>9.9</u>	<u>27.04</u>	<u>6.35</u>	<u>17.10</u>	<u>315</u>	<u>0.24</u>	<u>-3.0</u>	<u>cl</u>

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity GOOD  
Remarks: purge rate ~ 440 ml/min

Signature [Handwritten Signature]

# Parametrix, Inc.

Well/Sample #: MW-20

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/16/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2"    4"    Other \_\_\_\_\_

Depth to Water (feet)	<u>49.75</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>57.0</u>	Date Purged	<u>3/16/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1518-1541</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/16/15 1543</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1523	1.6	49.78	5.94	13.01	261	7.62	114.5	N/A
1526	2.6	49.78	5.65	12.95	260	7.52	116.3	cl
1529	3.5	49.79	5.63	12.95	260	7.44	110.1	cl
1532	4.5	49.78	5.67	12.93	259	7.38	102.6	cl
1535	5.4	49.75	5.74	12.90	259	7.37	95.2	cl
1538	6.4	49.75	5.77	12.86	259	7.39	89.5	cl
1541	7.3	49.75	5.79	12.88	259	7.32	86.0	cl

Purge Equipment Dedicated Bladder pump    Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
Purge RATE ~ 320 ml/min  
 \_\_\_\_\_  
 Signature AR

# Parametrix, Inc.

Well/Sample #: MW-21

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/16/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>33.52</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>42.0</u>	Date Purged	<u>3/16/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1605-1622</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/16/15 1624</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1610</u>	<u>2.4</u>	<u>33.50</u>	<u>5.85</u>	<u>12.92</u>	<u>280</u>	<u>7.78</u>	<u>82.2</u>	<u>N/A</u>
<u>1613</u>	<u>3.8</u>	<u>33.50</u>	<u>5.64</u>	<u>12.91</u>	<u>279</u>	<u>7.51</u>	<u>83.8</u>	<u>cl</u>
<u>1616</u>	<u>5.3</u>	<u>33.50</u>	<u>5.68</u>	<u>12.91</u>	<u>278</u>	<u>7.48</u>	<u>77.7</u>	<u>cl</u>
<u>1619</u>	<u>6.7</u>	<u>33.30</u>	<u>5.74</u>	<u>12.92</u>	<u>278</u>	<u>7.45</u>	<u>73.1</u>	<u>cl</u>
<u>1622</u>	<u>8.2</u>	<u>33.50</u>	<u>5.78</u>	<u>12.92</u>	<u>278</u>	<u>7.44</u>	<u>70.3</u>	<u>cl</u>

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks:

NOTED Purge Rate 400 ml/min  
Air coming from well as in MW-23

Signature AR

1603 33.54  
 1613 33.52

# Parametrix, Inc.

Well/Sample #: MW-10

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/17/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	_____

Casing Diameter: (2") 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>26.15</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>31.5</u>	Date Purged	<u>3/17/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1159-1216</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/17/15 1220</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1204</u>	<u>1.9</u>	<u>26.15</u>	<u>6.37</u>	<u>12.74</u>	<u>300</u>	<u>6.53</u>	<u>136.1</u>	<u>N/A</u>
<u>1207</u>	<u>3.0</u>	<u>26.15</u>	<u>6.25</u>	<u>12.77</u>	<u>299</u>	<u>6.46</u>	<u>133.9</u>	<u>sl. turbid</u>
<u>1210</u>	<u>4.2</u>	<u>26.15</u>	<u>6.30</u>	<u>12.78</u>	<u>299</u>	<u>6.33</u>	<u>126.9</u>	<u>sl. turbid</u>
<u>1213</u>	<u>5.3</u>	<u>26.15</u>	<u>6.33</u>	<u>12.81</u>	<u>299</u>	<u>6.28</u>	<u>121.1</u>	<u>sl. turbid</u>
<u>1216</u>	<u>6.5</u>	<u>26.15</u>	<u>6.37</u>	<u>12.74</u>	<u>299</u>	<u>6.25</u>	<u>118.4</u>	<u>sl. turbid</u>

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity OK

Remarks: \_\_\_\_\_  
purge RATE ~ 380ml/min  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-365

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/17/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>27.91</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>34.0</u>	Date Purged	<u>3/17/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1256 - 1313</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/17/15 1315</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1301	1.7	27.91	5.93	13.41	90	8.38	161.4	N/A
1304	2.7	27.91	5.52	13.39	91	8.26	125.7	TURBID
1307	3.7	27.91	5.43	13.37	93	8.18	105.1	TURBID
1310	4.7	27.91	5.44	13.37	92	8.14	107.2	TURBID
1313	5.8	27.91	5.46	13.37	91	8.09	109.2	TURBID

Purge Equipment Dedicated Bladder pump      Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

purge RATE ~ 340 ml/min

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-36i

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/17/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: (2") 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>28.16</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>105.0</u>	Date Purged	<u>3/17/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1318-1332</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/17/15 1334</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1323</u>	<u>1.7</u>	<u>28.16</u>	<u>6.17</u>	<u>12.78</u>	<u>326</u>	<u>6.05</u>	<u>122.4</u>	<u>N/A</u>
<u>1326</u>	<u>2.7</u>	<u>28.16</u>	<u>6.24</u>	<u>12.74</u>	<u>325</u>	<u>6.50</u>	<u>115.0</u>	<u>cl</u>
<u>1329</u>	<u>3.7</u>	<u>28.16</u>	<u>6.30</u>	<u>12.72</u>	<u>325</u>	<u>6.56</u>	<u>109.7</u>	<u>cl</u>
<u>1332</u>	<u>4.7</u>	<u>28.15</u>	<u>6.34</u>	<u>12.71</u>	<u>326</u>	<u>6.51</u>	<u>105.8</u>	<u>cl</u>

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Good

Remarks: Purge RATE ~ 340 ml/min

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-071

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/18/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>25.62</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>90.0</u>	Date Purged	<u>3/18/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0949-1001</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/18/15 1003</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
0952	1.6	25.62	6.68	12.86	336	5.40	108.4	N/A
0955	2.6	25.62	6.62	12.73	334	5.72	100.6	c1
0958	3.6	25.64	6.68	12.73	333	5.70	94.4	c1
1001	4.6	25.64	6.67	12.73	332	5.72	90.7	c1

Purge Equipment Dedicated Bladder pump      Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

Purge RATE ~320 ml/min

\_\_\_\_\_

Signature AR

# Parametrix, Inc.

Well/Sample #: MW-29i

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/18/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>AR</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>24.10</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>125.0</u>	Date Purged	<u>3/18/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1346-1400</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/18/15 1402</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1351</u>	<u>1.5</u>	<u>24.07</u>	<u>6.62</u>	<u>12.64</u>	<u>170</u>	<u>4.82</u>	<u>114.9</u>	<u>N/A</u>
<u>1354</u>	<u>2.4</u>	<u>24.05</u>	<u>6.33</u>	<u>12.44</u>	<u>172</u>	<u>5.15</u>	<u>125.4</u>	<u>cl</u>
<u>1357</u>	<u>3.3</u>	<u>24.04</u>	<u>6.34</u>	<u>12.33</u>	<u>172</u>	<u>5.06</u>	<u>123.1</u>	<u>cl</u>
<u>1400</u>	<u>4.2</u>	<u>24.02</u>	<u>6.40</u>	<u>12.29</u>	<u>172</u>	<u>5.01</u>	<u>118.2</u>	

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
Remarks: Purge RATE 2300ml/min  
\_\_\_\_\_  
\_\_\_\_\_  
Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-041

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>3/19/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q1</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>ARL</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>21.69</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>100.0</u>	Date Purged	<u>3/19/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1447-1507</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>3/19/15 1510</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1452</u>	<u>1.9</u>	<u>21.69</u>	<u>6.56</u>	<u>12.92</u>	<u>329</u>	<u>0.47</u>	<u>-77.0</u>	<u>N/A</u>
<u>1455</u>	<u>3.0</u>	<u>21.69</u>	<u>6.34</u>	<u>12.81</u>	<u>330</u>	<u>0.35</u>	<u>-46.0</u>	<u>cl</u>
<u>1458</u>	<u>4.2</u>	<u>21.69</u>	<u>6.34</u>	<u>12.72</u>	<u>332</u>	<u>0.32</u>	<u>-34.1</u>	<u>cl</u>
<u>1501</u>	<u>5.3</u>	<u>21.69</u>	<u>6.43</u>	<u>12.69</u>	<u>332</u>	<u>0.29</u>	<u>-32.8</u>	<u>cl</u>
<u>1504</u>	<u>6.5</u>	<u>21.70</u>	<u>6.55</u>	<u>12.62</u>	<u>333</u>	<u>0.28</u>	<u>-33.1</u>	<u>cl</u>
<u>1507</u>	<u>7.6</u>	<u>21.70</u>	<u>6.53</u>	<u>12.55</u>	<u>333</u>	<u>0.24</u>	<u>-31.4</u>	<u>cl</u>

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
Remarks: \_\_\_\_\_  
Purge RATE ~380 ml/min  
Signature [Signature]

# Parametrix, Inc.

Well/Sample #: 1MW-05

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>6/30/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q2</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>Tr. Sawal</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>26.40</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>30</u>	Date Purged	<u>6/30/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1155 - 1213</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>6/30/15 - 1217</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1155</u>		<u>26.54 feet</u>	<u>± 0.1</u>		<u>± 23%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1201</u>	<u>1.8</u>	<u>26.55</u>	<u>6.95</u>	<u>14.41</u>	<u>247</u>	<u>11.66</u>	<u>179.8</u>	<u>N/A clear</u>
<u>1204</u>	<u>2.7</u>	<u>26.56</u>	<u>7.08</u>	<u>14.39</u>	<u>248</u>	<u>14.55</u>	<u>173.0</u>	<u>clear</u>
<u>1207</u>	<u>3.6</u>	<u>26.56</u>	<u>7.06</u>	<u>14.45</u>	<u>248</u>	<u>12.12</u>	<u>172.8</u>	<u>clear</u>
<u>1210</u>	<u>4.5</u>	<u>26.57</u>	<u>7.06</u>	<u>14.44</u>	<u>248</u>	<u>11.46</u>	<u>172.2</u>	<u>clear</u>
<u>1213</u>	<u>5.4</u>	<u>26.58</u>	<u>7.07</u>	<u>14.32</u>	<u>248</u>	<u>10.86</u>	<u>171.6</u>	<u>clear</u>
<u>1217</u>	<u>Sample</u>							

Purge Equipment Peristaltic pump Sampling Equipment Peristaltic pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method		Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Tubing - 29.3  
Remarks:  
Flow Rate 0.5 l/min  
  
  
Signature Tr. Sawal

# Parametrix, Inc.

Well/Sample #: MW-055

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>6/30/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q2</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saml</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>24.26</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>30</u>	Date Purged	<u>6/30/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1409 - 1424</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>6/30/15 - 1428</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1407</u>		<u>24.57</u>	<u>± 0.1</u>		<u>± 3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1415</u>	<u>2.0</u>	<u>24.57</u>	<u>8.58</u>	<u>14.56</u>	<u>306</u>	<u>8.37</u>	<u>162.5</u>	<u>N/A cloud</u>
<u>1418</u>	<u>3.0</u>	<u>24.58</u>	<u>8.50</u>	<u>14.54</u>	<u>307</u>	<u>8.22</u>	<u>161.9</u>	<u>clear</u>
<u>1421</u>	<u>3.9</u>	<u>24.58</u>	<u>8.58</u>	<u>14.55</u>	<u>308</u>	<u>8.15</u>	<u>160.5</u>	<u>clear</u>
<u>1424</u>	<u>4.9</u>	<u>24.59</u>	<u>8.58</u>	<u>14.63</u>	<u>308</u>	<u>7.89</u>	<u>159.9</u>	<u>clear</u>
<u>1428</u>	<u>sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated Bladder pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Top of Pump 25.5

Remarks: calibrated pH - Buffer 7.0 / read 7.83 / calibrated to 6.99 / Buffer 4.0 / read - 5.06 / calibrated to 4.0 // app Buffer 270mV / read - 217.8

Conductivity - Buffer 1413 µS/cm / read - 1604 / calibrated - 1413

DO - 8.70 / Bar - 765.1 / calibrated - 8.03

Flow Rate - 0.325 L/min / 12 sec. off / 8 sec. on / 22 psi

Signature [Signature]

PORT-FD-063015  
MS/MSD

# Parametrix, Inc.

Well/Sample #: VMW-08

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>6/30/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q2</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul</u>

Casing Diameter: (2") 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>24.09'</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>25'</u>	Date Purged	<u>6/30/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u><del>1300</del> 1300 - 1318</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>6/30/15 - 1323</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1248</u>		<u>24.29</u>	<u>± 0.1</u>		<u>± 3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1306</u>	<u>2.1</u>	<u>24.37</u>	<u>8.63</u>	<u>14.31</u>	<u>210</u>	<u>9.43</u>	<u>184.3</u>	<u>N/A clear</u>
<u>1309</u>	<u>3.2</u>	<u>24.38</u>	<u>8.78</u>	<u>14.34</u>	<u>210</u>	<u>9.43</u>	<u>186.6</u>	<u>clear</u>
<u>1312</u>	<u>4.2</u>	<u>24.37</u>	<u>8.87</u>	<u>14.29</u>	<u>211</u>	<u>9.42</u>	<u>184.7</u>	<u>clear</u>
<u>1315</u>	<u>5.25</u>	<u>24.38</u>	<u>8.93</u>	<u>14.34</u>	<u>211</u>	<u>9.58</u>	<u>181.3</u>	<u>clear</u>
<u>1318</u>	<u>6.3</u>	<u>24.38</u>	<u>8.97</u>	<u>14.26</u>	<u>212</u>	<u>9.56</u>	<u>178.9</u>	<u>clear</u>
<u>1323</u>	<u>Sample</u>							

Purge Equipment Peristaltic pump Sampling Equipment Peristaltic pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Tubing 29'

Remarks: Flow Rate: 0.35 L/min

Signature: J. Saul

# Parametrix, Inc.

Well/Sample #: VMW-09

## Groundwater Sampling Field Data Sheet

Project Number	2751940006	Date	6/30/15
Project Name	Port of Vancouver - TCE	Event	2015 Q2
Client Name	Port of Vancouver	Sampled by	J. Saul

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	24.20	Purge Volume Measurement Method	2L cylinder
Depth of Well (feet)	26	Date Purged	6/30/15
Water Column (feet)	N/A	Purge Time (from/to)	1336 - 1351
1 Purge Volume (gals)	N/A	Date/Time Sampled	6/30/15 - 1350
3 Pure Volumes (gals)	N/A		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1335		24.48	±.1		± 3%	± 10%	± 10	
1342	1.8	24.57	8.89	15.19	271	10.13	165.4	N/A clear
1345	2.7	24.58	8.88	15.13	270	10.56	178.0	clear
1348	3.6	24.58	8.89	15.18	268	10.79	178.2	clear
1351	4.5	24.59	8.89	15.14	267	11.08	177.5	clear
1356	Sample							

Purge Equipment Peristaltic pump Sampling Equipment Peristaltic pump

Laboratory	Apex	Date Sent to Lab	
Chain-of-Custody (yes/no)	yes	Field QC Sample Number	
Shipment Method		Split with (name(s)/organization)	N/A

Well Integrity Tubing 28.2'  
 Remarks: Flow Rate - 0.32/min

Signature J. Saul

# Parametrix, Inc.

Well/Sample #: VMW-10

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>6/30/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q2</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul</u>

Casing Diameter: (2) 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>26.52'</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>28'</u>	Date Purged	<u>6/30/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1126 - 1141</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>6/30/15 1146</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1126</u>		<u>26.66</u>	<u>± 0.1</u>		<u>± 0.3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1132</u>	<u>1.86</u>	<u>26.67</u>	<u>6.61</u>	<u>14.52</u>	<u>274</u>	<u>13.88</u>	<u>189.5</u>	<u>N/A clear</u>
<u>1135</u>	<u>2.8</u>	<u>26.67</u>	<u>6.80</u>	<u>14.52</u>	<u>272</u>	<u>14.79</u>	<u>182.8</u>	<u>clear</u>
<u>1138</u>	<u>3.7</u>	<u>26.68</u>	<u>6.81</u>	<u>14.57</u>	<u>271</u>	<u>14.03</u>	<u>181.3</u>	<u>clear</u>
<u>1141</u>	<u>4.7</u>	<u>26.69</u>	<u>6.82</u>	<u>14.49</u>	<u>271</u>	<u>13.83</u>	<u>178.7</u>	<u>clear</u>
<u>1146</u>	<u>Sample</u>							

Purge Equipment Peristaltic pump Sampling Equipment Peristaltic pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Tubing 28.8"

Remarks: Flow rate - 0.31 L/min

Signature I. Saul

# Parametrix, Inc.

Well/Sample #: VMW-11

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>6/30/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q2</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Scull</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>25.45</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>28</u>	Date Purged	<u>6/30/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1039 - 1112</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>6/30/15 / 1118</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1039</u>	<u>(2) gal</u>		<u>7.01</u>		<u>+3%</u>	<u>7.10%</u>	<u>7-10</u>	<u>25.44</u>
<u>1045</u>	<u>0.5 (8)</u>	<u>25.51</u>	<u>4.70</u>	<u>14.87</u>	<u>267</u>	<u>8.34</u>	<u>285.7</u>	<u>N/A Clear</u>
<u>1048</u>	<u>2.7</u>	<u>25.51</u>	<u>4.96</u>	<u>14.82</u>	<u>267</u>	<u>8.73</u>	<u>267.8</u>	<u>Clear</u>
<u>1051</u>	<u>3.4</u>	<u>25.52</u>	<u>5.35</u>	<u>14.72</u>	<u>267</u>	<u>9.25</u>	<u>247.6</u>	<u>Clear</u>
<u>1054</u>	<u>4.5</u>	<u>25.52</u>	<u>5.73</u>	<u>14.80</u>	<u>267</u>	<u>9.18</u>	<u>227.9</u>	<u>Clear</u>
<u>1057</u>	<u>5.4</u>	<u>25.53</u>	<u>6.02</u>	<u>14.68</u>	<u>267</u>	<u>9.30</u>	<u>215.5</u>	<u>Clear</u>
<u>1100</u>	<u>6.3</u>	<u>25.53</u>	<u>6.20</u>	<u>14.70</u>	<u>267</u>	<u>9.42</u>	<u>207.8</u>	<u>Clear</u>
<u>1103</u>	<u>7.2</u>	<u>25.53</u>	<u>6.34</u>	<u>14.72</u>	<u>267</u>	<u>9.53</u>	<u>201.4</u>	<u>Clear</u>
<u>1106</u>	<u>8.1</u>	<u>25.53</u>	<u>6.45</u>	<u>14.70</u>	<u>268</u>	<u>9.76</u>	<u>196.0</u>	<u>Clear</u>
<u>1109</u>	<u>9.0</u>	<u>25.54</u>	<u>6.51</u>	<u>14.64</u>	<u>268</u>	<u>9.88</u>	<u>193.0</u>	<u>Clear</u>
<u>1112</u>	<u>9.9</u>	<u>25.54</u>	<u>6.58</u>	<u>14.73</u>	<u>268</u>	<u>9.85</u>	<u>189.8</u>	<u>Clear</u>

Purge Equipment Peristaltic pump Sampling Equipment Peristaltic pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method		Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Tubing - 29.6  
Remarks:  
Flow Rate 0.3 L/min  
  
  
Signature L. Scull

# Parametrix, Inc.

Well/Sample #: CM-MW-28USA-050

## Groundwater Sampling Field Data Sheet

Project Number	2751940006	Date	9/2/15
Project Name	Port of Vancouver - TCE	Event	2015 Q3
Client Name	Port of Vancouver	Sampled by	I. Saul / A. Romey

Casing Diameter: 2" 4" Other Multi point

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	2L cylinder
Depth of Well (feet)	<u>.</u>	Date Purged	9/2/15
Water Column (feet)	N/A	Purge Time (from/to)	1019 - <del>1050</del> 1048
1 Purge Volume (gals)	N/A	Date/Time Sampled	9/2/15 1050
3 Pure Volumes (gals)	N/A		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			+/- .1		+/- 3%	+/- 10%	+/- 10	clear
1024	0.9	—	6.84	17.90	366	11.80	41.0	N/A
1027	1.5	—	7.03	17.94	370	11.18	55.0	clear
1030	2.0	—	6.98	18.11	372	10.90	55.0	clear
1033	2.3	—	6.87	18.42	371	10.50	55.3	clear
1036	2.6	—	6.64	19.18	370	10.26	55.1	clear
1039	2.9	—	6.55	19.35	369	8.90	56.6	clear
1042	3.1	—	6.48	19.63	369	7.08	56.9	clear
1045	3.6	—	6.46	19.82	369	6.33	59.4	clear
1048	4.0	—	6.44	19.89	369	5.74	62.8	clear
1050	SAMPLE							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	Apex	Date Sent to Lab	9/4/15
Chain-of-Custody (yes/no)	yes	Field QC Sample Number	
Shipment Method	Courier	Split with (name(s)/organization)	N/A

Well Integrity \_\_\_\_\_

Remarks:  
Tank ps 2 2000 psi  
USED COMPRESSOR - on 7.5 sec / off, 12.5 sec / 30  
it took ~ 10 min for well & pumping to stabilize. GW low, I was  
pumping Air & GW until I found a happy medium to the pump flow.  
 Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-28USA-120.5

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other Multi Port

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1058 - 1120</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 1128</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>± 0.1</u>		<u>± 3%</u>	<u>± 0%</u>	<u>± 10</u>	<u>Clear</u>
<u>1105</u>	<u>2.2</u>	<u>—</u>	<u>6.64</u>	<u>16.08</u>	<u>812</u>	<u>2.44</u>	<u>7.2</u>	<u>N/A</u>
<u>1108</u>	<u>3.2</u>	<u>—</u>	<u>6.55</u>	<u>15.99</u>	<u>813</u>	<u>2.24</u>	<u>37.1</u>	<u>Clear</u>
<u>1111</u>	<u>4.4</u>	<u>—</u>	<u>6.54</u>	<u>15.80</u>	<u>813</u>	<u>1.74</u>	<u>54.9</u>	<u>Clear</u>
<u>1114</u>	<u>5.6</u>	<u>—</u>	<u>6.53</u>	<u>15.67</u>	<u>813</u>	<u>1.26</u>	<u>58.4</u>	<u>Clear</u>
<u>1117</u>	<u>6.8</u>	<u>—</u>	<u>6.53</u>	<u>15.63</u>	<u>813</u>	<u>1.04</u>	<u>55.5</u>	<u>Clear</u>
<u>1120</u>	<u>8.0</u>	<u>—</u>	<u>6.53</u>	<u>15.56</u>	<u>813</u>	<u>0.65</u>	<u>51.1</u>	<u>Clear</u>
<u>1123</u>	<u>9.2</u>	<u>—</u>	<u>6.54</u>	<u>15.64</u>	<u>813</u>	<u>0.83</u>	<u>51.2</u>	<u>Clear</u>
<u>1126</u>	<u>10.4</u>	<u>—</u>	<u>6.54</u>	<u>15.58</u>	<u>813</u>	<u>0.51</u>	<u>53.8</u>	<u>Clear</u>
<u>1128</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/2/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>—</u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.4 l/min

Remarks:

USED Compressor

ON - 7sec, OFF 13sec, 55 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-28USA-180

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other multiport

Depth to Water (feet)	<u>        </u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>        </u>	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1133 - 1159</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 - 1201</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS) <sub>30s</sub>	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1138</u>	<u>0.8</u>	<u>        </u>	<u>7.01</u>	<u>16.07</u>	<u>902</u>	<u>2.32</u>	<u>51.4</u>	<u>clear</u> <u>N/A</u>
<u>1141</u>	<u>1.8</u>	<u>        </u>	<u>7.06</u>	<u>15.96</u>	<u>901</u>	<u>1.16</u>	<u>37.6</u>	<u>clear</u>
<u>1144</u>	<u>3.0</u>	<u>        </u>	<u>7.13</u>	<u>15.83</u>	<u>901</u>	<u>0.53</u>	<u>26.1</u>	<u>clear</u>
<u>1147</u>	<u>4.0</u>	<u>        </u>	<u>7.16</u>	<u>15.81</u>	<u>896</u>	<u>0.51</u>	<u>36.6</u>	<u>clear</u>
<u>1150</u>	<u>5.0</u>	<u>        </u>	<u>7.19</u>	<u>15.71</u>	<u>891</u>	<u>0.43</u>	<u>52.2</u>	<u>clear</u>
<u>1153</u>	<u>6.0</u>	<u>        </u>	<u>7.20</u>	<u>15.63</u>	<u>886</u>	<u>0.30</u>	<u>58.4</u>	<u>clear</u>
<u>1156</u>	<u>7.0</u>	<u>        </u>	<u>7.21</u>	<u>15.65</u>	<u>881</u>	<u>0.32</u>	<u>61.4</u>	<u>clear</u>
<u>1159</u>	<u>8.0</u>	<u>        </u>	<u>7.23</u>	<u>15.67</u>	<u>876</u>	<u>0.30</u>	<u>60.8</u>	<u>clear</u>
<u>1201</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>        </u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate 0.35 l/min

Remarks: on - 7Sec / off 13Sec / Pressure - 60psi

Signature

# Parametrix, Inc.

Well/Sample #: CM-MW-18i

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>19.79</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1246 - 1312</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 - 1314</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1251	1.3	20.59	7.30	15.08	711	1.99	3.7	Clear N/A
1254	2.3	20.65	7.31	14.61	730	1.11	53.2	Clear
1257	3.2	20.66	7.33	14.43	732	1.04	58.4	Clear
1300	4.3	20.67	7.34	14.32	725	0.79	56.6	Clear
1303	5.3	20.68	7.32	14.30	679	0.70	34.4	Clear
1306	6.3	20.67	7.31	14.26	649	0.46	21.5	Clear
1309	7.3	20.67	7.31	14.24	655	0.51	23.7	Clear
1312	8.3	20.67	7.32	14.24	663	0.30	27.0	Clear
1314	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity flow rate - 0.325 l/min

Remarks:  
Tank pressure - 2100 psf,  
on - 75 sec / off - 12.5 sec / 30 psf

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-18d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>19.98</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1408 - 1425</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 - 1427</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1413</u>		<u>20.0</u>	<u>7.08</u>	<u>14.60</u>	<u>587</u>	<u>1.54</u>	<u>43.9</u>	<u>clear</u> N/A
<u>1416</u>	<u>2.7</u>	<u>19.44</u>	<u>7.13</u>	<u>14.44</u>	<u>589</u>	<u>1.00</u>	<u>44.1</u>	<u>clear</u>
<u>1419</u>	<u>3.3</u>	<u>19.44</u>	<u>7.20</u>	<u>14.44</u>	<u>593</u>	<u>0.89</u>	<u>43.9</u>	<u>clear</u>
<u>1422</u>		<u>20.00</u>	<u>7.26</u>	<u>14.51</u>	<u>596</u>	<u>0.66</u>	<u>46.4</u>	<u>clear</u>
<u>1425</u>	<u>5.2</u>	<u>20.00</u>	<u>7.27</u>	<u>14.52</u>	<u>596</u>	<u>0.58</u>	<u>45.8</u>	<u>clear</u>
<u>1427</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity flow rate - 0.34 l/min

Remarks: compression

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CN1-MW-195

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Saul / A. Romey</u>

Casing Diameter: 2"    4"    Other \_\_\_\_\_

Depth to Water (feet)	<u>26.66</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>26.67</u>	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1615 - 1624</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 - 1631</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>± 0.1</u>		<u>± 3%</u>	<u>± 10%</u>	<u>± 10</u>	<u>clear</u>
<u>1620</u>	<u>1.1</u>	<u>26.67</u>	<u>6.78</u>	<u>16.44</u>	<u>327</u>	<u>7.41</u>	<u>70.9</u>	<u>N/A</u>
<u>1623</u>	<u>2.0</u>	<u>26.66</u>	<u>6.77</u>	<u>16.21</u>	<u>328</u>	<u>7.59</u>	<u>70.5</u>	<u>clear</u>
<u>1626</u>	<u>3.0</u>	<u>26.67</u>	<u>6.79</u>	<u>16.11</u>	<u>326</u>	<u>7.70</u>	<u>71.1</u>	<u>clear</u>
<u>1629</u>	<u>3.9</u>	<u>26.68</u>	<u>6.78</u>	<u>16.02</u>	<u>326</u>	<u>7.80</u>	<u>70.5</u>	<u>clear</u>
<u>1631</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump    Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.33 L/min

Remarks: Tank Pressure - 1700 PSI  
on 7 sec / off 13 sec / 20 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-191

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>26.85</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1654 - 1710</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 - 1713</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>7.01</u>		<u>± 3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1701</u>	<u>1.1</u>	<u>26.86</u>	<u>6.60</u>	<u>15.29</u>	<u>345</u>	<u>4.37</u>	<u>72.5</u>	<u>cloudy</u> <u>N/A</u>
<u>1704</u>	<u>2.0</u>	<u>26.87</u>	<u>6.55</u>	<u>14.86</u>	<u>349</u>	<u>4.74</u>	<u>70.1</u>	<u>cloudy</u>
<u>1707</u>	<u>3.0</u>	<u>26.87</u>	<u>6.56</u>	<u>14.75</u>	<u>357</u>	<u>4.80</u>	<u>67.4</u>	<u>cloudy</u>
<u>1710</u>	<u>3.9</u>	<u>26.88</u>	<u>6.56</u>	<u>14.61</u>	<u>362</u>	<u>4.85</u>	<u>66.2</u>	<u>cloudy</u>
<u>1713</u>	<u>Sample</u>							<u>cloudy</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate 0.325 L/min

Remarks:  
Tank Pressure - 1600 psi  
7 sec on / 13 sec off / 40 psi

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-19d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>29.24</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1732 - 1749</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 1751</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>± 0.1</u>		<u>± 3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1737</u>	<u>0.8</u>	<u>29.24</u>	<u>7.32</u>	<u>14.86</u>	<u>583</u>	<u>1.81</u>	<u>34.8</u>	<u>clear N/A</u>
<u>1740</u>	<u>1.7</u>	<u>29.20</u>	<u>7.31</u>	<u>14.20</u>	<u>583</u>	<u>1.09</u>	<u>33.6</u>	<u>clear</u>
<u>1743</u>	<u>2.6</u>	<u>29.22</u>	<u>7.28</u>	<u>13.99</u>	<u>586</u>	<u>0.87</u>	<u>31.6</u>	<u>clear</u>
<u>1746</u>	<u>3.6</u>	<u>29.22</u>	<u>7.27</u>	<u>13.78</u>	<u>589</u>	<u>0.74</u>	<u>29.8</u>	<u>clear</u>
<u>1749</u>	<u>4.6</u>	<u>29.20</u>	<u>7.29</u>	<u>13.69</u>	<u>590</u>	<u>0.68</u>	<u>29.5</u>	<u>clear</u>
<u>1751</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.325 L/min

Remarks:  
Tank Pressure - 1500 psi  
7 Sec. on / 13 Sec. off / 50 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-245

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>19.89</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1451 - 1502</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 - 1504</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1456</u>	<u>1.3</u>	<u>19.90</u>	<u>6.41</u>	<u>15.84</u>	<u>279</u>	<u>7.24</u>	<u>61.8</u>	<u>N/A</u>
<u>1459</u>	<u>2.2</u>	<u>19.90</u>	<u>6.42</u>	<u>15.57</u>	<u>278</u>	<u>6.90</u>	<u>60.8</u>	<u>clear</u>
<u>1502</u>	<u>3.0</u>	<u>19.90</u>	<u>6.40</u>	<u>15.47</u>	<u>278</u>	<u>7.04</u>	<u>61.0</u>	<u>clear</u>
<u>1504</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.32 l/min.

Remarks: Tank Pressure - 1800 psf  
7 sec. on - / 13 sec off / 20 psf

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: 211-MW-241

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>(i. Saul) / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>20.43</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1527-1547</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 1549</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1532</u>	<u>1.4</u>	<u>20.45</u>	<u>6.59</u>	<u>15.86</u>	<u>759</u>	<u>2.46</u>	<u>75.2</u>	<u>Clear N/A</u>
<u>1535</u>	<u>2.3</u>	<u>20.45</u>	<u>6.55</u>	<u>15.20</u>	<u>765</u>	<u>1.76</u>	<u>74.5</u>	<u>clear</u>
<u>1538</u>	<u>3.2</u>	<u>20.45</u>	<u>6.54</u>	<u>14.94</u>	<u>767</u>	<u>1.35</u>	<u>69.9</u>	<u>clear</u>
<u>1541</u>	<u>4.1</u>	<u>20.45</u>	<u>6.54</u>	<u>14.91</u>	<u>768</u>	<u>1.04</u>	<u>66.4</u>	<u>clear</u>
<u>1544</u>	<u>5.0</u>	<u>20.46</u>	<u>6.54</u>	<u>14.81</u>	<u>769</u>	<u>0.90</u>	<u>64.2</u>	<u>clear</u>
<u>1547</u>	<u>5.9</u>	<u>20.46</u>	<u>6.54</u>	<u>14.69</u>	<u>770</u>	<u>0.70</u>	<u>59.7</u>	<u>clear</u>
<u>1549</u>	<u>Sample</u>							<u>clear</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.315 L/min

Remarks: Tank Pressure - 1800psi  
7sec on / 13 sec off / 40psi

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-046S

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>Dry / WL Below top of pump.</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1032</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1035</u>	<u>Dry</u>	<u>No water to pump.</u>						<u>N/A</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-04

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>25.21</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0955 - 1009</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 - 1011</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1000</u>	<u>1.1</u>	<u>25.19</u>	<u>6.89</u>	<u>14.36</u>	<u>338</u>	<u>4.03</u>	<u>-71.1</u>	<u>clear</u> <u>N/A</u>
<u>1003</u>	<u>2.0</u>	<u>25.19</u>	<u>6.84</u>	<u>13.88</u>	<u>337</u>	<u>4.47</u>	<u>-62.4</u>	<u>clear</u>
<u>1006</u>	<u>3.0</u>	<u>25.19</u>	<u>6.84</u>	<u>13.60</u>	<u>338</u>	<u>4.68</u>	<u>-58.6</u>	<u>clear</u>
<u>1009</u>	<u>4.0</u>	<u>25.19</u>	<u>6.84</u>	<u>13.46</u>	<u>340</u>	<u>4.50</u>	<u>-54.1</u>	<u>clear</u>
<u>1011</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.3 L/min

Remarks: compressor  
7 sec on / 13 sec off / 40 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-055

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>Dry / water below top of pump</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1245 - 1259</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 - 1302</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) $\pm 0.1$	Temp. (°C)	EC ( $\mu$ S) $\pm 3\%$	DO (mg/L) $\pm 10\%$	Redox (mV) $\pm 10$	Turb. (visual)
<u>1250</u>	<del>0.0</del>	<del>0.0</del>	<del>6.43</del>	<del>14.93</del>	<del>231</del>	<del>7.43</del>	<del>-15.0</del>	<u>N/A</u>
<u>1253</u>	<u>1.4</u>	<u>-</u>	<u>6.43</u>	<u>14.93</u>	<u>231</u>	<u>7.43</u>	<u>-15.0</u>	<u>clear</u>
<u>1256</u>	<u>2.4</u>	<u>-</u>	<u>6.44</u>	<u>14.61</u>	<u>229</u>	<u>6.88</u>	<u>-13.6</u>	<u>clear</u>
<u>1259</u>	<u>3.5</u>	<u>-</u>	<u>6.44</u>	<u>14.57</u>	<u>228</u>	<u>6.86</u>	<u>-17.9</u>	<u>clear</u>
<u>1302</u>	<u>Sample</u>							<u>clear</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity 0.355 l/min

Remarks: Compressor on 3 sec / off 7 sec /

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-051

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>21.94</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1201 - 1218</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 - 1220</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1206</u>	<u>1.2</u>	<u>21.94</u>	<u>6.39</u>	<u>14.18</u>	<u>351</u>	<u>2.19</u>	<u>-8.6</u>	<u>clear N/A</u>
<u>1209</u>	<u>2.1</u>	<u>21.95</u>	<u>6.39</u>	<u>13.94</u>	<u>369</u>	<u>1.80</u>	<u>-7.6</u>	<u>clear</u>
<u>1212</u>	<u>3.0</u>	<u>21.97</u>	<u>6.40</u>	<u>13.85</u>	<u>371</u>	<u>1.70</u>	<u>-7.0</u>	<u>clear</u>
<u>1215</u>	<u>3.9</u>	<u>21.97</u>	<u>6.41</u>	<u>13.80</u>	<u>371</u>	<u>1.39</u>	<u>-6.5</u>	<u>clear</u>
<u>1218</u>	<u>4.8</u>	<u>21.97</u>	<u>6.42</u>	<u>13.76</u>	<u>370</u>	<u>1.21</u>	<u>-7.8</u>	<u>clear</u>
<u>1220</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.3 L/min

Remarks:  
compressor  
7 sec ON / 13 sec OFF / 40 PSI  
FD  
MS/MSD & Dup. CM-~~25~~-090315 @ 0000

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-05d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>2.86</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1107 - 1133</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 - 1135</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ±0.1	Temp. (°C)	EC (µS) ± 30	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1102</u>	<u>0.7</u>	<u>21.84</u>	<u>7.92</u>	<u>14.74</u>	<u>823</u>	<u>1.59</u>	<u>-40.1</u>	<u>clear</u> <u>N/A</u>
<u>1115</u>	<u>1.5</u>	<u>21.84</u>	<u>8.06</u>	<u>14.17</u>	<u>745</u>	<u>0.98</u>	<u>-32.3</u>	<u>clear</u>
<u>1118</u>	<u>2.4</u>	<u>21.84</u>	<u>7.92</u>	<u>14.04</u>	<u>674</u>	<u>0.70</u>	<u>-28.9</u>	<u>clear</u>
<u>1121</u>	<u>3.1</u>	<u>21.84</u>	<u>7.72</u>	<u>14.12</u>	<u>702</u>	<u>0.67</u>	<u>-27.0</u>	<u>clear</u>
<u>1124</u>	<u>3.8</u>	<u>21.85</u>	<u>7.68</u>	<u>13.97</u>	<u>722</u>	<u>0.58</u>	<u>-28.6</u>	<u>clear</u>
<u>1127</u>	<u>4.8</u>	<u>21.86</u>	<u>7.58</u>	<u>13.85</u>	<u>731</u>	<u>0.50</u>	<u>-24.9</u>	<u>clear</u>
<u>1130</u>	<u>5.7</u>	<u>21.86</u>	<u>7.56</u>	<u>13.80</u>	<u>732</u>	<u>0.47</u>	<u>-24.3</u>	<u>clear</u>
<u>1133</u>	<u>6.6</u>	<u>21.86</u>	<u>7.54</u>	<u>13.79</u>	<u>733</u>	<u>0.49</u>	<u>-28.5</u>	<u>clear</u>
<u>1135</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.3 L/min

Remarks:  
Compressor  
7 sec on / 13 sec off / 45 psi

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-285

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul / A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>19.64 - right above the top of pump</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1412</u> →
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
								N/A
<u>Not enough flow / GW level to pump or sample. less than 0.25 el cycle pumped.</u>								

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks:

(Tank Pressure 1200 psi) Compressor

2.2 sec. on / 7.8 sec. off / 15-20 psi

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CN-MW-265

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>21.93</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1333 - 1347</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 - 1350</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1338</u>	<u>1.5</u>	<u>21.92</u>	<u>6.47</u>	<u>14.63</u>	<u>254</u>	<u>4.15</u>	<u>46.0</u>	<u>Clear N/A</u>
<u>1341</u>	<u>2.5</u>	<u>21.93</u>	<u>6.49</u>	<u>14.33</u>	<u>259</u>	<u>3.67</u>	<u>22.1</u>	<u>Clear</u>
<u>1344</u>	<u>3.4</u>	<u>21.94</u>	<u>6.49</u>	<u>14.13</u>	<u>261</u>	<u>3.50</u>	<u>14.0</u>	<u>Clear</u>
<u>1347</u>	<u>4.4</u>	<u>21.95</u>	<u>6.49</u>	<u>14.04</u>	<u>261</u>	<u>3.39</u>	<u>12.1</u>	<u>Clear</u>
<u>1350</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/4/15</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.34 l/min

Remarks:  
Tank pressure 1300 psi  
10 sec on 14 sec off 20 psi

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-3/15

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>19.32</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1745 - 1759</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1801</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1750	1.0	19.33	6.47	14.72	187	7.44	-81.6	Clear N/A
1753	1.8	19.36	6.48	14.60	184	7.53	-82.9	Clear
1756	2.7	19.38	6.48	14.49	184	7.65	-83.5	Clear
1759	3.5	19.36	6.48	14.47	185	7.66	-83.2	Clear
1801	Sample							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.3 L/min

Remarks:  
Tank Pressure ~ 100 PSF  
5 Sec on / 10 Sec OFF / 15 PSF

Signature \_\_\_\_\_

1111 1111

# Parametrix, Inc.

Well/Sample #: CM-MW-D1d-040

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul A. Romey</u>

Casing Diameter: 2" 4" Other multiphet

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1454 - 1508</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1510</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) $\pm 0.1$	Temp. (°C)	EC ( $\mu$ S) $\pm 3\%$	DO (mg/L) $\pm 10\%$	Redox (mV) $\pm 10$	Turb. (visual)
<u>1459</u>	<u>0.6</u>	<u>—</u>	<u>6.42</u>	<u>15.17</u>	<u>231</u>	<u>2.70</u>	<u>-161.3</u>	<u>Clear N/A</u>
<u>1502</u>	<u>1.3</u>	<u>—</u>	<u>6.38</u>	<u>14.75</u>	<u>235</u>	<u>2.39</u>	<u>-166.8</u>	<u>Clear</u>
<u>1505</u>	<u>2.0</u>	<u>—</u>	<u>6.37</u>	<u>14.66</u>	<u>235</u>	<u>2.00</u>	<u>-168.7</u>	<u>Clear</u>
<u>1508</u>	<u>2.7</u>	<u>—</u>	<u>6.37</u>	<u>14.47</u>	<u>236</u>	<u>1.82</u>	<u>-170.2</u>	<u>clear</u>
<u>1510 Sample</u>								

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>—</u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.25 l/min

Remarks: Tank Pressure - 800 PSI

10 Sec on / 10 Sec off / 20 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-Ø1d-121

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul/A. Romey</u>

Casing Diameter: 2" 4" Other multiple

Depth to Water (feet)	_____	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1529 - 1536</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1538</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1524</u>	<u>0.8</u>	<u>-</u>	<u>6.58</u>	<u>15.33</u>	<u>562</u>	<u>1.12</u>	<u>-190.1</u>	<u>Clear N/A</u>
<u>1527</u>	<u>1.4</u>	<u>-</u>	<u>6.50</u>	<u>15.01</u>	<u>568</u>	<u>0.83</u>	<u>-192.1</u>	<u>clear</u>
<u>1530</u>	<u>2.1</u>	<u>-</u>	<u>6.48</u>	<u>14.76</u>	<u>569</u>	<u>0.68</u>	<u>-192.7</u>	<u>clear</u>
<u>1533</u>	<u>2.8</u>	<u>-</u>	<u>6.48</u>	<u>14.84</u>	<u>569</u>	<u>0.61</u>	<u>-191.2</u>	<u>clear</u>
<u>1536</u>	<u>3.4</u>	<u>-</u>	<u>6.49</u>	<u>14.74</u>	<u>570</u>	<u>0.56</u>	<u>-190.3</u>	<u>clear</u>
<u>1538</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.32 l/min

Remarks: Tank pressure - 800 PSI

10 sec on / 10 sec off / 30 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-Ø1d-161

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other Multiport

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1543 - 1402</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1404</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ±0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 0%	Redox (mV) ± 10	Turb. (visual)
1553	0.9	—	7.02	14.06	727	1.30	-187.7	Clean N/A
1556	1.6	—	6.93	13.73	739	0.73	-188.9	Clean
1559	2.4	—	6.91	13.60	741	0.55	-188.5	Clean
1402	3.1	—	6.41	13.55	741	0.46	-188.7	Clean
<u>1404 Sample</u>								

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u> </u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.275 l/min

Remarks:  
Tank Pressure 700 PSI  
To see on / 10 sec off / 40 PSI

Signature

# Parametrix, Inc.

Well/Sample #: CM-MW-01d-194

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>A. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other Multiport

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1613 - 1630</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1632</u>
3 Purge Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1618</u>	<u>0.9</u>	<u>—</u>	<u>7.17</u>	<u>14.01</u>	<u>738</u>	<u>1.16</u>	<u>-188.8</u>	<u>Clear</u>
<u>1621</u>	<u>1.5</u>	<u>—</u>	<u>7.09</u>	<u>13.86</u>	<u>729</u>	<u>0.66</u>	<u>-191.7</u>	<u>Clear</u>
<u>1624</u>	<u>2.1</u>	<u>—</u>	<u>7.07</u>	<u>13.66</u>	<u>726</u>	<u>0.45</u>	<u>-193.1</u>	<u>Clear</u>
<u>1627</u>	<u>2.8</u>	<u>—</u>	<u>7.06</u>	<u>13.63</u>	<u>726</u>	<u>0.41</u>	<u>-193.4</u>	<u>Clear</u>
<u>1630</u>	<u>3.8</u>	<u>—</u>	<u>7.06</u>	<u>13.61</u>	<u>725</u>	<u>0.37</u>	<u>-193.6</u>	<u>Clear</u>
<u>1632</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>—</u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.275 l/min

Remarks: Tank Pressure - 600 PSI

.12 sec on / 8 sec off / 50 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-Ø1d-224

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>C. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other multi port

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1642 - 1654</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1701</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1647	0.9	—	7.27	13.55	697	1.15	-191.1	Clear N/A
1650	1.7	—	7.20	13.38	694	0.70	-192.2	Clear
1653	2.5	—	7.17	13.23	694	0.51	-194.0	Clear
1656	3.3	—	7.17	13.20	694	0.43	-194.8	Clear
1659	4.1	—	7.17	13.15	694	0.39	-195.2	Clear
1701	Sample							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>—</u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.31 l/min

Remarks:  
Tank Pressure - 500 PSI  
12 sec on / 10 sec off / 65 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-035

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>Dry / water level below top of pump</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1415 - 1429</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1431</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1420</u>	<u>1.4</u>	<u>—</u>	<u>6.72</u>	<u>15.53</u>	<u>128</u>	<u>8.72</u>	<u>-119.2</u>	<u>clear</u>
<u>1423</u>	<u>2.3</u>	<u>—</u>	<u>6.71</u>	<u>15.26</u>	<u>130</u>	<u>7.81</u>	<u>-118.1</u>	<u>clear</u>
<u>1426</u>	<u>3.2</u>	<u>—</u>	<u>6.71</u>	<u>15.14</u>	<u>133</u>	<u>7.94</u>	<u>-117.7</u>	<u>clear</u>
<u>1429</u>	<u>4.0</u>	<u>—</u>	<u>6.71</u>	<u>15.11</u>	<u>137</u>	<u>7.87</u>	<u>-117.2</u>	<u>clear</u>
<u>1431</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.31 l/min

Remarks:  
Tank Pressure - 900 PSI  
4 Sec on / 16 Sec off / 20 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-Ø3d-100

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other multiport

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1335 - 1350</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1352</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>± 0.1</u>		<u>± 3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1340</u>	<u>1.3</u>	<u>—</u>	<u>6.48</u>	<u>14.14</u>	<u>423</u>	<u>1.36</u>	<u>-175.4</u>	<u>clear</u> <u>N/A</u>
<u>1343</u>	<u>2.4</u>	<u>—</u>	<u>6.46</u>	<u>13.81</u>	<u>426</u>	<u>1.05</u>	<u>-177.5</u>	<u>clear</u>
<u>1347</u>	<u>3.5</u>	<u>—</u>	<u>6.46</u>	<u>13.84</u>	<u>427</u>	<u>0.96</u>	<u>-179.8</u>	<u>clear</u>
<u>1350</u>	<u>4.6</u>	<u>—</u>	<u>6.46</u>	<u>13.70</u>	<u>428</u>	<u>0.88</u>	<u>-180.2</u>	<u>clear</u>
<u>1352</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>—</u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.35 l/min

Remarks:  
Compressor  
9 sec on / 11 sec off / 40 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-03d-141

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other Multipoint

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1313 - 1327</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1329</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1318	1.4	—	6.58	14.11	676	1.22	-183.5	Clear N/A
1321	2.4	—	6.54	13.98	678	0.85	-186.0	clear
1324	3.4	—	6.53	13.80	678	0.74	-186.5	clear
1327	4.4	—	6.53	13.74	678	0.69	-186.6	clear
1329	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u> </u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.135 L/min

Remarks:  
Compressor  
9 Sec on / 11 Sec off / 55 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-03d-181

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>J. Saud / A. Romey</u>

Casing Diameter: 2" 4" Other multiport

Depth to Water (feet)	<u>—</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	<u>—</u>	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1249 - 1303</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1205</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1254	1.3	—	7.08	14.27	602	1.40	-176.4	N/A
1257	2.2	—	7.01	14.01	601	0.43	-185.8	clear
1300	3.1	—	7.00	13.45	599	0.81	-188.1	clear
1303	4.0	—	6.99	13.88	597	0.68	-189.2	clear
1305	Sample							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>—</u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.32 L/min

Remarks:  
Compressor  
9 sec on / 11 sec off / 75 PSI

Signature —

# Parametrix, Inc.

Well/Sample #: CM-MW-23d-227

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul A. Romey</u>

Casing Diameter:	<u>4"</u>	Other	<u>multiple</u>
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Depth to Water (feet)		Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1225 - 1240</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1242</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1231</u>	<u>1.2</u>	<u>-</u>	<u>7.21</u>	<u>14.48</u>	<u>693</u>	<u>3.14</u>	<u>-178.4</u>	<u>clear</u>
<u>1234</u>	<u>2.0</u>	<u>-</u>	<u>7.17</u>	<u>14.26</u>	<u>687</u>	<u>7.11</u>	<u>-185.1</u>	<u>clear</u>
<u>1237</u>	<u>2.8</u>	<u>-</u>	<u>7.16</u>	<u>14.16</u>	<u>687</u>	<u>0.91</u>	<u>-185.9</u>	<u>clear</u>
<u>1240</u>	<u>3.8</u>	<u>-</u>	<u>7.17</u>	<u>14.13</u>	<u>687</u>	<u>0.77</u>	<u>-185.7</u>	<u>clear</u>
<u>1242</u>	<u>Sample</u>							

Purge Equipment	<u>Dedicated Bladder Pump</u>	Sampling Equipment	<u>Dedicated Bladder Pump</u>
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Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity	<u>Flow Rate - 0.280 l/min</u>
Remarks:	<u>Compressor</u>
	<u>9 sec on / 11 sec off / 65 psi</u>
Signature	

# Parametrix, Inc.

Well/Sample #: CM-MW-225

## Groundwater Sampling Field Data Sheet

Project Number	2751940006	Date	9/4/15
Project Name	Port of Vancouver - TCE	Event	2015 Q3
Client Name	Port of Vancouver	Sampled by	I. Saul / A. Romey

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	19.37	Purge Volume Measurement Method	2L cylinder
Depth of Well (feet)		Date Purged	9/4/15
Water Column (feet)	N/A	Purge Time (from/to)	1715 - 1732
1 Purge Volume (gals)	N/A	Date/Time Sampled	9/4/15 - 1734
3 Pure Volumes (gals)	N/A		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1720	1.1	19.39	6.47	14.48	245	2.91	-175.2	Clear N/A
1723	1.9	19.39	6.45	14.04	248	2.08	-176.1	Clear
1726	2.7	19.39	6.45	13.44	249	1.85	-175.2	clear
1729	3.6	19.39	6.45	13.85	249	1.69	-174.3	clear
1732	4.5	19.40	6.45	13.80	249	1.60	-172.9	clear
1734	Sample							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	Apex	Date Sent to Lab	9/8/16
Chain-of-Custody (yes/no)	yes	Field QC Sample Number	
Shipment Method	Courier	Split with (name(s)/organization)	N/A

Well Integrity Flow rate - 0.28

Remarks:  
Tank pressure - 200 PSI  
8 sec. on / 7 sec. off / 20 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-VE-09

## Groundwater Sampling Field Data Sheet

Project Number	2751940006	Date	9/4/15
Project Name	Port of Vancouver - TCE	Event	2015 Q3
Client Name	Port of Vancouver	Sampled by	I. Saul / A. Romey

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	18.80	Purge Volume Measurement Method	2L cylinder
Depth of Well (feet)	<del>23.0</del>	Date Purged	9/4/15
Water Column (feet)	N/A	Purge Time (from/to)	1113 - 1127
1 Purge Volume (gals)	N/A	Date/Time Sampled	9/4/15 - 1129
3 Pure Volumes (gals)	N/A		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ±0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 0.2	Redox (mV) ± 10	Turb. (visual)
1118	0.5	18.89	6.62	15.39	252	6.06	-107.2	clear N/A
1121	1.1	18.89	6.59	15.24	254	5.89	-107.9	clear
1124	1.7	18.89	6.59	15.16	256	5.80	-108.2	clear
1127	2.3	18.89	6.58	15.11	256	5.70	-108.2	clear
1129	sample							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	Apex	Date Sent to Lab	9/8/16
Chain-of-Custody (yes/no)	yes	Field QC Sample Number	
Shipment Method	Courier	Split with (name(s)/organization)	N/A

Well Integrity Cadet warehouse / Flow rate - 0.12 L/min

Remarks:

Tank pressure - 200 PSI

4 Sec. ON / 6 Sec OFF / 15 PSI

Signature \_\_\_\_\_

171

# Parametrix, Inc.

Well/Sample #: CM-VE-10

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>18.88</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1044 - 1058</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 1100</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>50.1</u>		<u>± 2310</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1049</u>	<u>0.6</u>	<u>18.86</u>	<u>6.71</u>	<u>15.08</u>	<u>238</u>	<u>5.58</u>	<u>-112.0</u>	<u>clear</u> N/A
<u>1052</u>	<u>1.1</u>	<u>18.86</u>	<u>6.67</u>	<u>14.93</u>	<u>239</u>	<u>5.87</u>	<u>-110.1</u>	<u>clear</u>
<u>1055</u>	<u>1.7</u>	<u>18.86</u>	<u>6.65</u>	<u>14.85</u>	<u>241</u>	<u>5.91</u>	<u>-109.3</u>	<u>clear</u>
<u>1058</u>	<u>2.3</u>	<u>18.86</u>	<u>6.64</u>	<u>14.81</u>	<u>242</u>	<u>5.87</u>	<u>-109.2</u>	<u>clear</u>
<u>1100</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Crack warehouse /      Flow rate - 0.21 l/min

Remarks:  
Tank pressure - 1000 PSI  
4 sec on / 6 sec off / 15 PSI

Signature \_\_\_\_\_

1111

# Parametrix, Inc.

Well/Sample #: CM-VE-11

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>(I. Saul) / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>19.04</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0907 - 0916</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 0919</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) $\pm 0.1$	Temp. (°C)	EC ( $\mu\text{S}$ ) $\pm 3\%$	DO (mg/L) $\pm 10\%$	Redox (mV) $\pm 10$	Turb. (visual)
<u>0907</u>	<u>0.5</u>	<u>19.01</u>	<u>6.68</u>	<u>15.25</u>	<u>235</u>	<u>5.43</u>	<u>-113.8</u>	<u>Clear</u> N/A
<u>0910</u>	<u>1.1</u>	<u>19.00</u>	<u>6.63</u>	<u>15.17</u>	<u>234</u>	<u>6.00</u>	<u>-107.0</u>	<u>Clear</u>
<u>0913</u>	<u>1.7</u>	<u>18.99</u>	<u>6.61</u>	<u>15.10</u>	<u>234</u>	<u>6.61</u>	<u>-104.5</u>	<u>Clear</u>
<u>0916</u>	<u>2.3</u>	<u>18.98</u>	<u>6.60</u>	<u>15.08</u>	<u>234</u>	<u>6.60</u>	<u>-103.0</u>	<u>Clear</u>
<u>0919</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Cadet warehouse      Flow rate - 0.2 l/min

Remarks:

Tank pressure - 1100 PSI

4 sec on / 6 sec off / 15 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-VE-12

## Groundwater Sampling Field Data Sheet

Project Number	2751940006	Date	9/4/15
Project Name	Port of Vancouver - TCE	Event	2015 Q3
Client Name	Port of Vancouver	Sampled by	I. Saul / A. Romey

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	18.76	Purge Volume Measurement Method	2L cylinder
Depth of Well (feet)		Date Purged	9/4/15
Water Column (feet)	N/A	Purge Time (from/to)	1014 - 1027
1 Purge Volume (gals)	N/A	Date/Time Sampled	9/4/15 - 1029
3 Pure Volumes (gals)	N/A		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1018	0.5	18.71	6.84	14.96	245	4.56	-129.1	clear N/A
1021	1.3	18.73	6.85	14.67	247	3.42	-129.3	clear
1024	1.9	18.73	6.79	14.68	247	3.55	-124.0	clear
1027	2.6	18.72	6.83	14.59	247	3.18	-128.8	clear
1029	Sample							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	Apex	Date Sent to Lab	9/8/16
Chain-of-Custody (yes/no)	yes	Field QC Sample Number	
Shipment Method	Courier	Split with (name(s)/organization)	N/A

Well Integrity Cadet Warehouse / flow rate - 0.275 l/m

Remarks:  
Tank pressure - 1000 PSI  
4 Sec on / 6 Sec off / 20 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: C1M-MW-17

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/4/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2"    4"    Other \_\_\_\_\_

Depth to Water (feet)	<u>18.98</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/4/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0940 - 0956</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/4/15 - 0958</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ±0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 0.2	Redox (mV) ± 10	Turb. (visual)
<u>0947</u>	<u>0.5</u>	<u>18.89</u>	<u>5.99</u>	<u>14.27</u>	<u>311</u>	<u>3.36</u>	<u>-116.4</u>	<u>clear N/A</u>
<u>0950</u>	<u>1.1</u>	<u>18.91</u>	<u>5.98</u>	<u>13.69</u>	<u>313</u>	<u>3.36</u>	<u>-115.2</u>	<u>clear</u>
<u>0953</u>	<u>1.8</u>	<u>18.89</u>	<u>5.99</u>	<u>13.43</u>	<u>315</u>	<u>3.30</u>	<u>-114.2</u>	<u>clear</u>
<u>0956</u>	<u>2.5</u>	<u>18.88</u>	<u>5.99</u>	<u>13.33</u>	<u>315</u>	<u>3.12</u>	<u>-114.4</u>	<u>clear</u>
<u>0958</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump    Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	<u>9/8/16</u>
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity cadet wane house / Flow rate - 0.33 L/min

Remarks:  
Tank Pressure - 1100  
11 sec on / 9 sec off / 50 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CA-MW-235

## Groundwater Sampling Field Data Sheet

Project Number	2751940006	Date	9/9/15
Project Name	Port of Vancouver - TCE	Event	2015 Q3
Client Name	Port of Vancouver	Sampled by	I. Saul / A. Romey

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	30.20	Purge Volume Measurement Method	2L cylinder
Depth of Well (feet)		Date Purged	9/9/15
Water Column (feet)	N/A	Purge Time (from/to)	0909 - 1920
1 Purge Volume (gals)	N/A	Date/Time Sampled	9/9/15 - 0923
3 Pure Volumes (gals)	N/A		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
0914	1L	30.21	6.44	14.66	249	6.57	-128.2	N/A
0917	2L	30.20	6.44	14.27	244	6.27	-126.0	clear
0920	3.1L	30.20	6.45	14.12	243	6.19	-124.4	clear
0923	Sample							clear

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	Apex	Date Sent to Lab	
Chain-of-Custody (yes/no)	yes	Field QC Sample Number	
Shipment Method	Courier	Split with (name(s)/organization)	N/A

Well Integrity Flow rate - 0.34 L/min

Remarks:  
Compressor  
7 Sec on / 13 Sec OFF / 20 Sec 15'

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-23i

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>Saul A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>29.90</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0949 - 1006</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/9/15 - 1008</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>± 0.1</u>		<u>± 3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>0954</u>	<u>1.4</u>	<u>29.90</u>	<u>7.11</u>	<u>13.88</u>	<u>490</u>	<u>0.83</u>	<u>-230.4</u>	<u>clear</u> <u>N/A</u>
<u>0957</u>	<u>2.6</u>	<u>29.90</u>	<u>7.10</u>	<u>13.57</u>	<u>489</u>	<u>0.16</u>	<u>-232.5</u>	<u>clear</u>
<u>1000</u>	<u>3.8</u>	<u>29.90</u>	<u>7.10</u>	<u>13.50</u>	<u>489</u>	<u>0.59</u>	<u>-233.3</u>	<u>clear</u>
<u>1003</u>	<u>4.8</u>	<u>29.90</u>	<u>7.10</u>	<u>13.44</u>	<u>489</u>	<u>0.64</u>	<u>-234.3</u>	<u>clear</u>
<u>1006</u>	<u>5.6</u>	<u>29.91</u>	<u>7.11</u>	<u>13.42</u>	<u>489</u>	<u>0.69</u>	<u>-234.3</u>	<u>clear</u>
<u>1008</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.355 l/min

Remarks:

Tank Pressure - 2000 PSI

0008 sec on / 12 sec off / 40 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-02d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>Saul A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>23.18</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1634-1651</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/10/15 - 1653</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1639</u>	<u>1.3</u>	<u>23.13</u>	<u>7.10</u>	<u>14.79</u>	<u>649</u>	<u>1.11</u>	<u>-278.5</u>	<u>clear</u>
<u>1642</u>	<u>2.3</u>	<u>23.13</u>	<u>7.12</u>	<u>14.52</u>	<u>639</u>	<u>0.84</u>	<u>-279.5</u>	<u>clear</u>
<u>1645</u>	<u>3.3</u>	<u>23.13</u>	<u>7.14</u>	<u>14.41</u>	<u>631</u>	<u>0.69</u>	<u>-279.0</u>	<u>clear</u>
<u>1648</u>	<u>4.3</u>	<u>23.13</u>	<u>7.14</u>	<u>14.30</u>	<u>628</u>	<u>0.62</u>	<u>-278.3</u>	<u>clear</u>
<u>1651</u>	<u>5.3</u>	<u>23.13</u>	<u>7.13</u>	<u>14.25</u>	<u>627</u>	<u>0.56</u>	<u>-276.7</u>	<u>clear</u>
<u>1653</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate ~ 0.35 l/min

Remarks:  
Tank pressure - 1700 PSF  
7 sec on / 13 sec off / 40 PSF

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-205

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>dry water level below top of pump.</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	_____
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/10/15</u>
3 Purge Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1525</u>	<u>-</u>	<u>water below bottom of pump.</u>						<u>N/A</u>
		<u>Dry</u>						

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks:  
Tank Pressure - 2000 PSI.  
Water below bottom of pump. No water pumped.

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-201

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>30.04</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1537-1554</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/10/15-1556</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1542	1.3	30.05	7.17	14.88	486	1.37	-294.2	<u>Clear</u>
1545	2.3	30.05	7.25	14.39	488	0.99	-295.8	<u>Clear</u>
1548	3.3	30.04	7.29	14.17	488	0.62	-296.1	<u>Clear</u>
1551	4.3	30.04	7.32	14.12	489	0.73	-295.5	<u>Clear</u>
1554	5.3	30.04	7.34	13.99	488	0.65	-295.2	<u>Clear</u>
1556	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow rate - 0.35 l/min Collected MS/MSD

Remarks: Test Pressure - 2000 PSI Field Dup

7 Sec on / 13 Sec off / 50 PSI FD-CM-091015

Signature \_\_\_\_\_ @ 1200

# Parametrix, Inc.

Well/Sample #: CM-DPW-01

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other 1"

Depth to Water (feet)	<u>19.51</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1749 - 1809</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/10/15-1811</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
			<u>± 0.1</u>		<u>± 0.3%</u>	<u>± 10%</u>	<u>± 10</u>	
<u>1754</u>	<u>1.1</u>	<u>-</u>	<u>6.48</u>	<u>15.84</u>	<u>216</u>	<u>4.85</u>	<u>-141.2</u>	<u>N/A</u> <i>clean</i>
<u>1757</u>	<u>2.3</u>	<u>-</u>	<u>6.55</u>	<u>15.26</u>	<u>2197</u>	<u>4.93</u>	<u>-137.0</u>	<u>clean</u>
<u>1800</u>	<u>3.5</u>	<u>-</u>	<u>6.56</u>	<u>15.22</u>	<u>196</u>	<u>4.56</u>	<u>-136.2</u>	<u>clean</u>
<u>1803</u>	<u>4.7</u>	<u>-</u>	<u>6.57</u>	<u>15.16</u>	<u>198</u>	<u>3.82</u>	<u>-135.9</u>	<u>clean</u>
<u>1806</u>	<u>5.9</u>	<u>-</u>	<u>6.58</u>	<u>15.04</u>	<u>195</u>	<u>3.46</u>	<u>-135.8</u>	<u>clean</u>
<u>1809</u>	<u>7.1</u>	<u>-</u>	<u>6.58</u>	<u>15.17</u>	<u>199</u>	<u>3.10</u>	<u>-134.9</u>	<u>clean</u>
<u>1811</u>	<u>Sample</u>							

Purge Equipment Peristaltic Dedicated Bladder Pump Sampling Equipment peristaltic Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Remarks: Flow rate - 0.40 l/min

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-DPW-10

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other 1"

Depth to Water (feet)	<u>19.02</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1720 - 1734</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/10/15 - 1736</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1725</u>	<u>0.3</u>	<u>-</u>	<u>6.53</u>	<u>18.23</u>	<u>299</u>	<u>3.41</u>	<u>-160.9</u>	<u>clear</u> <del>N/A</del>
<u>1728</u>	<u>1.1</u>	<u>-</u>	<u>6.53</u>	<u>16.78</u>	<u>294</u>	<u>3.41</u>	<u>-161.6</u>	<u>clear</u>
<u>1731</u>	<u>2.1</u>	<u>-</u>	<u>6.54</u>	<u>16.31</u>	<u>293</u>	<u>3.35</u>	<u>-160.3</u>	<u>clear</u>
<u>1734</u>	<u>3.1</u>	<u>-</u>	<u>6.54</u>	<u>15.99</u>	<u>293</u>	<u>3.33</u>	<u>-158.7</u>	<u>clear</u>
<u>1736</u>	<u>Sample</u>							

Purge Equipment Parastatic ~~Dedicated Bladder Pump~~ Sampling Equipment Parastatic ~~Dedicated Bladder Pump~~

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate - 0.335 L/min

Remarks:

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: CM-MW-27USA-049.5

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/22/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>←</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/22/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1450 - 1510</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/22/15 1515</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<del>1458</del>								N/A
<u>1458</u>	<u>1.6</u>	<u>-</u>	<u>6.92</u>	<u>14.73</u>	<u>254</u>	<u>10.21</u>	<u>-29.7</u>	<u>sl. turb.</u>
<u>1501</u>	<u>2.2</u>	<u>-</u>	<u>6.95</u>	<u>15.33</u>	<u>254</u>	<u>9.76</u>	<u>-28.2</u>	<u>sl turb</u>
<u>1504</u>	<u>2.8</u>	<u>-</u>	<u>6.96</u>	<u>15.77</u>	<u>254</u>	<u>9.56</u>	<u>-29.1</u>	<u>sl. turb</u>
<u>1507</u>	<u>3.4</u>	<u>-</u>	<u>6.88</u>	<u>16.93</u>	<u>255</u>	<u>9.63</u>	<u>-24.8</u>	<u>sl. turb</u>
<u>1510</u>	<u>4.0</u>	<u>-</u>	<u>6.87</u>	<u>17.22</u>	<u>256</u>	<u>9.29</u>	<u>-19.9</u>	<u>sl. turb</u>

Purge Equipment Dedicated Bladder Pump DV Sampling Equipment Dedicated Bladder Pump DV

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: Purge RATE ~ 200ml/min

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: LM-MW-065

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>26.62</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/23/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0929 - 0940</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/23/15 0945</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>0934</u>	<u>1.5</u>	<u>26.62</u>	<u>6.56</u>	<u>14.50</u>	<u>285</u>	<u>6.61</u>	<u>-87.3</u>	<u>N/A</u>
<u>0937</u>	<u>2.4</u>	<u>26.62</u>	<u>6.55</u>	<u>14.32</u>	<u>284</u>	<u>6.58</u>	<u>-87.4</u>	<u>cl</u>
<u>0940</u>	<u>3.3</u>	<u>26.62</u>	<u>6.56</u>	<u>14.29</u>	<u>284</u>	<u>6.56</u>	<u>-87.1</u>	<u>cl</u>
<del><u>0943</u></del>	<del><u>4.7</u></del>							

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

Signature Purge Rome 300ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-25s

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>25.05</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/23/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0959 - 1025</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/23/15 1030</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1004</u>	<u>1.7</u>	<u>25.05</u>	<u>6.44</u>	<u>13.49</u>	<u>304</u>	<u>6.59</u>	<u>96.5</u>	<u>N/A</u>
<u>1007</u>	<u>2.7</u>	<u>25.05</u>	<u>6.45</u>	<u>13.41</u>	<u>304</u>	<u>6.42</u>	<u>76.4</u>	<u>cl</u>
<u>1010</u>	<u>3.7</u>	<u>25.05</u>	<u>6.45</u>	<u>13.40</u>	<u>304</u>	<u>6.30</u>	<u>60.7</u>	<u>cl</u>
<u>1013</u>	<u>4.8</u>	<u>25.05</u>	<u>6.45</u>	<u>13.41</u>	<u>304</u>	<u>6.24</u>	<u>48.6</u>	<u>cl</u>
<u>1016</u>	<u>5.8</u>	<u>25.05</u>	<u>6.45</u>	<u>13.41</u>	<u>304</u>	<u>6.23</u>	<u>40.7</u>	<u>cl</u>
<u>1019</u>	<u>6.8</u>	<u>25.05</u>	<u>6.45</u>	<u>13.42</u>	<u>304</u>	<u>6.14</u>	<u>34.4</u>	<u>cl</u>
<u>1022</u>	<u>7.9</u>	<u>25.05</u>	<u>6.45</u>	<u>13.45</u>	<u>304</u>	<u>6.14</u>	<u>30.5</u>	<u>cl</u>
<u>1025</u>	<u>8.9</u>	<u>25.05</u>	<u>6.45</u>	<u>13.42</u>	<u>304</u>	<u>6.12</u>	<u>26.0</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature Purge Rate 340 ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-29USA-060.5

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	_____	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/23/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1133 - 1158</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/23/15 1200</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1138</u>	<u>1.0</u>	<u>-</u>	<u>6.55</u>	<u>15.25</u>	<u>200</u>	<u>6.60</u>	<u>-20.9</u>	<u>N/A</u>
<u>1141</u>	<u>1.6</u>	<u>-</u>	<u>6.56</u>	<u>15.42</u>	<u>299</u>	<u>6.29</u>	<u>-20.9</u>	<u>cl</u>
<u>1144</u>	<u>2.2</u>	<u>-</u>	<u>6.55</u>	<u>15.66</u>	<u>202</u>	<u>5.33</u>	<u>-21.7</u>	<u>cl</u>
<u>1147</u>	<u>2.8</u>	<u>-</u>	<u>6.55</u>	<u>15.30</u>	<u>203</u>	<u>5.61</u>	<u>-22.1</u>	<u>cl</u>
<u>1150</u>	<u>3.4</u>	<u>-</u>	<u>6.72</u>	<u>14.87</u>	<u>200</u>	<u>8.61</u>	<u>-19.3</u>	<u>cl</u>
<u>1153</u>	<u>4.0</u>	<u>-</u>	<u>6.56</u>	<u>14.77</u>	<u>199</u>	<u>7.89</u>	<u>-24.6</u>	<u>cl</u>
<u>1158</u>	<u>4.6</u>	<u>-</u>	<u>6.54</u>	<u>14.78</u>	<u>201</u>	<u>7.24</u>	<u>-25.2</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

Signature Purge rate 200ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-24USA-100

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	_____	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/23/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1203 - 1217</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/23/15 1220</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1200</u>	<u>1.6</u>	<u>-</u>	<u>6.70</u>	<u>14.37</u>	<u>318</u>	<u>5.08</u>	<u>-54.6</u>	<u>N/A</u>
<u>1211</u>	<u>2.6</u>	<u>-</u>	<u>6.70</u>	<u>14.40</u>	<u>318</u>	<u>4.93</u>	<u>-55.4</u>	<u>cl</u>
<u>1214</u>	<u>3.4</u>	<u>-</u>	<u>6.70</u>	<u>14.39</u>	<u>318</u>	<u>4.77</u>	<u>-57.2</u>	<u>cl</u>
<u>1217</u>	<u>4.3</u>	<u>-</u>	<u>6.70</u>	<u>14.39</u>	<u>318</u>	<u>4.64</u>	<u>-58.1</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature purge rate 320 ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-29USA-140.5

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	_____	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	_____
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1224-1235</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>1240</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1226</u>	<u>1.0</u>	<u>-</u>	<u>7.02</u>	<u>14.84</u>	<u>449</u>	<u>2.03</u>	<u>-199.3</u>	<u>N/A</u>
<u>1229</u>	<u>1.6</u>	<u>-</u>	<u>7.12</u>	<u>14.76</u>	<u>468</u>	<u>0.90</u>	<u>-268.0</u>	<u>Cl</u>
<u>1232</u>	<u>2.2</u>	<u>-</u>	<u>7.10</u>	<u>14.75</u>	<u>468</u>	<u>0.79</u>	<u>-269.0</u>	<u>Cl</u>
<u>1235</u>	<u>2.8</u>	<u>-</u>	<u>7.11</u>	<u>14.73</u>	<u>465</u>	<u>0.75</u>	<u>-267.7</u>	<u>Cl</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Purge Rate 200ml/min



# Parametrix, Inc.

Well/Sample #: CIM-MW-29TGA

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: (2") 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>42.87</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/23/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1245 - 1259</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/23/15 1305</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1250</u>	<u>2.0</u>	<u>42.87</u>	<u>7.53</u>	<u>14.03</u>	<u>484</u>	<u>1.86</u>	<u>-220.1</u>	<u>N/A</u>
<u>1253</u>	<u>3.2</u>	<u>42.87</u>	<u>7.49</u>	<u>13.90</u>	<u>507</u>	<u>0.91</u>	<u>-222.0</u>	<u>Cl</u>
<u>1256</u>	<u>4.4</u>	<u>42.87</u>	<u>7.47</u>	<u>13.73</u>	<u>511</u>	<u>0.73</u>	<u>-221.8</u>	<u>Cl</u>
<u>1259</u>	<u>6.6</u>	<u>42.87</u>	<u>7.48</u>	<u>13.71</u>	<u>511</u>	<u>0.67</u>	<u>-222.4</u>	<u>Cl</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Signature Purge Rate 400ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-075

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>38.45</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/23/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1440 - 1503</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/23/15 1508</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1445</u>	<u>1.4</u>	<u>38.45</u>	<u>6.69</u>	<u>14.41</u>	<u>230</u>	<u>5.45</u>	<u>-60.6</u>	<u>N/A</u>
<u>1448</u>	<u>2.2</u>	<u>38.45</u>	<u>6.69</u>	<u>14.29</u>	<u>230</u>	<u>4.75</u>	<u>-59.5</u>	<u>cl</u>
<u>1451</u>	<u>3.0</u>	<u>38.45</u>	<u>6.70</u>	<u>14.57</u>	<u>230</u>	<u>4.05</u>	<u>-56.2</u>	<u>cl</u>
<u>1454</u>	<u>3.8</u>	<u>38.45</u>	<u>6.70</u>	<u>14.24</u>	<u>230</u>	<u>3.65</u>	<u>-54.1</u>	<u>cl</u>
<u>1457</u>	<u>4.6</u>	<u>38.45</u>	<u>6.70</u>	<u>14.47</u>	<u>230</u>	<u>3.41</u>	<u>-52.1</u>	<u>cl</u>
<u>1500</u>	<u>5.4</u>	<u>38.45</u>	<u>6.70</u>	<u>14.47</u>	<u>230</u>	<u>3.24</u>	<u>-50.7</u>	<u>cl</u>
<u>1503</u>	<u>6.2</u>	<u>38.45</u>	<u>6.70</u>	<u>14.36</u>	<u>230</u>	<u>3.14</u>	<u>-49.7</u>	<u>cl</u>
<del>1506</del>								<del>cl</del>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature Purge Note 280 ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-071

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/23/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>38.99</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/23/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1509 - 1526</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/23/15 1530</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1514</u>	<u>1.0</u>	<u>38.99</u>	<u>7.09</u>	<u>15.40</u>	<u>377</u>	<u>2.18</u>	<u>-145.0</u>	<u>N/A</u>
<u>1517</u>	<u>1.6</u>	<u>38.99</u>	<u>6.76</u>	<u>14.83</u>	<u>386</u>	<u>1.30</u>	<u>-141.0</u>	<u>cl</u>
<u>1520</u>	<u>2.2</u>	<u>38.99</u>	<u>6.70</u>	<u>14.70</u>	<u>372</u>	<u>1.91</u>	<u>-98.3</u>	<u>cl</u>
<u>1523</u>	<u>2.8</u>	<u>38.99</u>	<u>6.70</u>	<u>14.85</u>	<u>370</u>	<u>2.14</u>	<u>-92.5</u>	<u>cl</u>
<u>1526</u>	<u>3.4</u>	<u>38.99</u>	<u>6.70</u>	<u>14.75</u>	<u>369</u>	<u>2.19</u>	<u>-91.6</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature [Signature]

purge rate = 200 ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-155

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/25/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>17.60</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/25/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1115 - <del>1130</del> 1129</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>1135</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1120</u>	<u>1.3</u>	<u>17.60</u>	<u>6.54</u>	<u>13.77</u>	<u>213</u>	<u>3.66</u>	<u>-100.5</u>	<u>N/A</u>
<u>1123</u>	<u>2.0</u>	<u>17.60</u>	<u>6.51</u>	<u>13.60</u>	<u>234</u>	<u>3.55</u>	<u>-83.5</u>	<u>Cl</u>
<u>1126</u>	<u>2.8</u>	<u>17.60</u>	<u>6.51</u>	<u>13.52</u>	<u>236</u>	<u>3.60</u>	<u>-81.7</u>	<u>Cl</u>
<u>1129</u>	<u>3.5</u>	<u>17.60</u>	<u>6.51</u>	<u>13.47</u>	<u>236</u>	<u>3.57</u>	<u>-81.6</u>	<u>Cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature Purge RATE 260ml/min

# Parametrix, Inc.

Well/Sample #: CM-DPW-16

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/25/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>18.99</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1045 - 1059</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>1105</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<del>1050</del>	1.3	19.03	6.49	14.83	324	3.90	-57.0	N/A
<del>1045</del>	2.0	19.03	6.46	14.78	333	3.22	-75.2	cl
<del>1045</del>	2.8	19.03	6.46	14.71	335	3.05	-79.8	cl
1059	3.5	19.03	6.46	14.66	335	3.03	-81.9	cl

1053  
1056

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature purge rate 200 ml/min

# Parametrix, Inc.

Well/Sample #: CM-DPW-06

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/25/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)		Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1015 - 1029</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>1035</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1020</u>	<u>1.0</u>	<u>19.07</u>	<u>6.50</u>	<u>15.04</u>	<u>280</u>	<u>5.66</u>	<u>-33.9</u>	<u>N/A</u>
<u>1023</u>	<u>1.6</u>	<u>19.04</u>	<u>6.49</u>	<u>15.55</u>	<u>284</u>	<u>5.25</u>	<u>-36.7</u>	<u>cl</u>
<u>1026</u>	<u>2.2</u>	<u>19.04</u>	<u>6.49</u>	<u>15.47</u>	<u>289</u>	<u>5.11</u>	<u>-41.4</u>	<u>cl</u>
<u>1029</u>	<u>2.8</u>	<u>19.04</u>	<u>6.49</u>	<u>15.30</u>	<u>289</u>	<u>5.01</u>	<u>-45.5</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Signature purge rates 200 ml/min

# Parametrix, Inc.

Well/Sample #: CM-MW-011

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/25/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>19.35</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/25/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>0936-0956</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/25/15 1000</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
0941	1.3	19.35	6.96	14.03	300	2.95	-186.7	N/A
0944	2.0	19.35	6.69	13.89	345	1.26	-215.4	cl
0947	2.8	19.35	6.68	13.83	344	0.97	-226.6	cl
0950	3.5	19.35	6.68	13.82	343	1.010	-233.6	cl
0953	4.2	19.35	6.67	13.81	341	1.20	-237.6	cl
0956	4.9	19.35	6.67	13.79	340	1.23	-239.2	cl

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Signature purge RATE 260 ml/min

# Parametrix, Inc.

Well/Sample #: MW-151

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015-03</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>26.65</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1553 - 1616</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 1620</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1558</u>	<u>1.4</u>	<u>26.69</u>	<u>7.96</u>	<u>13.96</u>	<u>248</u>	<u>2.08</u>	<u>-199.8</u>	<u>N/A</u>
<u>1601</u>	<u>2.3</u>	<u>26.71</u>	<u>8.11</u>	<u>13.59</u>	<u>249</u>	<u>1.06</u>	<u>-213.9</u>	<u>cl</u>
<u>1604</u>	<u>3.1</u>	<u>26.75</u>	<u>8.19</u>	<u>13.41</u>	<u>250</u>	<u>0.76</u>	<u>-217.7</u>	<u>cl</u>
<u>1607</u>	<u>4.0</u>	<u>26.77</u>	<u>8.18</u>	<u>13.37</u>	<u>251</u>	<u>0.60</u>	<u>-206.3</u>	<u>cl</u>
<u>1610</u>	<u>4.8</u>	<u>26.78</u>	<u>8.16</u>	<u>13.27</u>	<u>252</u>	<u>0.53</u>	<u>-197.8</u>	<u>cl</u>
<u>1613</u>	<u>5.7</u>	<u>26.79</u>	<u>8.14</u>	<u>13.24</u>	<u>252</u>	<u>0.46</u>	<u>-198.4</u>	<u>cl</u>
<u>1616</u>	<u>6.5</u>	<u>26.80</u>	<u>8.13</u>	<u>13.20</u>	<u>252</u>	<u>0.43</u>	<u>-189.2</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
purge rate ~ 0.28 L/min  
 \_\_\_\_\_  
 Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-289

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>28.65</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1500 - 1514</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 1517</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1505</u>	<u>1.5</u>	<u>28.65</u>	<u>6.61</u>	<u>14.39</u>	<u>306</u>	<u>10.17</u>	<u>129.4</u>	<u>N/A</u>
<u>1508</u>	<u>2.4</u>	<u>28.65</u>	<u>6.59</u>	<u>14.32</u>	<u>306</u>	<u>9.75</u>	<u>133.4</u>	<u>cl</u>
<u>1511</u>	<u>3.3</u>	<u>28.65</u>	<u>6.58</u>	<u>14.27</u>	<u>306</u>	<u>9.61</u>	<u>135.9</u>	<u>cl</u>
<u>1514</u>	<u>4.2</u>	<u>28.65</u>	<u>6.57</u>	<u>14.20</u>	<u>306</u>	<u>9.47</u>	<u>138.4</u>	

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

Purge RATE ~ 0.30 L/min

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-16

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>32.50</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1412 - 1426</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 1430</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1417</u>	<u>1.5</u>	<u>32.50</u>	<u>6.51</u>	<u>13.53</u>	<u>282</u>	<u>10.04</u>	<u>113.6</u>	<u>N/A</u>
<u>1420</u>	<u>2.4</u>	<u>32.50</u>	<u>6.47</u>	<u>13.42</u>	<u>281</u>	<u>9.68</u>	<u>123.1</u>	<u>cl</u>
<u>1423</u>	<u>3.3</u>	<u>32.49</u>	<u>6.45</u>	<u>13.36</u>	<u>281</u>	<u>9.54</u>	<u>129.6</u>	<u>cl</u>
<u>1426</u>	<u>4.2</u>	<u>32.50</u>	<u>6.45</u>	<u>13.36</u>	<u>281</u>	<u>9.45</u>	<u>132.4</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

Purge Rate 0.30 L/min

MS/MSD

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-14d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>2.85</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1308 - 1337</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15 1340</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1313	2.0	21.85	8.19	12.78	398	1.48	-223.0	N/A
1316	3.2	21.85	8.17	12.64	456	1.09	-199.8	cl
1319	4.4	21.87	8.03	12.55	454	0.91	-175.8	cl
1322	5.6	21.87	7.99	12.58	463	0.81	-155.0	cl
1325	6.8	21.88	7.92	12.46	468	0.65	-135.8	cl
1328	8.0	21.89	7.95	12.32	468	0.58	-118.3	cl
1331	9.2	21.89	7.89	12.22	467	0.51	-106.1	cl
1334	10.4	21.90	7.85	12.23	467	0.47	-99.0	cl
1337	11.6	21.91	7.88	12.18	466	0.45	-96.9	cl

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	<u>POV-FD-090815</u>
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

Purge Rate ~ 0.40 L/min

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-E

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>26.04</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	_____
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1138 - 1149</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/3/15</u>
3 Pure Volumes (gals)	<u>N/A</u>		<u>1155</u>

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1143</u>	<u>1.5</u>	<u>26.20</u>	<u>6.31</u>	<u>14.33</u>	<u>553</u>	<u>0.62</u>	<u>124.6</u>	<u>N/A</u>
<u>1146</u>	<u>2.4</u>	<u>26.20</u>	<u>6.31</u>	<u>14.24</u>	<u>554</u>	<u>0.47</u>	<u>128.3</u>	<u>cl</u>
<u>1149</u>	<u>3.3</u>	<u>26.19</u>	<u>6.30</u>	<u>14.28</u>	<u>553</u>	<u>0.39</u>	<u>130.5</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: Broken air fitting

Purge rate ~ 0.30 L/min

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-31i

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/3/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>26.19</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/3/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1102 - 1122</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/13/15 1125</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1107</u>	<u>1.8</u>	_____	_____	_____	_____	_____	_____	<u>N/A</u>
<u>1110</u>	<u>2.9</u>	<u>26.24</u>	<u>7.00</u>	<u>12.92</u>	<u>170</u>	<u>6.35</u>	<u>157.0</u>	<u>cl</u>
<u>1113</u>	<u>4.0</u>	<u>26.24</u>	<u>6.94</u>	<u>12.75</u>	<u>171</u>	<u>6.10</u>	<u>174.7</u>	<u>cl</u>
<u>1116</u>	<u>5.1</u>	<u>26.24</u>	<u>6.95</u>	<u>12.76</u>	<u>170</u>	<u>6.04</u>	<u>157.3</u>	<u>cl</u>
<u>1119</u>	<u>6.1</u>	<u>26.25</u>	<u>6.96</u>	<u>12.73</u>	<u>169</u>	<u>6.00</u>	<u>150.1</u>	<u>cl</u>
<u>1122</u>	<u>7.2</u>	<u>26.25</u>	<u>6.94</u>	<u>12.75</u>	<u>170</u>	<u>5.97</u>	<u>147.6</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Good

Remarks: \_\_\_\_\_

\_\_\_\_\_

Purge Rate 10.36 L/min

\_\_\_\_\_

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-32i

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>29.95</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1556 - 1613</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 1618</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1601</u>	<u>1.5</u>	<u>29.98</u>	<u>6.84</u>	<u>14.43</u>	<u>261</u>	<u>5.87</u>	<u>158.0</u>	<u>N/A</u>
<u>1604</u>	<u>2.4</u>	<u>29.97</u>	<u>6.82</u>	<u>14.10</u>	<u>281</u>	<u>3.81</u>	<u>148.7</u>	<u>cl.</u>
<u>1607</u>	<u>3.3</u>	<u>29.98</u>	<u>6.83</u>	<u>14.06</u>	<u>283</u>	<u>5.51</u>	<u>146.2</u>	<u>cl</u>
<u>1610</u>	<u>4.2</u>	<u>29.99</u>	<u>6.83</u>	<u>14.01</u>	<u>285</u>	<u>3.36</u>	<u>143.3</u>	<u>cl</u>
<u>1613</u>	<u>5.1</u>	<u>29.99</u>	<u>6.82</u>	<u>13.96</u>	<u>285</u>	<u>3.28</u>	<u>142.5</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

Purge RATE ~ 0.30 L/min

Signature A. Romey

# Parametrix, Inc.

Well/Sample #: MW-32S

## Groundwater Sampling Field Data Sheet

Project Number	2751940006	Date	9/2/15
Project Name	Port of Vancouver - TCE	Event	2015-03
Client Name	Port of Vancouver	Sampled by	I. Sau / A. Romey

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	79.05	Purge Volume Measurement Method	2L cylinder
Depth of Well (feet)		Date Purged	9/2/15
Water Column (feet)	N/A	Purge Time (from/to)	1518 - 1535
1 Purge Volume (gals)	N/A	Date/Time Sampled	9/2/15 1625
3 Pure Volumes (gals)	N/A		<del>1518</del>

11.5  
11.5

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
1523	1.2	29.37	6.43	15.62	427	2.76	179.2	N/A
1526	1.9	29.75	6.40	15.43	427	3.01	166.6	cl.
1529	2.7	30.00	6.41	15.42	428	2.94	160.2	cl
1532	3.4	30.31	6.43	15.25	430	2.10	153.6	cl
1535	4.2	2 ft TOP of pump	6.44	15.35	432	1.51	148.7	cl
TURNING off pump - will allow for recovery then sample								
SAMPLED @ 1625 - WL never came back ABOVE PUMP								
- NO APPARENT RECOVERY								

Purge Equipment Dedicated Bladder Pump Sampling Equipment Dedicated Bladder Pump

Laboratory	Apex	Date Sent to Lab	
Chain-of-Custody (yes/no)	yes	Field QC Sample Number	
Shipment Method	Courier	Split with (name(s)/organization)	N/A

Well Integrity OK

Remarks:

Purge RATE ~~0.24~~ /min = 0.24 /min

SAMPLE LIKELY NOT REPRESENTATIVE - NO RECOVERY

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-33

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul (A. Romey)</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>26.45</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1316 - 1339</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 1342</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1321</u>	<u>1.7</u>	<u>26.47</u>	<u>6.15</u>	<u>13.28</u>	<u>206</u>	<u>7.79</u>	<u>193.4</u>	<u>N/A</u>
<u>1324</u>	<u>2.7</u>	<u>26.47</u>	<u>5.90</u>	<u>13.03</u>	<u>189</u>	<u>7.28</u>	<u>191.8</u>	<u>cl</u>
<u>1327</u>	<u>3.7</u>	<u>26.48</u>	<u>6.19</u>	<u>12.91</u>	<u>186</u>	<u>7.13</u>	<u>177.6</u>	<u>cl</u>
<u>1330</u>	<u>4.8</u>	<u>26.48</u>	<u>6.39</u>	<u>12.88</u>	<u>185</u>	<u>7.05</u>	<u>165.7</u>	<u>cl</u>
<u>1333</u>	<u>5.8</u>	<u>26.49</u>	<u>6.53</u>	<u>12.88</u>	<u>185</u>	<u>7.03</u>	<u>160.2</u>	<u>cl</u>
<u>1336</u>	<u>6.8</u>	<u>26.49</u>	<u>6.57</u>	<u>12.88</u>	<u>185</u>	<u>7.01</u>	<u>157.3</u>	<u>cl</u>
<u>1339</u>	<u>7.9</u>	<u>26.49</u>	<u>6.59</u>	<u>12.88</u>	<u>185</u>	<u>6.99</u>	<u>155.4</u>	<u>cl</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-33s

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/2/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul (A. Romey)</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>26.62</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/2/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1257-1308</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/2/15 1310</u>
3 Purge Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1302</u>	<u>1.7</u>	<u>26.63</u>	<u>6.07</u>	<u>15.03</u>	<u>235</u>	<u>10.35</u>	<u>182.3</u>	<u>N/A</u>
<u>1305</u>	<u>2.7</u>	<u>26.63</u>	<u>6.10</u>	<u>14.86</u>	<u>235</u>	<u>10.25</u>	<u>176.2</u>	<u>sl. Turbid</u>
<u>1308</u>	<u>3.7</u>	<u>26.63</u>	<u>6.12</u>	<u>14.84</u>	<u>235</u>	<u>10.06</u>	<u>173.9</u>	<u>sl. Turbid</u>

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	_____
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity \_\_\_\_\_

Remarks: CRACKED AIR INLET - PARTIALLY FUNCTIONAL

Purge RATE 0.24 L/min

Signature [Signature]

# Parametrix, Inc.

Well/Sample #: MW-Ø1d

## Groundwater Sampling Field Data Sheet

Project Number	<u>2751940006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul / A. Romey</u>

Casing Diameter: 2" 4" Other

Depth to Water (feet)	<u>22.91</u>	Purge Volume Measurement Method	<u>2L cylinder</u>
Depth of Well (feet)		Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>N/A</u>	Purge Time (from/to)	<u>1044 - 1103</u>
1 Purge Volume (gals)	<u>N/A</u>	Date/Time Sampled	<u>9/9/15 - 1105</u>
3 Pure Volumes (gals)	<u>N/A</u>		

Time (2400 hr)	Cumulative Volume (L)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1048</u>	<u>0.9</u>	<u>22.92</u>	<u>8.13</u>	<u>14.22</u>	<u>668</u>	<u>4.28</u>	<u>22.2</u>	<u>clean N/A</u>
<u>1051</u>	<u>1.9</u>	<u>22.92</u>	<u>8.19</u>	<u>13.29</u>	<u>665</u>	<u>1.87</u>	<u>-255.0</u>	<u>clean</u>
<u>1054</u>	<u>3.0</u>	<u>22.92</u>	<u>7.82</u>	<u>12.43</u>	<u>687</u>	<u>0.78</u>	<u>-244.2</u>	<u>clean</u>
<u>1057</u>	<u>4.0</u>	<u>22.93</u>	<u>7.71</u>	<u>12.82</u>	<u>643</u>	<u>0.52</u>	<u>-240.3</u>	<u>clean</u>
<u>1100</u>	<u>5.0</u>	<u>22.93</u>	<u>7.70</u>	<u>12.80</u>	<u>644</u>	<u>0.44</u>	<u>-239.8</u>	<u>clean</u>
<u>1103</u>	<u>6.0</u>	<u>22.93</u>	<u>7.70</u>	<u>12.79</u>	<u>644</u>	<u>0.39</u>	<u>-239.7</u>	<u>clean</u>
<u>1105</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder Pump      Sampling Equipment Dedicated Bladder Pump

Laboratory	<u>Apex</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)	<u>yes</u>	Field QC Sample Number	
Shipment Method	<u>Courier</u>	Split with (name(s)/organization)	<u>N/A</u>

Well Integrity Flow Rate. 0.133 L/min

Remarks: Compressor

7 sec on / 13 sec off / 35 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-055

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Saul</u>

Casing Diameter: 2"      4"      Other \_\_\_\_\_

Depth to Water (feet)	<u>wedge level below top of pump - Dry</u>	Purge Volume Measurement Method	<u>Graduated 5-g bucket cylinder</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>-</u>	Purge Time (from/to)	<u>1157-1209</u>
1 Purge Volume (gals)	<u>-</u>	Date/Time Sampled	<u>9/9/15-1211</u>
3 Pure Volumes (gals)	<u>-</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1203	0.9	-	6.58	16.16	336	7.93	-167.6	clear
1206	1.4	-	6.58	15.89	338	7.84	-165.8	clear
1209	2.0	-	6.58	15.70	340	7.83	-163.8	clear
1211	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump      Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow rate - 0.23 l/min

Remarks: Compressor.

7 sec on / 13 sec off / 20 PSC

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-051

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver - Tce</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Sawl</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>25.97</u>	Purge Volume Measurement Method	<u>Graduated 5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>-</u>	Purge Time (from/to)	<u>1227 - 1246</u>
1 Purge Volume (gals)	<u>-</u>	Date/Time Sampled	<u>9/9/15 - 1248</u>
3 Pure Volumes (gals)	<u>-</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1231	0.7	26.00	7.53	16.01	685	2.60	-228.6	clean
1234	1.5	26.05	7.58	15.00	680	1.23	-235.7	clean
1237	2.5	26.04	7.58	14.56	675	0.68	-239.1	clean
1240	3.3	26.04	7.57	14.48	673	0.53	-238.7	clean
1243	4.2	26.04	7.56	14.31	672	0.46	-239.0	clean
1246	5.2	26.04	7.55	14.31	671	0.44	-239.5	clean
1248	Sample							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow Rate - 0.325 l/min

Remarks: compressor.

8 sec on / 12 sec off / 30 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-05DR

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver - TLE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>25.22</u>	Purge Volume Measurement Method	<u>5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>1304 - 1320</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/9/15 - 1322</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ±0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1308</u>	<u>1.2</u>	<u>25.32</u>	<u>7.61</u>	<u>15.10</u>	<u>575</u>	<u>3.70</u>	<u>-236.2</u>	<u>clear</u>
<u>1311</u>	<u>2.2</u>	<u>25.29</u>	<u>7.59</u>	<u>14.47</u>	<u>595</u>	<u>1.34</u>	<u>-245.0</u>	<u>clear</u>
<u>1314</u>	<u>3.2</u>	<u>25.29</u>	<u>7.50</u>	<u>14.27</u>	<u>617</u>	<u>0.73</u>	<u>-244.7</u>	<u>clear</u>
<u>1317</u>	<u>4.3</u>	<u>25.28</u>	<u>7.55</u>	<u>14.19</u>	<u>624</u>	<u>0.55</u>	<u>-243.3</u>	<u>clear</u>
<u>1320</u>	<u>5.3</u>	<u>25.28</u>	<u>7.55</u>	<u>14.19</u>	<u>625</u>	<u>0.47</u>	<u>-242.5</u>	<u>clear</u>
<u>1322</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow Rate - 0.355 l/min

Remarks: Compressor

7 sec on / 13 sec off / 35 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-12d

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saml</u>

Casing Diameter: 2"    4"    Other \_\_\_\_\_

Depth to Water (feet)	<u>28.60</u>	Purge Volume Measurement Method	<u>5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	_____	Purge Time (from/to)	<u>1503 - 1519</u>
1 Purge Volume (gals)	_____	Date/Time Sampled	<u>9/9/15 - 1521</u>
3 Pure Volumes (gals)	_____		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1507</u>	<u>0.7</u>	<u>28.60</u>	<u>7.08</u>	<u>16.30</u>	<u>545</u>	<u>2.97</u>	<u>-249.5</u>	<u>clear</u>
<u>1510</u>	<u>1.6</u>	<u>28.58</u>	<u>7.19</u>	<u>14.71</u>	<u>542</u>	<u>1.33</u>	<u>-258.0</u>	<u>clear</u>
<u>1513</u>	<u>2.6</u>	<u>28.57</u>	<u>7.13</u>	<u>14.20</u>	<u>545</u>	<u>0.82</u>	<u>-2523</u>	<u>clear</u>
<u>1516</u>	<u>3.4</u>	<u>28.56</u>	<u>7.06</u>	<u>13.99</u>	<u>549</u>	<u>0.71</u>	<u>-247.4</u>	<u>clear</u>
<u>1519</u>	<u>4.3</u>	<u>28.55</u>	<u>7.04</u>	<u>13.91</u>	<u>555</u>	<u>0.66</u>	<u>-2434</u>	<u>clear</u>
<u>1521</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump    Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow Rate - 0.325 l/min

Remarks: Compressor

8 sec on / 12 sec off / 30 Hz

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-30i

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver - ICE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Saw</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>25.57</u>	Purge Volume Measurement Method	<u>5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>1700 - 1717</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/9/15 - 1719</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1705</u>	<u>1.0</u>	<u>25.55</u>	<u>6.96</u>	<u>15.66</u>	<u>143</u>	<u>2.99</u>	<u>-169.7</u>	<u>cloudy</u>
<u>1708</u>	<u>1.9</u>	<u>25.56</u>	<u>7.00</u>	<u>14.77</u>	<u>150</u>	<u>2.74</u>	<u>-158.4</u>	<u>cloudy</u>
<u>1711</u>	<u>2.8</u>	<u>25.56</u>	<u>6.99</u>	<u>14.40</u>	<u>153</u>	<u>2.67</u>	<u>-149.5</u>	<u>clear</u>
<u>1714</u>	<u>3.6</u>	<u>25.56</u>	<u>7.02</u>	<u>14.16</u>	<u>153</u>	<u>2.72</u>	<u>-147.0</u>	<u>clear</u>
<u>1717</u>	<u>4.5</u>	<u>25.56</u>	<u>7.03</u>	<u>14.06</u>	<u>154</u>	<u>2.77</u>	<u>-141.5</u>	<u>clear</u>
<u>1719</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow Rate - 0.3 l/min

Remarks: Compressor

8 sec. on / 12 sec. off / 35 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-37i

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver-TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Saul</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>29.88</u>	Purge Volume Measurement Method	<u>5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>-</u>	Purge Time (from/to)	<u>1557-1618</u>
1 Purge Volume (gals)	<u>-</u>	Date/Time Sampled	<u>9/9/15 1620</u>
3 Pure Volumes (gals)	<u>-</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) $\pm 0.1$	Temp. (°C)	EC ( $\mu$ S) $\pm 3\%$	DO (mg/L) $\pm 10\%$	Redox (mV) $\pm 10$	Turb. (visual)
1603	0.6	29.84	7.44	16.33	318	4.48	-215.8	clear
1606	1.6	29.84	7.52	15.29	318	2.37	-227.9	clear
1609	2.6	29.85	7.60	14.87	319	1.33	-232.5	clear
1612	3.67	29.85	7.62	14.75	314	0.93	-233.7	clear
1615	4.7	29.85	7.62	14.68	318	0.84	-232.8	clear
1618	5.8	29.85	7.60	14.70	316	0.79	-233.0	clear
1620	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity flow rate - 0.35 l/min

Remarks: Compressor

7 sec on / 13 sec off / 65 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: VMW-08

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Port of Vancouver TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Sawl</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>24.53</u>	Purge Volume Measurement Method	<u>Graduated</u> <del>5-g bucket</del> <del>Cylinder</del>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>1416 - —</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/9/15 - —</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1419</u>	<u>Emptied well</u>	<u>w/ no recharge</u>						
	<u>No Sample</u>	<u>collected</u>						

Purge Equipment peristaltic pump ~~Dedicated Bladder pump~~      Sampling Equipment Peristaltic pump ~~Dedicated tubing~~ Tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/9/15</u>
Project Name	<u>Part of Vancouver TCE</u>	Event	<u>2015</u>
Client Name	<u>Part of Vancouver</u>	Sampled by	<u>L. Seaw</u>

Casing Diameter: (2") 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>25.45</u>	Purge Volume Measurement Method	<u>Graduated bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/9/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>1359- —</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/9/15 —</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units)	Temp. (°C)	EC (µS)	DO (mg/L)	Redox (mV)	Turb. (visual)
<u>1404</u>								
<u>Empties well w/ no recovery</u>								
<u>No sample collected.</u>								

Purge Equipment peristaltic pump ~~Dedicated Bladder pump~~      Sampling Equipment peristaltic pump ~~Dedicated tubing~~

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: 01W-181

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver - TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>I. Saul</u>

Casing Diameter: 2"    4"    Other \_\_\_\_\_

Depth to Water (feet)	<u>28.10</u>	Purge Volume Measurement Method	<u>Graduated sig bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>1059 - 1113</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/10/15 - 1115</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gals)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
1104	1.5	28.13	7.09	15.59	315	5.20	-172.6	Clean
1107	2.5	28.14	7.06	15.14	313	5.30	-168.6	Clean
1110	3.5	28.14	7.05	14.95	313	5.31	-165.6	Clean
1113	4.5	28.14	7.05	14.82	314	5.26	-163.6	Clean
1115	Sample							

Purge Equipment Dedicated Bladder pump    Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow Rate - 0.335    Remarks: Collect - ms/msd & FD-Pol - 091015 0060

~~Tank Pressure - 1400 PSE / Compressor~~

7 Sec on / 13 Sec OFF / 60PSE

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-28i

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Sawl</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>27.04</u>	Purge Volume Measurement Method	<u>5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>0909 - 0920</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/10/15 - 0922</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>0914</u>	<u>1.1</u>	<u>27.04</u>	<u>6.95</u>	<u>14.52</u>	<u>246</u>	<u>6.03</u>	<u>-148.2</u>	<u>clean</u>
<u>0917</u>	<u>1.9</u>	<u>27.04</u>	<u>6.94</u>	<u>14.16</u>	<u>259</u>	<u>5.62</u>	<u>-147.2</u>	<u>clean</u>
<u>0920</u>	<u>2.9</u>	<u>27.04</u>	<u>6.95</u>	<u>14.01</u>	<u>263</u>	<u>5.50</u>	<u>-146.6</u>	<u>clean</u>
<u>0922</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow rate - 0.31 l/min leaking air intake  
 Remarks: Compressor Valve/Fitting  
9 sec on / 11 sec off / 40 PSI  
 Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-34i

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-001</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>K. Saml</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>31. <del>23.28</del> 83</u>	Purge Volume Measurement Method	<u>Grattrey 5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>0947-1007</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/10/15-1009</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ±0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
0952	1.1	31.38 <sup>85</sup>	7.58	13.44	183	4.77	-193.0	clear
0955	2.1	31.39 <sup>86</sup>	7.69	13.04	186	2.48	-216.7	clear
0958	3.1	31.39 <sup>86</sup>	7.71	13.00	186	1.50	-229.2	clear
1001	4.0	31.87	7.74	13.00	187	1.16	-234.9	clear
1004	4.8	31.89	7.75	12.97	186	1.06	-235.4	clear
1007	5.7	31.90	7.75	12.97	188	0.99	-236.3	clear
1009	Sample							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow Rate - 0.335 l/min

Remarks: Compressor

9 sec on / 11 sec off / 55 PSI

Signature \_\_\_\_\_

# Parametrix, Inc.

Well/Sample #: MW-35

## Groundwater Sampling Field Data Sheet

Project Number	<u>215-1440-006</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver TCE</u>	Event	<u>2015-Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>LSaw</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>30.61</u>	Purge Volume Measurement Method	<u>Graduated bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>1144-1201</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/10/15-1203</u>
3 Pure Volumes (gals)	<u>—</u>		

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1149</u>	<u>0.8</u>	<u>30.60</u>	<u>7.03</u>	<u>17.68</u>	<u>259</u>	<u>3.72</u>	<u>-169.4</u>	<u>Clear</u>
<u>1152</u>	<u>1.7</u>	<u>30.61</u>	<u>7.98</u>	<u>16.16</u>	<u>279</u>	<u>4.04</u>	<u>-153.4</u>	<u>Clear</u>
<u>1155</u>	<u>2.6</u>	<u>30.62</u>	<u>6.96</u>	<u>15.72</u>	<u>289</u>	<u>4.16</u>	<u>-143.8</u>	<u>Clear</u>
<u>1158</u>	<u>3.5</u>	<u>30.63</u>	<u>6.96</u>	<u>15.55</u>	<u>293</u>	<u>4.12</u>	<u>-138.6</u>	<u>Clear</u>
<u>1201</u>	<u>4.4</u>	<u>30.63</u>	<u>6.96</u>	<u>15.46</u>	<u>294</u>	<u>3.98</u>	<u>-138.2</u>	<u>Clear</u>
<u>1203</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow rate - 0.31 l/min

Remarks: Compressor

8 Sec on / 12 Sec off / 60 PSF

Signature \_\_\_\_\_

## Groundwater Sampling Field Data Sheet

Project Number	<u>275-1940-008</u>	Date	<u>9/10/15</u>
Project Name	<u>Port of Vancouver TCE</u>	Event	<u>2015 Q3</u>
Client Name	<u>Port of Vancouver</u>	Sampled by	<u>L. Saul</u>

Casing Diameter: 2" 4" Other \_\_\_\_\_

Depth to Water (feet)	<u>40.41</u>	Purge Volume Measurement Method	<u>Graduated 5-g bucket</u>
Depth of Well (feet)	_____	Date Purged	<u>9/10/15</u>
Water Column (feet)	<u>—</u>	Purge Time (from/to)	<u>1227. - 1241</u>
1 Purge Volume (gals)	<u>—</u>	Date/Time Sampled	<u>9/10/15 - 1243</u>
3 Pure Volumes (gals)	<u>—</u>		<u>1242</u>

Time (2400 hr)	Cumulative Volume (gal)	Depth to Water (feet)	pH (units) ± 0.1	Temp. (°C)	EC (µS) ± 3%	DO (mg/L) ± 10%	Redox (mV) ± 10	Turb. (visual)
<u>1032</u>	<u>1.4</u>	<u>40.39</u>	<u>7.14</u>	<u>15.71</u>	<u>326</u>	<u>3.35</u>	<u>-150.7</u>	<u>Clean</u>
<u>1035</u>	<u>2.3</u>	<u>40.38</u>	<u>7.15</u>	<u>15.22</u>	<u>326</u>	<u>3.23</u>	<u>-151.6</u>	<u>Clean</u>
<u>1038</u>	<u>3.3</u>	<u>40.38</u>	<u>7.15</u>	<u>15.06</u>	<u>326</u>	<u>3.16</u>	<u>-147.2</u>	<u>Clean</u>
<u>1041</u>	<u>4.3</u>	<u>40.38</u>	<u>7.16</u>	<u>14.99</u>	<u>325</u>	<u>3.04</u>	<u>-141.6</u>	<u>Clean</u>
<u>1043</u>	<u>Sample</u>							

Purge Equipment Dedicated Bladder pump Sampling Equipment Dedicated tubing

Laboratory	_____	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity Flow rate - 0.35 l/min

Remarks: Compressor

7 sec on / 13 sec off / 40 PSI

Signature \_\_\_\_\_