IN SITU BIOSTIMULATION PILOT TEST EVALUATION AND GROUNDWATER MONITORING STATUS REPORT

HLH/New City Cleaners

Prepared for: HLH, Inc. c/o Riddell Williams, P.S., and Landye Bennett Blumstein, LLP

Project No. 090018-003-01 • March 27, 2015

Aspect CONSULTING

earth + water

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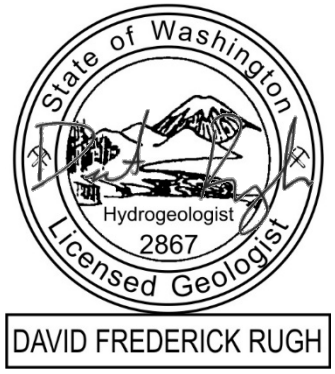

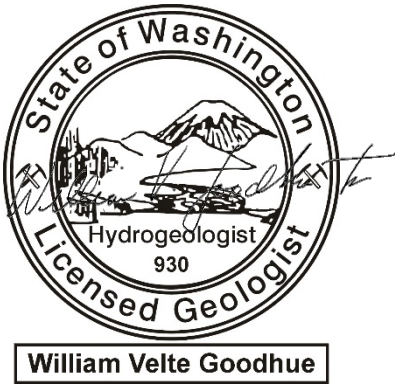

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Acronyms

Aspect	Aspect Consulting, LLC
bgs	below ground surface
cDCE	cis-1,2-dichloroethylene
DCE	dichloroethylene
DHC	*dehalococcoides ethenogenes*
DNA	deoxyribonucleic acid
Ecology	Washington Department of Ecology
foc	fraction organic carbon
gpm	gallons per minute
IER	ISB Evaluation Report
ISB	*in situ* biostimulation
mg/kg	milligrams/kilograms
mg/L	milligrams per liter
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
NCC	New City Cleaners
PCE	tetrachloroethylene
PLFA	phospholipid fatty acid
psig	pounds per square inch gauge
qPCR	quantitative polymerase chain reaction
redox	oxidation-reduction
TCE	trichloroethylene
tDCE	trans-1,2-dichloroethylene
VFA	volatile fatty acid
VOC	volatile organic compound
WAC	Washington Administrative Code

1 Introduction

The New City Cleaners (NCC) property is located at 747 Stevens Drive in Richland, Washington. The Site (Site), as defined in the Agreed Order No. DE6558, dated April 22, 2009, between the Department of Ecology and HLH, Inc., includes on- and off-NCC Property areas impacted from releases of dry cleaning chemicals, including tetrachloroethylene (PCE). PCE has migrated vertically into NCC property hydrostratigraphic units including saturated portions of the Upper Silt Unit and a portion of the Upper Gravelly Sand Unit. PCE has also migrated in groundwater to nearby properties.

Aspect Consulting, LLC (Aspect) prepared a *Remediation Pilot Testing Technology Evaluation Memorandum* (Aspect, 2013a) that recommended that an *in situ* biostimulation (ISB) pilot test be performed in the Upper Silt Unit and in the Upper Gravelly Sand Unit on the NCC property. Ecology provided approval of the *Remediation Pilot Testing Technology Memorandum* on January 4, 2013. Aspect subsequently prepared a *Pilot Test Engineering Design and Implementation Plan* (ISB Pilot Test Plan) (Aspect, 2013b) on August 7, 2013. The ISB Pilot Test Plan defined the objectives, procedures, and evaluation methods for implementation of the ISB pilot test. After test startup, Aspect prepared an *In-Situ Biostimulation Pilot Test and Groundwater Monitoring Status Report* (Aspect, 2014), which summarized the biostimulant injection and initial results from the three month and six month performance sampling events.

This ISB Evaluation Report (IER) describes and evaluates pilot test effectiveness based on comparison of baseline groundwater sampling results to replicate groundwater sampling results collected at 3-, 6-, and 9-month intervals after biostimulation, and comparison of baseline soil samples to replicate soil samples collected 9 months after biostimulation. The IER also includes a summary of Site-wide groundwater data collected since the last groundwater monitoring dataset was reported (Aspect, 2014). Finally, the IER provides recommendations for the integration of the ISB pilot test data into the Site Remedial Investigation and Feasibility Study (RI/FS).

1.1 Overview of Pilot Test Results

The ISB pilot test has demonstrated that biostimulation can be an effective technology for remediating chlorinated volatile organic compounds (VOCs) in Site soil and groundwater. Biostimulants proved readily injectable into both the Upper Silt and Upper Gravelly Sand Units, and the impact of biostimulation extended at least 8 feet in Upper Silt Unit (injection well IW-10 to monitoring well MW-26SC) and at least 25 feet in the Upper Gravelly Sand Unit (MW-28I to MW-26I). Biostimulation to date has decreased PCE and trichloroethylene (TCE) concentrations in soil, and a surfactant effect was observed in the highest concentration areas of impacted soil. Biostimulation also resulted in a decrease in PCE and TCE concentrations in groundwater and an increase in daughter product concentrations. Active biostimulation is ongoing, as the biostimulants injected during the pilot test are anticipated to stimulate bioremediation for up to an additional 1 to 2 years (2 to 3 years total).

1.2 Pilot Test Objectives

The ISB pilot test was performed to evaluate whether ISB is a suitable technology for reducing source zone concentrations in both soil and groundwater at the Site.

The objectives of the ISB pilot test were to:

- Evaluate the injectivity of biostimulants into the Upper Silt Unit and Upper Gravelly Sand Unit;
- Evaluate the detectability, distribution, mobility, and attenuation of biostimulants;
- Evaluate the effect of biostimulants to the native microbial populations and taxonomy to assess the ability of the microbes to bioattenuate PCE and its bioattenuation daughter products;
- Evaluate the concentrations of competitive electron acceptors to assess the effect and resilience of ISB, and the correlation between reducing conditions and the reductive dechlorination of PCE and its bioattenuation daughter products; and
- Evaluate the concentrations of chlorinated VOCs during pilot testing to assess the ability of ISB to effectively reduce PCE and its daughter products in soil and groundwater.

1.3 Pilot Test Timeline

The primary components of the ISB pilot test included well installation, baseline soil and groundwater sampling, biostimulant injection, groundwater sampling at 3-, 6-, and 9-month intervals after ISB injection, and replicate soil sampling 9-months after ISB injection. Table 1.1 summarizes the completed ISB components and additional recommended sampling for the ISB pilot test.

Table 1.1 – Pilot Test Schedule

Completed Activities	Completed Dates
Construction of new injection and monitoring wells	February 11 - 19, 2014
Soil sampling – baseline	February 11 - 14, 2014
Groundwater sampling – baseline (Biotrap sampling duration)	March 11 - 12, 2014 (February 18, 2014 – March 17, 2014)
ISB injection	March 17 - 20, 2014
Groundwater sampling – 3 months after ISB injection (Biotrap sampling duration)	June 26, 2014 (May 22, 2014 – June 26, 2014)
Groundwater sampling – 6 months after ISB injection	September 9 - 10, 2014
ISB Pilot Test and Groundwater Monitoring Status Report	October 17, 2014
Groundwater sampling – 9 months after ISB injection (Biotrap sampling duration)	December 15-16, 2014 (November 13, 2014 – December 16, 2014)
Replicate Soil sampling – 9 months after ISB injection	December 15-16, 2014
Groundwater sampling – 9 months after ISB injection	December 16-17, 2014
ISB Pilot Test Evaluation and Groundwater Monitoring Status Report	March 27, 2015
Recommended Additional Activities	**Anticipated Dates**
Semi-annual sampling of selected ISB pilot test wells	Quarters 2 and 4, 2015

2 ISB Pilot Test Implementation Summary

2.1 Injection Wells

The ISB pilot test injection wells were installed by Holt Services, Inc. between February 13 and 19, 2014. Figure 1 shows the locations of the pilot test injection wells, monitoring wells, and soil borings. Boring logs are included in Appendix A.

2.1.1 Upper Silt Unit

Temporary injection wells were installed in the Upper Silt Unit. Temporary injection wells IW-1 to IW-10 were located south and west of the NCC building and screened in the Upper Silt Unit between 10 and 20 feet below ground surface (bgs.) The depth to groundwater was approximately 14 feet bgs in March 2014 and the bottom of the Upper Silt Unit ranged from 21 to 25 feet bgs in the nearby Upper Gravelly Sand Unit injection wells.

2.1.2 Upper Gravelly Sand Unit

Injection wells in the Upper Gravelly Sand Unit were completed as permanent wells to permit potential additional future injections. Upper Gravelly Sand Unit injection wells MW-27I to MW-31I are located on the south and west of the NCC building and are constructed with 10-foot long well screens at depths ranging from 22 to 34 feet bgs.

2.2 Biostimulant Injection Activities

Holt Services, Inc., with Aspect supervision, prepared and injected a 3DMe® biostimulant emulsion into the ISB injection wells between March 17 and 20, 2014. Table 2.1 summarizes the injection wells, injection intervals, injection pressures and flow rates, injected volumes, and injected mass of biostimulants. A grout pump was used to inject the biostimulant solution. Injection was performed by opening a ball valve to a wellhead injection assembly that included a pressure gauge and totalizing flow meter. Biostimulant was pumped into the injection wells individually. The pressure was monitored in the nearest well during injection to evaluate the pressure radius.

2.2.1 Upper Silt Unit

Five 250-gallon batches of the biostimulant emulsion were prepared for temporary injection wells IW-1 to IW-10, and approximately 125 gallons of the biostimulant emulsion were injected into each temporary injection wells. The injection pressure was limited to 5 pounds per square inch gauge (psig) to minimize hydraulic fracturing, and the resulting injection rates ranged from 2 to 5 gallons per minute (gpm). The injection rate into the Upper Silt Unit wells exceeded the anticipated injection rate of 1.5 gpm, which indicates that the silt is slightly more permeable than anticipated.

2.2.2 Upper Gravelly Sand Unit

Five 250-gallon batches of the biostimulant emulsion were prepared for injection wells MW-27I to MW-31I, and one 250-gallon batch was injected into each well. The injection rates into the Upper Gravelly Sand Unit wells were lower than anticipated. Although the design injection pressure was limited to 6 psig to minimize hydraulic fracturing, the injection pressures were allowed to exceed the design limit in four of the wells, where the

injection pressures ranged from 12 to 15 psig. The resultant injection rates ranged from 3 to 8 gpm. Hydraulic fracturing was not anticipated in coarse grained Gravelly Sand Unit.

3 ISB Pilot Test Soil and Groundwater Monitoring

The conceptual site model is described in Section 2 of the *Pilot Test Engineering Design and Implementation Plan* (Aspect, 2013b). Temporary injection wells IW-1 to IW-10 were placed near confirmed sources of PCE in the Upper Silt Unit and injection wells MW-27I to MW-31I were placed near and upgradient of confirmed sources of PCE in the Upper Gravelly Sand Unit. Figure 1 shows the locations of the wells and soil borings.

Baseline soil and groundwater samples were collected from a subset of the ISB pilot test wells and the impact of biostimulation was monitored by sampling monitoring wells at 3-, 6-, and 9-month intervals after injection. Replicate soil samples were collected adjacent to the baseline soil samples 9 months after injection.

Groundwater sampling was performed to evaluate the presence and distribution of the biostimulants, the impact of biostimulants to microbial growth and taxonomy, the impact of microbial growth on oxidation-reduction (redox) conditions in groundwater, and the impact of redox conditions and microbial populations on the biodegradation of the chlorinated ethylenes. Additionally, non-ISB monitoring wells were sampled for VOCs during the scheduled ISB sampling events, and these data are presented in Section 4 of this report.

3.1 Soil Sampling Results

Baseline soil samples were collected from ISB monitoring and injection well locations during well construction. Samples were collected from the Upper Silt Unit at IW-2, IW-4, IW-10, MW-26S, and MW-31 and from the Upper Gravelly Sand Unit at MW-27I, MW-28I, and MW-31I.

The “collocated” replicate soil borings were located within 2 to 5 feet of the injection wells and within the biostimulation radius of influence. Figure 1 shows the locations of the soil borings. Replicate soil samples were collected adjacent to the baseline samples 9 months after biostimulant injection. Replicate samples were collected in undisturbed soil, as close as possible (horizontally and vertically) to the baseline samples. Table 3.1 presents the concentrations of VOCs and fraction organic carbon (foc) in the baseline and replicate soil samples. A summary of the baseline and post-biostimulation replicate soil samples is provided below.

Upper Silt Unit

IW-2 (soil baseline location) and IW-2C (replicate location)
Biostimulation reduced the concentration of PCE in soil by approximately 70 percent.

IW-4 (soil baseline location) and IW-4C (replicate location):
Biostimulation reduced the concentrations of PCE and TCE to below the detection limits, and increased the concentrations of degradation products cis-1,2-dichloroethylene (cDCE) and trans-1,2-DCE (tDCE).

IW-10 (soil baseline location) and IW-10C (replicate location):

Biostimulation reduced the concentrations of PCE and TCE in the replicate soil sample by 35 and 50 percent, respectively. PCE concentrations were reduced to below 0.05 milligrams per kilograms (mg/kg).

MW-26S (baseline location) and MW-26SC (replicate location):
Biostimulation reduced the concentrations of PCE and TCE by 50 and 65 percent for PCE and TCE, respectively, near the top of the injection interval. Near the bottom of the injection interval, biostimulation reduced the concentration of PCE by approximately 20 percent.

MW-31I (baseline location) and MW-31IC (replicate location):
The PCE concentration in the replicate sample was higher than in the baseline sample, possibly due to either heterogeneity between sample locations, or a surfactant effect. TCE concentrations in the replicate sample were reduced by over 30 percent.

Upper Gravelly Sand Unit

MW-27I (baseline location) and MW-27IC (replicate location):
In the upper part of the injection interval (20 to 21 foot bgs), biostimulation reduced the concentrations of PCE by 90 percent, and reduced the concentration of TCE by 85 percent. VOCs were not detected in the baseline soil sample from the lower part of the injection interval (30 to 31 foot bgs).

MW-28I (baseline location) and MW-28IC (replicate location):
Biostimulation reduced the concentration of PCE by 80 percent, and reduced the concentration of TCE by over 95 percent.

MW-31I (baseline location) and MW-31IC (replicate location):
Biostimulation reduced PCE concentrations by 95 percent. Sample results show increased concentrations of TCE, likely related to the documented contemporaneous PCE dechlorination.

3.2 Groundwater Sampling Results

Table 3.2 summarizes the ISB groundwater monitoring data. The data summarized include available carbon, microbial response, redox parameters, and sequential degradation of parent VOC compounds into daughter product VOCs.

3.2.1 Available Carbon and Microbial Response

ISB groundwater samples were analyzed for volatile fatty acids (VFAs) to measure the presence and distribution of the lactate-based biostimulants. VFA analysis reports the concentrations of 10 fatty acids, including lactic acid. The total concentration of VFAs were calculated to estimate the trend of distribution and consumption of the biostimulant.

Upper Silt Unit
VFAs were measured in MW-5S and MW-26S in the Upper Silt Unit, located 6 feet downgradient from injection wells IW-5 and IW-10, respectively. VFAs increased in both wells throughout the 9-month test. At MW-26S, the total concentration of VFAs increased by over three orders of magnitude.

In the Upper Silt Unit, acetic acid was the predominant VFA detected during the pilot test. The acetic acid generated during the test was converted from lactate, which is a main ingredient of the 3DMe biostimulant. Lactate conversion to acetic acid occurs under anoxic conditions, which were present throughout the pilot test.

Biostimulation increased the total aquifer biomass by more than a factor of 100 in MW-5S and by a factor of 200 in MW-26S after 3 months. The total biomass subsequently decreased in MW-5S and MW-26S between 3 and 9 months. Supplemental discussions of

VFA and microbial analyses for the Upper Silt Unit wells are provided in Appendix B. Appendix C provides a biomass interpretation guide from Microbial Insights. Laboratory Certificates of Analysis are provided in Appendix D.

Upper Gravelly Sand Unit

VFAs were measured in injection well MW-31I and in observation well MW-32I in the Upper Gravelly Sand Unit, which is 11 feet downgradient from MW-31I. VFAs were also measured in injection well MW-28I and in observation well MW-26I, which is 25 feet downgradient of MW-28I.

In injection well MW-31I, the total concentrations of VFAs increased throughout the 9-month ISB test interval. In observation well MW-32I, concentrations of VFAs increased after 3 months, and then subsequently decreased after both 6 and 9 months.

The concentration of VFAs in injection well MW-28I increased by over 3 orders of magnitude during the 9 month ISB test. Biostimulants were distributed from MW-28I at least 25 feet downgradient to MW-26I, where modest increases in VFA concentrations were recorded throughout the 9 month ISB test.

Supplemental discussions of VFA and microbial analyses for the Upper Gravelly Sand Unit wells are provided in Appendix B.

3.2.2 Impact to Reducing Conditions

The intent of ISB is to create a biostimulated carbon source that enables the microbial population to grow and consume the available dissolved oxygen from the groundwater. Reductive dechlorination occurs when these anaerobic bacteria use the chlorinated VOCs for respiration. The more chlorinated species (more reduced species), e.g., PCE, have the highest oxidation potential and are preferentially used as electron acceptors for microbial respiration in the absence of nitrate, whereas less chlorinated species (more oxidized species), e.g., vinyl chloride, are generally used as electron acceptors for microbial respiration when sulfate and ferric iron become depleted. Ideally, biostimulation should create sulfate- and iron-reducing conditions.

Upper Silt Unit

Biostimulation transitioned observation wells MW-5S and MW-26S, located 6 feet from the nearest injection well, from aerobic to reducing conditions. A transition to reducing conditions was not observed in control well MW-6S, which is about 80 feet from the nearest Upper Silt Unit injection well. A more detailed discussion of Upper Silt Unit redox conditions before and during the ISB test is provided in Appendix B.

Upper Gravelly Sand Unit

The Upper Gravelly Sand Unit pilot test wells were generally under anaerobic and nitrate-reducing conditions prior to biostimulation. During the ISB test, nitrite concentrations in the Upper Gravelly Sand Unit wells increased to generally twice pre-biostimulation levels.

The background concentrations of sulfate and iron provide insight into the pre-ISB Upper Gravelly Sand Unit conditions. Baseline sulfate concentrations indicate marginally sulfate-reducing conditions were present pre-ISB in the Upper Gravelly Sand Unit. Baseline iron concentrations confirm that natural iron-reducing conditions were not present prior to the ISB.

Biostimulation resulted in a decreasing trend in sulfate and an increasing trend in iron in injection wells MW-28I and MW-31I, which confirm ISB-induced sulfate- and iron-reducing conditions. Sulfate-reducing conditions were also documented in observation well MW-32I, located 11 feet downgradient from injection well MW-31I. In observation well MW-26I, located 25 feet downgradient from MW-28I, the observed decreasing trends in oxidation-reduction potential (ORP) and sulfate, coupled with an increasing trend in nitrite, are likely attributable to biostimulation.

3.2.3 Attenuation of Chlorinated VOCs

Reductive dechlorination decreases the parent compound by generating a variety of daughter compounds. The amount of reductive dechlorination accomplished during the ISB can be evaluated through comparison of the trends in concentrations of PCE and daughter products in groundwater during testing. In areas where significant source compounds remain sorbed to soils, biostimulants create a surfactant effect that can accelerate desorption and increase VOC concentrations in groundwater.

Table 3.2 also shows the total of number moles per liter of the chlorinated ethylenes PCE, TCE, the DCE isomers, and vinyl chloride for groundwater samples collected over the course of the ISB testing. Details on groundwater VOC concentration trends are discussed below.

Upper Silt Unit
Biostimulation accelerated the reductive dechlorination reactions in observation wells MW-5S and MW-26S, which are 6 feet downgradient from the nearest injection wells. Biostimulation did not affect control well MW-6S, which is 80 feet from the nearest Upper Silt Unit injection well.

In observation well MW-5S, concentrations of PCE and TCE decreased, and the concentrations of cDCE and vinyl chloride increased. In MW-26S, the concentration of both PCE and TCE decreased more than an order of magnitude after 9 months. Conversely, the concentration of daughter products cDCE and vinyl chloride in well MW-26S each increased more than an order of magnitude.

The increase in cDCE and vinyl chloride are expected consequences of the ISB-induced reducing conditions. Once the biostimulants become depleted and the groundwater recovers to its pre-treatment conditions, the residual cDCE and vinyl chloride will likely continue to biodegrade through aerobic pathways.

Upper Gravelly Sand Unit
Biostimulation also accelerated the reductive dechlorination reactions within the Upper Gravelly Sand Unit pilot test area. At the time of this report, accelerated reductive dechlorination had not been observed in hydraulically downgradient control wells MW-6I and MW-10I.

A surfactant effect caused by the ISB biostimulants is evident in injection well MW-31I, which had the highest background soil concentrations of both TCE and PCE in the Upper Gravelly Sand Unit. Although a limited decrease in PCE was observed in groundwater from well MW-31I, the concentrations of daughter products increased significantly. The total number of moles of chlorinated VOCs and daughter products in the 9-month groundwater samples increased almost 40-fold over the pre-ISB results. The surfactant-

effect is considered beneficial during the active biostimulation period. Continued monitoring is warranted to evaluate VOC trends after biostimulant depletion.

Biostimulation was also effective in attenuation of VOCs in well MW-32I, located 11 feet downgradient of injection well MW-31I. PCE and TCE concentrations both decreased substantially over the ISB testing period. The decrease in PCE and TCE were accompanied by an increase in cDCE.

Accelerated reductive dechlorination is also evident in MW-26I, which is located 25 feet downgradient from injection well MW-28I. Concentrations of PCE in MW-26I decreased nearly an order of magnitude during the 9-month testing period.

3.2.4 Monitoring of ISB Pilot Test Control Wells

Control wells MW-6I and MW-10I were sampled for chlorinated VOCs, metals, and redox parameters, and the results are summarized in Table 3.3. This sampling was completed as a means to evaluate the potential for metals remobilization downgradient of the ISB test area. The results do not indicate any evidence of metals mobilization in the control wells.

4 Site-Wide Groundwater Monitoring

This section provides a summary of the Site-wide sampling that was performed independently from the ISB pilot test sampling. Quarterly groundwater sampling of selected monitoring wells was completed in March 2014, June 2014, September 2014, and December 2014. These sampling events were completed in accordance with the Ecology-approved original *Data Gap Investigation Work Plan* (Aspect, 2009), and the updated or superseded sections of the *Data Gap Investigation Work Plan Addendum* (Aspect, 2011) and *Second Data Gaps Investigation Work Plan Addendum* (Aspect, 2013c).

4.1 Groundwater Flow Direction

Groundwater flow direction in the Upper Silt Unit was to the southeast during all four 2014 monitoring events. Flow directions observed in the Upper Gravelly Sand Unit was also to the southeast during all four events, and consistent with the range of previously observed flow directions. Groundwater elevation measurements were collected during each sampling event at all Site wells, including wells that are not included in the sampling program.

4.2 Groundwater Sampling Results

Groundwater elevation contour maps and chlorinated VOC groundwater sampling results for the Upper Silt Unit and the Upper Gravelly Sand Unit during December 2014 are provided on Figures 4 and 5, respectively. Historic analytical results for the Upper Silt Unit and the Upper Gravelly Sand Unit wells are provided in Tables 4.1 and 4.2, respectively. Concentrations of VOCs during the four 2014 sampling events were generally comparable with concentrations observed during the previous sampling events, with the exception of monitoring wells within the ISB Pilot Test area. ISB results are discussed in previous sections of this report.

5 Closing

The results of the ISB pilot test confirm that this technology is applicable for Site conditions and holds significant promise as a potential final site remedy for both soil and groundwater. Biostimulation is an effective means to complement existing natural bioattenuation. It is expected that biostimulation can effectively reduce the total mass of contamination in the source areas, which will lead to decreased migration of contamination from the source properties and eventual shrinking of the off-property chlorinated VOC groundwater plume. Biostimulation will therefore be retained as a presumptive remedy in the upcoming Site RI/FS.

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Limitations

Work for this project was performed for HLH, Inc. (Client) c/o Riddell Williams, P.S., and Landye Bennett Blumstein, LLP, and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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TABLES

Table 2.1 - ISB Pilot Test Injection Data Summary

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Injection Well	Injection Date(s)	Screen Interval (feet)	Injection Pressure (psig)	Average Injection Rate (gpm)	3DMe® Factory Emulsified (lb)	HRC Primer® (lb)	Total Volume (gal)	Notes
IW-1	3/17/2014	10-20	5	4	200	15	125	
IW-2	3/18/2014	10-20	5	3	200	15	125	
IW-3	3/17/2014	10-20	5	5	200	15	125	
IW-4	3/20/2014	10-20	4	2	200	15	125	
IW-5	3/17/2014	10-20	5	3	200	15	125	
IW-6	3/17/2014	10-20	5	5	200	15	125	
IW-7	3/17/2014	10-20	5	5	200	15	125	
IW-8	3/17/2014	10-20	3	5	200	15	125	Flow rate was initially 10 gpm, mounding observed in IW-7
IW-9	3/17/2014	10-20	5	3	200	15	125	
IW-10	3/20/2014	10-20	4	3	200	15	125	Mounding observed at MW-26s
MW-27I	3/19/2014	22-32	12	3	400	30	750	
MW-28I	3/19/2014	22-32	15	4	400	30	690	
MW-29I	3/19/2014	24-34	12	3	400	30	750	
MW-30I	3/18/2014	23-33	6	5	400	30	750	Injectate observed in monument, pressure lowered
MW-31I	3/19/2014	24-34	13	8	400	30	750	

Notes:

psig = pounds per square inch gauge

Table 3.1 - ISB Pilot Test Soil Data

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Upper Silt Unit

Chemical Name	Soil, Method A, Unrestricted Land Use, Table Value (mg/kg)	IW-2 2/18/14 (10-11 ft.)	IW-2C 12/15/14 (10-11 ft.)	IW-2 2/18/14 (15-16 ft.)	IW-2C 12/15/14 (15-16 ft.)	IW-4 2/13/14 (15-16 ft.)	IW-4C 12/16/14 (15-16 ft.)	IW-4 2/13/14 (18-19 ft.)	IW-4C 12/16/14 (18-19 ft.)	IW-10 2/13/14 (10-11 ft.)	IW-10C 12/15/14 (10-11 ft.)	MW-26S 2/13/14 (10-11 ft.)	MW-26SC 12/15/14 (10-11 ft.)	MW-26S 2/13/14 (19-20 ft.)	MW-26SC 12/15/14 (19-20 ft.)	MW-31I 2/13/14 (20-21 ft.)	MW-31IC 12/16/14 (20-21 ft.)
Conventional Chemistry Parameters																	
Total Organic Carbon in mg/kg		560	630	480	1,100	860	330 U	1,200	1,300	1,000	480	840	320 U	710	430	4,100	3,600
Volatile Organic Compounds (VOC)																	
Tetrachloroethene (PCE) in mg/kg	0.05	0.011	0.0032	0.0034	0.0011 U	0.011	0.0013 U	0.012	0.0013 U	0.073	0.047	0.07	0.034	0.15	0.12	0.03	0.13
Trichloroethene (TCE) in mg/kg	0.03	0.0014 U	0.00098 U	0.0015 U	0.0011 U	0.04	0.0013 U	0.49	0.0013 U	0.2	0.1	0.2	0.071	0.08	0.058	5.5	3.8 UH
cis-1,2-Dichloroethene (DCE) in mg/kg		0.0014 U	0.00098 U	0.0015 U	0.0016	0.015	0.11	0.044	0.33	0.013	0.088	0.022	0.018	0.0028	0.07	0.038	0.3
trans-1,2-Dichloroethene in mg/kg		0.0014 U	0.00098 U	0.0015 U	0.0011 U	0.00086 U	0.0013 U	0.0011 U	0.0015	0.0011 U	0.0011 U	0.001 U	0.001 U	0.0012 U	0.0011 U	0.0013 U	0.0033
1,1-Dichloroethene in mg/kg		0.0068 U	0.0049 U	0.0076 U	0.0053 U	0.0043 U	0.0063 U	0.0055 U	0.0063 U	0.0053 U	0.0053 U	0.0052 U	0.005 U	0.0058 U	0.0053 U	0.0065 U	0.0051 U
Vinyl chloride in mg/kg		0.0014 U	0.00098 U	0.0015 U	0.0011 U	0.00086 U	0.0013 U	0.0011 U	0.0013 U	0.0011 U	0.0011 U	0.001 U	0.001 U	0.0012 U	0.0011 U	0.0013 U	0.001 U
Carbon tetrachloride in mg/kg		0.0014 U	0.00098 U	0.0015 U	0.0011 U	0.00086 U	0.0013 U	0.0011 U	0.0013 U	0.0011 U	0.0011 U	0.001 U	0.001 U	0.0012 U	0.0011 U	0.0013 U	0.001 U
Chloroform in mg/kg		0.0014 U	0.00098 U	0.0015 U	0.0011 U	0.00086 U	0.0013 U	0.0011 U	0.0013 U	0.0011 U	0.0011 U	0.001 U	0.001 U	0.0012 U	0.0011 U	0.0013 U	0.001 U
Methylene chloride in mg/kg	0.02	0.02 U	0.015 U	0.023 U	0.016 U	0.013 U	0.019 U	0.016 U	0.019 U	0.016 U	0.016 U	0.016 U	0.015 U	0.017 U	0.016 U	0.019 U	0.015 U
Chloromethane in mg/kg		0.0014 U	0.00098 U	0.0015 U	0.0011 U	0.00086 U	0.0013 U	0.0011 U	0.0013 U	0.0011 U	0.0011 U	0.001 U	0.001 U	0.0012 U	0.0011 U	0.0013 U	0.001 U

Upper Gravelly Sand Unit

Chemical Name	Soil, Method A, Unrestricted Land Use, Table Value (mg/kg)	MW-27I 2/14/14 (20-21 ft.)	MW-27IC 12/15/14 (20-21 ft.)	MW-27I 2/14/14 (30-31 ft.)	MW-27IC 12/15/14 (30-31 ft.)	MW-28I 2/11/14 (20-21 ft.)	MW-28IC 12/15/14 (20-21 ft.)	MW-31I 2/13/14 (25-26 ft.)	MW-31IC 12/16/14 (25-26 ft.)
Conventional Chemistry Parameters									
Total Organic Carbon in mg/kg		590	720	480	1,300	2,700	350 U	2,000	1,200
Volatile Organic Compounds (VOC)									
Tetrachloroethene (PCE) in mg/kg	0.05	0.15	0.015	0.0013 U	0.00095 U	0.098 H	0.02	0.73	0.039
Trichloroethene (TCE) in mg/kg	0.03	0.027	0.0039	0.0013 U	0.00095 U	0.076 H	0.0017	0.085	0.15
cis-1,2-Dichloroethene (DCE) in mg/kg		0.016	0.028	0.0013 U	0.00095 U	0.0079 H	0.0082	0.0048	0.12
trans-1,2-Dichloroethene in mg/kg		0.0011 U	0.001 U	0.0013 U	0.00095 U	0.0011 UH	0.0011 U	0.0014 U	0.001
1,1-Dichloroethene in mg/kg		0.0054 U	0.0052 U	0.0063 U	0.0047 U	0.0054 UH	0.0054 U	0.007 U	0.0034 U
Vinyl chloride in mg/kg		0.0011 U	0.001 U	0.0013 U	0.00095 U	0.0011 UH	0.0011 U	0.0014 U	0.00069 U
Carbon tetrachloride in mg/kg		0.0011 U	0.001 U	0.0013 U	0.00095 U	0.0011 UH	0.0011 U	0.0014 U	0.00069 U
Chloroform in mg/kg		0.0011 U	0.001 U	0.0013 U	0.00095 U	0.0011 UH	0.0011 U	0.0014 U	0.00069 U
Methylene chloride in mg/kg	0.02	0.016 U	0.016 U	0.019 U	0.014 U	0.016 UH	0.016 U	0.021 U	0.01 U
Chloromethane in mg/kg		0.0011 U	0.001 U	0.0013 U	0.00095 U	0.0011 UH	0.0011 U	0.0014 U	0.00069 U

Notes

Concentrations within shaded border indicate value exceeds Soil, Method A, Unrestricted Land Use, Table Value (mg/kg)

* - Duplicate RPD is not within established control limits.

H - The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible.

U - Analyte was not detected at or above the reported result.

NA - Not applicable

Table 3.2 - ISB Pilot Test Groundwater Data

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Bioremediation Parameters	Preliminary Screening Level (µg/L)	IW-2 Injection Boring	IW-4 Injection Boring	MW-5S Observation Well (6-ft from IW-5) Injection Date: March 17, 2014				MW-26S Observation Well (6-ft from IW-10) Injection Date: March 20, 2014				MW-6S Control Well Not Influenced by Biostimulation			
		3/12/2014	3/12/2014	3/12/2014	6/16/2014	9/10/2014	12/16/2014	3/12/2014	6/16/2014	9/10/2014	12/16/2014	3/11/2014	6/16/2014	9/10/2014	12/15/2014
Elapsed Time (Days) Since Injection		-6	-8	-5	91	177	274	-8	88	174	271	NA	NA	NA	NA
Biostimulants/ Available Carbon															
Volatile Fatty Acids (Tracks Biostimulant)															
Lactic acid (mg/L)				<0.10	<1.0	0.13	<1.0	0.42	<1.0	<10	11				
Acetic acid (mg/L)				0.098	7.3	9.8	18	0.13	48	200	560				
Propionic acid (mg/L)				<0.050	9.4	0.61	<0.5	<0.050	51	170	23				
Formic acid (mg/L)				<0.10	0.69	0.13	<1.0	<0.10	2.2	7.2	2.3				
Butyric acid (mg/L)				<0.050	0.51	0.30	0.62	0.059	2.1	13	14				
Pyruvic acid (mg/L)				<0.15	<0.15	<0.15	<1.5	<0.15	0.74	5.4	1.7				
i-Pentanoic acid (mg/L)				<0.15	<0.15	<0.15	<1.5	<0.15	0.32	0.78	<1.5				
Pentanoic acid (mg/L)				<0.070	0.090	<0.070	<0.70	<0.070	0.77	5.4	1.1				
i-Hexanoic acid (mg/L)				<0.10	<0.20	<0.20	<2.0	<0.10	<0.20	<0.20	<2.0				
Hexanoic acid (mg/L)				<0.50	<0.50	<0.50	<5.0	<0.50	1.8	7.2	<5.0				
Total, Volatile Fatty Acids (mg/L)				0.1	18.0	11.0	18.6	0.6	106.9	409.0	613.1				
Dissolved organic carbon (DOC) (mg/L)				2											
Microbial Response															
Collection Date for Bio-Trap samplers				3/17/2014	6/26/2014		12/16/2014	3/17/2014	6/26/2014		12/16/2014				
Phospholipid Fatty Acid (Measures Community Structure and Stress Indicators)															
Total Biomass (cells/bead)				<1.65E+04	1.64E+06		2.52E+05	6.46E+04	1.28E+07		5.60E+05				
Community Structure (% total PLFA)															
Monos: includes wide variety of aerobic and anaerobic bacteria				0.00	62.75		52.60	78.06	61.76		47.60				
Nsats: found in all organisms, high number indicates lack of diversity				0.00	24.65		31.84	21.94	23.90		36.55				
TerBrSats: anaerobic bacteria, produce H_2 for reductive dechlorination				**0.00**	**8.30**		**6.90**	**0.00**	**3.54**		**5.85**				
MidBrSats: include sulfate- and iron-reducing bacteria				**0.00**	**0.98**		**2.98**	**0.00**	**0.35**		**1.11**				
BrMonos: include sulfate- and iron-reducing bacteria				**0.00**	**0.58**		**2.44**	**0.00**	**0.19**		**0.79**				
Polyenoics: scavengers associated with contaminant utilizing bacteria				**0.00**	**2.70**		**3.25**	**0.00**	**10.27**		**8.08**				
Physiological Status (Monos)															
Slowed growth				0.00	0.01		0.37	1.36	2.11		0.15				
Decreased permeability				0.00	0.03		0.05	0.00	0.28		0.10				
CENSUS® (DNA Analysis of Specific Bacteria)															
Dehalococcoides (DHC) cells/bead				<25	<25		457	<25	75.9		<25				
tceA Reductase (TCE)				<25			153	<25			<25				
BAV1 Vinyl Chloride Reductase (BVC)				<25			<25	<25			<25				
Vinyl Chloride Reductase (VCR)				<25			5.5	<25			<25				
Competing Electron Acceptors / Redox Parameters															
ORP (mV) (negative values are desired)		107	96.5	78	-34.9	-164.3	-127.8	91.4	-26	-66.1	-91.9	138.6	95.2	37.9	0.2
Dissolved oxgyen (mg/L) (ideally <0.5 mg/L)		3.15	0.96	2.35	0.16	0.08	0.18	0.92	0.09	0.26	0.09	1	1.03	0.36	0.37
Nitrate (mg/L) (ideally not detected)	10				<0.1	<0.9	<0.9	0.9	<0.1	<0.9	<0.9	1.6	1.3	<0.9	<0.9
Nitrite (mg/L) (presence indicates reducing conditions)	1				<0.1	**3.2**	**8.1**	**3.1**	<0.1	<0.6	**24**	**2.7**	<0.1	**2.5**	**6.3**
Sulfate (mg/L) (competing electron acceptor, <20 mg/L desired)					<1	1.3	3.6	35	10	<1.2	<1.2	32	38	28	22
Iron, total (mg/L) (ferrous iron is more soluble, increasing trend desired)					2.22	1.4	2.6	<0.5	4.7	41	57	<0.5	<0.5	<0.5	<0.5
Methane (ug/L)				<0.005	0.024	0.92	3.3	<0.005	0.0058	1	3.8				
Chlorinated VOCs/daughter products															
PCE (ug/L)	5	**5.2**	**88**	**27**	4.9	0.68	0.13	**74**	**12**	3.8	3.1	3.3	4.3	3.2	3.8
TCE (ug/L)	5	0.64	**350**	**5.3**	2.3	0.53	0.46	**180**	**31**	**13**	**7.9**	2.5	2.4	2.3	1.9
cis-1,2-DCE (ug/L)	70	<0.1	**210**	0.1	22	24	29	9.7	48	**330**	**510**	0.37	0.29	0.25	0.26
trans-1,2-DCE (ug/L)	100	<0.1	1.6	<0.1	<0.1	<0.1	<0.1	0.31	0.27	0.93	1.4	0.17	0.15	0.15	0.12
1,1-DCE (ug/L)	7	<0.1	0.64	<0.1	<0.1	<0.1	<0.1	0.11	0.14	0.65	0.74	<0.1	<0.1	<0.1	<0.1
Vinyl chloride (ug/L)	0.2	<0.02	0.12	<0.02	<0.02	0.078	0.15	<0.02	**0.34**	**5.5**	**5.2**	<0.02	<0.02	<0.02	<0.02
Carbon tetrachloride (ug/L)	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloroform (ug/L)	80	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methylene chloride (ug/L)	5	<0.5	<0.5	<0.5	0.51	<0.5	<0.5	<0.5	2.8	<0.5	<0.5	<0.5	0.57	<0.5	<0.5
Chloromethane (ug/L)		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethene (ug/L)				<5	<5	<5	<5	<5	<5	<5	<5				
Ethane (ug/L)				<5	<5	<5	<5	<5	<5	<5	<5				
Methane (ug/L)				<5	24	920	3,300	<5	5.8	1,000	3,800				
Total chlorinated ethylenes (µg-moles/L)		0.04	5.39	0.20	0.27	0.26	0.31	1.92	0.82	3.69	5.50	0.04	0.05	0.04	0.04

Notes:

1. Chloroform is a disinfection byproduct that is also a degradation product of carbon tetrachloride. The presence of chloroform in the absence of carbon tetrachloride is an indicator of treated water and potentially a sanitary sewer leak.
2. Methane is an indicator of methanogenesis, which is generated by the reduction of carbon dioxide in groundwater. Methane is also a degradation byproduct along the reductive dechlorination pathway.
3. Chlorinated ethylenes and chlorinated methanes are both amenable to reductive dechlorination degradation, which involves similar mechanisms for sequential removal of chloride ligands.
4. Concentrations in shaded cells indicate value exceeds Preliminary Screening Level. Preliminary Screening Levels are the more stringent of the Ground Water, Method A, Table Value (µg/L) and the Federal Maximum Contaminant Level (µg/L).

Table 3.2 - ISB Pilot Test Groundwater Data

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Bioremediation Parameters	MW-31I Injection Well Injection Date: March 19, 2014				MW-32I Observation Well (11 feet from MW-31I) Injection Date: March 19, 2014				MW-28I Injection well Injection Date: March 19, 2014				MW-26I Observation Well (25-ft from MW-28I) Injection Date: March 19, 2014			
	3/12/2014	6/17/2014	9/10/2014	12/16/2014	3/12/2014	6/16/2014	9/10/2014	12/16/2014	3/12/2014	6/17/2014	9/10/2014	12/16/2014	3/12/2014	6/17/2014	9/10/2014	12/16/2014
Elapsed Time (Days) Since Injection	-7	90	175	272	-7	89	175	272	-7	90	175	272	-7	90	175	272
Biostimulants/ Available Carbon																
Volatile Fatty Acids (Tracks Biostimulant)																
Lactic acid (mg/L)	<0.10	1.8	<10	<10	0.26	0.31	0.61	<1.0	0.14	23	<10	11	0.17	0.36	0.22	<1.0
Acetic acid (mg/L)	0.14	170	540	800	0.29	3.3	2.8	1.1	0.097	460	270	500	0.14	0.79	1.4	<0.70
Propionic acid (mg/L)	<0.050	290	480	250	<0.050	5.3	0.58	<0.50	0.051	840	400	380	<0.050	0.52	0.053	<0.50
Formic acid (mg/L)	<0.10	<10	18	<10	<0.10	0.23	0.13	<1.0	<0.10	30	11	<10	<0.10	0.18	<0.10	<1.0
Butyric acid (mg/L)	0.062	12	54	130	<0.050	0.12	0.088	0.5	<0.050	17	46	94	<0.050	0.098	<0.050	0.51
Pyruvic acid (mg/L)	<0.15	2.5	20	35	<0.15	<0.15	<0.15	<1.5	<0.15	6.4	5.4	8.7	<0.15	<0.15	<0.15	<1.5
i-Pentanoic acid (mg/L)	<0.15	<1.5	3.5	3.1	<0.15	<0.15	<0.15	<1.5	<0.15	2.5	2.5	2.5	<0.15	<0.15	<0.15	<1.5
Pentanoic acid (mg/L)	<0.070	18	56	100	<0.070	0.11	0.07	<0.70	<0.070	12	85	130	<0.070	<0.070	0.074	<0.70
i-Hexanoic acid (mg/L)	<0.10	0.32	<0.20	<2.0	<0.10	<0.20	<0.20	<2.0	<0.10	<0.20	<0.20	<2.0	<0.10	<0.20	<0.20	<2.0
Hexanoic acid (mg/L)	<0.50	1.3	8.0	22.0	<0.50	<0.50	<0.50	<5.0	<0.50	0.66	7.0	25	<0.50	<0.50	<0.50	<5.0
Total, Volatile Fatty Acids (mg/L)	0.2	495.9	1,179.5	1,340.1	0.6	9.4	4.3	1.6	0.3	1,391.6	826.9	1,151.2	0.3	1.9	1.7	0.5
Dissolved organic carbon (DOC) (mg/L)	3.4	260	600		3.4	6.8	4.9									
Microbial Response																
Collection Date for Bio-Trap samplers	3/17/2014				3/17/2014	6/26/2014		12/16/2014								
Phospholipid Fatty Acid (Measures Community Structure and Stress Indicators																
Total Biomass (cells/bead)	1.08E+05	NS		NS	5.57E+04	1.72E+05		4.60E+05								
Community Structure (% total PLFA)																
Monos: includes wide variety of aerobic and anaerobic bacteria	88.46	NS		NS	80.66	53.55		54.99								
Nsats: found in all organisms, high number indicates lack of diversity	11.55	NS		NS	16.86	25.08		32.16								
TerBrSats: anaerobic bacteria, produce H_2 for reductive dechlorination	**0.00**	NS		NS	**0.00**	**0.88**		**3.21**								
MidBrSats: include sulfate- and iron-reducing bacteria	**0.00**	NS		NS	**0.00**	**0.36**		**1.05**								
BrMonos: include sulfate- and iron-reducing bacteria	**0.00**	NS		NS	**0.00**	**0.00**		**0.55**								
Polyenoics: scavengers associated with contaminant utilizing bacteria	**0.00**	NS		NS	**2.49**	**20.63**		**8.04**								
Physiological Status (Monos)																
Slowed growth	0.17	NS		NS	0.11	0.31		0.13								
Decreased permeability	0.02	NS		NS	0.05	0.06		0.29								
CENSUS® (DNA Analysis of Specific Bacteria)																
Dehalococcoides (DHC) cells/bead	<25	NS		NS	<25	66.5		166								
tceA Reductase (TCE)	<25	NS		NS	<25			<25								
BAV1 Vinyl Chloride Reductase (BVC)	<25	NS		NS	<25			<25								
Vinyl Chloride Reductase (VCR)	<25	NS		NS	<25			<25								
Competing Electron Acceptors / Redox Parameters																
ORP (mV) (negative values are desired)	-28	-3.6	66.7	76.7	-108.2	-76.9	-150.2	-117.5	7.66	10.3	37.6	-19.6	-22.7	88.2	-175.6	-163
Dissolved oxgyen (mg/L) (ideally <0.5 mg/L)	0.07	0.14	0.34	0.07	0.14	0.33	0.09	0.17	ERR	0.18	0.17	0.05	0.16	7.76	0.06	0.17
Nitrate (mg/L) (ideally not detected)	<0.9	<0.1	<0.9	<0.9	<0.9	<0.1	<0.9	<0.9	<0.9	<0.1	<0.9	<0.9	<0.9	<0.1	<0.9	<0.9
Nitrite (mg/L) (presence indicates reducing conditions)	**3.2**	<0.1	3.2	**6.4**	**3.1**	<0.1	<0.6	**9.4**	**3.2**	<0.1	<0.6	**6.3**	**4.1**	<0.1	<0.6	**9.2**
Sulfate (mg/L) (competing electron acceptor, <20 mg/L desired)	24	10	1.2	<1.2	27	26	10	8.4	24	<0.1	1.2	<1.2	56	15	31	23
Iron, total (mg/L) (ferrous iron is more soluble, increasing trend desired)	<0.5	17	72	110	<0.5	<0.5	<0.5	<0.5	<0.5	30	29	71	<0.5	<0.5	<0.5	<0.5
Methane (ug/L)									0.049	<0.005	0.1	2.3	0.16	0.011	0.057	0.32
Chlorinated VOCs/daughter products																
PCE (ug/L)	**19**	**7.4**	**6.4**	**13**	**52**	**28**	0.92	2.8	**8.3**	0.25	0.18	0.25	**47**	**11**	**17**	**6.8**
TCE (ug/L)	**70**	**590**	**750**	**420**	**68**	**120**	**35**	<0.1	**11**	3	**5.4**	**7.5**	**460**	**62**	**210**	**98**
cis-1,2-DCE (ug/L)	12	**310**	**2,900**	**3,200**	45	52	**340**	**300**	1.5	4.3	47	**81**	**620**	**140**	**640**	**670**
trans-1,2-DCE (ug/L)	0.13	4.4	12	9.8	0.31	0.42	0.78	0.59	<0.1	<0.1	<0.1	0.15	3	0.77	4.2	2.5
1,1-DCE (ug/L)	0.17	1.1	4.4	5	0.16	0.19	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	1.2	0.36	1.7	0.74
Vinyl chloride (ug/L)	**0.21**	**2.4**	**49**	**63**	**0.49**	<0.02	**0.74**	**0.57**	<0.02	0.07	**1.2**	**1.7**	**0.47**	0.077	**0.61**	**0.36**
Carbon tetrachloride (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloroform (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	26	1.4	2.1
Methylene chloride (ug/L)	<0.5	1.2	<0.5	<0.5	<0.5	0.69	<0.5	<0.5	<0.5	4.5	1.6	1.3	<0.5	0.86	<0.5	<0.5
Chloromethane (ug/L)	<0.1	<0.1	<0.1	<0.1	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethene (ug/L)									<5	<5	<5	<5	<5	<5	<5	<5
Ethane (ug/L)									<5	<5	<5	<5	<5	<5	<5	<5
Methane (ug/L)									49	<5	100	2,300	160	11	57	320
Total chlorinated ethylenes (µg-moles/L)	0.78	7.85	37.10	38.08	1.31	1.62	3.81	3.13	0.15	0.07	0.56	0.94	10.24	2.00	8.38	7.74

1. Chloroform is a disinfection byproduct that is also a degradation product of carbon tetrachloride. The presence of chloroform in the absence of carbon tetrachloride is an indicator of treated water and potentially a sanitary sewer leak.

2. Methane is an indicator of methanogenesis, which is generated by the reduction of carbon dioxide in groundwater. Methane is also a degradation byproduct along the reductive dechlorination pathway.

3. Chlorinated ethylenes and chlorinated methanes are both amenable to reductive dechlorination degradation, which involves similar mechanisms for sequential removal of chloride ligands.

4. Concentrations in shaded cells indicate value exceeds Preliminary Screening Level. Preliminary Screening Levels are the more stringent of the Ground Water, Method A, Table Value (µg/L) and the Federal Maximum Contaminant Level (µg/L).

Table 3.2 - ISB Pilot Test Groundwater Data

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Bioremediation Parameters	MW-6I Control Well Not Influenced by Biostimulation				MW-10I Control Well Not Influenced by Biostimulation			
	3/11/2014	6/16/2014	9/10/2014	12/15/2014	3/12/2014	6/17/2014	9/10/2014	12/15/2014
Elapsed Time (Days) Since Injection	NA	NA	NA	NA	NA	NA	NA	NA
Biostimulants/ Available Carbon								
Volatile Fatty Acids (Tracks Biostimulant)								
Lactic acid (mg/L)								
Acetic acid (mg/L)								
Propionic acid (mg/L)								
Formic acid (mg/L)								
Butyric acid (mg/L)								
Pyruvic acid (mg/L)								
i-Pentanoic acid (mg/L)								
Pentanoic acid (mg/L)								
i-Hexanoic acid (mg/L)								
Hexanoic acid (mg/L)								
Total, Volatile Fatty Acids (mg/L)								
Dissolved organic carbon (DOC) (mg/L)								
Microbial Response								
Collection Date for Bio-Trap samplers								
Phospholipid Fatty Acid (Measures Community Structure and Stress Indicators								
Total Biomass (cells/bead)								
Community Structure (% total PLFA)								
Monos: includes wide variety of aerobic and anaerobic bacteria								
Nsats: found in all organisms, high number indicates lack of diversity								
TerBrSats: anaerobic bacteria, produce H_2 for reductive dechlorination								
MidBrSats: include sulfate- and iron-reducing bacteria								
BrMonos: include sulfate- and iron-reducing bacteria								
Polyenoics: scavengers associated with contaminant utilizing bacteria								
Physiological Status (Monos)								
Slowed growth								
Decreased permeability								
CENSUS® (DNA Analysis of Specific Bacteria)								
Dehalococcoides (DHC) cells/bead								
tceA Reductase (TCE)								
BAV1 Vinyl Chloride Reductase (BVC)								
Vinyl Chloride Reductase (VCR)								
Competing Electron Acceptors / Redox Parameters								
ORP (mV) (negative values are desired)	116.7	78.9	-17.4	3.9	-72	-63.3	42.2	-78.8
Dissolved oxgyen (mg/L) (ideally <0.5 mg/L)	0.15	0.25	0.08	0.15	0.09	0.26	0.27	0.16
Nitrate (mg/L) (ideally not detected)	<0.9	<0.1	<0.9	<0.9	<0.9	<0.1	<0.9	<0.9
Nitrite (mg/L) (presence indicates reducing conditions)	**3.1**	<0.1	**3.1**	**7.6**	**3.1**	<0.1	<0.6	**7.3**
Sulfate (mg/L) (competing electron acceptor, <20 mg/L desired)	30	30	29	28	27	29	20	12
Iron, total (mg/L) (ferrous iron is more soluble, increasing trend desired)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.61	0.63
Methane (ug/L)								
Chlorinated VOCs/daughter products								
PCE (ug/L)	1.4	<0.1	0.11	3.4	**200**	**280**	**320**	**250**
TCE (ug/L)	**59**	**46**	**48**	**73**	**320**	**420**	**230**	**200**
cis-1,2-DCE (ug/L)	**74**	63	67	**71**	**76**	**120**	**330**	**150**
trans-1,2-DCE (ug/L)	9.6	10	10	13	1.3	2.1	1.7	0.71
1,1-DCE (ug/L)	0.31	0.32	0.26	0.3	0.33	0.49	0.32	0.19
Vinyl chloride (ug/L)	**0.79**	**0.8**	**0.89**	**0.69**	0.095	0.11	<0.02	0.047
Carbon tetrachloride (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloroform (ug/L)	<0.1	<0.1	<0.1	<0.1	0.12	0.11	0.75	0.24
Methylene chloride (ug/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloromethane (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethene (ug/L)								
Ethane (ug/L)								
Methane (ug/L)								
Total chlorinated ethylenes (µg-moles/L)	1.34	1.13	1.19	1.46	4.44	6.15	7.11	4.59

1. Chloroform is a disinfection byproduct that is also a degradation product of carbon tetrachloride. The presence of chloroform in the absence of carbon tetrachloride is an indicator of treated water and potentially a sanitary sewer leak.
2. Methane is an indicator of methanogenesis, which is generated by the reduction of carbon dioxide in groundwater. Methane is also a degradation byproduct along the reductive dechlorination pathway.
3. Chlorinated ethylenes and chlorinated methanes are both amenable to reductive dechlorination degradation, which involves similar mechanisms for sequential removal of chloride ligands.
4. Concentrations in shaded cells indicate value exceeds Preliminary Screening Level. Preliminary Screening Levels are the more stringent of the Ground Water, Method A, Table Value (µg/L) and the Federal Maximum Contaminant Level (µg/L).

Table 3.3 - Concentrations of Chlorinated VOCs, Metals, and Redox Parameters in Control Wells

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Parameters	Preliminary Screening Level (µg/L)	MW-6I Control Well Not Influenced by Biostimulation				MW-10I Control Well Not Influenced by Biostimulation			
		3/11/2014	6/16/2014	9/10/2014	12/15/2014	3/12/2014	6/17/2014	9/10/2014	12/15/2014
Chlorinated VOCs/daughter products									
PCE (ug/L)	5	1.4	<0.1	0.11	3.4	**200**	**280**	**320**	**250**
TCE (ug/L)	5	**59**	**46**	**48**	**73**	**320**	**420**	**230**	**200**
cis-1,2-DCE (ug/L)	70	**74**	63	67	**71**	**76**	**120**	**330**	**150**
trans-1,2-DCE (ug/L)	100	9.6	10	10	13	1.3	2.1	1.7	0.71
1,1-DCE (ug/L)	7	0.31	0.32	0.26	0.3	0.33	0.49	0.32	0.19
Vinyl chloride (ug/L)	0.2	**0.79**	**0.8**	**0.89**	**0.69**	0.095	0.11	<0.02	0.047
Carbon tetrachloride (ug/L)	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloroform (ug/L)	80	<0.1	<0.1	<0.1	<0.1	0.12	0.11	0.75	0.24
Methylene chloride (ug/L)	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloromethane (ug/L)		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethene (ug/L)									
Ethane (ug/L)									
Methane (ug/L)									
Metals									
Total Arsenic in mg/L	5	0.00758	0.0073	0.0072	0.007	0.0052	0.0059	0.005	<0.005
Total Cadmium in mg/L	5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Chromium (Total) in mg/L	50	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Iron in mg/L		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.63
Total Manganese in mg/L		0.25	0.22	0.18	0.19	0.074	0.084	0.091	0.079
Total Selenium in mg/L	50	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Competing Electron Acceptors / Redox Parameters									
ORP (mV) (negative values are desired)		116.7	78.9	-17.4	3.9	-72	-63.3	42.2	-78.8
Dissolved oxgyen (mg/L) (ideally <0.5 mg/L)		0.15	0.25	0.08	0.15	0.09	0.26	0.27	0.16
Nitrate (mg/L) (ideally not detected)	10	<0.9	<0.1	<0.9	<0.9	<0.9	<0.1	<0.9	<0.9
Nitrite (mg/L) (presence indicates reducing conditions)	1	**3.1**	<0.1	**3.1**	**7.6**	**3.1**	<0.1	<0.6	**7.3**
Sulfate (mg/L) (competing electron acceptor, <20 mg/L desired)		30	30	29	28	27	29	20	12
Iron, total (mg/L) (ferrous iron is more soluble, increasing trend desired)		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.61	0.63
Methane (ug/L)									

Concentrations in shaded cells indicate value exceeds Preliminary Screening Level. Preliminary Screening Levels are the more stringent of the Ground Water, Method A, Table Value (µg/L) and the Federal Maximum Contaminant Level (µg/L).

Table 4.1 - Groundwater Quality Data - Upper Silt Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	IW-02 3/12/14	IW-04 3/12/14	MW-05S 11/16/10	MW-05S 3/28/11	MW-05S 6/28/11	MW-05S 10/12/11	MW-05S 1/26/12	MW-05S 5/30/12	MW-05S 8/16/12	MW-05S 3/12/14	MW-05S 6/16/14	MW-05S 9/10/14	MW-05S 12/16/14	MW-06S 11/17/10	MW-06S 3/28/11	MW-06S 6/28/11	MW-06S 10/12/11	MW-06S 1/25/12	MW-06S 5/30/12	MW-06S 8/15/12	MW-06S 4/16/13	MW-06S 3/11/14	MW-06S 6/16/14	MW-06S 9/10/14	MW-06S 12/16/14
Volatile Organic Compounds (VOC)																										
1,1,1,2-Tetrachloroethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.1 U	0.64	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,1-Dichloropropene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 UH	0.40 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.4 U	0.4 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 *	0.4 U	0.20 U	0.20 U	0.20 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.4 UH	0.40 U	0.4 *	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.25	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
Benzene in ug/L	5	0.1 U	0.16	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Bromobenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Bromoform in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Bromomethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Carbon tetrachloride in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 *	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 UH	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.15	0.13	0.15	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Chloromethane in ug/L		0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.1 U	210	0.46	0.44	0.48	0.37	0.5	0.21	0.24	0.1	22	24	29	1.1	1.4	1.8	0.63	0.58	0.63	0.3	0.48	0.37 H	0.29	0.25	0.26
cis-1,3-Dichloropropene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 *	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 UH	0.40 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Hexachlorobutadiene in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Methylene chloride in ug/L	5	0.5 U	0.5 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.51	0.5 U	0.5 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 UH	0.57	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
p-Isopropyltoluene in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.1 U	0.13	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Styrene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	5.2	88	110 J	88 J	120	50 J	87	60	66 J	27	4.9	0.68	0.13	10 J	9.7 J	14	7.4 J	8.5	6.4 J	5 J	7.2	3.3 H	4.3	3.2	3.8
Toluene in ug/L	1,000	0.1 U	0.34	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.34	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
trans-1,2-Dichloroethene in ug/L		0.1 U	1.6	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.58	0.67	1.0	0.41	0.27	0.36	0.1 U	0.31	0.17 H	0.15	0.15	0.12
trans-1,3-Dichloropropene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	0.64	350	19	14	15	9.9	14	7.3	11	5.3	2.3	0.53	0.46	6.4	7.7	8.7	4.3	3.9	4.1	2.9	4.0	2.5 H	2.4	2.3	1.9
Trichlorofluoromethane in ug/L		0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.02 U	0.12	0.020 U	0.020 U	0.020 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.020 U	0.078	0.15	0.020 U	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.020 U	0.02 UH	0.020 U	0.02 U	0.02 U
m,p-Xylenes in ug/L		0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 UH	0.20 U	0.2 U	0.2 U
o-Xylene in ug/L		0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 UH	0.10 U	0.1 U	0.1 U
Naphthalene in ug/L	160	0.4 U	0.4 U	8.0 UJ	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 UJ	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.4 UH	0.40 U	0.4 U	0.4 U

Table 4.1 - Groundwater Quality Data - Upper Silt Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	IW-02 3/12/14	IW-04 3/12/14	MW-05S 11/16/10	MW-05S 3/28/11	MW-05S 6/28/11	MW-05S 10/12/11	MW-05S 1/26/12	MW-05S 5/30/12	MW-05S 8/16/12	MW-05S 3/12/14	MW-05S 6/16/14	MW-05S 9/10/14	MW-05S 12/16/14	MW-06S 11/17/10	MW-06S 3/28/11	MW-06S 6/28/11	MW-06S 10/12/11	MW-06S 1/25/12	MW-06S 5/30/12	MW-06S 8/15/12	MW-06S 4/16/13	MW-06S 3/11/14	MW-06S 6/16/14	MW-06S 9/10/14	MW-06S 12/16/14
Total Petroleum Hydrocarbons (TPH)																										
Gasoline Range Hydrocarbons in mg/L	1,000																									
Metals																										
Dissolved Iron in mg/L																										
Dissolved Manganese in mg/L																										
Total Arsenic in mg/L	5																									
Total Cadmium in mg/L	5																									
Total Chromium (Total) in mg/L	50																									
Total Iron in mg/L												2.22	1.4	2.6									0.5 U	0.50 U	0.5 U	0.5 U
Total Manganese in mg/L																										
Total Selenium in mg/L																										
Conventional Chemistry Parameters																										
Carbon, Dissolved Organic (DOC) in mg/L											2												3			
Chloride in mg/L												19	11	9									22	26	25	17
Dissolved Silica (SiO2) in mg/L																										
Ethane in mg/L											0.005 U	0.0050 U	0.005 U	0.005 U												
Ethene in mg/L											0.005 U	0.0050 U	0.005 U	0.005 U												
Methane in mg/L											0.005 U	0.024	0.92	3.3												
Nitrate as Nitrogen in mg/L												0.10 UH	0.9 U	0.9 U									1.6 H	1.3 H	0.9 U	0.9 U
Nitrite as Nitrogen in mg/L												0.10 UH	3.2	8.1									2.7 H	0.10 UH	2.5	6.3
Sulfate in mg/L												1.0 U	1.3	3.6									32	38	28	22
Field Parameters																										
Dissolved Oxygen in mg/L		3.15	0.96	0.61	0.66	1.36	1.4	1.08	2.74	NM	2.35	0.16	0.08	0.18	0.52	2.95	1.08	1.2	0.99	1.48	NM	1.01	1.00	1.03	0.36	0.37
ORP in mVolts		107.0	96.5	128.9	-6.2	-25	-2.6	25.4	-52.5	-69.7	78.0	-34.9	-164.3	-127.8	106.1	93.3	79.8	-103.4	117.4	-276	-125	143.2	138.6	95.2	37.9	0.2
pH in pH Units		7.37	7.35	7.69	7.23	7.64	7.28	7.33	7.81	7.59	7.50	6.56	7.06	7.1	7.44	7.57	7.79	7.82	7.87	7.73	8.18	7.71	7.52	7.61	7.58	7.77
Specific Conductance in us/cm		601.3	982	728	721	674	680	687	566.6	626	435.6	879	501.4	499.8	612	538	549.8	518.5	504	488.2	594	616.7	565.7	525.4	665	427.7
Temperature in deg C		13.7	15.4	17.28	14.19	15.5	16.7	15.3	14.9	16	13.6	15.2	17.7	16.6	18.32	15.93	17.9	19.3	17.13	17.3	20.3	15.1	16.1	16.6	18.9	17.7
Turbidity in NTU			3.70	1.37			0.43	3.81	0.32	3.04	0.45		1.45	3.44	7.63			0.74	6.41	6.56	2.39	4.81			0.54	3.5

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.1 - Groundwater Quality Data - Upper Silt Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-07S 11/17/10	MW-07S 3/28/11	MW-07S 6/28/11	MW-07S 10/12/11	MW-07S 1/25/12	MW-07S 5/30/12	MW-07S 8/15/12	MW-07S 4/16/13	MW-08S 11/15/10	MW-08S 3/29/11	MW-08S 6/28/11	MW-08S 10/12/11	MW-08S 1/25/12	MW-08S 5/30/12	MW-08S 8/16/12	MW-08S 4/16/13	MW-09S 11/15/10	MW-09S 3/28/11	MW-09S 6/28/11	MW-09S 10/12/11	MW-09S 1/25/12	MW-09S 5/30/12	MW-09S 8/16/12	MW-15S 11/16/10	MW-15S 3/29/11	MW-15S 6/28/11	MW-15S 10/12/11	MW-15S 1/25/12	MW-15S 5/30/12	MW-15S 8/15/12
Volatile Organic Compounds (VOC)																															
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.35	0.22	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	1.2	0.23	0.23	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.49	0.33	0.29	0.2 U	0.2 U	0.2 U	0.2 U	0.43	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene in ug/L	5	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Bromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U
Chloroform in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.47	0.14	0.17	0.12	0.12	0.12	0.1 U
Chloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		15	9.8	11	9.2	7	5.6	4.1	4.5	72 J	18	11	8.9	18	18	60	13	0.49	0.42	0.54	0.29	0.19	0.28	0.29	15	10	7.7	6.7	6.4	4.8	6.9
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Methylene chloride in ug/L	5	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
p-Isopropyltoluene in ug/L		0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Styrene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	2.4	1.6 J	3.7	2.7 J	4.4	4.9	3.1 J	4.1	35	43 J	140	110 J	140	100	67 J	140	0.29	0.10 UJ	0.28	0.1 UJ	0.22	0.14	0.2 J	4.6 J	4.8 J	8.4	7.3 J	8.8	7.4 J	6.7 J
Toluene in ug/L	1,000	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,2-Dichloroethene in ug/L		4.5	0.76	0.95	0.74	0.68	0.52	0.38	0.34	0.12	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.33	0.21	0.22	0.21	0.17	0.14	0.2
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	6.0	4.7	6.8	5	6.9	7.1	6.2	7.5	7.0	21	12	9.6	12	12	19	12	0.19	0.16	0.16	0.11	0.1 U	0.13	0.1	20	18	15	15	14	13	13
Trichlorofluoromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.062 J	0.020 U	0.020 U	0.026	0.02 UJ	0.02 U	0.02 U	0.020 U	0.25 J	0.020 U	0.020 U	0.02 U	0.02 U	0.02 U	0.055	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.036	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene in ug/L	160	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 UJ	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U

Table 4.1 - Groundwater Quality Data - Upper Silt Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-07S 11/17/10	MW-07S 3/28/11	MW-07S 6/28/11	MW-07S 10/12/11	MW-07S 1/25/12	MW-07S 5/30/12	MW-07S 8/15/12	MW-07S 4/16/13	MW-08S 11/15/10	MW-08S 3/29/11	MW-08S 6/28/11	MW-08S 10/12/11	MW-08S 1/25/12	MW-08S 5/30/12	MW-08S 8/16/12	MW-08S 4/16/13	MW-09S 11/15/10	MW-09S 3/28/11	MW-09S 6/28/11	MW-09S 10/12/11	MW-09S 1/25/12	MW-09S 5/30/12	MW-09S 8/16/12	MW-15S 11/16/10	MW-15S 3/29/11	MW-15S 6/28/11	MW-15S 10/12/11	MW-15S 1/25/12	MW-15S 5/30/12	MW-15S 8/15/12
Total Petroleum Hydrocarbons (TPH)																															
Gasoline Range Hydrocarbons in mg/L	1,000																								0.050 U						
Metals																															
Dissolved Iron in mg/L		0.20 U																													
Dissolved Manganese in mg/L		0.23																													
Total Arsenic in mg/L	5																														
Total Cadmium in mg/L	5																														
Total Chromium (Total) in mg/L	50																														
Total Iron in mg/L																															
Total Manganese in mg/L																															
Total Selenium in mg/L																															
Conventional Chemistry Parameters																															
Carbon, Dissolved Organic (DOC) in mg/L		2.8																													
Chloride in mg/L																															
Dissolved Silica (SiO2) in mg/L		51																													
Ethane in mg/L																															
Ethene in mg/L																															
Methane in mg/L																															
Nitrate as Nitrogen in mg/L		0.90 U																													
Nitrite as Nitrogen in mg/L		0.60 U																													
Sulfate in mg/L		34																													
Field Parameters																															
Dissolved Oxygen in mg/L		1.04	1.7	0.72	1.92	0.9	1.34	NM	1.37	1.46	2.45	2.67	3.48	1.4	1.58	NM	3.79	0.21	0.23	0.76	0.39	0.27	0.68	0.97	0.84	0.44	1.05	1.43	0.72	1.04	1.11
ORP in mVolts		66.3	63.1	12.1	-65.8	-48.3	-62	-91.2	7.26	80.5	14.6	106.5	-32.8	36.7	-275.6	-30.4	86.7	22.1	-67.7	-86	-168.3	-6.9	-99.8	-27	132	57	54.4	-82.1	61	-64.3	-266.6
pH in pH Units		7.78	7.52	7.65	7.56	7.72	7.96	7.59	7.68	7.68	6.73	7.39	7.24	7.3	7.27	7.55	7.2	8.18	7.32	7.39	7.36	7.19	7.72	6.95	7.54	7.54	7.49	7.56	7.52	8.07	7.49
Specific Conductance in us/cm		787	756	690	565	719	651	784	797	879	921	765	783	779	705	726	735	391	408	414.4	341.4	362	464.7	758	1,217	1,036	879	925	932	859	1,705
Temperature in deg C		18.38	15.62	17.6	19.7	16.8	16.8	20	15.3	17.51	13.39	17.03	18.9	15.3	15.8	18	13.6	14.91	13.57	16	14.7	14.09	14.8	15.5	17.21	15.68	16.9	17.8	16.4	16.5	18.5
Turbidity in NTU		2.51			1.6	16.3	1.93	8.48	1.47	7.26			0.72	4.54	3.27	21.9	2.41	2.5			1.66	13.1	9.08	3.8	2.13			0.32	0.72	0.73	0.81

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.1 - Groundwater Quality Data - Upper Silt Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-26S 3/12/14	MW-26S 6/16/14	MW-26S 9/10/14	MW-26S 12/16/14	MWD 11/16/10	MWD 3/29/11	MWD 6/28/11	MWD 10/12/11	MWD 1/25/12	MWD 5/30/12	MWD 8/15/12	MWE 11/16/10	MWE 3/29/11	MWE 6/28/11	MWE 10/12/11	MWE 1/26/12	MWE 5/30/12	MWE 8/15/12
Volatile Organic Compounds (VOC)																			
1,1,1,2-Tetrachloroethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.11	0.14	0.65 H	0.74	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.15	0.25	0.2	0.1 U	0.13	0.21
1,1-Dichloropropene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.4 U	0.40 U	0.4 UH	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.25	0.10 U	0.26 H	0.35	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.4 U	0.40 U	0.4 *	0.4 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.52	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.25	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene in ug/L	5	0.1 U	0.10 U	0.1 H	0.25	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromobenzene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.73	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.51	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ
Bromomethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon tetrachloride in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 UH	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.1 U	20	0.1 H	0.1 U	0.10 U	0.10 U	11	0.2	0.1 U	0.31	1.9	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloromethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		9.7	48	330 H	510	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.16	4.7	3.6	6.6	0.84	5.9	6.1
cis-1,3-Dichloropropene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.57	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.4 U	0.40 U	0.4 UH	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.11
Hexachlorobutadiene in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.15	0.10 U	0.17 H	0.19	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Methylene chloride in ug/L	5	0.5 U	2.8	0.5 UH	0.5 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.1 U	0.10 U	0.13 H	0.19	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
p-Isopropyltoluene in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 UJ	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.23	0.10 U	0.1 UH	0.19	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Styrene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	74	12	3.8 H	3.1	0.10 UJ	0.10 UJ	0.10 U	0.38 J	0.1 U	0.1	0.1 UJ	0.46 J	31 J	16	12 J	0.48	0.64 J	9.2 J
Toluene in ug/L	1,000	0.1 U	0.10 U	0.19 H	0.24	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,2-Dichloroethene in ug/L		0.31	0.27	0.93 H	1.4	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.74	0.46	0.65	0.1 U	0.17	0.38
trans-1,3-Dichloropropene in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	180	31	13 H	7.9	0.18	0.10 U	0.10 U	0.14	0.1 U	0.1 U	0.1 U	0.54 J	26	18	20	1.4	2.8	16
Trichlorofluoromethane in ug/L		0.1 U	0.10 U	0.1 UH	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.02 U	0.34	5.5 H	5.2	0.020 U	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.020 U	0.071	0.11	0.02 U	0.02 UJ	0.02 U	0.17
m,p-Xylenes in ug/L		0.2 U	0.20 U	0.2 UH	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.25	0.43	0.2 U	0.2 U	0.37
o-Xylene in ug/L		0.16	0.11	0.19 H	0.24	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.38	0.33	0.1 U	0.21	0.36
Naphthalene in ug/L	160	0.4 U	0.40 U	0.4 UH	0.4 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U

Table 4.1 - Groundwater Quality Data - Upper Silt Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-26S 3/12/14	MW-26S 6/16/14	MW-26S 9/10/14	MW-26S 12/16/14	MWD 11/16/10	MWD 3/29/11	MWD 6/28/11	MWD 10/12/11	MWD 1/25/12	MWD 5/30/12	MWD 8/15/12	MWE 11/16/10	MWE 3/29/11	MWE 6/28/11	MWE 10/12/11	MWE 1/26/12	MWE 5/30/12	MWE 8/15/12
Total Petroleum Hydrocarbons (TPH)																			
Gasoline Range Hydrocarbons in mg/L	1,000												0.050 U						
Metals																			
Dissolved Iron in mg/L																			
Dissolved Manganese in mg/L																			
Total Arsenic in mg/L	5	0.005 U																	
Total Cadmium in mg/L	5	0.002 U																	
Total Chromium (Total) in mg/L	50	0.002 U																	
Total Iron in mg/L		0.5 U	4.7	41	57														
Total Manganese in mg/L		0.13																	
Total Selenium in mg/L		0.005 U																	
Conventional Chemistry Parameters																			
Carbon, Dissolved Organic (DOC) in mg/L		3																	
Chloride in mg/L		25	11	19	21														
Dissolved Silica (SiO2) in mg/L																			
Ethane in mg/L		0.005 U	0.0050 U	0.005 U	0.005 U														
Ethene in mg/L		0.005 U	0.0050 U	0.005 U	0.005 U														
Methane in mg/L		0.005 U	0.0058	1	3.8														
Nitrate as Nitrogen in mg/L		0.9 UH	0.10 UH	0.9 U	0.9 U														
Nitrite as Nitrogen in mg/L		3.1 H	0.10 UH	0.6 U	24														
Sulfate in mg/L		35	10	1.2 U	1.2 U														
Field Parameters																			
Dissolved Oxygen in mg/L		0.92	0.09	0.26	0.09	0.31	2.4	2.06	0.62	0.7	2.83	NM	2.61	0.33	0.24	1.3	1.13	0.16	0.97
ORP in mVolts		91.4	-026.0	-66.1	-91.9	105.1	83.4	133.6	-54.4	117.7	-255.4	-58.6	179.9	45.6	-116	-173.4	-67.7	-515.6	-181
pH in pH Units		7.60	6.65	6.75	6.8	7.39	6.57	6.81	6.49	6.58	6.42	6.63	6.54	7.08	6.98	6.77	7.28	6.46	6.79
Specific Conductance in us/cm		549.9	536.4	2,491	2,520	507	330	275.9	375.9	345	352.5	203.7	98	1,130	871	549.2	7,008	499.2	1,852
Temperature in deg C		14.3	14.6	16.1	15.6	17.55	14.2	16.3	17.4	16.01	15.4	17.5	18.54	14.21	17.4	19.5	15.4	16.2	19.4
Turbidity in NTU		0.88		2.91	32.5	0.9			8.57	13	9.52	2.6	52.3			44	882	41	91.2

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-06I 11/17/10	MW-06I 3/28/11	MW-06I 6/28/11	MW-06I 10/12/11	MW-06I 1/25/12	MW-06I 5/30/12	MW-06I 8/15/12	MW-06I 8/15/12 FD	MW-06I 4/16/13	MW-06I 3/11/14	MW-06I 6/16/14	MW-06I 9/10/14	MW-06I 12/16/14	MW-07I 11/17/10	MW-07I 11/17/10 FD	MW-07I 3/28/11	MW-07I 6/28/11	MW-07I 10/12/11	MW-07I 1/25/12	MW-07I 5/30/12	MW-07I 8/15/12	MW-07I 4/16/13	MW-10I 11/16/10	MW-10I 3/29/11
Volatile Organic Compounds (VOC)																									
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethene in ug/L		0.24	0.18	0.28	0.24	0.29	0.27	0.19	0.17	0.30	0.31	0.32	0.26	0.3	0.13	0.16	0.10 U	0.29	0.25	0.18	0.18	0.13	0.23	0.30	0.28
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dibromo-3-chloropropane in ug/L		0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 *	0.4 U	0.20 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.20 U	0.20 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.14	0.11	0.12	0.11	0.1 U	0.1	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.25	0.1 U	0.1	0.12	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.27	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,3-Dichlorobenzene in ug/L		0.30	0.20	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.25	0.20 U
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.17	0.12	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
Benzene in ug/L	5	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromoform in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.18	0.10 U
Chloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
cis-1,2-Dichloroethene (DCE) in ug/L		32	52	53	53	57	46	40	45	61	74	63	67	71	26	25	58	63	55	41	46	34	50	55	84
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Methylene chloride in ug/L	5	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.50 U	0.5 U	0.5 U	0.10 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.10 U	0.10 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
p-Isopropyltoluene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Styrene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Tetrachloroethene (PCE) in ug/L	5	8.5	1.3 J	2.3	0.36	1.2	0.6	0.17 J	0.18 J	0.10 U	1.4	0.10 U	0.11	3.4	18	19	26 J	21	30	21	9.1	23	7.6	270 J	200 J
Toluene in ug/L	1,000	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
trans-1,2-Dichloroethene in ug/L		3.3	8.2	7.2	7.3	8.4	6.4	6	6.1	8.7	9.6	10	10	13	0.76	0.76	1.6	3.7	3.2	1.8	3.6	3.2	2.7	0.89	1.6
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Trichloroethene (TCE) in ug/L	5	60	65	82	69	72	69	72	66	57	59	46	48	73	69	70	95 J	180	240	150	190	230	110	210 J	330
Trichlorofluoromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Vinyl chloride in ug/L	0.2	0.90 J	1.0	0.64	0.89	1	0.68	0.96	0.99	0.92	0.79	0.80	0.89	0.69	0.10 J	0.15 J	0.077	0.41	0.16	0.19	0.19	0.098 J	0.27	0.10 J	0.17
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
o-Xylene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Naphthalene in ug/L	160	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-06I 11/17/10	MW-06I 3/28/11	MW-06I 6/28/11	MW-06I 10/12/11	MW-06I 1/25/12	MW-06I 5/30/12	MW-06I 8/15/12	MW-06I 8/15/12 FD	MW-06I 4/16/13	MW-06I 3/11/14	MW-06I 6/16/14	MW-06I 9/10/14	MW-06I 12/16/14	MW-07I 11/17/10	MW-07I 11/17/10 FD	MW-07I 3/28/11	MW-07I 6/28/11	MW-07I 10/12/11	MW-07I 1/25/12	MW-07I 5/30/12	MW-07I 8/15/12	MW-07I 4/16/13	MW-10I 11/16/10	MW-10I 3/29/11
Total Petroleum Hydrocarbons (TPH)																									
Gasoline Range Hydrocarbons in mg/L	1,000																							0.13	
Metals																									
Dissolved Iron in mg/L		0.20 U													0.55										
Dissolved Manganese in mg/L		0.11													0.12										
Total Arsenic in mg/L	5										0.00758	0.0073	0.0072	0.007											
Total Cadmium in mg/L	5										0.002 U	0.0020 U	0.002 U	0.002 U											
Total Chromium (Total) in mg/L	50										0.002 U	0.0020 U	0.002 U	0.002 U											
Total Iron in mg/L											0.5 U	0.50 U	0.5 U	0.5 U											
Total Manganese in mg/L											0.25	0.22	0.18	0.19											
Total Selenium in mg/L											0.005 U	0.0050 U	0.005 U	0.005 U											
Conventional Chemistry Parameters																									
Carbon, Dissolved Organic (DOC) in mg/L		2.5													2.8										
Chloride in mg/L											29	29	29	29											
Dissolved Silica (SiO2) in mg/L															36										
Ethane in mg/L																									
Ethene in mg/L																									
Methane in mg/L																									
Nitrate as Nitrogen in mg/L		0.90 U									0.9 UH	0.10 UH	0.9 U	0.9 U	0.90 U										
Nitrite as Nitrogen in mg/L		0.60 U									3.1 H	0.10 UH	3.1	7.6	0.60 U										
Sulfate in mg/L		43									30	30	29	28	36										
Field Parameters																									
Dissolved Oxygen in mg/L		0.15	0.69	0.16	0.34	0.21	0.29	NM		0.29	0.15	0.25	0.08	0.15	0.17		0.31	0.6	1.16	0.38	0.46	NM	0.56	0.18	0.71
ORP in mVolts		86.4	77.9	93.9	-172.3	103.6	-421.4	-138.7		168	116.7	78.9	-17.4	3.9	23.7		39.9	-119	-185.9	-102.1	-231.4	-215.6	110.8	39.6	-51
pH in pH Units		7.9	7.5	7.75	7.71	7.69	7.58	8.8		7.67	7.47	7.66	7.74	7.78	7.99		7.78	7.77	7.77	7.79	8.03	7.9	7.77	8.35	7.51
Specific Conductance in us/cm		692	628	616	639	683	637	689		662	659	586.9	627	606	635		534	592	546.1	596.2	549.2	583	648	685	673
Temperature in deg C		16.75	16.36	17.9	17.7	16.13	18	20.1		14.8	16.0	16.2	17.7	15.9	16.69		16.13	17.8	17.4	16.4	16.9	17.8	15.6	17.39	15.35
Turbidity in NTU		6.73			0.86	2.55	3	1.59		0.96			0.91	0.46	1.23				0.73	1.94	1.25		1.96	0.69	

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-10I 3/29/11 FD	MW-10I 6/28/11	MW-10I 6/28/11 FD	MW-10I 10/11/11	MW-10I 10/11/11 FD	MW-10I 1/25/12	MW-10I 5/30/12	MW-10I 8/15/12	MW-10I 4/16/13	MW-10I 3/12/14	MW-10I 6/17/14	MW-10I 9/10/14	MW-10I 12/16/14	MW-12I 11/15/10	MW-12I 1/25/12	MW-12I 4/16/13	MW-12I 3/11/14	MW-12I 12/16/14	MW-13I 11/17/10	MW-13I 3/29/11	MW-13I 6/27/11	MW-13I 10/11/11	MW-13I 1/25/12	MW-13I 5/30/12	MW-13I 8/15/12
Volatile Organic Compounds (VOC)																										
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.53	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.32	0.36	0.39	0.38	0.38	0.2 J	0.25	0.33	0.31	0.33	0.49	0.32	0.19	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.40 U	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.20 U	0.40 U	0.40 U	0.4 UJ	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 *	0.4 U	0.20 U	0.4 U	0.40 U	0.4 U	0.4 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.45	0.2 U	0.20 U	0.2 U	0.2 U	0.27	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene in ug/L	5	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ
Bromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 UJ	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.10 U	0.10 U	0.10 U	0.42	0.43	0.12	0.12	0.29	0.12	0.12	0.11	0.75	0.24	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.76	0.13	0.1 U	0.1 U
Chloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 *	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		79	94	88	120	110	84	70	140	76	76	120	330	150	0.10 UJ	0.1 U	0.10 U	0.1 U	0.1 U	0.22	0.20	0.11	1.9	0.86	0.23	0.12
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 *	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Methylene chloride in ug/L	5	0.10 U	0.50 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.50 U	0.5 U	0.5 U	0.10 U	0.5 U	0.50 U	0.5 U	0.5 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
p-Isopropyltoluene in ug/L		0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Styrene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	190 J	300	300	630 J	480 J	440	400	580 J	350	200	280	320	250	0.15	0.1 U	0.10 U	0.1 U	0.1 U	39 J	13	18	16 J	47	30	9 J
Toluene in ug/L	1,000	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,2-Dichloroethene in ug/L		1.5	1.8	2.2	1.6	1.5	1.5	1.3	2.3	1.7	1.3	2.1	1.7	0.71	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	320	340	330	310	320	300	270	400	330	320	420	230	200	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	2.0	3.0	1.9	1.7	2.4	1	0.66
Trichlorofluoromethane in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.18	0.16	0.16	0.16	0.15	0.081 J	0.082	0.2	0.057	0.095	0.11	0.02 U	0.047	0.020 U	0.02 UJ	0.020 U	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U	0.028	0.02 U	0.02 U	0.02 U
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene in ug/L		0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene in ug/L	160	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-10I 3/29/11 FD	MW-10I 6/28/11	MW-10I 6/28/11 FD	MW-10I 10/11/11	MW-10I 10/11/11 FD	MW-10I 1/25/12	MW-10I 5/30/12	MW-10I 8/15/12	MW-10I 4/16/13	MW-10I 3/12/14	MW-10I 6/17/14	MW-10I 9/10/14	MW-10I 12/16/14	MW-12I 11/15/10	MW-12I 1/25/12	MW-12I 4/16/13	MW-12I 3/11/14	MW-12I 12/16/14	MW-13I 11/17/10	MW-13I 3/29/11	MW-13I 6/27/11	MW-13I 10/11/11	MW-13I 1/25/12	MW-13I 5/30/12	MW-13I 8/15/12
Total Petroleum Hydrocarbons (TPH)																										
Gasoline Range Hydrocarbons in mg/L	1,000																									
Metals																										
Dissolved Iron in mg/L																				0.20 U						
Dissolved Manganese in mg/L																				0.020 U						
Total Arsenic in mg/L	5										0.0052	0.0059	0.005 U	0.005 U												
Total Cadmium in mg/L	5										0.002 U	0.0020 U	0.002 U	0.002 U												
Total Chromium (Total) in mg/L	50										0.002 U	0.0020 U	0.002 U	0.002 U												
Total Iron in mg/L											0.5 U	0.50 U	0.609	0.63												
Total Manganese in mg/L											0.074	0.084	0.091	0.079												
Total Selenium in mg/L											0.005 U	0.0050 U	0.005 U	0.005 U												
Conventional Chemistry Parameters																										
Carbon, Dissolved Organic (DOC) in mg/L																				2.2						
Chloride in mg/L											24	27	30	15												
Dissolved Silica (SiO2) in mg/L																										
Ethane in mg/L																										
Ethene in mg/L																										
Methane in mg/L																										
Nitrate as Nitrogen in mg/L											0.9 UH	0.10 UH	0.9 U	0.9 U						5.1						
Nitrite as Nitrogen in mg/L											3.1 H	0.10 UH	0.6 U	7.3						0.60 U						
Sulfate in mg/L											27	29	20	12						32						
Field Parameters																										
Dissolved Oxygen in mg/L			0.15		0.65		0.15	0.3	0.98	0.75	0.09	0.26	0.27	0.16	0.26	0.52	0.79	0.21	0.17	2.46	1.58	3.55	2.62	1.45	4.49	NM
ORP in mVolts			-53.3		-133.3		9.2	489.6	-180.1	-50.1	-072.0	-63.3	42.2	-78.8	248.6	132.3	9.9	229.7	-25.4	153.4	83.6	92.3	77.5	39.2	38.7	11.1
pH in pH Units			7.64		7.53		7.6	7.44	7.41	7.58	7.70	7.64	7.48	7.67	8.2	7.49	7.48	7.37	7.32	7.37	7.87	7.1	7.15	7.14	7.14	7.26
Specific Conductance in us/cm			667		748		704	665	1,585	702	539.3	614	804	508	811	825	883	941	874	930	1,064	992	825	843	739	911
Temperature in deg C			17.3		17.4		16.13	17.3	18.8	15.9	15.4	16.0	17.8	15.4	17.76	16.16	16.8	17.1	17.4	18.45	14.62	17.9	20.3	16.7	16.3	20.3
Turbidity in NTU					0.38		0.73	0.15	2.14	2	0.39	0.34	0.79	1.63	0.46	1.31	0.34	0.85	0.43	0.89			0.35	1.07	1.2	0.37

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-14I 11/16/10	MW-14I 11/16/10 FD	MW-14I 3/29/11	MW-14I 6/27/11	MW-14I 10/11/11	MW-14I 1/25/12	MW-14I 5/30/12	MW-14I 8/15/12	MW-14I 4/16/13	MW-14I 4/16/13 FD	MW-14I 10/31/13	MW-14I 3/11/14	MW-14I 9/9/14	MW-15I 11/16/10	MW-15I 11/16/10 FD	MW-15I 3/29/11	MW-15I 6/28/11	MW-15I 6/28/11 FD	MW-15I 10/12/11	MW-15I 10/12/11 FD	MW-15I 1/25/12	MW-15I 5/30/12	MW-15I 8/15/12	MW-15I 4/16/13	MW-16I 11/16/10
Volatile Organic Compounds (VOC)																										
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.16	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,1-Dichloroethene in ug/L		0.10 UJ	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 J	0.15 J	0.10 U	0.10 U	0.10 U	0.12	0.16	0.11	0.14	0.26	0.11	0.26
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,2-Dibromo-3-chloropropane in ug/L		0.20 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.20 U	0.20 U	0.20 U	0.40 U	0.40 U	0.4 UJ	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.20 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.21 UJ	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,3-Dichlorobenzene in ug/L		0.39	0.39	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.37	0.38	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.27
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.10 UJ	0.87 UJ	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
Benzene in ug/L	5	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.17
Bromobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Bromoform in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Bromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Chloroethane in ug/L		0.25 UJ	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.10 U	0.10 U	0.17	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.13	0.16	0.13	0.10 U	0.10 U	0.1	0.12	0.1 U	0.13	0.1 U	0.10 U	0.32
Chloromethane in ug/L		0.10 UJ	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 *	0.1 U	0.10 UJ	0.10 UJ	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.50	0.52	3.3	1.1	0.25	0.29	0.11	0.1 U	0.12	0.16	0.10 U	0.1 U	0.1 U	36	36	20	33	32	65	53	39	49	75	46	20
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 *	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Methylene chloride in ug/L	5	0.10 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.5 U	0.5 U	0.10 U	0.10 U	0.10 U	0.50 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.10 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
p-Isopropyltoluene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Styrene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Tetrachloroethene (PCE) in ug/L	5	15 J	16 J	24	23	27 J	26	12	26 J	17	18	34	6.6	8.2	10 J	12 J	10 J	22	22	39 J	47	32	69	130	86	84 J
Toluene in ug/L	1,000	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.27
trans-1,2-Dichloroethene in ug/L		0.10 U	0.10	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	1.8	1.7	1.1	1.5	1.4	2.2	2.5	1.7	1.7	1.8	1.3	0.21
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Trichloroethene (TCE) in ug/L	5	3.7	4.0	5.8	3.8	2.3	3	1.6	1.3	1.7	1.8	1.3	0.98	1	51	51	35	43	43	83	87	62	81	190	130	57
Trichlorofluoromethane in ug/L		0.10 UJ	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 UJ	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Vinyl chloride in ug/L	0.2	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U	0.02 U	0.02 U	0.088 J	0.058 J	0.027	0.057	0.042	0.081	0.086	0.069 J	0.067	0.13	0.093	0.35 J
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
o-Xylene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U
Naphthalene in ug/L	160	0.40 UJ	0.40 UJ	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 UJ	0.40 UJ	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-14I 11/16/10	MW-14I 11/16/10 FD	MW-14I 3/29/11	MW-14I 6/27/11	MW-14I 10/11/11	MW-14I 1/25/12	MW-14I 5/30/12	MW-14I 8/15/12	MW-14I 4/16/13	MW-14I 4/16/13 FD	MW-14I 10/31/13	MW-14I 3/11/14	MW-14I 9/9/14	MW-15I 11/16/10	MW-15I 11/16/10 FD	MW-15I 3/29/11	MW-15I 6/28/11	MW-15I 6/28/11 FD	MW-15I 10/12/11	MW-15I 10/12/11 FD	MW-15I 1/25/12	MW-15I 5/30/12	MW-15I 8/15/12	MW-15I 4/16/13	MW-16I 11/16/10
Total Petroleum Hydrocarbons (TPH)																										
Gasoline Range Hydrocarbons in mg/L	1,000	0.050 U													0.050 U											0.073
Metals																										
Dissolved Iron in mg/L																										
Dissolved Manganese in mg/L																										
Total Arsenic in mg/L	5																									
Total Cadmium in mg/L	5																									
Total Chromium (Total) in mg/L	50																									
Total Iron in mg/L																										
Total Manganese in mg/L																										
Total Selenium in mg/L																										
Conventional Chemistry Parameters																										
Carbon, Dissolved Organic (DOC) in mg/L																										
Chloride in mg/L																										
Dissolved Silica (SiO2) in mg/L																										
Ethane in mg/L																										
Ethene in mg/L																										
Methane in mg/L																										
Nitrate as Nitrogen in mg/L																										
Nitrite as Nitrogen in mg/L																										
Sulfate in mg/L																										
Field Parameters																										
Dissolved Oxygen in mg/L		2.23		3.25	5.65	1.97	1.08	4.27	NM	3.25		5.12	4.20	2.1	0.17		0.24	0.91		1.45		0.61	0.49	1.22	0.1	0.16
ORP in mVolts		129.4		76.6	134.9	-1.1	64	-66.6	63.3	53.6		211.1	305.8	138.4	137.3		84.3	71.6		-71		65.7	-155	-281.7	136.5	73.5
pH in pH Units		7.37		7.11	7.2	7.16	7.26	7.11	7.24	7.13		7.14	7.02	7.13	7.25		7.67	7.44		7.51		7.48	7.7	7.45	7.59	8.51
Specific Conductance in us/cm		981		990	1,082	913	1,005	912	834	1,256		901	1,223	894	910		943	778		826		853	769	1,646	810	1,107
Temperature in deg C		19.67		15.57	17.5	20.3	17.17	15.9	18.9	16.1		20.4	15.6	20.4	16.73		15.93	16.6		16.8		16	16.5	17.2	15.9	18.49
Turbidity in NTU		26.5				0.82	3.24	2.98	1.63	0.62		1.01	2.25	0.22	4.29					0.32		1.67	1.41	0.9	0.61	10.2

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-16I 3/29/11	MW-16I 6/28/11	MW-16I 10/12/11	MW-16I 1/26/12	MW-16I 5/30/12	MW-16I 8/15/12	MW-16I 4/16/13	MW-16I 7/23/13	MW-16I 10/31/13	MW-16I 12/19/13	MW-16I 3/11/14	MW-16I 6/17/14	MW-16I 9/10/14	MW-16I 9/10/14 FD	MW-16I 12/17/14	MW-17I 11/18/10	MW-17I 3/29/11	MW-17I 3/29/11 FD	MW-17I 6/27/11	MW-17I 6/27/11 FD	MW-17I 10/11/11	MW-17I 10/11/11 FD	MW-17I 1/26/12	MW-17I 5/29/12	MW-17I 5/29/12 FD	MW-17I 8/14/12
Volatile Organic Compounds (VOC)																											
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.17	0.18	0.10 U	0.1 U	0.1 U	0.26	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 *	0.4 *	0.4 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene in ug/L	5	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromobenzene in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.34	0.56	0.57	0.1 U
Bromoform in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ
Bromomethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.10 U	0.17	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 J	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.19	0.10 U	0.10 U	0.10 U	0.12	0.35	0.33	4.4	5.6	5.7	0.38
Chloromethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		22	7.1	1.7	2.9	1.5	1.9	5.2	4.1	6.4	13	17	4.0	7	6.9	28	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.82	0.88	0.1 U	0.1 U	0.18
Methylene chloride in ug/L	5	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.5 U	0.56	0.5 U	0.5 U	0.5 U	0.10 U	0.10 U	0.10 U	0.50 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
p-Isopropyltoluene in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Styrene in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	70 J	37	11	13	7.8	3.3 J	15	3.2	5.2	39	34	11	6.1	5.9	27	32	26	26	20	19	7 J	5.2 J	6.5 J	3.2	3	2.7 J
Toluene in ug/L	1,000	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,2-Dichloroethene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.24	0.41	0.10 U	0.13	0.14	0.84	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	11	5.0	1.4	3	1.8	1.3	15	3.5	8.6	46	67 H	19	12	12	100	0.60	0.51	0.50	0.27	0.29	0.31	0.29	0.17	0.1 U	0.1 U	0.26
Trichlorofluoromethane in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.032	0.020 U	0.02 U	0.02 U	0.02 U	0.02 U	0.020 U	0.026	0.020 U	0.020 U	0.11	0.020 U	0.027	0.035	0.22	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene in ug/L		0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene in ug/L	160	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-16I 3/29/11	MW-16I 6/28/11	MW-16I 10/12/11	MW-16I 1/26/12	MW-16I 5/30/12	MW-16I 8/15/12	MW-16I 4/16/13	MW-16I 7/23/13	MW-16I 10/31/13	MW-16I 12/19/13	MW-16I 3/11/14	MW-16I 6/17/14	MW-16I 9/10/14	MW-16I 9/10/14 FD	MW-16I 12/17/14	MW-17I 11/18/10	MW-17I 3/29/11	MW-17I 3/29/11 FD	MW-17I 6/27/11	MW-17I 6/27/11 FD	MW-17I 10/11/11	MW-17I 10/11/11 FD	MW-17I 1/26/12	MW-17I 5/29/12	MW-17I 5/29/12 FD	MW-17I 8/14/12
Total Petroleum Hydrocarbons (TPH)																											
Gasoline Range Hydrocarbons in mg/L	1,000																										
Metals																											
Dissolved Iron in mg/L																											
Dissolved Manganese in mg/L																											
Total Arsenic in mg/L	5																										
Total Cadmium in mg/L	5																										
Total Chromium (Total) in mg/L	50																										
Total Iron in mg/L																											
Total Manganese in mg/L																											
Total Selenium in mg/L																											
Conventional Chemistry Parameters																											
Carbon, Dissolved Organic (DOC) in mg/L																											
Chloride in mg/L																											
Dissolved Silica (SiO2) in mg/L																											
Ethane in mg/L																											
Ethene in mg/L																											
Methane in mg/L																											
Nitrate as Nitrogen in mg/L																											
Nitrite as Nitrogen in mg/L																											
Sulfate in mg/L																											
Field Parameters																											
Dissolved Oxygen in mg/L		1.16	0.63	0.35	0.35	0.95	0.97	1.01	0.79	3.51	3.20	1.80	0.74	0.3	0.3	0.08	0.15			3.45		1.99		2.07	5.11		3.75
ORP in mVolts		78	41.2	-81.8	79.6	-66.2	-146	133.9	204.5	184.1	135.0	260.1	100.0	167.5	167.5	111.9	126.5			118.9		58.5		40.1	-9.8		-74.7
pH in pH Units		7.75	7.7	7.77	7.83	7.86	7.74	7.91	7.7	7.80	8.38	7.74	7.80	7.64	7.64	8.07	7.72			7.4		7.33		7.3	7.5		7.28
Specific Conductance in us/cm		867	806	829	842	788	1,689	896	998	933	1,039	938	925	1,097	1,097	913	1,083			1,106		842		1,042	858		1,707
Temperature in deg C		15.76	17.5	18	15.79	17.1	19.5	16.5	18.4	18.7	17.0	16.0	16.8	18.3	18.3	16.8	16.98			16.7		19.4		16.1	16.3		18.9
Turbidity in NTU				0.53	1.41	0.33	2.12	0.29	0.81	1.27	0.28	0.40	0.27	0.44	0.44	0.24	1.99					0.4		3.59	1.43		

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-17I 4/16/13	MW-17I 7/23/13	MW-17I 7/23/13 FD	MW-17I 10/30/13	MW-17I 12/19/13	MW-17I 3/11/14	MW-17I 6/17/14	MW-17I 9/9/14	MW-17I 12/16/14	MW-17I 12/16/14 FD	MW-18I 11/17/10	MW-18I 11/17/10 FD	MW-18I 3/29/11	MW-18I 6/27/11	MW-18I 10/11/11	MW-18I 1/25/12	MW-18I 5/29/12	MW-18I 8/15/12	MW-18I 4/16/13	MW-18I 10/31/13	MW-18I 3/11/14	MW-18I 9/9/14	MW-19I 11/18/10	MW-19I 3/29/11	MW-19I 6/27/11
Volatile Organic Compounds (VOC)																										
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.40 UJ	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dibromo-3-chloropropane in ug/L		0.40 U	0.40 U	0.40 UJ	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.20 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.20 U	0.20 U	0.40 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,3-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.50	0.48	0.39	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
Benzene in ug/L	5	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromobenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.34	0.15	0.10 U	0.10 U	0.10 U
Bromoform in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromomethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U
Chloroform in ug/L		0.22	0.13	0.12 J	0.20	0.45	0.23	0.39	0.65	0.29	0.28	0.17	0.14	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.12	14	2.6	0.10 U	0.10 U	0.10 U
Chloromethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 *	0.1 U	0.10 UJ	0.10 U	0.10 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.59	0.53	0.23	0.13	0.14	0.13	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.58	0.32	1.4
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.40 UJ	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 *	0.1 U	0.10 U	0.10 U	0.10 U
Methylene chloride in ug/L	5	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U	0.5 U	0.50 U	0.5 U	0.5 U	0.5 U	0.10 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.5 U	0.5 U	0.10 U	0.10 U	0.50 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
p-Isopropyltoluene in ug/L		0.20 U	0.20 *	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Styrene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Tetrachloroethene (PCE) in ug/L	5	4.5	2.6	2.7 J	3.5	3.6	2.9	6.7	3.1	9.8	9.8	17	15	9.5	8.1	9.3 J	11	7.1 J	6.5 J	6.8	8.4	3.9	4.1	8.1	3.0	13
Toluene in ug/L	1,000	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
trans-1,2-Dichloroethene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.20
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Trichloroethene (TCE) in ug/L	5	0.24	0.26	0.26 J	0.24	0.12	0.1 U	0.12	0.1 U	0.1 U	0.1 U	2.2	1.9	1.5	0.99	1.2	1.2	0.83	0.74	0.68	0.51	0.61	0.49	3.1	1.9	7.1
Trichlorofluoromethane in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U
Vinyl chloride in ug/L	0.2	0.020 U	0.020 U	0.020 UJ	0.020 U	0.020 U	0.02 U	0.020 U	0.02 U	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.020 U	0.020 U	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.20 UJ	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
o-Xylene in ug/L		0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Naphthalene in ug/L	160	0.40 U	0.40 U	0.40 UJ	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-17I 4/16/13	MW-17I 7/23/13	MW-17I 7/23/13 FD	MW-17I 10/30/13	MW-17I 12/19/13	MW-17I 3/11/14	MW-17I 6/17/14	MW-17I 9/9/14	MW-17I 12/16/14	MW-17I 12/16/14 FD	MW-18I 11/17/10	MW-18I 11/17/10 FD	MW-18I 3/29/11	MW-18I 6/27/11	MW-18I 10/11/11	MW-18I 1/25/12	MW-18I 5/29/12	MW-18I 8/15/12	MW-18I 4/16/13	MW-18I 10/31/13	MW-18I 3/11/14	MW-18I 9/9/14	MW-19I 11/18/10	MW-19I 3/29/11	MW-19I 6/27/11
Total Petroleum Hydrocarbons (TPH)																										
Gasoline Range Hydrocarbons in mg/L	1,000																									
Metals																										
Dissolved Iron in mg/L												0.20 U														
Dissolved Manganese in mg/L												0.19														
Total Arsenic in mg/L	5																									
Total Cadmium in mg/L	5																									
Total Chromium (Total) in mg/L	50																									
Total Iron in mg/L																										
Total Manganese in mg/L																										
Total Selenium in mg/L																										
Conventional Chemistry Parameters																										
Carbon, Dissolved Organic (DOC) in mg/L												1.7														
Chloride in mg/L																										
Dissolved Silica (SiO2) in mg/L																										
Ethane in mg/L																										
Ethene in mg/L																										
Methane in mg/L																										
Nitrate as Nitrogen in mg/L												0.90 U														
Nitrite as Nitrogen in mg/L												0.60 U														
Sulfate in mg/L												45														
Field Parameters																										
Dissolved Oxygen in mg/L		2.69	1.99		3.79	3.87	2.16	2.90	3.33	3.34		1.33		4.28	5.04	4.54	4.98	4.8	NM	5.85	6.81	6.13	5.76	0.22	3.9	2.34
ORP in mVolts		36.8	201.1		105.6	78.1	230.7	71.5	212.8	-4.1		155.1		50.9	103.3	89.3	121	-371.9	104.3	35.9	229.7	143.2	239.3	130.9	107.6	102.9
pH in pH Units		7.34	7.22		7.30	7.81	7.15	7.36	7.22	7.43		7.59		7.32	7.25	7.33	7.39	7.25	7.32	7.33	7.33	7.24	7.47	7.32	7.72	7.26
Specific Conductance in us/cm		948	754		720	1,011	1,129	1,019	1,040	1,017		1,019		1,071	1,298	1,109	1,124	1,017	1,182	1,435	1,195	1,018	1,176	1,035	1,302	1,010
Temperature in deg C		16.4	18.6		19.2	17.8	16.5	17.2	19.9	18.4		18.26		15.89	17.6	19.7	17.24	17.4	19.4	16	19.6	16.3	20.2	17.91	16.09	18.5
Turbidity in NTU		3.91	2.43		clear	1.74	2.42	1.00	0.87	1.87		10.9				1.15	1.78	5.26	0.98	4.69	1.13		3.92	5.82		

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-19I 10/11/11	MW-19I 1/25/12	MW-19I 5/29/12	MW-19I 5/29/12 FD	MW-19I 8/15/12	MW-19I 8/15/12 FD	MW-19I 4/16/13	MW-19I 7/23/13	MW-19I 10/31/13	MW-19I 12/19/13	MW-19I 3/11/14	MW-19I 6/17/14	MW-19I 9/9/14	MW-19I 12/17/14	MW-20I 1/25/12	MW-20I 5/29/12	MW-20I 8/14/12	MW-21I/2 11/16/10	MW-21I/2 3/29/11	MW-21I/2 6/27/11	MW-21I/2 10/11/11	MW-21I/2 1/25/12	MW-21I/2 5/29/12	MW-21I/2 8/15/12	MW-21I/2 4/16/13
Volatile Organic Compounds (VOC)																										
1,1,1,2-Tetrachloroethane in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
1,1,1-Trichloroethane in ug/L	200	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,1,2,2-Tetrachloroethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,1,2-Trichloroethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,1-Dichloroethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,1-Dichloroethene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,1-Dichloropropene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,2,3-Trichlorobenzene in ug/L		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U
1,2,3-Trichloropropane in ug/L		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U
1,2,4-Trichlorobenzene in ug/L		0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U
1,2,4-Trimethylbenzene in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
1,2-Dibromo-3-chloropropane in ug/L		0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,2-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U
1,2-Dichloroethane (EDC) in ug/L	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,2-Dichloropropane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,3,5-Trimethylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,3-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.29	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U
1,3-Dichloropropane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
1,4-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U
2,2-Dichloropropane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
2-Chlorotoluene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
4-Chlorotoluene in ug/L		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U
Benzene in ug/L	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Bromobenzene in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
Bromochloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Bromodichloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Bromoform in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
Bromomethane in ug/L		0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.10 U
Carbon tetrachloride in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
Chlorobenzene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Chloroethane in ug/L		0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.19	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.12
Chloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.23	0.69	0.72	0.83	0.33	0.36	0.42	0.41	0.15	0.11	0.14	0.10 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U	0.22	0.27	0.23	0.38	0.31	0.19	0.17	0.17
cis-1,3-Dichloropropene in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
Dibromochloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Dibromomethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Dichlorodifluoromethane in ug/L		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U
Ethylbenzene in ug/L	700	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Hexachlorobutadiene in ug/L		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U
Isopropylbenzene in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.13	0.12	0.11
Methylene chloride in ug/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U
n-Butylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
n-Propylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
p-Isopropyltoluene in ug/L		0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U*	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.20 U
sec-Butylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Styrene in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
tert-Butylbenzene in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
Tetrachloroethene (PCE) in ug/L	5	11 J	12	12 J	15	9.6 J	9.1 J	11	10	11	7.9	3.8	6.2	5.1	6.5	0.99	0.76 J	0.94 J	4.9 J	5.7	7.3	8.3 J	11	8.1 J	9.6 J	11
Toluene in ug/L	1,000	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.25	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
trans-1,2-Dichloroethene in ug/L		0.1 U	0.1 U	0.15	0.15	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
trans-1,3-Dichloropropene in ug/L		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U
Trichloroethene (TCE) in ug/L	5	2.4	4.9	4.9	5.2	2	1.9	2.4	1.5	1.1	1.0	1.3	0.95	0.66	1.2	0.19	0.16	0.14	1.2	1.4	1.5	2.1	2.8	1.7	1.8	1.7
Trichlorofluoromethane in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Vinyl chloride in ug/L	0.2	0.02 U	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.020 U	0.02 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.020 U
m,p-Xylenes in ug/L		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U
o-Xylene in ug/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U
Naphthalene in ug/L	160	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 UJ	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.40 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-19I 10/11/11	MW-19I 1/25/12	MW-19I 5/29/12	MW-19I 5/29/12 FD	MW-19I 8/15/12	MW-19I 8/15/12 FD	MW-19I 4/16/13	MW-19I 7/23/13	MW-19I 10/31/13	MW-19I 12/19/13	MW-19I 3/11/14	MW-19I 6/17/14	MW-19I 9/9/14	MW-19I 12/17/14	MW-20I 1/25/12	MW-20I 5/29/12	MW-20I 8/14/12	MW-21I/2 11/16/10	MW-21I/2 3/29/11	MW-21I/2 6/27/11	MW-21I/2 10/11/11	MW-21I/2 1/25/12	MW-21I/2 5/29/12	MW-21I/2 8/15/12	MW-21I/2 4/16/13
Total Petroleum Hydrocarbons (TPH)																										
Gasoline Range Hydrocarbons in mg/L	1,000																									
Metals																										
Dissolved Iron in mg/L																										
Dissolved Manganese in mg/L																										
Total Arsenic in mg/L	5																									
Total Cadmium in mg/L	5																									
Total Chromium (Total) in mg/L	50																									
Total Iron in mg/L																										
Total Manganese in mg/L																										
Total Selenium in mg/L																										
Conventional Chemistry Parameters																										
Carbon, Dissolved Organic (DOC) in mg/L																										
Chloride in mg/L																										
Dissolved Silica (SiO2) in mg/L																										
Ethane in mg/L																										
Ethene in mg/L																										
Methane in mg/L																										
Nitrate as Nitrogen in mg/L																										
Nitrite as Nitrogen in mg/L																										
Sulfate in mg/L																										
Field Parameters																										
Dissolved Oxygen in mg/L		2.25	2.65	2.82		NM		2.5	2.54	4.60	4.51	3.05	7.08	2.29	1.7	1.62	1.23	1.53	0.36	0.29	2.27	2.75	0.44	0.58	NM	1.5
ORP in mVolts		79.3	116.6	-27.3		202.7		135.7	212.6	203.1	79.3	345.1	-5.1	1,350	122.2	99.7	-69.5	-78.5	87.9	18.8	161.8	-190.3	31.1	-565.6	270.9	-1.3
pH in pH Units		7.22	7.23	7.43		7.15		7.27	7.07	7.15	7.55	7.08	7.32	7.1	7.51	7.56	7.46	7.26	7.78	7.62	7.67	7.52	7.53	7.43	7.43	7.51
Specific Conductance in us/cm		1,284	1,255	948		1,076		1,114	1,023	1,056	1,332	1,189	955	1,154	997	1,104	984	2,357	886	816	832	856	930	903	994	943
Temperature in deg C		20.5	18.28	18.4		20		16.9	19.1	20.6	18.3	16.4	17.2	20.7	19.1	17.17	17.2	19.8	17.8	17.76	19.3	19.3	17.6	18.9	19.7	17.5
Turbidity in NTU		0.53	0.79	1.77		0.83		0.47	4.18	0.32	1.50	0.68	0.54	0.24	0.56	4.53	9.52		72.2			5.28	20.9	5.05	10.8	15.2

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-21I/2 7/23/13	MW-21I/2 10/31/13	MW-21I/2 10/31/13 FD	MW-21I/2 12/19/13	MW-21I/2 12/19/13 FD	MW-21I/2 3/11/14	MW-21I/2 3/11/14 FD	MW-21I/2 6/17/14	MW-21I/2 6/17/14 FD	MW-21I/2 9/9/14	MW-21I/2 12/17/14	MW-21I 11/16/10	MW-21I 3/29/11	MW-21I 3/29/11 FD	MW-21I 6/27/11	MW-21I 10/11/11	MW-21I 1/25/12	MW-21I 5/29/12	MW-21I 8/15/12	MW-21I 8/15/12 FD	MW-22I 1/25/12	MW-22I 5/29/12	MW-22I 8/15/12	MW-22I 4/15/13	MW-22I 7/23/13	MW-22I 10/30/13
Volatile Organic Compounds (VOC)																											
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.2	0.10 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dibromo-3-chloropropane in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.20 U	0.20 U	0.20 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,3-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.50	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
Benzene in ug/L	5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Bromoform in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U
Bromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.15	0.10	0.10	0.10 U	0.10 U	0.13	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.23	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Chloromethane in ug/L		0.10	0.10 U	0.10 U	0.20	0.14	0.1 *	0.1 *	0.10 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.14	0.12	0.12	0.10 U	0.10 U	0.11	19	0.10	0.10 U	0.11	0.1 U	0.25	0.18	0.18	0.10 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.1 *	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Methylene chloride in ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.5 U	0.5 U	0.56	0.55	0.5 U	0.5 U	0.10 U	0.10 U	0.10 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
p-Isopropyltoluene in ug/L		0.20 U*	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U*	0.20 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Styrene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Tetrachloroethene (PCE) in ug/L	5	8.6	9.4	9.1	8.8	8.4	5.2	42	7.7	7.9	4.7	7.3	10 J	8.6	8.3	2.6	5.7 J	10	7.5	4.5 J	3.1 J	0.55	0.38	0.24 J	0.41	0.26	0.35
Toluene in ug/L	1,000	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
trans-1,2-Dichloroethene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.49	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Trichloroethene (TCE) in ug/L	5	1.3	1.3	1.3	1.1	1.1	1.1	73 H	1.1	1.1	0.88	1	2.1	1.9	1.9	0.37	0.87	1.5	0.88	0.59 J	0.43 J	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Trichlorofluoromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Vinyl chloride in ug/L	0.2	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.15	0.020 U	0.020 U	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U
o-Xylene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U
Naphthalene in ug/L	160	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.4 U	0.40 UJ	0.40 U	0.40 U	0.40 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-21I/2 7/23/13	MW-21I/2 10/31/13	MW-21I/2 10/31/13 FD	MW-21I/2 12/19/13	MW-21I/2 12/19/13 FD	MW-21I/2 3/11/14	MW-21I/2 3/11/14 FD	MW-21I/2 6/17/14	MW-21I/2 6/17/14 FD	MW-21I/2 9/9/14	MW-21I/2 12/17/14	MW-21I 11/16/10	MW-21I 3/29/11	MW-21I 3/29/11 FD	MW-21I 6/27/11	MW-21I 10/11/11	MW-21I 1/25/12	MW-21I 5/29/12	MW-21I 8/15/12	MW-21I 8/15/12 FD	MW-22I 1/25/12	MW-22I 5/29/12	MW-22I 8/15/12	MW-22I 4/15/13	MW-22I 7/23/13	MW-22I 10/30/13
Total Petroleum Hydrocarbons (TPH)																											
Gasoline Range Hydrocarbons in mg/L	1,000																										
Metals																											
Dissolved Iron in mg/L																											
Dissolved Manganese in mg/L																											
Total Arsenic in mg/L	5																										
Total Cadmium in mg/L	5																										
Total Chromium (Total) in mg/L	50																										
Total Iron in mg/L																											
Total Manganese in mg/L																											
Total Selenium in mg/L																											
Conventional Chemistry Parameters																											
Carbon, Dissolved Organic (DOC) in mg/L																											
Chloride in mg/L																											
Dissolved Silica (SiO2) in mg/L																											
Ethane in mg/L																											
Ethene in mg/L																											
Methane in mg/L																											
Nitrate as Nitrogen in mg/L																											
Nitrite as Nitrogen in mg/L																											
Sulfate in mg/L																											
Field Parameters																											
Dissolved Oxygen in mg/L		0.75	3.41		2.94		1.35		0.96		0.1	0.16	2.57	2.5		5.36	4.83	1.75	3.35	NM		0.87	5.84	7.41	7.17	7.12	9.99
ORP in mVolts		213.1	197.2		77.4		147.6		84.9		232.5	88.9	138.6	94.2		136	82.5	78.6	-413	244		57.4	-235.5	62.5	176.7	217.6	119.9
pH in pH Units		7.34	7.51		8.06		7.37		7.60		7.6	7.75	7.16	8.04		7.53	7.3	7.36	7.33	7.29		7.9	7.56	7.58	7.56	7.62	7.71
Specific Conductance in us/cm		92.1	858		1,028		889		809		881	903	961	953		764	878	982	979	1,044		1,015	1,288	2,725	1,235	1,349	1,151
Temperature in deg C		19.2	19.5		18.0		17.1		18.8		20.2	18.3	19.72	16.41		19	21	17.9	18.8	20.9		16.9	17.4	19.3	16.8	19.5	20.1
Turbidity in NTU		12.4	4.93		6.19		15.1				2.75	7.55	7.02				0.71	1.93	0.77	0.84		14.1	3.12	2.04	1.06	4.98	0.61

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-22I 12/19/13	MW-22I 3/11/14	MW-22I 6/17/14	MW-22I 9/9/14	MW-22I 12/17/14	MW-22I 12/17/14 FD	MW-23I 1/25/12	MW-23I 5/29/12	MW-23I 5/29/12 FD	MW-23I 8/15/12	MW-23I 4/15/13	MW-23I 7/22/13	MW-23I 10/30/13	MW-23I 12/19/13	MW-23I 3/11/14	MW-23I 6/17/14	MW-23I 9/9/14	MW-23I 9/9/14 FD	MW-23I 12/17/14	MW-24I 1/25/12	MW-24I 5/29/12	MW-24I 8/14/12	MW-25I 1/25/12	MW-25I 5/30/12	MW-25I 8/15/12	MW-25I 8/15/12 FD
Volatile Organic Compounds (VOC)																											
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloropropene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene in ug/L	5	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.22	0.1 U	0.1 U
Bromobenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
Bromomethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 UJ
Carbon tetrachloride in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11	0.14	0.16	0.10	0.16	0.23	0.33	0.36	0.48	0.5	0.55	0.5	0.65	0.1 U	0.1 U	0.1 U
Chloromethane in ug/L		0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.11	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.74	0.11	0.1 U	0.11
cis-1,3-Dichloropropene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.95	0.32	0.36	0.74	1.1	0.60	0.11	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Methylene chloride in ug/L	5	0.50 U	0.5 U	0.52	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.5 U	0.61	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
p-Isopropyltoluene in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U*	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Styrene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	0.34	0.32	0.34	0.19	0.36	0.3	9.2	5 J	6.3	6.5 J	5.7	5.4	4.9	4.6	2.8	3.9	2.9	2.9	3.9	1	0.72 J	1 J	3.3	0.56 J	0.57 J	0.57 J
Toluene in ug/L	1,000	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.21	0.1 U	0.1 U	0.1 U
trans-1,2-Dichloroethene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,3-Dichloropropene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	1.3	0.71	0.75	0.99	0.63	0.77	0.52	0.43	0.43	0.44	0.38	0.36	0.36	0.1 U	0.1 U	0.1 U	2.6	0.39	0.37	0.4
Trichlorofluoromethane in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.020 U	0.02 U	0.020 U	0.02 U	0.02 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.02 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.020 U	0.02 U	0.02 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.02 U
m,p-Xylenes in ug/L		0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene in ug/L		0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene in ug/L	160	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-22I 12/19/13	MW-22I 3/11/14	MW-22I 6/17/14	MW-22I 9/9/14	MW-22I 12/17/14	MW-22I 12/17/14 FD	MW-23I 1/25/12	MW-23I 5/29/12	MW-23I 5/29/12 FD	MW-23I 8/15/12	MW-23I 4/15/13	MW-23I 7/22/13	MW-23I 10/30/13	MW-23I 12/19/13	MW-23I 3/11/14	MW-23I 6/17/14	MW-23I 9/9/14	MW-23I 9/9/14 FD	MW-23I 12/17/14	MW-24I 1/25/12	MW-24I 5/29/12	MW-24I 8/14/12	MW-25I 1/25/12	MW-25I 5/30/12	MW-25I 8/15/12	MW-25I 8/15/12 FD
Total Petroleum Hydrocarbons (TPH)																											
Gasoline Range Hydrocarbons in mg/L	1,000																										
Metals																											
Dissolved Iron in mg/L																											
Dissolved Manganese in mg/L																											
Total Arsenic in mg/L	5																										
Total Cadmium in mg/L	5																										
Total Chromium (Total) in mg/L	50																										
Total Iron in mg/L																											
Total Manganese in mg/L																											
Total Selenium in mg/L																											
Conventional Chemistry Parameters																											
Carbon, Dissolved Organic (DOC) in mg/L																											
Chloride in mg/L																											
Dissolved Silica (SiO2) in mg/L																											
Ethane in mg/L																											
Ethene in mg/L																											
Methane in mg/L																											
Nitrate as Nitrogen in mg/L																											
Nitrite as Nitrogen in mg/L																											
Sulfate in mg/L																											
Field Parameters																											
Dissolved Oxygen in mg/L		8.16	3.25	7.12	5.93	0.08		0.92	1.91		0.62	1.92	2.28	3.59	3.16	1.44	0.90	1.14	1.14	1.4	2.58	4.24	4.14	0.42	2.62	NM	
ORP in mVolts		88.0	155.0	92.6	148.3	135.4		109.4	-44.2		15	163.3	187.9	114.5	84.4	148.9	84.9	214.7	214.7	124	83.3	-94.7	-60.5	-258.5	-23.2	-90.9	
pH in pH Units		7.86	7.40	7.82	7.64	7.84		7.72	7.63		7.39	7.4	7.34	7.37	7.87	7.25	7.57	7.49	7.49	7.67	7.28	7.22	7.21	7.63	7.62	7.95	
Specific Conductance in us/cm		1,346	880	1,163	1,271	1,211		991	1,103		1,989	1,070	1,050	955	1,158	1,063	981	1,000	1,000	1,009	1,096	1,124	2,090	1,157	825	906	
Temperature in deg C		18.6	16.7	17.3	20.5	18.6		18	17.5		19.6	17.1	20.6	20.4	18.6	16.8	17.3	20.7	20.7	19.2	16.7	16.7	19.7	16	16.6	17.7	
Turbidity in NTU			1.50	1.52	1.55	2.14		5.66	1.78		15.5	1.15	2.67	2.75	11.8	2.88	5.84	1.04	1.04	1.2	24.7	4.94	1.08	95.4	3.45	9.83	

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-25I 4/16/13	MW-25I 7/23/13	MW-25I 10/31/13	MW-25I 12/19/13	MW-25I 3/11/14	MW-25I 6/17/14	MW-25I 9/10/14	MW-25I 12/17/14	MW-26I 1/26/12	MW-26I 5/30/12	MW-26I 8/16/12	MW-26I 4/16/13	MW-26I 4/16/13 FD	MW-26I 3/12/14	MW-26I 6/17/14	MW-26I 9/10/14	MW-26I 12/16/14	MW-27I 3/11/14	MW-27I 12/17/14	MW-28I 3/12/14	MW-28I 6/17/14	MW-28I 9/10/14	MW-28I 12/16/14	MW-29I 3/11/14	MW-29I 12/17/14
Volatile Organic Compounds (VOC)																										
1,1,1,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.50 J	0.10 UJ	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	1	1.3	1.7	1.5	1.8	1.2	0.36	1.7	1.1	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.12
1,1-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 *	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 *	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 *	0.4 U	0.4 U	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.12	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene in ug/L	5	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.3	0.21	0.28	0.26	0.31	0.25	0.10 U	0.23	0.15	0.1 U	0.12	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.29	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon tetrachloride in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.32 J	1.1 J	1.3	0.82	0.25 U	0.25 U	0.25 U	0.25 *	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Chloroform in ug/L		0.10 U	0.10 J	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.38	0.14	0.1 U	0.10 U	0.10 U	0.1 U	26	1.4	2.1	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.24	0.10 U	0.13	0.57	0.21	0.22	0.92	0.66	280	440	780	670	780	620	140	640	670	0.1	5.1	1.5	4.3	47	81	2.1	47
cis-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 *	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.10 U	0.10 U	0.10 U	0.10 U	0.1 *	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Methylene chloride in ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.5 U	0.56	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.5 U	0.86	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.5	1.6	1.3	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
p-Isopropyltoluene in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.69	0.45	0.63	0.49	0.64	0.33	0.10 U	0.26	0.21	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Styrene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.13	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	1.1	0.50	0.54	0.86	0.51	0.65	0.61	0.64	270	220	180 J	160	180	47	11	17	6.8	2.3	0.26	8.3	0.25	0.18	0.25	7.4	1.3
Toluene in ug/L	1,000	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.13	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.29	0.39	0.1 U	0.10 U	0.1 U	0.12	0.38	0.29
trans-1,2-Dichloroethene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	1.5	2.6	3.8	3.3	3.8	3	0.77	4.2	2.5	0.1 U	0.1 U	0.1 U	0.10 U	0.1	0.15	0.1 U	0.18
trans-1,3-Dichloropropene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	1.1	0.44	0.60	1.3	1.4	1.2	2	1.9	290	430	590	540	650	460	62	210	98	0.3	0.23	11	3.0	5.4	7.5	7.5	12
Trichlorofluoromethane in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.020 U	0.02 U	0.02 U	2.5	1	0.93	0.51 J	0.65 J	0.47	0.077	0.61	0.36	0.021	0.16	0.02 U	0.070	1.2	1.7	0.053	2.3
m,p-Xylenes in ug/L		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene in ug/L		0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene in ug/L	160	0.40 U	0.40 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.40 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-25I 4/16/13	MW-25I 7/23/13	MW-25I 10/31/13	MW-25I 12/19/13	MW-25I 3/11/14	MW-25I 6/17/14	MW-25I 9/10/14	MW-25I 12/17/14	MW-26I 1/26/12	MW-26I 5/30/12	MW-26I 8/16/12	MW-26I 4/16/13	MW-26I 4/16/13 FD	MW-26I 3/12/14	MW-26I 6/17/14	MW-26I 9/10/14	MW-26I 12/16/14	MW-27I 3/11/14	MW-27I 12/17/14	MW-28I 3/12/14	MW-28I 6/17/14	MW-28I 9/10/14	MW-28I 12/16/14	MW-29I 3/11/14	MW-29I 12/17/14
Total Petroleum Hydrocarbons (TPH)																										
Gasoline Range Hydrocarbons in mg/L	1,000																									
Metals																										
Dissolved Iron in mg/L																										
Dissolved Manganese in mg/L																										
Total Arsenic in mg/L	5																									
Total Cadmium in mg/L	5																									
Total Chromium (Total) in mg/L	50																									
Total Iron in mg/L															0.5 U	0.50 U	0.5 U	0.5 U			0.5 U	30	29	71		
Total Manganese in mg/L																										
Total Selenium in mg/L																										
Conventional Chemistry Parameters																										
Carbon, Dissolved Organic (DOC) in mg/L																										
Chloride in mg/L															52	12	35	33	14	12	20	66	16	14	32	26
Dissolved Silica (SiO2) in mg/L																										
Ethane in mg/L															0.005 U	0.0050 U	0.005 U	0.005 U			0.005 U	0.0050 U	0.005 U	0.005 U		
Ethene in mg/L															0.005 U	0.0050 U	0.005 U	0.005 U			0.005 U	0.0050 U	0.005 U	0.005 U		
Methane in mg/L															0.16	0.011	0.057	0.32			0.049	0.0050 U	0.1	2.3		
Nitrate as Nitrogen in mg/L															0.9 UH	0.10 U	0.9 U	0.9 U	0.9 UH	0.9 U	0.9 UH	0.10 UH	0.9 U	0.9 U	0.9 UH	0.9 U
Nitrite as Nitrogen in mg/L															4.1 H	0.10 U	0.6 U	9.2	3.1 H	9.6	3.2 H	0.10 UH	0.6 U	6.3	3 H	7.2
Sulfate in mg/L															56	15	31	23	8.9	1.2 U	24	1.0 U	1.2 U	1.2 U	22	1.2 U
Field Parameters																										
Dissolved Oxygen in mg/L		2.29	2.52	3.49	3.87	2.33	2.74	1.22	0.16	0.28	3.14	1.69	3.4		0.16	7.76	0.06	0.17	0.16	0.35	517.4	0.18	0.17	0.05	2.6	0.14
ORP in mVolts		-31.2	200.1	163.5	90.8	248.5	96.5	20.6	82.5	-325.6	-190.6	-119.8	35.4		-22.7	88.2	-175.6	-163	71.4	21.9	7.66	10.3	37.6	-19.6	-29.9	29.1
pH in pH Units		7.72	7.56	7.61	8.65	7.67	7.64	7.46	7.85	7.93	7.69	7.6	7.69		7.63	6.94	7.63	7.65	7.40	5.99	0.10	5.89	5.66	5.89	7.68	5.9
Specific Conductance in us/cm		724	847	816	991	898	799	876	900	1,250	1,079	2,011	1,121		887	67.3	863	737	542	1,401	14.4	1,595	1,175	1,302	664	1,317
Temperature in deg C		16.3	17.8	17.6	16.7	16.5	16.0	16.8	16.3	14.5	15.2	16.4	15.2		15.0	15.6	16.6	14.2	14.7	15.1		14.9	16.1	14.7	14.2	13.7
Turbidity in NTU		2.41	1.74	0.87	0.77	1.29	0.75	1.09	2.4	9.26	1.47	5.32	0.73		0.78		6.35	1.47	4.71	397	79.2	158	31.9	111	5.38	261

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-30I 3/12/14	MW-30I 12/17/14	MW-31I 3/12/14	MW-31I 6/17/14	MW-31I 9/10/14	MW-31I 12/16/14	MW-32I 3/12/14	MW-32I 6/16/14	MW-32I 9/10/14	MW-32I 12/16/14
Volatile Organic Compounds (VOC)											
1,1,1,2-Tetrachloroethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,1,1-Trichloroethane in ug/L	200	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,1,2-Trichloroethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	1	0.10 U	0.1 U	0.1 U
1,1-Dichloroethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,1-Dichloroethene in ug/L		0.1 U	0.11	0.17	1.1	4.4	5	0.16	0.19	0.18	0.1 U
1,1-Dichloropropene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene in ug/L		0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U
1,2,3-Trichloropropane in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.12	0.1 U	0.10 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane in ug/L		0.4 U	0.4 U	0.4 U	0.40 U	0.4 *	0.4 U	0.4 U	0.40 U	0.4 *	0.4 U
1,2-Dibromoethane (EDB) in ug/L	0.01	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,2-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
1,2-Dichloroethane (EDC) in ug/L	5	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,2-Dichloropropane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.23	0.10 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,3-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
1,3-Dichloropropane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
1,4-Dichlorobenzene in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
2,2-Dichloropropane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
2-Chlorotoluene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
4-Chlorotoluene in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
Benzene in ug/L	5	0.1 U	0.1 U	0.1 U	0.12	0.35	0.14	0.4	0.33	0.32	0.26
Bromobenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Bromochloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Bromodichloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Bromoform in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Bromomethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Carbon tetrachloride in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Chlorobenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Chloroethane in ug/L		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.43	1.9
Chloroform in ug/L		0.1 U	0.1	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Chloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.14	0.10 U	0.1 U	0.1 U
cis-1,2-Dichloroethene (DCE) in ug/L		0.78	33	12	310	2,900	3,200	45	52	340	300
cis-1,3-Dichloropropene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Dibromochloromethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Dibromomethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Dichlorodifluoromethane in ug/L		0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U
Ethylbenzene in ug/L	700	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Hexachlorobutadiene in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
Isopropylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Methyl tert-butyl ether (MTBE) in ug/L	20	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Methylene chloride in ug/L	5	0.5 U	0.5 U	0.5 U	1.2	0.5 U	0.5 U	0.5 U	0.69	0.5 U	0.5 U
n-Butylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
n-Propylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.12	0.1 U	0.10 U	0.1 U	0.11
p-Isopropyltoluene in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
sec-Butylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Styrene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.12	0.1 U	0.10 U	0.1 U	0.1 U
tert-Butylbenzene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Tetrachloroethene (PCE) in ug/L	5	4	0.75	19	7.4	6.4	13	52	28	0.92	2.8
Toluene in ug/L	1,000	0.57	0.17	0.11	0.10 U	0.14	0.36	1.1	0.84	0.7	0.62
trans-1,2-Dichloroethene in ug/L		0.1 U	0.1 U	0.13	4.4	12	9.8	0.31	0.42	0.78	0.59
trans-1,3-Dichloropropene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Trichloroethene (TCE) in ug/L	5	2	8.8	70	590	750	420	68	120	35	0.1 U
Trichlorofluoromethane in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U
Vinyl chloride in ug/L	0.2	0.025	1.2	0.21	2.4	49	63	0.49	0.020 U	0.74	0.57
m,p-Xylenes in ug/L		0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U
o-Xylene in ug/L		0.1 U	0.1 U	0.1 U	0.10 U	0.1 U	0.1 U	0.1	0.10 U	0.1 U	0.1 U
Naphthalene in ug/L	160	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U

Table 4.2 - Groundwater Quality Data - Upper Gravelly Sand Unit

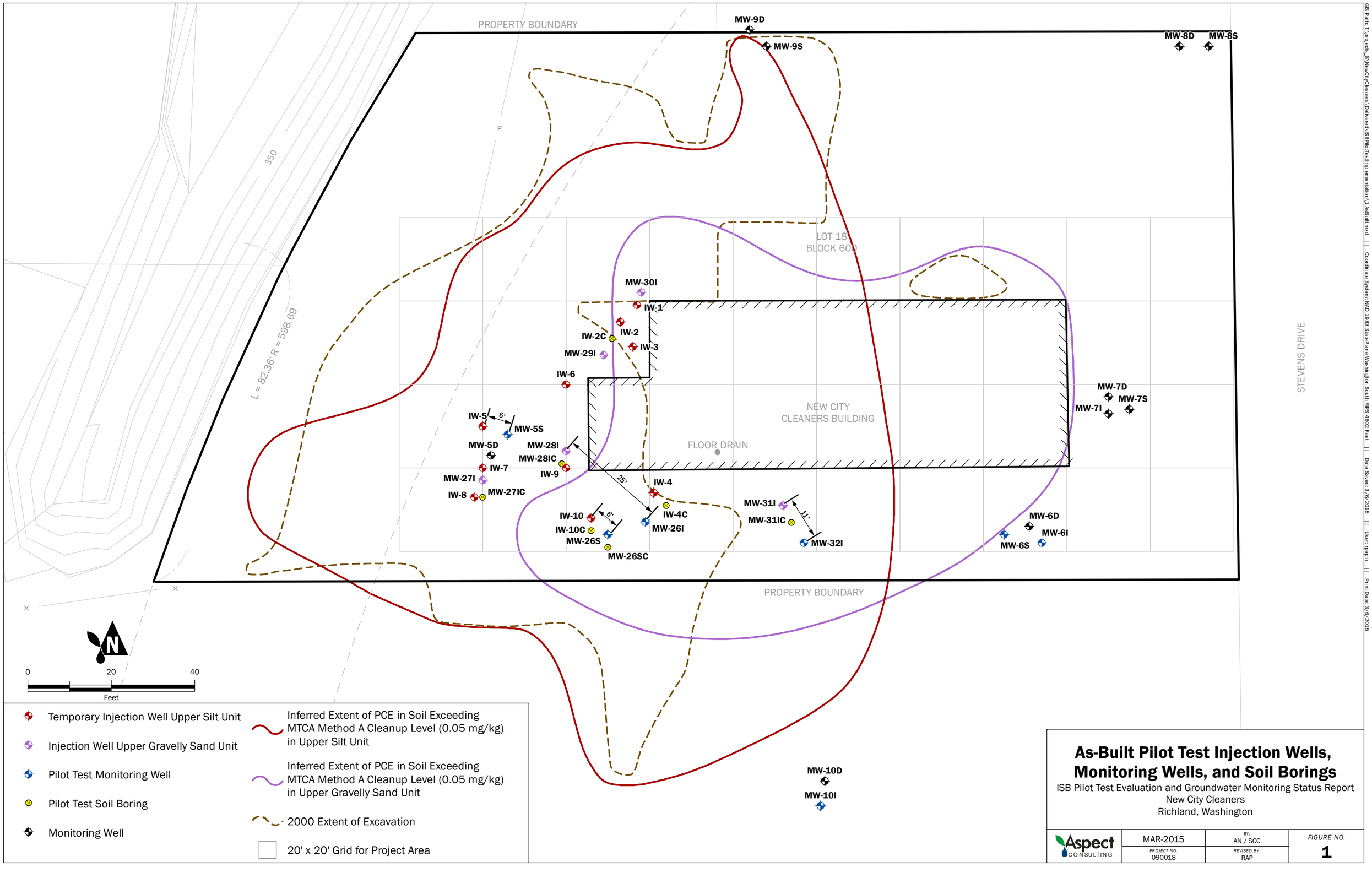
New City Cleaners, Richland, Washington, Project No. 090018-003-01

Chemical Name	Preliminary Screening Level (µg/L)	MW-30I 3/12/14	MW-30I 12/17/14	MW-31I 3/12/14	MW-31I 6/17/14	MW-31I 9/10/14	MW-31I 12/16/14	MW-32I 3/12/14	MW-32I 6/16/14	MW-32I 9/10/14	MW-32I 12/16/14
Total Petroleum Hydrocarbons (TPH)											
Gasoline Range Hydrocarbons in mg/L	1,000										
Metals											
Dissolved Iron in mg/L											
Dissolved Manganese in mg/L											
Total Arsenic in mg/L	5										
Total Cadmium in mg/L	5										
Total Chromium (Total) in mg/L	50										
Total Iron in mg/L				0.5 U	17	72	110	0.5 U	0.50 U	0.5 U	0.5 U
Total Manganese in mg/L											
Total Selenium in mg/L											
Conventional Chemistry Parameters											
Carbon, Dissolved Organic (DOC) in mg/L				3.4	260	600	570	3.4	6.8	4.9	2.8
Chloride in mg/L		59	29	23	52	40	34	52	56	54	45
Dissolved Silica (SiO2) in mg/L											
Ethane in mg/L											
Ethene in mg/L											
Methane in mg/L											
Nitrate as Nitrogen in mg/L		0.9 U	0.9 U	0.9 U	0.10 UH	0.9 U	0.9 U	0.9 UH	0.10 UH	0.9 U	0.9 U
Nitrite as Nitrogen in mg/L		2.8	10	3.2	0.10 UH	3.2	6.4	3.1 H	0.10 UH	0.6 U	9.4
Sulfate in mg/L		23	1.2 U	24	10	1.2 U	1.2 U	27	26	10	8.4
Field Parameters											
Dissolved Oxygen in mg/L		0.07	0.2	0.07	0.14	0.34	0.07	0.14	0.33	0.09	0.17
ORP in mVolts		-616.6	61.6	-028.0	-3.6	66.7	76.7	-108.2	-76.9	-150.2	-117.5
pH in pH Units		8.33	5.72	7.69	6.05	5.49	5.46	7.88	7.50	7.77	7.84
Specific Conductance in us/cm		555.8	1,449	532.8	921	1,475	1,700	618.8	749	844	808
Temperature in deg C		14.2	14.1	15.3	15.5	16.7	14.9	14.8	15.9	16.9	14.9
Turbidity in NTU		4.66	388	2.39	41.6	24.5	22.5	2.75	1.59	0.84	1.17

Notes

Concentrations in shaded cells indicate value exceeds the Preliminary Screening Level.
Preliminary Screening Level is the Ground Water, Method A, Table Value (µg/L)
* - LCS or LCSD exceeds the control limits
H - Sample was prepped or analyzed beyond the specified holding time
J - Analyte was positively identified. The reported result is an estimate.
U - Analyte was not detected at or above the reported result.
UJ - Analyte was not detected at or above the reported estimate

FIGURES



As-Built Pilot Test Injection Wells, Monitoring Wells, and Soil Borings

ISB Pilot Test Evaluation and Groundwater Monitoring Status Report
New City Cleaners
Richland, Washington

Aspect CONSULTING	MAR-2015	BY: AN / SCC	FIGURE NO. 1
	PROJECT NO. 090018	REVISED BY: RAP	

IW-2/IW-2C	Depth	PCE	TCE	cDCE	VC	TOC
02/18/14	10-11ft	0.011	0.0014U	0.0014U	0.0014U	560
12/15/14	10-11ft	0.0032	0.00098U	0.00098U	0.00098U	630
02/18/14	15-16ft	0.0034	0.0015U	0.0015U	0.0015U	480
12/15/14	15-16ft	0.0011U	0.0011U	0.0016	0.0011U	1100

IW-4/IW-4C	Depth	PCE	TCE	cDCE	VC	TOC
02/13/14	15-16ft	0.011	0.04	0.015	0.00086U	860
12/16/14	15-16ft	0.0013U	0.0013U	0.11	0.0013U	330U
02/13/14	18-19ft	0.012	0.49	0.044	0.0011U	1200
12/16/14	18-19ft	0.0013U	0.0013U	0.33	0.0013U	1300

MW-31I/MW-31C	Depth	PCE	TCE	cDCE	VC	TOC
02/13/14	20-21ft	0.03	5.5	0.038	0.0013U	4100
12/16/14	20-21ft	0.13	3.8UH	0.3	0.001U	3600

MW-26S/MW-26SC	Depth	PCE	TCE	cDCE	VC	TOC
02/13/14	10-11ft	0.07	0.2	0.022	0.001U	840
12/15/14	10-11ft	0.034	0.071	0.018	0.001U	320U
02/13/14	19-20ft	0.15	0.08	0.0028	0.0012U	710
12/15/14	19-20ft	0.12	0.058	0.07	0.0011U	430

IW-10/IW-10C	Depth	PCE	TCE	cDCE	VC	TOC
02/13/14	10-11ft	0.073	0.2	0.013	0.0011U	1000
12/15/14	10-11ft	0.047	0.1	0.088	0.0011U	480

LOT 18
BLOCK 600

NEW CITY
CLEANERS BUILDING

PROPERTY BOUNDARY

STEVENS DRIVE

L = 82.36' R = 598.69

MW-30I
IW-1
IW-2
IW-2C
IW-3
MW-29I
IW-6
IW-5
MW-5S
MW-5D
MW-28I
IW-7
MW-28IC
IW-9
MW-27I
IW-8
MW-27IC
IW-4
IW-4C
MW-31I
MW-31IC
MW-32I
IW-10
MW-26I
IW-10C
MW-26S
MW-26SC
MW-7D
MW-7S
MW-7I
MW-6S
MW-6D
MW-6I
MW-10D
MW-10I

N

0 20 40
Feet

- Temporary Injection Well Upper Silt Unit
- Injection Well Upper Gravelly Sand Unit
- Pilot Test Monitoring Well
- Pilot Test Soil Boring
- Monitoring Well

Monitoring Well Name
Tetrachloroethylene in mg/kg
Trichloroethylene in mg/kg
cis-1,2-Dichloroethylene in mg/kg
Vinyl Chloride in mg/kg
Total Organic Carbon mg/kg

IW-10	Depth	PCE	TCE	cDCE	VC	TOC
02/13/14	10-11ft	0.073	0.2	0.013	0.0011U	1000

Sample Date
Sample Depth

BOLD, ORANGE, UNDERLINED TEXT
indicates exceedance of preliminary soil screening levels

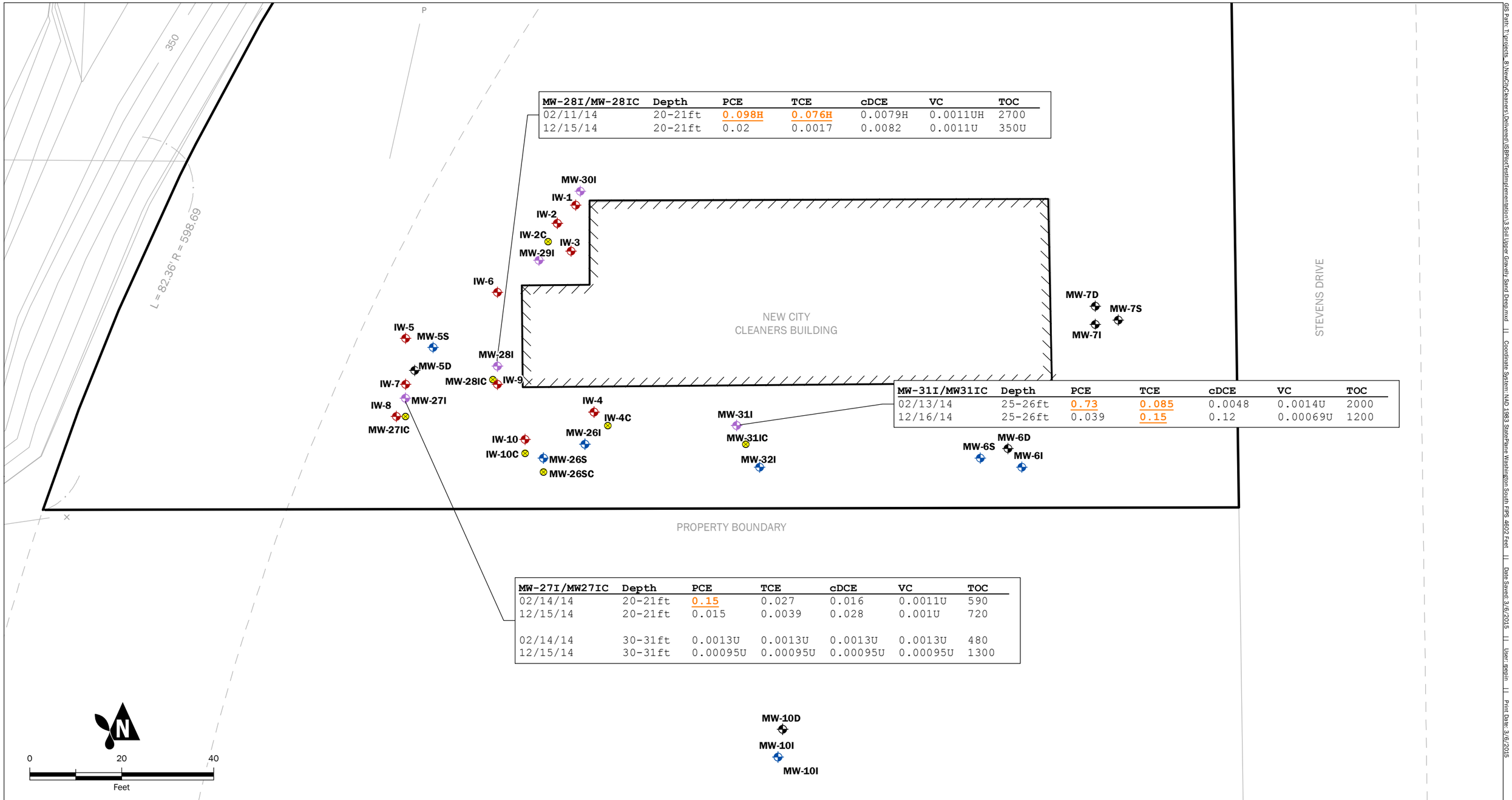
	Preliminary Screening Level in mg/kg
PCE	0.05
TCE	0.03

Upper Silt Unit
Pre- and Post-Pilot Test
Soil Sampling Results

ISB Pilot Test Evaluation and Groundwater Monitoring Status Report
New City Cleaners
Richland, Washington

Aspect CONSULTING

MAR-2015	DFR / RAP	FIGURE NO.
PROJECT NO. 090018	REVISED BY: ---	2



MW-28I/MW-28IC	Depth	PCE	TCE	cDCE	VC	TOC
02/11/14	20-21ft	0.098H	0.076H	0.0079H	0.0011UH	2700
12/15/14	20-21ft	0.02	0.0017	0.0082	0.0011U	350U

MW-31I/MW31IC	Depth	PCE	TCE	cDCE	VC	TOC
02/13/14	25-26ft	0.73	0.085	0.0048	0.0014U	2000
12/16/14	25-26ft	0.039	0.15	0.12	0.00069U	1200

MW-27I/MW27IC	Depth	PCE	TCE	cDCE	VC	TOC
02/14/14	20-21ft	0.15	0.027	0.016	0.0011U	590
12/15/14	20-21ft	0.015	0.0039	0.028	0.001U	720
02/14/14	30-31ft	0.0013U	0.0013U	0.0013U	0.0013U	480
12/15/14	30-31ft	0.00095U	0.00095U	0.00095U	0.00095U	1300

- Temporary Injection Well Upper Silt Unit
- Injection Well Upper Gravelly Sand Unit
- Pilot Test Monitoring Well
- Pilot Test Soil Boring
- Monitoring Well

Monitoring Well Name; Tetrachloroethylene in mg/kg; Trichloroethylene in mg/kg; cis-1,2-Dichloroethylene in mg/kg; Vinyl Chloride in mg/kg; Total Organic Carbon mg/kg

IW-10	Depth	PCE	TCE	cDCE	VC	TOC
02/13/14	10-11ft	0.073	0.2	0.013	0.0011U	1000

Sample Date; Sample Depth

BOLD, ORANGE, UNDERLINED TEXT indicates exceedance of preliminary soil screening levels

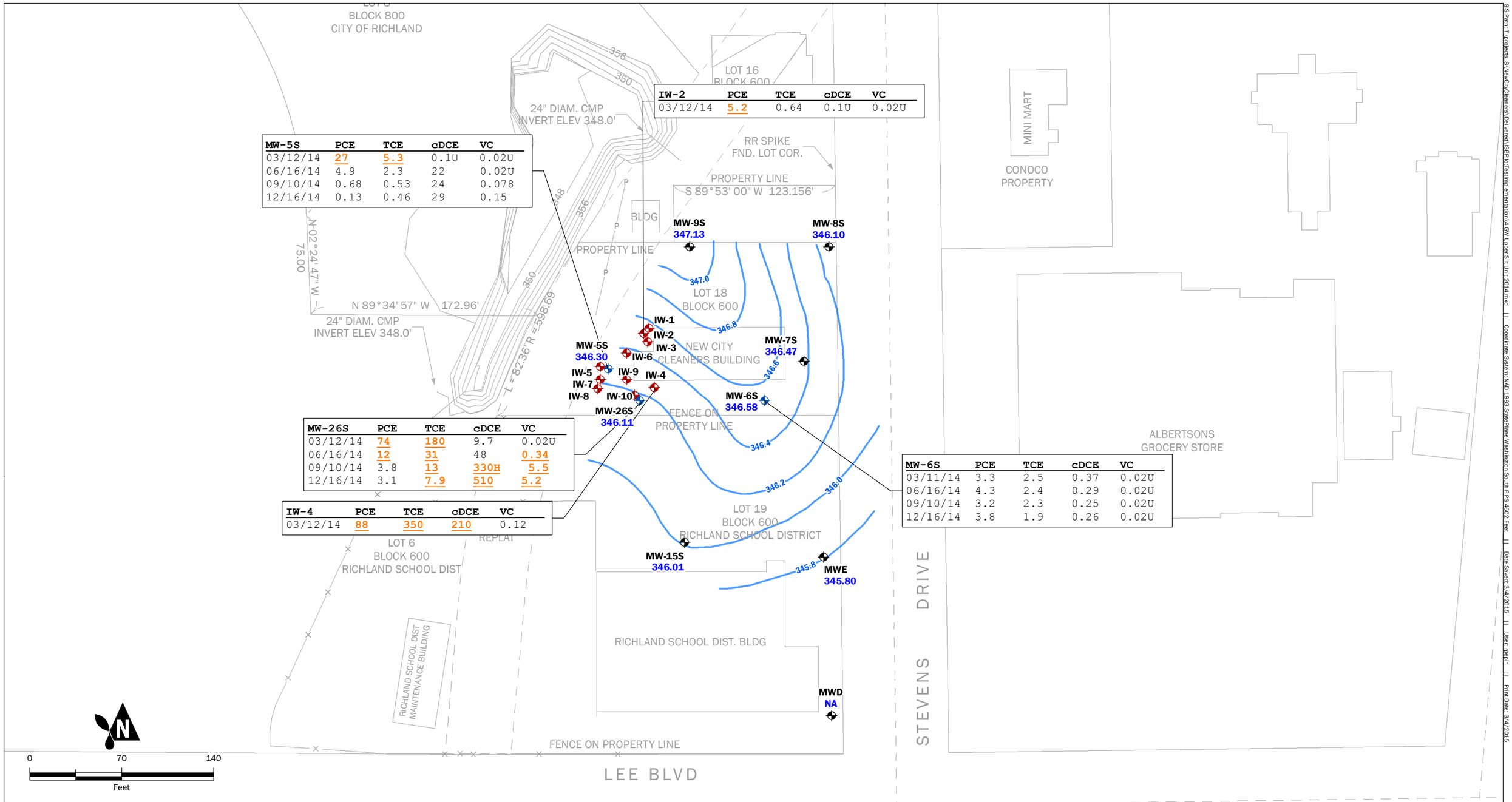
	Preliminary Screening Level in mg/kg
PCE	0.05
TCE	0.03

Upper Gravelly Sand Unit Pre- and Post-Pilot Test Soil Sampling Results

ISB Pilot Test Evaluation and Groundwater Monitoring Status Report
New City Cleaners
Richland, Washington

Aspect CONSULTING

MAR-2015	BY: DFR / RAP	FIGURE NO. 3
PROJECT NO. 090018	REVISED BY: ---	



IW-2	PCE	TCE	cDCE	VC
03/12/14	5.2	0.64	0.1U	0.02U

MW-5S	PCE	TCE	cDCE	VC
03/12/14	27	5.3	0.1U	0.02U
06/16/14	4.9	2.3	22	0.02U
09/10/14	0.68	0.53	24	0.078
12/16/14	0.13	0.46	29	0.15

MW-26S	PCE	TCE	cDCE	VC
03/12/14	74	180	9.7	0.02U
06/16/14	12	31	48	0.34
09/10/14	3.8	13	330H	5.5
12/16/14	3.1	7.9	510	5.2

IW-4	PCE	TCE	cDCE	VC
03/12/14	88	350	210	0.12

MW-6S	PCE	TCE	cDCE	VC
03/11/14	3.3	2.5	0.37	0.02U
06/16/14	4.3	2.4	0.29	0.02U
09/10/14	3.2	2.3	0.25	0.02U
12/16/14	3.8	1.9	0.26	0.02U

Temporary Injection Well Upper Silt Unit

Pilot Test Monitoring Well

Monitoring Well

Groundwater Elevation Contour

Monitoring Well Name → MW-9S 345.77 ← Groundwater Elevation

Monitoring Well Name → MW-19I | PCE | TCE | cDCE | VC ← Vinyl Chloride in µg/L
Tetrachloroethylene in µg/L
Trichloroethylene in µg/L
cis-1.2-Dichloroethylene in µg/L

MW-19I	PCE	TCE	cDCE	VC
12/19/13	7.9	1	0.11	0.020U

Sample Date

BOLD, ORANGE, UNDERLINED TEXT indicates exceedance of preliminary groundwater screening levels

Note: Groundwater elevations not displayed for injection wells due to residual biostimulant present in the well casing.

	Preliminary Screening Level in µg/L
PCE	5
TCE	5
cDCE	70
VC	0.2

Upper Silt Unit
Chlorinated VOCs in Groundwater 2014

ISB Pilot Test Evaluation and Groundwater Monitoring Status Report
New City Cleaners
Richland, Washington

Aspect CONSULTING

MAR-2015	BY: DFR / RAP	FIGURE NO. 4
PROJECT NO. 090018	REVISED BY: RAP	

GIS Path: T:\projects_8\NewCityCleaners\Delivered\ISBPilotTestImplementation\4 GW Upper Silt Unit 2014.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 3/4/2015 || User: mepin || Print Date: 3/4/2015

MW-30I	PCE	TCE	cDCE	VC
03/12/14	4	2	0.78	0.025
12/17/14	0.75	8.8	33	1.2

MW-29I	PCE	TCE	cDCE	VC
03/11/14	7.4	7.5	2.1	0.053
12/17/14	1.3	12	47	2.3

MW-31I	PCE	TCE	cDCE	VC
03/12/14	19	70	12	0.21
06/17/14	7.4	590	310	2.4
09/10/14	6.4	750	2900	49
12/16/14	13	420	3200	63

MW-17I	PCE	TCE	cDCE	VC
03/11/14	2.9	0.1U	0.1U	0.02U
06/17/14	6.7	0.12	0.10U	0.020U
09/09/14	3.1	0.1U	0.1U	0.02U
12/16/14	9.8	0.1U	0.1U	0.02U

MW-32I	PCE	TCE	cDCE	VC
03/12/14	52	68	45	0.49
06/16/14	28	120	52	0.020U
09/10/14	0.92	35	340	0.74
12/16/14	2.8	0.1U	300	0.57

MW-28I	PCE	TCE	cDCE	VC
03/12/14	8.3	11	1.5	0.02U
06/17/14	0.25	3.0	4.3	0.070
09/10/14	0.18	5.4	47	1.2
12/16/14	0.25	7.5	81	1.7

MW-26I	PCE	TCE	cDCE	VC
03/12/14	47	460	620	0.47
06/17/14	11	62	140	0.077
09/10/14	17	210	640	0.61
12/16/14	6.8	98	670	0.36

MW-22I	PCE	TCE	cDCE	VC
03/11/14	0.32	0.1U	0.1U	0.02U
06/17/14	0.34	0.10U	0.10U	0.020U
09/09/14	0.19	0.1U	0.1U	0.02U
12/17/14	0.36	0.1U	0.1U	0.02U

MW-27I	PCE	TCE	cDCE	VC
03/11/14	2.3	0.3	0.1	0.021
12/17/14	0.26	0.23	5.1	0.16

MW-14I	PCE	TCE	cDCE	VC
03/11/14	6.6	0.98	0.1U	0.02U
09/09/14	8.2	1	0.1U	0.02U

MW-6I	PCE	TCE	cDCE	VC
03/11/14	1.4	59	74	0.79
06/16/14	0.10U	46	63	0.80
09/10/14	0.11	48	67	0.89
12/16/14	3.4	73	71	0.69

MW-18I	PCE	TCE	cDCE	VC
03/11/14	3.9	0.61	0.1U	0.02U
09/09/14	4.1	0.49	0.1U	0.02U

MW-10I	PCE	TCE	cDCE	VC
03/12/14	200	320	76	0.095
06/17/14	280	420	120	0.11
09/10/14	320	230	330	0.02U
12/16/14	250	200	150	0.047

MW-23I	PCE	TCE	cDCE	VC
03/11/14	2.8	0.43	0.1U	0.02U
06/17/14	3.9	0.44	0.10U	0.020U
09/09/14	2.9	0.38	0.1U	0.02U
12/17/14	3.9	0.36	0.1U	0.02U

MW-21I/2	PCE	TCE	cDCE	VC
03/11/14	5.2	1.1	0.11	0.02U
06/17/14	7.7	1.1	0.10	0.020U
09/09/14	4.7	0.88	0.11	0.02U
12/17/14	7.3	1	0.1U	0.02U

MW-12I	PCE	TCE	cDCE	VC
03/11/14	0.1U	0.1U	0.1U	0.02U
12/16/14	0.1U	0.1U	0.1U	0.02U

MW-19I	PCE	TCE	cDCE	VC
03/11/14	3.8	1.3	0.14	0.02U
06/17/14	6.2	0.95	0.10U	0.020U
09/09/14	5.1	0.66	0.1U	0.02U
12/17/14	6.5	1.2	0.12	0.02U

MW-25I	PCE	TCE	cDCE	VC
03/11/14	0.51	1.4	0.21	0.02U
06/17/14	0.65	1.2	0.22	0.020U
09/10/14	0.61	2	0.92	0.02U
12/17/14	0.64	1.9	0.66	0.02U

MW-16I	PCE	TCE	cDCE	VC
03/11/14	34	67H	17	0.11
06/17/14	11	19	4.0	0.020U
09/10/14	6.1	12	7	0.027
12/17/14	27	100	28	0.22

MW-24I 345.78
MW-20I 345.59
MW-17I 345.79
MW-22I 345.45
MW-7I 345.98
MW-6I 345.99
MW-13I 345.77
MW-14I 345.71
MW-10I 345.96
MW-15I 346.01
MW-16I 345.66
MW-18I 345.58
MW-19I 345.49
MW-23I 345.26
MW-21I/2 345.26
MW-21I 345.33
MW-12I 345.34
MW-25I 345.71
MW-30I
MW-29I
MW-28I
MW-31I
MW-32I
MW-27I
MW-26I 346.10

LOT 8 BLOCK 800 CITY OF RICHLAND
24" DIAM. CMP INVERT ELEV 348.0'
PROPERTY LINE
S 89°53' 00" W 123.156'
BLDG
LOT 18 BLOCK 600
NEW CITY CLEANERS BUILDING
FENCE ON PROPERTY LINE
N 89°34' 57" W 172.96'
24" DIAM. CMP INVERT ELEV 348.0'
R=82.36' R=394.69'
LOT 6 BLOCK 600 RICHLAND SCHOOL DIST
LOT 22 REPLAT
LOT 19 BLOCK 600 RICHLAND SCHOOL DISTRICT
RICHLAND SCHOOL DIST MAINTENANCE BUILDING
RICHLAND SCHOOL DIST. BLDG
FENCE ON PROPERTY LINE
STEVENS DRIVE
GOETHALS DR
LVD
ER L&L EXXON PROPERTY
346.0
345.9
345.7
345.6
345.5
345.4
345.3
345.8

0 100 200 Feet

Injection Well Upper Gravelly Sand Unit
Pilot Test Monitoring Well
Monitoring Well
Groundwater Elevation Contour

Monitoring Well Name: MW-9S
Groundwater Elevation: 345.77

Monitoring Well Name
Tetrachloroethylene in µg/L
Trichloroethylene in µg/L
cis-1.2-Dichloroethylene in µg/L
Vinyl Chloride in µg/L
Sample Date

MW-19I	PCE	TCE	cDCE	VC
12/19/13	7.9	1	0.11	0.020U

BOLD, ORANGE, UNDERLINED TEXT indicates exceedance of preliminary groundwater screening levels

Note: Groundwater elevations not displayed for injection wells due to residual biostimulant present in the well casing.

	Preliminary Screening Level in µg/L
PCE	5
TCE	5
cDCE	70
VC	0.2

Upper Gravelly Sand Unit
Chlorinated VOCs in Groundwater 2014

ISB Pilot Test Evaluation and Groundwater Monitoring Status Report
New City Cleaners
Richland, Washington

Aspect CONSULTING

MAR-2015	BY: DFR / RAP	FIGURE NO. 5
PROJECT NO. 090018	REVISED BY: RAP	

APPENDIX A

Injection Well Logs and New Monitoring Well Log

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-1	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/19/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap						Grass, slightly gravelly	
	Concrete surface seal (0'-2')						Medium stiff, moist, dark brown with iron stain SILT (ML)	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2		0				10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3		0			Wet, trace fine sand	15
							Soft, brown-gray, slightly sandy	
		S4		0				
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-216	20

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-2	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 2/18/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap; Concrete surface seal (0'-2')						Grass, slightly gravelly	
							Hard, moist, dark brown SILT (ML); trace gravel	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2	IW-2-10-11 (VOC and FOC)	0			Medium stiff, very moist, iron staining, trace organics	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3	IW-2-15-16 (VOC and FOC)	0			Soft, wet, slightly sandy	15
		S4		0			Stiff	
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH215	20

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-2C	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 12/15/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Backfilled with 3/8 Bentonite Chips						See boring log IW-2 for lithology information	
10		S1	IW-2C-10-11 (VOC and FOC)				Medium stiff, very moist, brown, slightly sandy SILT (ML); with iron oxide staining, trace organics	10
15		S2	IW-2C-15-16 (VOC and FOC)				Soft, wet, gray slightly, sandy SILT (ML);	15
							Bottom of boring at 16.5' BGS	
20								20

Sampler Type:
- ○ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: AET
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-3	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/18/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap						Grass, slightly gravelly	
	Concrete surface seal (0'-2')						Stiff, slightly moist, brown, slightly sandy SILT (ML)	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2		0			Soft, iron staining, trace sand	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3						15
		S4						
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-214	20

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-4	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/13/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap						Grass, slightly gravelly	
	Concrete surface seal (0'-2')						Very stiff, slightly moist, brown SILT (ML)	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2						10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3	IW-4-15-16 (VOC and FOC)				Soft, wet, brown, iron staining	15
			IW-4-18-19 (VOC and FOC)					
		S4						
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-205	20

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-4C	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 12/16/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Backfilled with 3/8 Bentonite Chips						See boring log IW-4 for lithology information	
15		S1	IW-4C-15-16 (VOC and FOC)				Soft, moist, gray, silty SAND (SM); fine sand	15
		S2	IW-4C-18-19 (VOC and FOC)					
20							Bottom of boring at 19.5' BGS	20

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: AET
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-5	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/11/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap						Grass, slightly gravelly	
	Concrete surface seal (0'-2')						Soft, dark brown, slightly moist SILT (ML); trace organics, trace sand	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2		0			Medium stiff, moist, brown-gray	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3		0			Soft, very moist, with iron staining	15
							Stiff, wet	
		S4		0				
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-201	20

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-6	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/18/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap						Grass, slightly gravelly	
	Concrete surface seal (0'-2')						Very stiff, moist, dark brown SILT (ML); trace gravel	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2					Stiff	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3					Soft	15
		S4					Wet, dark brown-gray, slightly sandy, iron staining	
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-212	20

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-7	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev:
Depth to Water (ft BGS):
Start/Finish Date: 2/17/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap						Grass, slightly gravelly	
	Concrete surface seal (0'-2')						Soft, very moist, dark gray-brown SILT (ML); trace gravel	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2		0			Medium stiff	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3						15
		S4					Soft, wet, iron staining	
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-210	20

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-8	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/17/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly	
							Very stiff, slightly moist, dark gray-brown SILT (ML); trace gravel	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2		0			Medium stiff with trace organics	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3		0			Very moist, iron staining	15
		S4					Wet	
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-209	20

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-9	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev:
Depth to Water (ft BGS):
Start/Finish Date: 2/18/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly	
							Soft, very moist, dark brown SILT (ML); trace gravel	
5	3/8 Hydrated Bentonite chips (2'-9')	S1		0				5
10	# 10/20 Silica sand filter pack (9'-20')	S2		0			Dark brown-gray, iron staining	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3						15
		S4					Medium stiff, wet, slightly sandy	
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-211	20

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-10	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/13/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly	
							Soft, slightly moist, gray SILT (ML); trace gravel, trace organics	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2	IW-10-10-11 (VOC and FOC)				Medium stiff, brown	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3					Soft, wet	15
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH-206	20

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	IW-10C	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 12/15/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Backfilled with 3/8 Bentonite Chips						See IW-10 for lithology information	
10		S1	IW-10C-10-11 (VOC and FOC)				Moist, brown SILT (ML);	10
							Bottom of boring at 11.5' BGS	

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: AET
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-26S	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 2/13/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap; Concrete surface seal (0'-2')						Grass, slightly gravelly	
							Stiff, moist, gray SILT (ML); no odor	
	3/8 Hydrated Bentonite chips (2'-9')							
5		S1		0				5
	# 10/20 Silica sand filter pack (9'-20')							
10		S2	MW-26S-10-11 (VOC and FOC)	0			Medium stuff, brown gray, trace gravel	10
15	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (10'-20')	S3		0				15
		S4	MW-26S-19-20 (VOC and FOC)	0			Dark brown with iron staining	
20	Threaded PVC endcap						Bottom of boring at 20' BGS. Ecology Well Tag BIH207	20

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: ELG

Approved by: WVG

Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-26SC	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 12/15/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Backfilled with 3/8 Bentonite Chips						See boring log MW-26S for lithology information	
10		S1	MW-26SC-10-11 (VOC and FOC)				Moist, brown SILT (ML); with large root in sampler	10
20		S2	MW-26SC-19-20 (VOC and FOC)				Loose, wet, brown, silty SAND (SM); fine sand Becomes gray at 20' bgs Bottom of boring at 20.5' BGS	20

Sampler Type:
- ○ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: AET
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-27I	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/14/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly	
							Medium stiff, slightly moist, brown, sandy SILT (ML)	
5		S1		0				5
10	Neat cement-bentonite grout (2'-18')	S2		0			Very moist, dark brown-gray	10
15		S3		0			Wet, dark brown with iron staining, trace rounded gravel	15
	3/8 Hydrated Bentonite chips (18'-20')							
20	# 10/20 Silica sand filter pack (20'-22')	S4	MW-27I-20-21 (VOC and FOC)	0			Loose, wet, dark gray SAND (SP); fine sand	20
							Very dense, wet, dark gray, sandy GRAVEL (GW); driller notes drilling became difficult at 22'	
25	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (22'-32')	S5		0				25
30		S6	MW-27I-30-31 (VOC and FOC)	0				30
	Threaded PVC endcap						Bottom of boring at 32' BGS. Ecology Well Tag BIH208	

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-27IC	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 12/15/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Backfilled with 3/8 Bentonite Chips						See boring log MW-27IC for lithology information	
20		S1	MW-27IC-20-21 (VOC and FOC)				Loose, wet, dark gray SAND (SP); fine sand	20
							Medium stiff, wet, brown SILT (ML); driller notes drilling became difficult at 22'	
30		S2	MW-27IC-30-31 (VOC and FOC)				Very dense, wet, dark gray, sandy GRAVEL (GW); Bottom of boring at 30.5' BGS	30

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- Static Water Level
- Water Level (ATD)

Logged by: AET

Approved by: WVG

Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-28I	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/11/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly Stiff, slightly moist, dark brown SILT (ML); trace fine sand	
5		S1		0				5
10	Neat cement-bentonite grout (2'-18')	S2		0				10
15		S3		0			Soft, very moist, brown-gray with iron staining	15
	3/8 Hydrated Bentonite chips (18'-20')							
20	# 10/20 Silica sand filter pack (20'-22')	S4	MW-28I-20-21 (VOC and FOC)	0				20
25	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (22'-32')	S5		0			Very dense, wet, gray, sandy GRAVEL (GW); coarse sand	25
30		S6		0				30
	Threaded PVC endcap						Bottom of boring at 32' BGS. Ecology Well Tag BIH202	

Sampler Type:
- ◯ No Recovery
- ◪ Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- ▼ Static Water Level
- ▽ Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-28IC	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 12/15/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Backfilled with 3/8 Bentonite Chips						See boring log MW-28I for lithology information	
20		S1	MW-28IC-20-21 (VOC and FOC)				Loose, wet, brown, silty SAND (SM); fine sand	
							Bottom of boring at 21.5' bgs	

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: AET
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-29I	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev:
Depth to Water (ft BGS):
Start/Finish Date: 2/18/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
0	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly	0
							Very stiff, slightly moist, brown, slightly sandy SILT (ML); trace organics	
5		S1		0				5
10	Neat cement-bentonite grout (2'-20')	S2		0			Medium stiff, moist, dark brown with iron staining, trace gravel	10
15		S3		0			Soft, wet	15
20	3/8 Hydrated Bentonite chips (20'-22')	S4		0			Dark gray, slightly sandy	20
	# 10/20 Silica sand filter pack (22'-34')							
25		S5					Driller notes drilling becomes hard at 24'	25
30	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (24'-34')	S6		0			Very dense, wet, dark gray, sandy GRAVELY (GW); medium to coarse sand	30
	Threaded PVC endcap						Bottom of boring at 34' BGS. Ecology Well Tag BIH213	

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-30I	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev
Depth to Water (ft BGS)
Start/Finish Date 2/19/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly Stiff, slightly moist, brown SILT (ML); trace gravel	
5		S1		0				5
10	Neat cement-bentonite grout (2'-19')	S2		0			Soft, very moist with iron staining	10
15		S3		0			Medium stiff, wet, dark brown, slightly sandy	15
20	3/8 Hydrated Bentonite chips (19'-21') # 10/20 Silica sand filter pack (21'-33')	S4		0			Loose, wet, dark gray, silty SAND (SM); fine sand	20
							Driller notes drilling becomes hard at 23'	
25		S5		0			Very dense, wet, dark gray, sandy GRAVELY (GW); medium to coarse sand, rounded fine gravel	25
30	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (23'-33')	S6		0				30
	Threaded PVC endcap						Bottom of boring at 33' BGS. Ecology Well Tag BIH217	

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-31I	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev:
Depth to Water (ft BGS):
Start/Finish Date: 2/13/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly	
							Medium stiff, slightly moist, dark brown-gray SILT (ML); trace organics	
5		S1		0				5
10	Neat cement-bentonite grout (2'-19')	S2		0			Moist, trace gravel	10
15		S3		0			Very moist, dark brown with iron staining	15
20	3/8 Hydrated Bentonite chips (19'-21') # 10/20 Silica sand filter pack (21'-33')	S4	MW-31I-20-21 (VOC and FOC)	0			Very soft, wet	20
							Driller notes drilling becomes hard at 22.5'	
25		S5	MW-31I-25-26 (VOC and FOC)	0			Very dense, wet, dark gray, sandy GRAVELY (GW); medium to coarse sand, rounded fine gravel	25
30	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (23'-33')	S6		0				30
	Threaded PVC endcap						Bottom of boring at 33' BGS. Ecology Well Tag BIH204	

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-31IC	1 of 1

Project Name: New City Cleaners
Ground Surface Elev:
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Depth to Water (ft BGS):
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"
Start/Finish Date: 12/16/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
	Backfilled with 3/8 Bentonite Chips						See boring log MW-31I for lithology information	
20		S1	MW-31IC-20-21 (VOC and FOC)				Very soft, wet, brown, sandy SILT (ML); Very loose, wet, gray, silty SAND (SM);	20
							Very dense, wet, dark gray, sandy GRAVELY (GW); medium to coarse sand, rounded fine gravel	
25		S2	MW-31IC-25-26 (VOC and FOC)					25
							Bottom of boring at 26.5' BGS	

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)
- Static Water Level
- Water Level (ATD)

Logged by: AET
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

Boring Log

Aspect CONSULTING

Project Number	Boring Number	Sheet
090018	MW-32I	1 of 1

Project Name: New City Cleaners
Location: Richland, WA
Driller/Method: Holt / Hollow Stem Auger
Sampling Method: SPT / Hammer Weight: 140 # / Hammer Drop: 30"

Ground Surface Elev:
Depth to Water (ft BGS):
Start/Finish Date: 2/12/2014

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	Tests	PID (ppm)	Drive/ Recovery (inches)	Material Type	Description	Depth (ft)
0	Flush monument and thermos well cap Concrete surface seal (0'-2')						Grass, slightly gravelly Soft, slightly moist, brown-gray SILT (ML)	0
5		S1		0				5
10	Neat cement-bentonite grout (2'-20')	S2		0			Medium stiff, very moist, with trace sand	10
15		S3		0			Wet, with iron staining, trace gravel	15
20	3/8 Hydrated Bentonite chips (20'-22') # 10/20 Silica sand filter pack (22'-34')	S4		0			Very soft	20
25		S5		0			Driller notes drilling becomes hard at 24' Very dense, wet, dark gray, sandy GRAVELY (GW); trace silt, medium to coarse sand	25
30	2" diameter Sch. 40 PVC 0.020-inch slotted well screen (24'-34') Threaded PVC endcap	S6		0			Bottom of boring at 34' BGS. Ecology Well Tag BIH203	30

Sampler Type:
- No Recovery
- Standard Penetration Test (ASTM D1586)

PID - Photoionization Detector (Headspace Measurement)

- Static Water Level
- Water Level (ATD)

Logged by: ELG
Approved by: WVG
Figure No.

_ENV PROBE LOG NEWCITYCLEANERS.GPJ March 2, 2015

APPENDIX B

Interpretation of Volatile Fatty Acid and Microbial Data

This appendix provides additional interpretation of volatile fatty acid (VFA), phospholipid fatty acid (PLFA), and CENSUS® analytical results. Table 3.2 summarizes the sampling results.

Volatile Fatty Acid Results

Groundwater samples were analyzed for VFAs to measure the presence, consumption, and distribution of the lactate-based biostimulants. The VFA analysis measures the concentration of ten common fatty acids, some of which are released by the 3DMe biostimulant.

Upper Silt Unit

VFAs were measured in the Upper Silt Unit at MW-5S and MW-26S, which are located approximately six feet downgradient of injection wells IW-5 and IW-10. The initial total concentration of VFAs in both wells was below 1 mg/L prior to biostimulant injection. In MW-5S, the total concentration of VFAs increased and stabilized by an approximate factor of 200 throughout the duration of the pilot test. In MW-26S, the total concentration of VFAs increased throughout the pilot test, with a total VFAs concentration of over 600 mg/L after 9 months. The increasing trend of VFAs in both observation wells indicates that the biostimulant released mobile VFAs in groundwater as designed.

Acetic acid was the predominant VFA detected during the pilot test. Acetic acid is generated from the breakdown of lactic acid under anoxic conditions, which occurred throughout the pilot test. Other VFAs, including propionic acid, formic acid, and butyric acid, were also detected throughout the pilot test.

Upper Gravelly Sand Unit

VFAs were measured at injection wells MW-31I and MW-28I and observation wells MW-32I and MW-26I. Observation wells MW-32I and MW-26I were installed 11 feet and 25 feet downgradient from their respective injection wells. Results for VFAs measured in Upper Gravelly Sand Unit wells were as follows:

- At injection wells MW-28I and MW-31I, the initial total concentration of VFAs was less than 1 mg/L, but drastically increased throughout the pilot test to a concentration of over 1,300 mg/L.
- A moderate increase in VFA concentrations was observed at MW-32I, located 11 feet downgradient at MW-31I. Total concentrations of VFAs peaked after three months and slowly declined as the biostimulant was consumed.
- A slight increase in VFA concentrations was observed at MW-26I, located 25 feet downgradient at MW-28I. Similar to MW-32I, total concentrations of VFAs peaked after 3 months and declined throughout the remainder of the test. The elevated presence of VFAs in MW-26I indicates that biostimulation released VFAs that migrated more than 25 feet from the injection well.

The relative concentrations of the individual VFAs were generally consistent with those observed in the Upper Silt Unit, suggesting that geochemical conditions are similar in these two aquifer units with significantly different physical and hydraulic properties.

Phospholipid Fatty Acid and CENSUS Microbial Results

The microbial response to biostimulation was evaluated by counting the total microbial population with the PLFA analytical method and measuring the DNA of specific microbes by the CENSUS® analytical method. These test methods were performed by Microbial Insights laboratory, and their data interpretation guide is provided in Appendix C.

The biological methods used in this pilot test are used to evaluate the anaerobic reductive dechlorination biodegradation pathway. Tetrachloroethylene (PCE), trichloroethylene (TCE), dichoroethylene (DCE) isomers, and vinyl chloride biodegrade through reductive dechlorination in the absence of competing electron acceptors (e.g., dissolved oxygen, nitrate, sulfate, ferric iron). The more oxidized species (i.e., PCE) biodegrade relatively quickly compared to the more reduced species (i.e., vinyl chloride), which leads to the build-up of DCE and vinyl chloride during biostimulation. Very favorable reducing conditions are necessary for the reductive dechlorination of vinyl chloride. However, DCE and vinyl chloride also biodegrade through aerobic processes, which are possible with very low concentrations of dissolved oxygen. Aerobic bioattenuation of vinyl chloride may be a primary degradation pathway in anaerobic groundwater (SERDP, 2012). Aerobic biodegradation products include epoxides, chlorinated ethanes, and chloro-acetaldehydes, which are generally not detectable, and specific DNA tests for these aerobic degradation pathways are not available commercially. Once the surfactant effect diminishes, the impact of the alternate degradation pathways can be evaluated from the total molar concentrations of chlorinated ethylenes.

Upper Silt Unit

The microbial response in the Upper Silt Unit was evaluated in MW-5S and MW-26S, which are respectively 6 feet downgradient from injection wells IW-5 and IW-10.

PLFA results indicate that biostimulation increased the total biomass by factors of more than 100 and approximately 200 at observation wells MW-5S and MW-26S. Prior to biostimulation, the microbial community consisted only of ubiquitous aerobic and anaerobic bacteria (Monos and NSats bacteria types as indicated on Table 3.2). Biostimulation increased the relative percentage of anaerobic bacteria that are typically associated with reductive dechlorination (TerBrSats, MidBrSats, BrMonos bacteria types).

CENSUS data indicate that the *dehalococcoides* (DHC) and the chlorinated ethylene reductase genes were not detected in MW-5S and MW-26S prior to biostimulation. DHC is the only known group of bacteria that is capable of biodegrading PCE to ethylene by the reductive dechlorination pathway. The respective reductase genes are associated with the anaerobic degradation of TCE, DCE, and vinyl chloride. Following biostimulation, DHC was detected only in the 9 month sampling event at MW-5S and in the 3 month sampling event at MW-26S. In addition to DHC, TCE and VC reductase genes were detected in MW-5S after 9 months, which correspond with more reduced conditions and more anaerobic degradation of DCE and vinyl chloride.

Upper Gravelly Sand Unit

The microbial response in the Upper Gravelly Sand Unit was evaluated at injection well MW-31I and observation well MW-32I, located 11 feet downgradient from MW-31I. Post injection biotrap sampling at MW-31I was not completed due to residual foaming in the well.

PLFA results at MW-32I indicate that biostimulation increased the total biomass by a factor of 10. Prior to biostimulation, the microbial community consisted primarily of ubiquitous aerobic and anaerobic bacteria (Monos and NSats bacteria types), and trace contaminant utilizing scavenger bacteria (Polyenoics bacteria type). Biostimulation increased the relative percentage of anaerobic bacteria which are typically associated with reductive dechlorination (TerBrSats, MidBrSats, and BrMonos) as well as an increase in contaminant utilizing scavenger bacteria (Polyenoics).

CENSUS data indicate that the DHC and chlorinated ethylene reductase genes were not detected in MW-31I and MW-32I prior to biostimulation. DHC bacterial concentrations increased throughout the pilot test at MW-32I, and was accompanied by a decrease in PCE concentrations. Reductase genes were not detected in MW-32I during the pilot test.

Reference

Strategic Environmental Research and Development Program (SERDP), 2012, Elucidation of the Mechanisms and Environmental Relevance of cis-Dichloroethene and Vinyl Chloride Biodegradation, SERDP Project ER-1557, November 2012.

W:\090018 New City Cleaners\Deliverables\ISB Performance and Evaluation Report\Appendix B - VFA & Microbial Data Interpretation\Appendix B - VFA and Microbial Interpretation.docx

APPENDIX C

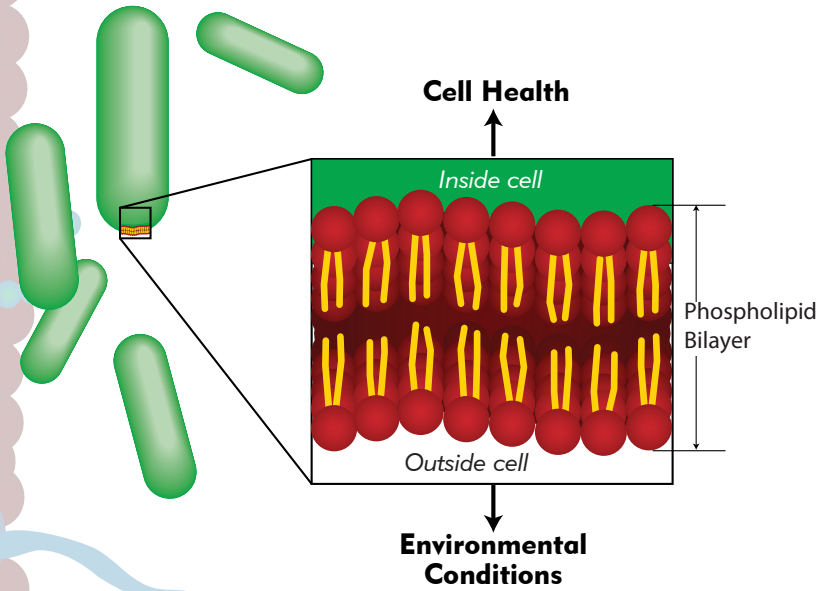
Microbial Insights Interpretation Guidance

miPLFA

MOLECULAR BIOLOGICAL TOOL

Quantify total biomass and assess the entire microbial population

Phospholipid fatty acids (PLFA) are a main component of the membrane (essentially the skin) of all microbes.



PLFA analysis provides direct information on the entire microbial community in three key areas:

- **Biomass** — PLFA decomposes quickly upon cell death, so the total PLFA biomarkers in a sample represent all living cells.
- **Population "Fingerprint"** — Some organisms produce specific or signature types of PLFA biomarkers allowing quantification of important microbial functional groups (e.g. iron reducers, sulfate reducers, or fermenters). The relative proportions of these groups of PLFA biomarkers provide a fingerprint of the microbial community.
- **Microbial Activity** — Some microbes, most notably *Proteobacteria*, modify specific PLFA biomarkers during periods of slow growth or in response to environmental stress providing an index of their health and metabolic activity.

PLFA Type	Bacterial Group	Potential Relevance to Bioremediation
Monoenoic (Monos)	Abundant in *Proteobacteria* which includes a wide variety of aerobes and anaerobes	Many hydrocarbon utilizing bacteria are classified within *Proteobacteria*
Terminally Branched Saturated (TerBrSats)	Characteristic of *Firmicutes* and *Bacteroides*	*Firmicutes* include anaerobic fermenting bacteria which produce the H_2 necessary for reductive dechlorination
Branched Monoenoic (BrMonos)	Anaerobes and micro-aerophiles such as sulfate- or iron-reducing bacteria	High proportions are often associated with anaerobic sulfate and iron reducing bacteria
Mid-Chain Branched Saturated (MidBrSats)	Common in sulfate reducing bacteria and also *Actinomycetes*	High proportions are often associated with anaerobic sulfate and iron reducing bacteria
Normal Saturated (Nsats)	Found in all organisms	High proportions often indicate less diverse populations
Polyenoic (Polys)	Found in eukaryotes (fungi, algae, protozoa, plants and animals)	Eukaryotic scavengers often prey on contaminant utilizing bacteria

PLFA

MOLECULAR BIOLOGICAL TOOL

PLFA applications include:

Monitored Natural Attenuation (MNA)

- Determine whether bacterial biomass is sufficient for bioremediation.
- Determine the microbial community composition "fingerprint".
- Evaluate microbial populations indicative of dominant redox status (aerobic vs. anaerobic).
- Monitor microbial activity under site conditions.

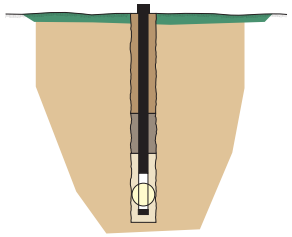
Biostimulation (Enhanced Bioremediation)

- Monitor growth in viable biomass following amendments.
- Monitor overall changes in the microbial "fingerprint" over time or in response to site activities.
- Assess shift in redox state after amendment.
- Electron donor injection (e.g. lactate) should increase the proportion of anaerobic PLFA biomarkers.
- Oxygen amendment should decrease anaerobic PLFA biomarkers.
- Monitor the metabolic health of Proteobacteria (several key degraders are classified within Proteobacteria).

How does PLFA analysis work?

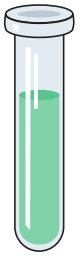
All cells have membranes which consist mainly of phospholipid fatty acids (PLFA). PLFA biomarkers break down quickly when a cell dies, so intact PLFA extracted from an environmental sample (groundwater, soil, sediment or Bio-Trap®) is only from living (viable) organisms and is expressed as cells per unit of sample. The chemical composition of the PLFA biomarkers differs depending on the type of organism and therefore can be used to generate a "fingerprint" of the microbial community composition. In principle, PLFA biomarker analysis is similar to the analysis of other chemical compounds: (1) PLFA biomarkers are extracted, (2) biomarkers are identified by gas chromatography with flame ionization detection (GC-FID), and (3) biomarkers can be confirmed by mass spectroscopy (MS), if necessary.

Sample Collection



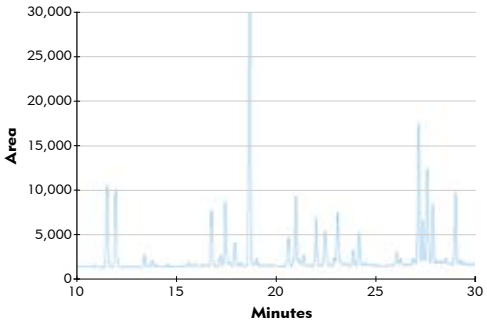
Groundwater, soil, or Bio-Trap Sampler collected and shipped overnight on ice (4°c)

PLFA Extraction



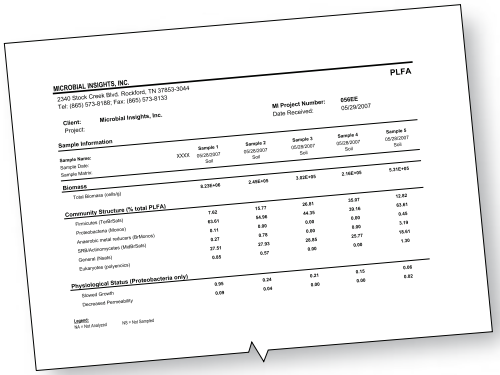
PLFA biomarkers are extracted from samples upon arrival

Gas Chromatography

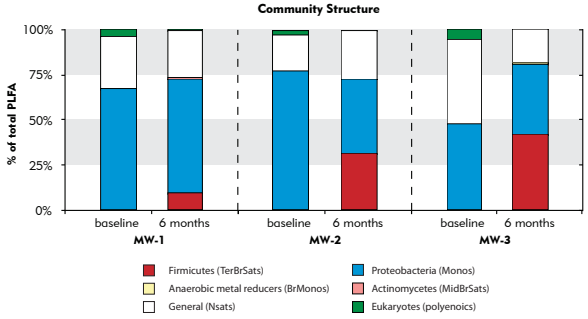


Biomarkers are identified by gas chromatography with flame ionization detection (GC-FID)

Results



Assessment



Results are integrated with other site parameters to evaluate site management decisions

microbialinsights
www.microbe.com
10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188

mi CENSUS®

MOLECULAR BIOLOGICAL TOOL

Rapidly detect and quantify specific microbial populations and processes

CENSUS® allows site managers to cost effectively quantify targeted members of the microbial community deemed critical for site remediation. At a site impacted by chlorinated solvents like PCE or TCE for example, quantification of *Dehalococcoides* spp. (DHC), a key dechlorinating bacteria, permits project managers to address the following:

- Directly evaluate the feasibility of monitored natural attenuation
- Evaluate the efficacy of enhanced bioremediation approaches
- Assess the need for bioaugmentation

Currently, Microbial Insights offers over 30 targets for a wide variety of functions ranging from reductive dechlorination of chlorinated solvents to BTEX and MTBE biodegradation that can provide direct evidence of the biological processes occurring at your site.

CENSUS® Advantages:

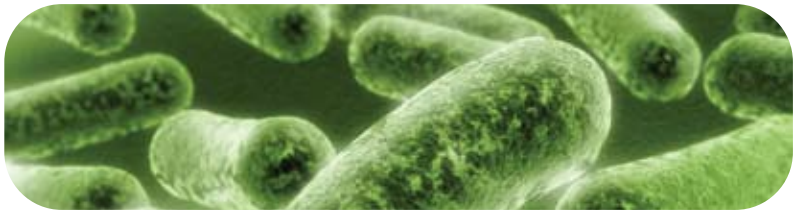
- Accurate — Direct analysis of sample removes the need to grow the bacteria thus eliminating biases associated with more traditional based approaches (i.e. plate counts).
- Specific — Target either the specific bacterial group (e.g. *Dehalococcoides* spp.) or a specific gene encoding a desired function (e.g. reductive dechlorination).
- Rapid — Results are available within days (7–10 standard TAT) * Rush service available.
- Sensitivity — Practical Detection Limits (PDL) are as low as 100 cells per sample with a dynamic range over seven orders of magnitude.

Targets available for a wide range of pollutants including:

Chlorinated Compounds:
- PCE, TCE, DCE, VC
- TCA, DCA
- PCP
- Perchlorate

And more!

Petroleum Hydrocarbons:
- BTEX
- MTBE
- Diesel
- Naphthalene
- Alkanes



Approaches include:

CENSUS® is offered in a variety of formats to meet the objectives of your particular project. Please choose from the following:

CENSUS® — *Are organisms present that have the potential to degrade…?*

Our standard DNA based approach provides quantification of bacteria with the genetic potential to degrade a particular contaminant.

CENSUS®-Expression — *Are organisms actively expressing a desired function?*

RNA as opposed to DNA is extracted and used to quantify metabolically active bacteria of interest expressing the desired function.

CENSUS®-Store — *What were the baseline results before treatment?*

Collect those valuable points in time and store them for potential future analysis. Allows the collection of more data points at a lower cost. Samples can be stored and processed even years down the road.

Need the ability to quantify a unique population or function? MI can develop custom CENSUS® targets for your contaminant of concern. For more information, please call us at (865) 573-8188.

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Targets available for a wide range of organisms including:

Dechlorinating Bacteria

- *Dehalococcoides*
- *Desulfuromonas* spp.
- *Dehalobacter* spp.
- *Desulfitobacterium* spp.
- And more!

Bacterial groups involved in remedial processes

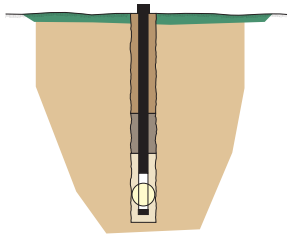
- BTEX utilizing bacteria
- MTBE utilizing PM1
- PAH utilizing bacteria
- Methanogens
- Sulfate/iron reducing bacteria
- *Geobacter* spp.
- Methane oxidizing bacteria
- Propane oxidizing bacteria
- Denitrifying bacteria
- Ammonia oxidizers
- Acetogens
- Total bacteria
- Fungi
- Anaerobic ammonia oxidizing bacteria (Anammox)
- And more

How does CENSUS® work?

CENSUS® is based on a technique called quantitative polymerase chain reaction (qPCR) whereby many copies of a specific gene are generated. As each gene copy is made, a fluorescent marker is released, measured, and used to quantify the number of target genes present in the sample. The gene copied during the process (target gene) is determined by short segments of DNA called "primers" which are added to the reaction mixture. In essence, qPCR is like a copy machine with a counter. The "primers" select which pages (target gene) of the book (DNA) are copied and the counter keeps a running total of how many pages were copied (number of target genes in the sample).

Traditionally, culture-based methods such as plate counts or most probable number (MPN) analyses have been used to estimate bacterial populations in environmental samples. However, cultivation based approaches detect less than 10% of the targeted bacterial group thus severely underestimating the total population.

Sample Collection

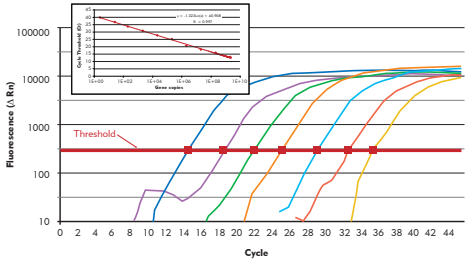


Groundwater, soil, or Bio-Trap® Sampler collected and shipped overnight on ice (4°c)

DNA Extraction

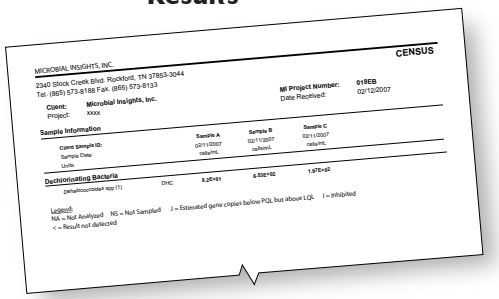
DNA is extracted from samples upon arrival

Amplification



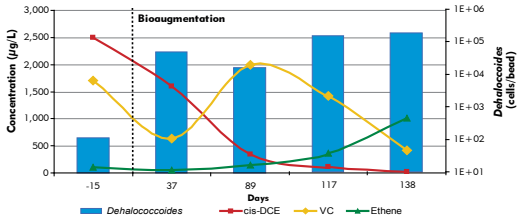
Quantitative PCR is used to detect and quantify targets of interest (i.e. *Dehalococcoides*)

Results



Results are emailed to project contact

Assessment



Results are integrated with other site parameters to evaluate site management decisions

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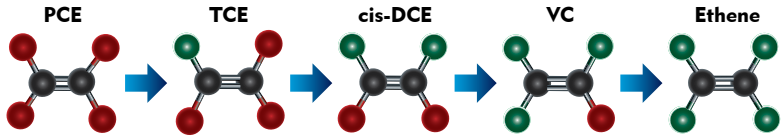
CENSUS® – Reductive Dechlorination

CENSUS® MOLECULAR BIOLOGICAL TOOL

Detect and quantify Dehalococcoides and other bacteria capable of reductive dechlorination

Under anaerobic conditions, certain bacteria can use chlorinated ethenes (PCE, TCE, DCE, and VC) as electron acceptors in a process called reductive dechlorination. The net result is the sequential dechlorination of PCE and TCE through daughter products DCE and VC to non-toxic ethene, which volatilizes or can be further metabolized.



Successful reductive dechlorination can be hindered by a few site-specific factors that cannot be evaluated with chemical and geochemical tests including:

- a lack of a key dechlorinating bacteria including *Dehalococcoides*, the only known bacteria that completely dechlorinates PCE and TCE to non-toxic ethene
- reasons for incomplete dechlorination and the accumulation of daughter products (DCE stall)

CENSUS® provides the most direct avenue to investigate the potentials and limitations to implementing corrective action plan decisions and to target a variety of organisms involved in the reductive dechlorination pathway.

Target	Code	Contaminants	Environmental Relevance / Data Interpretation
Dehalococcoides	qDHC	PCE, TCE, DCE, VC	Only known group of bacteria capable of complete dechlorination of PCE and/or TCE to ethene Absence of *Dehalococcoides* suggests dechlorination of DCE and VC is improbable and accumulation of daughter products is likely The presence of *Dehalococcoides* even in low copy numbers indicates the potential for complete reductive dechlorination Higher copy numbers and the presence of daughter products suggest that dechlorination may be occurring
Dehalococcoides Functional Genes	qTCE qVC	TCE, VC	Functional genes encoding reductive dehalogenases for TCE and VC Presence of TCE reductase indicates the ability to reduce TCE to DCE and VC Presence of VC reductase indicates the potential for reductive dechlorination of VC to ethene Absence of VC reductase suggests that VC may accumulate
Dehalobacter	qDHB	DCA, TCA, PCE, TCE	Capable of dechlorination of PCE and TCE to cis-DCE Converts TCA, a common co-contaminant at PCE/TCA-impacted sites to chloroethane
Desulfuromonas	qDSM	PCE, TCE	Capable of dechlorination of PCE and TCE to cis-DCE using acetate as an electron donor
Desulfitobacterium	qDSB	PCE, TCE	Capable of dechlorination of PCE and TCE to cis-DCE
Total bacteria	qEBAC		Index of total bacterial biomass Domain level
Methanogens	qMGN		Methanogens utilize hydrogen and carbon dioxide to produce methane Compete with dechlorinating bacteria for available hydrogen
Sulfate Reducing Bacteria	qAPS		Targets functional gene involved in sulfate reduction SRB can compete with dechlorinating bacteria for available hydrogen

When combined with chemical and geochemical groundwater monitoring programs, CENSUS® results provide a valuable tool to determine:

- the feasibility of bioremediation of PCE/TCE under MNA conditions
- the ability of bioremediation approaches to meet overall treatment goals
- the effectiveness of enhanced bioremediation (e.g. sodium lactate or vegetable oil injection) to promote reductive dechlorination

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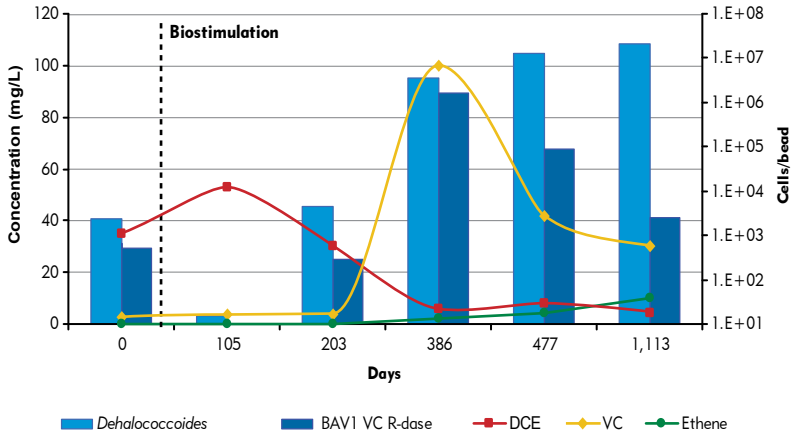
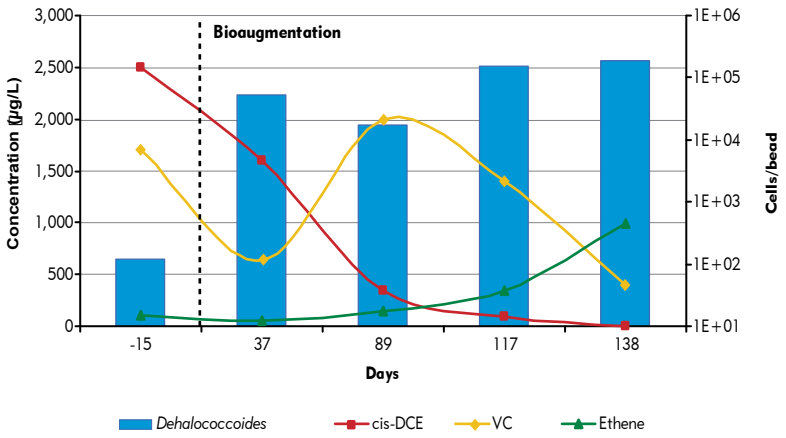
mi CENSUS®
MOLECULAR BIOLOGICAL TOOL

Biostimulation



- The relatively low *Dehalococcoides* (DHC) population (10^3 cells/bead) and the accumulation of the daughter product DCE indicated that monitored natural attenuation (MNA) would not meet remediation goals in an acceptable timeframe.
- Following HRC® injection to promote reductive dechlorination, the DHC population increased to 10^6–10^7 cells/bead with a corresponding decrease in DCE.
- Vinyl chloride (VC) concentrations temporarily increased due to the reductive dechlorination of DCE.
- As indicated by the high number of DHC and VC reductase genes however, microorganisms capable of reductive dechlorination of VC were present.
- VC concentrations decreased after the initial spike with a corresponding increase in ethene.

Bioaugmentation



- Initially, the *Dehalococcoides* (DHC) population was low (10^2 cells/bead) and daughter products had accumulated suggesting MNA would not provide complete reductive dechlorination of PCE.
- Following bioaugmentation, the DHC population increased by 3 orders of magnitude with a corresponding decrease in DCE.
- Vinyl chloride (VC) concentrations temporarily increased due to the reductive dechlorination of DCE.
- The continued detection of DHC, however, indicated the potential for complete reductive dechlorination.
- VC concentrations decreased with a corresponding increase in ethene production.

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APPENDIX D

Laboratory Certificates of Analysis (Provided on CD)