2015 Annual Groundwater Monitoring Report
Mason County Landfill

Prepared for
Mason County Department of Utilities
and Waste Management

November 2015

Prepared by
Parametrix

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Mason County Landfill

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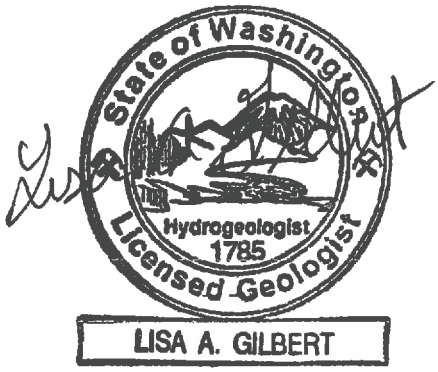
CERTIFICATION

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



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ACRONYMS AND ABBREVIATIONS

ARI	Analytical Resources, Inc.
GWQS	Groundwater quality standards
MCDHS	Mason County Department of Health Services
MCL	Maximum Contaminant Level
MSL	mean sea level
QA/QC	Quality Assurance/Quality Control
RPDs	relative percent differences
TOC	total organic carbon
WDOC	Washington State Department of Corrections
WAC	Washington Administrative Code

1. INTRODUCTION

This report presents data from the July 2015 event at the Mason County Landfill, and presents recommendations for future groundwater monitoring. Annual reporting of groundwater monitoring data is required under the General Facility Requirements of Chapter 173-304 WAC, Minimum Functional Standards for Solid Waste Handling, and the Solid Waste Handling Facility Closure/Post-Closure Permit issued by the Mason County Department of Health Services (MCDHS).

1.1 Background

The Mason County Landfill is located near Shelton in Mason County, Washington (Section 4, Township 20 North, Range 4 West). The site address is 501 West Eells Hill Road, Shelton, Washington. The facility is located in a sparsely populated area used primarily for tree farming. Two private properties, the Culver (formerly Ruggle) residence and the Shelton Auto Yard, are located within 1 mile of the facility.

The 8-acre landfill is situated within a 77-acre property and was the primary municipal solid waste disposal facility for Mason County from the early 1970s until the summer of 1993, when closure construction began. A solid waste transfer station is currently operating at the facility. Other features shown on the vicinity map (Figure 1) include two former septage disposal areas and two older landfill areas where waste was placed historically. Material from the septage disposal areas was excavated and stockpiled at the facility in 1990. Closure activities were completed in 1993 and consisted of capping, implementing surface water controls, and constructing a gas extraction system.

The Washington State Department of Corrections (WDOC) has operated a wastewater spray field on the property south of the landfill since 1999. The WDOC conducts quarterly groundwater monitoring at four wells including landfill wells MW-6 and MW-9, and sampling is currently conducted by Shelton Wastewater Treatment Plant personnel. Well MW-6 is upgradient from the spray field, and well MW-9 is downgradient from the spray field. Sampling of well MW-6 by the County has been discontinued as recommended in the 2005 Annual Report (Parametrix 2005).

Groundwater monitoring wells MW-1B, MW-2B, MW-3B, MW-4, and MW-5B were installed in 1986 and 1987, and wells MW-6 through MW-10 were installed in 1991. The “B” suffix is applied to wells where previous test borings were drilled at the same location. Routine groundwater monitoring was first conducted at the landfill during 1988 by Hart Crowser, and has continued to the present.

The Culver (formerly Ruggle) and Auto Yard domestic wells were sampled periodically during the 1980s, and were part of the routine monitoring program beginning in November 1989 (Ruggle) and February 1990 (Auto Yard). On-site water supply wells TH-1S and TH-1D were first monitored in 1975; monitoring of these wells was discontinued after the first quarter of 1995 per approval of the MCDHS (1996).

As a result of recommendations made in the 2002 annual report (Parametrix 2003), several changes were made to the monitoring program with the approval of the Mason County Department of Health Services (MCDHS 2003), including discontinuation of sampling at well MW-9 and the Auto Yard well. In addition, sampling of well MW-2B was discontinued beginning in 2008 per recommendations presented in the 2006 Annual Report (Parametrix 2006) with approval of the MCDHS (MCDHS 2007).

Information pertaining to samples collected prior to 1988 is included in the landfill closure plan (Parametrix 1991) and the 1988 monitoring summary report by Hart Crowser (1989). Annual groundwater monitoring reports have been prepared by Parametrix since 1991.

The 2013 Annual Monitoring Report (Parametrix 2015) recommended reducing the sampling locations to include upgradient well MW-4 and downgradient wells located at the point of compliance (MW-3B, MW-8, and MW-10), and reducing the sampling frequency with the next sampling event to be conducted in Spring 2015.

1.2 Geology and Hydrogeology

The region is underlain by a thick sequence of unconsolidated glacial and non-glacial Pleistocene deposits. The deposits typically consist of interbedded layers of glacial outwash sands and gravels, till, and occasional interglacial fluvial and lacustrine deposits.

The site is underlain by outwash sands and gravels to a depth of approximately 70 ft. A fine-grained deposit consisting of silt with some fine sand and clay is present beneath the outwash to depths of up to 116 ft below ground surface. These units have been referred to as Unit A and Unit B, respectively, in previous site reports (Parametrix 1991). An unconsolidated sandy gravel deposit (Unit C) underlies Unit B and extends to at least 180 ft below ground surface at the landfill. Bedrock conditions are unknown, but not considered significant to the hydrogeologic conditions at the site.

The Unit A outwash deposits form the uppermost hydrostratigraphic unit at the site. Groundwater is present in Unit A under unconfined conditions at a depth of less than 50 ft below ground surface; groundwater is also present in Unit C under confined conditions. Regional groundwater flow generally follows the topography toward surface water discharge points. In the vicinity of the landfill, the groundwater flow direction in Unit A is to the south-southeast toward Goldsborough Creek (Parametrix 1991). No information regarding the groundwater flow direction in Unit C is available.

Monitoring wells MW-1B through MW-10 and supply well TH-1S are screened in the uppermost aquifer (Unit A); supply well TH-1D is screened in an underlying aquifer (Unit C). The depths and screened intervals of the off-site water supply wells (Culver wells and Auto Yard well) are unknown, but these wells are assumed to be completed in Unit A.

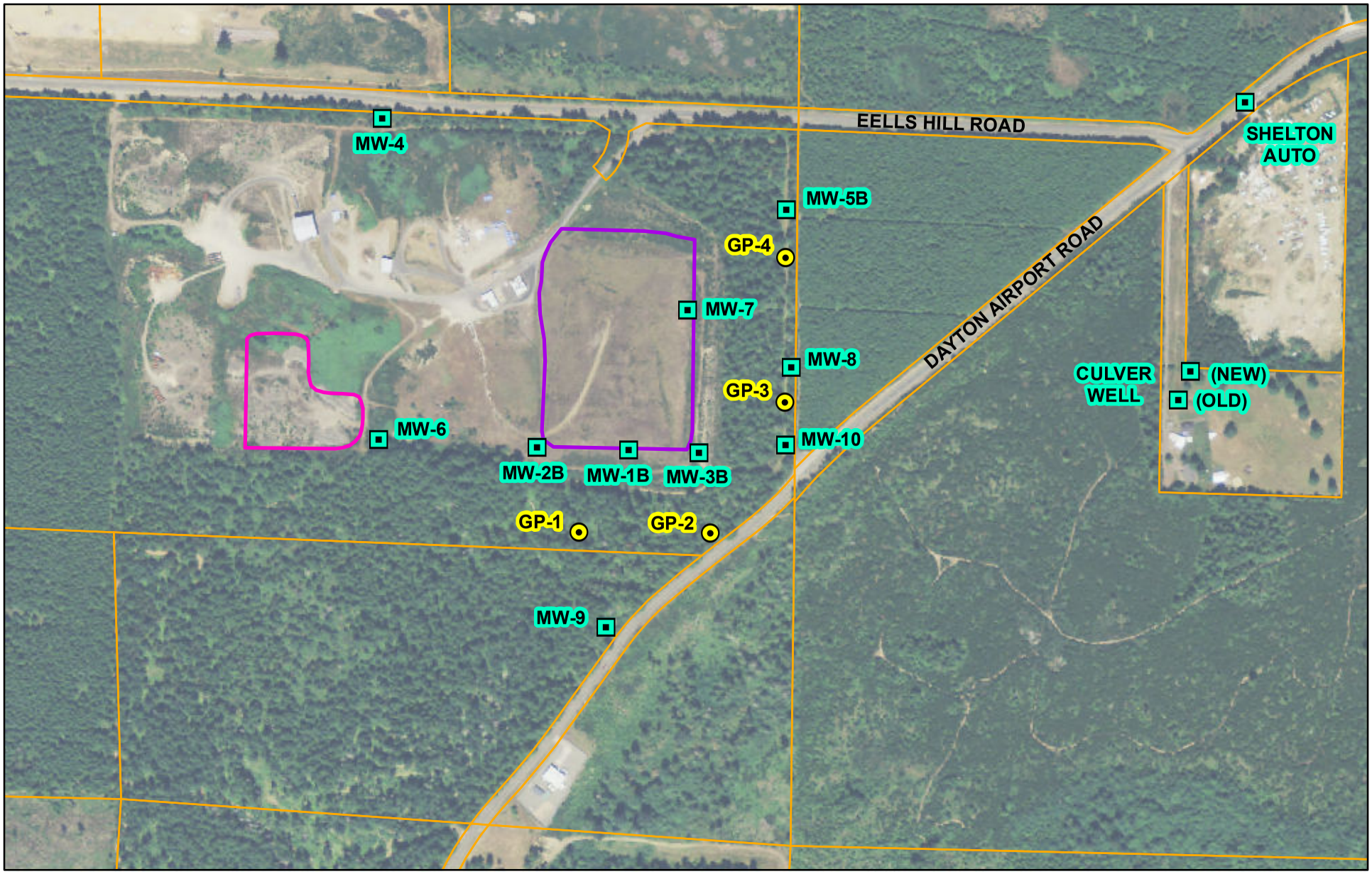

Image Source: USDA NAIP 2013.

Feet
0 250 500 750 1,000

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Note: All feature locations are approximate.

Monitoring Well
Gas Probe
Closed Landfill
Former Septage Lagoon
Parcel Boundary

Figure 1
Mason County Landfill Site Map Showing Locations of Monitoring Wells and Gas Probes

2. MONITORING PROGRAM

2.1 Sampling Locations and Frequency

The 2015 groundwater monitoring at the Mason County Landfill was conducted in accordance with the recommendations made in the 2013 Annual Report (Parametrix 2015) that included sampling of upgradient well MW-4, downgradient wells located at the point of compliance (MW-3B, MW-8, and MW-10), and the domestic Culver well.

The locations of the on-site and off-site wells used for groundwater monitoring and water level measurements at the Mason County Landfill are shown on Figure 1. MW-4 is the upgradient monitoring well, and MW-2B and MW-6 are located downgradient from the former septage lagoon. Other on-site monitoring wells are located downgradient from the closed landfill and/or older landfilling locations. Wells MW-1B, MW-2B, MW-3B, MW-5B, MW-8, and MW-10 are located at the perimeter of the landfill property, and wells MW-1B, MW-3B, MW-8, and MW-10 are located downgradient of the closed landfill area at the point of compliance.

Sampling of well MW-6 by the County has been discontinued as recommended in the 2005 Annual Report (Parametrix 2005). Instead, available monitoring data collected as part of the WDOC wastewater spray field monitoring program are attached to this report (Appendix D). The annual event that includes testing for metals is conducted in March.

The 2015 sampling event was conducted on July 8 by Parametrix staff. Samples were collected from monitoring wells MW-3B, MW-8, and MW-10 and at the Culver well. Sampling at upgradient well MW-4 was attempted but was not successful due to a broken pump assembly. Duplicate samples (designated MW-11) were collected from well MW-3B for quality control purposes.

Monitoring wells were purged and sampled using dedicated Hydrostar® pumps. The domestic well (Culver new well) was sampled from an outdoor spigot. Groundwater sampling locations and procedures are described further in the *Mason County Sanitary Landfill Final Closure Plan* (Parametrix 1991).

2.2 Analytical Parameters

Groundwater samples were analyzed for the Chapter 173-304 WAC parameters required by the current Solid Waste Handling Facility Closure/Post-Closure Permit. In addition, groundwater samples were analyzed for dissolved arsenic and volatile organic compounds, which have been detected historically in groundwater at the facility. Analytical parameters analyzed in all wells are summarized in Table 1. Samples were submitted to Analytical Resources, Inc. (ARI) in Seattle, Washington for chemical analysis.

Table 1. Summary of Analytical Parameters — Mason County Landfill 2015 Groundwater Monitoring

Chapter 173-304 WAC Parameters (Solid Waste Handling Facility Permit)*:*		
Field Parameters:		
Temperature	pH	Specific Conductivity
Conventionals:		
Chemical Oxygen Demand	Nitrate as Nitrogen	Chloride
Ammonia as Nitrogen	Total Organic Carbon	Sulfate
Nitrite as Nitrogen		
Metals (dissolved):		
Iron	Manganese	Zinc
Other Parameters		
Metals (dissolved):		
Arsenic		
Organics:		
Volatile Organic Compounds		

3. GROUNDWATER FLOW DIRECTION

3.1 Groundwater Levels

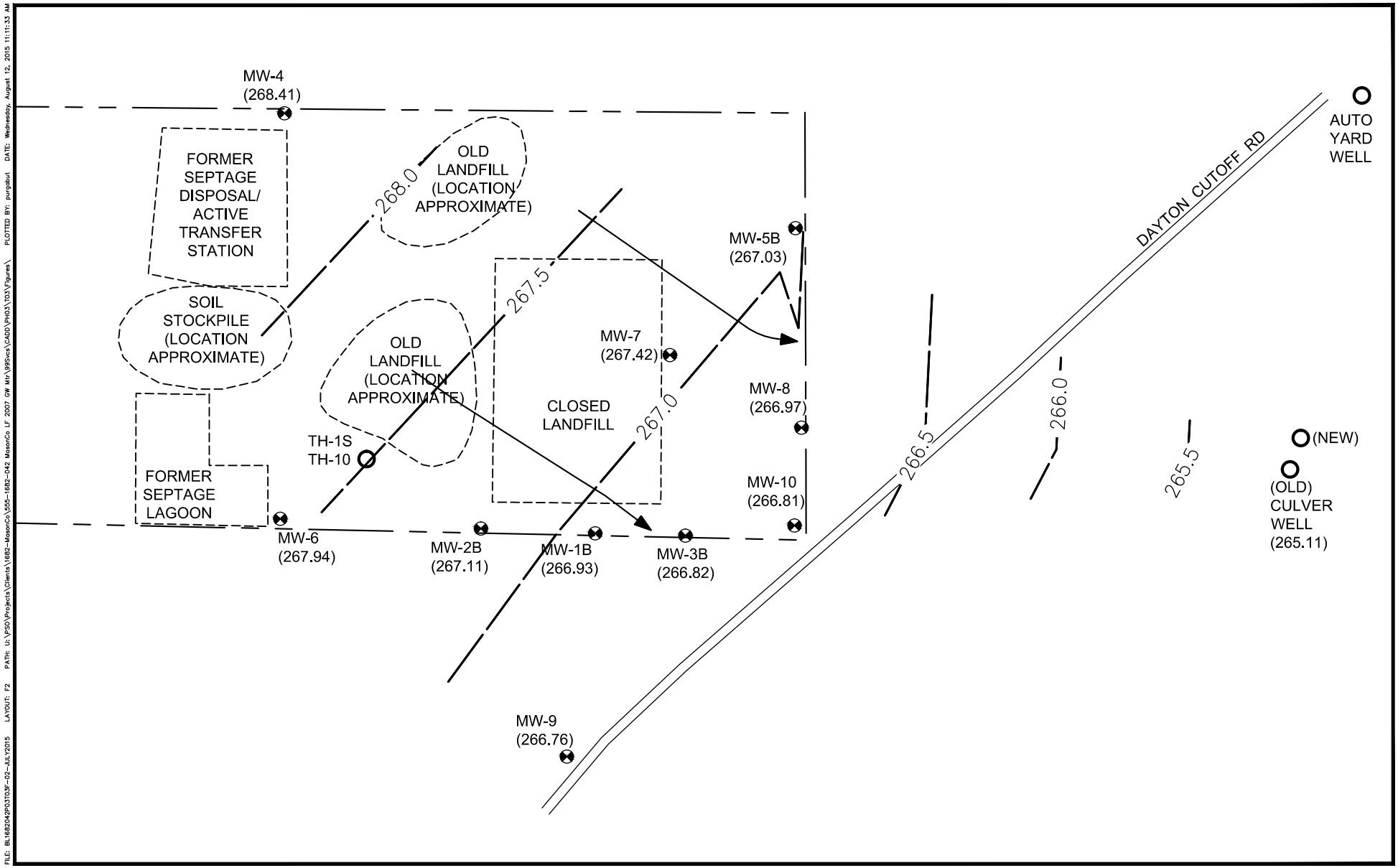
Water level data were collected at all wells (measurements at the Culver well are collected from the older well because the new well cannot be accessed for water level measurements) and are summarized in Table 2.

Table 2. Summary of July 2015 Groundwater Elevations, Mason County Landfill

Well Number	Reference Elevation Top of PVC (ft MSL)	Groundwater Elevation (feet MSL)
		July 8, 2015
MW-1B	290.82	266.93
MW-2B	307.10	267.11
MW-3B	306.37	266.82
MW-4	312.01	268.41
MW-5B	305.54	267.03
MW-6	311.21	267.94
MW-7	309.77	267.42
MW-8	306.23	266.97
MW-9	306.43	266.76
MW-10	306.74	266.81
Culver (old well)	283.00	265.11

3.2 Groundwater Flow Direction and Rate

Potentiometric surface contour maps were prepared using data collected during the July 2015 monitoring event and are presented in Figure 2. As previously observed, the groundwater flow direction was to the east-southeast. The groundwater gradient (between MW-4 and MW-8) was approximately 0.0008 ft/ft. Using the observed gradient, the rate of groundwater flow is estimated at between 5 and 10 ft per day. This estimate was calculated using measured hydraulic conductivity values ranging from about 2,100 ft/day to 2,400 ft/day (Parametrix 1991) and estimated effective porosities for sand and gravel ranging from 20 to 35 percent (Freeze and Cherry 1979).



Parametrix DATE: Aug 12, 2015 FILE: BL1682042P03T03F-02-July2015

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SCALE IN FEET

TH-1S	Steel Cased Test or Supply Well
MW-6	PVC Monitoring Well
(263.22)	Water Level Elevation (Feet Mean Sea Level)
N.M.	Not Measured, Suspected Error
→	Approximate Groundwater Flow Direction
—262.0—	Potentiometric Surface Contour Line with Groundwater Elevation

Figure 2
Mason County Landfill
Groundwater Potentiometric Surface Map
July 8, 2015

FILE: BL1682042P03T03F-02-JULY2015 LAYOUT: F2 PATH: U:\PSO\Projects\Clients\1682-MasonCo\355-1682-042 MasonCo LF 2007 GW Mtr\995vcs\CADD\PH03\T03\Figures\ PLOTTED BY: purgdut DATE: Wednesday, August 12, 2015 11:11:33 AM

4. ANALYTICAL RESULTS

Analytical results for the 2015 groundwater monitoring are summarized in Appendix A (inorganic and field parameters) and Appendix B (volatile organic compounds). The laboratory report and chain-of-custody form for the July sampling event are presented in Appendix C. Appendix D presents monitoring data available beginning in 2014 for well MW-6 provided by the Shelton Wastewater Treatment Plant.

4.1 Data Validation

Parametrix conducted a Quality Assurance/Quality Control (QA/QC) review of the laboratory data. The QA/QC review included a complete check of holding times, field duplicate results, and blank results. The laboratory QC internal standard data were also reviewed, including matrix spikes, matrix spike duplicates, surrogate recoveries, and laboratory control samples. No qualifiers were added to the data as a result of this review.

4.2 Comparison to Groundwater Quality Standards

Analytical results were evaluated by comparison to the Washington State groundwater standards (GWQSs; WAC 173-200) and to the state Maximum Contaminant Levels for drinking water (MCLs; WAC 246-290). Concentrations that were above water quality standards are summarized in Table 3 and discussed in the following sections. Those standards designated primary and carcinogen are potential risks to human health. Secondary standards are based on other factors including odor, taste, and color.

4.2.1 On-Site Wells

The secondary standards for manganese were exceeded in wells MW-3B and MW-8, but were below the standards in further downgradient well MW-10. pH concentrations were below the range of the GWQS, as typically observed, and are believed to reflect naturally occurring conditions (Parametrix 1991). No volatile organic compounds were detected.

4.2.2 Off-Site Well

In the Culver domestic well, the results with the exception of pH met the primary and secondary GWQSs and MCLs. No volatile organic compounds were detected.

Table 3. Summary of Groundwater and Drinking Water Quality Criteria Exceedances, Mason County Landfill 2015 Groundwater Monitoring

	Secondary Contaminants			Carcinogens
	pH (units)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)	Dissolved Arsenic (mg/L)
GWQS	**6.5-8.5**	**0.3**	**0.05**	**0.00005**
MCL		**0.3**	**0.05**	**0.01**
ON-SITE WELLS				
Upgradient Well				
MW-4	NS	NS	NS	NS
Landfill Monitoring Wells				
MW-3B	5.47	--	0.543	--
MW-8	5.50	--	0.214	--
MW-10	5.58	--	--	--
OFF-SITE WELLS				
Culver (new well)	5.85	--	--	--

GWQS = Groundwater quality standards (Chapter 173-200 WAC)
MCL = Maximum contaminant level for drinking water (Chapter 246-290 WAC)
-- Criteria not exceeded
NS = well not sampled due to pump malfunction

4.3 Groundwater Quality Trends

The effect of landfill closure on groundwater quality was evaluated using time-series plots and the Mann-Kendall and Sen's slope statistical tests. This evaluation was previously presented in the Annual Report for 2013 (Parametrix 2015), and has been updated to incorporate the results of the July 2015 sampling event.

The evaluation was conducted for indicator parameters (dissolved arsenic, chloride, COD, specific conductivity, dissolved iron, dissolved manganese, ammonia, nitrate, nitrite, pH, sulfate, TOC, and dissolved zinc), and volatile organic compounds (vinyl chloride and tetrachloroethene) in the upgradient monitoring well (MW-4) and seven downgradient monitoring wells (wells MW-1B, MW-3B, MW-5B, MW-7, MW-8, MW-10, and Culver). A time-series plot is also presented for the volatile organic compound carbon tetrachloride for upgradient well MW-4 and downgradient wells MW-1B, MW-2B, and MW-6. Carbon tetrachloride has not been detected in any other wells at the site and was believed historically to be related to impacts from former septage application areas of the site (see Figure 1).

4.3.1 Time Series Plots

Time-series plots and trend analyses are presented in Appendix E and summarized in the following sections.

4.3.1.1 Indicator Parameters

Overall decreasing trends in the concentrations of indicator parameters continued to be observed since landfill closure in 1993. Concentrations remained generally highest directly downgradient of the landfill at well MW-7 and decreased with distance from the landfill in further downgradient monitoring wells on the landfill property (wells MW-3B, MW-8 and MW-10). Concentrations of zinc in the Culver well show

more variability and are typically slightly higher than the concentrations in the landfill monitoring wells. It is likely that the zinc concentrations observed in the Culver well are related to factors other than landfill impacts. Actual concentrations of zinc in the Culver well (all below 0.1 mg/L) are substantially below the secondary MCL and GWQS criterion of 5 mg/L.

4.3.1.2 Volatile Organic Compounds

Vinyl chloride has not been detected in well MW-7 since the second quarter of 2001, in wells MW-3B and MW-8 since 1998, and in well MW-10 since 1995. Carbon tetrachloride has not been detected in any well since 2005.

4.3.2 Statistical Analysis of Trends

Potential trends in the groundwater data were evaluated using the Mann-Kendall test for trend and Sen's nonparametric estimator of slope (Gibbons 1994; Gilbert 1987, USEPA 2009). These tests are well suited to environmental data because there are no distributional assumptions, and missing data (non-detects) or irregularly spaced measurement periods are permitted. The Mann-Kendall test was used to identify whether or not a trend exists, and then the Sen's slope test was used to determine how steeply the concentration levels are changing.

Trend analyses were conducted using all data measured at the Mason County Landfill monitoring wells between November 1991 and July 2015. In addition, trend analyses were conducted using data from the latest eight consecutive sampling events for each well as recommended in Ecology's guidance document "*Preparing for Termination of Post-Closure Activities at Landfills Closed Under Chapter 173-304 WAC*." (Ecology 2011, 2015). The latest eight events for wells, except MW-4, MW-1B, and MW-5B started with September 2010 and ended with July 2015. MW-4 started with March 2010 because no data were collected in July 2015 due to pump malfunction, and MW-1B and MW-5B started with February 2006 because those wells were only sampled during the spring event through 2013.

All non-detected values were given a value equal to one half the reporting limit (Gilbert 1987, Gibbons 1994). The results of the trend analyses are presented in Appendix E.

4.3.2.1 Mann-Kendall Tests

The nonparametric Mann-Kendall test evaluates the significance of temporal trends at the 95 percent confidence level. A negative value for the Mann Kendall S statistic implies that a majority of the differences between earlier and later values are negative, suggestive of a decreasing trend. An S value near zero indicates a roughly equal number of positive and negative differences. This would be expected if the measurements were randomly fluctuating about a constant mean with no apparent trend.

4.3.2.2 Sen's Slope Tests

The Sen's slope test is a nonparametric procedure used to estimate the true slope of the data. The advantage of the Sen's slope test over linear regression methods is that it is not greatly affected by gross data errors or outliers, and can be computed when data are missing.

4.3.2.3 Summary of Statistical Results

For all data collected since November 1991, the results of the combined Mann-Kendall tests and Sen's slope tests (see Appendix E) indicate statistically significant downward trends or no trend for all parameters in both upgradient and downgradient wells, except for the following cases:

- Upward trends in dissolved iron and dissolved zinc in upgradient well MW-4 and several of the downgradient wells. It is likely that the upward trends calculated for these parameters are due to historical increases in reporting limits since there are mostly non-detected values in the wells with upward trends.
- Upward trend in sulfate in downgradient well MW-7. The sulfate trends is not believed to represent landfill impacts since there is a high degree of variability in sulfate concentrations across the site and there was no trend in the MW-7 sulfate data over the latest eight events (see subsequent section). Actual concentrations in MW-7 (all below 15 mg/L) are substantially below the secondary criterion of 250 mg/L.
- Upward trend in nitrate in upgradient well MW-4.
- Downward trend in pH in all wells, both upgradient and downgradient. Since the trend also occurred in the upgradient well, the downward trend in pH appears to indicate a site-wide or regional trend.

For the latest eight consecutive sampling events, the results of the combined Mann-Kendall and Sen's slope tests indicate no trend or statistically significant downward trends for all parameters in both upgradient and downgradient wells, except for the following cases:

- Upward trend for nitrate in upgradient well MW-4 and downgradient well MW-3B. Nitrate also showed a significant upward trend in upgradient well MW-4 using all data, likely reflecting a site-wide or regional trend. Actual concentrations in both these wells (all below 0.4 mg/L) are substantially below the criterion of 10 mg/L.
- Downward trend for pH in downgradient well MW-3B and Culver well. The downward trend in pH likely indicates a site-wide or regional trend since there were significant downward trends in all site wells including upgradient well MW-4 when all data were considered.

The results of trend analyses indicate there were no statistically significant upward trends in downgradient monitoring wells over the most recent eight events, or in any well located downgradient from the closed landfill at the point of compliance for all data measured during the post-closure period between November 1991 and July 2015. The only exceptions were cases where there was also a significant upward trend (or downgradient trend in the case of pH) in the upgradient monitoring well indicating either the presence of a site-wide or regional trend, or increasing reporting limits over time.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The 1993 closure of the waste disposal areas was designed to reduce leachate generation and, therefore, reduce groundwater impacts. The 2015 monitoring results indicate these reductions continue to occur since groundwater quality impacts from the former landfill are generally decreasing over time.

The extent of groundwater impacts is largely confined to the area immediately downgradient from the landfill at well MW-7, and to a lesser extent at further downgradient wells MW-3B and MW-8. Vinyl chloride has not been detected in any well since 2001.

In monitoring wells located downgradient from the closed landfill at the point of compliance (MW-1B, MW-3B, MW-8, and MW-10), the only parameter that exceeds the MCL or GWQS criteria (other than pH which is believed to be naturally occurring) is dissolved manganese in wells MW-3B and MW-8. The GWQS criterion for manganese is the same as the MCL which is not based on human health but is established as a guidance to assist public water systems to manage drinking water for aesthetic considerations such as taste, color, and odor. Manganese concentrations were below the GWQS criteria in further downgradient monitoring well MW-10 and the Culver domestic well. Over the last five years of monitoring, none of the landfill monitoring wells have exceeded the Model Toxics Control Act Method B criteria for manganese (2.2 mg/L) that is based on human health criteria.

There were no exceedances of GWQS criteria in the domestic Culver well located approximately 1,400 ft from the landfill property boundary. No volatile organic compounds were detected in the Culver well in 2015.

The information presented in this report documents that a clear reduction in concentrations of landfill indicator parameters has occurred since landfill closure in 1993. The trend analyses indicate either no trend or a statistically significant downward trend for all parameters in wells located at the point of compliance, both since landfill closure and over the last eight sampling events. The only exceptions were cases where there was also a significant upward trend (or downgradient trend in the case of pH) in the upgradient monitoring well indicating either the presence of a site-wide or regional trend, or increasing reporting limits over time.

5.2 Recommendations

The Mason County Landfill closed in 1993, and the 20-year post-closure period was completed with the fall 2013 monitoring event. A post-closure care summary report will be prepared summarizing relevant environmental information and evaluating the stability of the landfill in accordance with the Ecology guidance document "*Preparing for Termination of Post-Closure Activities at Landfills Closed Under Chapter 173-304 WAC*." In addition to summarizing the status of the groundwater monitoring as presented in this report, the post-closure care summary report will provide an evaluation of and recommendations for other environmental systems that prevent or monitor releases to the environment including the cover system and the gas collection and monitoring system.

Continued groundwater monitoring of selected monitoring wells at a reduced frequency is recommended to verify that post-closure groundwater quality continues to be stable or improving, and to meet Ecology and MCDHS requirements.

The following are recommendations for the Mason County Landfill groundwater monitoring system:

- Inspect monitoring wells annually to ensure they are covered and locked.
- Collect samples of groundwater in two years (spring 2017) from upgradient well MW-4, wells downgradient from the closed landfill located at the point of compliance (MW-3B, MW-8, and MW-10) and from the domestic Culver well. Analyze the samples for the parameters listed in Table 1.
- Based on the results of the spring 2017 groundwater sampling, make recommendations regarding future groundwater monitoring.

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Appendix A

Tabulated 2015 Groundwater Monitoring Results, Inorganic and Field Parameters

Table A-1. Groundwater Monitoring Results for Inorganic and Field Parameters, July 8, 2015, Mason County Landfill

Analyte	Units	MCL	GWQS	MW-3B	MW-11 (MW-3B Dup)	MW-4	MW-8	MW-10	Culver (formerly Ruggle)
FIELD PARAMETERS									
Temperature	Centigrade			10.33	- -	- -	10.40	10.15	10.41
pH	units		6.5-8.5 **	**5.47**	- -	- -	**5.50**	**5.58**	**5.85**
Specific Conductivity	µmhos/cm@25C	700 **		73	- -	- -	82	71	112
CONVENTIONALS									
Chloride	mg/L	250 **	250 **	2.0	2.0	- -	2.3	2.1	2.2
N-Ammonia	mg-N/L			0.027	0.029	- -	0.080	0.018	0.014
N-Nitrate	mg-N/L	10 *	10 *	0.164	0.188	- -	0.319	0.355	0.330
N-Nitrite	mg-N/L	1 *		<0.010	<0.010	- -	<0.010	<0.010	<0.010
Nitrate + Nitrite	mg-N/L			0.164	0.188	- -	0.319	0.355	0.330
Sulfate	mg/L	250 **	250 **	2.2	2.6	- -	2.8	2.6	2.9
Chemical Oxygen Demand	mg/L			<10.0	<10.0	- -	<10.0	<10.0	<10.0
Total Organic Carbon	mg/L			<0.50	0.53	- -	<0.50	0.58	<0.50
METALS									
Arsenic (Dissolved)	mg/L	0.01 *	0.00005 ***	<0.0002	<0.0002	- -	<0.0002	<0.0002	<0.0002
Iron (Dissolved)	mg/L	0.3 **	0.3 **	<0.050	<0.050	- -	<0.050	<0.050	<0.05
Manganese(Dissolved)	mg/L	0.05 **	0.05 **	**0.543**	**0.561**	- -	**0.214**	<0.001	<0.001
Zinc (Dissolved)	mg/L	5 **	5 **	<0.010	<0.010	- -	<0.010	<0.010	0.020

Notes:

- - = Not Measured
MCL = Maximum Contaminant Level for drinking water (WAC 246-290)
GWQS = Washington State Groundwater Standards (WAC 173-200)
= Does not meet standard
* = Primary Contaminant Criteria
** = Secondary Contaminant Criteria
*** = Carcinogen Contaminant Criteria
Culver: Water level measured in old well, sample collected from new well.

Appendix B

Tabulated 2015 Groundwater Monitoring Results, Volatile Organic Compounds

Table B-1. Groundwater Monitoring Results for Organic Parameters, July 8, 2015, Mason County Landfill

Analyte	Units	MCL	GWQS	MW-3B	MW-11 (MW-3B Dup)	MW-8	MW-10	Culver (formerly Ruggle)	Trip Blank
VOLATILE ORGANICS									
Chloromethane	µg/L			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane	µg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	µg/L	2 *	0.02 ***	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chloroethane	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methylene Chloride	µg/L	5 *	5 ***	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	µg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon Disulfide	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethene	µg/L	7 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L		1 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
trans-1,2-Dichloroethene	µg/L	100 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethene	µg/L	70 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	µg/L	100 *THM	7 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	5 *	0.5 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Butanone	µg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	µg/L	200 *	200 *	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Carbon Tetrachloride	µg/L	5 *	0.3 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Acetate	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L	100 *THM	0.3 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	5 *	0.6 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethene	µg/L	5 *	3 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	100 *THM		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	µg/L	5 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzene	µg/L	5 *	1 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
trans-1,3-Dichloropropene	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Chloroethylvinylether	µg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	µg/L	100 *THM	5 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Methyl-2-Pentanone	µg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone	µg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	µg/L	5 *	0.8 ***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2,2-Tetrachloroethane	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	1,000 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	µg/L	100 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	700 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	µg/L	100 *		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichlorotrifluoroethane	µg/L			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m,p-Xylene	µg/L	10,000 *XYL		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
o-Xylene	µg/L	10,000 *XYL		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

NOTES:
- - = Not Measured
MCL = Maximum Contaminant Level for drinking water (WAC 246-290)
GWQS = Washington State Groundwater Standards (WAC 173 - 200)
= Does not meet standard
* = Primary Contaminant Criteria
** = Secondary Contaminant Criteria
*** = Carcinogen Contaminant Criteria
THM = Total trihalomethanes cannot exceed 100 µg/L
XYL = Total xylenes cannot exceed 10,000 µg/L
VOC detections shown in **bold**

Appendix C

July 2015 Laboratory Report and
Chain-of-Custody Form

Analytical Resources, Incorporated
Analytical Chemists and Consultants

21 July 2015

Lisa Gilbert
Parametrix, Inc.
719 2nd Avenue, Suite 200
Seattle, WA 98104

RE: Project: 555-1682-042, Mason County LF
ARI Job No. AIX1

Dear Lisa:

Please find enclosed the original Chain of Custody (COC) records and the final results for the samples for the project referenced above. Analytical Resources, Inc. accepted five water samples and one trip blank in good condition on July 8, 2015. It was noted upon sample receipt that the trip blank was not listed on the COC. The samples were analyzed for VOAs, vinyl chloride by GC/MS-SIM, selected general chemistry parameters and dissolved metals as requested.

The percent recoveries for the surrogate, d4-1,2-dichlorothane, were high following the 8260-VOC analyses of several of these samples. Since no target compounds were detected in any of these samples, the high bias does not compromise and LOQ. No corrective actions were taken.

Matrix spikes (MSs) and matrix spike duplicates (MSDs) were prepared and analyzed for 8260-VOCs in conjunction with sample MW-3B and MW-11. The percent recoveries for several compounds were high following the analyses of both MS/MSD pairs. Since no target compounds were detected in any sample associated with these MS/MSD, the high bias does not compromise and LOQ. No corrective actions were taken.

There were no further problems with these analyses.

A copy of these reports and all raw data will remain on file at ARI. If you have questions, or require further information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
<markh@arilabs.com>

Enclosures

cc: File AIX1

MDH/mdh

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

ARI Assigned Number: AIX1	Turn-around Requested:
ARI Client Company: Parametrix	Phone: 206 394-3667
Client Contact: Lisa Gilbert	
Client Project Name: Mason Co Landfill	
Client Project #: 5551682042	Samplers: Lisa Gilbert, Adam Ramey

Page: 1 of 1	
Date: 7-8-15	Ice Present? Y
No. of Coolers: 2	Cooler Temps: 7.6, 9.8

Sample ID	Date	Time	Matrix	No. Containers	VOCs WAC 173-351	Vinyl Chloride SIM	Chloride Sulfate Nitrate	Ammonia COD TOC	Dissolved Fe, Mn, Zn, As				Notes/Comments
MW-10	7-8-15	1107	Water	8	X	X	X	X	X				
MW-8	7-8-15	1205	↓	8	X	X	X	X	X				
MW-3B	7-8-15	1324	↓	12	X	X	X	X	X				MS/MSD
MW-11	7-8-15	1324	↓	11	X	X	X	X	X				MS/MSD
Culver	7-8-15	1434	↓	8	X	X	X	X	X				

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
	(Signature) Lisa Gilbert	(Signature)	(Signature)	(Signature)
	Printed Name: Lisa Gilbert	Printed Name: A. Volgardsen	Printed Name:	Printed Name:
	Company: Parametrix Inc	Company: ARI	Company:	Company:
	Date & Time: 7-8-15 17:51	Date & Time: 7/8/15 1751	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Parametrix

Project Name: Mason Co Landfill

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other: _____

Assigned ARI Job No: AIX1

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 7.6 9.8 ____ ____ ____ ____

Time: 1751

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: AV Date: 7/8/15 Time: 1751

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... (Bubble Wrap) (Wet Ice) Gel Packs Baggies (Foam Block) Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		YES	(NO)
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	7/1/15	

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: AV Date: 7/9/15 Time: 825

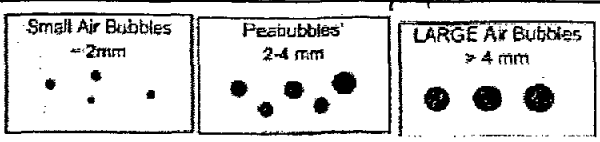
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

One full vial received without a label.
Culver has 9 bottles 6 vials, 1-1gal, 1-250ml AG, 1-500ml HDPE

By: AV Date: 7/9/15



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 1 + 2	Temperature(°C): 7.6, 9.8	
Sample ID	**Bottle Count**	**Bottle Type**
Samples received above 6°.		

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: AV Date: 7/8/15 Time: 1751

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: AIX1
Client: Parametrix, Inc.
Project Event: 5551682042
Project Name: Mason County Landfill

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-10	AIX1A	15-12262	Water	07/08/15 11:07	07/08/15 17:51
2.	MW-8	AIX1B	15-12263	Water	07/08/15 12:05	07/08/15 17:51
3.	MW-3B	AIX1C	15-12264	Water	07/08/15 13:24	07/08/15 17:51
4.	MW-11	AIX1D	15-12265	Water	07/08/15 13:24	07/08/15 17:51
5.	Culver	AIX1E	15-12266	Water	07/08/15 14:34	07/08/15 17:51
6.	TRIP BLANKS	AIX1F	15-12267	Water	07/08/15	07/08/15 17:51

AIX1 : 000005

Data Reporting Qualifiers

Effective 12/31/13

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

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

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

AIX1 : 00000

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: Volatiles-SW8260C

Matrix: Water

Holding Time: 14 Days Preserved, 7 Days Unpreserved

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	07/10/15	07/10/15
MW-8	AIX1B	07/08/15	07/08/15	07/10/15	07/10/15
MW-3B	AIX1C	07/08/15	07/08/15	07/10/15	07/10/15
MW-11	AIX1D	07/08/15	07/08/15	07/10/15	07/10/15
Culver	AIX1E	07/08/15	07/08/15	07/10/15	07/10/15
TRIP BLANKS	AIX1F	07/08/15	07/08/15	07/10/15	07/10/15
Method Blank	MB071015	N/A	N/A	07/10/15	07/10/15
Lab Control	LCS071015	N/A	N/A	07/10/15	07/10/15
Lab Control Dup	LCSD071015	N/A	N/A	07/10/15	07/10/15
MW-3B	AIX1CMS	07/08/15	07/08/15	07/10/15	07/10/15
MW-11	AIX1DMS	07/08/15	07/08/15	07/10/15	07/10/15
MW-3B	AIX1CMSD	07/08/15	07/08/15	07/10/15	07/10/15
MW-11	AIX1DMSD	07/08/15	07/08/15	07/10/15	07/10/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: Volatiles-SIM SW8260B

Matrix: Water

Holding Time: 14 Days Preserved

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	07/14/15	07/14/15
MW-8	AIX1B	07/08/15	07/08/15	07/14/15	07/14/15
MW-3B	AIX1C	07/08/15	07/08/15	07/14/15	07/14/15
MW-11	AIX1D	07/08/15	07/08/15	07/14/15	07/14/15
Culver	AIX1E	07/08/15	07/08/15	07/14/15	07/14/15
TRIP BLANKS	AIX1F	07/08/15	07/08/15	07/14/15	07/14/15
Method Blank	MB071415	N/A	N/A	07/14/15	07/14/15
Lab Control	LCS071415	N/A	N/A	07/14/15	07/14/15
Lab Control Dup	LCSD071415	N/A	N/A	07/14/15	07/14/15
MW-3B	AIX1CMS	07/08/15	07/08/15	07/14/15	07/14/15
MW-11	AIX1DMS	07/08/15	07/08/15	07/14/15	07/14/15
MW-3B	AIX1CMSD	07/08/15	07/08/15	07/14/15	07/14/15
MW-11	AIX1DMSD	07/08/15	07/08/15	07/14/15	07/14/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: Chloride-EPA 325.2

Matrix: Water

Holding Time: 28 Days

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/15/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/15/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/15/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/15/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/15/15
Method Blank	MB071515	N/A	N/A	N/A	07/15/15
Standard Ref.	SRM071515	N/A	N/A	N/A	07/15/15
MW-3B	AIX1CDP	07/08/15	07/08/15	N/A	07/15/15
MW-11	AIX1DDP	07/08/15	07/08/15	N/A	07/15/15
MW-3B	AIX1CMS	07/08/15	07/08/15	N/A	07/15/15
MW-11	AIX1DMS	07/08/15	07/08/15	N/A	07/15/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: N-Ammonia-EPA 350.1M

Matrix: Water

Holding Time: 28 Days

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/10/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/10/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/10/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/10/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/10/15
Method Blank	MB071015	N/A	N/A	N/A	07/10/15
Standard Ref.	SRM071015	N/A	N/A	N/A	07/10/15
MW-3B	AIX1CDP	07/08/15	07/08/15	N/A	07/10/15
MW-11	AIX1DDP	07/08/15	07/08/15	N/A	07/10/15
MW-3B	AIX1CMS	07/08/15	07/08/15	N/A	07/10/15
MW-11	AIX1DMS	07/08/15	07/08/15	N/A	07/10/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: N-Nitrate-Calculated

Matrix: Water

Holding Time: 48 Hours

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/09/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/09/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/09/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/09/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/09/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: N-Nitrite-EPA 353.2

Matrix: Water

Holding Time: 48 Hours

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/09/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/09/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/09/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/09/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/09/15
Method Blank	MB070915	N/A	N/A	N/A	07/09/15
Method Blank	MB070915	N/A	N/A	N/A	07/09/15
Standard Ref.	SRM070915	N/A	N/A	N/A	07/09/15
Standard Ref.	SRM070915	N/A	N/A	N/A	07/09/15
MW-3B	AIX1CDP	07/08/15	07/08/15	N/A	07/09/15
MW-11	AIX1DDP	07/08/15	07/08/15	N/A	07/09/15
MW-3B	AIX1CMS	07/08/15	07/08/15	N/A	07/09/15
MW-11	AIX1DMS	07/08/15	07/08/15	N/A	07/09/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: Nitrate + Nitrite-EPA 353.2

Matrix: Water

Holding Time: 48 Hours (unpreserved)
28 Days (preserved)

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/09/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/09/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/09/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/09/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/09/15
Method Blank	MB070915	N/A	N/A	N/A	07/09/15
Method Blank	MB070915	N/A	N/A	N/A	07/09/15
Standard Ref.	SRM070915	N/A	N/A	N/A	07/09/15
Standard Ref.	SRM070915	N/A	N/A	N/A	07/09/15
MW-3B	AIX1CDP	07/08/15	07/08/15	N/A	07/09/15
MW-11	AIX1DDP	07/08/15	07/08/15	N/A	07/09/15
MW-3B	AIX1CMS	07/08/15	07/08/15	N/A	07/09/15
MW-11	AIX1DMS	07/08/15	07/08/15	N/A	07/09/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: Sulfate-EPA 375.2

Matrix: Water

Holding Time: 28 Days

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/17/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/17/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/17/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/17/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/17/15
Method Blank	MB071715	N/A	N/A	N/A	07/17/15
Standard Ref.	SRM071715	N/A	N/A	N/A	07/17/15
MW-3B	AIX1CDP	07/08/15	07/08/15	N/A	07/17/15
MW-11	AIX1DDP	07/08/15	07/08/15	N/A	07/17/15
MW-3B	AIX1CMS	07/08/15	07/08/15	N/A	07/17/15
MW-11	AIX1DMS	07/08/15	07/08/15	N/A	07/17/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: Chemical Oxygen Demand-EPA 410.4

Matrix: Water

Holding Time: 28 Days

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/16/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/16/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/16/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/16/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/16/15
Method Blank	MB071615	N/A	N/A	N/A	07/16/15
Standard Ref.	SRM071615	N/A	N/A	N/A	07/16/15
MW-3B	AIX1CDP	07/08/15	07/08/15	N/A	07/16/15
MW-11	AIX1DDP	07/08/15	07/08/15	N/A	07/16/15
MW-3B	AIX1CMS	07/08/15	07/08/15	N/A	07/16/15
MW-11	AIX1DMS	07/08/15	07/08/15	N/A	07/16/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: Total Organic Carbon-EPA 9060

Matrix: Water

Holding Time: 28 Days

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	N/A	07/10/15
MW-8	AIX1B	07/08/15	07/08/15	N/A	07/10/15
MW-3B	AIX1C	07/08/15	07/08/15	N/A	07/10/15
MW-11	AIX1D	07/08/15	07/08/15	N/A	07/10/15
Culver	AIX1E	07/08/15	07/08/15	N/A	07/10/15
Method Blank	MB071015	N/A	N/A	N/A	07/10/15
Standard Ref.	SRM071015	N/A	N/A	N/A	07/10/15
MW-3B	AIX1CDP	07/08/15	07/08/15	N/A	07/10/15
MW-11	AIX1DDP	07/08/15	07/08/15	N/A	07/10/15
MW-3B	AIX1CMS	07/08/15	07/08/15	N/A	07/10/15
MW-11	AIX1DMS	07/08/15	07/08/15	N/A	07/10/15

Preparation Summary Table

ANALYTICAL RESOURCES INCORPORATED

Client Project ID: 5551682042, Mason County Landfill

ARI Job No: AIX1

Parameter: ICP Dissolved Metals-6010C

Matrix: Water

Holding Time: 6 Months

Date Reported: 07/21/15

Client Sample ID	ARI Sample ID	Date Sampled	Date Received	Date Extracted	Date Analyzed
MW-10	AIX1A	07/08/15	07/08/15	07/10/15	07/15/15
MW-8	AIX1B	07/08/15	07/08/15	07/10/15	07/15/15
MW-3B	AIX1C	07/08/15	07/08/15	07/10/15	07/15/15
MW-11	AIX1D	07/08/15	07/08/15	07/10/15	07/15/15
Culver	AIX1E	07/08/15	07/08/15	07/10/15	07/15/15
Method Blank	MB071015	N/A	N/A	07/10/15	07/15/15
Lab Control	LCS071015	N/A	N/A	07/10/15	07/15/15
MW-3B	AIX1CDP	07/08/15	07/08/15	07/10/15	07/15/15
MW-11	AIX1DDP	07/08/15	07/08/15	07/10/15	07/15/15
MW-3B	AIX1CMS	07/08/15	07/08/15	07/10/15	07/15/15
MW-11	AIX1DMS	07/08/15	07/08/15	07/10/15	07/15/15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-071015A**
 METHOD BLANK

Lab Sample ID: MB-071015A
LIMS ID: 15-12262
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 13:27

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
108-38-3	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	114%
d8-Toluene	101%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-10**
 SAMPLE

Lab Sample ID: AIX1A
LIMS ID: 15-12262
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 16:59

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
108-38-3	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	118%
d8-Toluene	101%
Bromofluorobenzene	95.8%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-8**
 SAMPLE

Lab Sample ID: AIX1B
LIMS ID: 15-12263
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 17:26

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
108-38-3	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	120%
d8-Toluene	103%
Bromofluorobenzene	97.4%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3B**
Page 1 of 1 **SAMPLE**

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 17:53

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
108-38-3	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	120%
d8-Toluene	102%
Bromofluorobenzene	95.3%
d4-1,2-Dichlorobenzene	105%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3B**
 MATRIX SPIKE

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 19:39

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.20	---	
75-00-3	Chloroethane	0.20	---	
75-09-2	Methylene Chloride	1.0	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.20	---	
75-35-4	1,1-Dichloroethene	0.20	---	
75-34-3	1,1-Dichloroethane	0.20	---	
156-60-5	trans-1,2-Dichloroethene	0.20	---	
156-59-2	cis-1,2-Dichloroethene	0.20	---	
67-66-3	Chloroform	0.20	---	
107-06-2	1,2-Dichloroethane	0.20	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.20	---	
56-23-5	Carbon Tetrachloride	0.20	---	
108-05-4	Vinyl Acetate	0.20	---	
75-27-4	Bromodichloromethane	0.20	---	
78-87-5	1,2-Dichloropropane	0.20	---	
10061-01-5	cis-1,3-Dichloropropene	0.20	---	
79-01-6	Trichloroethene	0.20	---	
124-48-1	Dibromochloromethane	0.20	---	
79-00-5	1,1,2-Trichloroethane	0.20	---	
71-43-2	Benzene	0.20	---	
10061-02-6	trans-1,3-Dichloropropene	0.20	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.20	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.20	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.20	---	
108-88-3	Toluene	0.20	---	
108-90-7	Chlorobenzene	0.20	---	
100-41-4	Ethylbenzene	0.20	---	
100-42-5	Styrene	0.20	---	
75-69-4	Trichlorofluoromethane	0.20	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	---	
108-38-3	m,p-Xylene	0.40	---	
95-47-6	o-Xylene	0.20	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	120%
d8-Toluene	104%
Bromofluorobenzene	98.7%
d4-1,2-Dichlorobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3B**
 MATRIX SPIKE DUP

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 20:06

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.20	---	
75-00-3	Chloroethane	0.20	---	
75-09-2	Methylene Chloride	1.0	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.20	---	
75-35-4	1,1-Dichloroethene	0.20	---	
75-34-3	1,1-Dichloroethane	0.20	---	
156-60-5	trans-1,2-Dichloroethene	0.20	---	
156-59-2	cis-1,2-Dichloroethene	0.20	---	
67-66-3	Chloroform	0.20	---	
107-06-2	1,2-Dichloroethane	0.20	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.20	---	
56-23-5	Carbon Tetrachloride	0.20	---	
108-05-4	Vinyl Acetate	0.20	---	
75-27-4	Bromodichloromethane	0.20	---	
78-87-5	1,2-Dichloropropane	0.20	---	
10061-01-5	cis-1,3-Dichloropropene	0.20	---	
79-01-6	Trichloroethene	0.20	---	
124-48-1	Dibromochloromethane	0.20	---	
79-00-5	1,1,2-Trichloroethane	0.20	---	
71-43-2	Benzene	0.20	---	
10061-02-6	trans-1,3-Dichloropropene	0.20	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.20	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.20	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.20	---	
108-88-3	Toluene	0.20	---	
108-90-7	Chlorobenzene	0.20	---	
100-41-4	Ethylbenzene	0.20	---	
100-42-5	Styrene	0.20	---	
75-69-4	Trichlorofluoromethane	0.20	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	---	
108-38-3	m,p-Xylene	0.40	---	
95-47-6	o-Xylene	0.20	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	121%
d8-Toluene	103%
Bromofluorobenzene	97.5%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-11**
Page 1 of 1 **SAMPLE**

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 18:19

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
108-38-3	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	123%
d8-Toluene	102%
Bromofluorobenzene	94.0%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-11**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized:
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 20:32

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.20	---	
75-00-3	Chloroethane	0.20	---	
75-09-2	Methylene Chloride	1.0	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.20	---	
75-35-4	1,1-Dichloroethene	0.20	---	
75-34-3	1,1-Dichloroethane	0.20	---	
156-60-5	trans-1,2-Dichloroethene	0.20	---	
156-59-2	cis-1,2-Dichloroethene	0.20	---	
67-66-3	Chloroform	0.20	---	
107-06-2	1,2-Dichloroethane	0.20	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.20	---	
56-23-5	Carbon Tetrachloride	0.20	---	
108-05-4	Vinyl Acetate	0.20	---	
75-27-4	Bromodichloromethane	0.20	---	
78-87-5	1,2-Dichloropropane	0.20	---	
10061-01-5	cis-1,3-Dichloropropene	0.20	---	
79-01-6	Trichloroethene	0.20	---	
124-48-1	Dibromochloromethane	0.20	---	
79-00-5	1,1,2-Trichloroethane	0.20	---	
71-43-2	Benzene	0.20	---	
10061-02-6	trans-1,3-Dichloropropene	0.20	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.20	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.20	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.20	---	
108-88-3	Toluene	0.20	---	
108-90-7	Chlorobenzene	0.20	---	
100-41-4	Ethylbenzene	0.20	---	
100-42-5	Styrene	0.20	---	
75-69-4	Trichlorofluoromethane	0.20	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	---	
108-38-3	m,p-Xylene	0.40	---	
95-47-6	o-Xylene	0.20	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	120%
d8-Toluene	103%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-11**
 MATRIX SPIKE DUP

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 20:59

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.20	---	
75-00-3	Chloroethane	0.20	---	
75-09-2	Methylene Chloride	1.0	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.20	---	
75-35-4	1,1-Dichloroethene	0.20	---	
75-34-3	1,1-Dichloroethane	0.20	---	
156-60-5	trans-1,2-Dichloroethene	0.20	---	
156-59-2	cis-1,2-Dichloroethene	0.20	---	
67-66-3	Chloroform	0.20	---	
107-06-2	1,2-Dichloroethane	0.20	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.20	---	
56-23-5	Carbon Tetrachloride	0.20	---	
108-05-4	Vinyl Acetate	0.20	---	
75-27-4	Bromodichloromethane	0.20	---	
78-87-5	1,2-Dichloropropane	0.20	---	
10061-01-5	cis-1,3-Dichloropropene	0.20	---	
79-01-6	Trichloroethene	0.20	---	
124-48-1	Dibromochloromethane	0.20	---	
79-00-5	1,1,2-Trichloroethane	0.20	---	
71-43-2	Benzene	0.20	---	
10061-02-6	trans-1,3-Dichloropropene	0.20	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.20	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.20	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.20	---	
108-88-3	Toluene	0.20	---	
108-90-7	Chlorobenzene	0.20	---	
100-41-4	Ethylbenzene	0.20	---	
100-42-5	Styrene	0.20	---	
75-69-4	Trichlorofluoromethane	0.20	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	---	
108-38-3	m,p-Xylene	0.40	---	
95-47-6	o-Xylene	0.20	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	123%
d8-Toluene	103%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Culver SAMPLE**

Lab Sample ID: AIX1E
LIMS ID: 15-12266
Matrix: Water
Data Release Authorized:
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 18:46

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
108-38-3	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	122%
d8-Toluene	102%
Bromofluorobenzene	95.4%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TRIP BLANKS SAMPLE**

Lab Sample ID: AIX1F
LIMS ID: 15-12267
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT15/PAB
Date Analyzed: 07/10/15 19:13

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
108-38-3	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	123%
d8-Toluene	102%
Bromofluorobenzene	94.1%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-071015A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-071015A
LIMS ID: 15-12262
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT15/PAB
LCSD: NT15/PAB
Date Analyzed LCS: 07/10/15 10:57
LCSD: 07/10/15 12:55

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	10.2	10.0	102%	9.24	10.0	92.4%	9.9%
Bromomethane	7.30	10.0	73.0%	7.36	10.0	73.6%	0.8%
Vinyl Chloride	10.4	10.0	104%	9.07	10.0	90.7%	13.7%
Chloroethane	14.3 Q	10.0	143%	13.5 Q	10.0	135%	5.8%
Methylene Chloride	8.89	10.0	88.9%	8.85	10.0	88.5%	0.5%
Acetone	38.6	50.0	77.2%	41.7	50.0	83.4%	7.7%
Carbon Disulfide	9.35	10.0	93.5%	8.23	10.0	82.3%	12.7%
1,1-Dichloroethene	9.92	10.0	99.2%	8.79	10.0	87.9%	12.1%
1,1-Dichloroethane	10.1	10.0	101%	9.65	10.0	96.5%	4.6%
trans-1,2-Dichloroethene	8.15	10.0	81.5%	7.61	10.0	76.1%	6.9%
cis-1,2-Dichloroethene	10.1	10.0	101%	9.71	10.0	97.1%	3.9%
Chloroform	10.1	10.0	101%	9.84	10.0	98.4%	2.6%
1,2-Dichloroethane	8.30	10.0	83.0%	8.69	10.0	86.9%	4.6%
2-Butanone	45.1	50.0	90.2%	48.8	50.0	97.6%	7.9%
1,1,1-Trichloroethane	10.4	10.0	104%	9.41	10.0	94.1%	10.0%
Carbon Tetrachloride	9.85	10.0	98.5%	8.67	10.0	86.7%	12.7%
Vinyl Acetate	9.01	10.0	90.1%	9.77	10.0	97.7%	8.1%
Bromodichloromethane	8.97	10.0	89.7%	9.00	10.0	90.0%	0.3%
1,2-Dichloropropane	8.70	10.0	87.0%	8.66	10.0	86.6%	0.5%
cis-1,3-Dichloropropene	9.24	10.0	92.4%	9.01	10.0	90.1%	2.5%
Trichloroethene	8.78	10.0	87.8%	8.02	10.0	80.2%	9.0%
Dibromochloromethane	9.12	10.0	91.2%	9.25	10.0	92.5%	1.4%
1,1,2-Trichloroethane	8.20	10.0	82.0%	8.64	10.0	86.4%	5.2%
Benzene	8.79	10.0	87.9%	8.39	10.0	83.9%	4.7%
trans-1,3-Dichloropropene	9.79	10.0	97.9%	9.70	10.0	97.0%	0.9%
2-Chloroethylvinylether	9.05	10.0	90.5%	9.39	10.0	93.9%	3.7%
Bromoform	9.53	10.0	95.3%	9.86	10.0	98.6%	3.4%
4-Methyl-2-Pentanone (MIBK)	39.0	50.0	78.0%	41.7	50.0	83.4%	6.7%
2-Hexanone	39.5	50.0	79.0%	43.0	50.0	86.0%	8.5%
Tetrachloroethene	8.94	10.0	89.4%	7.90	10.0	79.0%	12.4%
1,1,2,2-Tetrachloroethane	8.80	10.0	88.0%	9.16	10.0	91.6%	4.0%
Toluene	8.67	10.0	86.7%	8.11	10.0	81.1%	6.7%
Chlorobenzene	8.68	10.0	86.8%	8.23	10.0	82.3%	5.3%
Ethylbenzene	8.79	10.0	87.9%	8.08	10.0	80.8%	8.4%
Styrene	9.09	10.0	90.9%	8.53	10.0	85.3%	6.4%
Trichlorofluoromethane	10.1	10.0	101%	8.75	10.0	87.5%	14.3%
1,1,2-Trichloro-1,2,2-trifluoroetha	9.74	10.0	97.4%	8.42	10.0	84.2%	14.5%
m,p-Xylene	17.6	20.0	88.0%	16.2	20.0	81.0%	8.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-071015A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-071015A
LIMS ID: 15-12262
Matrix: Water

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	8.67	10.0	86.7%	8.19	10.0	81.9%	5.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	113%	113%
d8-Toluene	103%	103%
Bromofluorobenzene	96.8%	96.3%
d4-1,2-Dichlorobenzene	99.9%	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3B**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst MS: NT15/PAB
MSD: NT15/PAB
Date Analyzed MS: 07/10/15 19:39
MSD: 07/10/15 20:06

Sample Amount MS: 10.0 mL
MSD: 10.0 mL
Purge Volume MS: 10.0 mL
MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Chloromethane	< 0.50 U	11.9	10.0	119%	12.3	10.0	123%	3.3%
Bromomethane	< 1.0 U	9.10	10.0	91.0%	9.92	10.0	99.2%	8.6%
Vinyl Chloride	< 0.20 U	12.4	10.0	124%	13.0	10.0	130%	4.7%
Chloroethane	< 0.20 U	16.3 Q	10.0	163%	17.3 Q	10.0	173%	6.0%
Methylene Chloride	< 1.0 U	10.6	10.0	106%	11.1	10.0	111%	4.6%
Acetone	< 5.0 U	55.7	50.0	111%	58.5	50.0	117%	4.9%
Carbon Disulfide	< 0.20 U	11.1	10.0	111%	11.7	10.0	117%	5.3%
1,1-Dichloroethene	< 0.20 U	12.0	10.0	120%	12.4	10.0	124%	3.3%
1,1-Dichloroethane	< 0.20 U	12.1	10.0	121%	12.6	10.0	126%	4.0%
trans-1,2-Dichloroethene	< 0.20 U	9.74	10.0	97.4%	10.1	10.0	101%	3.6%
cis-1,2-Dichloroethene	< 0.20 U	12.3	10.0	123%	12.7	10.0	127%	3.2%
Chloroform	< 0.20 U	12.1	10.0	121%	12.7	10.0	127%	4.8%
1,2-Dichloroethane	< 0.20 U	10.3	10.0	103%	10.7	10.0	107%	3.8%
2-Butanone	< 5.0 U	64.6	50.0	129%	68.5	50.0	137%	5.9%
1,1,1-Trichloroethane	< 0.20 U	12.2	10.0	122%	12.8	10.0	128%	4.8%
Carbon Tetrachloride	< 0.20 U	10.9	10.0	109%	11.4	10.0	114%	4.5%
Vinyl Acetate	< 0.20 U	12.2	10.0	122%	12.5	10.0	125%	2.4%
Bromodichloromethane	< 0.20 U	10.7	10.0	107%	11.1	10.0	111%	3.7%
1,2-Dichloropropane	< 0.20 U	10.3	10.0	103%	10.7	10.0	107%	3.8%
cis-1,3-Dichloropropene	< 0.20 U	10.6	10.0	106%	11.0	10.0	110%	3.7%
Trichloroethene	< 0.20 U	10.2	10.0	102%	10.7	10.0	107%	4.8%
Dibromochloromethane	< 0.20 U	10.9	10.0	109%	11.4	10.0	114%	4.5%
1,1,2-Trichloroethane	< 0.20 U	10.5	10.0	105%	11.0	10.0	110%	4.7%
Benzene	< 0.20 U	10.4	10.0	104%	10.7	10.0	107%	2.8%
trans-1,3-Dichloropropene	< 0.20 U	11.5	10.0	115%	11.9	10.0	119%	3.4%
2-Chloroethylvinylether	< 1.0 U	11.5	10.0	115%	12.2	10.0	122%	5.9%
Bromoform	< 0.20 U	11.3	10.0	113%	11.8	10.0	118%	4.3%
4-Methyl-2-Pentanone (MIBK)	< 5.0 U	54.3	50.0	109%	56.8	50.0	114%	4.5%
2-Hexanone	< 5.0 U	55.3	50.0	111%	57.9	50.0	116%	4.6%
Tetrachloroethene	< 0.20 U	10.2	10.0	102%	10.7	10.0	107%	4.8%
1,1,2,2-Tetrachloroethane	< 0.20 U	11.0	10.0	110%	11.6	10.0	116%	5.3%
Toluene	< 0.20 U	10.3	10.0	103%	10.6	10.0	106%	2.9%
Chlorobenzene	< 0.20 U	10.2	10.0	102%	10.6	10.0	106%	3.8%
Ethylbenzene	< 0.20 U	10.1	10.0	101%	10.6	10.0	106%	4.8%
Styrene	< 0.20 U	10.6	10.0	106%	11.1	10.0	111%	4.6%
Trichlorofluoromethane	< 0.20 U	12.1	10.0	121%	12.6	10.0	126%	4.0%
1,1,2-Trichloro-1,2,2-trifl	< 0.20 U	11.3	10.0	113%	11.9	10.0	119%	5.2%
m,p-Xylene	< 0.40 U	20.4	20.0	102%	21.1	20.0	106%	3.4%
o-Xylene	< 0.20 U	10.1	10.0	101%	10.7	10.0	107%	5.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-11**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized: VD
Reported: 07/14/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst MS: NT15/PAB
MSD: NT15/PAB
Date Analyzed MS: 07/10/15 20:32
MSD: 07/10/15 20:59

Sample Amount MS: 10.0 mL
MSD: 10.0 mL
Purge Volume MS: 10.0 mL
MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Chloromethane	< 0.50 U	12.2	10.0	122%	14.4	10.0	144%	16.5%
Bromomethane	< 1.0 U	10.3	10.0	103%	11.3	10.0	113%	9.3%
Vinyl Chloride	< 0.20 U	13.2	10.0	132%	14.5	10.0	145%	9.4%
Chloroethane	< 0.20 U	16.8 Q	10.0	168%	17.0 Q	10.0	170%	1.2%
Methylene Chloride	< 1.0 U	11.2	10.0	112%	12.2	10.0	122%	8.5%
Acetone	< 5.0 U	60.4	50.0	121%	67.5	50.0	135%	11.1%
Carbon Disulfide	< 0.20 U	11.9	10.0	119%	13.0	10.0	130%	8.8%
1,1-Dichloroethene	< 0.20 U	12.7	10.0	127%	13.8	10.0	138%	8.3%
1,1-Dichloroethane	< 0.20 U	12.8	10.0	128%	14.0	10.0	140%	9.0%
trans-1,2-Dichloroethene	< 0.20 U	10.3	10.0	103%	11.4	10.0	114%	10.1%
cis-1,2-Dichloroethene	< 0.20 U	12.9	10.0	129%	14.1	10.0	141%	8.9%
Chloroform	< 0.20 U	13.0	10.0	130%	14.2	10.0	142%	8.8%
1,2-Dichloroethane	< 0.20 U	11.0	10.0	110%	11.9	10.0	119%	7.9%
2-Butanone	< 5.0 U	70.1	50.0	140%	77.7	50.0	155%	10.3%
1,1,1-Trichloroethane	< 0.20 U	13.2	10.0	132%	14.2	10.0	142%	7.3%
Carbon Tetrachloride	< 0.20 U	11.5	10.0	115%	12.6	10.0	126%	9.1%
Vinyl Acetate	< 0.20 U	12.9	10.0	129%	14.5	10.0	145%	11.7%
Bromodichloromethane	< 0.20 U	11.3	10.0	113%	12.2	10.0	122%	7.7%
1,2-Dichloropropane	< 0.20 U	10.9	10.0	109%	11.9	10.0	119%	8.8%
cis-1,3-Dichloropropene	< 0.20 U	11.3	10.0	113%	12.2	10.0	122%	7.7%
Trichloroethene	< 0.20 U	11.0	10.0	110%	11.9	10.0	119%	7.9%
Dibromochloromethane	< 0.20 U	11.6	10.0	116%	12.6	10.0	126%	8.3%
1,1,2-Trichloroethane	< 0.20 U	11.2	10.0	112%	12.3	10.0	123%	9.4%
Benzene	< 0.20 U	10.9	10.0	109%	11.9	10.0	119%	8.8%
trans-1,3-Dichloropropene	< 0.20 U	12.2	10.0	122%	13.3	10.0	133%	8.6%
2-Chloroethylvinylether	< 1.0 U	12.2	10.0	122%	13.5	10.0	135%	10.1%
Bromoform	< 0.20 U	12.3	10.0	123%	13.3	10.0	133%	7.8%
4-Methyl-2-Pentanone (MIBK)	< 5.0 U	58.5	50.0	117%	63.9	50.0	128%	8.8%
2-Hexanone	< 5.0 U	60.2	50.0	120%	65.5	50.0	131%	8.4%
Tetrachloroethene	< 0.20 U	11.0	10.0	110%	11.7	10.0	117%	6.2%
1,1,2,2-Tetrachloroethane	< 0.20 U	12.0	10.0	120%	12.9	10.0	129%	7.2%
Toluene	< 0.20 U	10.8	10.0	108%	11.8	10.0	118%	8.8%
Chlorobenzene	< 0.20 U	10.8	10.0	108%	11.6	10.0	116%	7.1%
Ethylbenzene	< 0.20 U	10.9	10.0	109%	11.7	10.0	117%	7.1%
Styrene	< 0.20 U	11.4	10.0	114%	12.2	10.0	122%	6.8%
Trichlorofluoromethane	< 0.20 U	12.9	10.0	129%	14.1	10.0	141%	8.9%
1,1,2-Trichloro-1,2,2-trifl	< 0.20 U	12.0	10.0	120%	13.2	10.0	132%	9.5%
m,p-Xylene	< 0.40 U	21.7	20.0	108%	23.2	20.0	116%	6.7%
o-Xylene	< 0.20 U	10.9	10.0	109%	11.6	10.0	116%	6.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-071015A	Method Blank	10	114%	101%	96.5%	102%	0
LCS-071015A	Lab Control	10	113%	103%	96.8%	99.9%	0
LCSD-071015A	Lab Control Dup	10	113%	103%	96.3%	100%	0
AIX1A	MW-10	10	118%	101%	95.8%	102%	0
AIX1B	MW-8	10	120%	103%	97.4%	104%	0
AIX1C	MW-3B	10	120%	102%	95.3%	105%	0
AIX1CMS	MW-3B	10	120%	104%	98.7%	103%	0
AIX1CMSD	MW-3B	10	121%*	103%	97.5%	102%	1
AIX1D	MW-11	10	123%*	102%	94.0%	103%	1
AIX1DMS	MW-11	10	120%	103%	97.8%	103%	0
AIX1DMSD	MW-11	10	123%*	103%	96.5%	103%	1
AIX1E	Culver	10	122%*	102%	95.4%	103%	1
AIX1F	TRIP BLANKS	10	123%*	102%	94.1%	103%	1

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-120)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 15-12262 to 15-12267

Data File: /chem1/nt15.i/20150710.b/icv071015.d
Report Date: 10-Jul-2015 10:32

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt15.i
Lab File ID: icv071015.d
Analysis Type: WATER
Lab Sample ID: ICV0710
Method: /chem1/nt15.i/20150710.b/82600612L.m

Injection Date: 10-JUL-2015 10:00
Init. Cal. Date(s): 29-JUN-2015 29-JUN-2015
Init. Cal. Times: 15:12 18:11
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
1 Dichlorodifluoromethane	0.43939	0.55873	0.55873	0.010	27.15894	20.00000	Averaged	<-
2 Chloromethane	0.57974	0.64228	0.64228	0.100	10.78648	20.00000	Averaged	
3 Vinyl Chloride	0.65885	0.74562	0.74562	0.100	13.17105	20.00000	Averaged	
4 Bromomethane	0.60616	0.50102	0.50102	0.100	-17.34461	20.00000	Averaged	
5 Chloroethane	14.86639	10.00000	0.49898	0.010	48.66387	20.00000	Linear	<-
6 Trichlorofluoromethane	0.92529	1.01435	1.01435	0.010	9.62450	20.00000	Averaged	
7 1,1-Dichloroethene	1.03229	1.11508	1.11508	0.100	8.02032	20.00000	Averaged	
8 Carbon Disulfide	2.17693	2.22333	2.22333	0.010	2.13169	20.00000	Averaged	
9 112Trichloro122Trifluoroeth	0.59671	0.63158	0.63158	0.010	5.84313	20.00000	Averaged	
10 Iodomethane	9.96646	10.00000	0.55217	0.010	-0.33544	20.00000	Quadratic	
11 Bromoethane	0.44470	0.45079	0.45079	0.100	1.36823	20.00000	Averaged	
12 Acrolein	0.07721	0.07920	0.07920	0.000	2.58116	20.00000	Averaged	
13 Methylene Chloride	0.76547	0.73958	0.73958	0.010	-3.38110	20.00000	Averaged	
14 Acetone	0.12388	0.10465	0.10465	0.001	-15.52484	20.00000	Averaged	
15 Trans-1,2-Dichloroethene	0.70766	0.62526	0.62526	0.010	-11.64462	20.00000	Averaged	
17 Methyl tert butyl ether	1.42883	1.48766	1.48766	0.100	4.11721	20.00000	Averaged	
18 1,1-Dichloroethane	1.07497	1.17334	1.17334	0.200	9.15083	20.00000	Averaged	
19 Acrylonitrile	0.15163	0.14651	0.14651	0.001	-3.37543	20.00000	Averaged	
20 Vinyl Acetate	0.83810	0.84825	0.84825	0.010	1.21124	20.00000	Averaged	
22 Cis-1,2-Dichloroethene	0.62873	0.68525	0.68525	0.010	8.98966	20.00000	Averaged	
23 2,2-Dichloropropane	0.76491	0.91665	0.91665	0.010	19.83837	20.00000	Averaged	
24 Bromochloromethane	0.25318	0.26113	0.26113	0.050	3.14071	20.00000	Averaged	
25 Chloroform	1.00089	1.09367	1.09367	0.200	9.27055	20.00000	Averaged	
26 Carbon Tetrachloride	0.32297	0.35047	0.35047	0.100	8.51629	20.00000	Averaged	
$ 27 Dibromofluoromethane	0.52173	0.62298	0.62298	0.100	19.40513	20.00000	Averaged	
28 1,1,1-Trichloroethane	0.85208	0.96139	0.96139	0.100	12.82824	20.00000	Averaged	
29 2-Butanone	0.17898	0.17880	0.17880	0.001	-0.09700	20.00000	Averaged	
30 1,1-Dichloropropene	0.45807	0.44650	0.44650	0.010	-2.52524	20.00000	Averaged	
31 Benzene	1.34568	1.30270	1.30270	0.500	-3.19370	20.00000	Averaged	
$ 33 d4-1,2-Dichloroethane	0.66688	0.75065	0.75065	0.010	12.56182	20.00000	Averaged	
34 1,2-Dichloroethane	0.41979	0.38890	0.38890	0.100	-7.35844	20.00000	Averaged	
36 Trichloroethene	0.30627	0.29102	0.29102	0.100	-4.97868	20.00000	Averaged	
38 Dibromomethane	0.15746	0.14488	0.14488	0.010	-7.98921	20.00000	Averaged	
39 1,2-Dichloropropane	0.32838	0.31354	0.31354	0.100	-4.51931	20.00000	Averaged	
40 Bromodichloromethane	0.38417	0.38263	0.38263	0.100	-0.40050	20.00000	Averaged	
173 2-Pentanone	0.02820	0.02896	0.02896	0.100	2.66845	20.00000	Averaged	

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt15.i Injection Date: 10-JUL-2015 10:00
Lab File ID: icv071015.d Init. Cal. Date(s): 29-JUN-2015 29-JUN-2015
Analysis Type: WATER Init. Cal. Times: 15:12 18:11
Lab Sample ID: ICV0710 Quant Type: ISTD
Method: /chem1/nt15.i/20150710.b/82600612L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
41 2-Chloroethyl Vinyl Ether	0.15167	0.15231	0.15231	0.000	0.42243	20.00000	Averaged
42 Cis 1,3-dichloropropene	0.46445	0.47191	0.47191	0.200	1.60566	20.00000	Averaged
$ 43 d8-Toluene	1.21015	1.24996	1.24996	0.010	3.28962	20.00000	Averaged
44 Toluene	0.85235	0.81019	0.81019	0.400	-4.94688	20.00000	Averaged
45 4-Methyl-2-Pentanone	0.08970	0.07924	0.07924	0.000	-11.65891	20.00000	Averaged
46 Tetrachloroethene	0.30551	0.29338	0.29338	0.200	-3.97073	20.00000	Averaged
47 Trans 1,3-Dichloropropene	0.35952	0.38460	0.38460	0.010	6.97560	20.00000	Averaged
48 1,1,2-Trichloroethane	0.23271	0.21464	0.21464	0.100	-7.76626	20.00000	Averaged
49 Chlorodibromomethane	0.24298	0.24632	0.24632	0.100	1.37397	20.00000	Averaged
50 1,3-Dichloropropane	0.49024	0.45725	0.45725	0.100	-6.72865	20.00000	Averaged
51 1,2-Dibromoethane	0.21168	0.19587	0.19587	0.010	-7.46490	20.00000	Averaged
52 2-Hexanone	0.16640	0.15030	0.15030	0.010	-9.67478	20.00000	Averaged
54 Chlorobenzene	0.96913	0.92181	0.92181	0.500	-4.88209	20.00000	Averaged
55 Ethyl Benzene	0.55855	0.53321	0.53321	0.100	-4.53703	20.00000	Averaged
56 1,1,1,2-Tetrachloroethane	0.28073	0.28738	0.28738	0.010	2.36897	20.00000	Averaged
57 m,p-xylene	0.68919	0.66065	0.66065	0.300	-4.14241	20.00000	Averaged
58 o-Xylene	0.65349	0.62933	0.62933	0.300	-3.69685	20.00000	Averaged
59 Styrene	1.02294	1.01852	1.01852	0.300	-0.43179	20.00000	Averaged
60 Bromoform	0.25999	0.28612	0.28612	0.010	10.05021	20.00000	Averaged
61 Isopropyl Benzene	3.73582	4.05557	4.05557	0.010	8.55921	20.00000	Averaged
$ 62 4-Bromofluorobenzene	0.48950	0.46831	0.46831	0.200	-4.32861	20.00000	Averaged
63 Bromobenzene	0.72871	0.76791	0.76791	0.010	5.37994	20.00000	Averaged
64 N-Propyl Benzene	4.55649	4.91857	4.91857	0.010	7.94660	20.00000	Averaged
65 1,1,2,2-Tetrachloroethane	0.66070	0.67137	0.67137	0.100	1.61496	20.00000	Averaged
66 2-Chloro Toluene	2.59173	2.73175	2.73175	0.010	5.40272	20.00000	Averaged
67 1,3,5-Trimethyl Benzene	3.06404	3.23517	3.23517	0.010	5.58494	20.00000	Averaged
68 1,2,3-Trichloropropane	0.19995	0.19661	0.19661	0.010	-1.66886	20.00000	Averaged
69 Trans-1,4-Dichloro 2-Butene	0.17312	0.19516	0.19516	0.001	12.72943	20.00000	Averaged
70 4-Chloro Toluene	2.61742	2.79415	2.79415	0.010	6.75181	20.00000	Averaged
71 T-Butyl Benzene	2.60430	2.77885	2.77885	0.010	6.70271	20.00000	Averaged
72 1,2,4-Trimethylbenzene	3.02903	3.27779	3.27779	0.010	8.21275	20.00000	Averaged
73 S-Butyl Benzene	3.98891	4.30081	4.30081	0.010	7.81925	20.00000	Averaged
74 4-Isopropyl Toluene	3.15514	3.42108	3.42108	0.010	8.42886	20.00000	Averaged
75 1,3-Dichlorobenzene	1.44299	1.49473	1.49473	0.600	3.58623	20.00000	Averaged
77 1,4-Dichlorobenzene	1.43185	1.46240	1.46240	0.500	2.13342	20.00000	Averaged

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt15.i
Lab File ID: icv071015.d
Analysis Type: WATER
Lab Sample ID: ICV0710
Method: /chem1/nt15.i/20150710.b/82600612L.m

Injection Date: 10-JUL-2015 10:00
Init. Cal. Date(s): 29-JUN-2015 29-JUN-2015
Init. Cal. Times: 15:12 18:11
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
78 N-Butyl Benzene	2.96282	3.17867	3.17867	0.010	7.28522	20.00000	Averaged
$ 79 d4-1,2-Dichlorobenzene	0.90395	0.91323	0.91323	0.010	1.02646	20.00000	Averaged
80 1,2-Dichlorobenzene	1.30546	1.32660	1.32660	0.400	1.61948	20.00000	Averaged
81 1,2-Dibromo 3-Chloropropane	0.09514	0.09631	0.09631	0.010	1.22509	20.00000	Averaged
83 Hexachloro 1,3-Butadiene	0.25730	0.23800	0.23800	0.010	-7.49818	20.00000	Averaged
84 1,2,4-Trichlorobenzene	0.61656	0.59187	0.59187	0.010	-4.00361	20.00000	Averaged
85 Naphthalene	1.49757	1.43061	1.43061	0.010	-4.47119	20.00000	Averaged
86 1,2,3-Trichlorobenzene	0.52645	0.48969	0.48969	0.010	-6.98260	20.00000	Averaged

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MB-071415**
 METHOD BLANK

Lab Sample ID: MB-071415
LIMS ID: 15-12262
Matrix: Water
Data Release Authorized: WD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 09:14

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MW-10
 SAMPLE

Lab Sample ID: AIX1A
LIMS ID: 15-12262
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 10:21

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MW-8
 SAMPLE

Lab Sample ID: AIX1B
LIMS ID: 15-12263
Matrix: Water
Data Release Authorized: VD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 10:49

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MW-3B
 SAMPLE

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized: VD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 11:18

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	111%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-3B**
 MATRIX SPIKE

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized: VD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 13:41

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MW-3B
 MATRIX SPIKE DUP

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 14:10

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MW-11
 SAMPLE

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized: VD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 11:47

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-11**
 MATRIX SPIKE

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 12:44

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-11**
 MATRIX SPIKE DUP

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized: VD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 13:13

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: Culver SAMPLE**

Lab Sample ID: AIX1E
LIMS ID: 15-12266
Matrix: Water
Data Release Authorized: VD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 12:15

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: TRIP BLANKS SAMPLE**

Lab Sample ID: AIX1F
LIMS ID: 15-12267
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst: NT7/MMH
Date Analyzed: 07/14/15 09:52

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%

ANALYTICAL RESOURCES INCORPORATED

SW8260-SIM SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042

Client ID	DCE	TOT OUT
MB-071415	105%	0
LCS-071415	101%	0
LCSD-071415	99.2%	0
MW-10	106%	0
MW-8	110%	0
MW-3B	111%	0
MW-3B-MS	99.0%	0
MW-3B-MSD	98.0%	0
MW-11	113%	0
MW-11-MS	104%	0
MW-11-MSD	100%	0
Culver	113%	0
TRIP BLANKS	106%	0

	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-129)	(80-129)

Prep Method: SW5030
Log Number Range: 15-12262 to 15-12267

FORM-II SW8260-SIM

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: LCS-071415
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-071415
LIMS ID: 15-12262
Matrix: Water
Data Release Authorized: VD
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT7/MMH
LCSD: NT7/MMH
Date Analyzed LCS: 07/14/15 08:17
LCSD: 07/14/15 08:46

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Vinyl Chloride	0.907	1.00	90.7%	0.926	1.00	92.6%	2.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	101%	99.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MW-3B
 MATRIX SPIKE

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized: WB
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst MS: NT7/MMH
MSD: NT7/MMH
Date Analyzed MS: 07/14/15 13:41
MSD: 07/14/15 14:10

Sample Amount MS: 10.0 mL
MSD: 10.0 mL
Purge Volume MS: 10.0 mL
MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Vinyl Chloride	< 0.020 U	0.895	1.00	89.5%	0.831	1.00	83.1%	7.4%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-11**
 MATRIX SPIKE

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized: VB
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Instrument/Analyst MS: NT7/MMH
MSD: NT7/MMH
Date Analyzed MS: 07/14/15 12:44
MSD: 07/14/15 13:13

Sample Amount MS: 10.0 mL
MSD: 10.0 mL
Purge Volume MS: 10.0 mL
MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Vinyl Chloride	< 0.020 U	0.869	1.00	86.9%	0.873	1.00	87.3%	0.5%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SAMPLE RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Client ID: MW-10
ARI ID: 15-12262 AIX1A

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	07/15/15 071515#1	EPA 325.2	mg/L	1.0	2.1
N-Ammonia	07/10/15 071015#1	EPA 350.1M	mg-N/L	0.010	0.018
N-Nitrate	07/09/15	Calculated	mg-N/L	0.010	0.355
N-Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	0.355
Sulfate	07/17/15 071715#1	EPA 375.2	mg/L	2.0	2.6
Chemical Oxygen Demand	07/16/15 071615#1	EPA 410.4	mg/L	10.0	< 10.0 U
Total Organic Carbon	07/10/15 071015#1	EPA 9060	mg/L	0.50	0.58

RL Analytical reporting limit
U Undetected at reported detection limit

AIX1 : 000014

SAMPLE RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Client ID: MW-8
ARI ID: 15-12263 AIX1B

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	07/15/15 071515#1	EPA 325.2	mg/L	1.0	2.3
N-Ammonia	07/10/15 071015#1	EPA 350.1M	mg-N/L	0.010	0.080
N-Nitrate	07/09/15	Calculated	mg-N/L	0.010	0.319
N-Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	0.319
Sulfate	07/17/15 071715#1	EPA 375.2	mg/L	2.0	2.8
Chemical Oxygen Demand	07/16/15 071615#1	EPA 410.4	mg/L	10.0	< 10.0 U
Total Organic Carbon	07/10/15 071015#1	EPA 9060	mg/L	0.50	< 0.50 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Client ID: MW-3B
ARI ID: 15-12264 AIX1C

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	07/15/15 071515#1	EPA 325.2	mg/L	1.0	2.0
N-Ammonia	07/10/15 071015#1	EPA 350.1M	mg-N/L	0.010	0.027
N-Nitrate	07/09/15	Calculated	mg-N/L	0.010	0.164
N-Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	0.164
Sulfate	07/17/15 071715#1	EPA 375.2	mg/L	2.0	2.2
Chemical Oxygen Demand	07/16/15 071615#1	EPA 410.4	mg/L	10.0	< 10.0 U
Total Organic Carbon	07/10/15 071015#1	EPA 9060	mg/L	0.50	< 0.50 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Client ID: MW-11
ARI ID: 15-12265 AIX1D

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	07/15/15 071515#1	EPA 325.2	mg/L	1.0	2.0
N-Ammonia	07/10/15 071015#1	EPA 350.1M	mg-N/L	0.010	0.029
N-Nitrate	07/09/15	Calculated	mg-N/L	0.010	0.188
N-Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	0.188
Sulfate	07/17/15 071715#1	EPA 375.2	mg/L	2.0	2.6
Chemical Oxygen Demand	07/16/15 071615#1	EPA 410.4	mg/L	10.0	< 10.0 U
Total Organic Carbon	07/10/15 071015#1	EPA 9060	mg/L	0.50	0.53

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Client ID: Culver
ARI ID: 15-12266 AIX1E

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	07/15/15 071515#1	EPA 325.2	mg/L	1.0	2.2
N-Ammonia	07/10/15 071015#1	EPA 350.1M	mg-N/L	0.010	0.014
N-Nitrate	07/09/15	Calculated	mg-N/L	0.010	0.330
N-Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	07/09/15 070915#1	EPA 353.2	mg-N/L	0.010	0.330
Sulfate	07/17/15 071715#1	EPA 375.2	mg/L	2.0	2.9
Chemical Oxygen Demand	07/16/15 071615#1	EPA 410.4	mg/L	10.0	< 10.0 U
Total Organic Carbon	07/10/15 071015#1	EPA 9060	mg/L	0.50	< 0.50 U

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Chloride	EPA 325.2	07/15/15	mg/L	< 1.0 U	FB
N-Ammonia	EPA 350.1M	07/10/15	mg-N/L	< 0.010 U	FB
N-Nitrite	EPA 353.2	07/09/15	mg-N/L	< 0.010 U	FB
		07/09/15		< 0.010 U	FB
Nitrate + Nitrite	EPA 353.2	07/09/15	mg-N/L	< 0.010 U	FB
		07/09/15		< 0.010 U	FB
Sulfate	EPA 375.2	07/17/15	mg/L	< 2.0 U	FB
Chemical Oxygen Demand	EPA 410.4	07/16/15	mg/L	< 10.0 U	
Total Organic Carbon	EPA 9060	07/10/15	mg/L	< 0.50 U	

FB Filtration Blank

AIX1 : 00059

STANDARD REFERENCE RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Chloride ERA #260115	EPA 325.2	07/15/15	mg/L	5.0	5.0	100.0%
N-Ammonia ERA #360114	EPA 350.1M	07/10/15	mg-N/L	0.495	0.500	99.0%
N-Nitrite ERA #141113	EPA 353.2	07/09/15 07/09/15	mg-N/L	0.518 0.514	0.500 0.500	103.6% 102.8%
Nitrate + Nitrite ERA #320614	EPA 353.2	07/09/15 07/09/15	mg-N/L	0.530 0.525	0.500 0.500	106.0% 105.0%
Sulfate ERA 131013	EPA 375.2	07/17/15	mg/L	14.7	15.0	98.0%
Chemical Oxygen Demand Orion #RP1	EPA 410.4	07/16/15	mg/L	91.6	100	91.6%
Total Organic Carbon ERA #0408-13-02	EPA 9060	07/10/15	mg/L	20.8	20.0	104.0%

REPLICATE RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: AIX1C Client ID: MW-3B						
Chloride	EPA 325.2	07/15/15	mg/L	2.0	1.9	5.1%
N-Ammonia	EPA 350.1M	07/10/15	mg-N/L	0.027	0.023	16.0%
N-Nitrite	EPA 353.2	07/09/15	mg-N/L	< 0.010	< 0.010	NA
Nitrate + Nitrite	EPA 353.2	07/09/15	mg-N/L	0.164	0.184	11.5%
Sulfate	EPA 375.2	07/17/15	mg/L	2.2	2.6	16.7%
Chemical Oxygen Demand	EPA 410.4	07/16/15	mg/L	< 10.0	< 10.0	NA
Total Organic Carbon	EPA 9060	07/10/15	mg/L	< 0.50	< 0.50	NA
ARI ID: AIX1D Client ID: MW-11						
Chloride	EPA 325.2	07/15/15	mg/L	2.0	1.9	5.1%
N-Ammonia	EPA 350.1M	07/10/15	mg-N/L	0.029	0.025	14.8%
N-Nitrite	EPA 353.2	07/09/15	mg-N/L	< 0.010	< 0.010	NA
Nitrate + Nitrite	EPA 353.2	07/09/15	mg-N/L	0.188	0.173	8.3%
Sulfate	EPA 375.2	07/17/15	mg/L	2.6	2.9	10.9%
Chemical Oxygen Demand	EPA 410.4	07/16/15	mg/L	< 10.0	< 10.0	NA
Total Organic Carbon	EPA 9060	07/10/15	mg/L	0.53	< 0.50	NA

MS/MSD RESULTS-CONVENTIONALS
AIX1-Parametrix, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized: 7-20-15
Reported: 07/20/15

Project: Mason County Landfill
Event: 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: AIX1C Client ID: MW-3B							
Chloride	EPA 325.2	07/15/15	mg/L	2.0	7.1	5.0	102.0%
N-Ammonia	EPA 350.1M	07/10/15	mg-N/L	0.027	0.555	0.500	105.6%
N-Nitrite	EPA 353.2	07/09/15	mg-N/L	< 0.010	0.508	0.500	101.6%
Nitrate + Nitrite	EPA 353.2	07/09/15	mg-N/L	0.164	0.695	0.500	106.2%
Sulfate	EPA 375.2	07/17/15	mg/L	2.2	17.6	15.0	102.7%
Chemical Oxygen Demand	EPA 410.4	07/16/15	mg/L	< 10.0	92.9	100	92.9%
Total Organic Carbon	EPA 9060	07/10/15	mg/L	< 0.50	20.7	20.0	103.5%
ARI ID: AIX1D Client ID: MW-11							
Chloride	EPA 325.2	07/15/15	mg/L	2.0	7.1	5.0	102.0%
N-Ammonia	EPA 350.1M	07/10/15	mg-N/L	0.029	0.549	0.500	104.0%
N-Nitrite	EPA 353.2	07/09/15	mg-N/L	< 0.010	0.506	0.500	101.2%
Nitrate + Nitrite	EPA 353.2	07/09/15	mg-N/L	0.188	0.674	0.500	97.2%
Sulfate	EPA 375.2	07/17/15	mg/L	2.6	16.9	15.0	95.3%
Chemical Oxygen Demand	EPA 410.4	07/16/15	mg/L	< 10.0	95.5	100	95.5%
Total Organic Carbon	EPA 9060	07/10/15	mg/L	0.53	20.7	20.0	100.8%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-10
SAMPLE

Lab Sample ID: AIX1A
LIMS ID: 15-12262
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	07/10/15	200.8	07/13/15	7440-38-2	Arsenic	0.2	0.2	U
6010C	07/10/15	6010C	07/15/15	7439-89-6	Iron	50	50	U
6010C	07/10/15	6010C	07/15/15	7439-96-5	Manganese	1	1	U
6010C	07/10/15	6010C	07/15/15	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-8
SAMPLE

Lab Sample ID: AIX1B
LIMS ID: 15-12263
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	07/10/15	200.8	07/13/15	7440-38-2	Arsenic	0.2	0.2	U
6010C	07/10/15	6010C	07/15/15	7439-89-6	Iron	50	50	U
6010C	07/10/15	6010C	07/15/15	**7439-96-5**	**Manganese**	1	**214**	
6010C	07/10/15	6010C	07/15/15	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-3B
SAMPLE

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	07/10/15	200.8	07/13/15	7440-38-2	Arsenic	0.2	0.2	U
6010C	07/10/15	6010C	07/15/15	7439-89-6	Iron	50	50	U
6010C	07/10/15	6010C	07/15/15	**7439-96-5**	**Manganese**	1	**543**	
6010C	07/10/15	6010C	07/15/15	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-3B
DUPLICATE

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	0.2 U	0.2 U	0.0%	+/- 0.2	L
Iron	6010C	50 U	50 U	0.0%	+/- 50	L
Manganese	6010C	543	548	0.9%	+/- 20%	
Zinc	6010C	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-3B
MATRIX SPIKE

Lab Sample ID: AIX1C
LIMS ID: 15-12264
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	0.2 U	27.6	25.0	110%	
Iron	6010C	50 U	2,090	2,000	104%	
Manganese	6010C	543	1,020	500	95.4%	
Zinc	6010C	10 U	500	500	100%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-11
SAMPLE

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	07/10/15	200.8	07/13/15	7440-38-2	Arsenic	0.2	0.2	U
6010C	07/10/15	6010C	07/15/15	7439-89-6	Iron	50	50	U
6010C	07/10/15	6010C	07/15/15	**7439-96-5**	**Manganese**	1	**561**	
6010C	07/10/15	6010C	07/15/15	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-11
DUPLICATE

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	0.2 U	0.2 U	0.0%	+/- 0.2	L
Iron	6010C	50 U	50 U	0.0%	+/- 50	L
Manganese	6010C	561	562	0.2%	+/- 20%	
Zinc	6010C	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-11
MATRIX SPIKE

Lab Sample ID: AIX1D
LIMS ID: 15-12265
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	0.2 U	27.2	25.0	109%	
Iron	6010C	50 U	2,070	2,000	104%	
Manganese	6010C	561	1,030	500	93.8%	
Zinc	6010C	10 U	500	500	100%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: Culver SAMPLE

Lab Sample ID: AIX1E
LIMS ID: 15-12266
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill 5551682042
Date Sampled: 07/08/15
Date Received: 07/08/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	07/10/15	200.8	07/13/15	7440-38-2	Arsenic	0.2	0.2	U
6010C	07/10/15	6010C	07/15/15	7439-89-6	Iron	50	50	U
6010C	07/10/15	6010C	07/15/15	7439-96-5	Manganese	1	1	U
6010C	07/10/15	6010C	07/15/15	**7440-66-6**	**Zinc**	10	**20**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: AIX1MB
LIMS ID: 15-12266
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	07/10/15	200.8	07/13/15	7440-38-2	Arsenic	0.2	0.2	U
6010C	07/10/15	6010C	07/15/15	7439-89-6	Iron	50	50	U
6010C	07/10/15	6010C	07/15/15	7439-96-5	Manganese	1	1	U
6010C	07/10/15	6010C	07/15/15	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: LAB CONTROL

Lab Sample ID: AIX1LCS
LIMS ID: 15-12266
Matrix: Water
Data Release Authorized:
Reported: 07/16/15

QC Report No: AIX1-Parametrix, Inc.
Project: Mason County Landfill
5551682042
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	28.8	25.0	115%	
Iron	6010C	2100	2000	105%	
Manganese	6010C	498	500	99.6%	
Zinc	6010C	510	500	102%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

Appendix D

Laboratory Results for Well MW-6

DRAGON ANALYTICAL LABORATORY

530 A1 Ronlee Ln, Olympia, WA 98502
(360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton WWTP
1000 West Pine Street
Shelton, WA 98584

Sampled By: John Ozga

DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a
P.O. No.: n/a
Date Collected: 3/11/2014; 08:00
Date Received: 3/11/2014; 13:05
Temperature Received (°C): 8 to 9
Report Date: 3/28/2014
Data Reviewed by:

Preparation Method: US EPA 3010A
Analytical Method: US EPA 200.8
Date Prepared: 3/18/2014
Date Analyzed: 3/19/2014
Analyst: TM

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Instrument ID: Agilent 7500
Lab Data File: 14C19l00

TOTAL HEAVY METALS
ANALYTICAL RESULTS

Analyte	CAS No.	MRL	Method Blank	WCC-1	WCC-2	MW-6	MW-9
Arsenic (As)	7440-38-2	5.0	nd	nd	nd	nd	nd
Cadmium (Cd)	7440-43-9	5.0	nd	nd	nd	nd	nd
Calcium (Ca)	7440-70-2	500	nd	**5,320**	**9,800**	**5,430**	**4,010**
Chromium (Cr)	7440-47-3	5.0	nd	nd	nd	nd	nd
Copper (Cu)	7440-50-8	5.0	nd	nd	nd	nd	nd
Lead (Pb)	7439-92-1	1.0	nd	**1.18**	nd	**1.37**	nd
Magnesium (Mg)	7439-95-4	250	nd	**1,690**	**3,470**	**1,780**	**1,590**
Manganese (Mn)	7439-96-5	5.0	nd	**30.2**	nd	nd	**12.0**
Mercury (Hg)	7439-97-6	1.0	nd	nd	nd	nd	nd
Nickel (Ni)	7440-02-0	5.0	nd	nd	nd	nd	nd
Potassium (K)	7440-09-7	1000	nd	nd	nd	nd	nd
Silver (Ag)	7440-22-4	10.0	nd	nd	nd	nd	nd
Sodium (Na)	7440-23-5	1000	nd	**2,450**	**8,640**	**2,160**	**2,650**
Zinc (Zn)	7440-66-6	10.0	1.20	**10.2**	nd	nd	**12.1**
Dilution Factor			1.0	10	10	10	10

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton WWTP
DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a

TOTAL HEAVY METALS
QUALITY CONTROL RESULTS

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 140319-Metals | MS/MSD Sample ID: 140319-Metals MS/MSD | LCS Sample ID: 140319-Metals LCS

Analyte	MS/MSD Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD Limits (%)	RPD	MS/MSD RPD Limits	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCS Limits (%)
Arsenic (As)	50	0.760	47.1	92.7%	46.2	90.9%	80-120	1.00	≤ 20%	50	48.4	96.8%	80-120
Cadmium (Cd)	50	0.020	48.8	97.5%	51.3	103%	80-120	2.53	≤ 20%	50	51.7	103%	80-120
Calcium (Ca)	5000	12680	18150	109%	15780	62.0%	80-120	27.7	≤ 20%	5000	4894	97.9%	80-120
Chromium (Cr)	50	1.00	51.2	100%	48.0	93.9%	80-120	3.28	≤ 20%	50	48.6	97.1%	80-120
Copper (Cu)	50	7.79	56.9	98.2%	53.3	91.0%	80-120	3.81	≤ 20%	50	49.0	98.0%	80-120
Lead (Pb)	50	0.530	44.0	87.0%	51.0	101%	80-120	7.42	≤ 20%	50	50.4	101%	80-120
Magnesium (Mg)	5000	3461	8556	102%	7926	89.3%	80-120	6.59	≤ 20%	5000	4989	99.8%	80-120
Manganese (Mn)	50	285	350	130%	329	87.6%	80-120	19.6	≤ 20%	50	49.6	99.2%	80-120
Mercury (Hg)	2.5	0.010	2.38	94.8%	2.79	111%	80-120	7.96	≤ 20%	2.0	2.07	104%	80-120
Nickel (Ni)	50	2.14	51.0	97.7%	48.2	92.1%	80-120	2.91	≤ 20%	50	47.7	95.4%	80-120
Potassium (K)	5000	5332	8320	59.8%	7794	49.2%	80-120	9.65	≤ 20%	5000	5449	109%	80-120
Silver (Ag)	50	0.080	47.6	95.1%	50.2	100%	80-120	2.62	≤ 20%	50	51.3	103%	80-120
Sodium (Na)	5000	12760	18490	115%	17250	89.8%	80-120	12.1	≤ 20%	5000	5062	101%	80-120
Zinc (Zn)	50	21.4	68.9	95.1%	66.7	90.8%	80-120	2.34	≤ 20%	50	51.0	102%	80-120

WA-DOE-Laboratory Certification No.: C890 | "nd" indicates the analyte was not detected at or above the listed Method Reporting Limit. | n/a indicates not applicable

Comments and Explanations: None.

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Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a
P.O. No.: n/a
Matrix: Non-Potable Water
Temperature Received (°C): **8 to 9**

Report Date: **3/28/2014**

TOTAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
WCC-1	**3**	100	3	<1	CFU/100 mL	SM 9222 B2,5,6	3/11/2014; 08:00	3/11/2014; 13:05	3/11/2014; 15:13	3/12/2014	BW	J
WCC-2	**1**	100	1	<1	CFU/100 mL	SM 9222 B2,5,6	3/11/2014; 08:10	3/11/2014; 13:05	3/11/2014; 15:15	3/12/2014	BW	J
MW-6	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	3/11/2014; 08:30	3/11/2014; 13:05	3/11/2014; 15:18	3/12/2014	BW	J
MW-9	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	3/11/2014; 08:45	3/11/2014; 13:05	3/11/2014; 15:19	3/12/2014	BW	J

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	3/12/2014	BW	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	3/12/2014	BW	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: A "J" flag indicates an estimated value because the colony count was outside the optimum range of colonies per filter.

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-1**
Matrix: Non-Potable Water
Temperature Received (°C): **8 to 9**
Collected: **3/11/2014; 08:00**
Received: **3/11/2014; 13:05**
Report Date: **3/28/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity ($CaCO_3$)	**20.8**	n/a	5.0	mg/L	SM 2320 B	1	3/24/2014	3/24/2014	n/a	CH	
BiCarbonate	**20.8**	n/a	1.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Chloride	**1.79**	0.022	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Fluoride	**0.04**	0.037	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	J
Nitrogen, Nitrate	**0.04**	0.026	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Nitrogen, (TKN)	**0.6**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/21/2014	3/21/2014	n/a	RP	J
pH	**6.36**	n/a	n/a	SU	SM 4500-H^+	1	3/11/2014	3/11/2014	14:32	RP	(1)
Specific Conductance	**57.6**	n/a	10.0	umho/cm	SM 2510 B	1	3/14/2014	3/14/2014	n/a	GD	
Solids, Total Dissolved	**54.0**	n/a	20.0	mg/L	SM 2540 C	1	3/12/2014	3/12/2014	n/a	BW	
Sulfate	**1.13**	0.015	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	

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"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL. A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

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Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-2**
Matrix: Non-Potable Water
Temperature Received (°C): **8 to 9**
Collected: **3/11/2014; 08:10**
Received: **3/11/2014; 13:05**
Report Date: **3/28/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity ($CaCO_3$)	**32.4**	n/a	5.0	mg/L	SM 2320 B	1	3/24/2014	3/24/2014	n/a	CH	
BiCarbonate	**32.4**	n/a	1.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Chloride	**14.2**	0.022	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Fluoride	**0.04**	0.037	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	J
Nitrogen, Nitrate	**0.69**	0.026	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Nitrogen, (TKN)	**1.1**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/21/2014	3/21/2014	n/a	RP	J
pH	**6.51**	n/a	n/a	SU	SM 4500-H^+	1	3/11/2014	3/11/2014	14:33	RP	(1)
Specific Conductance	**134**	n/a	10.0	umho/cm	SM 2510 B	1	3/14/2014	3/14/2014	n/a	GD	
Solids, Total Dissolved	**122**	n/a	20.0	mg/L	SM 2540 C	1	3/12/2014	3/12/2014	n/a	BW	
Sulfate	**5.00**	0.015	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	

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"n/a" indicates not applicable

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL. A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

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Sampled by: John Ozga

DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-6**
Matrix: Non-Potable Water
Temperature Received (°C): **8 to 9**
Collected: **3/11/2014; 08:30**
Received: **3/11/2014; 13:05**
Report Date: **3/28/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity ($CaCO_3$)	**17.6**	n/a	5.0	mg/L	SM 2320 B	1	3/24/2014	3/24/2014	n/a	CH	
BiCarbonate	**17.6**	n/a	1.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Chloride	**2.11**	0.022	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Fluoride	**0.03**	0.037	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	J
Nitrogen, Nitrate	**0.07**	0.026	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Nitrogen, (TKN)	**1.1**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/21/2014	3/21/2014	n/a	RP	J
pH	**6.31**	n/a	n/a	SU	SM 4500-H^+	1	3/11/2014	3/11/2014	14:34	RP	(1)
Specific Conductance	**54.8**	n/a	10.0	umho/cm	SM 2510 B	1	3/14/2014	3/14/2014	n/a	GD	
Solids, Total Dissolved	**nd**	n/a	20.0	mg/L	SM 2540 C	1	3/12/2014	3/12/2014	n/a	BW	
Sulfate	**1.17**	0.015	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	

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"n/a" indicates not applicable

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL. A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

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Sampled by: John Ozga

DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-9**
Matrix: Non-Potable Water
Temperature Received (°C): **8 to 9**
Collected: **3/11/2014; 08:45**
Received: **3/11/2014; 13:05**
Report Date: **3/28/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity ($CaCO_3$)	**15.6**	n/a	5.0	mg/L	SM 2320 B	1	3/24/2014	3/24/2014	n/a	CH	
BiCarbonate	**15.6**	n/a	1.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/24/2014	3/24/2014	n/a	CH	
Chloride	**2.05**	0.022	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Fluoride	**0.03**	0.037	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	J
Nitrogen, Nitrate	**0.14**	0.026	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	
Nitrogen, (TKN)	**1.4**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/21/2014	3/21/2014	n/a	RP	J
pH	**6.14**	n/a	n/a	SU	SM 4500-H^+	1	3/11/2014	3/11/2014	14:35	RP	(1)
Specific Conductance	**51.1**	n/a	10.0	umho/cm	SM 2510 B	1	3/14/2014	3/14/2014	n/a	GD	
Solids, Total Dissolved	**40.0**	n/a	20.0	mg/L	SM 2540 C	1	3/12/2014	3/12/2014	n/a	BW	
Sulfate	**1.42**	0.015	0.10	mg/L	EPA 300.0	1	3/12/2014	3/12/2014	n/a	FW	

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"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL. A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

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DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a

QUALITY CONTROL RESULTS
Method Blank

SAMPLE BATCH	PARAMETER	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
140324-Alkalinity (CaCO3)	Alkalinity ($CaCO_3$)	nd	5.0	mg/L	SM 2320 B	3/24/2014	CH	
140324-BiCarb	BiCarbonate	n/a	n/a	mg/L	SM 2320	3/24/2014	CH	
140324-Carb	Carbonate	n/a	n/a	mg/L	SM 2320	3/24/2014	CH	
140312-Chloride	Chloride	nd	0.10	mg/L	EPA 300.0	3/12/2014	FW	
140312-Flo3ride	Fluoride	nd	0.10	mg/L	EPA 300.0	3/12/2014	FW	
140312-NO^2	Nitrogen, Nitrate	nd	0.10	mg/L	EPA 300.0	3/12/2014	FW	
140312-NO	Nitrogen, Nitrite	nd	0.10	mg/L	EPA 300.0	3/12/2014	FW	
140321-TKN	Nitrogen, (TKN)	nd	2.0	mg/L	SM 4500-N_{org} B	3/21/2014	RP	
140311-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	
140314-SC	Specific Conductance	nd	10.0	*u* mho/cm	SM 2510 B	3/14/2014	GD	
140312-TDS	Solids, Total Dissolved	nd	20.0	mg/L	SM 2540 C	3/12/2014	BW	
140312-Sulfate	Sulfate	nd	0.10	mg/L	EPA 300.0	3/12/2014	FW	

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

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DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a

QUALITY CONTROL RESULTS
Duplicate Sample

SAMPLE BATCH	PARAMETER	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140324-Alkalinity (CaCO3)	Alkalinity ($CaCO_3$)	20.8	20.4	mg/L	SM 2320 B	1.94	±35	3/24/2014	CH	
140324-BiCarb	BiCarbonate	20.8	20.4	mg/L	SM 2321	1.94	±35	3/24/2014	CH	
140324-Carb	Carbonate	nd	nd	mg/L	SM 2320	0.00	±35	3/24/2014	CH	
140312-Chloride	Chloride	0.766	0.765	mg/L	EPA 300.0	0.131	±35	3/12/2014	FW	
140312-Floride	Fluoride	0.044	0.048	mg/L	EPA 300.0	8.70	±35	3/12/2014	FW	
140312-NO^2	Nitrogen, Nitrate	0.087	0.083	mg/L	EPA 300.0	4.71	±35	3/12/2014	FW	
140312-NO	Nitrogen, Nitrite	0.008	0.01	mg/L	EPA 300.0	22.2	±35	3/12/2014	FW	
140321-TKN	Nitrogen, (TKN)	nd	nd	mg/L	SM 4500-N_{org} B	0.00	±35	3/21/2014	RP	
140311-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
140314-SC	Specific Conductance	184	194	*u* mho/cm	SM 2510 B	5.45	±35	3/14/2014	GD	
140312-TDS	Solids, Total Dissolved	258	246	mg/L	SM 2540 C	4.76	±35	3/12/2014	BW	
140312-Sulfate	Sulfate	0.725	0.752	mg/L	EPA 300.0	3.66	±35	3/12/2014	FW	

WA-DOE-Laboratory Certification No.: C890

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"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

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530 A1 Ronlee Ln, Olympia, WA 98502
(360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton WWTP
DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a

QUALITY CONTROL RESULTS
Laboratory Fortified Blank

SAMPLE BATCH	PARAMETER	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140324-Alkalinity (CaCO3)	Alkalinity ($CaCO_3$)	n/a	n/a	mg/L	SM 2320 B	n/a	n/a	n/a	n/a	
140324-BiCarb	BiCarbonate	n/a	40	mg/L	SM 2320	n/a	n/a	n/a	n/a	
140324-Carb	Carbonate	n/a	n/a	mg/L	SM 2320	n/a	n/a	n/a	n/a	
140312-Chloride	Chloride	0.540	0.5	mg/L	EPA 300.0	108	65.0-135	3/12/2014	FW	
140312-Flo3ride	Fluoride	0.535	0.5	mg/L	EPA 300.0	107	65.0-135	3/12/2014	FW	
140312-NO^2	Nitrogen, Nitrate	0.516	0.5	mg/L	EPA 300.0	103	65.0-135	3/12/2014	FW	
140312-NO	Nitrogen, Nitrite	0.555	0.5	mg/L	EPA 300.0	111	65.0-135	3/12/2014	FW	
140321-TKN	Nitrogen, (TKN)	21.6	20.0	mg/L	SM 4500-N_{org} B	108	65.0-135	3/21/2014	RP	
140311-pH	pH	6.99	7.0	SU	SM 4500-H^+	99.9	65.0-135	3/11/2014	RP	
140314-SC	Specific Conductance	1434	1415	umho/cm	SM 2510 B	101	65.0-135	3/14/2014	GD	
140312-TDS	Solids, Total Dissolved	498	500	mg/L	SM 2540 C	99.6	65.0-135	3/12/2014	n/a	
140312-Sulfate	Sulfate	0.572	0.5	mg/L	EPA 300.0	114	65.0-135	3/12/2014	FW	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton WWTP
DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a

QUALITY CONTROL RESULTS
Matrix Spike/Matrix Spike Duplicate

SAMPLE BATCH	PARAMETER	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140324-Alkalinity (CaCO3)	Alkalinity ($CaCO_3$)	n/a	n/a	n/a	mg/L	SM 2320 B	n/a	n/a	n/a	n/a	
140324-BiCarb	BiCarbonate	n/a	n/a	n/a	mg/L	SM 2320	n/a	n/a	n/a	n/a	
140324-Carb	Carbonate	n/a	n/a	n/a	mg/L	SM 2320	n/a	n/a	n/a	n/a	
140312-Chloride	Chloride	0.594	0.586	0.5	mg/L	EPA 300.0	0.902	±35	3/12/2014	FW	
140312-Flo3ride	Fluoride	0.562	0.583	0.5	mg/L	EPA 300.0	2.46	±35	3/12/2014	FW	
140312-NO^2	Nitrogen, Nitrate	0.543	0.563	0.5	mg/L	EPA 300.0	2.43	±35	3/12/2014	FW	
140312-NO	Nitrogen, Nitrite	0.499	0.498	0.5	mg/L	EPA 300.0	0.134	±35	3/12/2014	FW	
140321-TKN	Nitrogen, (TKN)	20.4	21.3	20.0	mg/L	SM 4500-N_{org} B	2.70	±35	3/21/2014	RP	
140311-pH	pH	n/a	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
140314-SC	Specific Conductance	n/a	n/a	n/a	*u* mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
140312-TDS	Solids, Total Dissolved	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	
140312-Sulfate	Sulfate	0.875	0.913	0.5	mg/L	EPA 300.0	2.85	±35	3/12/2014	FW	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

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"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton WWTP
1000 West Pine Street
Shelton, WA 98584

Sampled By:

DAL Project No.: John Ozga

Project Name: Spray Field Annual/Qrtly
Project No.: n/a
P.O. No.: n/a
Date Collected: 3/11/2014; 08:00
Date Received: 3/11/2014; 13:05
Temperature Received (°C): 8 to 9
Report Date: 3/28/2014

Preparation Method: US EPA 5030B
Analytical Method: US EPA 8260B
Date Prepared: 3/20/2014
Date Analyzed: 3/20/2014
Analyst: TM
Data Reviewed By:

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Purge Volume: 10 mL
Instrument ID: Agilent 3026
Lab Data File: 14032001

VOLATILE ORGANIC COMPOUNDS
ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	Method Blank	WCC-1	WCC-1 Dup.	WCC-2	MW-6	MW-9
Bromodichloromethane	75-27-4	1.0	nd	nd	nd	nd	nd	nd
Bromoform	75-25-2	1.0	nd	nd	nd	nd	nd	nd
Chloroform	67-66-3	1.0	nd	nd	nd	**4.60**	nd	nd
Dibromochloromethane	124-48-1	1.0	nd	nd	nd	nd	nd	nd
Dilution Factor				1.0	1.0	1.0	1.0	1.0
Data Flags								

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City of Shelton WWTP
DAL Project No.: 140311-07

Project Name: Spray Field Annual/Qrtly
Project No.: n/a

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

Surrogate	Limits (%)	Method Blank	WCC-1	WCC-1 Dup.	WCC-2	MW-6	MW-9
Dibromofluoromethane	86-118	104	100	101	104	102	102
Toluene-d8	88-110	104	104	109	104	101	103
4-Bromofluorobenzene	86-115	96.4	95.2	95.8	96.0	94.8	95.2

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 140320-VOC — MS/MSD Sample ID: 140320-VOC MS/MSD — LCS Sample ID: 140320-VOC LCS

Analyte	MS Limits (%)	MS Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD RPD Limits	RPD	LCS Limits (%)	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery
Benzene	76-127	10.0	nd	9.40	94.0%	9.19	91.9%	≤ 11%	1.13	80-120	10.0	10.3	103%
Chlorobenzene	75-130	10.0	nd	8.60	86.0%	8.67	86.7%	≤ 13%	0.405	80-120	10.0	8.03	80.3%
1,1-Dichloroethene	61-145	10.0	nd	8.04	80.4%	8.08	80.8%	≤ 14%	0.248	75-135	10.0	8.43	84.3%
Toluene	76-125	10.0	nd	9.40	94.0%	10.2	102%	≤ 13%	4.23	80-120	10.0	10.7	107%
Trichloroethene	71-120	10.0	nd	10.8	108%	10.8	108%	≤ 14%	0.046	80-120	10.0	9.94	99.4%

WA-DOE-Laboratory Certification No.: C890
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None.

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a
P.O. No.: n/a
Matrix: Non-Potable Water
Temperature Received (°C): **10**

Report Date: **6/30/2014**

FECAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
WCC-1	**<1**	100	0	<1	CFU/100 mL	SM 9222 D	6/10/2014; 08:00	6/10/2014; 14:10	6/10/2014; 16:04	6/11/2014	CH	
WCC-2	**<1**	100	0	<1	CFU/100 mL	SM 9222 D	6/10/2014; 08:15	6/10/2014; 14:10	6/10/2014; 16:06	6/11/2014	CH	
MW-6	**<1**	100	0	<1	CFU/100 mL	SM 9222 D	6/10/2014; 08:30	6/10/2014; 14:10	6/10/2014; 16:07	6/11/2014	CH	
MW-9	**<1**	100	0	<1	CFU/100 mL	SM 9222 D	6/10/2014; 09:00	6/10/2014; 14:10	6/10/2014; 16:08	6/11/2014	CH	

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 D	6/11/2014	CH	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 D	6/11/2014	CH	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-1**
Matrix: Non-Potable Water
Temperature Received (°C): **10**
Collected: **6/10/2014; 08:00**
Received: **6/10/2014; 14:10**
Report Date: **6/30/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.87**	0.022	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrate	**0.06**	0.026	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrite	**0.00**	0.034	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, (TKN)	**0.00**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2014	6/17/2014	n/a	NH	
pH	**6.60**	n/a	n/a	SU	SM 4500-H^+	1	6/10/2014	6/10/2014	17:51	GD	(1)
Specific Conductance	**65.2**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2014	6/11/2014	n/a	GD	
Solids, Total Dissolved	**54.0**	n/a	20.0	mg/L	SM 2540 C	1	6/14/2014	6/14/2014	n/a	SV	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-2**
Matrix: Non-Potable Water
Temperature Received (°C): **10**
Collected: **6/10/2014; 08:15**
Received: **6/10/2014; 14:10**
Report Date: **6/30/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**3.60**	0.022	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrate	**0.18**	0.026	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrite	**0.00**	0.034	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, (TKN)	**0.3**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2014	6/17/2014	n/a	NH	
pH	**6.71**	n/a	n/a	SU	SM 4500-H^+	1	6/10/2014	6/10/2014	17:56	GD	(1)
Specific Conductance	**77.8**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2014	6/11/2014	n/a	GD	
Solids, Total Dissolved	**22.0**	n/a	20.0	mg/L	SM 2540 C	1	6/14/2014	6/14/2014	n/a	SV	

WA-DOE-Laboratory Certification No.: C890
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"DF" indicates Dilution Factor
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"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
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Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-6**
Matrix: Non-Potable Water
Temperature Received (°C): **10**
Collected: **6/10/2014; 08:30**
Received: **6/10/2014; 14:10**
Report Date: **6/30/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.90**	0.022	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrate	**0.10**	0.026	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrite	**0.00**	0.034	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, (TKN)	**0.3**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2014	6/17/2014	n/a	NH	
pH	**6.48**	n/a	n/a	SU	SM 4500-H^+	1	6/10/2014	6/10/2014	17:58	GD	(1)
Specific Conductance	**56.6**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2014	6/11/2014	n/a	GD	
Solids, Total Dissolved	**28.0**	n/a	20.0	mg/L	SM 2540 C	1	6/14/2014	6/14/2014	n/a	SV	

WA-DOE-Laboratory Certification No.: C890
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"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
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Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-9**
Matrix: Non-Potable Water
Temperature Received (°C): **10**
Collected: **6/10/2014; 09:00**
Received: **6/10/2014; 14:10**
Report Date: **6/30/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.99**	0.022	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrate	**0.13**	0.026	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, Nitrite	**0.00**	0.034	0.10	mg/L	EPA 300.0	1	6/11/2014	6/11/2014	n/a	FW	
Nitrogen, (TKN)	**0.3**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2014	6/17/2014	n/a	NH	
pH	**6.29**	n/a	n/a	SU	SM 4500-H^+	1	6/10/2014	6/10/2014	17:59	GD	(1)
Specific Conductance	**50.7**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2014	6/11/2014	n/a	GD	
Solids, Total Dissolved	**30.0**	n/a	20.0	mg/L	SM 2540 C	1	6/14/2014	6/14/2014	n/a	SV	

WA-DOE-Laboratory Certification No.: C890
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"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

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Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a

QUALITY CONTROL RESULTS
Method Blank

SAMPLE BATCH	PARAMETER	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
140611-Chloride	Chloride	nd	0.10	mg/L	EPA 300.0	6/11/2014	FW	
140611-NO^2	Nitrogen, Nitrate	nd	0.10	mg/L	EPA 300.0	6/11/2014	FW	
140611-NO	Nitrogen, Nitrite	nd	0.10	mg/L	EPA 300.0	6/11/2014	FW	
140617-TKN	Nitrogen, (TKN)	nd	2.0	mg/L	SM 4500-N_{org} B	6/17/2014	NH	
140610-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	
140611-SC	Specific Conductance	nd	10.0	*u* mho/cm	SM 2510 B	6/11/2014	GD	
140614-TDS	Solids, Total Dissolved	nd	20.0	mg/L	SM 2540 C	6/14/2014	SV	

QUALITY CONTROL RESULTS
Duplicate Sample

SAMPLE BATCH	PARAMETER	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140611-Chloride	Chloride	4.39	4.39	mg/L	EPA 300.0	0.023	±35	6/11/2014	FW	
140611-NO^2	Nitrogen, Nitrate	1.53	1.54	mg/L	EPA 300.0	0.522	±35	6/11/2014	FW	
140611-NO	Nitrogen, Nitrite	nd	nd	mg/L	EPA 300.0	0.00	±35	6/11/2014	FW	
140617-TKN	Nitrogen, (TKN)	nd	nd	mg/L	SM 4500-N_{org} B	0.00	±35	6/17/2014	NH	
140610-pH	pH	6.6	6.63	SU	SM 4500-H^+	0.454	±35	6/10/2014	GD	(1)
140611-SC	Specific Conductance	n/a	n/a	*u* mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
140614-TDS	Solids, Total Dissolved	2184	2230	mg/L	SM 2540 C	2.08	±35	6/14/2014	SV	

WA-DOE-Laboratory Certification No.: C890
"MRL" indicates Method Reporting Limit
"RPD" indicates Relative Percent Difference
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a

QUALITY CONTROL RESULTS
Laboratory Fortified Blank

SAMPLE BATCH	PARAMETER	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140611-Chloride	Chloride	0.537	0.5	mg/L	EPA 300.0	107	65.0-135	6/11/2014	FW	
140611-NO^2	Nitrogen, Nitrate	0.520	0.5	mg/L	EPA 300.0	104	65.0-135	6/11/2014	FW	
140611-NO	Nitrogen, Nitrite	0.545	0.5	mg/L	EPA 300.0	109	65.0-135	6/11/2014	FW	
140617-TKN	Nitrogen, (TKN)	19.6	20.0	mg/L	SM 4500-N_{org} B	98.0	65.0-135	6/17/2014	NH	
140610-pH	pH	6.99	7.0	SU	SM 4500-H^+	99.9	65.0-135	6/10/2014	GD	
140611-SC	Specific Conductance	1391	1415	umho/cm	SM 2510 B	98.3	65.0-135	6/11/2014	GD	
140614-TDS	Solids, Total Dissolved	496	500	mg/L	SM 2540 C	99.2	65.0-135	6/14/2014	n/a	

QUALITY CONTROL RESULTS
Matrix Spike/Matrix Spike Duplicate

SAMPLE BATCH	PARAMETER	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140611-Chloride	Chloride	0.476	0.498	0.5	mg/L	EPA 300.0	3.03	±35	6/11/2014	FW	
140611-NO^2	Nitrogen, Nitrate	0.496	0.528	0.5	mg/L	EPA 300.0	4.21	±35	6/11/2014	FW	
140611-NO	Nitrogen, Nitrite	0.541	0.535	0.5	mg/L	EPA 300.0	0.742	±35	6/11/2014	FW	
140617-TKN	Nitrogen, (TKN)	20.4	20.4	20.0	mg/L	SM 4500-N_{org} B	0.00	±35	6/17/2014	NH	
140610-pH	pH	n/a	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
140611-SC	Specific Conductance	n/a	n/a	n/a	*u* mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
140614-TDS	Solids, Total Dissolved	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled By:

DAL Project No.: John Ozga

Project Name: Quarterly Sprayfield
Project No.: n/a
P.O. No.: n/a
Date Collected: 6/10/2014; 08:00
Date Received: 6/10/2014; 14:10
Temperature Received (°C): 10
Report Date: 6/30/2014

Preparation Method: US EPA 5030B
Analytical Method: US EPA 8260B
Date Prepared: 6/12/2014
Date Analyzed: 6/12/2014
Analyst: TM
Data Reviewed By:

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Purge Volume: 15 mL
Instrument ID: Agilent 3026
Lab Data File: 14061201

TOTAL TRIHALOMETHANES
ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	Method Blank	WCC-1	WCC-2	MW-6	MW-9
Bromodichloromethane	75-27-4	1.0	nd	nd	nd	nd	nd
Bromoform	75-25-2	1.0	nd	nd	nd	nd	nd
Chloroform	67-66-3	1.0	nd	nd	**1.31**	nd	nd
Dibromochloromethane	124-48-1	1.0	nd	nd	nd	nd	nd
Dilution Factor				1.0	1.0	1.0	1.0
Data Flags							

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 140610-06

Project Name: Quarterly Sprayfield
Project No.: n/a

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

Surrogate	Limits (%)	Method Blank	WCC-1	WCC-2	MW-6	MW-9
Dibromofluoromethane	86-118	99.6	97.8	95.0	92.8	97.0
Toluene-d8	88-110	94.4	97.6	92.0	94.2	91.4
4-Bromofluorobenzene	86-115	98.4	102	105	106	102

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 140613-VOC — MS/MSD Sample ID: 140613-VOC MS/MSD — LCS Sample ID: 140613-VOC LCS

Analyte	MS Limits (%)	MS Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD RPD Limits	RPD	LCS Limits (%)	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery
Benzene	76-127	20.0	nd	21.0	105%	n/a	n/a	n/a	n/a	80-120	10.0	10.8	108%
Chlorobenzene	75-130	20.0	nd	21.2	106%	n/a	n/a	n/a	n/a	80-120	10.0	11.9	119%
1,1-Dichloroethene	61-145	20.0	0.530	20.0	97.5%	n/a	n/a	n/a	n/a	75-135	10.0	8.75	87.5%
Toluene	76-125	20.0	nd	23.5	118%	n/a	n/a	n/a	n/a	80-120	10.0	11.5	115%
Trichloroethene	71-120	20.0	nd	23.5	117%	n/a	n/a	n/a	n/a	80-120	10.0	9.01	90.1%

WA-DOE-Laboratory Certification No.: C890
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None.

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a
P.O. No.: n/a
Matrix: Non-Potable Water
Temperature Received (°C): **8-10 C°**

Report Date: **10/6/2014**

TOTAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
MW-6	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	Unknown Unknown	9/17/2014; 15:38	9/17/2014; 16:26	9/18/2014	CH	
MW-9	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	Unknown Unknown	9/17/2014; 15:38	9/17/2014; 16:30	9/18/2014	CH	
WCC-1	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	Unknown Unknown	9/17/2014; 15:38	9/17/2014; 16:20	9/18/2014	CH	
WCC-2	**<2**	50	0	<2	CFU/100 mL	SM 9222 B2,5,6	Unknown Unknown	9/17/2014; 15:38	9/17/2014; 16:24	9/18/2014	CH	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: None

Data reviewed by:

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/18/2014	CH	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/18/2014	CH	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: None

Data reviewed by:

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-6**
Matrix: Non-Potable Water
Temperature Received (°C): **8-10 C°**
Collected: **Unknown; Unknown**
Received: **9/17/2014; 15:38**
Report Date: **10/6/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**2.46**	0.022	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, Nitrate	**0.11**	0.026	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, (TKN)	**0.42**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/29/2014	9/29/2014	n/a	GMD	J
pH	**6.56**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2014	9/17/2014	15:54	MS	(1)
Specific Conductance	**55.5**	n/a	10.0	umho/cm	SM 2510 B	1	9/18/2014	9/18/2014	n/a	CH	
Solids, Total Dissolved	**48.0**	n/a	20.0	mg/L	SM 2540 C	1	9/18/2014	9/18/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.
A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: NDH

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-9**
Matrix: Non-Potable Water
Temperature Received (°C): **8-10 C°**
Collected: **Unknown; Unknown**
Received: **9/17/2014; 15:38**
Report Date: **10/6/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.98**	0.022	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, Nitrate	**0.12**	0.026	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/29/2014	9/29/2014	n/a	GMD	
pH	**6.49**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2014	9/17/2014	15:53	MS	(1)
Specific Conductance	**46.2**	n/a	10.0	umho/cm	SM 2510 B	1	9/18/2014	9/18/2014	n/a	CH	
Solids, Total Dissolved	**36.0**	n/a	20.0	mg/L	SM 2540 C	1	9/18/2014	9/18/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: NDH

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Mobile Environmental Laboratory

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1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-1**
Matrix: Non-Potable Water
Temperature Received (°C): **8-10 C°**
Collected: **Unknown; Unknown**
Received: **9/17/2014; 15:38**
Report Date: **10/6/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.84**	0.022	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, Nitrate	**0.08**	0.026	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, (TKN)	**0.42**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/29/2014	9/29/2014	n/a	GMD	J
pH	**7.11**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2014	9/17/2014	15:48	MS	(1)
Specific Conductance	**59.9**	n/a	10.0	umho/cm	SM 2510 B	1	9/18/2014	9/18/2014	n/a	CH	
Solids, Total Dissolved	**40.0**	n/a	20.0	mg/L	SM 2540 C	1	9/18/2014	9/18/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: NDH

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Mobile Environmental Laboratory

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1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-2**
Matrix: Non-Potable Water
Temperature Received (°C): **8-10 C°**
Collected: **Unknown; Unknown**
Received: **9/17/2014; 15:38**
Report Date: **10/6/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**6.56**	0.022	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, Nitrate	**0.33**	0.026	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/18/2014	9/18/2014	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/29/2014	9/29/2014	n/a	GMD	
pH	**6.84**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2014	9/17/2014	15:51	MS	(1)
Specific Conductance	**87.5**	n/a	10.0	umho/cm	SM 2510 B	1	9/18/2014	9/18/2014	n/a	CH	
Solids, Total Dissolved	**66.0**	n/a	20.0	mg/L	SM 2540 C	1	9/18/2014	9/18/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: NDH

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a

QUALITY CONTROL RESULTS
Method Blank

SAMPLE BATCH	PARAMETER	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
140918-Chl^{3}ride	Chloride	nd	0.10	mg/L	EPA 300.0	9/18/2014	FW	
140918-NO^2	Nitrogen, Nitrate	nd	0.10	mg/L	EPA 300.0	9/18/2014	FW	
140918-NO	Nitrogen, Nitrite	nd	0.10	mg/L	EPA 300.0	9/18/2014	FW	
140929-TKN	Nitrogen, (TKN)	nd	2.0	mg/L	SM 4500-N_{org} B	9/29/2014	GMD	
140917-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	
140918-SC	Specific Conductance	nd	10.0	*u* mho/cm	SM 2510 B	9/18/2014	CH	
140918-TDS	Solids, Total Dissolved	nd	20.0	mg/L	SM 2540 C	9/18/2014	GMD	

QUALITY CONTROL RESULTS
Duplicate Sample

SAMPLE BATCH	PARAMETER	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140918-Chl^{3}ride	Chloride	1.36	1.36	mg/L	EPA 300.0	0.2	±35	9/18/2014	FW	
140918-NO^2	Nitrogen, Nitrate	nd	nd	mg/L	EPA 300.0	0.00	±35	9/18/2014	FW	
140918-NO	Nitrogen, Nitrite	nd	nd	mg/L	EPA 300.0	0.00	±35	9/18/2014	FW	
140929-TKN	Nitrogen, (TKN)	nd	nd	mg/L	SM 4500-N_{org} B	0.00	±35	9/29/2014	GMD	
140917-pH	pH	7.11	6.86	SU	SM 4500-H^+	3.6	±35	9/17/2014	MS	(1)
140918-SC	Specific Conductance	n/a	n/a	*u* mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
140918-TDS	Solids, Total Dissolved	200	180	mg/L	SM 2540 C	10.5	±35	9/18/2014	GMD	

WA-DOE-Laboratory Certification No.: C890
"MRL" indicates Method Reporting Limit
"RPD" indicates Relative Percent Difference
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a

QUALITY CONTROL RESULTS
Laboratory Fortified Blank

SAMPLE BATCH	PARAMETER	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140918-Chloride	Chloride	0.5	0.5	mg/L	EPA 300.0	100	65.0-135	9/18/2014	FW	
140918-NO^2	Nitrogen, Nitrate	0.54	0.5	mg/L	EPA 300.0	107	65.0-135	9/18/2014	FW	
140918-NO	Nitrogen, Nitrite	0.53	0.5	mg/L	EPA 300.0	106	65.0-135	9/18/2014	FW	
140929-TKN	Nitrogen, (TKN)	17.7	20.0	mg/L	SM 4500-N_{org} B	88.5	65.0-135	9/29/2014	GMD	
140917-pH	pH	7.02	7.0	SU	SM 4500-H^+	100	65.0-135	9/17/2014	MS	
140918-SC	Specific Conductance	1423	1415	umho/cm	SM 2510 B	101	65.0-135	9/18/2014	CH	
140918-TDS	Solids, Total Dissolved	530	500	mg/L	SM 2540 C	106	65.0-135	9/18/2014	n/a	

QUALITY CONTROL RESULTS
Matrix Spike/Matrix Spike Duplicate

SAMPLE BATCH	PARAMETER	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
140918-Chloride	Chloride	0.50	0.48	0.5	mg/L	EPA 300.0	2.58	±35	9/18/2014	FW	
140918-NO^2	Nitrogen, Nitrate	0.52	0.54	0.5	mg/L	EPA 300.0	2.68	±35	9/18/2014	FW	
140918-NO	Nitrogen, Nitrite	0.54	0.55	0.5	mg/L	EPA 300.0	0.49	±35	9/18/2014	FW	
140929-TKN	Nitrogen, (TKN)	16.4	16.7	20.0	mg/L	SM 4500-N_{org} B	1.13	±35	9/29/2014	GMD	
140917-pH	pH	n/a	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
140918-SC	Specific Conductance	n/a	n/a	n/a	*u* mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
140918-TDS	Solids, Total Dissolved	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled By: John Ozga

DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a
P.O. No.: n/a
Date Collected: Unknown; Unknown
Date Received: 9/17/2014; 15:38
Temperature Received (°C): 8-10 C°
Report Date: 10/6/2014

Preparation Method: US EPA 5030B
Analytical Method: US EPA 8260B
Date Prepared: 9/30/2014
Date Analyzed: 9/30/2014
Analyst: TM
Data Reviewed By:

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Purge Volume: 15 mL
Instrument ID: Agilent 3026
Lab Data File: 14093002

VOLATILE ORGANIC COMPOUNDS
ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	Method Blank	MW-6	MW-9	WCC-1	WCC-2
Bromodichloromethane	75-27-4	1.0	nd	nd	nd	nd	nd
Bromoform	75-25-2	1.0	nd	nd	nd	nd	nd
Chloroform	67-66-3	1.0	nd	**0.25 J**	nd	nd	**2.03**
Dibromochloromethane	124-48-1	1.0	nd	nd	nd	nd	nd
Dilution Factor				1.0	1.0	1.0	1.0

Data Flags: A (J) Flag indicates that the result was between the MDL and MRL and therefore estiimated.

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 140917-13

Project Name: QRT Recaimed Sprayfield
Project No.: n/a

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

Surrogate	Limits (%)	Method Blank	MW-6	MW-9	WCC-1	WCC-2
Dibromofluoromethane	86-118	97.0	100	102	103	101
Toluene-d8	88-110	100	103	103	101	101
4-Bromofluorobenzene	86-115	101	99.8	98.4	96.2	98.4

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 140930-VOC — MS/MSD Sample ID: 140930-VOC MS/MSD — LCS Sample ID: 140930-VOC LCS

Analyte	MS Limits (%)	MS Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD RPD Limits	RPD	LCS Limits (%)	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery
Benzene	76-127	10.0	nd	9.47	94.7%	9.35	93.50%	≤ 11%	0.64	80-120	10.0	9.81	98.1%
Chlorobenzene	75-130	10.0	nd	10.6	106%	10.3	103.20%	≤ 13%	1.39	80-120	10.0	10.7	107%
1,1-Dichloroethene	61-145	10.0	nd	9.29	92.9%	8.85	88.50%	≤ 14%	2.43	75-135	10.0	9.09	90.9%
Toluene	76-125	10.0	nd	10.5	105%	10.3	102.60%	≤ 13%	1.06	80-120	10.0	10.6	106%
Trichloroethene	71-120	10.0	nd	11.8	118%	11.8	117.50%	≤ 14%	0.30	80-120	10.0	11.9	119%

WA-DOE-Laboratory Certification No.: C890
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None.

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na
P.O. No.: na
Matrix: Non-Potable Water
Temperature Received (°C): **11**

Report Date: **12/19/2014**

TOTAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
WCC-1	**10**	10	1	<10	CFU/100 mL	SM 9222 B2,5,6	12/2/2014; 08:00	12/2/2014; 14:05	12/2/2014; 17:34	12/3/2014	MM	J
WCC-2	**60**	10	6	<10	CFU/100 mL	SM 9222 B2,5,6	12/2/2014; 08:15	12/2/2014; 14:05	12/2/2014; 17:36	12/3/2014	MM	J
MW-6	**20**	10	2	<10	CFU/100 mL	SM 9222 B2,5,6	12/2/2014; 08:30	12/2/2014; 14:05	12/2/2014; 17:38	12/3/2014	MM	J
MW-9	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	12/2/2014; 08:45	12/2/2014; 14:05	12/2/2014; 17:40	12/3/2014	MM	

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	12/3/2014	MM	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	12/3/2014	MM	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: A "J" flag indicates an estimated value because the colony count was outside the optimum range of colonies per filter.

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na
P.O. No.: na
Sample Name: **WCC-1**
Matrix: Non-Potable Water
Temperature Received (°C): **11**
Collected: **12/2/2014; 08:00**
Received: **12/2/2014; 14:05**
Report Date: **12/19/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.9**	0.022	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Dissolved Oxygen	**10.9**	n/a	0.01	mg/L	SM 4500-O G	1	12/2/2014	12/2/2014	18:12	MM	(1)
Nitrogen, Nitrate	**0.046**	0.026	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Nitrogen, (TKN)	**0.28**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	12/10/2014	12/10/2014	n/a	MS	J
pH	**6.5**	n/a	n/a	SU	SM 4500-H^+	1	12/3/2014	12/3/2014	17:50	JB	(1)
Specific Conductance	**50.6**	n/a	10.0	umho/cm	SM 2510 B	1	12/9/2014	12/9/2014	n/a	JB	
Solids, Total Dissolved	**40.0**	n/a	20.0	mg/L	SM 2540 C	1	12/2/2014	12/2/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: GMD

DRAGON ANALYTICAL LABORATORY

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City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na
P.O. No.: na
Sample Name: **WCC-2**
Matrix: Non-Potable Water
Temperature Received (°C): **11**
Collected: **12/2/2014; 08:15**
Received: **12/2/2014; 14:05**
Report Date: **12/19/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**8.8**	0.022	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Dissolved Oxygen	**10.3**	n/a	0.01	mg/L	SM 4500-O G	1	12/2/2014	12/2/2014	18:13	MM	(1)
Nitrogen, Nitrate	**0.80**	0.026	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Nitrogen, (TKN)	**0.84**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	12/10/2014	12/10/2014	n/a	MS	J
pH	**6.6**	n/a	n/a	SU	SM 4500-H^+	1	12/3/2014	12/3/2014	17:56	JB	(1)
Specific Conductance	**101**	n/a	10.0	umho/cm	SM 2510 B	1	12/9/2014	12/9/2014	n/a	JB	
Solids, Total Dissolved	**42.0**	n/a	20.0	mg/L	SM 2540 C	1	12/2/2014	12/2/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: GMD

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Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na
P.O. No.: na
Sample Name: **MW-6**
Matrix: Non-Potable Water
Temperature Received (°C): **11**
Collected: **12/2/2014; 08:30**
Received: **12/2/2014; 14:05**
Report Date: **12/19/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**3.3**	0.022	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Dissolved Oxygen	**10.3**	n/a	0.01	mg/L	SM 4500-O G	1	12/2/2014	12/2/2014	18:14	MM	(1)
Nitrogen, Nitrate	**0.16**	0.026	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	12/10/2014	12/10/2014	n/a	MS	
pH	**6.5**	n/a	n/a	SU	SM 4500-H^+	1	12/3/2014	12/3/2014	17:57	JB	(1)
Specific Conductance	**58.5**	n/a	10.0	umho/cm	SM 2510 B	1	12/9/2014	12/9/2014	n/a	JB	
Solids, Total Dissolved	**44.0**	n/a	20.0	mg/L	SM 2540 C	1	12/2/2014	12/2/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: GMD

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Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na
P.O. No.: na
Sample Name: **MW-9**
Matrix: Non-Potable Water
Temperature Received (°C): **11**
Collected: **12/2/2014; 08:45**
Received: **12/2/2014; 14:05**
Report Date: **12/19/2014**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**2.0**	0.022	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Dissolved Oxygen	**9.2**	n/a	0.01	mg/L	SM 4500-O G	1	12/2/2014	12/2/2014	18:15	MM	(1)
Nitrogen, Nitrate	**0.10**	0.026	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	12/3/2014	12/3/2014	n/a	FW	
Nitrogen, (TKN)	**0.28**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	12/10/2014	12/10/2014	n/a	MS	J
pH	**6.0**	n/a	n/a	SU	SM 4500-H^+	1	12/2/2014	12/2/2014	17:59	JB	(1)
Specific Conductance	**97.4**	n/a	10.0	umho/cm	SM 2510 B	1	12/9/2014	12/9/2014	n/a	JB	
Solids, Total Dissolved	**84.0**	n/a	20.0	mg/L	SM 2540 C	1	12/2/2014	12/2/2014	n/a	GMD	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: GMD

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na

QUALITY CONTROL RESULTS
Method Blank

SAMPLE BATCH	PARAMETER	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
141203-Chloride	Chloride	nd	0.10	mg/L	EPA 300.0	12/3/2014	FW	
141202-DO[3]	Dissolved Oxygen	8.6	0.01	mg/L	SM 4500-O G	12/2/2014	MM	
141203-NO[2]	Nitrogen, Nitrate	nd	0.10	mg/L	EPA 300.0	12/3/2014	FW	
141203-NO	Nitrogen, Nitrite	nd	0.10	mg/L	EPA 300.0	12/3/2014	FW	
141210-TKN	Nitrogen, (TKN)	nd	2.0	mg/L	SM 4500-N_{org} B	12/10/2014	MS	
141203-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	
141209-SC	Specific Conductance	nd	10.0	*u* mho/cm	SM 2510 B	12/9/2014	JB	
141202-TDS	Solids, Total Dissolved	nd	20.0	mg/L	SM 2540 C	12/2/2014	GMD	

QUALITY CONTROL RESULTS
Duplicate Sample

SAMPLE BATCH	PARAMETER	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
141203-Chloride	Chloride	1.9	1.9	mg/L	EPA 300.0	0.63	±35	12/3/2014	FW	
141202-DO[3]	Dissolved Oxygen	n/a	n/a	mg/L	SM 4500-O G	0.00	±35	12/2/2014	MM	(1)
141203-NO[2]	Nitrogen, Nitrate	nd	nd	mg/L	EPA 300.0	0.00	±35	12/3/2014	FW	
141203-NO	Nitrogen, Nitrite	nd	nd	mg/L	EPA 300.0	0.00	±35	12/3/2014	FW	
141210-TKN	Nitrogen, (TKN)	0.84	0.84	mg/L	SM 4500-N_{org} B	0.00	±35	12/10/2014	MS	
141203-pH	pH	6.5	6.5	SU	SM 4500-H^+	0.61	±35	12/3/2014	JB	(1)
141209-SC	Specific Conductance	97.4	97.3	*u* mho/cm	SM 2510 B	0.01	.01	12/9/2014	JB	
141202-TDS	Solids, Total Dissolved	112	134	mg/L	SM 2540 C	17.9	±35	12/2/2014	GMD	

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
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City of Shelton
DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na

QUALITY CONTROL RESULTS
Laboratory Fortified Blank

SAMPLE BATCH	PARAMETER	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
141203-Chloride	Chloride	0.49	0.50	mg/L	EPA 300.0	98.2	65.0-135	12/3/2014	FW	
141202-DO[3]	Dissolved Oxygen	n/a	n/a	mg/L	SM 4500-O G	n/a	n/a	n/a	n/a	
141203-NO[2]	Nitrogen, Nitrate	0.50	0.50	mg/L	EPA 300.0	100	65.0-135	12/3/2014	FW	
141203-NO	Nitrogen, Nitrite	0.51	0.50	mg/L	EPA 300.0	102	65.0-135	12/3/2014	FW	
141210-TKN	Nitrogen, (TKN)	19.6	20.0	mg/L	SM 4500-N_{org} B	98.0	65.0-135	12/10/2014	MS	
141203-pH	pH	7.0	7.0	SU	SM 4500-H^+	100	65.0-135	12/3/2014	JB	
141209-SC	Specific Conductance	1420	1415	umho/cm	SM 2510 B	100	65.0-135	12/9/2014	JB	
141202-TDS	Solids, Total Dissolved	568	500	mg/L	SM 2540 C	114	65.0-135	12/2/2014	n/a	

QUALITY CONTROL RESULTS
Matrix Spike/Matrix Spike Duplicate

SAMPLE BATCH	PARAMETER	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
141203-Chloride	Chloride	0.47	0.49	0.50	mg/L	EPA 300.0	2.7	±35	12/3/2014	FW	
141202-DO[3]	Dissolved Oxygen	n/a	n/a	n/a	mg/L	SM 4500-O G	n/a	n/a	n/a	n/a	
141203-NO[2]	Nitrogen, Nitrate	0.51	0.60	0.50	mg/L	EPA 300.0	10.9	±35	12/3/2014	FW	
141203-NO	Nitrogen, Nitrite	0.54	0.53	0.50	mg/L	EPA 300.0	1.1	±35	12/3/2014	FW	
141210-TKN	Nitrogen, (TKN)	18.8	19.4	20.0	mg/L	SM 4500-N_{org} B	2.1	±35	12/10/2014	MS	
141203-pH	pH	n/a	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
141209-SC	Specific Conductance	n/a	n/a	n/a	umho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
141202-TDS	Solids, Total Dissolved	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	

WA-DOE-Laboratory Certification No.: C890
"RPD" indicates Relative Percent Difference
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None
Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled By: John Ozga

DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na
P.O. No.: na
Date Collected: 12/2/2014; 08:00-08:45
Date Received: 12/2/2014; 14:05
Temperature Received (°C): 11
Report Date: 12/19/2014

Preparation Method: US EPA 5030B
Analytical Method: US EPA 8260B
Date Prepared: 12/11/2014
Date Analyzed: 12/11/2014
Analyst: TM
Data Reviewed By:

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Purge Volume: 15 mL
Instrument ID: Agilent 3026
Lab Data File: 14121014. D

TOTAL TRIHALOMETHANES
ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	Method Blank	Trip Blank	WCC-1	WCC-2	MW-6	MW-9
Bromodichloromethane	75-27-4	1.0	nd	nd	nd	**0.11 J**	nd	nd
Bromoform	75-25-2	1.0	nd	nd	nd	nd	nd	nd
Chloroform	67-66-3	1.0	nd	nd	nd	**3.9**	**0.36 J**	nd
Dibromochloromethane	124-48-1	1.0	nd	nd	nd	nd	nd	nd
Dilution Factor				1.0	1.0	1.0	1.0	1.0
Data Flags								

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 141202-19

Project Name: Monitoring Wells
Project No.: na

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

Surrogate	Limits (%)	Method Blank	Trip Blank	WCC-1	WCC-2	MW-6	MW-9
Dibromofluoromethane	86-118	102	104	101	103	102	100
Toluene-d8	88-110	98.2	103	101	98.2	101	101
4-Bromofluorobenzene	86-115	105	104	103	102	104	101

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 141211-VOC MS/MSD Sample ID: 141211-VOC MS/MSD LCS Sample ID: 141211-VOC LCS

Analyte	LCS Limits (%)	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCSD Recovery (ug/L)	LCSD Percent Recovery
Benzene	80-120	10.0	10.9	109%	10.9	109%
Chlorobenzene	80-120	10.0	8.32	83.2%	11.5	115%
1,1-Dichloroethene	75-135	10.0	11.1	111%	10.0	100%
Toluene	80-120	10.0	12.0	120%	11.2	112%
Trichloroethene	80-120	10.0	13.5	135%	11.7	117%

WA-DOE-Laboratory Certification No.: C890
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None.

DRAGON ANALYTICAL LABORATORY

530 A1 Ronlee Ln, Olympia, WA 98502
(360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 141230-02

Project Name: Reclaimed Spray Field
Project No.: n/a
P.O. No.: n/a
Matrix: Non-Potable Water
Temperature Received (°C): **10 to 12**

Report Date: **12/31/2014**

TOTAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
WCC 1	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	12/30/2014; 08:00	12/30/2014; 09:40	12/30/2014; 11:06	12/31/2014	MM	
WCC 2	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	12/30/2014; 08:15	12/30/2014; 09:40	12/30/2014; 11:08	12/31/2014	MM	
MW 6	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	12/30/2014; 08:30	12/30/2014; 09:40	12/30/2014; 11:09	12/31/2014	MM	
MW 9	**<10**	10	0	<10	CFU/100 mL	SM 9222 B2,5,6	12/30/2014; 08:45	12/30/2014; 09:40	12/30/2014; 11:11	12/31/2014	MM	

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	12/31/2014	MM	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	12/31/2014	MM	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled By: John Ozga

DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a
P.O. No.: n/a
Date Collected: 3/2/2015; 08:00-09:30
Date Received: 3/2/2015; 14:00
Temperature Received (°C): 9 to 10
Report Date: 3/12/2015
Data Reviewed by:

Preparation Method: US EPA 3010A
Analytical Method: US EPA 200.8
Date Prepared: 3/5/2015
Date Analyzed: 3/6/2015
Analyst: TM

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Instrument ID: Agilent 7500
Lab Data File: 15C06k00.B

TOTAL HEAVY METALS
ANALYTICAL RESULTS

Analyte	CAS No.	MRL	Method Blank	WCC1	WCC2	MW6	MW9
Arsenic (As)	7440-38-2	5.0	nd	0.17 J	0.22 J	nd	nd
Cadmium (Cd)	7440-43-9	5.0	nd	0.070 J	nd	0.12 J	0.045 J
Calcium (Ca)	7440-70-2	500	nd	**6,720**	**5,940**	**5,350**	**5,720**
Chromium (Cr)	7440-47-3	5.0	nd	4.6 J	2.4 J	2.1 J	2.3 J
Copper (Cu)	7440-50-8	5.0	nd	nd	nd	nd	nd
Lead (Pb)	7439-92-1	1.0	nd	**1.6**	0.28 J	0.53 J	0.39 J
Magnesium (Mg)	7439-95-4	250	nd	**2,570**	**1,790**	**1,630**	**1,910**
Manganese (Mn)	7439-96-5	5.0	nd	**84.5**	**6.9**	**11.1**	**13.2**
Mercury (Hg)	7439-97-6	1.0	nd	nd	0.048 J	0.029 J	0.013 J
Nickel (Ni)	7440-02-0	5.0	nd	nd	nd	nd	nd
Potassium (K)	7440-09-7	1000	nd	23.4 J	nd	nd	nd
Silver (Ag)	7440-22-4	10.0	nd	0.050 J	0.064 J	0.049 J	0.040 J
Sodium (Na)	7440-23-5	1000	nd	**2,470**	**9,160**	**2,180**	**9,050**
Zinc (Zn)	7440-66-6	10.0	nd	**18.3**	6.3 J	6.4 J	9.4 J
Dilution Factor			10	10	10	10	10

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a

TOTAL HEAVY METALS
QUALITY CONTROL RESULTS

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 150306-Metals | MS/MSD Sample ID: 150306-Metals MS/MSD | LCS Sample ID: 150306-Metals LCS

Analyte	MS/MSD Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD Limits (%)	RPD	MS/MSD RPD Limits	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCS Limits (%)
Arsenic (As)	50	0.017	48.4	96.8%	49.2	98.3%	80-120	0.80	≤ 20%	50	50.5	101%	80-120
Cadmium (Cd)	50	0.0070	49.2	98.3%	50.5	101%	80-120	1.4	≤ 20%	50	50.7	101%	80-120
Calcium (Ca)	5000	672	5740	101%	5690	100%	80-120	0.50	≤ 20%	5000	5240	105%	80-120
Chromium (Cr)	50	0.46	50.2	99.5%	48.9	96.9%	80-120	1.3	≤ 20%	50	47.9	95.8%	80-120
Copper (Cu)	50	nd	47.4	94.8%	45.6	91.2%	80-120	1.9	≤ 20%	50	44.3	88.6%	80-120
Lead (Pb)	50	0.16	49.9	99.4%	51.6	103%	80-120	1.7	≤ 20%	50	50.0	100%	80-120
Magnesium (Mg)	5000	257	5160	98.1%	5000	94.9%	80-120	1.7	≤ 20%	5000	4872	97.4%	80-120
Manganese (Mn)	50	8.4	58.2	99.5%	56.6	96.4%	80-120	1.6	≤ 20%	50	58.6	117%	80-120
Mercury (Hg)	3.0	nd	2.6	85.7%	2.7	88.7%	80-120	1.7	≤ 20%	3.0	3.0	101%	80-120
Nickel (Ni)	50	nd	48.0	96.1%	46.3	92.6%	80-120	1.8	≤ 20%	50	45.0	90.0%	80-120
Potassium (K)	5000	2.3	4180	83.6%	4010	80.2%	80-120	2.1	≤ 20%	5000	5034	101%	80-120
Silver (Ag)	50	0.0050	48.4	96.8%	49.6	99.1%	80-120	1.2	≤ 20%	50	50.2	100%	80-120
Sodium (Na)	5000	247	5240	99.9%	5110	97.3%	80-120	1.3	≤ 20%	5000	4965	99.3%	80-120
Zinc (Zn)	50	1.8	50.8	97.9%	50.6	97.5%	80-120	0.18	≤ 20%	50	49.8	99.5%	80-120

WA-DOE-Laboratory Certification No.: C890 "nd" indicates the analyte was not detected at or above the listed Method Reporting Limit. n/a indicates not applicable

Comments and Explanations: None.

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled By: John Ozga

DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a
P.O. No.: n/a
Date Collected: 3/2/2015; 08:00-09:30
Date Received: 3/2/2015; 14:00
Temperature Received (°C): 9 to 10
Report Date: 3/12/2015

Preparation Method: US EPA 5030B
Analytical Method: US EPA 8260B
Date Prepared: 3/4/2015
Date Analyzed: 3/5/2015
Analyst: TM
Data Reviewed By: GMD

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Purge Volume: 15 mL
Instrument ID: Agilent 3026
Lab Data File: 15030401

TOTAL TRIHALOMETHANES
ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	Method Blank	WCC1	WCC2	MW6	MW9
Bromodichloromethane	75-27-4	1.0	nd	nd	nd	nd	nd
Bromoform	75-25-2	1.0	nd	nd	nd	nd	nd
Chloroform	67-66-3	1.0	nd	nd	**2.1**	nd	nd
Dibromochloromethane	124-48-1	1.0	nd	nd	nd	nd	nd
Dilution Factor				1.0	1.0	1.0	1.0
Data Flags							

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150302-07
Dichlorobenzene

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a

TOTAL TRIHALOMETHANES
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

Surrogate	Limits (%)	Method Blank	WCC1	WCC2	MW6	MW9
Dibromofluoromethane	86-118	106	108	107	108	102
Toluene-d8	88-110	95.6	97.6	94.8	96.4	96.2
4-Bromofluorobenzene	86-115	89.8	99.0	100	97.0	97.6
1,2-Dichlorobenzene-d4	80-120	102	103	103	104	104

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 150305-VOC
MS/MSD Sample ID: 150305-VOC MS/MSD
LCS Sample ID: 150305-VOC LCS

Analyte	LCS Limits (%)	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCSD Recovery (ug/L)	LCSD Percent Recovery
Benzene	80-120	10	10.1	101%	10.0	99.6%
Chlorobenzene	80-120	10	10.9	109%	10.5	105%
1,1-Dichloroethene	75-135	10	10.3	103%	10.0	99.5%
Toluene	80-120	10	11.3	113%	11.7	117%
Trichloroethene	80-120	10	11.9	119%	10.8	108%

WA-DOE-Laboratory Certification No.: C890
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None.

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a
P.O. No.: n/a
Matrix: Non-Potable Water
Temperature Received (°C): **9 to 10**

Report Date: **3/12/2015**

TOTAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
WCC1	**11**	100	11	<1	CFU/100 mL	SM 9222 B2,5,6	3/2/2015; 08:00	3/2/2015; 14:00	3/2/2015; 15:46	3/3/2015	MM	J
WCC2	**9**	100	9	<1	CFU/100 mL	SM 9222 B2,5,6	3/2/2015; 08:30	3/2/2015; 14:00	3/2/2015; 15:48	3/3/2015	MM	J
MW6	**8**	100	8	<1	CFU/100 mL	SM 9222 B2,5,6	3/2/2015; 09:00	3/2/2015; 14:00	3/2/2015; 15:50	3/3/2015	MM	J
MW9	**10**	100	10	<1	CFU/100 mL	SM 9222 B2,5,6	3/2/2015; 09:30	3/2/2015; 14:00	3/2/2015; 15:51	3/3/2015	MM	J

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: A "J" flag indicates an estimated value because the colony count was outside the optimum range of colonies per filter.

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	3/3/2015	MM	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	3/3/2015	MM	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC1**
Matrix: Non-Potable Water
Temperature Received (°C): **9 to 10**
Collected: **3/2/2015; 08:00**
Received: **3/2/2015; 14:00**
Report Date: **3/12/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
BiCarbonate	**25.9**	n/a	1.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Chloride	**1.8**	0.022	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Dissolved Oxygen	**6.7**	n/a	0.01	mg/L	SM 4500-O G	1	3/2/2015	3/2/2015	16:41	NJ	(1)
Fluoride	**0.076**	0.037	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	J
Nitrogen, Nitrate	**0.084**	0.026	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/11/2015	3/11/20015	n/a	MS	
pH	**6.6**	n/a	n/a	SU	SM 4500-H^+	1	3/2/2015	3/2/2015	17:14	JC	(1)
Specific Conductance	**57.3**	n/a	10.0	umho/cm	SM 2510 B	1	3/2/2015	3/2/2015	n/a	NJ	
Solids, Total Dissolved	**62.0**	n/a	20.0	mg/L	SM 2540 C	1	3/4/2015	3/4/2015	n/a	JB	
Sulfate	**1.0**	0.015	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: NJ

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC2**
Matrix: Non-Potable Water
Temperature Received (°C): **9 to 10**
Collected: **3/2/2015; 08:30**
Received: **3/2/2015; 14:00**
Report Date: **3/12/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
BiCarbonate	**30.3**	n/a	1.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Chloride	**3.6**	0.022	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Dissolved Oxygen	**7.0**	n/a	0.01	mg/L	SM 4500-O G	1	3/2/2015	3/2/2015	16:43	NJ	(1)
Fluoride	**0.069**	0.037	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	J
Nitrogen, Nitrate	**0.29**	0.026	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/11/20015	3/11/20015	n/a	MS	
pH	**6.7**	n/a	n/a	SU	SM 4500-H^+	1	3/2/2015	3/2/2015	17:19	JC	(1)
Specific Conductance	**76.2**	n/a	10.0	umho/cm	SM 2510 B	1	3/2/2015	3/2/2015	n/a	NJ	
Solids, Total Dissolved	**66.0**	n/a	20.0	mg/L	SM 2540 C	1	3/4/2015	3/4/2015	n/a	JB	
Sulfate	**2.2**	0.015	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: NJ

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
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City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW6**
Matrix: Non-Potable Water
Temperature Received (°C): **9 to 10**
Collected: **3/2/2015; 09:00**
Received: **3/2/2015; 14:00**
Report Date: **3/12/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
BiCarbonate	**19.8**	n/a	1.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Chloride	**1.7**	0.022	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Dissolved Oxygen	**6.7**	n/a	0.01	mg/L	SM 4500-O G	1	3/2/2015	3/2/2015	16:44	NJ	(1)
Fluoride	**0.069**	0.037	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	J
Nitrogen, Nitrate	**0.12**	0.026	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/11/20015	3/11/20015	n/a	MS	
pH	**6.3**	n/a	n/a	SU	SM 4500-H^+	1	3/2/2015	3/2/2015	17:30	JC	(1)
Specific Conductance	**46.0**	n/a	10.0	umho/cm	SM 2510 B	1	3/2/2015	3/2/2015	n/a	NJ	
Solids, Total Dissolved	**52.0**	n/a	20.0	mg/L	SM 2540 C	1	3/4/2015	3/4/2015	n/a	JB	
Sulfate	**1.1**	0.015	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: NJ

DRAGON ANALYTICAL LABORATORY

530 A1 Ronlee Ln, Olympia, WA 98502
(360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: John Ozga

DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW9**
Matrix: Non-Potable Water
Temperature Received (°C): **9 to 10**
Collected: **3/2/2015; 09:30**
Received: **3/2/2015; 14:00**
Report Date: **3/12/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
BiCarbonate	**30.8**	n/a	1.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Carbonate	**nd**	n/a	3.0	mg/L	SM 2320	1	3/4/2015	3/4/2015	n/a	JC/CH	
Chloride	**3.6**	0.022	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Dissolved Oxygen	**6.7**	n/a	0.01	mg/L	SM 4500-O G	1	3/2/2015	3/2/2015	16:45	NJ	(1)
Fluoride	**0.064**	0.037	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	J
Nitrogen, Nitrate	**0.29**	0.026	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	3/11/20015	3/11/20015	n/a	MS	
pH	**6.3**	n/a	n/a	SU	SM 4500-H^+	1	3/2/2015	3/2/2015	17:30	JC	(1)
Specific Conductance	**45.9**	n/a	10.0	umho/cm	SM 2510 B	1	3/2/2015	3/2/2015	n/a	NJ	
Solids, Total Dissolved	**56.0**	n/a	20.0	mg/L	SM 2540 C	1	3/4/2015	3/4/2015	n/a	JB	
Sulfate	**2.2**	0.015	0.10	mg/L	EPA 300.0	1	3/2/2015	3/2/2015	n/a	FW	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: NJ

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Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a

QUALITY CONTROL RESULTS
Method Blank

SAMPLE BATCH	PARAMETER	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
150304-BiCarb	BiCarbonate	nd	n/a	mg/L	SM 2320	3/4/2015	n/a	
150304-Carb	Carbonate	nd	n/a	mg/L	SM 2320	3/4/2015	n/a	
150302-Chloride	Chloride	nd	0.10	mg/L	EPA 300.0	3/2/2015	FW	
150302-DO	Dissolved Oxygen	n/a	n/a	mg/L	SM 4500-O G	n/a	n/a	
150302-Floůride	Fluoride	nd	0.10	mg/L	EPA 300.0	3/2/2015	FW	
150302-NO^2	Nitrogen, Nitrate	nd	0.10	mg/L	EPA 300.0	3/2/2015	FW	
150302-NO	Nitrogen, Nitrite	nd	0.10	mg/L	EPA 300.0	3/2/2015	FW	
150311-TKN	Nitrogen, (TKN)	nd	2.0	mg/L	SM 4500-N_{org} B	3/11/20015	MS	
150302-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	
150302-SC	Specific Conductance	nd	10.0	*u* mho/cm	SM 2510 B	3/2/2015	NJ	
150304-TDS	Solids, Total Dissolved	nd	20.0	mg/L	SM 2540 C	3/4/2015	JB	
150302-Sulfate	Sulfate	nd	0.10	mg/L	EPA 300.0	3/2/2015	FW	

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

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Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a

QUALITY CONTROL RESULTS
Duplicate Sample

SAMPLE BATCH	PARAMETER	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150304-BiCarb	BiCarbonate	25.9	25.3	mg/L	SM 2321	2.3	±35	3/4/2015	JC/CH	
150304-Carb	Carbonate	nd	nd	mg/L	SM 2320	0.00	±35	3/4/2015	JC/CH	
150302-Chloride	Chloride	1.7	1.7	mg/L	EPA 300.0	0.41	±35	3/2/2015	FW	
150302-DO	Dissolved Oxygen	6.7	6.9	mg/L	SM 4500-O G	2.7	±35	3/2/2015	NJ	(1)
150302-Flo^{3}ride	Fluoride	nd	nd	mg/L	EPA 300.0	0.00	±35	3/2/2015	FW	
150302-NO^2	Nitrogen, Nitrate	0.12	0.11	mg/L	EPA 300.0	0.87	±35	3/2/2015	FW	
150302-NO	Nitrogen, Nitrite	nd	nd	mg/L	EPA 300.0	0.00	±35	3/2/2015	FW	
150311-TKN	Nitrogen, (TKN)	nd	nd	mg/L	SM 4500-N_{org} B	0.00	±35	3/11/20015	MS	
150302-pH	pH	6.9	6.9	SU	SM 4500-H^+	0.58	±35	3/2/2015	JC	(1)
150302-SC	Specific Conductance	n/a	n/a	*u* mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
150304-TDS	Solids, Total Dissolved	190	182	mg/L	SM 2540 C	4.3	±35	3/4/2015	JB	
150302-Sulfate	Sulfate	1.1	1.1	mg/L	EPA 300.0	2.1	±35	3/2/2015	FW	

WA-DOE-Laboratory Certification No.: C890
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"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

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Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a

QUALITY CONTROL RESULTS
Laboratory Fortified Blank

SAMPLE BATCH	PARAMETER	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150304-BiCarb	BiCarbonate	n/a	n/a	mg/L	SM 2320	n/a	n/a	n/a	n/a	
150304-Carb	Carbonate	n/a	n/a	mg/L	SM 2320	n/a	n/a	n/a	n/a	
150302-Chloride	Chloride	0.53	0.5	mg/L	EPA 300.0	105	65.0-135	3/2/2015	FW	
150302-DO	Dissolved Oxygen	n/a	n/a	mg/L	SM 4500-O G	n/a	n/a	n/a	n/a	
150302-Floride	Fluoride	0.50	0.5	mg/L	EPA 300.0	100	65.0-135	3/2/2015	FW	
150302-NO^2	Nitrogen, Nitrate	0.46	0.5	mg/L	EPA 300.0	91.4	65.0-135	3/2/2015	FW	
150302-NO	Nitrogen, Nitrite	0.52	0.5	mg/L	EPA 300.0	104	65.0-135	3/2/2015	FW	
150311-TKN	Nitrogen, (TKN)	18.2	20.0	mg/L	SM 4500-N_{org} B	91.0	65.0-135	3/11/20015	MS	
150302-pH	pH	7.0	7.0	SU	SM 4500-H^+	100	65.0-135	3/2/2015	JC	
150302-SC	Specific Conductance	1414	1415	umho/cm	SM 2510 B	100	65.0-135	3/2/2015	NJ	
150304-TDS	Solids, Total Dissolved	488	500	mg/L	SM 2540 C	97.6	65.0-135	3/4/2015	n/a	
150302-Sulfate	Sulfate	0.54	0.5	mg/L	EPA 300.0	107	65.0-135	3/2/2015	FW	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

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City of Shelton
DAL Project No.: 150302-07

Project Name: Reclaimed Sprayfeild Quarterly
Project No.: n/a

QUALITY CONTROL RESULTS
Matrix Spike/Matrix Spike Duplicate

SAMPLE BATCH	PARAMETER	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150304-BiCarb	BiCarbonate	n/a	n/a	n/a	mg/L	SM 2320	n/a	n/a	n/a	n/a	
150304-Carb	Carbonate	n/a	n/a	n/a	mg/L	SM 2320	n/a	n/a	n/a	n/a	
150302-Chloride	Chloride	0.49	0.50	0.5	mg/L	EPA 300.0	1.2	±35	3/2/2015	FW	
150302-DO	Dissolved Oxygen	n/a	n/a	n/a	mg/L	SM 4500-O G	n/a	n/a	n/a	n/a	
150302-Flo3ride	Fluoride	0.49	0.48	0.5	mg/L	EPA 300.0	0.97	±35	3/2/2015	FW	
150302-NO^2	Nitrogen, Nitrate	0.44	0.46	0.5	mg/L	EPA 300.0	2.6	±35	3/2/2015	FW	
150302-NO	Nitrogen, Nitrite	0.54	0.54	0.5	mg/L	EPA 300.0	0.12	±35	3/2/2015	FW	
150311-TKN	Nitrogen, (TKN)	18.2	18.2	20.0	mg/L	SM 4500-N_{org} B	0.00	±35	3/11/20015	MS	
150302-pH	pH	n/a	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
150302-SC	Specific Conductance	n/a	n/a	n/a	*u*mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
150304-TDS	Solids, Total Dissolved	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	
150302-Sulfate	Sulfate	0.58	0.62	0.5	mg/L	EPA 300.0	4.4	±35	3/2/2015	FW	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

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City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: J. Ozga

DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a
P.O. No.: n/a
Matrix: Non-Potable Water
Temperature Received (°C): **n/a**

Report Date: **6/23/2015**

TOTAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
WCC 1	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	6/9/2015; 08:15	6/9/2015; 13:45	6/9/2015; 15:12	6/10/2015	MM	
WCC 2	**3**	100	3	<1	CFU/100 mL	SM 9222 B2,5,6	6/9/2015; 08:15	6/9/2015; 13:45	6/9/2015; 15:14	6/10/2015	MM	J
MW 6	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	6/9/2015; 08:15	6/9/2015; 13:45	6/9/2015; 15:15	6/10/2015	MM	
MW 9	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	6/9/2015; 08:15	6/9/2015; 13:45	6/9/2015; 15:17	6/10/2015	MM	

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	6/10/2015	MM	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	6/10/2015	MM	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: A "J" flag indicates an estimated value because the colony count was outside the optimum range of colonies per filter.

Data reviewed by:

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Shelton, WA 98584

Sampled by: J. Ozga

DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC 1**
Matrix: Non-Potable Water
Temperature Received (°C): **n/a**
Collected: **6/9/2015; 08:15**
Received: **6/9/2015; 13:45**
Report Date: **6/23/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.6**	0.022	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, Nitrate	**0.058**	0.026	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, (TKN)	**0.28**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2015	6/17/2015	n/a	MS	N
pH	**6.4**	n/a	n/a	SU	SM 4500-H^+	1	6/9/2015	6/9/2015	15:03	MS	(1)
Specific Conductance	**56.0**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2015	6/11/2015	n/a	JC	
Solids, Total Dissolved	**10.0**	n/a	20.0	mg/L	SM 2540 C	1	6/16/2015	6/15/2015	n/a	JB	J

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"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.
A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.
A "N" flag Indicates analyte was tentatively identified below the MDL and an estimated value is provided.

Data reviewed by:

Report Prepared By: NJ

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Shelton, WA 98584

Sampled by: J. Ozga

DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC 2**
Matrix: Non-Potable Water
Temperature Received (°C): **n/a**
Collected: **6/9/2015; 08:15**
Received: **6/9/2015; 13:45**
Report Date: **6/23/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**4.4**	0.022	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, Nitrate	**0.36**	0.026	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, (TKN)	**0.28**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2015	6/17/2015	n/a	MS	N
pH	**6.6**	n/a	n/a	SU	SM 4500-H^+	1	6/9/2015	6/9/2015	15:04	MS	(1)
Specific Conductance	**78.5**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2015	6/11/2015	n/a	JC	
Solids, Total Dissolved	**24.0**	n/a	20.0	mg/L	SM 2540 C	1	6/15/2015	6/15/2015	n/a	JB	

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Sampled by: J. Ozga

DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW 6**
Matrix: Non-Potable Water
Temperature Received (°C): **n/a**
Collected: **6/9/2015; 08:15**
Received: **6/9/2015; 13:45**
Report Date: **6/23/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.6**	0.022	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, Nitrate	**0.091**	0.026	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2015	6/17/2015	n/a	MS	
pH	**6.4**	n/a	n/a	SU	SM 4500-H^+	1	6/9/2015	6/9/2015	15:06	MS	(1)
Specific Conductance	**49.7**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2015	6/11/2015	n/a	JC	
Solids, Total Dissolved	**26.0**	n/a	20.0	mg/L	SM 2540 C	1	6/15/2015	6/15/2015	n/a	JB	

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"n/a" indicates not applicable

Comments and Explanations: A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.
A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

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Sampled by: J. Ozga

DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW 9**
Matrix: Non-Potable Water
Temperature Received (°C): **n/a**
Collected: **6/9/2015; 08:15**
Received: **6/9/2015; 13:45**
Report Date: **6/23/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.6**	0.022	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, Nitrate	**0.14**	0.026	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	6/10/2015	6/10/2015	n/a	FW	
Nitrogen, (TKN)	**nd**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	6/17/2015	6/17/2015	n/a	MS	N
pH	**6.2**	n/a	n/a	SU	SM 4500-H^+	1	6/9/2015	6/9/2015	15:07	MS	(1)
Specific Conductance	**41.1**	n/a	10.0	umho/cm	SM 2510 B	1	6/11/2015	6/11/2015	n/a	JC	
Solids, Total Dissolved	**10.0**	n/a	20.0	mg/L	SM 2540 C	1	6/15/2015	6/15/2015	n/a	JB	J

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"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.
A "N" flag Indicates analyte was tentatively identified below the MDL and an estimated value is provided.

Data reviewed by:

Report Prepared By: NJ

DRAGON ANALYTICAL LABORATORY

530 A1 Ronlee Ln, Olympia, WA 98502
(360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a

QUALITY CONTROL RESULTS
Method Blank

SAMPLE BATCH	PARAMETER	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
150610-Chloride	Chloride	nd	0.10	mg/L	EPA 300.0	6/10/2015	FW	
150610-NO2	Nitrogen, Nitrate	nd	0.10	mg/L	EPA 300.0	6/10/2015	FW	
150610-NO	Nitrogen, Nitrite	nd	0.10	mg/L	EPA 300.0	6/10/2015	FW	
150617-TKN	Nitrogen, (TKN)	nd	2.0	mg/L	SM 4500-N_{org} B	6/17/2015	MS	
150609-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	
150611-SC	Specific Conductance	nd	10.0	*u* mho/cm	SM 2510 B	6/11/2015	JC	
150615-TDS	Solids, Total Dissolved	nd	20.0	mg/L	SM 2540 C	6/15/2015	JB	

QUALITY CONTROL RESULTS
Duplicate Sample

SAMPLE BATCH	PARAMETER	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150610-Chloride	Chloride	5.0	5.0	mg/L	EPA 300.0	0.080	±35	6/10/2015	FW	
150610-NO2	Nitrogen, Nitrate	1.3	1.3	mg/L	EPA 300.0	0.15	±35	6/10/2015	FW	
150610-NO	Nitrogen, Nitrite	nd	nd	mg/L	EPA 300.0	0.00	±35	6/10/2015	FW	
150617-TKN	Nitrogen, (TKN)	nd	nd	mg/L	SM 4500-N_{org} B	0.00	±35	6/17/2015	MS	
150609-pH	pH	6.1	6.0	SU	SM 4500-H^+	2.1	±35	6/9/2015	MS	(1)
150611-SC	Specific Conductance	88.3	88.4	*u* mho/cm	SM 2510 B	0.11	±35	6/11/2015	n/a	
150615-TDS	Solids, Total Dissolved	70.0	74.0	mg/L	SM 2540 C	5.6	±35	6/15/2015	JB	

WA-DOE-Laboratory Certification No.: C890
"MRL" indicates Method Reporting Limit
"RPD" indicates Relative Percent Difference
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a

QUALITY CONTROL RESULTS
Laboratory Fortified Blank

SAMPLE BATCH	PARAMETER	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150610-Chloride	Chloride	0.48	0.5	mg/L	EPA 300.0	96.6	65.0-135	6/10/2015	FW	
150610-NO^2	Nitrogen, Nitrate	0.45	0.5	mg/L	EPA 300.0	90.4	65.0-135	6/10/2015	FW	
150610-NO	Nitrogen, Nitrite	0.52	0.5	mg/L	EPA 300.0	103	65.0-135	6/10/2015	FW	
150617-TKN	Nitrogen, (TKN)	19.0	20.0	mg/L	SM 4500-N_{org} B	95.2	65.0-135	6/17/2015	MS	
150609-pH	pH	7.0	7.0	SU	SM 4500-H^+	100	65.0-135	6/9/2015	MS	
150611-SC	Specific Conductance	1436	1415	umho/cm	SM 2510 B	101	65.0-135	6/11/2015	JC	
150615-TDS	Solids, Total Dissolved	470	500	mg/L	SM 2540 C	94.0	65.0-135	6/15/2015	n/a	

QUALITY CONTROL RESULTS
Matrix Spike/Matrix Spike Duplicate

SAMPLE BATCH	PARAMETER	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150610-Chloride	Chloride	0.48	0.48	0.5	mg/L	EPA 300.0	0.21	±35	6/10/2015	FW	
150610-NO^2	Nitrogen, Nitrate	0.47	0.46	0.5	mg/L	EPA 300.0	1.3	±35	6/10/2015	FW	
150610-NO	Nitrogen, Nitrite	0.54	0.53	0.5	mg/L	EPA 300.0	2.0	±35	6/10/2015	FW	
150617-TKN	Nitrogen, (TKN)	17.4	18.2	20.0	mg/L	SM 4500-N_{org} B	4.7	±35	6/17/2015	MS	
150609-pH	pH	n/a	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
150611-SC	Specific Conductance	n/a	n/a	n/a	*u*mho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
150615-TDS	Solids, Total Dissolved	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled By: J. Ozga

DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a
P.O. No.: n/a
Date Collected: 6/9/2015; 08:15
Date Received: 6/9/2015; 13:45
Temperature Received (°C): n/a
Report Date: 6/23/2015

Preparation Method: US EPA 5030B
Analytical Method: US EPA 8260B
Date Prepared: 6/11/2015
Date Analyzed: 6/11/2015
Analyst: TM
Data Reviewed By:

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Purge Volume: 15 mL
Instrument ID: Agilent 3026
Lab Data File: 15060902

VOLATILE ORGANIC COMPOUNDS
ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	Method Blank	WCC 1	WCC 2	MW 6	MW 9	MW 9 Dup.
Bromodichloromethane	75-27-4	1.0	nd	nd	nd	nd	nd	nd
Bromoform	75-25-2	1.0	nd	nd	nd	nd	nd	nd
Chloroform	67-66-3	1.0	nd	nd	**3.9**	nd	nd	nd
Dibromochloromethane	124-48-1	1.0	nd	nd	nd	nd	nd	nd
Dilution Factor				1.0	1.0	1.0	1.0	1.0
Data Flags								

DRAGON ANALYTICAL LABORATORY

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City of Shelton
DAL Project No.: 150609-06

Project Name: WCC Sprayfield
Project No.: n/a

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

Surrogate	Limits (%)	Method Blank	WCC 1	WCC 2	MW 6	MW 9	MW 9 Dup.
Dibromofluoromethane	86-118	90.6	112	112	114	112	117
Toluene-d8	88-110	106	102	107	106	104	105
4-Bromofluorobenzene	86-115	102	98.8	105	99.4	107	97.2
1,2-Dichlorobenzene-d4	80-120	109	102	109	108	104	101

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 150611-VOC MS/MSD Sample ID: 150611-VOC MS/MSD LCS Sample ID: 150611-VOC LCS

Analyte	LCS Limits (%)	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCSD Recovery (ug/L)	LCSD Percent Recovery
Benzene	76-127	10.0	10.0	99.9%	9.8	97.7%
Chlorobenzene	75-130	10.0	10.5	105%	10.0	99.7%
1,1-Dichloroethene	61-145	10.0	8.6	86.0%	8.1	81.4%
Toluene	76-125	10.0	9.7	96.9%	10.0	99.5%
Trichloroethene	71-120	10.0	10.3	103%	10.1	101%

WA-DOE-Laboratory Certification No.: C890
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None.

DRAGON ANALYTICAL LABORATORY

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Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: Brent Armstrong

DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a
P.O. No.: n/a
Matrix: Non-Potable Water
Temperature Received (°C): **Unknown**

Report Date: **10/1/2015**

TOTAL COLIFORMS ANALYTICAL RESULTS

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	DATE/TIME SAMPLE COLLECTED	DATE/TIME SAMPLE RECEIVED	DATE/TIME SAMPLE FILTERED	ANALYSIS DATE	ANALYST	DATA FLAGS
WCC-1	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/17/2015; 11:08	9/17/2015; 15:00	9/17/2015; 17:25	9/18/2015	CH/EK	
WCC-2	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/17/2015; 10:30	9/17/2015; 15:00	9/17/2015; 17:23	9/18/2015	CH/EK	
MW-6	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/17/2015; 12:40	9/17/2015; 15:00	9/17/2015; 17:26	9/18/2015	CH/EK	
MW-9	**<1**	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/17/2015; 12:55	9/17/2015; 15:00	9/17/2015; 17:27	9/18/2015	CH/EK	

COLIFORM QUALITY CONTROL RESULTS
Method Blank

SAMPLE NAME	RESULTS	SAMPLE VOLUME (mL)	FILTER COUNT	MRL	UNITS	METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Method Blank - Open	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/18/2015	CH/EK	
Method Blank - Close	<1	100	0	<1	CFU/100 mL	SM 9222 B2,5,6	9/18/2015	CH/EK	

Fecal and/or Total Coliforms must be delivered to the laboratory within 6 hours of sample collection. Samples must be filtered by the laboratory within 2 hours of reciept.

WA-DOE-Laboratory Certification No.: C890

"MRL" indicates Method Reporting Limit

Comments and Explanations: None

Data reviewed by:

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: Brent Armstrong

DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-1**
Matrix: Non-Potable Water
Temperature Received (°C): **Unknown**
Collected: **9/17/2015; 11:08**
Received: **9/17/2015; 15:00**
Report Date: **10/1/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**2.0**	0.022	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Dissolved Oxygen	**10.3**	n/a	0.01	mg/L	SM 4500-O G	1	9/17/2015	9/17/2015	15:49	NJ	(1)
Nitrogen, Nitrate	**0.060**	0.026	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	J
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Nitrogen, (TKN)	**1.7**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/30/2015	9/30/2015	n/a	MS	J
pH	**5.8**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2015	9/17/2015	17:15	NJ	(1)
Specific Conductance	**57.2**	n/a	10.0	umho/cm	SM 2510 B	1	9/17/2015	9/17/2015	n/a	NJ	
Solids, Total Dissolved	**44.0**	n/a	20.0	mg/L	SM 2540 C	1	9/23/2015	9/23/2015	n/a	JB	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: FW

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: Brent Armstrong

DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a
P.O. No.: n/a
Sample Name: **WCC-2**
Matrix: Non-Potable Water
Temperature Received (°C): **Unknown**
Collected: **9/17/2015; 10:30**
Received: **9/17/2015; 15:00**
Report Date: **10/1/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**8.8**	0.022	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Dissolved Oxygen	**10.1**	n/a	0.01	mg/L	SM 4500-O G	1	9/17/2015	9/17/2015	15:50	NJ	(1)
Nitrogen, Nitrate	**0.83**	0.026	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Nitrogen, (TKN)	**2.2**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/30/2015	9/30/2015	n/a	MS	
pH	**5.9**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2015	9/17/2015	17:17	NJ	(1)
Specific Conductance	**95.8**	n/a	10.0	umho/cm	SM 2510 B	1	9/17/2015	9/17/2015	n/a	NJ	
Solids, Total Dissolved	**68.0**	n/a	20.0	mg/L	SM 2540 C	1	9/23/2015	9/23/2015	n/a	JB	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes.

Data reviewed by:

Report Prepared By: FW

DRAGON ANALYTICAL LABORATORY

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Shelton, WA 98584

Sampled by: Brent Armstrong

DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-6**
Matrix: Non-Potable Water
Temperature Received (°C): **Unknown**
Collected: **9/17/2015; 12:40**
Received: **9/17/2015; 15:00**
Report Date: **10/1/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**1.9**	0.022	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Dissolved Oxygen	**10.6**	n/a	0.01	mg/L	SM 4500-O G	1	9/17/2015	9/17/2015	15:51	NJ	(1)
Nitrogen, Nitrate	**0.17**	0.026	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Nitrogen, (TKN)	**1.4**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/30/2015	9/30/2015	n/a	MS	J
pH	**5.9**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2015	9/17/2015	17:18	NJ	(1)
Specific Conductance	**52.8**	n/a	10.0	umho/cm	SM 2510 B	1	9/17/2015	9/17/2015	n/a	NJ	
Solids, Total Dissolved	**32.0**	n/a	20.0	mg/L	SM 2540 C	1	9/23/2015	9/23/2015	n/a	JB	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is greater than the MDL but less than the MRL.

Data reviewed by:

Report Prepared By: FW

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled by: Brent Armstrong

DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a
P.O. No.: n/a
Sample Name: **MW-9**
Matrix: Non-Potable Water
Temperature Received (°C): **Unknown**
Collected: **9/17/2015; 12:55**
Received: **9/17/2015; 15:00**
Report Date: **10/1/2015**

ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Chloride	**2.2**	0.022	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Dissolved Oxygen	**10.3**	n/a	0.01	mg/L	SM 4500-O G	1	9/17/2015	9/17/2015	15:53	NJ	(1)
Nitrogen, Nitrate	**0.13**	0.026	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Nitrogen, Nitrite	**nd**	0.034	0.10	mg/L	EPA 300.0	1	9/17/2015	9/17/2015	n/a	NJ	
Nitrogen, (TKN)	**0.28**	0.36	2.0	mg/L	SM 4500-N_{org} B	1	9/30/2015	9/30/2015	n/a	MS	J
pH	**5.6**	n/a	n/a	SU	SM 4500-H^+	1	9/17/2015	9/17/2015	17:21	NJ	(1)
Specific Conductance	**49.3**	n/a	10.0	umho/cm	SM 2510 B	1	9/17/2015	9/17/2015	n/a	NJ	
Solids, Total Dissolved	**30.0**	n/a	20.0	mg/L	SM 2540 C	1	9/23/2015	9/23/2015	n/a	JB	

WA-DOE-Laboratory Certification No.: C890
"MDL" indicates Method Detection Limit
"MRL" indicates Method Reporting Limit
"DF" indicates Dilution Factor
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: A (1) flag Indicates an estimated value, because the sample was received and therefore analyzed outside of the recommended and regulatory hold time of 15 minutes. A "J" flag indicates an estimated value that is less than the MRL.

Data reviewed by:

Report Prepared By: FW

DRAGON ANALYTICAL LABORATORY

530 A1 Ronlee Ln, Olympia, WA 98502
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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a

QUALITY CONTROL RESULTS
Method Blank

SAMPLE BATCH	PARAMETER	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
150917-Chloride	Chloride	nd	0.10	mg/L	EPA 300.0	9/17/2015	NJ	
150917-DO[3]	Dissolved Oxygen	8.9	0.01	mg/L	SM 4500-O G	9/17/2015	NJ	
150917-NO[2]	Nitrogen, Nitrate	nd	0.10	mg/L	EPA 300.0	9/17/2015	NJ	
150917-NO	Nitrogen, Nitrite	nd	0.10	mg/L	EPA 300.0	9/17/2015	NJ	
150930-TKN	Nitrogen, (TKN)	nd	2.0	mg/L	SM 4500-N_{org} B	9/30/2015	MS	
150917-pH	pH	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	
150917-SC	Specific Conductance	nd	10.0	*u* mho/cm	SM 2510 B	9/17/2015	NJ	
150923-TDS	Solids, Total Dissolved	nd	20.0	mg/L	SM 2540 C	9/23/2015	JB	

QUALITY CONTROL RESULTS
Duplicate Sample

SAMPLE BATCH	PARAMETER	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150917-Chloride	Chloride	92.1	92.2	mg/L	EPA 300.0	0.11	±35	9/17/2015	NJ	
150917-DO[3]	Dissolved Oxygen	10.6	10.7	mg/L	SM 4500-O G	1.5	±35	9/17/2015	NJ	(1)
150917-NO[2]	Nitrogen, Nitrate	nd	nd	mg/L	EPA 300.0	0.00	±35	9/17/2015	NJ	
150917-NO	Nitrogen, Nitrite	nd	nd	mg/L	EPA 300.0	0.00	±35	9/17/2015	NJ	
150930-TKN	Nitrogen, (TKN)	nd	nd	mg/L	SM 4500-N_{org} B	0.00	±35	9/30/2015	MS	
150917-pH	pH	5.6	5.7	SU	SM 4500-H^+	0.71	±35	9/17/2015	NJ	(1)
150917-SC	Specific Conductance	49.3	49.4	*u* mho/cm	SM 2510 B	0.20	±35	9/17/2015	NJ	
150923-TDS	Solids, Total Dissolved	1730	1664	mg/L	SM 2540 C	3.9	±35	9/23/2015	JB	

WA-DOE-Laboratory Certification No.: C890
"MRL" indicates Method Reporting Limit
"RPD" indicates Relative Percent Difference
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

530 A1 Ronlee Ln, Olympia, WA 98502
(360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a

QUALITY CONTROL RESULTS
Laboratory Fortified Blank

SAMPLE BATCH	PARAMETER	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150917-Chloride	Chloride	0.53	0.5	mg/L	EPA 300.0	105	65.0-135	9/17/2015	NJ	
150917-DO[3]	Dissolved Oxygen	n/a	n/a	mg/L	SM 4500-O G	n/a	n/a	n/a	n/a	
150917-NO[2]	Nitrogen, Nitrate	0.50	0.5	mg/L	EPA 300.0	99.0	65.0-135	9/17/2015	NJ	
150917-NO	Nitrogen, Nitrite	0.59	0.5	mg/L	EPA 300.0	118	65.0-135	9/17/2015	NJ	
150930-TKN	Nitrogen, (TKN)	19.3	20.0	mg/L	SM 4500-N_{org} B	96.5	65.0-135	9/30/2015	MS	
150917-pH	pH	7.0	7.0	SU	SM 4500-H^+	100	65.0-135	9/17/2015	NJ	
150917-SC	Specific Conductance	1448	1415	umho/cm	SM 2510 B	102	65.0-135	9/17/2015	NJ	
150923-TDS	Solids, Total Dissolved	506	500	mg/L	SM 2540 C	101	65.0-135	9/23/2015	JB	

QUALITY CONTROL RESULTS
Matrix Spike/Matrix Spike Duplicate

SAMPLE BATCH	PARAMETER	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
150917-Chloride	Chloride	DO	DO	DO	mg/L	EPA 300.0	DO	DO	DO	DO	
150917-DO[3]	Dissolved Oxygen	n/a	n/a	n/a	mg/L	SM 4500-O G	n/a	n/a	n/a	n/a	
150917-NO[2]	Nitrogen, Nitrate	0.47	0.47	0.5	mg/L	EPA 300.0	0.43	±35	9/17/2015	NJ	
150917-NO	Nitrogen, Nitrite	0.57	0.56	0.5	mg/L	EPA 300.0	0.35	±35	9/17/2015	NJ	
150930-TKN	Nitrogen, (TKN)	18.8	17.9	20.0	mg/L	SM 4500-N_{org} B	4.6	±35	9/30/2015	MS	
150917-pH	pH	n/a	n/a	n/a	SU	SM 4500-H^+	n/a	n/a	n/a	n/a	
150917-SC	Specific Conductance	n/a	n/a	n/a	umho/cm	SM 2510 B	n/a	n/a	n/a	n/a	
150923-TDS	Solids, Total Dissolved	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Data reviewed by:

DRAGON ANALYTICAL LABORATORY

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(360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
1000 West Pine Street
Shelton, WA 98584

Sampled By: Brent Armstrong

DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a
P.O. No.: n/a
Date Collected: 9/17/2015; 10:30-12:55
Date Received: 9/17/2015; 15:00
Temperature Received (°C): Unknown
Report Date: 10/1/2015

Preparation Method: US EPA 5030B
Analytical Method: US EPA 8260B
Date Prepared: 9/18/2015
Date Analyzed: 9/18/2015
Analyst: Tm
Data Reviewed By:

Units: ug/L
Matrix: Non-Potable Water
Reporting Limits: Standard
Purge Volume: 15 mL
Instrument ID: Agilent 3026
Lab Data File: 15091801

TOTAL TRIHALOMETHANES
ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	Method Blank	WCC-1	WCC-2	MW-6	MW-9
Bromodichloromethane	75-27-4	1.0	nd	nd	nd	nd	nd
Bromoform	75-25-2	1.0	nd	nd	nd	nd	nd
Chloroform	67-66-3	1.0	nd	nd	**5.7**	nd	nd
Dibromochloromethane	124-48-1	1.0	nd	nd	nd	nd	nd
Dilution Factor				1.0	1.0	1.0	1.0
Data Flags							

DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water
Mobile Environmental Laboratory

City of Shelton
DAL Project No.: 150917-07

Project Name: Qrtly Spray Field
Project No.: n/a

TOTAL TRIHALOMETHANES
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

Surrogate	Limits (%)	Method Blank	WCC-1	WCC-2	MW-6	MW-9
Dibromofluoromethane	86-118	109	111	113	109	111
Toluene-d8	88-110	94.0	94.0	91.4	95.2	91.8
4-Bromofluorobenzene	86-115	92.8	95.8	93.8	94.0	92.0
1,2-Dichlorobenzene-d4	80-120	110	113	111	107	108

LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 150918-VOC MS/MSD Sample ID: 150918-VOC MS/MSD LCS Sample ID: 150918-VOC LCS

Analyte	LCS Limits (%)	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCSD Recovery (ug/L)	LCSD Percent Recovery
Benzene	76-127	10.0	11.5	115%	11.2	112%
Chlorobenzene	75-130	10.0	10.2	102%	10.7	107%
1,1-Dichloroethene	61-145	10.0	11.3	113%	10.7	107%
Toluene	76-125	10.0	8.2	82.2%	8.8	87.5%
Trichloroethene	71-120	10.0	10.3	103%	10.0	99.8%

WA-DOE-Laboratory Certification No.: C890
"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable

Comments and Explanations: None.

Appendix E

Groundwater Quality Trends

Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

719 2ND AVENUE, SUITE 200 | SEATTLE, WA 98104 | P 206.394.3700

TECHNICAL MEMORANDUM

DATE: September 9, 2015

TO: Brian Matthews

FROM: Lisa Gilbert

SUBJECT: Statistical Analysis of Trends in Groundwater Quality Data

PROJECT NUMBER: 555-1682-042 (04/03)

PROJECT NAME: Mason County Landfill

This Memorandum presents the results of statistical analyses of trends in groundwater monitoring data measured at the Mason County Landfill during the post-closure period. The landfill closed in 1993. The statistical analyses were originally prepared following the September 2013 monitoring event, and have been updated to incorporate additional data collected in July 2015 (wells MW-3B, MW-8, MW-10, and Culver).

STATISTICAL APPROACH

Potential trends in the groundwater data were evaluated using the Mann-Kendall test for trend and Sen's nonparametric estimator of slope (Gibbons 1994; Gilbert 1987, USEPA 2009). These tests are well suited to environmental data because there are no distributional assumptions, and missing data (non-detects) or irregularly spaced measurement periods are permitted. The Mann-Kendall test was used to identify whether or not a trend exists, and then the Sen's slope test was used to determine how steeply the concentration levels are changing.

Trend analyses were conducted using all data collected from the Mason County Landfill monitoring wells between November 1991 and July 2015. The analyses were conducted for indicator parameters (dissolved arsenic, chloride, COD, specific conductivity, dissolved iron, dissolved manganese, ammonia, nitrate, nitrite, pH, sulfate, TOC, and dissolved zinc), and volatile organic compounds that have historically been detected at the site (carbon tetrachloride, tetrachloroethene, and vinyl chloride). The wells analyzed include upgradient well MW-4, downgradient monitoring wells MW-1B, MW-3B, MW-5B, MW-7, MW-8, and MW-10, and a domestic well at the Culver home located approximately 1,400 ft from the landfill property boundary in a downgradient direction. Wells MW-1B, MW-3B, MW-8, and MW-10 are located downgradient from the closed landfill at the point of compliance. Data for previously monitored wells MW-2B and MW-6 were not considered because these wells have not been sampled by the County since 2007 and 2005, respectively. Time-series plots showing all data collected during this period are presented in Attachment A.

In addition, trend analyses were conducted on data from the latest eight consecutive sampling events for each well as recommended in Ecology's guidance document "*Preparing for Termination of Post-Closure Activities at Landfills Closed Under Chapter 173-304 WAC*." (Ecology 2011, 2013). The latest eight events for wells except MW-4, MW-1B, and MW-5B started with September 2010 and ended with July 2015. MW-4 started with March 2010 because no data were collected in July 2015 due to pump malfunction, and MW-1B and MW-5B started with February 2006 because those wells were only sampled during the spring event through 2013.

All non-detected values were given a value equal to one half the reporting limit (Gilbert 1987, Gibbons 1994).

MANN-KENDALL TESTS

The nonparametric Mann-Kendall test evaluates the significance of temporal trends at the 95 percent confidence level. This test uses only the relative magnitudes of the data instead of their measured values and can be considered a non-parametric test for zero slope of the linear regression of time-ordered data versus time (Gilbert, 1987). As such, it can be greatly influenced by gross data errors, a few extreme data values, and/or outliers and the estimated slope can deviate greatly from the true slope of the trend. A negative value for the Mann Kendall S statistic implies that a majority of the differences between earlier and later values are negative, suggestive of a decreasing trend. An S value near zero indicates a roughly equal number of positive and negative differences. This would be expected if the measurements were randomly fluctuating about a constant mean with no apparent trend. A positive value for the S statistic suggests an increasing trend.

SEN'S SLOPE TESTS

The Sen's slope test is a nonparametric procedure used to estimate the true slope of the data. The advantage of the Sen's slope test over linear regression methods is that it is not greatly affected by gross data errors, a few extreme data values, or outliers, and can be computed when data are missing. The Sen's Slope/Trend Estimator Test used was a two-tailed test with the null hypothesis of zero slope. Therefore the slope (S = median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). The upper and lower confidence limits for the true slope are calculated based on the variance of S and Z (normal theory approximation). The probability and significance of the calculated slope S depend on the position of the upper and lower limits with reference to zero (the null hypothesis of zero slope). If both limits are greater than zero, a significant upward trend in slope exists, if both limits are less than zero, a significant downward trend exists, and if both limits are equal to zero or if zero lies between the lower and upper limits, no significant trends exists.

RESULTS OF TREND TESTS

In several cases where there are a few relatively high detected values and the majority of the data are low or non-detected, the Mann-Kendall and Sen's slope test results did not agree. In these cases, the Sen's slope test is a more accurate depiction of whether a trend actually exists because the test estimates the magnitude of the linear slope of the overall data, relative to zero. The Mann-Kendall, instead, estimates or tests for the presence of a linear trend using the relative magnitudes of the data. Therefore, an overall significant trend was considered to occur only when both the Mann-Kendall test and the Sen's slope test showed significant trends.

Trends Using All Data

For all data collected since November 1991, the results of the combined Mann-Kendall tests and Sen's slope tests are presented in the tables in Attachment B, and summarized in Table 1. The results indicate statistically significant downward trends or no trend for all parameters in both upgradient and downgradient wells, except for the following cases:

- Upward trends in dissolved iron and dissolved zinc in upgradient well MW-4 and several of the downgradient wells. It is likely that the upward trends calculated for these parameters are due to historical increases in reporting limits since there are mostly non-detected values in the wells with upward trends. Time-series plots for these parameters with an expanded vertical scale to show the changes in reporting limits are presented in Attachment C.
- Upward trend in sulfate in downgradient well MW-7. The sulfate trends is not believed to represent landfill impacts since there is a high degree of variability in sulfate concentrations across the site and there was no trend in the MW-7 sulfate data over the latest eight events (see subsequent section). Actual concentrations in MW-7 (all below 15 mg/L) are substantially below the secondary criterion of 250 mg/L.
- Upward trend in nitrate in upgradient well MW-4.
- Downward trend in pH in all wells, both upgradient and downgradient. Since the trend also occurred in the upgradient well, the downward trend in pH appears to indicate a site-wide or regional trend.

Table 1. Summary of Combined Mann-Kendall and Sen's Slope Test Results for All Data (November 1991 through July 2015)

	MW-4 (Upgradient well)	MW-1B	MW-3B	MW-5B	MW-7	MW-8	MW-10	CULVER
Arsenic	--	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	NA	NA	NA	NA	NA	NA
Chloride	--	--	D	--	D	D	--	--
COD	--	--	--	--	--	--	--	--
Conductivity	--	D	D	--	D	D	D	D
Iron[1]	U	U	--	U	--	U	U	--
Manganese	--	--	D	--	D	D	D	--
Ammonia	--	--	D	--	D	--	--	--
Nitrate	U	D	--	--	--	--	D	--
Nitrite	--	--	--	--	--	--	--	--
pH	D	D	D	D	D	D	D	D
Sulfate	--	--	D	--	U	--	--	--
Tetrachloroethene	--	--	--	D	--	--	--	D
TOC	--	--	--	--	--	--	--	--
Vinyl Chloride	--	--	--	--	--	--	--	--
Zinc[1]	U	--	U	U	--	U	U	U

U = Statistically Significant Upward Trend
[1] Upgradient trends reflect historical increases in reporting limits
D = Statistically Significant Downward Trend
-- indicates no statistical trend
NA = Not analyzed. All data non-detected

TrendS Using Latest Eight Sampling Events

The results of the combined Mann-Kendall tests and Sen's slope tests for the latest eight consecutive sampling events are presented in the tables in Attachment D, and summarized in Table 2. The results indicate no trend or statistically significant downward trends for all parameters in both upgradient and downgradient wells, except for the following cases:

- Upward trend for nitrate in upgradient well MW-4 and downgradient well MW-3B. Nitrate also showed a significant upward trend in upgradient well MW-4 using all data, likely reflecting a site-wide or regional trend. Actual concentrations in both these wells (all below 0.4 mg/L) are substantially below the criterion of 10 mg/L.
- Downward trend for pH in downgradient well MW-3B and Culver well. The downward trend in pH likely indicates a site-wide or regional trend since there were significant downward trends in all site wells including the upgradient well when all data were considered.

Table 2. Summary of Mann-Kendall Test Results for Latest Eight Sampling Events

	MW-4 (upgradient well)	MW-1B	MW-3B	MW-5B	MW-7	MW-8	MW-10	CULVER
Arsenic	--	D	--	D	--	--	--	--
Carbon Tetrachloride	--	--	NA	NA	NA	NA	NA	NA
Chloride	--	--	--	--	--	--	--	--
COD	--	--	--	--	--	--	--	--
Conductivity	--	--	--	--	--	D	--	--
Iron	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--
Ammonia	--	--	D	--	--	--	--	--
Nitrate	U	--	U	--	--	--	--	--
Nitrite	--	--	--	--	--	--	--	--
pH	--	--	D	--	--	--	--	D
Sulfate	--	--	D	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--
TOC	--	--	--	--	--	--	--	--
Vinyl Chloride	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--

U = Statistically Significant Upward Trend
D = Statistically Significant Downward Trend
-- indicates no statistical trend, or all data were non-detected
NA = not analyzed. All data non-detected

CONCLUSIONS

The results of trend analyses indicate there were no statistically significant upward trends in downgradient monitoring wells over the most recent eight events, or in any well located downgradient from the closed landfill at the point of compliance for all data measured during the post-closure period between November 1991 and July 2015. The only exceptions were cases where there was also an upward trend (or downgradient trend in the case of pH) in the upgradient monitoring well indicating the presence of a site-wide or regional trend. Some of the upward trends in the data for the entire post-closure period reflect increasing reporting limits over time.

REFERENCES

Gibbons, R.D. 1994. Statistical Methods for Groundwater Monitoring. John Wiley and Sons, Inc. New York

Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold. New York

U.S. Environmental Protection Agency (USEPA). 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance. March.

Washington State Department of Ecology (Ecology). 2011. Preparing for Termination of Post-Closure Activities at Landfills Closed Under Chapter 173-304 WAC. Publication 11-07-006.

Washington State Department of Ecology (Ecology). 2013. Addendum to Preparing for Termination of Post-Closure Activities at Landfills Closed Under Chapter 173-304 WAC.

ATTACHMENTS

A Time-Series Plots

B Results of Mann-Kendall Test for Trend and Sen's Slope Analysis – All Data

C Time-Series Plots for Selected Parameters Illustrating Changing Reporting Limits

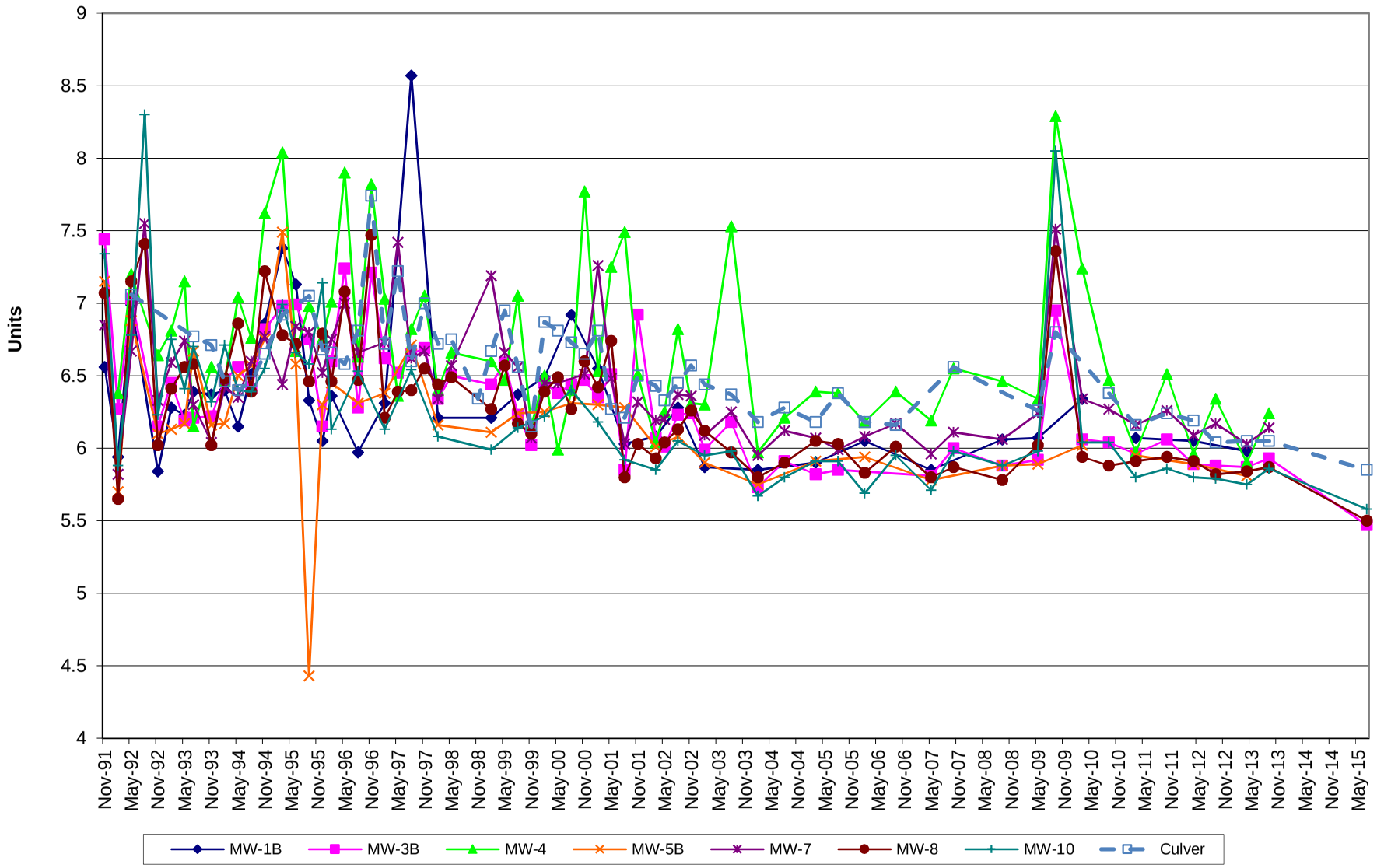
D Results of Mann-Kendall Test for Trend and Sen's Slope Analysis – Most Recent Eight Events

Attachment A

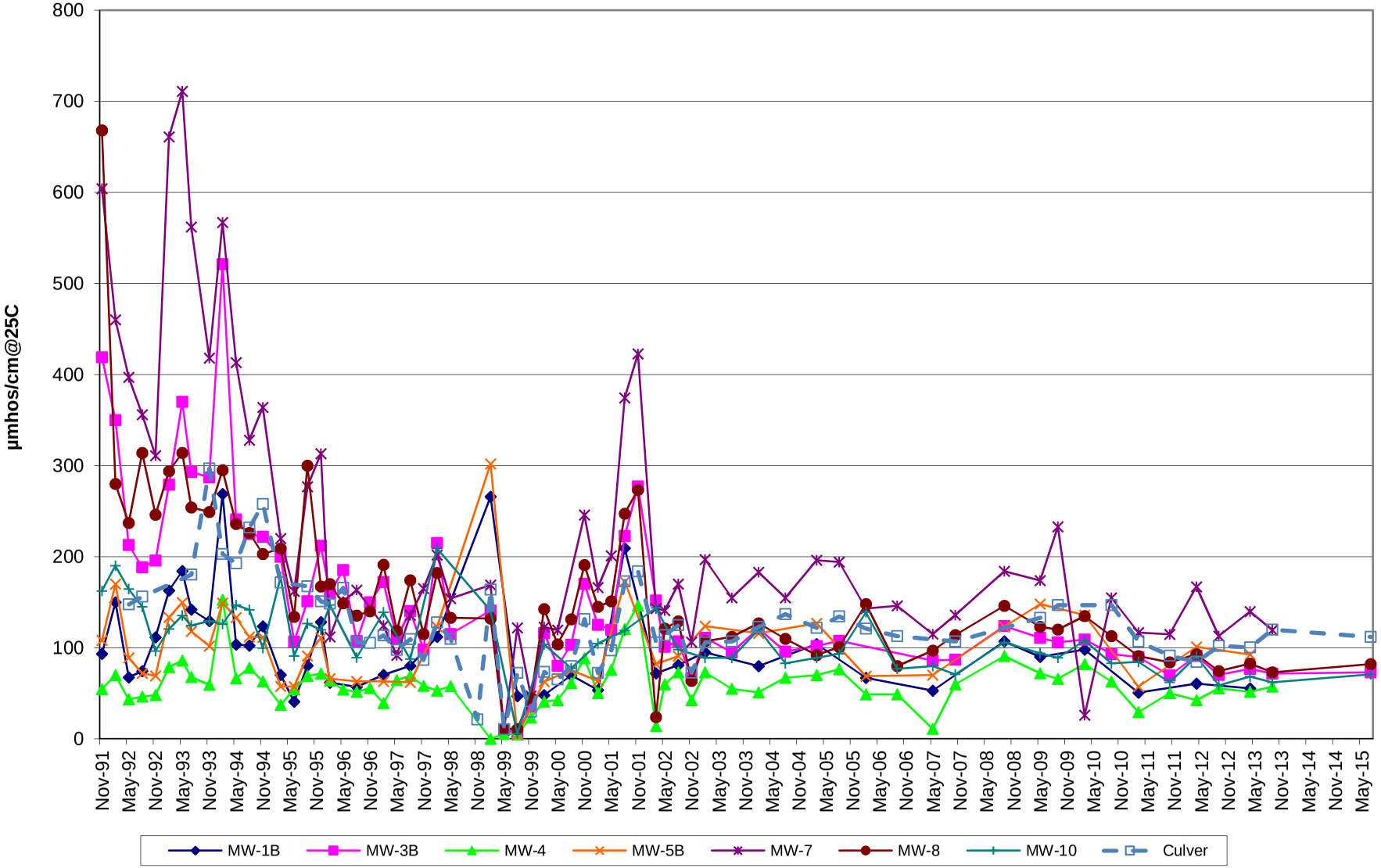
Time-Series Plots

Mason County Landfill

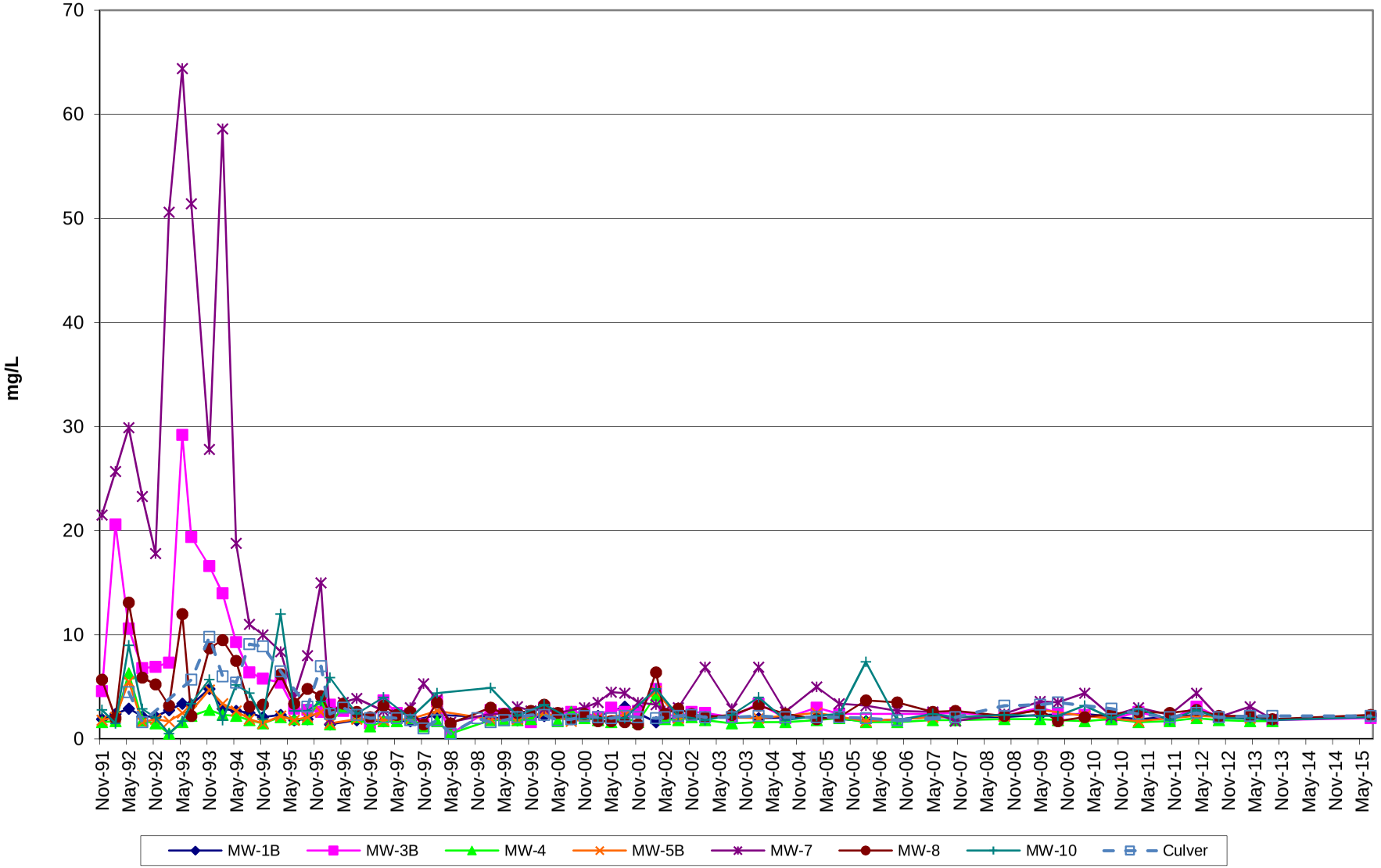
pH



Mason County Landfill
Specific Conductivity

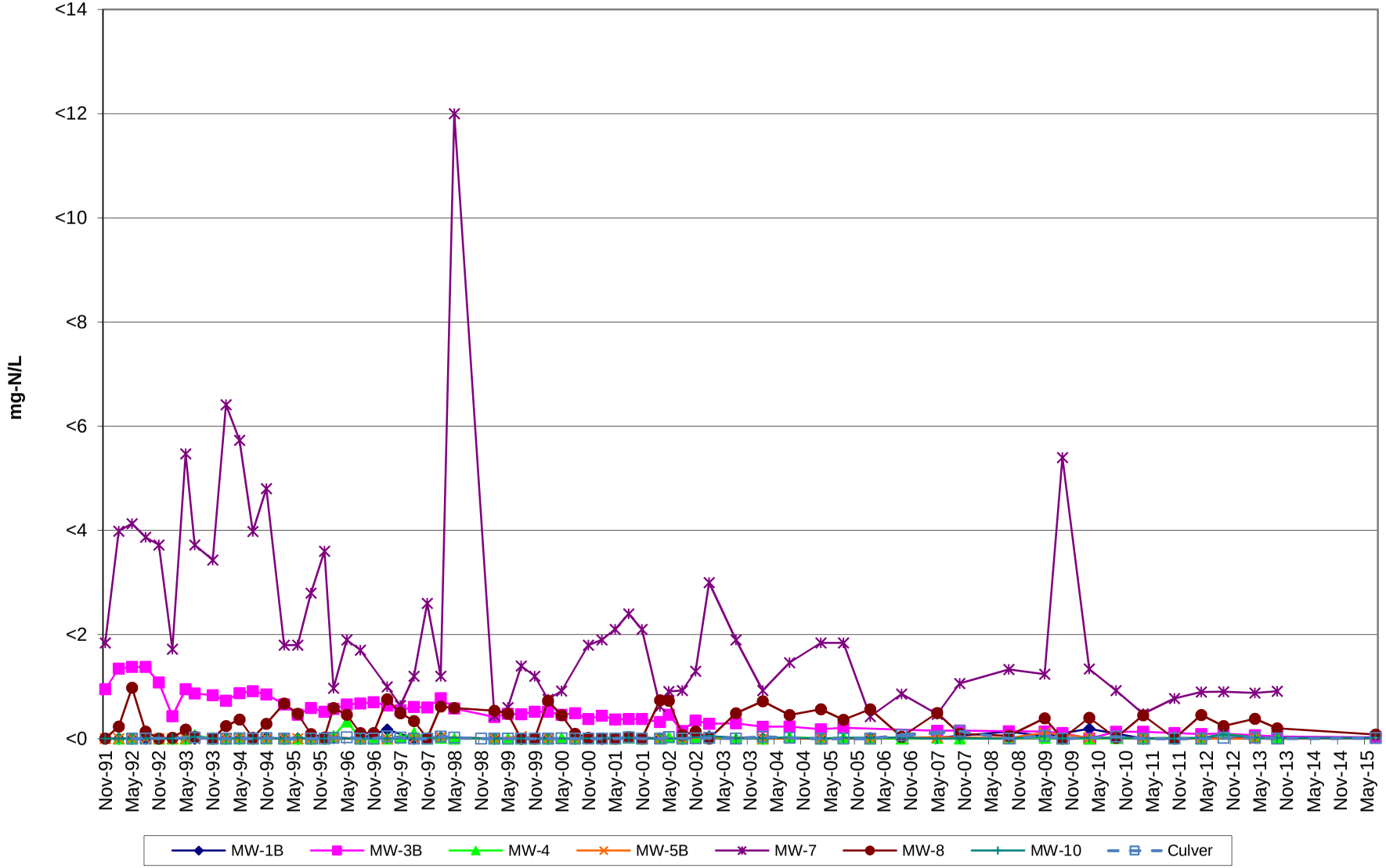


Mason County Landfill
Chloride



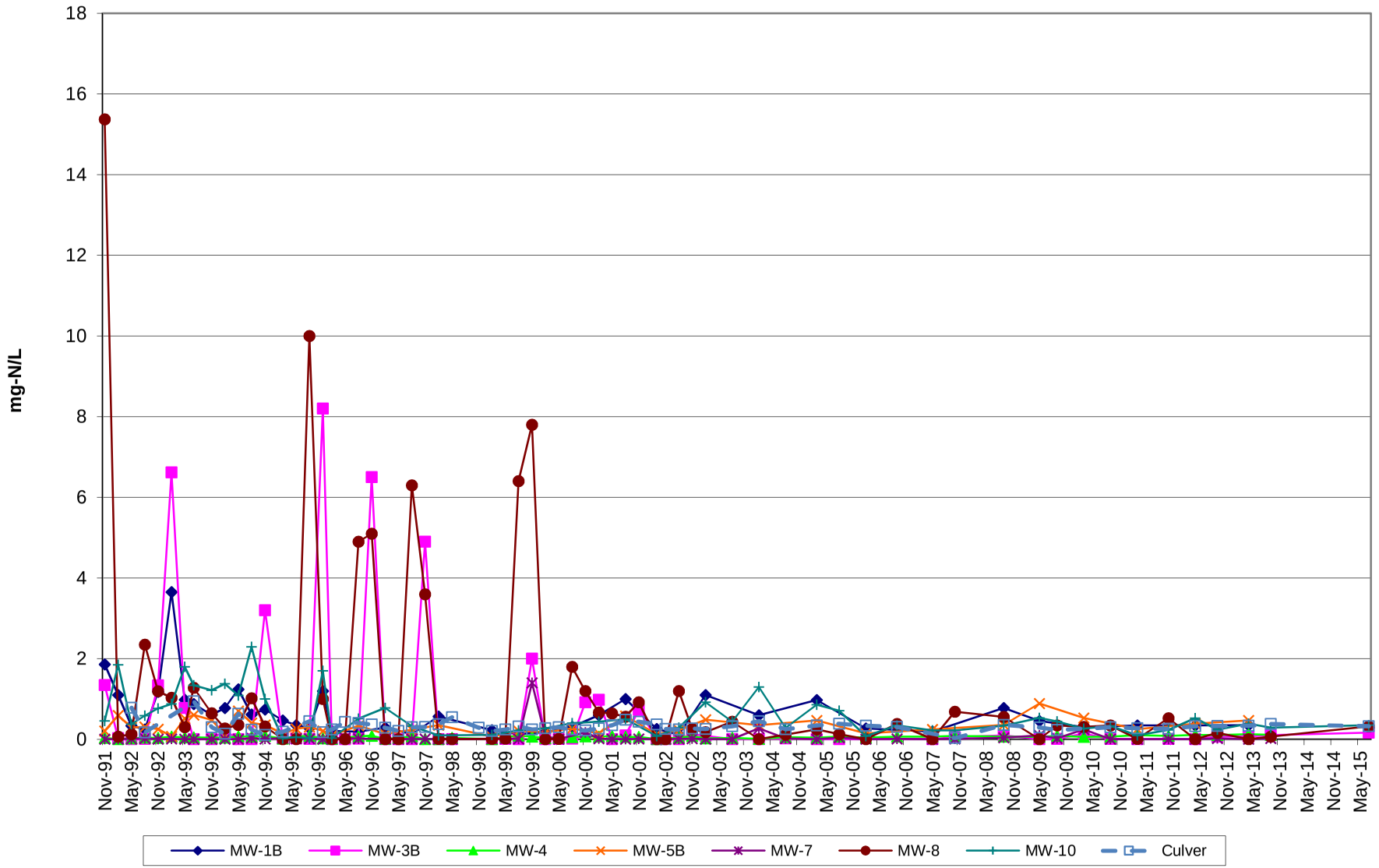
Mason County Landfill

Ammonia



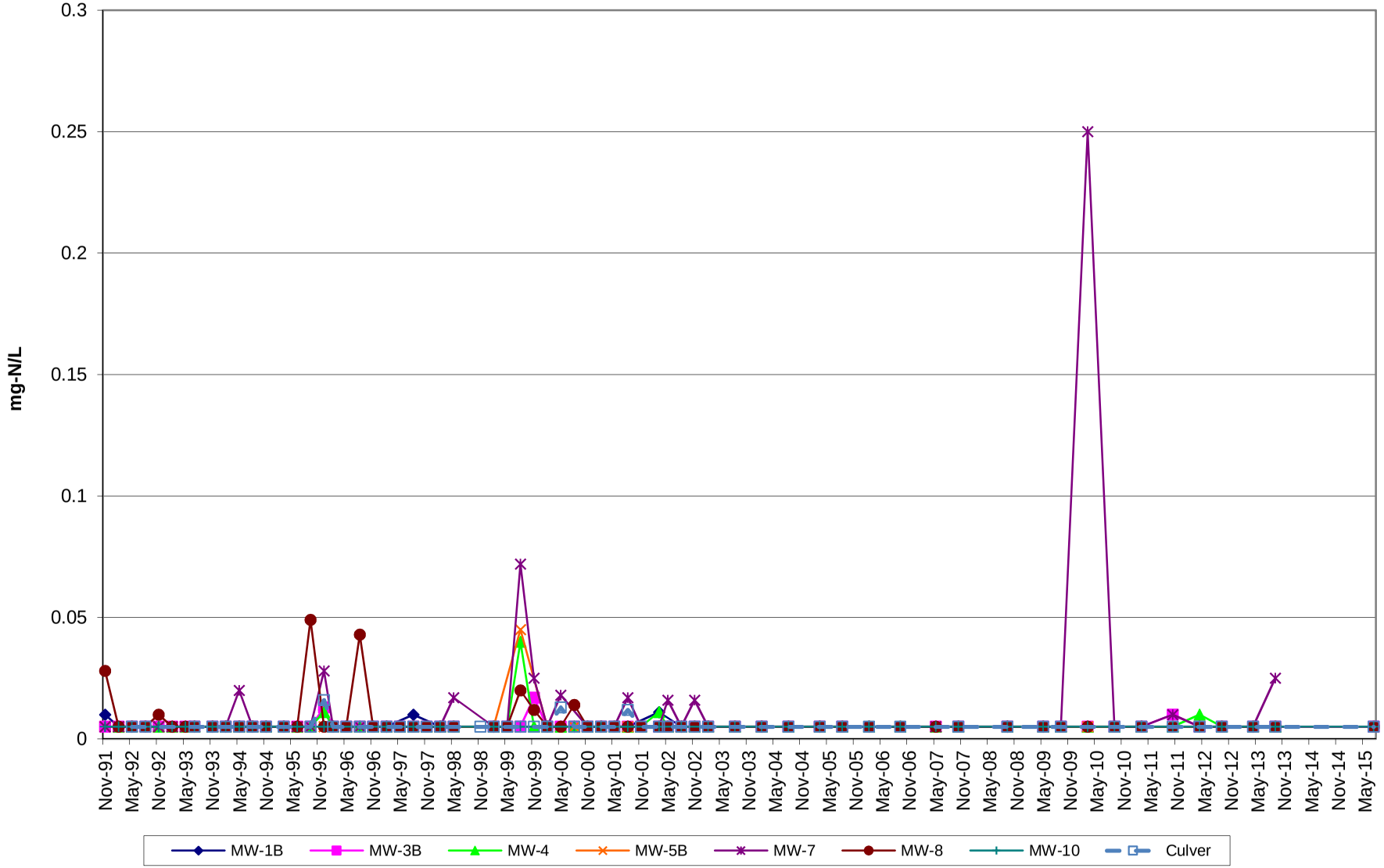
Mason County Landfill

N-Nitrate



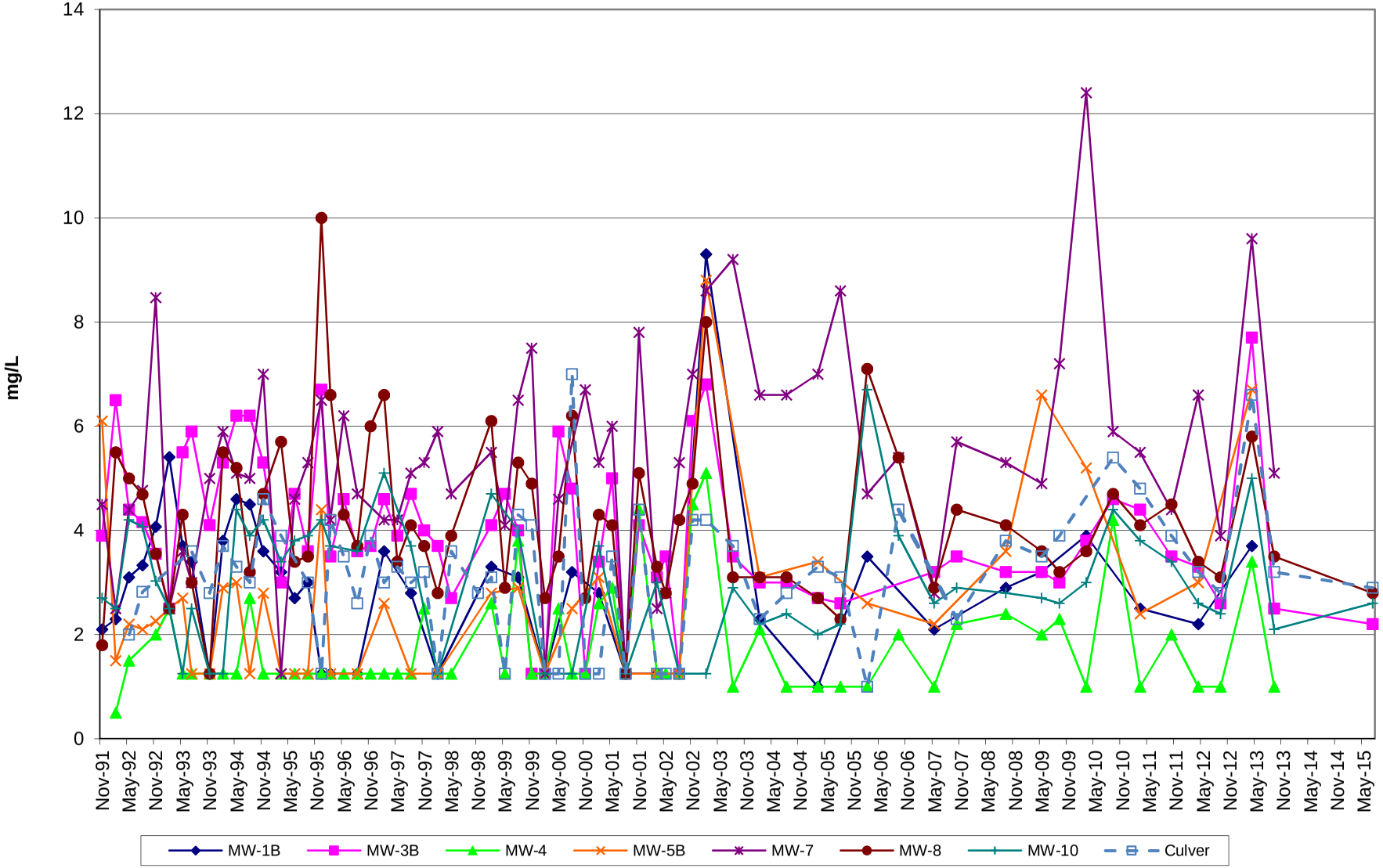
Mason County Landfill

N-Nitrite

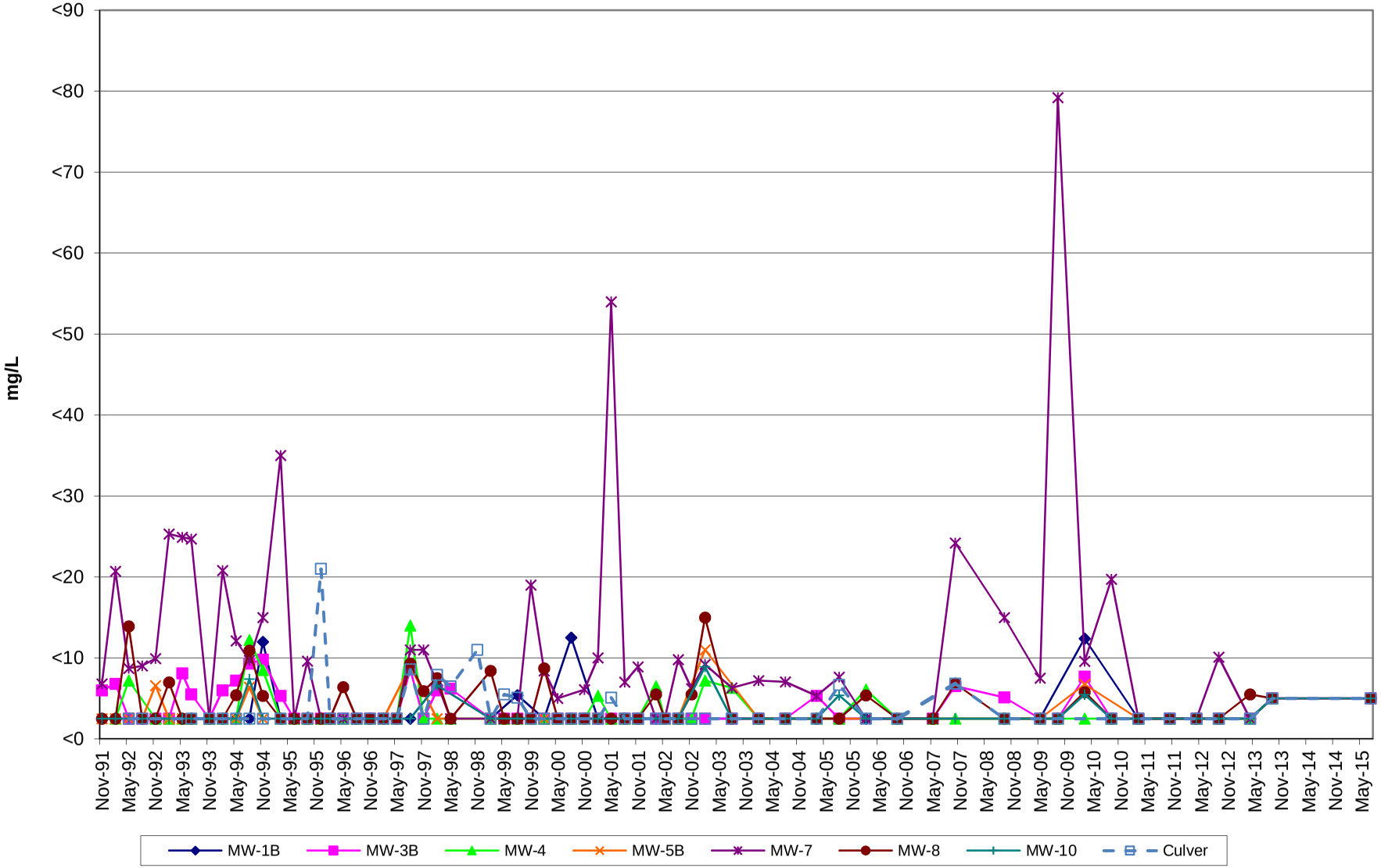


Mason County Landfill

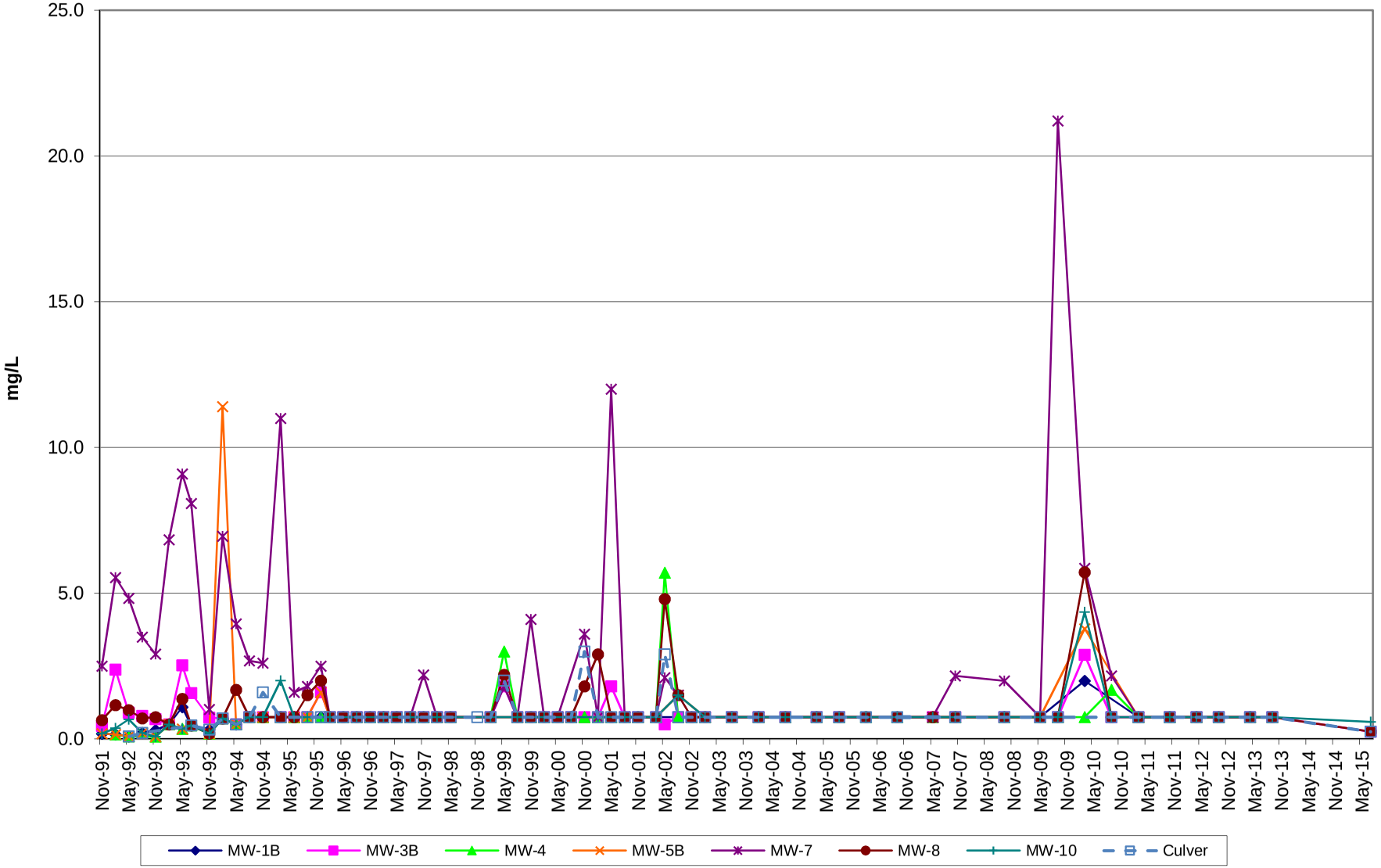
Sulfate



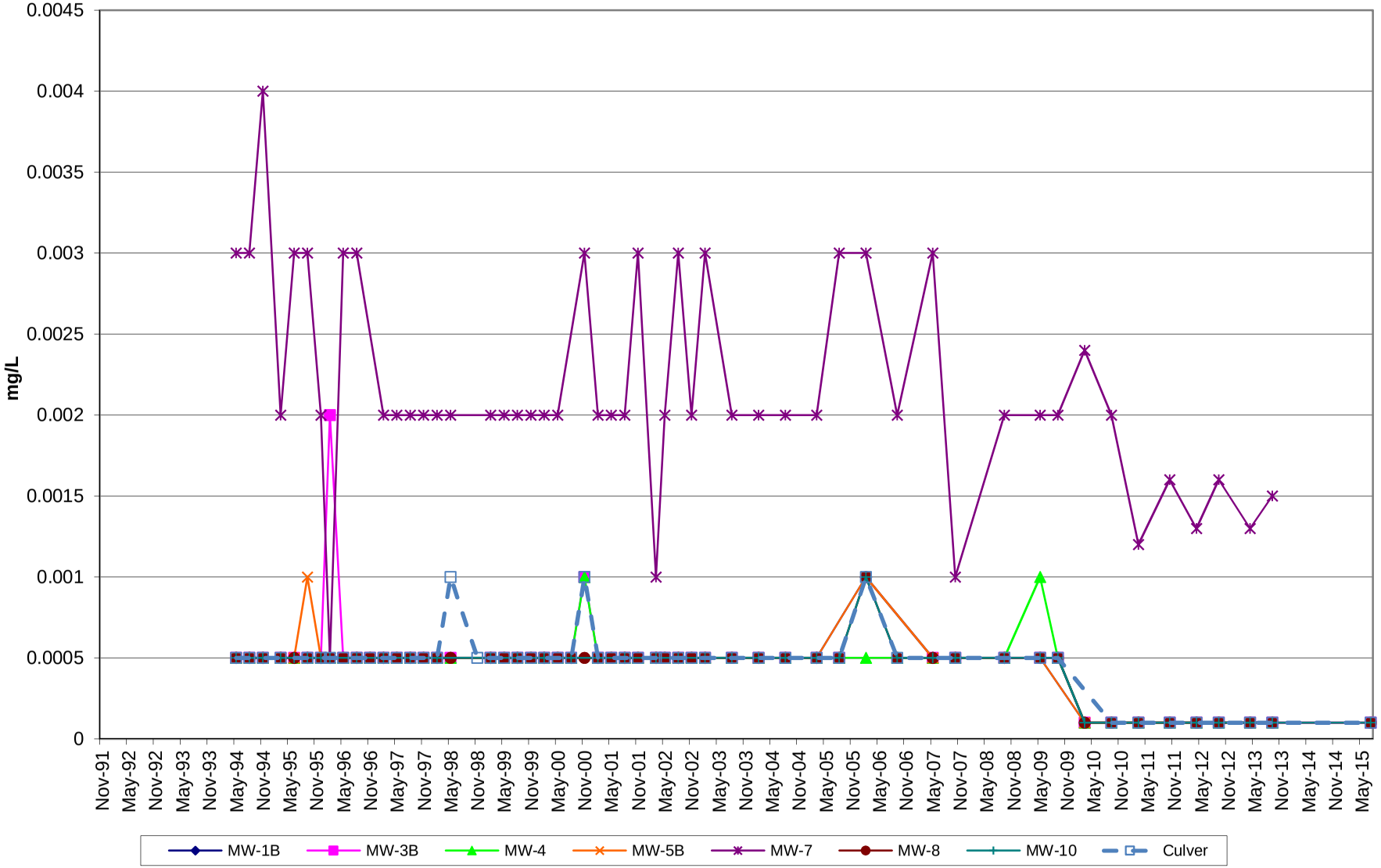
Mason County Landfill
Chemical Oxygen Demand



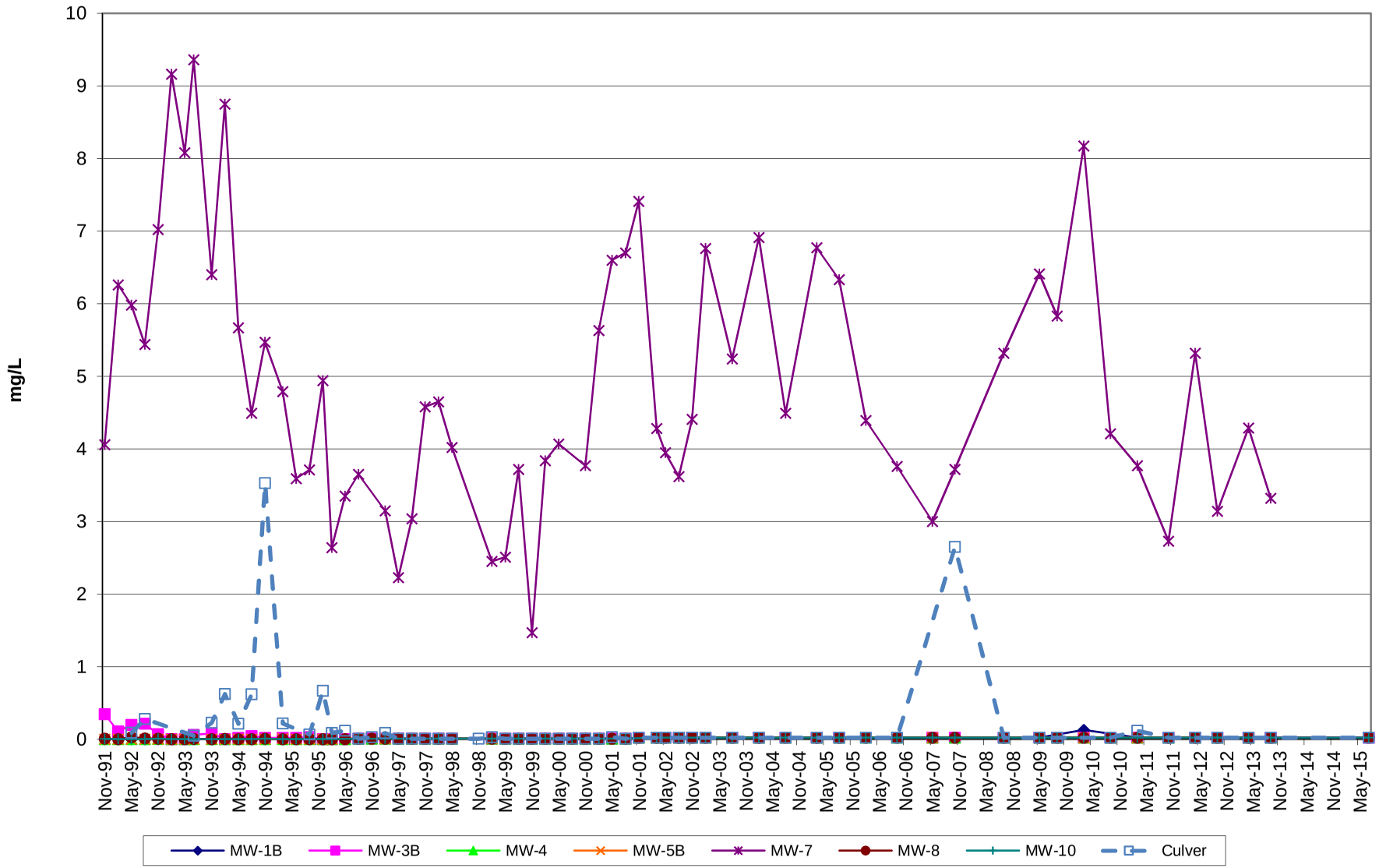
Mason County Landfill
Total Organic Carbon



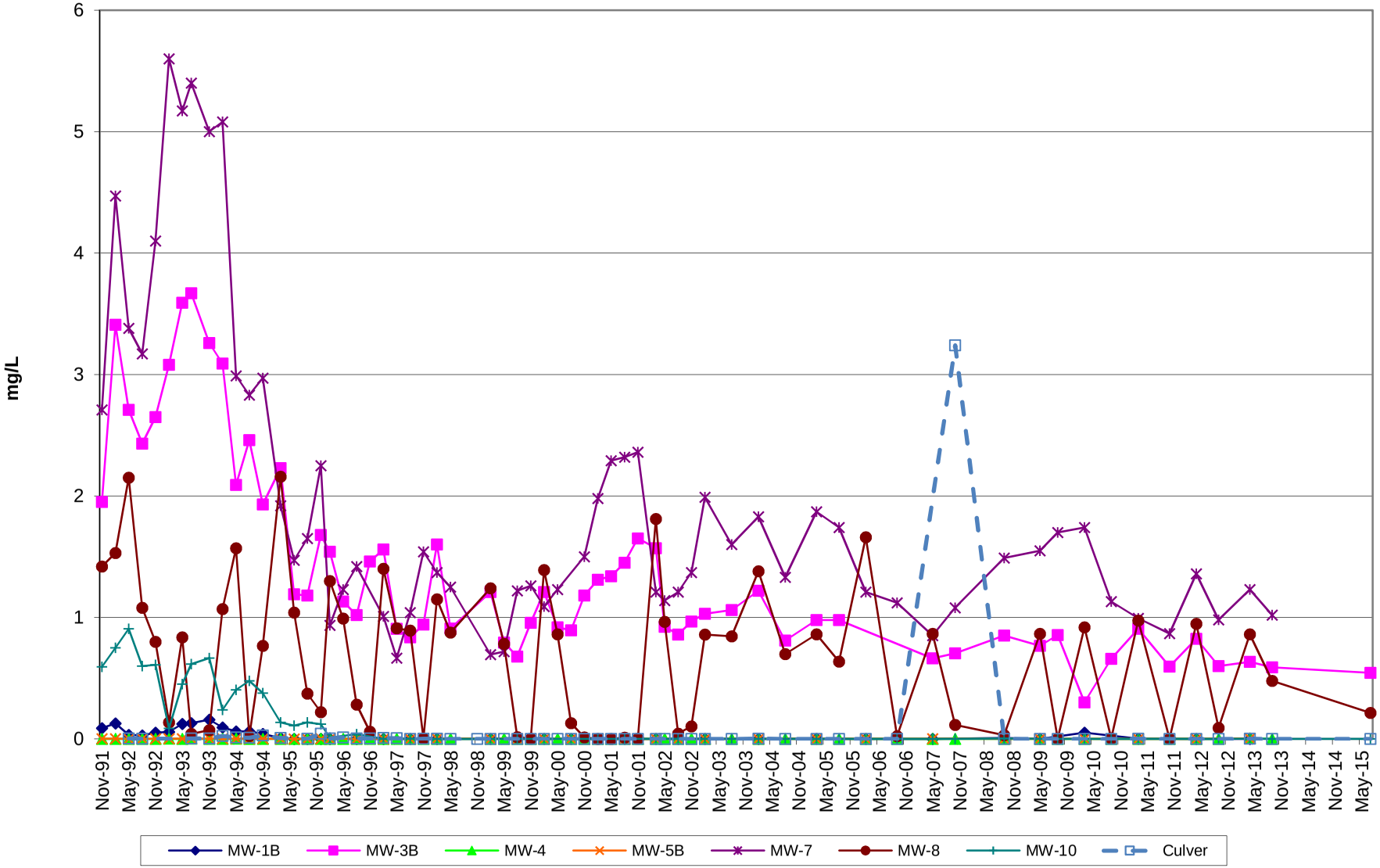
Mason County Landfill
Dissolved Arsenic



Mason County Landfill
Dissolved Iron

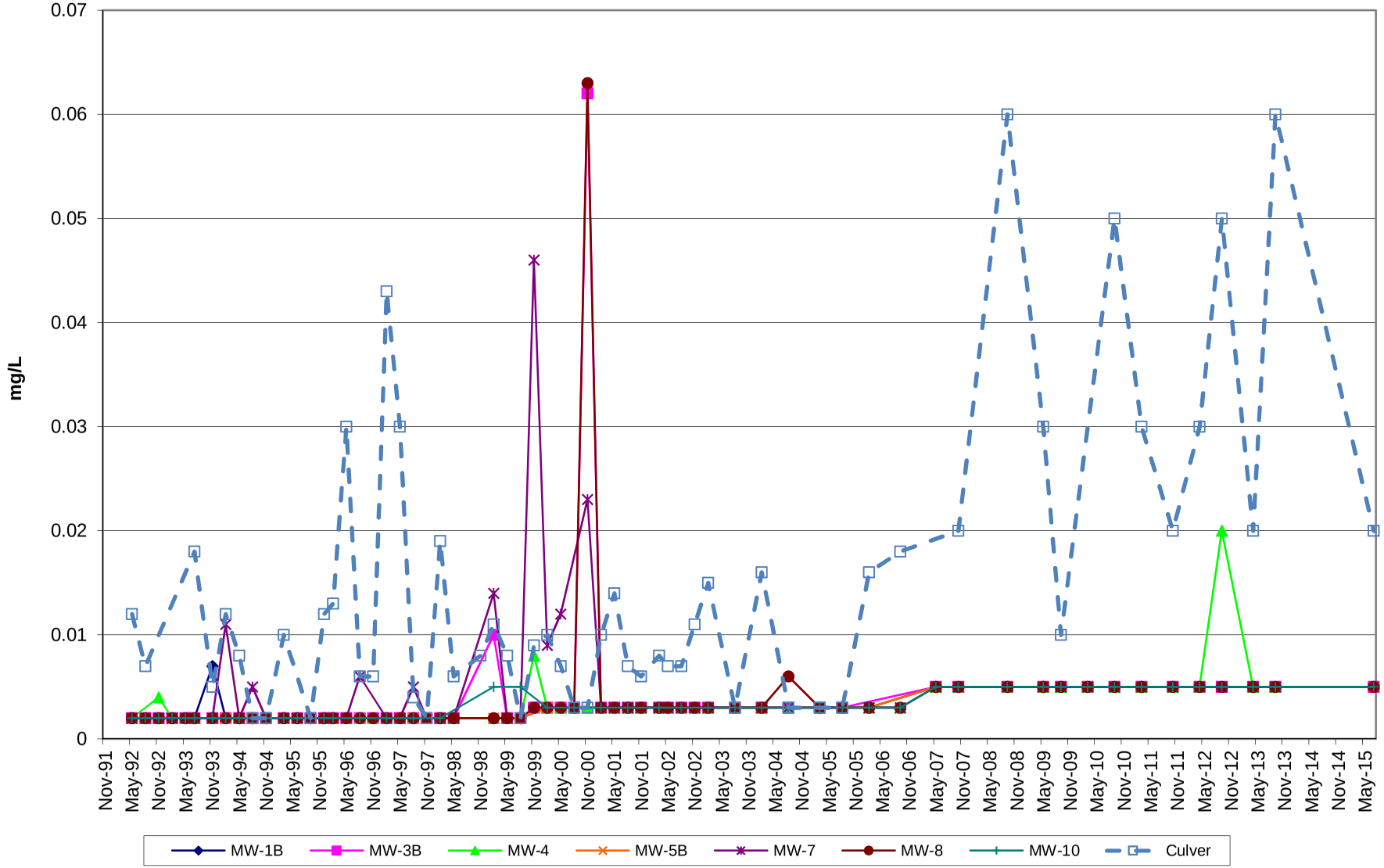


Mason County Landfill
Dissolved Manganese

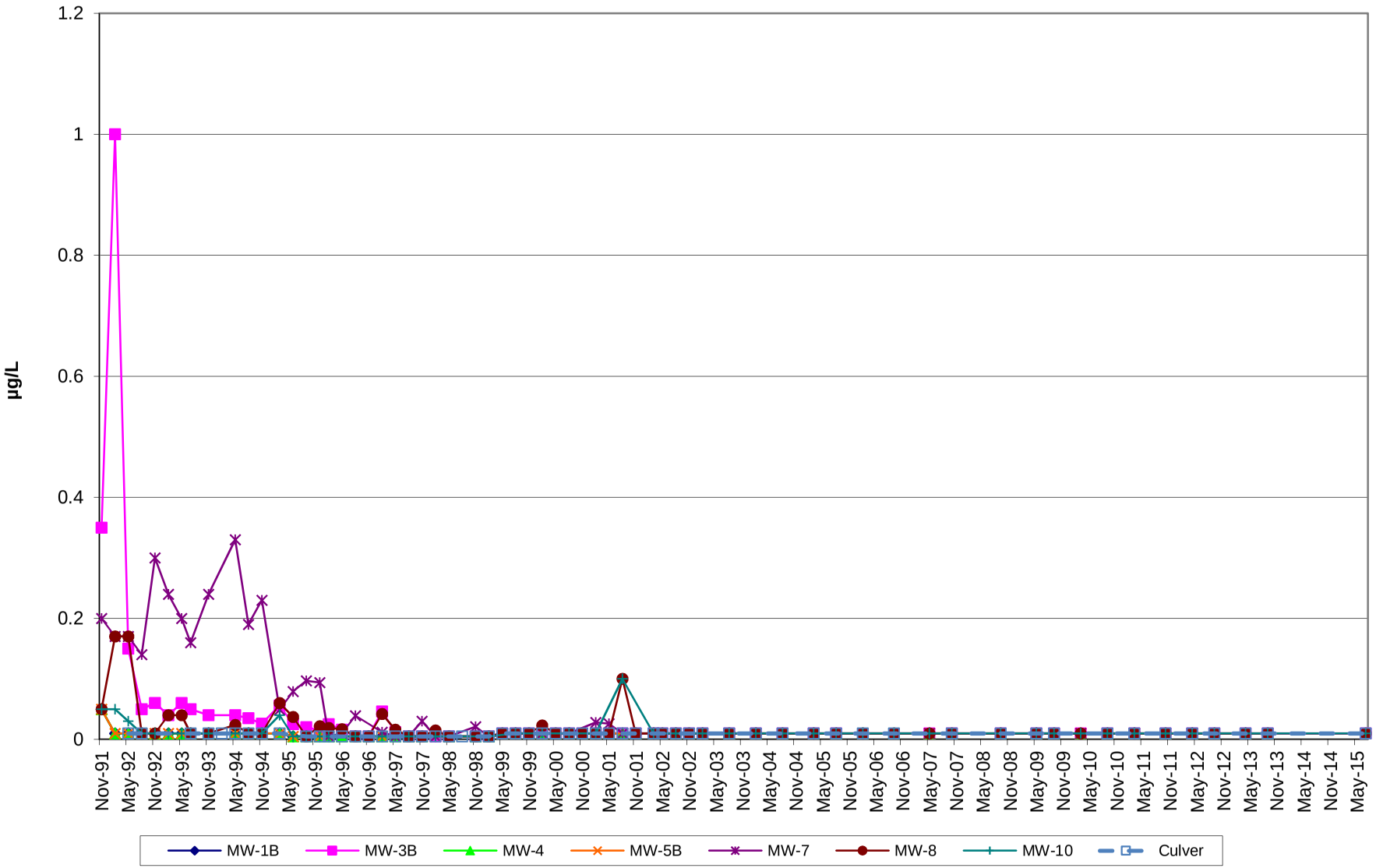


Mason County Landfill

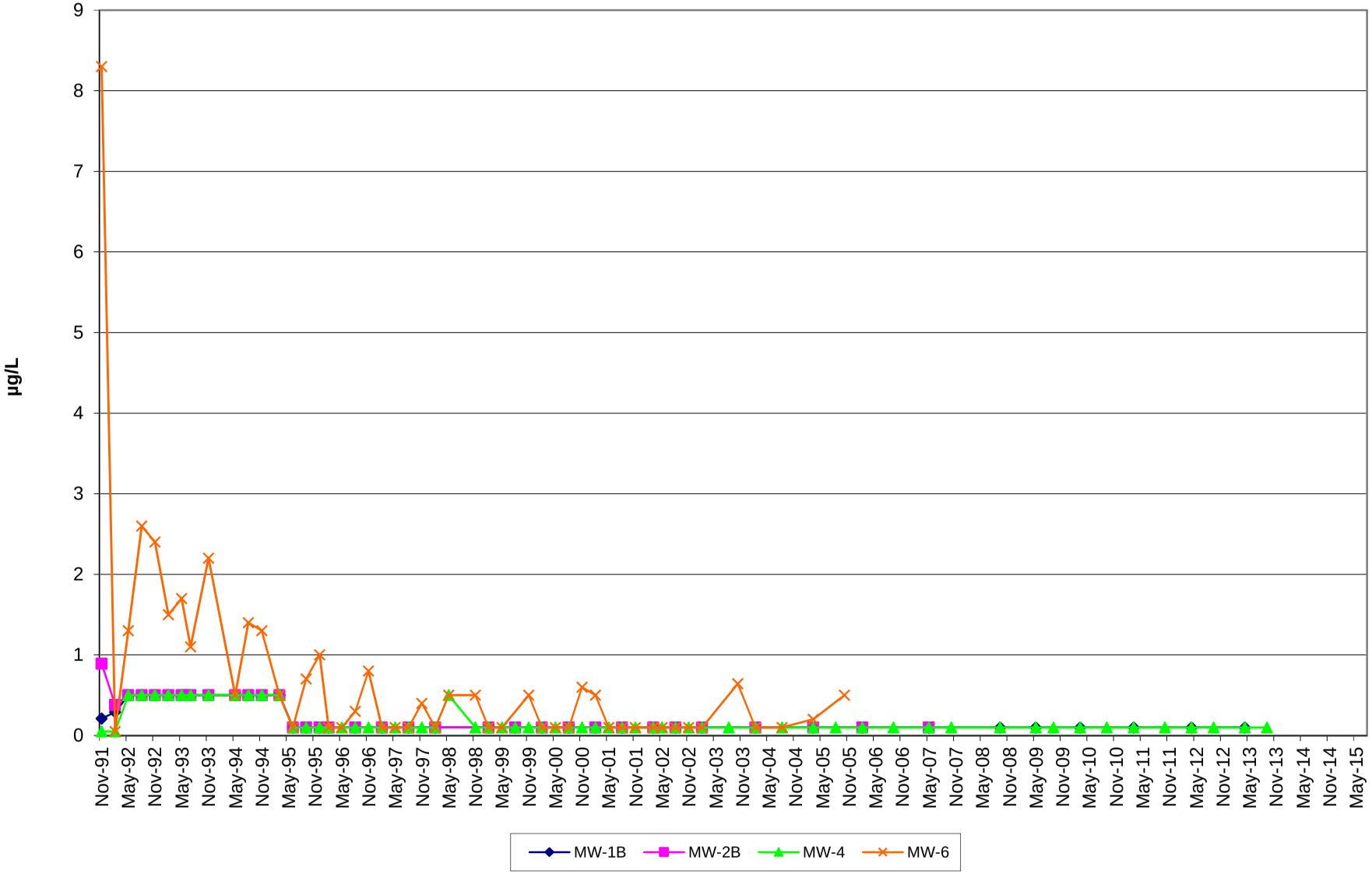
Dissolved Zinc



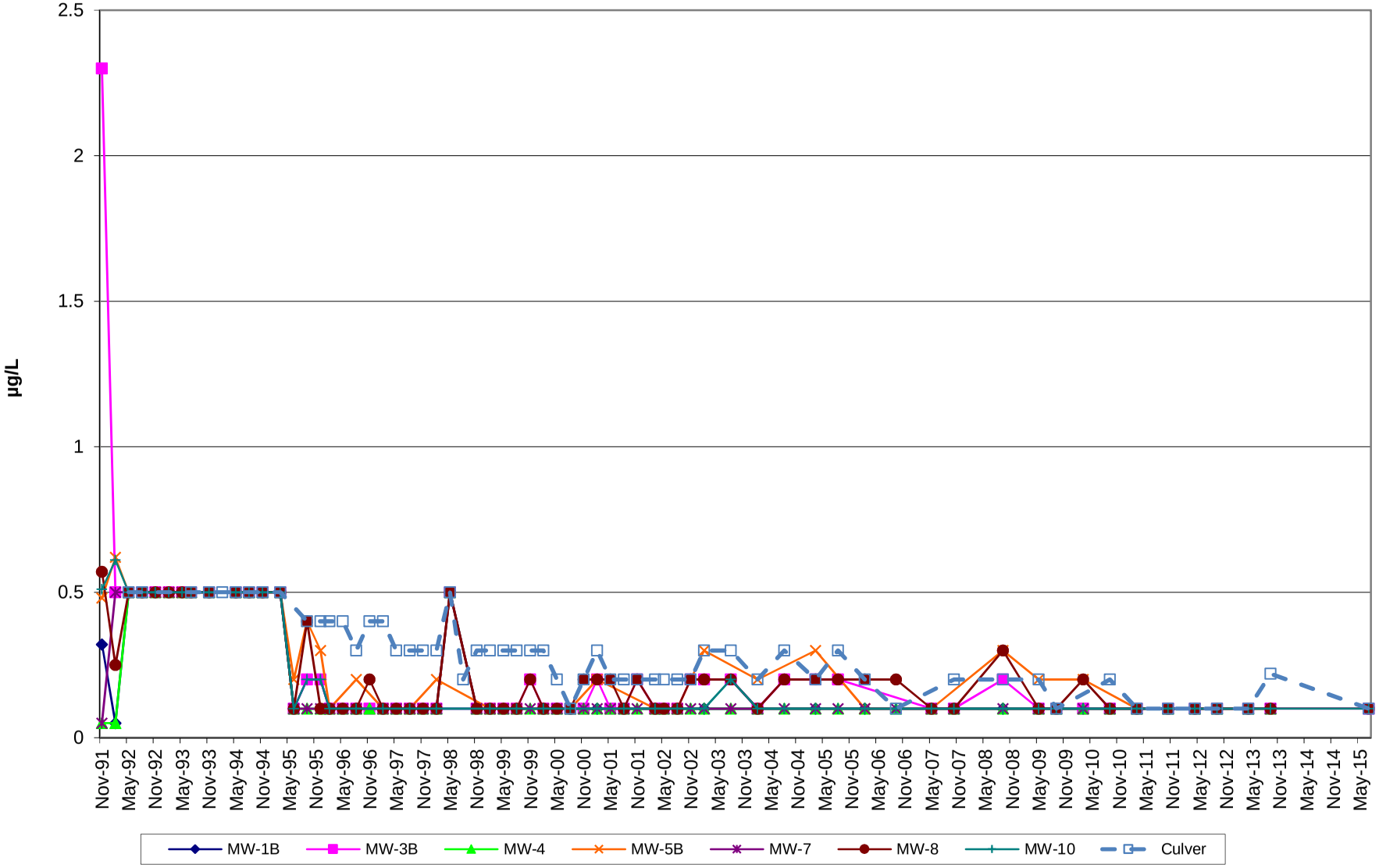
Mason County Landfill
Vinyl Chloride



Mason County Landfill
Carbon Tetrachloride



Mason County Landfill
Tetrachloroethene



Attachment B

Results of Mann-Kendall Test for Trend and Sen's Slope Analysis – All Data

Mason County Landfill MW-3B

Results of Mann-Kendall/Sen's Slope Analyses for Trend

			Mann-Kendall Trend Analysis				Sen's Slope Analysis			
Well ID	Analyte	n	S	Variance	Z	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
MW-3B	Arsenic, Dissolved	53	-421	8389.0	-4.59	Downward	0.00	0.00	0.00	No Trend
MW-3B	**Chloride**	**63**	**-900**	**28339.3**	**-5.34**	**Downward**	**-0.05**	**-0.0884314**	**-0.0255814**	**Downward**
MW-3B	COD	63	-221	17972.3	-1.64	No Trend	0.00	0.00	0.00	No Trend
MW-3B	**Specific Conductivity**	**63**	**-1090**	**28426.0**	**-6.46**	**Downward**	**-2.775**	**-3.61404**	**-2.025**	**Downward**
MW-3B	Iron, Dissolved	63	293	25765.7	1.82	Upward	0.00	0.00	0.00015625	No Trend
MW-3B	**Manganese, Dissolved**	**63**	**-1243**	**28425.0**	**-7.37**	**Downward**	**-0.0291**	**-0.0370175**	**-0.0223462**	**Downward**
MW-3B	**Ammonia**	**63**	**-1636**	**28414.0**	**-9.70**	**Downward**	**-0.0156563**	**-0.0168529**	**-0.0145833**	**Downward**
MW-3B	Nitrate	63	-101	26122.3	-0.62	No Trend	0.00	-0.00024242	0.00	No Trend
MW-3B	Nitrite	63	-31	2603.7	-0.59	No Trend	0.00	0.00	0.00	No Trend
MW-3B	**pH**	**62**	**-885**	**27096.3**	**-5.37**	**Downward**	**-0.0152941**	**-0.02**	**-0.01**	**Downward**
MW-3B	**Sulfate**	**63**	**-518**	**28359.3**	**-3.07**	**Downward**	**-0.0261905**	**-0.0454545**	**-0.0097561**	**Downward**
MW-3B	Tetrachloroethene	63	-677	22099.7	-4.55	Downward	0.00	-0.00588235	0.00	No Trend
MW-3B	TOC	63	25	17972.3	0.18	No Trend	0.00	0.00	0.00	No Trend
MW-3B	Vinyl Chloride	63	-706	23396.7	-4.61	Downward	-0.000135135	-0.0005	0.00	No Trend
MW-3B	**Zinc, Dissolved**	**61**	**1111**	**22491.7**	**7.40**	**Upward**	**0.000043478**	**0.00003125**	**0.00005882**	**Upward**

n = Sample size

S = Mann-Kendall test statistic. Positive numbers imply increasing trends; negative numbers imply decreasing trends.

Z = Approximate normal test statistic; calculated based on S and the estimated variance when the sample size is greater than 10.

The comparison level (critical value of Z) at 1.0 - (α/ 2) = (0.05 / 2) = 97.5% confidence level = 1.97737 for a two-tailed Mann-Kendall test and at 1.0 - (a) = (0.05) = 95% confidence level = 1.65463 for a one-tailed Mann-Kendall test

A significant trend is present in the data if the absolute value of the calculated Z statistic (|Z|) > 1.97737 and a significant upward or downward trend is present in the data if the absolute value of the calculated Z statistic (|Z|) > 1.65463.

There is no trend in the data when |Z| < 1.97737 and no significant upward or downward trend when |Z| < 1.65463

The Sen's Slope/Trend Estimator Test is a two-tailed test with a null hypothesis of zero slope. Therefore Q (Slope Estimator= Median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). If zero lies between the upper and lower 95% Confidence Limits around the median Q, there is no trend. If zero lies above the upper limit (UL < 0), there is a downward trend in the data. If zero lies below the lower limit (0 < LL), there is a upward trend in the data.

The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at confidence level of 95% or 97.5% are shown in bold type.

Mason County Landfill MW-8
Results of Mann-Kendall/Sen's Slope Analyses for Trend

			Mann-Kendall Trend Analysis				Sen's Slope Analysis			
Well ID	Analyte	n	S	Variance	Z	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
MW-8	Arsenic, Dissolved	55	-381	8433.0	-4.14	Downward	0.00	0.00	0.00	No Trend
MW-8	**Chloride**	**65**	**-709**	**31116.3**	**-4.01**	**Downward**	**-0.03**	**-0.05**	**-0.0142857**	**Downward**
MW-8	COD	65	-30	20748.0	-0.20	No Trend	0.00	0.00	0.00	No Trend
MW-8	**Specific Conductivity**	**65**	**-1183**	**31199.0**	**-6.69**	**Downward**	**-2.78018**	**-3.5**	**-2.10217**	**Downward**
MW-8	**Iron, Dissolved**	**65**	**1129**	**27887.0**	**6.75**	**Upward**	**0.000357143**	**0.00025**	**0.00042553**	**Upward**
MW-8	**Manganese, Dissolved**	**65**	**-397**	**31191.7**	**-2.24**	**Downward**	**-0.00496364**	**-0.014**	**-0.00035714**	**Downward**
MW-8	Ammonia	65	37	30977.7	0.20	No Trend	0.00	-0.00205882	0.00292593	No Trend
MW-8	Nitrate	65	-394	30704.7	-2.24	Downward	-0.00528099	-0.0171429	0.00	No Trend
MW-8	Nitrite	65	-193	8976.3	-2.03	Downward	0.00	0.00	0.00	No Trend
MW-8	**pH**	**65**	**-1068**	**31182.0**	**-6.04**	**Downward**	**-0.0160714**	**-0.0197222**	**-0.0125**	**Downward**
MW-8	Sulfate	65	-152	31155.3	-0.86	No Trend	-0.00769231	-0.0270833	0.0111111	No Trend
MW-8	Tetrachloroethene	65	-644	26028.7	-3.99	Downward	0.00	-0.005	0.00	No Trend
MW-8	TOC	65	125	19309.0	0.89	No Trend	0.00	0.00	0.00	No Trend
MW-8	Vinyl Chloride	65	-388	23206.0	-2.54	Downward	0.00	0.00	0.00	No Trend
MW-8	**Zinc, Dissolved**	**63**	**1217**	**24714.3**	**7.73**	**Upward**	**0.000043478**	**0.00003125**	**0.0000566**	**Upward**

n = Sample size

S = Mann-Kendall test statistic. Positive numbers imply increasing trends; negative numbers imply decreasing trends.

Z = Approximate normal test statistic; calculated based on S and the estimated variance when the sample size is greater than 10.

The comparison level (critical value of Z) at 1.0 - (α/ 2) = (0.05 / 2) = 97.5% confidence level = 1.97737 for a two-tailed Mann-Kendall test and at 1.0 - (a) = (0.05) = 95% confidence level = 1.65463 for a one-tailed Mann-Kendall test

A significant trend is present in the data if the absolute value of the calculated Z statistic (|Z|) > 1.97737 and a significant upward or downward trend is present in the data if the absolute value of the calculated Z statistic (|Z|) > 1.65463.

There is no trend in the data when |Z| < 1.97737 and no significant upward or downward trend when |Z| < 1.65463

The Sen's Slope/Trend Estimator Test is a two-tailed test with a null hypothesis of zero slope. Therefore Q (Slope Estimator= Median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). If zero lies between the upper and lower 95% Confidence Limits around the median Q, there is no trend. If zero lies above the upper limit (UL < 0), there is a downward trend in the data. If zero lies below the lower limit (0 < LL), there is a upward trend in the data.

The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at confidence level of 95% or 97.5% are shown in bold type.

Mason County Landfill MW-10
Results of Mann-Kendall/Sen's Slope Analyses for Trend

			Mann-Kendall Trend Analysis				Sen's Slope Analysis			
Well ID	Analyte	n	S	Variance	Z	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
MW-10	Arsenic, Dissolved	42	-277	4619.7	-4.06	Downward	0.00	0.00	0.00	No Trend
MW-10	Chloride	52	-202	15975.3	-1.59	No Trend	-0.0149074	-0.036	0.00	No Trend
MW-10	COD	52	111	5608.3	1.47	No Trend	0.00	0.00	0.00	No Trend
MW-10	**Specific Conductivity**	**52**	**-681**	**16047.7**	**-5.37**	**Downward**	**-1.5475**	**-1.95455**	**-1.05926**	**Downward**
MW-10	**Iron, Dissolved**	**52**	**876**	**14127.3**	**7.36**	**Upward**	**0.000535714**	**0.00042105**	**0.00060606**	**Upward**
MW-10	**Manganese, Dissolved**	**52**	**-756**	**13995.3**	**-6.38**	**Downward**	**-0.00387868**	**-0.00990789**	**-0.00034483**	**Downward**
MW-10	Ammonia	52	337	14211.0	2.82	Upward	0.000069048	0.00	0.000326531	No Trend
MW-10	**Nitrate**	**52**	**-295**	**16058.3**	**-2.32**	**Downward**	**-0.00916818**	**-0.018625**	**-0.00138776**	**Downward**
MW-10	Nitrite	52	0	0.0	0.00	No Trend	0.00	0.00	0.00	No Trend
MW-10	**pH**	**52**	**-759**	**16045.0**	**-5.98**	**Downward**	**-0.02**	**-0.025**	**-0.0141379**	**Downward**
MW-10	Sulfate	52	-56	15936.0	-0.44	No Trend	0.00	-0.0285714	0.0190476	No Trend
MW-10	Tetrachloroethene	51	-586	10031.3	-5.84	Downward	0.00	-0.00833333	0.00	No Trend
MW-10	TOC	52	448	10211.3	4.42	Upward	0.00	0.00	0.00	No Trend
MW-10	Vinyl Chloride	51	4	9219.3	0.03	No Trend	0.00	0.00	0.00	No Trend
MW-10	**Zinc, Dissolved**	**50**	**768**	**12514.7**	**6.86**	**Upward**	**0.0000625**	**0.00004167**	**0.00007895**	**Upward**

n = Sample size

S = Mann-Kendall test statistic. Positive numbers imply increasing trends; negative numbers imply decreasing trends.

Z = Approximate normal test statistic; calculated based on S and the estimated variance when the sample size is greater than 10.

The comparison level (critical value of Z) at 1.0 - (α/ 2) = (0.05 / 2) = 97.5% confidence level = 1.97737 for a two-tailed Mann-Kendall test and at 1.0 - (a) = (0.05) = 95% confidence level = 1.65463 for a one-tailed Mann-Kendall test

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The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at confidence level of 95% or 97.5% are shown in bold type.

Mason County Landfill Culver Well
Results of Mann-Kendall/Sen's Slope Analyses for Trend

			Mann-Kendall Trend Analysis				Sen's Slope Analysis			
Well ID	Analyte	n	S	Variance	Z	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
Culver	Arsenic, Dissolved	53	-336	8412.0	-3.65	Downward	0.00	0.00	0.00	No Trend
Culver	Chloride	58	-133	21855.0	-0.89	No Trend	-0.00227273	-0.02	0.00322581	No Trend
Culver	COD	58	10	11066.7	0.09	No Trend	0.00	0.00	0.00	No Trend
Culver	**Specific Conductivity**	**57**	**-381**	**21099.7**	**-2.62**	**Downward**	**-1.03662**	**-1.7**	**-0.246667**	**Downward**
Culver	Iron, Dissolved	58	-233	20291.0	-1.63	No Trend	0.00	-0.00055556	0.00	No Trend
Culver	Manganese, Dissolved	58	-618	18387.3	-4.55	Downward	-0.000041667	-0.00008824	0.00	No Trend
Culver	Ammonia	58	146	17261.3	1.10	No Trend	0.00	0.00	0.00	No Trend
Culver	Nitrate	58	102	22198.0	0.68	No Trend	0.000555556	-0.0013617	0.00211111	No Trend
Culver	Nitrite	58	-36	3248.7	-0.61	No Trend	0.00	0.00	0.00	No Trend
Culver	**pH**	**56**	**-789**	**20005.7**	**-5.57**	**Downward**	**-0.0141667**	**-0.0180645**	**-0.00979167**	**Downward**
Culver	Sulfate	58	125	22013.0	0.84	No Trend	0.00444444	-0.00740741	0.023913	No Trend
Culver	**Tetrachloroethene**	**59**	**-1129**	**22055.7**	**-7.60**	**Downward**	**-0.00652174**	**-0.00754717**	**-0.00540541**	**Downward**
Culver	TOC	58	254	11068.7	2.40	Upward	0.00	0.00	0.00	No Trend
Culver	Vinyl Chloride	59	390	13200.0	3.39	Upward	0.00	0.00	0.00	No Trend
Culver	**Zinc, Dissolved**	**58**	**465**	**22091.0**	**3.12**	**Upward**	**0.000230769**	**0.000052632**	**0.0004**	**Upward**

n = Sample size

S = Mann-Kendall test statistic. Positive numbers imply increasing trends; negative numbers imply decreasing trends.

Z = Approximate normal test statistic; calculated based on S and the estimated variance when the sample size is greater than 10.

The comparison level (critical value of Z) at 1.0 - (α/ 2) = (0.05 / 2) = 97.5% confidence level = 1.97737 for a two-tailed Mann-Kendall test and at 1.0 - (a) = (0.05) = 95% confidence level = 1.65463 for a one-tailed Mann-Kendall test

A significant trend is present in the data if the absolute value of the calculated Z statistic (|Z|) > 1.97737 and a significant upward or downward trend is present in the data if the absolute value of the calculated Z statistic (|Z|) > 1.65463.

There is no trend in the data when |Z| < 1.97737 and no significant upward or downward trend when |Z| < 1.65463

The Sen's Slope/Trend Estimator Test is a two-tailed test with a null hypothesis of zero slope. Therefore Q (Slope Estimator= Median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). If zero lies between the upper and lower 95% Confidence Limits around the median Q, there is no trend. If zero lies above the upper limit (UL < 0), there is a downward trend in the data. If zero lies below the lower limit (0 < LL), there is a upward trend in the data.

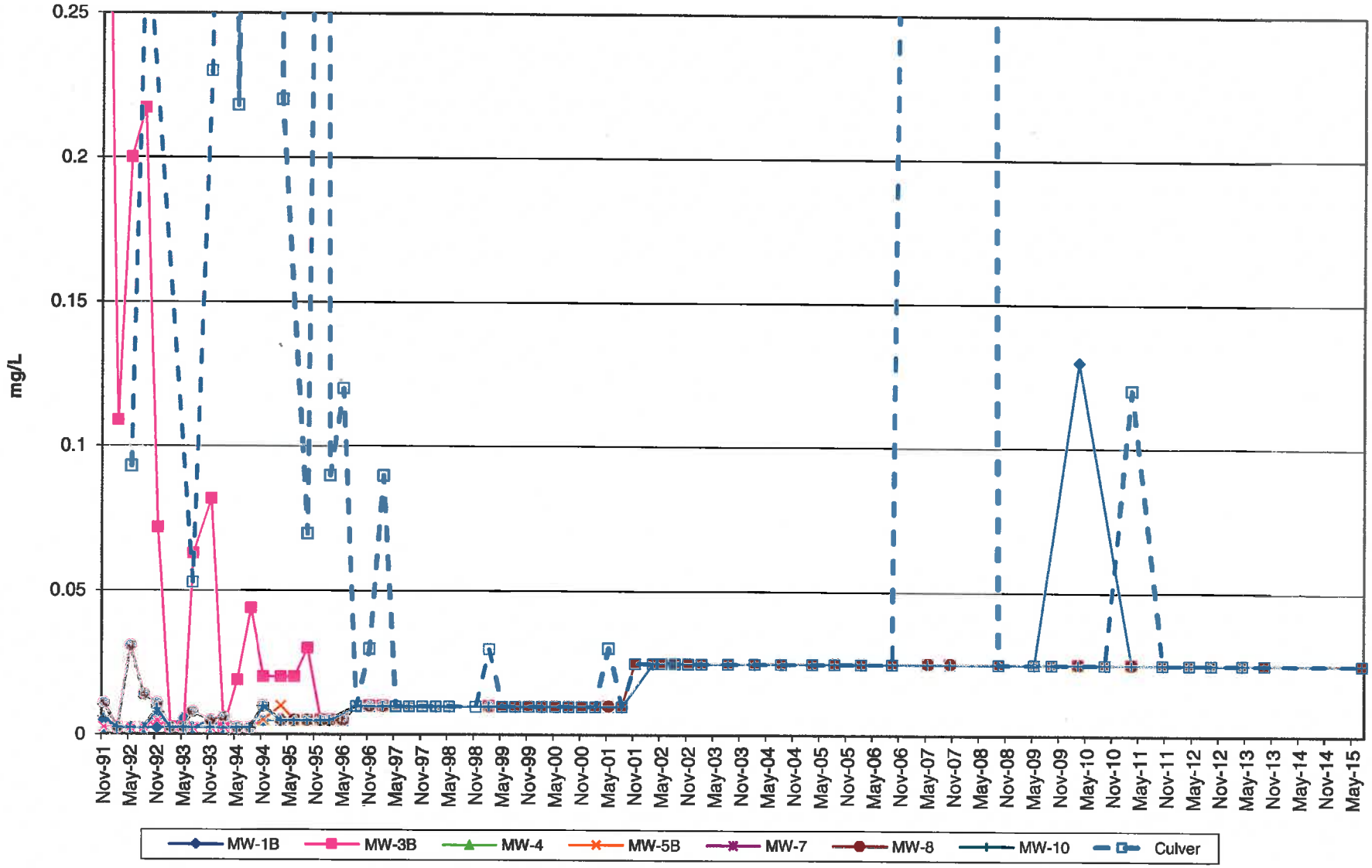
The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at confidence level of 95% or 97.5% are shown in bold type.

Attachment C

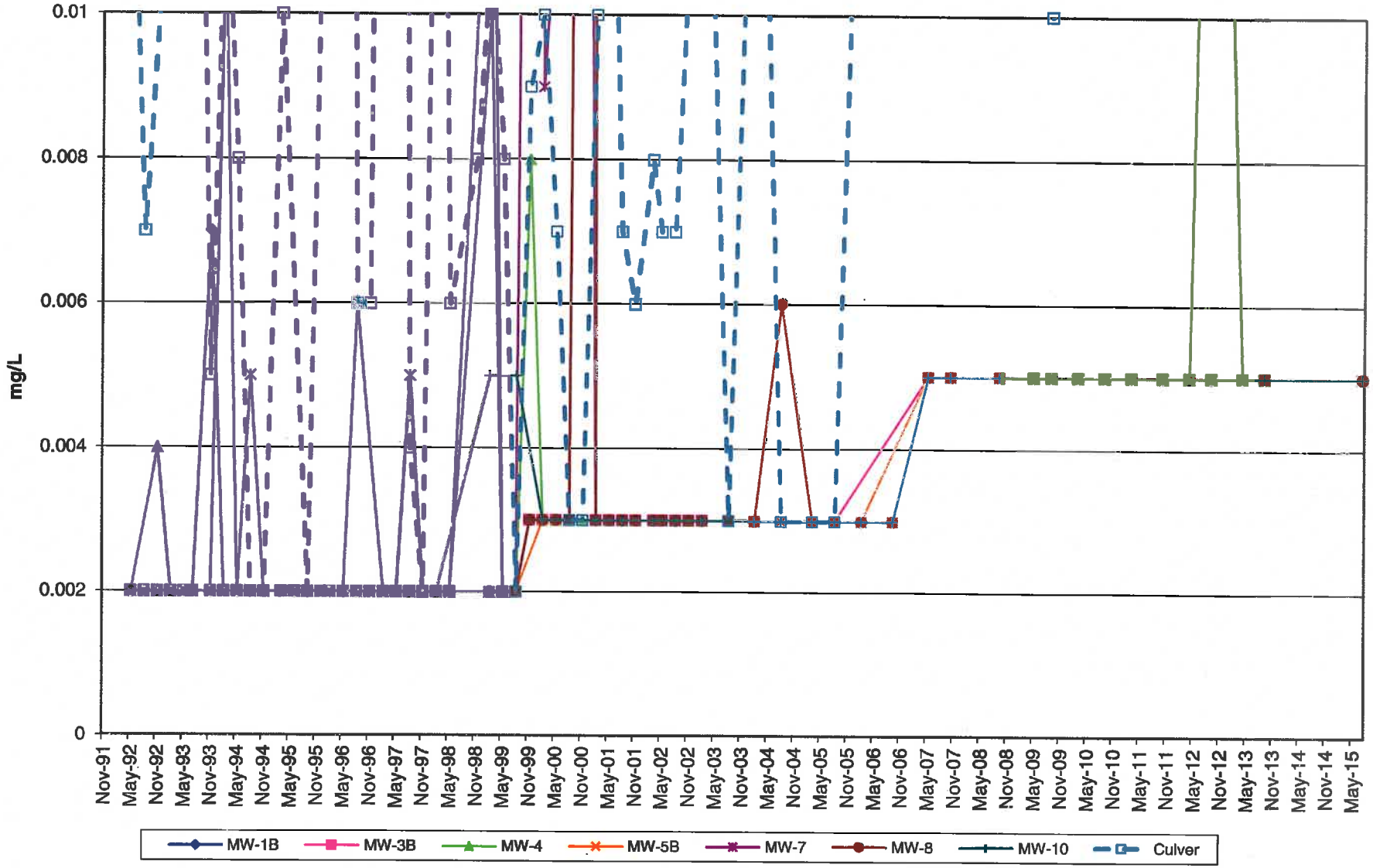
Time-Series Plots for Selected Parameters Illustrating Changing Reporting Limits

Mason County Landfill
Dissolved Iron



Mason County Landfill

Dissolved Zinc



Attachment D

Results of Mann-Kendall Test for Trend and Sen's Slope Analysis– Most Recent Eight Events

Mason County Landfill MW-3B

Results of Mann-Kendall/Sen's Slope Analyses for Trend (n=8)

			Mann-Kendall Analysis				Sen's Slope Analysis			
Well ID	Analyte[1]	n	S	Prob. (n≤10)	Prob. (Signif.)	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
MW-3B	Chloride	8	-3	0.025/0.05	0.812/0.406	No Trend	-0.025	-0.275	0.15	No Trend
MW-3B	Specific Conductivity	8	-8	0.025/0.05	0.398/0.199	No Trend	-3.02857	-6.46667	0.75	No Trend
MW-3B	Manganese, Dissolved	8	-16	0.025/**0.05**	0.062/**0.031**	Downward	-0.0255	-0.0705	0.0025	No Trend
MW-3B	**Ammonia**	**8**	**-24**	**0.025/0.05**	**0.00174/0.00087**	**Downward**	**-0.016**	**-0.022**	**-0.0115**	**Downward**
MW-3B	**Nitrate**	**8**	**21**	**0.025/0.05**	**0.0099/0.00495**	**Upward**	**0.0203333**	**0.008**	**0.0333333**	**Upward**
MW-3B	**pH**	**8**	**-18**	0.025/**0.05**	0.032/**0.016**	**Downward**	**-0.0345**	**-0.105**	**-0.006**	**Downward**
MW-3B	**Sulfate**	**8**	**-18**	0.025/**0.05**	0.032/**0.016**	**Downward**	**-0.321429**	**-0.55**	**-0.05**	**Downward**

[1] Trend analyses were not run for Arsenic, COD, Iron, Nitrite, Tetrachloroethene, TOC, Vinyl Chloride and Zinc because the data for these analytes are all NDs

n = Sample size

S = Mann-Kendall test statistic. Positive number implies an increasing trend; a negative number implies a decreasing trend.
$P_{(n\leq 10)}$ = Probability of obtaining a specific |S| value (absolute value of S) when the sample size is less than or equal to 10 (Table 9.4, Gibbons, 1994).
$P_{(Signif)}$) ≤ 0.025 for a two-tailed Mann-Kendall test (i.e. at 1.0 - (α/ 2) = 97.5% confidence level)
$P_{(Signif)}$) ≤ 0.05 for a one-tailed Mann-Kendall test (i.e. at 1.0 - (α) = 95% confidence level)
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.025, a significant trend is present in the data.
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.05, a significant upward or downward trend is present in the data.

There is no trend in the data when |S| > 0.025 and no significant upward or downward trend when |S| > 0.05

The Sen's Slope/Trend Estimator Test is a two-tailed test with a null hypothesis of zero slope. Therefore Q (Slope Estimator= Median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). If zero lies between the upper and lower 95% Confidence Limits around the median Q, there is no trend. If zero lies above the upper limit (UL < 0), there is a downward trend in the data. If zero lies below the lower limit (0 < LL), there is a upward trend in the data.

The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at a confidence level of 97.5% OR 95% are shown in bold type.

Mason County Landfill MW-8

Results of Mann-Kendall/Sen's Slope Analyses for Trend (n=8)

			Mann-Kendall Analysis				Sen's Slope Analysis			
Well ID	Analyte[1]	n	S	Prob. (n≤10)	Prob. (Signif.)	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
MW-8	Chloride	8	-11	0.025/0.05	0.227/0.1135	No Trend	-0.0666667	-0.15	0.05	No Trend
MW-8	COD	8	13	0.025/0.05	0.143/0.0715	No Trend	0.386905	0	0.7475	No Trend
MW-8	**Specific Conductivity**	**8**	**-18**	0.025/**0.05**	0.032/**0.016**	**Downward**	**-3.99429**	**-6.9**	**-0.4**	**Downward**
MW-8	Manganese, Dissolved	8	0	0.025/0.05	1.096/0.548	No Trend	0.01025	-0.263	0.1935	No Trend
MW-8	Ammonia	8	-2	0.025/0.05	0.904/0.452	No Trend	-0.012	-0.094	0.121	No Trend
MW-8	Nitrate	8	-3	0.025/0.05	0.812/0.406	No Trend	-0.001875	-0.115	0.0785	No Trend
MW-8	pH	8	-13	0.025/0.05	0.143/0.0715	No Trend	-0.0175	-0.088	0.02	No Trend
MW-8	Sulfate	8	-12	0.025/0.05	0.178/0.089	No Trend	-0.233333	-0.6	0.22	No Trend

[1] Trend analyses were not run for Arsenic, Iron, Nitrite, Tetrachloroethene, TOC, Vinyl Chloride and Zinc because the data for these analytes are all NDs

n = Sample size

S = Mann-Kendall test statistic. Positive number implies an increasing trend; a negative number implies a decreasing trend.
$P_{(n\leq 10)}$ = Probability of obtaining a specific |S| value (absolute value of S) when the sample size is less than or equal to 10 (Table 9.4, Gibbons, 1994).
$P_{(Signif)}$) ≤ 0.025 for a two-tailed Mann-Kendall test (i.e. at 1.0 - (α/ 2) = 97.5% confidence level)
$P_{(Signif)}$) ≤ 0.05 for a one-tailed Mann-Kendall test (i.e. at 1.0 - (α) = 95% confidence level)
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.025, a significant trend is present in the data.
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.05, a significant upward or downward trend is present in the data.

There is no trend in the data when |S| > 0.025 and no significant upward or downward trend when |S| > 0.05

The Sen's Slope/Trend Estimator Test is a two-tailed test with a null hypothesis of zero slope. Therefore Q (Slope Estimator= Median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). If zero lies between the upper and lower 95% Confidence Limits around the median Q, there is no trend. If zero lies above the upper limit (UL < 0), there is a downward trend in the data. If zero lies below the lower limit (0 < LL), there is a upward trend in the data.

The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at a confidence level of 97.5% OR 95% are shown in bold type.

Mason County Landfill MW-10
Results of Mann-Kendall/Sen's Slope Analyses for Trend (n=8)

			Mann-Kendall Analysis				Sen's Slope Analysis			
Well ID	Analyte[1]	n	S	Prob. (n≤10)	Prob. (Signif.)	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
MW-10	Chloride	8	-4	0.025/0.05	0.72/0.36	No Trend	-0.0166667	-0.225	0.0666667	No Trend
MW-10	Specific Conductivity	8	-6	0.025/0.05	0.548/0.274	No Trend	-2.00833	-8.63333	2.56667	No Trend
MW-10	Manganese, Dissolved	8	1	0.025/0.05	1.0/0.5	No Trend	0.00	0.00	0.00	No Trend
MW-10	Ammonia	8	5	0.025/0.05	0.634/0.317	No Trend	0.000458333	-0.007	0.00566667	No Trend
MW-10	Nitrate	8	8	0.025/0.05	0.398/0.199	No Trend	0.019025	-0.05	0.0636667	No Trend
MW-10	pH	8	-16	0.025/**0.05**	0.062/**0.031**	Downward	-0.0366667	-0.07	0.00	No Trend
MW-10	Sulfate	8	-13	0.025/0.05	0.143/0.0715	No Trend	-0.291071	-0.6	0.12	No Trend
MW-10	TOC	8	-7	0.025/0.05	0.473/0.2365	No Trend	0.00	0.00	0.00	No Trend

[1] Trend analyses were not run for Arsenic, COD, Iron, Nitrite, Tetrachloroethene, Vinyl Chloride and Zinc because the data for these analytes are all NDs

n = Sample size

S = Mann-Kendall test statistic. Positive number implies an increasing trend; a negative number implies a decreasing trend.
$P_{(n\leq 10)}$ = Probability of obtaining a specific |S| value (absolute value of S) when the sample size is less than or equal to 10 (Table 9.4, Gibbons, 1994).
$P_{(Signif)}$) ≤ 0.025 for a two-tailed Mann-Kendall test (i.e. at 1.0 - (α/ 2) = 97.5% confidence level)
$P_{(Signif)}$) ≤ 0.05 for a one-tailed Mann-Kendall test (i.e. at 1.0 - (α) = 95% confidence level)
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.025, a significant trend is present in the data.
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.05, a significant upward or downward trend is present in the data.

There is no trend in the data when |S| > 0.025 and no significant upward or downward trend when |S| > 0.05

The Sen's Slope/Trend Estimator Test is a two-tailed test with a null hypothesis of zero slope. Therefore Q (Slope Estimator= Median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). If zero lies between the upper and lower 95% Confidence Limits around the median Q, there is no trend. If zero lies above the upper limit (UL < 0), there is a downward trend in the data. If zero lies below the lower limit (0 < LL), there is a upward trend in the data.

The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at a confidence level of 97.5% OR 95% are shown in bold type.

Mason County Landfill Culver Well
Results of Mann-Kendall/Sen's Slope Analyses for Trend (n=8)

			Mann-Kendall Analysis				Sen's Slope Analysis			
Well ID	Analyte[1]	n	S	Prob. (Signif.)	Prob. (n≤10)	Trend	Slope (Median Q)	Lower Limit	Upper Limit	Trend
Culver	Chloride	8	-8	0.025/0.05	0.398/0.199	No Trend	-0.045	-0.15	0.0333333	No Trend
Culver	Specific Conductivity	8	0	0.025/0.05	1.096/0.548	No Trend	-0.391667	-11.175	7.125	No Trend
Culver	Iron, Dissolved	8	-5	0.025/0.05	0.634/0.317	No Trend	0.00	0.00	0.00	No Trend
Culver	Manganese, Dissolved	8	-2	0.025/0.05	0.904/0.452	No Trend	0.00	0.00	0.00	No Trend
Culver	Ammonia	8	0	0.025/0.05	1.096/0.548	No Trend	0.00	-0.0055	0.00475	No Trend
Culver	Nitrate	8	16	0.025/**0.05**	0.062/**0.031**	Upward	0.00866667	-0.002	0.025	No Trend
Culver	**pH**	**8**	**-19**	**0.025/0.05**	**0.0231/0.0116**	**Downward**	**-0.0633333**	**-0.085**	**-0.022**	**Downward**
Culver	Sulfate	8	-13	0.025/0.05	0.143/0.0715	No Trend	-0.338571	-0.733333	0.2	No Trend
Culver	Tetrachloroethene	8	-1	0.025/0.05	1.0/0.5	No Trend	0.00	0.00	0.00	No Trend
Culver	Zinc, Dissolved	8	-3	0.025/0.05	0.812/0.406	No Trend	0.00	-0.01	0.01	No Trend

[1] Trend analyses were not run for Arsenic, COD, Nitrite, TOC, and Vinyl Chloride because the data for these analytes are all NDs

n = Sample size

S = Mann-Kendall test statistic. Positive number implies an increasing trend; a negative number implies a decreasing trend.
$P_{(n\leq 10)}$ = Probability of obtaining a specific |S| value (absolute value of S) when the sample size is less than or equal to 10 (Table 9.4, Gibbons, 1994).
$P_{(Signif)}$) ≤ 0.025 for a two-tailed Mann-Kendall test (i.e. at 1.0 - (α/ 2) = 97.5% confidence level)
$P_{(Signif)}$) ≤ 0.05 for a one-tailed Mann-Kendall test (i.e. at 1.0 - (α) = 95% confidence level)
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.025, a significant trend is present in the data.
If the probability of obtaining the absolute value of the calculated S statistic (|S|) ≤ 0.05, a significant upward or downward trend is present in the data.

There is no trend in the data when |S| > 0.025 and no significant upward or downward trend when |S| > 0.05

The Sen's Slope/Trend Estimator Test is a <u>two-tailed test</u> with a null hypothesis of zero slope. Therefore Q (Slope Estimator= Median Q) can be less than zero (< 0), not different than zero (ND 0), or greater than zero (> 0). If zero lies between the upper and lower 95% Confidence Limits around the median Q, there is no trend. If zero lies above the upper limit (UL < 0), there is a downward trend in the data. If zero lies below the lower limit (0 < LL), there is a upward trend in the data.

The results of both the Mann-Kendall and the Sen's Slope analyses must be significant for a trend to be considered significant.

Trends significant at a confidence level of 95% OR 97.5% are shown in bold type.