Pare Project No. 94139.01

2018 ANNUAL GROUNDWATER MONITORING REPORT FOR THE TOWN OF TIVERTON MUNICIPAL SOLID WASTE LANDFILL TIVERTON, RHODE ISLAND

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# **1.0 INTRODUCTION**

#### 1.1 Overview

The Tiverton Municipal Sanitary Waste Landfill, also known as the Tiverton Town Landfill #2 (Landfill), has been operating at its present location off Main Road (Route 77) for over sixty years. Operations and monitoring are performed in accordance with the "Draft Operation Plan for the Town of Tiverton Solid Waste Landfill" and the "Draft Groundwater Monitoring Plan for the Town of Tiverton Solid Waste Landfill", both dated September 2017, and pending final DEM approval.

#### 1.2 Purpose and Scope

This Report is intended to summarize the previous four (4) quarterly groundwater monitoring rounds at the Landfill for Year 2018, including identification of potential changes or patterns in the quality of groundwater in the immediate vicinity of the Landfill and any proposed revisions to the Groundwater Monitoring Plan. This Report will also serve as the December 2018 Quarterly Monitoring Report. Specifically, the following sections of this Report provide a discussion of general information pertaining to the Landfill, areas and quantities of landfilling during the Report period, the Landfill geologic and hydrogeologic setting, groundwater monitoring program, water quality test results, evaluation of results, summaries and tables, conclusions, and recommendations.

# 2.0 SITE DESCRIPTION

#### 2.1 General

The Tiverton Landfill is located off of Main Road (Route 77) in Tiverton, Rhode Island. A Site Location Map of the vicinity is presented as Appendix A. The Landfill property encompasses approximately 125 acres, of which approximately 33 acres are permitted for solid waste landfilling activities. The remainder of the property is used for the collection and transfer of recyclables, records and equipment maintenance, runoff control, and a wooded buffer. Also located within the property boundaries is a public recreation area situated approximately one-quarter (<sup>1</sup>/<sub>4</sub>) mile west of the active landfill, adjacent to Main Road. Landfill features are identified on Appendix B – Landfill Existing Site Plan.

The Town of Tiverton has been operating the Landfill for over 60 years. The Landfill was opened in 1952 and was originally used as an unregulated open burning dump. In 1977, the State instituted regulation of the Landfill by issuing the Town a permit to operate. In 1982, the State implemented the solid waste operating guidelines entitled, "Rules and Regulations of Solid Waste Management Facilities" and the Town received an Administrative Order to comply with Rule 10.12. As a result of this Order, the Town established a two hundred foot (200') buffer within the property boundary where no future landfilling could occur.

Prior to the 1982 guidelines, some landfilling occurred in what is now delineated as the southern buffer. In 1987, the Town purchased 6.3 acres along the southern property line from the abutting landowners. With this purchase, the Town was able to create a new buffer from where prior landfilling occurred in the southern section of the Landfill. Due to the swampy area in the southeastern corner of the Landfill, the Town increased the eastern buffer from 200 feet to 350 feet in June of 1993. In addition, a test pit evaluation program, performed by Pare in July 2005, indicated that historical trash filling in the northeast corner of the landfill, approximately 100 feet into the 200-foot buffer from the northern property line and approximately 80 feet into the 350-foot buffer from the eastern property line. The property to the north of the Site is conservation land, referred to as the Pardon Gray Preserve. The property to the east of the Site is a Town-owned right-of-way. The revised limits of historical trash filling were brought to the RIDEM's attention in the 2005 Operating License Renewal documents. The limits of historical trash filling, as they are known to date, are shown on the attached Existing Site Plan.

In 2018, the Town landfilled municipal solid waste (MSW), and non-salvageable bulky waste.



Recyclables, tires, and salvageable bulky wastes (i.e., white goods and scrap metal) are collected at the Landfill and transported by commercial haulers to appropriate facilities for reuse. A 2006 Town-wide Solid Waste Ordinance places restrictions on the amount of C&D debris that is accepted by the Town, and prohibits landfilling of solid waste generated by commercial users. In May 2011, the Town implemented a Pay-As-You-Throw (PAYT) program to reduce the amount of solid waste entering the Landfill. It appears as though the PAYT program has reduced the volume of trash coming to the Landfill based on the last several years of landfilling estimates.

The volume of waste generated and landfilled by the Town is evaluated semi-annually, after the completion of each height survey and review of the Town annual recycling records. Landfill height surveys are typically performed in January and July each year. Based on Town records, approximately 1,915 tons of materials were recycled during Year 2018.

In Year 2012, the Town consolidated their source-segregated recyclables into a "single stream" to be direct-hauled to the Rhode Island Resource Recovery Corporation (RIRRC). In 2018, this "single stream" consisted of paper, bottles, cans and rigid plastic for the year. Due to this change, Pare is unable to provide a break-down of the exact tonnage of recycled materials.

### 2.2 Semi-Annual Landfill Height Survey

Pare personnel visited the Landfill on July 31, 2018 and January 16, 2019 to perform semi-annual Landfill height surveys. The purpose of the height surveys is to document the area of the active portion of the Landfill that was filled during the previous year and to quantify the volume of trash disposed. The height surveys are also performed to ensure that the Town does not exceed the vertical limit permitted by the RIDEM. The results of both surveys are depicted on the 2018 End of Year Height Survey Plan in Appendix C. The approximate areas of the Landfill that were filled during 2018 are depicted on this Plan.

Based on the semi-annual height survey data, it is estimated that the Town landfilled approximately 14,500 cubic yards (cy) of municipal solid waste since the previous End-of-Year Landfill Height Survey performed in January 2018, including Daily Cover material. Assuming a compacted waste density of approximately 1,000 lbs./cy, this represents a waste landfilling rate of approximately 7,300tons for Year 2018. The landfilling rate for 2018 is higher than in 2017. The Landfill staff indicated the volume of Daily Cover material during landfilling operations increased in 2018, which may account for the increase in the landfilling rate during 2018.

As of the 2016 End of Year height survey, the Town has finished utilizing all available space in the area north of the landfill access road in the portion of the landfill known as the "hole to the north". Landfilling has since transitioned back to the southern half of the landfill. In 2018, the Town completed the southern-most cell and has commenced filling the eastern end of the access road. The access road is the final portion of the landfill to be filled prior to permanent closure, consistent with the *Landfill Closure Final Grade Plan*, provided with the 2017 license application.

As of the 2018 End of Year height survey, the elevation of the Landfill, north of the access road, ranged from elevation  $100.0 \pm$  to  $141.0 \pm$  feet MSL (NGVD 29). The southern half of the Landfill remains the highest area of the Landfill, with elevations ranging from 146 to 158 feet. The permitted maximum height of the Landfill is 160 feet. The height of the landfill has not increased significantly in 2018 because the Town focused their filling on areas that were generally low, leaving the higher areas of the landfill relatively untouched.

# 3.0 SITE GEOLOGIC/HYDROGEOLOGIC SETTING

### 3.1 Regional Setting

The Landfill is located within the Narragansett till of eastern Rhode Island. The area is marked by low drumlinoid hills smoothed by glacial action. Glacial till deposits consist of an unsorted mixture of clay to boulder sized particles. The Narragansett till is generally dark gray to olive colored and is compact with a fine textured matrix. The till particles are derived from nearby sedimentary rocks: shale, sandstone, and conglomerate (Rector, 1981). As the Landfill is near the edge of the Narragansett till plain, the till may contain material derived from granite rocks (Rector, 1981, pp. 99 and 89).

Stratified outwash and fluvial deposits overlie some parts of the glacial till. These deposits are widespread throughout the state and are the result of meltwater from the retreating glacier of approximately 10,000 years ago. These meltwater deposits contain sand, gravel and silt forming kames, eskers, terraces and outwash plains, many of which have been commercially exploited (Rector, 1981).

The soils beneath and surrounding the Landfill tend to have moderate to moderately rapid permeability near the surface and slow to very slow permeability in the substratum due to the clay content of the underlying till from which the soils are derived. The United States Department of Agriculture, Soil Conservation Service (SCS) maps soils adjacent to the Landfill as the Newport Silt Loam and the Newport Very Stony Silt Loam, (Rector, 1981). Other SCS classified soils adjacent to the Landfill include the Stissing Silt Loam and the Quonset Gravelly Sandy Loam.

Pollock (1964) mapped the bedrock beneath the Landfill as Bulgarmarsh Granite. This unit is described as a pink to gray, coarse-grained quartz-feldspar-muscovite-chlorite granite that is generally foliated. A north-south trending unconformable contact with younger Pennsylvanian age sedimentary rocks lies approximately 500 feet west of the limit of the permitted Landfill. A north-ast-southwest trending contact with the Pre-Cambrian Mica-Chlorite Schist unit lies approximately 1,500 feet to the southeast of the Landfill. Mapped outcrops of the Bulgarmarsh Granite are present at High Rock (Appendix A) approximately 600 feet east of the Landfill.

### **3.2** Site-Specific Geology

Information on Site-specific characteristics of the geologic deposits beneath the Landfill area was obtained by reviewing historical logs of borings previously drilled by others at ten locations in August 1981, September 1994, September 1996 and September 2001. Five (5) of the borings were former groundwater monitoring well locations (OW-1A, OW-2, OW-3, OW-5, and OW-9). Per the approval of the RIDEM, these groundwater monitoring wells, with the exception of OW-9, have been abandoned and replaced with new groundwater monitoring wells. As indicated on the logs the borings were advanced to final depths of between 11 and 27 feet.

The materials logged during these boring programs are consistent with the regional geology described above. Soils were reported to consist of fine to coarse sand with silt, fine to medium gravel and cobbles. A boulder was encountered in the boring for OW-5. Gray-brown till was encountered in the boring for OW-3. All borings encountered refusal at depths between 11 and 27 feet below grade. The boring log for OW-3 identified granite at a depth of 16 feet. It is unclear if the other borings encountered bedrock or boulders in till at the depth of refusal. The average thickness of the overburden is reported to be 20 feet in the Tiverton area (NUS, 1990).

New monitoring wells OW-12, OW-13, and OW-14 were installed in August 2006. Another new monitoring well, OW-15, was installed in August 2007. These new wells were added to the monitoring program to replace compliance wells OW-1A, OW-2, OW-3, and OW-5 when it was discovered that these wells were drilled within the footprint of the landfill. As indicated in the logs, which are provided in Pare's original well completion letters prepared for their installation, the borings were advanced to final depths ranging from approximately 10 to 16 feet.

The materials logged during these boring programs are consistent with the regional geology described above. Soils were reported to consist of silty sand with trace gravel, silty sand with trace organics, silty sand with gravel, and sandy soil. Bedrock was encountered at a depth of 10 feet in the boring for OW-14. Borings for OW-12, OW-13, and OW-15 did not encounter refusal.

The new bedrock monitoring well OW-16 was installed in October 2017. This well was installed in the vicinity of overburden well OW-7. These wells are downgradient of groundwater flow, giving a depiction of the groundwater quality migrating offsite. The top of granite bedrock was encountered at 10.5 feet below the ground surface, with groundwater first being observed at 17 feet below the ground surface. The total depth of the well is 42 feet.

### 3.3 Hydrogeology

During the last year, the depth of the groundwater table at the Site ranged from 2.2 to 16.8 feet below grade based on recorded groundwater elevations from sampling rounds conducted from March 2018 to December 2018. Based on the groundwater elevations and topographic information on the USGS Topographic Map - Tiverton, Rhode Island (dated 1949, photo revised 1970 and 1975), the inferred direction of shallow groundwater flow from the eastern portion (i.e., Landfill portion) of the Site is generally to the west toward the stream and wetland complex (refer to Appendix B). However, shallow groundwater flow from the eastern eastern end of the Site may be northeasterly and southeasterly toward the wetland and stream systems identified as Cedar Swamp Brook and Borden Brook. Actual flow directions may be somewhat impacted by Landfill operations at the eastern end of the Site.

Based on groundwater elevation data collected at the Site, the direction of shallow groundwater flow from the recreational field area (i.e. western end) of the Site appears to be easterly, toward the stream and wetland complex. Data is not available to evaluate groundwater flow patterns in bedrock underlying the Site. Groundwater elevation data collected from the background well and compliance wells for the 2018 quarterly monitoring periods are presented in Table 3A.

It should be noted that the RIDEM Rules and Regulations for Groundwater Quality classify groundwater beneath and in the immediate vicinity of the licensed Landfill portion of the Site as GC and GB. Groundwater classified as GC is defined by the RIDEM as, "…those areas which, because of present or past land use or hydrogeologic conditions, the Director has determined to be more suitable for certain waste disposal practices than for development as a drinking water supply." Specifically, groundwater beneath disposal sites, such as the Tiverton Landfill, is classified as GC. Groundwater classified as GB is defined by the RIDEM, "…as those groundwater resources designated by the Director which may not be suitable for public or private drinking water use without treatment due to known or presumed degradation."

### 3.4 Surface Water Drainage

Based upon topographic information obtained from the USGS Topographic Map, Tiverton, Rhode Island, 1949 as depicted on Appendix A and topographic contours depicted on the Landfill Existing Site Plan, the direction of surface water drainage from the eastern (i.e., Landfill portion) end of the Site and from the western end of the Site (recreation field area) is generally toward the on-Site wetland complex. This wetland complex is part of the southerly flowing Quaker Creek. Regionally, Quaker Creek flows south-southwest, discharges into Nonquit Pond, and ultimately to the Sakonnet River. However, runoff from the extreme northeastern corner of the Site appears to be northeasterly toward the wetland and stream systems identified as Cedar Swamp Brook and Borden Brook. These water bodies flow south and southwest, and merge with Quaker Creek to the south of the Site.

# TABLE 3A

### 2018 GROUNDWATER ELEVATIONS

### 2018 ANNUAL GROUNDWATER MONITORING REPORT TIVERTON MUNICIPAL SANITARY WASTE LANDFILL TIVERTON, RHODE ISLAND

	DEFE	DENCE			2018	GROUNDWA'	TER ELEV	ATIONS		
	REFERENCE		3/28/2018		6/7/2018		9/27/2018		12/6/2018	
WELL	TOP OF PVC PIPE (ft- MSL)	APPROX. GROUND SURFACE	DEPTH TO WATER*	GROUND- WATER ELEVATION	DEPTH TO WATER*	GROUND- WATER ELEVATION	DEPTH TO WATER*	GROUND- WATER ELEVATION	DEPTH TO WATER*	GROUND- WATER ELEVATION
	MBL)	(it hibb)	(feet)	(ft-MSL)	(feet)	(ft-MSL)	(feet)	(ft-MSL)	(feet)	(ft-MSL)
OW-12	63.28	60.5	2.2	61.08	16.2	47.08	10.9	52.38	2.6	60.68
OW-13	50.14	46	3.8	46.34	14.5	35.64	4.1	46.04	3.9	46.24
OW-14	85.63	83.5	3.6	82.03	10.6	75.03	Dry	NOT TESTED	4.8	80.83
OW-15	77.07	74.5	7.2	69.87	16.8	60.27	9.5	67.57	7.2	69.87
OW-9	128.65	126.5	12.6	116.05	16.0	112.65	Dry	NOT TESTED	12.1	116.55

\*Measured from top of PVC pipe

# 4.0 WATER QUALITY MONITORING PROGRAM

#### 4.1 General

The Groundwater Monitoring Program for the Landfill consists of quarterly monitoring at seven (7) groundwater wells, designated OW-7, OW-12, OW-13, OW-14, OW-15, OW-16, and OW-9; the locations of these wells are shown on Appendix B, Landfill Existing Site Plan. The year 2018 was the first monitoring year in which OW-7 and OW-16 were included in the quarterly monitoring program. Monitoring wells OW-7 and OW-16 were first sampled at the request of the RIDEM in November 2017 and have since been incorporated into the regular quarterly monitoring program. Monitoring well completion details, including well depths, diameters and screened intervals are summarized on Table 4A, which follows this page. Sampling of the monitoring wells during the 2018 reporting period was performed by Pare personnel on March 28<sup>th</sup>, June 7<sup>th</sup>, September 27<sup>th</sup> and December 6<sup>th</sup>.

Based on the inferred direction of shallow groundwater flow beneath the Landfill portion of the Site, the monitoring wells are classified in the following categories:

- Background Well OW-9
- Compliance Wells OW-7, OW-12, OW-13, OW-14, OW-15, and OW-16

### 4.2 Sampling Procedures

Prior to the May 2002 monitoring round, the Town received verbal approval from the RIDEM to modify the approved groundwater purging and sampling method. Previously, a bailer method of purging and sampling was employed during monitoring events. Subsequent to approval by the RIDEM, the bailer method of purging and sampling was replaced by a low-flow purging and sampling technique that uses a variable speed peristaltic pump, fitted with Teflon-lined silicon tubing attached to polyethylene down-well tubing. Low-flow purging reduces the rate at which groundwater is evacuated from the monitoring well, as compared to conventional bailer methods. The use of low-flow purging has been shown to reduce colloid mobilization, thereby reducing the turbidity of samples. Lower turbidity means a reduction in colloid-transported contaminants such as metals, which can sorb to the colloid surface. In addition, this technique reduces the likelihood of purging a well dry before sampling. Finally, low-flow purging reduces the cascading effect that can occur as a well recharges, thereby reducing the volatilization of VOCs before sampling by conventional bailer methods.

# TABLE 4A

#### SUMMARY OF WELL COMPLETION DETAILS

### 2018 ANNUAL GROUNDWATER MONITORING REPORT TIVERTON MUNICIPAL SANITARY WASTE LANDFILL TIVERTON, RHODE ISLAND

	ELEVATION			TOTAL DEPTH		MONITORED ZONE		
WELL I.D.	APPROX. TOP OF STEEL CASING (ft-MSL)	APPROX. GROUND SURFACE (ft-MSL)	WELL DIAMETER (inches)	OF WELL FROM TOP OF PVC PIPE (feet)	DEPTH TO TOP OF SCREEN (feet)	SCREEN LENGTH (feet)	DATE INSTALLED OR REPAIRED	
OW-9	129.1	125.5	2	14.2	5	8	9/19/96	
OW-12	63.78	60.5	2	16.0	3	10	8/23/06	
OW-13* (Repair)	49.39	46	2	14.4	4.5	8	6/26/09	
OW-14	86.13	83.5	2	8.0	3	6	8/22/06	
OW-15	76	74.5	2	8.5	3.5	10	8/21/07	

Source: Groundwater Monitoring Plan for the Town of Tiverton Solid Waste Landfill. January 2003. Prepared by Pare Corporation. \* Well construction details after steel casing and PVC pipe for monitoring well OW-13 were slightly lowered by Town personnel in June 2009. Ground surface around well remained at original elevation. The well purging and sampling procedure was further modified in 2005 to reduce the volume of water purged prior to collecting a sample. Previously, a minimum of three well volumes was purged from each well prior to sampling. Presently, the volume of water evacuated during purging is based on the stabilization of water quality field parameters, consisting of specific conductivity, pH, and temperature, in accordance with published EPA guidance on low-flow groundwater purging and sampling (Porfert and Sotolongo, 1996, rev. 2010). Each well is purged until water quality parameters have stabilized for three successive measurements. Stabilization is achieved when pH readings are within  $0.1\pm$  pH unit, specific conductivity is within  $3\%\pm$ , and temperature is within  $3\%\pm$ . The stabilization of field parameters typically indicates that the stagnant water in the well has been sufficiently evacuated and that samples collected are representative of the groundwater aquifer. Regardless of the field parameters, no less than one well volume is purged from each well, to further ensure the stagnant water has been evacuated from the well. This procedure improves efficiency while ensuring that the samples are collected from the aquifer and not stagnant water inside the well.

The well sampling procedure was modified again in 2017 to reduce the turbidity in samples collected. The procedure was updated to include a 10-15 minute period for suspended solids to settle, before the sample is decanted and then stored in laboratory glassware with preservative. Additionally, during the March 2017 monitoring round, accumulated sediment in the wells at the Landfill was removed prior to sampling.

### 4.3 Analytical Parameters

The Appendix A (Detection Monitoring) parameters, as defined in Regulation No. 2 of the Rules and Regulations for Solid Waste Management Facilities (Solid Waste Regulations) plus mercury and tin, were analyzed during the March, June, September, and December monitoring rounds. The Appendix A parameters consist of metals and volatile organic compounds (VOCs), as listed in Table 4B. Mercury and tin, though not included in Appendix A of the Solid Waste Regulations, have historically been included for analysis. These parameters are routinely monitored at the background well and compliance wells each quarter.

Assessment Monitoring parameters (Appendix B of Regulation No. 2 of the Solid Waste Regulations) are a comprehensive list of parameters that include semi-volatile organic compounds, herbicides, pesticides, PCB's, sulfate, phenols and cyanide that are in addition to the standard parameters for Detection Monitoring. Assessment monitoring is performed based on statistical analysis of data collected from detection monitoring, as described in subsequent sections of this document.

#### TABLE 4B

# ANALYTICAL PARAMETERS (DETECTION MONITORING)

#### 2018 ANNUAL GROUNDWATER MONITORING REPORT TIVERTON MUNICIPAL SANITARY WASTE LANDFILL TIVERTON, RHODE ISLAND

<u>Field Parameters</u> Depth to Water pH Specific Conductance Temperature

Inorganic Constituents Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium Silver Tin Thallium Vanadium Zinc Organic Constituents Acetone Acrylonitrile Benzene

Bromochloromethane

Bromodichloromethane Bromoform Carbon disulfide Carbon Tetrachloride Chlorobenzene Chloroethane Chloroform Dibromochloro-methane 1,2-Dibromo-3-chloropropane 1.2-Dibromoethane o-Dichlorobenzene p-Dichlorobenzene Trans-1, 4-Dichloro-2butene 1.1-Dichloroethane 1,2-Dichloroethane 1,1-Dichloroethylene Cis-1, 2-Dichloroethylene Trans, -1,2- Dichloroethylene 1,2-Dichloropropane Cis-1,3-Dichloropropene Trans-1,3-Dichloropropene Ethylbenzene 2-Hexanone Methyl bromide Methyl chloride Methylene bromide Methylene chloride Methyl ethyl ketone Methyl iodide 4-Methyl-2-pentanone

Methyl-*tert* Butyl Ether (MTBE) Styrene 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethylene Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethylene Trichlorofluoro-methane 1,2,3-Trichloropropane Vinyl acetate Vinyl chloride Xylenes

#### 4.4 Statistical Analysis

Since the March 1999 monitoring round, the Tolerance Interval (TI) method has been employed per mandate of the RIDEM to compare inorganic analytic results from the background well with the results from the compliance wells. The TI method is one of several statistical methods identified in the January 1997 "Solid Waste Regulations" and has been approved for use at the Landfill by the RIDEM, per the RIDEM's letter of June 10, 1999.

The intent of the TI method is to evaluate if there exists a statistically evident exceedance of an Appendix A parameter over background concentrations. If a contaminant is reported in groundwater sampled from a compliance well at a concentration that statistically exceeds that of the background concentration, it suggests that the presence of that contaminant is, at least in part, derived from landfilling activities. To perform the TI evaluation, Tolerance Limits (TLs) are constructed for each inorganic parameter from a minimum of eight (8) of the most recent monitoring rounds from the background well (refer to Appendix I – Tolerance Limit Calculation).

The Appendix A volatile organic compounds (VOCs) do not occur naturally, and therefore, are not anticipated to be present in the background well results data. For this reason, the TI method for the evaluation of the Compliance Well Appendix A VOC results is considered inappropriate. Previously, the approach for determining exceedances for VOCs in the Compliance Well results data was through comparison of the results data to the National Primary Drinking Water Standards (NPDWS) maximum contaminant levels<sup>1</sup> (MCL), where published. Other cited human health thresholds were used for comparison where MCLs have not been established.

As discussed in the May 2006 "Groundwater Monitoring Plan", Pare has added the Shewhart-CUSUM Method as a supplemental statistical analysis method in addition to the TI Method. The purpose of the Shewhart-CUSUM Method is to evaluate contaminant trends in groundwater over a long period of time. In order to conduct the first round of the statistical analysis for compliance wells OW-12, OW-13, OW-14, and OW-15, Pare constructed Control Charts for each target constituent at each monitoring well, as outlined in the USEPA documents entitled "*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Interim Final Guidance, April 1989*" and "*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum To Interim Final Guidance, July, 1992*". The Control Charts are based on the mean and standard deviation of the first eight (8) reported

<sup>&</sup>lt;sup>1</sup>Maximum Contaminant Level (MCL), defined as the highest level of a contaminant that is allowed in drinking water.

concentrations of the target constituent since the installation of the wells in August 2006, which is referred to as the baseline data (Standardized Mean). Pare has compiled enough data to construct the CUSUM baseline and to evaluate groundwater trends at the background well and at OW-12, OW-13, OW-14, and OW-15.

With the addition of the CUSUM statistical analysis, the triggering mechanism for Assessment Monitoring has been revised. In accordance with the May 2006 Groundwater Monitoring Plan, Assessment Monitoring is triggered if:

- An inorganic parameter exceeds the upper Tolerance Limit in two consecutive rounds and that parameter exceeds one of the two Shewhart-CUSUM control limits in the latter monitoring round; or
- 2. An organic parameter exceeds one of the two Shewhart-CUSUM control limits.

#### 4.5 Assessment Monitoring

In 2018, Assessment Monitoring was conducted during the June round at OW-13 due to an exceedance of barium during the March monitoring round. No (0) Appendix B parameters were reported in samples collected from OW-13. One (1) Appendix B parameter, sulfides, was reported above its respective detection limits in December 2017, as a result, Pare recommended that OW-14 be tested for sulfides in March 2018. Sulfides (0.04 mg/L) were detected in the samples collected from OW-14 in March 2018. Pare attempted to sample OW-14 in the September 2018 monitoring round to test for sulfides; however, a sample was unobtainable due to dry conditions. Pare sampled OW-14 for sulfides in December 2018. Sulfides were not detected in the samples collected at OW-14 during the December monitoring round. The EPA has no MCLs set for sulfides in groundwater. Water with dissolved hydrogen sulfide will smell musty or swampy around 0.5-1.0 mg/L, and Pare did not identify a noticeable smell emanating from the groundwater sample. Hydrogen sulfide gas can occur naturally in groundwater from plant materials rotting underground in anaerobic conditions. Hydrogen sulfide gas could also be resulting from gypsum buried at the Landfill. Pare does not recommend Assessment Monitoring for the March 2019 monitoring round. However, it is recommended that OW-14 be tested again for sulfides in the upcoming March 2019 monitoring round.

### 4.6 Laboratory Analytical Methods

Groundwater samples are transported to New England Testing Laboratory, Inc. of West Warwick, Rhode Island for chemical analyses. All samples are handled, stored, and manifested in accordance with the Groundwater Monitoring Plan for the Tiverton Landfill. The 2018 Detection Monitoring program was conducted for the parameters listed on Table 4B by the following methods:

<ul> <li>Volatile Organic Compounds (VOCs)</li> </ul>	Method 8260 B
Total Metals	
- Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, Sn, V	V, Zn Method 6010 B
T1	
Sn	
Method 7870 NE	
- Hg	Method 7470 A

The analytical methods for Appendix B parameters are provided below:

• Detection Monitoring (Appendix A) parameters, listed in Table 4	4B
Semi-Volatile Organic Compounds (SVOCs)	Method 8270 C
Polychlorinated Biphenyls (PCBs)	Method 8082
Herbicides	Method 8151A
Pesticides	Method 8081 A
• Cyanide	Method 335.5
• Phenols	Method 420.1
• Sulfate	Method 375.4

# 5.0 GROUNDWATER QUALITY

#### 5.1 Groundwater Results Data

The complete text of the March 2018, June 2018, and September 2018 quarterly monitoring reports, as previously presented to the RIDEM, are provided for reference in Appendix K of this Report. As stated in Section 1.2, this Report serves as the December 2018 Quarterly Monitoring Report in addition to summarizing groundwater quality observed throughout the year.

A tabular summary of the laboratory analytical results data for this Report period, by sample location, is provided on Tables 5A through 5H, which includes March 2018, June 2018, September 2018, and December 2018 quarterly monitoring data. A new bedrock well was installed south of the Landfill on October 5, 2017, after two days of drilling. A tabular summary of the laboratory analytical results data for OW-7 and OW-16 is provided in Appendix L of this Report. All values that are highlighted in gray represent statistically evident exceedances of Appendix A inorganic compounds relative to their Tolerance Limits. During 2018, there were forty-eight (48) reported TL exceedances for Appendix A metals. Analytical results for each well are further summarized in this section.

Note that groundwater was collected at OW-9 only in March 2018, June 2018, and December 2018 due to dry conditions during the September 2018 monitoring round. Groundwater was also not detected at OW-14 in September 2018 due to dry conditions. Groundwater was collected in every monitoring round at the other monitoring wells.

### <u>OW-9</u>

Analytical results data from this well (i.e., background well) indicate consistent detection (i.e., at least two out of three monitoring rounds in this case, due to OW-9 being dry in the September 2018 monitoring round) of seven (7) target metals: barium, chromium, cobalt, lead, nickel, vanadium and zinc. Cadmium and copper were also reported above their respective method detection limits in at least one monitoring round throughout the year. No (0) metals were reported above their respective MCLs during the 2018 monitoring period.

No (0) VOCs were reported above their respective detection limits at OW-9 in the 2018 monitoring year. Refer to Table 5A for a yearly summary of detections at OW-9.

### <u>OW-7</u>

Analytical results data for OW-7 indicate consistent detection (i.e., at least three out of four monitoring rounds) of five (5) target metals: barium, chromium, cobalt, nickel, and zinc. Antimony, arsenic, cadmium, copper, lead, selenium, thallium, and vanadium were also reported above their respective method detection limits at various times in at least one sampling round throughout the year. Additionally, one (1) metal, arsenic, was reported above its MCL on one (1) occasion in the 2018 monitoring period.

The analytical results also indicate consistent detection of one (1) VOC: MTBE. None of the reported VOC concentrations exceeded their cited human health threshold values. Refer to Table 5B for a yearly summary of detections at OW-7.

### <u>OW-12</u>

Analytical results data for OW-12 indicate consistent detection of three (3) target metals: barium, nickel, and zinc. Antimony, arsenic, chromium, cobalt, copper, and vanadium were also reported above their respective method detection limits at various times in at least one sampling round throughout the year. Additionally, one (1) metal, arsenic, was reported above its MCL on one (1) occasion in the 2018 monitoring period.

No (0) VOCs were reported above their respective detection limits at OW-12 in the 2018 monitoring year. Refer to Table 5C for a yearly summary of detections at OW-12.

### <u>OW-13</u>

Analytical results data for OW-13 indicate consistent detection of eight (8) target metals throughout the year: antimony, arsenic barium, cadmium, chromium, cobalt, nickel, and zinc. Lead, silver, thallium, and vanadium were also reported above their respective method detection limits at various times in at least one sampling round throughout the year. One (1) metal; arsenic; was reported above its MCL for a total of three (3) exceedances at OW-13 during the 2018 monitoring period.

The analytical results also indicate consistent detection of one (1) VOC: chlorobenzene. In addition, 1,4-dichlorobenzene and MTBE were reported above their respective method detection limits at various times in at least one sampling round throughout the year. None of the reported VOC concentrations exceeded their cited human health threshold values. Refer to Table 5D for a yearly summary of detections at OW-13.

### <u>OW-14</u>

Analytical results data for OW-14 indicate consistent detection (i.e., at least two out of three monitoring rounds in this case, due to OW-14 being dry in the September 2018 monitoring round) of eight (8) target metals: barium, cadmium, chromium, cobalt, copper, nickel, vanadium and zinc. Antimony, arsenic, lead, and thallium were also reported above their respective method detection limits in at least one monitoring round throughout the year. Two (2) metals, arsenic and cadmium, were each reported above their respective MCLs for a total of three (3) exceedances at OW-14 during the 2018 monitoring period.

The analytical results also indicate consistent detection of four (4) VOCs: benzene, chlorobenzene, and 1,4 dichlorobenzene, and MTBE. No target VOCs were reported above their respective human health threshold values at OW-14. Refer to Table 5E for a yearly summary of detections at OW-14.

### <u>OW-15</u>

Analytical results data for OW-15 indicate consistent detection of eight (8) target metals: arsenic, barium, cadmium, cobalt, lead, nickel, vanadium, and zinc. Antimony, was also reported above its respective method detection limits at various times throughout the year. Two (2) metals, arsenic and cadmium, were reported above their MCLs for a total of eight (8) exceedances at OW-15 during the 2018 monitoring period.

The analytical results indicate consistent detection of two (2) VOCs: chlorobenzene and MTBE. In addition, benzene and 1,4-dichlorobenzene were reported above their respective method detection limits at various times in at least one sampling round throughout the year. None of the reported concentrations exceeded their cited human health threshold values. Refer to Table 5F for a yearly summary of detections at OW-15.

### <u>OW-16</u>

Analytical results data for OW-16 indicate consistent detection of six (6) target metals: barium, chromium, cobalt, nickel, selenium, and zinc. Antimony, arsenic, and thallium were also reported above their respective method detection limits at various times in at least one sampling round throughout the year. Additionally, one (1) metal, arsenic, was reported above its MCL on one (1) occasion in the 2018 monitoring period.

The analytical results also indicate consistent detection of one (1) VOC: MTBE. None of the reported VOC concentrations exceeded their cited human health threshold values. Refer to Table 5G for a yearly summary of detections at OW-16.

### 5.2 Groundwater Concentration Trends

This section provides a discussion of recent and historical groundwater concentration trends of monitoring parameters in the Background Well and Compliance Wells at the Landfill.

### 5.2.1 Appendix A Metals

Historical concentrations of detected Appendix A metals, since the inception of low-flow purging and sampling in May 2002, are presented graphically on the plots provided in Appendix F of this Report. Although Pare identified more TL exceedances than previous years, 2018 marked the first monitoring period in which OW-7 and OW-16 were also included in this analysis. Excluding the additional exceedances as a result of OW-7 and OW-16, Pare identified fewer TL exceedances of the Appendix A metals during 2018 than in the monitoring period for 2017. A total of thirty-five (35) TL exceedances of Appendix A metals occurred in 2018 at monitoring wells OW-12, OW-13, OW-14, and OW-15, four (4) less than in 2017 (39) at those same monitoring well locations. The TL exceedances indicate statistically elevated concentrations of target metals in the compliance wells over the background well. This is represented on the attached charts that show the results of monitoring of Appendix A parameters at each well since the inception of low flow purging and sampling.

It is important to note that the samples collected from OW-9, the background well, are generally more turbid than any other compliance well location. The groundwater at this location is known to be shallow, which can lead to the water column becoming turbid following its recharge. Increased turbidity can increase the number and concentration of metals reported in a sample due to laboratory interference and mobilization of adsorbed metals from colloid particles. Therefore, the number of metals and their respective concentrations may be artificially high as a result of increased turbidity in a sample.

### 5.2.2 Appendix A VOCs

As discussed in Section 5.1, several VOCs were reported in groundwater from the compliance wells in 2017. Each detected VOC concentration across the landfill was below its cited human health threshold value. All reported VOC compounds and ranges of reported concentrations in groundwater from the compliance wells for this reporting period are generally consistent with historical data.

### 5.2.3 CUSUM Analysis

The Shewhart-CUSUM statistical analysis is used to evaluate whether Assessment Monitoring should be performed at a well if a statistical deterioration in groundwater quality is suspected. The results of the CUSUM analysis for 2018 generally confirm Pare's opinion that there exists consistent low-level impact to groundwater beneath and downgradient of the Landfill as a result of landfilling activities. The following are results of the CUSUM analysis reported for 2018 at the background well and the compliance wells.

### <u>OW-9</u>

No (0) CUSUM or standardized mean values crossed their thresholds at OW-9 in the 2018 monitoring period.

### <u>OW-12</u>

Barium and nickel crossed their standardized mean thresholds in all four monitoring rounds in the 2018 monitoring period. Barium has been in exceedance of its CUSUM threshold since the December 2013 monitoring round. No (0) metals aside from barium and nickel exceeded both their CUSUM and standardized mean thresholds in the 2018 monitoring period. Despite these CUSUM threshold exceedances, Assessment monitoring was not performed at OW-12 in 2018 because these constituents did not exceed their TLs.

### <u>OW-13</u>

In the March 2018 and December 2018 monitoring rounds, both barium and zinc crossed both their CUSUM and standardized mean value thresholds. No (0) metals exceeded their CUSUM or standardized mean thresholds at OW-13 during the June 2018 and September 2018 rounds.

### <u>OW-14</u>

In the December 2018 monitoring round, antimony crossed both its CUSUM and standardized mean value thresholds. Chromium and lead exceeded both their respective CUSUM and standardized mean value thresholds in the March 2018 round. No (0) metals exceeded their CUSUM or standardized mean thresholds at OW-14 during the June 2018 round. OW-14 was unable to be sampled during the September 2018 round due to dry conditions.

### <u>OW-15</u>

In the March 2018 monitoring round, lead crossed both its CUSUM and standardized mean threshold values. Cadmium crossed both its CUSUM and standardized mean threshold values in the June 2018 round. No (0) metals exceeded their CUSUM or standardized mean thresholds at OW-15 during the September 2018 and December 2018 rounds.

### 5.2.4 Summary of Assessment Monitoring

The need for Assessment Monitoring will be evaluated and coordinated with the RIDEM if the following conditions are met:

- An inorganic parameter exceeds the upper Tolerance Limit in two consecutive rounds and that parameter exceeds one of the two Shewhart-CUSUM control limits in the latter monitoring round; or
- An organic parameter exceeds one of the two Shewhart-CUSUM control limits. Analytical data will continue to be compared to US EPA Maximum Contaminant Levels (MCLs) or other healthbased criteria for parameters that do not have MCLs assigned each monitoring round.

Pare performed Assessment Monitoring at OW-13 in the June 2018 monitoring round due to an exceedance of both the TL and the Shewhart-CUSUM threshold of barium in the March 2018 monitoring round. No (0) Appendix B parameters were reported in samples collected from OW-13.

One (1) Appendix B parameter, sulfides, was reported above its respective detection limits in December 2017, as a result, Pare recommended that OW-14 be tested for sulfides in March 2018. Sulfides (0.04 mg/L) were detected in the samples collected from OW-14 in March 2018. Pare attempted to sample OW-14 in the September 2018 monitoring round to test for sulfides; however, a sample was unobtainable due to dry conditions. Pare sampled OW-14 for sulfides in December 2018. Sulfides were not detected in the samples collected at OW-14 during this monitoring round. Pare does not recommend Assessment Monitoring for the March 2019 monitoring round. However, it is recommended that OW-14 be tested again for sulfides in the upcoming March 2019 monitoring round.

Although the CUSUM values have increased for a number of parameters, the concentrations of those parameters remain consistently below their human health thresholds. The Shewhart-CUSUM is an analysis utilized to evaluate trends in a data set, specifically measuring the impact of a deviation from

the baseline data referenced above. When a parameter has historically been "non-detect", any detection of that parameter can result in a significant, albeit somewhat misleading, jump in CUSUM values. Any reported concentration above a parameter's detection limit is interpreted as a relatively large deviation from the artificially low baseline data, thereby causing a significant artificial increase in CUSUM values. It should also be noted that because of the nature of the CUSUM analysis, a greater spread in data (i.e., a greater difference in reported concentrations quarter over quarter) can cause an increase in CUSUM values.

### **MTBE Concentration Comparative Analysis**

MTBE is given special attention based on past historical data and a generally increasing trend in reported concentrations at the Landfill. During the 2018 monitoring period, the CUSUM value for MTBE was above its threshold at OW13, OW-14, and OW-15. Reported MTBE concentrations at OW-15 have generally risen since September 2006, ranging from 0.0036 mg/L to 0.0122 mg/L, as depicted in the attached figure titled *Reported Concentrations of MTBE* in Appendix J of this Report. The figure compares the recent increases in reported MTBE concentrations at OW-15 to historical concentrations and drinking water advisories. The reported concentration of MTBE at OW-13 and OW-14 has varied significantly since 2006; however, over that period there does not appear to be a significant upward trend in MTBE concentrations. The CUSUM evaluation suggests that there is an upward trend in data; however, the average concentration has risen less than 0.001 mg/L over the last 12 years at OW-13 and OW-14.

Although MTBE has been consistently reported at OW-13, OW-14, and OW-15, MTBE has never been reported above its odor threshold (0.020 mg/L) or its taste threshold (0.040 mg/L) at the Landfill. The US EPA has not established a human health advisory concentration for MTBE. Because the elevated concentrations of MTBE has caused Assessment Monitoring to be triggered at OW-13, OW-14, and OW-15 at various times over the past five years, and no Appendix B parameters have been reported to a significant degree in any of the samples collected as a result, it is Pare's opinion that the mechanism that triggered Appendix B monitoring is an indication of a minor change in MTBE concentration in groundwater beneath the Landfill and not a deterioration in groundwater quality to a degree that suggests the presence of Appendix B parameters in higher-than-usual concentrations.

#### **Future Assessment Monitoring**

Pare performed Assessment Monitoring at OW-13 in the June 2018 monitoring round due to an exceedance of both the TL and the Shewhart-CUSUM threshold of barium in the March 2018 monitoring round. No (0) Appendix B parameters were reported in samples collected from OW-13.

One (1) Appendix B parameter, sulfides, was reported above its respective detection limits in December 2017 at OW-14, as a result, Pare recommended that OW-14 be tested for sulfides in March 2018. Sulfides (0.04 mg/L) were detected in the samples collected from OW-14 in March 2018. Pare attempted to sample OW-14 in the September 2018 monitoring round to test for sulfides; however, a sample was unobtainable due to dry conditions. Pare sampled OW-14 for sulfides in December 2018. Sulfides were not detected in the samples collected at OW-14 during this monitoring round. Pare does not recommend Assessment Monitoring for the March 2019 monitoring round. However, it is recommended that OW-14 be tested again for sulfides in the upcoming March 2019 monitoring round.

#### TABLE 5A 2018 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

#### MONITORING WELL OW-9

#### Concentration (Expressed in the same units as Threshold Value)

	Thresho	old	DEC '18	SEP '18	JUN '18	MAR '18
Parameter	Value					
Antimony	0.006	mg/l <sup>1</sup>	ND	NT	ND	ND
Arsenic	0.010	mg/l <sup>1</sup>	ND	NT	ND	ND
Barium	2	mg/l <sup>1</sup>	0.032	NT	0.0090	0.0130
Beryllium	0.004	mg/l1	ND	NT	ND	ND
Cadmium	0.005	mg/l <sup>1</sup>	ND	NT	ND	0.0020
Chromium	0.1	mg/l <sup>1</sup>	0.013	NT	0.003	0.0070
Cobalt	0.73	ma/l <sup>5</sup>	0.003	NT	ND	0.0010
Copper	1.3	mg/l <sup>1</sup>	0.008	NT	ND	ND
Lead	0.015	mg/l <sup>1</sup>	0.004	NT	0.001	0.0020
Mercury	0.002	ma/l <sup>2</sup>	ND	NT	ND	ND
Nickel	0.002	ma/l <sup>1</sup>	0.006	NT	0.001	0.0040
Selenium	0.05	mg/l <sup>2,3</sup>		NT		
Silver	0.00	ma/l <sup>1</sup>	ND	NT	ND	ND
Thallium	0.002	ma/l <sup>5</sup>	ND	NT	ND	ND
Tip	0.002	mg/l <sup>5</sup>	ND	NT	ND	ND
Vanadium	0.26	mg/l <sup>2,3</sup>	0.008	NT	ND	0.0020
Zino	0.20	mg/l <sup>1</sup>	0.000	NT	0.0000	0.0020
Antesa	2-0		0.025	NT	0.0090	0.0190
Acetone	5500	µg/∟	ND	NI	ND	ND
Acryionitrile	0.039	μg/L	ND	NI	ND	ND
Benzene	5	μg/L	ND	NI	ND	ND
Bromochloromethane	90	μg/L <sup>2</sup>	ND	NT	ND	ND
Bromodichloromethane (THM)	80	μg/L'	ND	NT	ND	ND
Bromoform	80	μg/L'	ND	NT	ND	ND
Carbon disulfide	1000	μg/L°	ND	NT	ND	ND
Carbon tetrachloride	5	μg/L'	ND	NT	ND	ND
Chlorobenzene	100	μg/L <sup>1</sup>	ND	NT	ND	ND
Chloroethane	4.6	μg/L⁵	ND	NT	ND	ND
Chloroform (THM)	80	μg/L <sup>1</sup>	ND	NT	ND	ND
Chlorodibromomethane (THM)	80	μg/L <sup>1</sup>	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2	μg/L <sup>1</sup>	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05	μg/L <sup>1</sup>	ND	NT	ND	ND
1,2-Dichlorobenzene	600	μg/L <sup>1</sup>	ND	NT	ND	ND
1,4-Dichlorobenzene	75	$\mu g/L^1$	ND	NT	ND	ND
trans-1,4-Dichloro-2-butene		μg/L	ND	NT	ND	ND
1,1 -Dichloroethane	5	μg/L	ND	NT	ND	ND
1,2-Dichloroethane	5	$\mu g/L^1$	ND	NT	ND	ND
1.1-Dichloroethylene	7	$\mu q/L^1$	ND	NT	ND	ND
cis-1.2-Dichloroethene	70	$\mu q/L^1$	ND	NT	ND	ND
trans-1.2-Dichloroethene	100	μα/L <sup>1</sup>	ND	NT	ND	ND
1.2-Dichloropropane	5	μα/L <sup>1</sup>	ND	NT	ND	ND
cis-1.3-Dichloropropene		μα/L	ND	NT	ND	ND
trans-1.3-Dichloropropene		ug/L	ND	NT	ND	ND
Ethylbenzene	700	ug/l <sup>1</sup>	ND	NT	ND	ND
Methyl butyl ketone(2-Hevanone)	160	ug/l 5	ND	NT	ND	ND
Bromomethane	100	ug/1 <sup>2</sup>	ND	NT	ND	ND
Chloromethane	30	ug/L <sup>2</sup>	ND	NT	ND	ND
Dibromomethane	61	μg/L <sup>5</sup>	ND	NT	ND	ND
Methylene chloride	5	μg/L μg/L <sup>1</sup>	ND	NT	ND	ND
Methyl ethyl ketope(2 Putopopo)	4000	μg/L <sup>2</sup>	ND	NT	ND	ND
Methyl indide	4000	µg/∟ α/l	ND	NT		ND
		μg/L α/l	ND	NT	ND	ND
4-methyl-2-pentanone	100	μg/L g/L <sup>1</sup>	ND	NT	ND	ND
Styrene	100	μg/L 	ND	INT	ND	ND
1,1,1,2-1 etrachioroethane	70	μg/L g/L <sup>2</sup>	ND	NI	ND	ND
T, 1,2,2-Tetrachioroethane	0.3	μg/L	ND	INT	ND	ND
Tetrachioroethylene(PCE)	5	μg/L	ND	NI	ND	ND
loluene	1000	μg/L	ND	NI	ND	ND
1, 1, 1-1 richloroethane	200	μg/L	ND	N I	ND	ND
1,1,2-I richloroethane	5	μg/L	ND	NT	ND	ND
Trichloroethylene(TCE)	5	μg/L	ND	NT	ND	ND
Trichloroflouromethane	2000	μg/L <sup>4</sup>	ND	NT	ND	ND
1,2,3-Trichloropropane	40	μg/L <sup>2</sup>	ND	NT	ND	ND
Vinyl acetate	410	μg/L°	ND	NT	ND	ND
Vinyl chloride	2	μg/L'	ND	NT	ND	ND
Xylenes	10000	μg/L'	ND	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	μg/L⁴	ND	NT	ND	ND

 Methyl tert-budyl ether (MIBE)
 20 - 40 µg/L
 ND
 NI
 ND
 ND

 Note: Analytical data reported since commencement of low flow purging and sampling.
 1.
 1.
 Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 2.
 Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 3.
 Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories

 4.
 Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

No threshold value has been provided for parameters not identified in the sources listed above

#### TABLE 5B 2018 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

#### MONITORING WELL OW-7

#### Concentration (Expressed in the same units as Threshold Value)

	Thresho	old	DEC '18	SEP '18	<u>JUN '18</u>	MAR '18
Parameter	Value					
Antimony	0.006	mg/1*	0.0010	ND	ND	ND
Arsenic	0.010	mg/l <sup>1</sup>	ND	ND 0.0540	0.0100	ND 0.0200
Banum	2	mg/l <sup>1</sup>	0.04	0.0540	0.0280	0.0360
Codmium	0.004	mg/l <sup>1</sup>	ND	ND	ND	ND
Cadmium	0.005	mg/l <sup>1</sup>	ND	0.0040	ND 0.004	ND
Chromium	0.1	111g/1	0.004	0.0180	0.004	0.0050
Cobait	0.73	mg/l <sup>1</sup>	0.02	0.0220	0.0150	0.0190
Copper	1.3	mg/l <sup>1</sup>	ND	0.0300	ND	ND
Lead	0.015	mg/1	ND	0.0060	ND	ND
Nercury	0.002	mg/l <sup>1</sup>	ND	N I	ND 0.019	ND
	0.1	mg/1	0.022	0.0320	0.018	0.0210
Selenium	0.05	mg/l <sup>1</sup>	0.005	ND	ND	0.0100
Silver	0.1	111g/1	ND	ND	ND	ND
Thailium	0.002	mg/1	0.0003	ND	ND	0.0003
lin Maratin	22	mg/1	ND	NI 0.0100	ND	ND
vanadium	0.26	mg/l <sup>1</sup>	ND	0.0160	ND	ND
ZINC	2-5		0.0180	0.0850	0.0140	0.0180
Acetone	5500	μg/L	ND	ND	ND	ND
Acrylonitrile	0.039	μg/L	ND	ND	ND	ND
Benzene	5	μg/L	ND	ND	ND	ND
Bromochloromethane	90	μg/L~	ND	ND	ND	ND
Bromodichloromethane (THM)	80	μg/L'	ND	ND	ND	ND
Bromoform	80	μg/L'	ND	ND	ND	ND
Carbon disulfide	1000	μg/L°	ND	ND	ND	ND
Carbon tetrachloride	5	μg/L	ND	ND	ND	ND
Chlorobenzene	100	μg/L'	ND	ND	ND	ND
Chloroethane	4.6	μg/L°	ND	ND	ND	ND
Chloroform (THM)	80	μg/L'	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	μg/L	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2	μg/L'	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	μg/L'	ND	ND	ND	ND
1,2-Dichlorobenzene	600	μg/L'	ND	ND	ND	ND
1,4-Dichlorobenzene	75	μg/L'	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene		μg/L	ND	ND	ND	ND
1,1 -Dichloroethane	5	μg/L	ND	ND	ND	ND
1,2-Dichloroethane	5	μg/L'	ND	ND	ND	ND
1,1-Dichloroethylene	7	μg/L'	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	μg/L'	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	μg/L'	ND	ND	ND	ND
1,2-Dichloropropane	5	μg/L'	ND	ND	ND	ND
cis-1,3-Dichloropropene		μg/L	ND	ND	ND	ND
trans-1,3-Dichloropropene		μg/L	ND	ND	ND	ND
Ethylbenzene	700	μg/L'	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	μg/L°	ND	ND	ND	ND
Bromomethane	10	μg/L <sup>2</sup>	ND	ND	ND	ND
Chloromethane	30	μg/L <sup>2</sup>	ND	ND	ND	ND
Dibromomethane	61	μg/L°	ND	ND	ND	ND
Methylene chloride	5	μg/L'	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	μg/L²	ND	ND	ND	ND
Methyl iodide		μg/L	ND	ND	ND	ND
4-Methyl-2-pentanone		μg/L	ND	ND	ND	ND
Styrene	100	μg/L <sup>1</sup>	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	μg/L <sup>2</sup>	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	μg/L <sup>2</sup>	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	μg/L <sup>1</sup>	ND	ND	ND	ND
Toluene	1000	μg/L <sup>1</sup>	ND	ND	ND	ND
1,1,1-Trichloroethane	200	μg/L <sup>1</sup>	ND	ND	ND	ND
1,1,2-Trichloroethane	5	μg/L <sup>1</sup>	ND	ND	ND	ND
Trichloroethylene(TCE)	5	μg/L <sup>1</sup>	ND	ND	ND	ND
Trichloroflouromethane	2000	μg/L <sup>2</sup>	ND	ND	ND	ND
1,2,3-Trichloropropane	40	μg/L <sup>2</sup>	ND	ND	ND	ND
Vinyl acetate	410	μg/L⁵	ND	ND	ND	ND
Vinyl chloride	2	μg/L <sup>1</sup>	ND	ND	ND	ND
Xylenes	10000	μg/L <sup>1</sup>	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	μg/L <sup>4</sup>	6.38	4.87	3.56	6.80

 Methyl tert-butyl ether (M BE)
 20 - 40 µg/L
 6.38
 4.87
 3.56
 6.80

 Note: Analytical data reported since commencement of low flow purging and sampling.
 1.
 1.
 Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories

 4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 5. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 6. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 7. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 8. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

No threshold value has been provided for parameters not identified in the sources listed above

#### TABLE 5C 2018 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

#### MONITORING WELL OW-12

Concentration (Expressed in Same units as Threshold Value)

	Thresh	old	DEC '18	SEP '18	JUN '18	MAR '18
Parameter	Value	<u>e</u>				
Antimony	0.006	mg/L <sup>1</sup>	ND	ND	0.001	0.0250
Arsenic	0.010	mg/L <sup>1</sup>	ND	ND	0.01	ND
Barium	2	mg/L <sup>1</sup>	0.02	0.023	0.02	0.0410
Beryllium	0.004	mg/L <sup>1</sup>	ND	ND	ND	ND
Cadmium	0.005	mg/L <sup>1</sup>	ND	ND	ND	0.0010
Chromium	0.1	mg/L'	ND	0.002	ND	0.0040
Cobalt	0.73	mg/L <sup>5</sup>	ND	0.002	ND	0.0020
Copper	1.3	mg/L'	0.009	ND	ND	ND
Lead	0.015	mg/L'	ND	ND	ND	ND
Mercury	0.002	mg/L'	ND	NT	ND	ND
Nickel	0.1	mg/L <sup>=</sup>	0.024	0.025	0.025	0.0140
Selenium	0.05	mg/L	ND	ND	ND	ND
Silver	0.1	mg/L <sup>1</sup>	ND	ND	ND	ND
Tia	0.002	mg/L <sup>5</sup>	ND	NT	ND	ND
Vapadium	0.26	mg/L <sup>5</sup>	ND	0.001	ND	0.0040
Zinc	2 - 5	mg/L <sup>2,3</sup>	0.007	0.001	0.000	0.0040
Acetopo	2-3	ug/l <sup>5</sup>	0.007	0.020	0.003	0.0220
Accelone	010	ug/L <sup>5</sup>	ND	ND	ND	ND
Benzene	0.035	ug/L <sup>1</sup>	ND	ND	ND	ND
Bromochloromethane	80	µg/L <sup>2</sup>	ND	ND	ND	ND
Bromodichloromethane (THM)	90	ug/L <sup>1</sup>	ND	ND	ND	ND
Bromoform	80	ua/L <sup>1</sup>	ND	ND	ND	ND
Carbon disulfide	1000	ua/L⁵	ND	ND	ND	ND
Carbon tetrachloride	5	μ <b>g</b> /L <sup>1</sup>	ND	ND	ND	ND
Chlorobenzene	100	μ <b>g</b> /L <sup>1</sup>	ND	ND	ND	ND
Chloroethane	4.6	μg/L <sup>5</sup>	ND	ND	ND	ND
Chloroform	80	μg/L <sup>1</sup>	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	μg/L <sup>1</sup>	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2	μg/L <sup>1</sup>	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	μg/L <sup>1</sup>	ND	ND	ND	ND
1,2-Dichlorobenzene	600	μg/L <sup>1</sup>	ND	ND	ND	ND
1,4-Dichlorobenzene	75	μg/L <sup>1</sup>	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene		μg/L	ND	ND	ND	ND
1,1 -Dichloroethane	5	μg/L	ND	ND	ND	ND
1,2-Dichloroethane		μg/L	ND	ND	ND	ND
1,1-Dichloroethylene	7	μg/L	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	μg/L	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	μg/L	ND	ND	ND	ND
1,2-Dichloropropane	5	μg/L	ND	ND	ND	ND
cis-1,3-Dichloropropene		μg/L g/l	ND	ND	ND	ND
Ethylhopzopo	700	μg/L ug/L <sup>1</sup>	ND		ND	ND
Methyl butyl ketope(2-Hexapone)	160	μg/L <sup>5</sup>	ND	ND	ND	ND
Bromomethane	100	ug/L <sup>2</sup>	ND	ND	ND	ND
Chloromethane	30	ug/L <sup>2</sup>	ND	ND	ND	ND
Dibromomethane	61	μα/L <sup>5</sup>	ND	ND	ND	ND
Methylene chloride	5	μ <b>g</b> /L <sup>1</sup>	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	μg/L <sup>2</sup>	ND	ND	ND	ND
Methyl iodide		μg/L	ND	ND	ND	ND
4-Methyl-2-pentanone		μg/L	ND	ND	ND	ND
Styrene	100	μg/L <sup>1</sup>	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	μg/L <sup>2</sup>	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	μg/L <sup>2</sup>	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	μg/L <sup>1</sup>	ND	ND	ND	ND
Toluene	1000	μg/L'	ND	ND	ND	ND
1,1,1-Trichloroethane	200	μg/L'	ND	ND	ND	ND
1,1,2-Trichloroethane	5	μg/L	ND	ND	ND	ND
Trichloroethylene(TCE)	5	μg/L	ND	ND	ND	ND
Trichloroflouromethane	2000	μg/L*	ND	ND	ND	ND
1,2,3- I richloropropane	40	μg/L <sup>-</sup>	ND	ND	ND	ND
Vinyi acetate	410	μg/L <sup>-</sup>	ND	ND	ND	ND
Vinyi chiofide	10000	μg/L μg/L <sup>1</sup>	ND	ND	ND	ND
Ayrenes	20 - 40	μg/L μg/l <sup>4</sup>				ND

Note: Analytical data reported since commencement of low flow purging and sampling.

Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was signifi higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect. No threshold value has been provided for parameters not identified in the sources listed above

Note: Dichlorodifluoromethane is not an Appendix A VOC but was reported by the laboratory and has been included in this table.

#### TABLE 5D 2018 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

#### MONITORING WELL OW-13

#### Concentration (Expressed in same units as Threshold Value)

	Thresho	ld	DEC '18	SEP '18	JUN '18	MAR '18
Parameter	Value					
Antimony	0.006	mg/L <sup>1</sup>	0.0020	0.0020	0.002	ND
Arsenic	0.010	mg/L <sup>1</sup>	0.0100	0.0100	0.02	0.0070
Barium	2	mg/L <sup>1</sup>	0.1260	0.0890	0.089	0.1150
Beryllium	0.004	mg/L <sup>1</sup>	ND	ND	ND	ND
Cadmium	0.005	mg/L <sup>1</sup>	0.0040	0.0030	0.004	0.0040
Chromium	0.1	mg/L <sup>1</sup>	0.0020	0.0020	0.002	0.0020
Cobalt	0.73	mg/L <sup>5</sup>	0.0130	0.0100	0.011	0.0130
Copper	1.3	mg/L <sup>1</sup>	ND	ND	ND	ND
Lead	0.015	mg/L <sup>1</sup>	0.0020	ND	ND	0.0020
Mercury	0.002	mg/L <sup>1</sup>	ND	NT	ND	ND
Nickel	0.1	mg/L <sup>2</sup>	0.0140	0.0120	0.011	0.0120
Selenium	0.05	mg/L <sup>1</sup>	ND	ND	ND	ND
Silver	0.1	mg/L <sup>2,1</sup>	0.0010	ND	ND	ND
Thallium	0.002	mg/L <sup>1</sup>	ND	ND	ND	0.0003
Tin	22	mg/L⁵	ND	NT	ND	ND
Vanadium	0.26	mg/L <sup>5</sup>	0.0080	0.0040	ND	ND
Zinc	2 - 5	mg/L <sup>2,1</sup>	0.0190	0.0100	0.012	0.0170
Acetone	610	μg/L <sup>5</sup>	ND	ND	ND	ND
Acrylonitrile	0.039	μg/L <sup>5</sup>	ND	ND	ND	ND
Benzene	5	μg/L <sup>1</sup>	ND	ND	ND	ND
Bromochloromethane	80	μg/L <sup>2</sup>	ND	ND	ND	ND
Bromodichloromethane (THM)	90	μg/L <sup>1</sup>	ND	ND	ND	ND
Bromoform	80	μg/L <sup>1</sup>	ND	ND	ND	ND
Carbon disulfide	1000	μg/L <sup>b</sup>	ND	ND	ND	ND
Carbon tetrachloride	5	μg/L <sup>1</sup>	ND	ND	ND	ND
Chlorobenzene	100	μg/L <sup>1</sup>	6.19	ND	ND	5.40
Chloroethane	4.6	μg/L <sup>b</sup>	ND	ND	ND	ND
Chloroform	80	μg/L <sup>1</sup>	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L'	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2	μg/L <sup>1</sup>	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L'	ND	ND	ND	ND
1,2-Dichlorobenzene	600	μg/L'	ND	ND	ND	ND
1,4-Dichlorobenzene	75	µg/L'	1.31	ND	ND	ND
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	ND
1,1 -Dichloroethane	5	μg/L	ND	ND	ND	ND
1,2-Dichloroethane		μg/L	ND	ND	ND	ND
1,1-Dichloroethylene	7	µg/L'	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	μg/L'	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	μg/L'	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L'	ND	ND	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND
trans-1,3-Dichloropropene	=00	μg/L - 4.1	ND	ND	ND	ND
Etnylbenzene	700	μg/L 	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L <sup>-</sup>	ND	ND	ND	ND
Bromometnane	10	µg/∟	ND	ND	ND	ND
Chloromethane	30	μg/L - 4 <sup>5</sup>	ND	ND	ND	ND
Dibromomethane	61	μg/L α/L <sup>1</sup>	ND	ND	ND	ND
Methyl ethyl ketene (2 Butenene)	4000	μg/L ug/L <sup>2</sup>	ND	ND	ND	
Methyliedide	4000	μg/L	ND	ND	ND	ND
4 Method 2 pentanena		μg/L	ND	ND	ND	
Sturopo	100	ug/L <sup>1</sup>	ND	ND	ND	ND
1 1 1 2 Totrachloroothana	70	ug/1 <sup>2</sup>	ND	ND	ND	ND
1 1 2 2-Tetrachloroethane	0.3	ug/1 <sup>2</sup>	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	ug/L <sup>1</sup>	ND	ND	ND	ND
Toluene	1000	μα/L <sup>1</sup>	ND	ND	ND	ND
1 1 1-Trichloroethane	200	μα/L <sup>1</sup>	ND	ND	ND	ND
1 1 2-Trichloroethane	200	ug/L <sup>1</sup>	ND	ND	ND	ND
Trichloroethylene(TCE)	5	μα/L <sup>1</sup>	ND	ND	ND	ND
Trichloroflouromethane	2000	ug/l <sup>2</sup>	ND	ND	ND	ND
1.2.3-Trichloropropage	2000	ug/L <sup>2</sup>	ND	ND	ND	ND
Vinvl acetate	40	μα/L <sup>5</sup>	ND	ND	ND	ND
Vinyl chloride	410	ro- ua/l <sup>1</sup>	ND	ND	ND	ND
Xvlenes	10000	μα/L <sup>1</sup>	ND	ND	ND	ND
	10000					

Methyl tert-butyl ether (MTBE) 20 - 40 μg/L

Note: Analytical data reported since commencement of low flow purging and smapling. 1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories 3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories

4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 Threshold value given is the Preliminary trace rowsony as provided in the OCLE rowson of the Diministry water databases
 Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
 Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher th previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

Note: Dichlorodifluoromethane is not an Appendix A VOC but was reported by the laboratory and has been included in this table.

#### TABLE 5E 2018 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

#### MONITORING WELL OW-14

#### Concentration (Expressed in the same units as Threshold Value)

	Thresho	ld	DEC '18	SEP '18	JUN '18	MAR '18
Parameter	Value					
Antimony	0.006	mg/L <sup>1</sup>	0.005	NT	ND	ND
Arsenic	0.010	mg/L <sup>1</sup>	ND	NT	0.01	ND
Barium	2	mg/L <sup>1</sup>	0.210	NT	0.155	0.2240
Beryllium	0.004	ma/L <sup>1</sup>	ND	NT	ND	ND
Cadmium	0.005	ma/L <sup>1</sup>	0.002	NT	0.006	0.0050
Chromium	0.000	mg/L <sup>1</sup>	ND	NT	0.001	0.0000
Cobalt	0.73	mg/L <sup>5</sup>	0.011	NT	0.006	0.0000
Copper	0.73	mg/L <sup>1</sup>	0.011	NT	0.000	0.0140
Copper	0.045	mg/L <sup>1</sup>	0.007	NT	ND	0.0090
Lead	0.015	mg/L	ND	NI	ND	0.0060
Mercury	0.002	mg/L	ND	NI	ND	ND
Nickel	0.1	mg/L	0.019	NI	0.012	0.0220
Selenium	0.05	mg/L'	ND	NT	ND	ND
Silver	0.1	mg/L <sup></sup>	ND	NT	ND	ND
Thallium	0.002	mg/L'	ND	NT	ND	0.0003
Tin	22	mg/L <sup>5</sup>	ND	NT	ND	ND
Vanadium	0.26	mg/L <sup>5</sup>	0.004	NT	ND	0.0070
Zinc	2 - 5	mg/L <sup>2,:</sup>	0.014	NT	0.031	0.0480
Acetone	610	μg/L <sup>5</sup>	ND	NT	ND	ND
Acrylonitrile	0.039	μg/L <sup>5</sup>	ND	NT	ND	ND
Benzene	5	μα/L <sup>1</sup>	2.28	NT	2.77	ND
Bromochloromethane	80	μα/L <sup>2</sup>	ND	NT	ND	ND
Bromodichloromethane (THM)	90	μα/L <sup>1</sup>	ND	NT	ND	ND
Bromoform	80	ug/l <sup>1</sup>	ND	NT	ND	ND
Carbon disulfide	1000	ug/l <sup>5</sup>	ND	NT	ND	ND
Carbon totrophlarido	1000	μg/L <sup>1</sup>	ND	NT	ND	ND
Chlorabanana	100	μg/L g/l <sup>1</sup>	14.20	NT	10.0	10.0
Chiorobenzene	100	μg/L	11.38	INT	13.3	10.8
Chioroethane	4.6	μg/L	ND	NI	ND	ND
Chioroform	80	μg/L	ND	NI	ND	ND
Chlorodibromomethane (THM)	80	μg/L'	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2	μg/L'	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05	μg/L'	ND	NT	ND	ND
1,2-Dichlorobenzene	600	μg/L'	ND	NT	ND	ND
1,4-Dichlorobenzene	75	μg/L <sup>1</sup>	2.38	NT	2.62	ND
trans-1,4-Dichloro-2-butene		μg/L	ND	NT	ND	ND
1,1 -Dichloroethane	5	μg/L	ND	NT	ND	ND
1,2-Dichloroethane		μg/L	ND	NT	ND	ND
1,1-Dichloroethylene	7	μg/L <sup>1</sup>	ND	NT	ND	ND
cis-1,2-Dichloroethene	70	μg/L <sup>1</sup>	ND	NT	ND	ND
trans-1.2-Dichloroethene	100	ua/L <sup>1</sup>	ND	NT	ND	ND
1 2-Dichloropropane	5	ug/L <sup>1</sup>	ND	NT	ND	ND
cis-1 3-Dichloropropene	0	ua/L	ND	NT	ND	ND
trans-1.3-Dichloropropene		ua/L	ND	NT	ND	ND
Ethylbonzono	700	ug/L <sup>1</sup>	ND	NT	ND	ND
Methyl butyl ketono(2 Hovenene)	160	μg/L <sup>5</sup>	ND	NT	ND	ND
Drememorthese	100	μg/L g/l <sup>2</sup>	ND	NT	ND	ND
Biomoniemane	10	μg/L	ND	NIT	ND	ND
Chloromethane	30	μg/L 	ND	NI	ND	ND
Dibromometnane	61	μg/L	ND	NI	ND	ND
Methylene chloride	5	μg/L	ND	NI	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	μg/L=	ND	NI	ND	ND
Methyl iodide		μg/L	ND	NT	ND	ND
4-Methyl-2-pentanone		μg/L	ND	NT	ND	ND
Styrene	100	μg/L'	ND	NT	ND	ND
1,1,1,2-Tetrachloroethane	70	μg/L <sup>2</sup>	ND	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3	μg/L <sup>2</sup>	ND	NT	ND	ND
Tetrachloroethylene(PCE)	5	μg/L <sup>1</sup>	ND	NT	ND	ND
Toluene	1000	μg/L <sup>1</sup>	ND	NT	ND	ND
1,1,1-Trichloroethane	200	μg/L <sup>1</sup>	ND	NT	ND	ND
1,1,2-Trichloroethane	5	μg/L <sup>1</sup>	ND	NT	ND	ND
Trichloroethylene(TCE)	5	μg/L <sup>1</sup>	ND	NT	ND	ND
Trichloroflouromethane	2000	μg/L <sup>2</sup>	ND	NT	ND	ND
1.2.3-Trichloropropage	40	ua/L <sup>2</sup>	ND	NT	ND	ND
Vinvl acetate	410	ug/L <sup>5</sup>	ND	NT	ND	ND
Vinyl chloride	-10	ug/l <sup>1</sup>	ND	NT	ND	ND
Villance	10000	μ9/L		NT		
Aylettes	10000	μg/L 		IN I	ND	
wetnyi tert-butyl ether (MIBE)	20 - 40	µg/∟	7.97	NI	6.23	9.4

Note: Analytical data reported since commencement of low flow purging and smapling. 1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was signif higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect. No threshold value has been provided for parameters not identified in the sources listed above

#### TABLE 5F 2018 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

#### MONITORING WELL OW-15

#### Concentration (Expressed in the same units as Threshold Value)

	Threshol	ld	DEC '18	SEP '18	JUN '18	MAR '18
Parameter	Value					
Antimony	0.006	mg/L <sup>1</sup>	0.0040	0.0040	ND	ND
Arsenic	0.010	mg/L <sup>1</sup>	0.0200	0.0300	0.03	0.0200
Barium	2 1	mg/L <sup>1</sup>	0.2120	0.0840	0.096	0.1280
Beryllium	0.004	mg/L <sup>1</sup>	ND	ND	ND	ND
Cadmium	0.005	mg/L <sup>1</sup>	0.0080	0.0070	0.010	0.0090
Chromium	0.1	mg/L <sup>1</sup>	ND	ND	ND	ND
Cobalt	0.73	mg/L <sup>5</sup>	0.0080	0.0140	0.012	0.0100
Copper	1.3 1	mg/L <sup>1</sup>	ND	ND	ND	ND
Lead	0.015	mg/L <sup>1</sup>	0.0030	0.0020	ND	0.0020
Mercury	0.002	mg/L <sup>1</sup>	ND	NT	ND	ND
Nickel	0.1	mg/L <sup>2</sup>	0.0170	0.0290	0.023	0.0200
Selenium	0.05	mg/L <sup>1</sup>	ND	ND	ND	ND
Silver	0.1 (	mg/L <sup>2,:</sup>	ND	ND	ND	ND
Thallium	0.002 1	ma/L <sup>1</sup>	ND	ND	ND	ND
Tin	22 1	mg/L <sup>5</sup>	ND	NT	ND	ND
Vanadium	0.26 1	ma/L⁵	0.0150	0.0110	ND	0.0060
Zinc	2.5	mg/l <sup>2;</sup>	0.0150	0.0150	0.032	0.0210
Acetone	610	ug/l 5	ND	ND	ND	ND
Acedonie	0.030	ug/ <sup>5</sup>	ND	ND	ND	ND
Reprope	0.035	ug/L <sup>1</sup>	1 76	ND	1.67	ND
Bromochloromothana	80 1	ug/L <sup>2</sup>	ND	ND	ND	ND
Bromodiobloromothono (THM)	00 1	ug/L <sup>1</sup>	ND	ND	ND	ND
Bromoform	90 1	ug/L <sup>1</sup>	ND	ND	ND	ND
Contras disulfida	4000	ug/L	ND	ND	ND	ND
Carbon disulide	1000 į	ug/L	ND	ND	ND	ND
Carbon tetrachionde	100	μg/L	ND	ND 44.00	ND 10 70	ND
Chlorobenzene	100	μg/L	15.49	14.00	12.72	17
Chloroethane	4.6	µg/L	ND	ND	ND	ND
Chioroform	80	ug/L	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2	μg/L	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	μg/L	ND	ND	ND	ND
1,2-Dichlorobenzene	600	μg/L <sup>*</sup>	ND	ND	ND	ND
1,4-Dichlorobenzene	75	μg/L	3.06	ND	ND	ND
trans-1,4-Dichloro-2-butene	,	ug/L	ND	ND	ND	ND
1,1 -Dichloroethane	5	μg/L	ND	ND	ND	ND
1,2-Dichloroethane	,	μg/L	ND	ND	ND	ND
1,1-Dichloroethylene	7	μg/L'	ND	ND	ND	ND
cis-1,2-Dichloroethene	70 į	μg/L'	ND	ND	ND	ND
trans-1,2-Dichloroethene	100 (	μg/L'	ND	ND	ND	ND
1,2-Dichloropropane	5 (	μg/L'	ND	ND	ND	ND
cis-1,3-Dichloropropene	,	μg/L	ND	ND	ND	ND
trans-1,3-Dichloropropene	ļ	μg/L	ND	ND	ND	ND
Ethylbenzene	700 (	μg/L <sup>1</sup>	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 (	μg/L <sup>5</sup>	ND	ND	ND	ND
Bromomethane	10 (	μg/L <sup>2</sup>	ND	ND	ND	ND
Chloromethane	30 (	μg/L <sup>2</sup>	ND	ND	ND	ND
Dibromomethane	61 (	μg/L⁵	ND	ND	ND	ND
Methylene chloride	5 (	μg/L <sup>1</sup>	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 (	μg/L <sup>2</sup>	ND	ND	ND	ND
Methyl iodide	ļ	μg/L	ND	ND	ND	ND
4-Methyl-2-pentanone	,	μg/L	ND	ND	ND	ND
Styrene	100 (	μg/L <sup>1</sup>	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	μg/L <sup>2</sup>	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	μg/L <sup>2</sup>	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 (	μg/L <sup>1</sup>	ND	ND	ND	ND
Toluene	1000 (	μg/L <sup>1</sup>	ND	ND	ND	ND
1,1,1-Trichloroethane	200	μg/L <sup>1</sup>	ND	ND	ND	ND
1,1,2-Trichloroethane	5 1	μg/L <sup>1</sup>	ND	ND	ND	ND
Trichloroethylene(TCE)	5 1	μg/L <sup>1</sup>	ND	ND	ND	ND
Trichloroflouromethane	2000	ug/L <sup>2</sup>	ND	ND	ND	ND
1.2.3-Trichloropropane	40	ug/L <sup>2</sup>	ND	ND	ND	ND
Vinvl acetate	410	ug/L <sup>5</sup>	ND	ND	ND	ND
Vinvl chloride	2 1	ug/L <sup>1</sup>	ND	ND	ND	ND
Xvlenes	10000	ua/L <sup>1</sup>	ND	ND	ND	ND
Methyl tert-butyl ether (MTRE)	20 - 40	ug/L <sup>4</sup>	3.69	7.00	6.61	ND

Note: Analytical data reported since commencement of low flow purging and smapling. 1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

#### TABLE 5G 2018 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

#### MONITORING WELL OW-16

#### Concentration (Expressed in the same units as Threshold Value)

	Thresho	old	DE	C '18	<u>SEP '18</u>	<u>JUN '18</u>	MAR '18
Parameter	Value						
Antimony	0.006	mg/l <sup>1</sup>		ND	ND	0.002	ND
Arsenic	0.010	mg/l <sup>1</sup>		ND	ND	0.01	ND
Barium	2	mg/l <sup>1</sup>	0	.017	0.027	0.011	0.0190
Beryllium	0.004	mg/l <sup>1</sup>	1	ND	ND	ND	ND
Cadmium	0.005	mg/l <sup>1</sup>		ND	ND	ND	ND
Chromium	0.1	mg/l <sup>1</sup>	0	.003	0.003	0.004	0.0060
Cobalt	0.73	mg/l⁵	0	.006	0.004	0.002	0.0050
Copper	1.3	mg/l <sup>1</sup>		ND	ND	ND	ND
Lead	0.015	mg/l <sup>1</sup>		ND	ND	ND	ND
Mercury	0.002	ma/l <sup>2</sup>		ND	NT	ND	ND
Nickel	0.1	mg/l <sup>1</sup>	0	.013	0.01	0.009	0.0100
Selenium	0.05	ma/l <sup>2,3</sup>	0	009	0.003	ND	0.0100
Silver	0.1	mg/l <sup>1</sup>		ND	ND	ND	ND
Thallium	0.002	ma/l <sup>5</sup>		ND	ND	ND	0.0003
Tin	22	ma/l <sup>5</sup>		ND	NT	ND	ND
Vanadium	0.26	mg/l <sup>2,3</sup>			ND	ND	ND
Zinc	2.5	ma/l <sup>1</sup>	0	025	0.019	0.022	0.024
Apotono	2-3		0	.02.J	0.013	0.022	0.024 ND
Acetonie	0.020	μg/L ug/L <sup>5</sup>			ND	ND	ND
Acryionitile	0.039	μg/L			ND	ND	ND
Benzene	5	μg/L			ND	ND	ND
Bromocniorometnane	90	µg/∟		ND	ND	ND	ND
Bromodichloromethane (THM)	80	μg/L		ND	ND	ND	ND
Bromoform	80	μg/L		ND	ND	ND	ND
Carbon disulfide	1000	μg/L°		ND	ND	ND	ND
Carbon tetrachloride	5	μg/L'	1	ND	ND	ND	ND
Chlorobenzene	100	μg/L <sup>1</sup>		ND	ND	ND	ND
Chloroethane	4.6	μg/L <sup>5</sup>		ND	ND	ND	ND
Chloroform (THM)	80	μg/L <sup>1</sup>	I	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	μg/L <sup>1</sup>		ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2	μg/L <sup>1</sup>		ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	μg/L <sup>1</sup>	1	ND	ND	ND	ND
1,2-Dichlorobenzene	600	μg/L <sup>1</sup>		ND	ND	ND	ND
1,4-Dichlorobenzene	75	μg/L <sup>1</sup>		ND	ND	ND	ND
trans-1,4-Dichloro-2-butene		μg/L	1	ND	ND	ND	ND
1,1 -Dichloroethane	5	μg/L		ND	ND	ND	ND
1.2-Dichloroethane	5	$\mu q/L^1$		ND	ND	ND	ND
1.1-Dichloroethylene	7	μα/L <sup>1</sup>		ND	ND	ND	ND
cis-1 2-Dichloroethene	70	$\mu \alpha / L^1$		ND	ND	ND	ND
trans-1 2-Dichloroethene	100	$\mu \alpha / L^1$		ND	ND	ND	ND
1 2-Dichloropropane	.00	ug/l <sup>1</sup>			ND	ND	ND
cis-1 3-Dichloropropene	0	ug/L		ND	ND	ND	ND
trans-1 3-Dichloropropene		ug/l			ND	ND	ND
Ethylbenzene	700	ug/l <sup>1</sup>			ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	ug/1 5			ND	ND	ND
Bromomethane	100	ug/1 <sup>2</sup>			ND	ND	ND
Chloromothana	20	μg/L <sup>2</sup>			ND	ND	ND
Dibromomethane	61	μg/L μg/L <sup>5</sup>				ND	ND
Methylene ebleride	5	μg/L <sup>1</sup>			ND	ND	ND
Methyl ethyl ketopo(2 Butopopo)	4000	μg/L <sup>2</sup>			ND	ND	ND
Mathul indida	4000	μg/L α/l			ND	ND	ND
		μg/L			ND	ND	ND
4-Metnyl-2-pentanone		μg/L		ND	ND	ND	ND
Styrene	100	μg/L		ND	ND	ND	ND
1,1,1,2-I etrachloroethane	70	μg/L		ND	ND	ND	ND
1,1,2,2-1 etrachioroethane	0.3	µg/∟		ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	μg/L		ND	ND	ND	ND
louene	1000	μg/L		ND	ND	ND	ND
1,1,1-Trichloroethane	200	μg/L		ND	ND	ND	ND
1,1,2-Trichloroethane	5	μg/L		ND	ND	ND	ND
Trichloroethylene(TCE)	5	μg/L'	1	ND	ND	ND	ND
Trichloroflouromethane	2000	μg/L <sup>2</sup>		ND	ND	ND	ND
1,2,3-Trichloropropane	40	μg/L <sup>2</sup>		ND	ND	ND	ND
Vinyl acetate	410	μg/L⁵		ND	ND	ND	ND
Vinyl chloride	2	μg/L <sup>1</sup>		ND	ND	ND	ND
Xylenes	10000	μg/L <sup>1</sup>		ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	μg/L <sup>4</sup>	3	3.77	3.42	6.53	7.80

 Methyl tert-butyl ether (M BE)
 20 - 40 µg/L
 3.7
 3.42
 6.53
 7.80

 Note: Analytical data reported since commencement of low flow purging and sampling.
 1.
 1.
 Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories

 4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 5. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 6. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 7. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

 8. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

No threshold value has been provided for parameters not identified in the sources listed above

#### TABLE 5H SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON DEC 2018 - SAMPLE ROUND

Concentration (units as specified for Threshold Value)

		OW-9		Backgroun	Background Well		Compliance wells				
		Toleran	ce Limit *	Threshold							
	Parameter	TL=A	/G+K*S	Value	OW-9	OW-7	OW-12	OW-13	OW-14	OW-15	OW-16
METALS	Antimony	0.0290	ma/l	0.006 mg/L <sup>1</sup>	ND	0.0010	ND	0.002	0.005	0.0040	ND
INE IT LO	Arsenic	0.0030	mg/L	0.010 mg/L <sup>1</sup>	ND	ND	ND	0.01	ND	0.02	ND
	Barium	0.0564	ma/L	2 mg/L <sup>1</sup>	0.0320	0.0400	0.02	0.126	0.21	0.212	0.0170
	Beryllium	0.0005	mg/L	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND
	Cadmium	0.3650	mg/L	0.005 mg/L1	ND	ND	ND	0.004	0.0020	0.008	ND
	Chromium	0.0377	mg/L	0.1 mg/L1	0.013	0.004	ND	0.002	ND	ND	0.0030
	Cobalt	0.0030	mg/L	0.73 mg/L <sup>5</sup>	0.0030	0.020	ND	0.013	0.011	0.008	0.006
	Copper	0.0080	mg/L	1.3 mg/L <sup>1</sup>	0.0080	ND	0.009	ND	0.007	ND	ND
	Lead	0.2245	mg/L	0.015 mg/L	0.004	ND	ND	0.002	ND	0.0030	ND
	Mercury	0.0001	mg/L	0.002 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND
	Nickel	0.0293	mg/L	0.1 mg/L <sup>2</sup>	0.006	0.022	0.024	0.014	0.019	0.017	0.0130
	Selenium	0.0100	mg/L	0.05 mg/L'	ND	0.0050	ND	ND	ND	ND	0.0090
	Silver	0.0005	mg/L	0.1 mg/L <sup>2,0</sup>	ND	ND	ND	0.001	ND	ND	ND
	Thallium	0.0001	mg/L	0.002 mg/L	ND	0.0003	ND	ND	ND	ND	ND
	Tin	0.0010	mg/L	22 mg/L	ND	ND	ND	ND	ND	ND	ND
	Vanadium	0.0080	mg/L	0.26 mg/L	0.0080	ND	ND	0.008	0.004	0.0150	ND
VOCIE		13.7195	mg/L	2-5 mg/L 610 mg/L 5	0.0250	0.0180	0.007	0.019	0.014	0.0150	0.0250
1003	Acedonie			0.030 µg/L <sup>5</sup>							
	Renzene			5 µg/L							
	Bromochloromethane			80 µg/L <sup>2</sup>							
	Bromodichloromethane (THM)			90 µg/L'							
	Bromoform			80 µg/L1							
	Carbon disulfide			1000 μg/L <sup>5</sup>							
	Carbon tetrachloride			5 µg/L'							
	Chlorobenzene			100 µg/L <sup>1</sup>							
	Chloroethane			4.6 μg/L°							
	Chloroform			80 μg/L1							
	Chlorodibromomethane (THM)			80 μg/L <sup>1</sup>							
	1,2-Dibromo-3-chloropropane (DBCP)			0.2 µg/L <sup>1</sup>							
	1,2-Dibromoethane (EDB)			0.05 μg/L							
	1,2-Dichlorobenzene			600 μg/L							
	1,4-Dichlorobenzene			75 μg/L							
	trans-1,4-Dichloro-2-butene			μg/L							
	1,1 -Dichloroethane			5 μg/L							
	1,2-Dichloroethane			5 μg/L 7 μg/L <sup>1</sup>							
	r, r-Dichloroethope			7 µg/L 70 µg/L <sup>1</sup>							
	trans-1 2-Dichloroethene			100 µg/L <sup>1</sup>							
	1.2-Dichloropropane			5 μg/L <sup>1</sup>							
	cis-1.3-Dichloropropene			μg/L							
	trans-1,3-Dichloropropene			μg/L							
	Ethylbenzene			700 μg/L <sup>1</sup>							
	Methyl butyl ketone(2-Hexanone)			160 μg/L°							
	Bromomethane			10 µg/L <sup>∠</sup>							
	Chloromethane			30 μg/L <sup>2</sup>							
	Dibromomethane			61 μg/L°							
	Methylene chloride			5 μg/L'							
	Methyl ethyl ketone(2-Butanone)			4000 μg/L <sup>2</sup>							
	Methyl 2 poptops			μg/L							
	4-Metnyl-2-pentanone			μg/L 100 μg/L							
	1 1 1 2 Tetrachlereethane			100 μg/L 70 μg/L <sup>2</sup>							
	1,1,2,2-Tetrachloroethane			0.3 µg/L							
	Tetrachloroethylene(PCE)			5 µg/L1							
	Toluene			1000 µg/L <sup>1</sup>							
	1.1.1-Trichloroethane			200 µg/L <sup>1</sup>							
	1,1,2-Trichloroethane			5 μg/L							
	Trichloroethylene(TCE)			5 μg/L							
	Trichloroflouromethane			2000 µg/L <sup>∠</sup>							
	1,2,3-Trichloropropane			40 µg/L <sup>∠</sup>							
	Vinyl acetate			410 μg/L <sup>5</sup>							
	Vinyl chloride			2 μg/L <sup>1</sup>							
	Xylenes			10000 μg/L <sup>1</sup>							
	Methyl tert-butyl ether (MTBE)			20 - 40 µg/L⁴							

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories 3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit.

However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

#### No threshold value has been provided for parameters not identified in the sources listed above

" " =	Exceedance of TL
ND =	Not Detected

\* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

# 6.0 CONCLUSIONS

The groundwater monitoring data obtained for the Landfill during this reporting period reflects generally consistent trends in the number and concentrations of target parameters detected relative to historical data. Recent and historical data still suggest a generally consistent low-level impact<sup>2</sup> to groundwater beneath and downgradient from the Landfill.

### **Compliance Monitoring**

In 2018, there were a total of forty-eight (48) exceedances of Tolerance Limit (TL) thresholds at the compliance wells at the Landfill. The 2018 monitoring period was the first full year in which OW-7 and OW-16 were assessed for TL exceedances. Excluding Ow-7 and OW-16, the number of TL exceedances were generally consistent with past years. A total of seven (7) Appendix A metals; antimony, barium, cadmium, chromium, lead, nickel, and zinc exceeded their CUSUM thresholds at least once in the compliance wells during the 2018 monitoring period. A total of one (1) Appendix A VOC, MTBE, exceeded its CUSUM thresholds during the 2018 monitoring period.

### Assessment Monitoring

In 2018 Pare performed Assessment Monitoring at the following times and locations:

- OW-14 in March 2018, triggered by a detection of the Appendix B parameter sulfides during the December 2017 monitoring round.
- OW-13, in June 2018, triggered by an exceedance of the Shewhart-CUSUM threshold of barium in March 2018.

No (0) appendix B parameters were detected in any samples collected from OW-14 in March 2018 or OW-13 in March 2018. In these two Assessment Monitoring rounds, sulfides were only detected in samples collected from OW-14 in March 2018. Pare attempted to sample OW-14 in the September 2018 monitoring round to test for sulfides; however, a sample was unobtainable due to dry conditions. Pare sampled OW-14 for sulfides in December 2018; however, sulfides were not detected. Pare does not recommend Assessment Monitoring for the March 2019 monitoring round. However, it is

<sup>&</sup>lt;sup>2</sup> The analytical data compiled from the routine quarterly groundwater monitoring represent low-level impacts in comparison to water quality thresholds published in the US EPA 2012 Edition of the Drinking Water Standards and Health Advisories.
recommended that OW-14 be tested again for sulfides in the upcoming March 2019 monitoring round.

#### Shewhart-CUSUM Analysis

During the March 2018 monitoring round, barium exceeded its Shewhart-CUSUM thresholds at OW-12 and OW-13. This CUSUM threshold exceedance of barium at OW-13 triggered Assessment Monitoring for the next round that a sample was able to be acquired. Chromium exceeded its thresholds at OW-14 and OW-15. Nickel and zinc also exceeded their thresholds at OW-12 and OW-13, respectively. During the June 2018 monitoring round, barium and nickel both exceeded their Shewhart-CUSUM thresholds at OW-12, and cadmium exceeded its thresholds at OW-15. During the September 2018 and December 2018 monitoring rounds, barium and nickel both exceeded their Shewhart-CUSUM thresholds at OW-12. Antimony also exceeded its CUSUM thresholds during the December 2018 monitoring round.

Barium at OW-12 has exceeded both of its Shewhart-CUSUM thresholds in each monitoring round since June 2014. Despite this, barium has not triggered Assessment Monitoring parameters at OW-12. Pare will continue to monitor barium trends at the Landfill in future monitoring rounds.

The Shewhart-CUSUM analysis provides a method for discerning trends in reported landfill concentrations over an extended period of time. The analysis compares recently reported concentrations to those reported during the first two years of monitoring at the sampling locations. Since Pare implemented the Shewhart-CUSUM control charts, several organic parameters have exhibited a gradual increase in CUSUM values over time. In most cases, specifically at OW-15, these increases in CUSUM values are consistent with a general rise in reported concentrations (i.e., a divergence from the baseline data in the CUSUM analysis) since September 2006. As an example, the trend and reported concentrations of MTBE are shown in the *Reported Concentrations of MTBE* figure. Although the reported concentrations for MTBE are generally rising at OW-15, it remains significantly below its established drinking water advisories.

# 7.0 RECOMMENDATIONS

The groundwater monitoring program, as currently constituted, appears to be generally adequate for the purposes of evaluating groundwater impact from the Landfill. The statistical analyses employed to review groundwater impacts appear to be sufficiently useful at distinguishing between background concentrations and landfill-derived contaminants, as well as increasing contaminant trends at individual wells. However, based on recent coordination with RI DEM and the recent stormwater sampling around the landfill, it is apparent that the groundwater monitoring program is not addressing direct surface water runoff from the landfill into surround surface water bodies. As such, and at the recommendation of the RI DEM, the groundwater monitoring program should be converted into a more general environmental monitoring program that includes groundwater monitoring and surface water monitoring.

It is also noted that observation wells OW-13, OW-14, and OW-15 are located in in or immediately adjacent to future stormwater management structures. As part of the landfill closure, new downgradient wells should be installed to replace these three existing wells.

Finally, after coordination with the RI DEM, it has been determined that an additional upgradient groundwater monitoring well should be installed and the existing well, OW-12, should be redesignated as an upgradient well. The data collected from OW-12 since its installation strongly suggests that it is in an upgradient position to the landfill. There have never been any bona fide VOC detections in the well and the concentrations of metals are similar to those of OW-9. By re-designating OW-12 as a background well and installing a new background well, there will be three background wells for the landfill, which should provide a more complete understanding of the quality of groundwater coming onto the property.

**Pare Corporation** 

# 8.0 REFERENCES

State of Rhode Island and Providence Plantations, Department of Environmental Management, Office of Waste Management, Rules and Regulations for Composting Facilities and Solid Waste Management Facilities. Regulation DEM-OWM-SWO1-97.

NUS Corporation, 1990, Final Screening Site Inspection, Tiverton Town Landfill #2, Tiverton, Rhode Island.

Pollock, S.J., 1964, Bedrock Geology of the Tiverton Quadrangle, Rhode Island Massachusetts: Geological Survey Bulletin 1158-D.

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U.S. EPA, 1996 (Revised 2010), Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, EQASOP-GW 001

U.S. EPA, 1989, Statistical Analysis of Ground-Water Monitoring Data at RCRA (Resource Conservation and Recovery Act) Facilities, Interim Final Guidance, EPA/530/SW-89/026.

United States Geological Survey (USGS), 1949 (Photo revised 1970 and 1975), Tiverton Quadrangle Topographic Map.

**APPENDIX A** 

Site Location Map



**APPENDIX B** 

Landfill Existing Site Plan



PROJ. MGR.: TP   TIVERTON LANDFILL PESIGNED: BMB   TIVERTON LANDFILL DESIGNED: BMB   DESIGNED: BMB DESIGNED: BMB   DRAWN: TC DESIGNED: DESIGNED: DESIGNED:   DRAWN: TC DESIGNED: DESIGNED: DESIGNED: DESIGNED:   TURETON TURETON RHODE ISLAND DATE: January 2019						REV# DESCRIPTION
PROJ     TIVERTON LANDFILL   PESI     DESI   DESI     EXISTING SITE PLAN   DESI     TIVERTON   RHODE ISLAND   DATE	. MGR.: TPT	GNED : BMB	VN : TCJ	KED: TPT	.E : 1'=100'	: JANUARY 2019
	PROJ. N		EXISTING SITE DI AN		SCALE	TON RHODE ISLAND DATE :

# **APPENDIX C**

2018 End of Year Height Survey Plan



WOOD CHIPS MATTRESSES & BOX SPRINGS RIGID PLASTICS METALS TRASH - IRON ROD-FORMERLY ACTIVE FILLING AREA UP 14 TO JULY 2018-



# APPENDIX D

**December Laboratory Analytical Data Report** 



# **REPORT OF ANALYTICAL RESULTS**

# NETLAB Work Order Number: 8L07027 Client Project: 94139 - Tiverton Landfill

Report Date: 13-December-2018

Prepared for:

Travis Johnson Pare Corporation 8 Blackstone Valley Place Lincoln, RI 02865

Richard Warila, Laboratory Director New England Testing Laboratory, Inc. 59 Greenhill Street West Warwick, RI 02893 rich.warila@newenglandtesting.com

# Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 12/07/18. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 8L07027. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
8L07027-01	OW-7	Water	12/06/2018	12/07/2018
8L07027-02	OW-9	Water	12/06/2018	12/07/2018
8L07027-03	OW-12	Water	12/06/2018	12/07/2018
8L07027-04	OW-13	Water	12/06/2018	12/07/2018
8L07027-05	OW-14	Water	12/06/2018	12/07/2018
8L07027-06	OW-15	Water	12/06/2018	12/07/2018
8L07027-07	OW-16	Water	12/06/2018	12/07/2018

# **Request for Analysis**

At the client's request, the analyses presented in the following table were performed on the samples submitted.

### OW-12 (Lab Number: 8L07027-03)

<u>Analysis</u>	<u>Method</u>
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C
OW-13 (Lab Number: 8L07027-04)	
Analysis	<u>Method</u>
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

## OW-14 (Lab Number: 8L07027-05)

### <u>Analysis</u>

Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C

Method

# Request for Analysis (continued)

### OW-14 (Lab Number: 8L07027-05) (continued)

Analysis	Method
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Sulfide	SM4500-S-D
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

### OW-15 (Lab Number: 8L07027-06)

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5010C
3260C

### Method

# Request for Analysis (continued)

### OW-16 (Lab Number: 8L07027-07)

### <u>Analysis</u>

Antimony	EPA
Arsenic	EPA
Barium	EPA
Beryllium	EPA
Cadmium	EPA
Chromium	EPA
Cobalt	EPA
Copper	EPA
Lead	EPA
Mercury	EPA
Nickel	EPA
Selenium	EPA
Silver	EPA
Thallium	EPA
Tin	EPA
Vanadium	EPA
Volatile Organic Compounds	EPA
Zinc	EPA

### OW-7 (Lab Number: 8L07027-01)

#### **Analysis**

	<u></u>
Antimony	EPA 6010
Arsenic	EPA 6010
Barium	EPA 6010
Beryllium	EPA 6010
Cadmium	EPA 6010
Chromium	EPA 6010
Cobalt	EPA 6010
Copper	EPA 6010
Lead	EPA 6010
Mercury	EPA 7470
Nickel	EPA 6010
Selenium	EPA 6010
Silver	EPA 6010
Thallium	EPA 7010
Tin	EPA 6010
Vanadium	EPA 6010
Volatile Organic Compounds	EPA 8260
Zinc	EPA 6010

#### <u>Method</u>

6010C 6010C 6010C 6010C 6010C 6010C 6010C 6010C 6010C 7470A 6010C 6010C 6010C 7010 6010C 6010C 8260C EPA 6010C

#### Method

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# Request for Analysis (continued)

### OW-9 (Lab Number: 8L07027-02)

Analysis	Method
	<u></u>
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

### Method References

*Standard Methods for the Examination of Water and Wastewater, 20th Edition,* APHA/ AWWA-WPCF, 1998

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

#### **Case Narrative**

#### **CASE NARRATIVE:**

#### Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

#### Metals 199

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

#### Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

#### Wet Chemistry

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures

#### Case Number: 8L07027

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
18496-25-8	Sulfide	376.2	ND	0.01

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.001	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.040	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.004	0.001
7440-48-4	Cobalt	6010C	0.020	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.022	0.001
7782-49-2	Selenium	6010C	0.005	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	0.0003	0.0002
7440-62-2	Vanadium	6010C	ND	0.001
7440-66-6	Zinc	6010C	0.018	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.032	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.013	0.001
7440-48-4	Cobalt	6010C	0.003	0.001
7440-50-8	Copper	6010C	0.008	0.005
7439-92-1	Lead	6010C	0.004	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.006	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.008	0.001
7440-66-6	Zinc	6010C	0.025	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.020	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	ND	0.001
7440-50-8	Copper	6010C	0.009	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.024	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	ND	0.001
7440-66-6	Zinc	6010C	0.007	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.002	0.001
7440-38-2	Arsenic	6010C	0.01	0.002
7440-39-3	Barium	6010C	0.126	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.004	0.001
7440-47-3	Chromium	6010C	0.002	0.001
7440-48-4	Cobalt	6010C	0.013	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	0.002	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.014	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	0.001	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.008	0.001
7440-66-6	Zinc	6010C	0.019	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.005	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.210	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.002	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	0.011	0.001
7440-50-8	Copper	6010C	0.007	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.019	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.004	0.001
7440-66-6	Zinc	6010C	0.014	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.004	0.001
7440-38-2	Arsenic	6010C	0.02	0.002
7440-39-3	Barium	6010C	0.212	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.008	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	0.008	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	0.003	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.017	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.015	0.001
7440-66-6	Zinc	6010C	0.015	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.017	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.003	0.001
7440-48-4	Cobalt	6010C	0.006	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.013	0.001
7782-49-2	Selenium	6010C	0.009	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	ND	0.001
7440-66-6	Zinc	6010C	0.025	0.005
7440-34-5	Tin	6010C	ND	0.002

Sample: OW-7 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Method: 8260C

#### Case Number: 8L07027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	6.38	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	96.68	70-130
1,2-Dichloroethane d4	102.08	70-130
4 BFB	92.08	70-130

Sample: OW-9 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-9 Method: 8260C

#### Case Number: 8L07027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	91.84	70-130
1,2-Dichloroethane d4	98.30	70-130
4 BFB	91.54	70-130

Sample: OW-12 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-12 Method: 8260C

#### Case Number: 8L07027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	94.86	70-130
1,2-Dichloroethane d4	102.4	70-130
4 BFB	87.24	70-130

Sample: OW-13 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	6.19	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-13 Method: 8260C

#### Case Number: 8L07027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	1.31	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.99	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	103.52	70-130
1,2-Dichloroethane d4	101.72	70-130
4 BFB	90.14	70-130

Sample: OW-14 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	2.28	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	11.38	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-14 Method: 8260C

#### Case Number: 8L07027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.38	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	7.97	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	97.84	70-130
1,2-Dichloroethane d4	98.62	70-130
4 BFB	91.02	70-130

Sample: OW-15 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	1.76	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	15.49	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0
#### Sample: OW-15 Method: 8260C

#### Case Number: 8L07027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	3.06	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.69	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	98.26	70-130
1,2-Dichloroethane d4	106.18	70-130
4 BFB	88.96	70-130

ND = Not Detected

Sample: OW-16 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

#### Sample: OW-16 Method: 8260C

#### Case Number: 8L07027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.77	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	94.56	70-130
1,2-Dichloroethane d4	100.20	70-130
4 BFB	94.40	70-130

ND = Not Detected



# **APPENDIX E**

**December Field Sampling Data Sheets** 

PROJECT NAME: TIVERTON LANDFILL PARE PROJECT NO.: 94139.24	DATE: WEATHER:	12/6/2018 Sunny 30s
WELL ID: <u>OW-9</u>	DIAMETER	(INCHES): <u>2</u>
PURGE DATA		
WELL DEPTH:16feetPURGE VOLUME (GAL):0.5gallonsPURGER TYPE:Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing N/A N/A
WATER LEVEL DATA		
DEPTH: <u>12.1</u> feet MEASURE POINT: <u>Top of Casing</u>	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS		
READING 1	REA	DING 2
pH: 5.94 pH UNITS SPEC. COND: 0.078 mS/cm TEMPERATURE: 10.3 °C	5.94 0.075 10.4	pH UNITS mS/cm °C
NOTES:		

Samples were noted as generally clear and low in turbidity based on visual inspections of samples. Samples were collected at 3:30 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	12/6/2018 Sunny 30s
WELL ID: OW-7	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	11.8 feet 2.0 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	0 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULT	<u>S</u>		
	READING 1	READI	NG 2
pH: SPEC. COND: TEMPERATURE:	6.75 pH UNITS 0.779 mS/cm 10.7 °C	6.76 0.803 10.7	pH UNITS mS/cm °C
NOTES:			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 1:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	12/6/2018 Sunny 30s
WELL ID: OW-12	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16.2 feet 2.40 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	2.6 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULT	<u>S</u>		
	READING 1	READ	NG 2
pH: SPEC. COND: TEMPERATURE:	6.5 pH UNITS 0.325 mS/cm 11.3 °C	6.49 0.323 11.4	pH UNITS mS/cm °C
NOTES:			
Samples were noted as ge	nerally clear and low in turb	pidity based on visual insp	ections of samples.

Samples were collected at 3:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	12/6/2018 Sunny 30s
WELL ID: OW-13	-	DIAMETER	(INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	14.5 feet 1.80 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	3.9 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	6.93 pH UNITS 1.064 mS/cm 10.3 °C	6.93 1.054 10.4	_pH UNITS _mS/cm _°C
NOTES:			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 4:15 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	12/6/2018 Sunny 30s
WELL ID: OW-14	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	10.6 feet 0.9 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing N/A N/A
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	4.8 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>6</u>		
	READING 1	READI	NG 2
pH: SPEC. COND: TEMPERATURE:	6.77 pH UNITS 1.274 mS/cm 10 °C	6.77 1.287 10.1	pH UNITS mS/cm °C
NOTES:			

Samples were noted as generally clear and low in turbidity based on visual inspections of

supernatant sampled after a 15-minute decanting period.

Samples were collected at 2:15 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	12/6/2018 Sunny 30s
WELL ID: OW-15	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	<u>16.8</u> feet <u>1.6</u> gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	7.2 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	6.94 pH UNITS 1.103 mS/cm 12.2 °C	6.94 1.111 12.3	_pH UNITS _mS/cm °C
<u>NOTES:</u>			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 1:45 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	12/6/2018 Sunny 30s
WELL ID: OW-16	-	DIAMETER (	(INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	45.8 feet 7.5 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.3 +/- 20 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	0 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	6.82 pH UNITS 0.947 mS/cm 11.4 °C	6.83 0.947 11.4	_pH UNITS _mS/cm _°C
NOTES:			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 12:15 PM.

# **APPENDIX F**

**Historical Data Summary Plots** 

#### Detected Appendix A Metals in OW-9 Tiverton Landfill



<sup>◆</sup>Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt -Copper -Lead Nickel ■Selenium ▲Silver ×Thallium ×Tin ●Vanadium +Zinc -Mercury



TRUNCATED GRAPH

### Detected Appendix A Metals in OW-7 Tiverton Landfill

**COMPLETE GRAPH** 



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt -Copper -Lead -Nickel Selenium ■Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



#### Detected Appendix A Metals in OW-12 Tiverton Landfill

**COMPLETE GRAPH** 



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel Selenium ■Silver ▲Thallium ×Tin ×Vanadium ■Zinc +Mercury



#### **Detected Appendix A Metals in OW-13 Tiverton Landfill**

**COMPLETE GRAPH** 



×Tin Selenium Antimony Arsenic Barium × Beryllium Silver Thallium × Vanadium Zinc + Mercury



#### Detected Appendix A Metals in OW-14 Tiverton Landfill

**COMPLETE GRAPH** 



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel Selenium Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



Date

#### Detected Appendix A Metals in OW-15 Tiverton Landfill

**COMPLETE GRAPH** 



♦Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt -Copper -Lead +Nickel Selenium =Silver ▲Thallium ×Tin ×Vanadium @Zinc +Mercury



Date

### Detected Appendix A Metals in OW-16 Tiverton Landfill

**COMPLETE GRAPH** 



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel ≤Selenium ≡Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



# **APPENDIX G**

**Tolerance Interval Statistical Evaluation** 

#### TABLE 3 SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON DEC 2018 - SAMPLE ROUND

Concentration (units as specified for Threshold Value)

		OW-9			Background Well		Compliance wells				
		Tolerance Limit * Threshold									
	Parameter	TL=A	/G+K*S	Value	OW-9	OW-7	OW-12	OW-13	OW-14	OW-15	OW-16
METALS	Antimony	0.0290	mg/L	0.006 mg/L <sup>1</sup>	ND	0.0010	ND	0.002	0.005	0.0040	ND
	Arsenic	0.0030	mg/L	0.010 mg/L'	ND	ND	ND	0.01	ND	0.02	ND
	Barium	0.0564	mg/L	2 mg/L <sup>1</sup>	0.0320	0.0400	0.02	0.126	0.21	0.212	0.0170
	Beryllium	0.0005	mg/L	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND
	Cadmium	0.3650	ma/L	0.005 mg/L <sup>1</sup>	ND	ND	ND	0.004	0.0020	0.008	ND
	Chromium	0.0377	ma/L	0.1 mg/L1	0.013	0.004	ND	0.002	ND	ND	0.0030
	Cobalt	0.0030	mg/l	0.73 mg/L <sup>5</sup>	0.0030	0.020	ND	0.013	0.011	0.008	0.006
	Copper	0.0000	mg/L	1.3 mg/l <sup>1</sup>	0.0080	ND	0.000	ND	0.007	0.000	0.000
	Lood	0.0000	mg/L	0.015 mg/L <sup>1</sup>	0.0000	ND	0.003	0.002	0.007	0.0020	ND
	Lead	0.2245	ilig/L	0.015 mg/L	0.004	ND	ND	0.002	ND	0.0030	ND
	Mercury	0.0001	mg/L	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND
	NICKEI	0.0293	mg/L	0.1 mg/L	0.006	0.022	0.024	0.014	0.019	0.017	0.0130
	Selenium	0.0100	mg/L	0.05 mg/L	ND	0.0050	ND	ND	ND	ND	0.0090
	Silver	0.0005	mg/L	0.1 mg/L <sup>-,-</sup>	ND	ND	ND	0.001	ND	ND	ND
	Thallium	0.0001	mg/L	0.002 mg/L	ND	0.0003	ND	ND	ND	ND	ND
	Tin	0.0010	mg/L	22 mg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND
	Vanadium	0.0080	mg/L	0.26 mg/L <sup>5</sup>	0.0080	ND	ND	0.008	0.004	0.0150	ND
	Zinc	13.7195	mg/L	2 - 5 mg/L <sup>2,3</sup>	0.0250	0.0180	0.007	0.019	0.014	0.0150	0.0250
VOC'S	Acetone			610 μg/L <sup>°</sup>							
	Acrylonitrile			0.039 μg/L <sup>°</sup>							
	Benzene			5 μg/L1							
	Bromochloromethane			80 μg/L <sup>2</sup>							
	Bromodichloromethane (THM)			90 µg/L1							
	Bromoform			80 µg/L1							
	Carbon disulfide			1000 µg/L <sup>5</sup>							
	Carbon tetrachloride			5 µg/l <sup>-1</sup>							
	Chlorobenzene			100 µg/L <sup>1</sup>							
	Chloroothopo			100 μg/L 4 ε μg/L °							
	Chloroform			4.0 µg/L							
	Chlorolorm			60 μg/L 00 μg/L <sup>1</sup>							
	Chlorodibromomethane (THM)			80 μg/L 0.0 μg/L <sup>1</sup>							
	1,2-Dibromo-3-chioropropane (DBCP)			0.2 µg/L							
	1,2-Dibromoetnane (EDB)			0.05 µg/L							
	1,2-Dichlorobenzene			600 µg/L							
	1,4-Dichlorobenzene			75 μg/L							
	trans-1,4-Dichloro-2-butene			μg/L							
	1,1 -Dichloroethane			5 µg/L							
	1,2-Dichloroethane			5 μg/L'							
	1,1-Dichloroethylene			7 μg/L'							
	cis-1,2-Dichloroethene			70 μg/L'							
	trans-1,2-Dichloroethene			100 μg/L'							
	1,2-Dichloropropane			5 μg/L1							
	cis-1,3-Dichloropropene			μg/L							
	trans-1,3-Dichloropropene			μg/L							
	Ethylbenzene			700 μg/L <sup>1</sup>							
	Methyl butyl ketone(2-Hexanone)			160 μg/L <sup>°</sup>							
	Bromomethane			10 μg/L <sup>2</sup>							
	Chloromethane			30 μg/L <sup>2</sup>							
	Dibromomethane			61 µg/L°							
	Methylene chloride			5 µg/L1							
	Methyl ethyl ketone(2-Butanone)			4000 µg/L <sup>2</sup>							
	Methyl iodide			ua/L							
	4-Methyl-2-pentanone			ug/L							
	Styrene			100 µg/l <sup>-1</sup>							
	1 1 1 2-Tetrachloroethane			70 µg/L <sup>2</sup>							
	1 1 2 2-Tetrachloroethane			0.3 µg/L <sup>2</sup>							
	Totrophoroethylopo(DCE)			5 µg/L							
				1000 µg/L <sup>1</sup>							
				200 µg/L							
	1,1,2 Trichloroethane			200 μg/L 5 μg/L <sup>1</sup>							
	Triables studes (TOC)			5 μg/L							
	Trichloroethylene(ICE)			5 μg/L							
	I richloroflouromethane			2000 µg/L							
	1,2,3-Trichloropropane			40 μg/L <sup>-</sup>							
	Vinyl acetate			410 µg/L <sup>~</sup>							
	Vinyl chloride			2 μg/L							
	Xylenes			10000 µg/L							
	Methyl tert-butyl ether (MTBE)			20 - 40 μg/L <sup>**</sup>							

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories 3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit.

However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

#### No threshold value has been provided for parameters not identified in the sources listed above " " = Exceedance of TL ND = Not Detected

\* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

### Historical Tolerance Limit Concentrations from Background Well Tiverton Landfill Compliance Sampling



Date

# **APPENDIX H**

**Cusum Method Statistical Evaluation** 



### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Complaince Well OW-9



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Background Well OW-9

Series1 Series2



CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Background Well OW-9

Sampling Date





### CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

---- Series1 ------ Series2



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

Series1 Series2



CUSUM Control Chart for Lead Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Background Well OW-9



### CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Tin Tiverton Landfill Groundwater Background Well OW-9

Series1 Series2



### CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Background Well OW-9

10 9 8 7 (Units of Standard Deviation,  $\sigma$ ) **Standardized Concentration** 6 5 h SCL 4 3 2 1 0 0.00 0.000 00 00 0.00 -0 33 -0.30.30.33 -0.83 0|33 -0.83 -0|**30**.33 -0 -1 Maria JUD. Sex 0 4 4 4 8 0 4 4 4 8 0 4 4 4 8 0 4 06 06 06 06 06 06 70 70 70 77 77 77 77 Jun. Mar Soo 75 A Sampling Date ----- Series1 

### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-12
## CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-12





CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-12



# CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-12



## CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-12



#### CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-12



## CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-12







CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-12



CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Complaince Well OW-13



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-13

#### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-13





### CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Selenium Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Silver Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for 1,4-Dichlorobenzene - Adjusted Baseline Tiverton Landfill Groundwater Complaince Well OW-13



CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-14

----- Series1 ------ Series2



CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-14


CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



#### CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-14



#### CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-14



### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-15

#### 50 46 42 41.00 38 (Units of Standard Deviation, $\sigma$ ) 34 **Standardized Concentration** 30 26 22 18 14 10 6 h SCL -1.400 4/00<sup>.00</sup> 00 5 do 5.00 7 2 -3.00 3.00 2.00 00 -0.40 -2 0.00 0.00 -1.40 -6 Sampling Date Series1 ----- Series2

#### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-15



### CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Complaince Well OW-15



### CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Complaince Well OW-15



### CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Complaince Well OW-15



CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Xylenes Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-15

# **APPENDIX I**

**Tolerance Limit Calculation** 

PAGE \_\_\_\_\_ OF \_\_\_\_

•	
	Pare
EN	GINEERING CDEPORATION

PROJECT TUERTON	LANDFILL .	PROJECT NO. <u>94139,01</u>	
SUBJECT TOLERANCE	INTER:14L	CALCULATION	
COMPUTATIONS BY	TPT	DATE 01-22-0	54
CHECK BY			

OBDECTIVE :

GWEN:

PROVIDE SAMPLE CALCULATION FOR STATISTICAL ANALYSIS OF TIVERTON LANDFILL GROUNDWATER MONITORING DATA VIA TOLERANCE LIMIT APPROACH

"DATA SET SIZE 15 8 (N=8).

POPULATION OF DATA WE WILL PROVIDE FOR 15 95%. (P= 0.95)

PERCENT CONSIDENCE WE WILL CALLULATE IS 95%. (7 = 0.95)

CALCULATION :

#### CALCULATE UPPER TOLERANCE LIMIT

- $Y_{ik} = \overline{Y} + k_i s$
- Yu = UPPER TOLEPANCE LIMIT
- 7 = MEAN VALUE OF DATH SET
- K = K FACTOR FOR ONE SIDEE THEFAMILE
- S = STANDARD DEVIATION OF DATA SET

CALCULATE K FACTOR

$$K_1 = \frac{\Xi(1-p)}{A} \div \sqrt{\Xi_{1-p}^2 - ab}$$

= (1-P) = 1.645 (REFER TO SECTION 1.3.6.7.1 - ATTACHED)

$$a = 1 - \frac{z_{(1-y)}^{2}}{z_{(N-1)}}$$
  
$$b = z_{(1-y)}^{2} - \frac{z_{(1-y)}^{2}}{N}$$

Z(1-Y) = 1.645 (REFER TO SECTION 1.3.6.7.1 - ATTACHED)

PAGE Z OF

PARE ENGINEEBING CORPORATION

PROJECT TIVEBTON LA	NOFILL PROJECT	NO. 94139.01
SUBJECT TOLERANCE	INTERVAL	LALLULATION
COMPUTATIONS BY	TPT	DATE 01-22-04
CHECK BY		DATE

CALCULA TONS!

.

$$\frac{(ALCULATE}{a}$$

$$a = 1 - \frac{\Xi^{2}(1-y)}{Z(N-1)}$$

$$= 1 - \frac{(1.645)^{2}}{Z(5-1)}$$

$$= 0.80^{\frac{1}{2}}$$

$$= 0.80^{\frac{1}{2}}$$

$$= 0.80^{\frac{1}{2}}$$

$$= (1.645)^{2} - (1.645^{2}) = 3$$

= 2,368.

$$\frac{CALCULATE}{K_{1}} = \frac{E_{(1-P)} + \sqrt{E_{(1-P)}^{2} - ab}}{a}$$
$$= \frac{1.645 + \sqrt{1.645^{2} - (0.807)(2.368)}}{0.807}$$

= 3.143

UPPER TOLERANCE LIMIT IS

 $Y_{\mu} = \overline{Y} + 3.143(s)$ 

CALCULATE UPPER TOLERANCE LIMIT FOR BINC DETECTED IN OW-9 FOR THE LAST 8 SAMPLING ROUNDS FOR WHICH DATA WAS COLLECTED.

## PAGE \_\_\_\_ OF

= 0.254



PROJECT TWERTON LANDFILL PROJECT NO. 94139.01 SUBJECT TOLERANCE THTEZJAL CALLAR NO COMPUTATIONS BY TPT DATE 01-22-04 CHECK BY DATE

CALCULATIONS:

(CONT ....) Y = 0.0571 (REFER TO ATTACHED EXCEL SHEET) S = 0.0G28 (REFER TO ATACHED EXCEL SHEET ) Yu = 0.0571 + 3.143 (0.0628)

, 95% OF SAMPLES COLLECTED FROM OW-9 WILL HAVE A CONCENTRATION OF EINC BELOW 0.254 Ma/L WITH A 95% CERTAINTY 1.3.6.7.1. Cumulative Distribution Function of the Standard Normal Distribution

HOME ITOOLS & AIDS ISEARCH BACK NEXT

1. Exploratory Data Analysis

1.3. EDA Techniques

1.3.6. Probability Distributions

1.3.6.7. Tables for Probability Distributions

# 1.3.6.7.1. Cumulative Distribution Function of the Standard Normal Distribution

#### How to

Use This Table The table below contains the area under the standard normal curve from 0 to z. This can be used to compute the <u>cumulative</u> <u>distribution function</u> values for the <u>standard normal</u> distribution.

The table utilizes the symmetry of the normal distribution, so what in fact is given is

$$P[0 \le x \le |a|]$$

where a is the value of interest. This is demonstrated in the graph below for a = 0.5. The shaded area of the curve represents the probability that x is between 0 and a.



This can be clarified by a few simple examples.

1. What is the probability that x is less than or equal to 1.53? Look for 1.5 in the X column, go right to the 0.03 column to find the value 0.43699. Now add 0.5 (for the

1/22/04

4/11

1.3.6.7.1. Cumulative Distribution Function of the Standard Normal Distribution

probability less than zero) to obtain the final result of 0.93699.

2. What is the probability that x is less than or equal to - 1.53? For negative values, use the relationship

$$P[x \le a] = 1 - P[x \le |a|] \quad \text{for } x < 0$$

From the first example, this gives 1 - 0.93699 = 0.06301.

3. What is the probability that x is between -1 and 0.5? Look up the values for 0.5 (0.5 + 0.19146 = 0.69146) and -1 (1 - (0.5 + 0.34134) = 0.15866). Then subtract the results (0.69146 - 0.15866) to obtain the result 0.5328.

To use this table with a non-standard normal distribution (either the location parameter is not 0 or the scale parameter is not 1), standardize your value by subtracting the mean and dividing the result by the standard deviation. Then look up the value for this standardized value.

A few particularly important numbers derived from the table below, specifically numbers that are commonly used in significance tests, are summarized in the following table:

P	0.001	0.005	0.010	0.025	0.050	0.100
$Z_{p}$	-3.090	-2.576	-2.326	-1.960	-1.645	-1.282

p	0.999	0.995	0.990	0.975	0.950	0.900
Zp	+3.090	+2.576	+2.326	+1.960	+1.645	+1.282

These are critical values for the normal distribution.

Area under the Normal Curve from 0 to X

http://www.itl.nist.gov/div898/handbook/eda/section3/eda3671.htm

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0.9	0.31594	0.31859	0.32121	0.32381	0.32639	0.32894	0,33147	0.33398	0.33646	Ο,
1.0	0.34134	0.34375	0.34614	0.34849	0.35083	0.35314	0.35543	0.35769	0.35993	Ο.
1.1	D.36433	0.36650	0.36864	0.37076	0,37286	0.37493	0.37698	0.37900	0.38100	0.
1.2	0.38493	0.38686	0.38877	0.39065	0.39251	0.39435	0.39617	0.39796	0.39973	0.
1.3	0.40320	0.40490	0.40658	0.40824	0.40988	0.41149	0.41308	0.41466	0.41621	Q,
1.4	0.41924	0.42073	0.42220	0.42364	0.42507	0.42647	0.42785	0.42922	0.43056	Ο.
1.5	0,43319	0.43448	0.43574	0.43699	0.43822	0.43943	0.44062	0.44179	0.44295	Ο,
1.6	0.44520	0.44630	0.44738	0.44845	0.44950	0.45053	0.45154	0.45254	0.45352	Ο.
1.7	0.45543	0.45637	0.45728	0.45818	0.45907	0.45994	0.46080	0.46164	0.46246	٥.
1.8	0.46407	0.46485	0,46562	0.46638	0.46712	0.46784	0.46856	0.46926	0.46995	Ο,
1.9	0.47128	0.47193	0.47257	0.47320	0.47381	0.47441	0.47500	0.47558	0.47615	Ο,
2.0	0.47725	0.47778	0.47831	0.47882	0.47932	0.47982	0.48030	0.48077	0.48124	Ο.
2.1	0.48214	0.48257	0.48300	0.48341	0.48382	0.48422	0.48461	0.48500	0.48537	Ο.
2.2	0.48610	0.48645	0.48679	0.48713	0.48745	0,48778	0.48809	0.48840	0.48870	٥.
2.3	0.48928	0.48956	0.48983	0.49010	0.49036	0.49061	0.49086	0.49111	0.49134	0.
2.4	0.49180	0.49202	0.49224	0.49245	0.49266	0.49286	0.49305	0.49324	0.49343	0,
2.5	0.49379	0.49396	0.49413	0.49430	0.49446	0.49461	0.49477	0.49492	0.49506	٥.
2.6	0,49534	0.49547	0.49560	0.49573	0.49585	0.49598	0.49609	0.49621	0.49632	Ο,
2.7	0.49653	0.49664	0.49674	0.49683	0.49693	0.49702	0.49711	0.49720	0.49728	О,
2.8	0.49744	0.49752	0,49760	0.49767	0.49774	0.49781	0.49788	0.49795	0.49801	Ο.
2.9	0.49813	0.49819	0.49825	0.49831	0.49836	0.49841	0.49846	0.49851	0.49856	Ο,
3.0	0.49865	0.49869	0.49874	0.49878	0.49882	0.49886	0.49889	0.49893	0.49896	О.
3.1	0.49903	0.49906	0.49910	0.49913	0.49916	0.49918	0.49921	0.49924	0.49926	0.
3.2	0.49931	0.49934	0.49936	0.49938	0.49940	0,49942	0.49944	0.49946	0.49948	0.
3.3	0.49952	0.49953	0.49955	0.49957	0.49958	0.49960	0.49961	0.49962	0.49964	٥.
3.4	0,49966	0.49968	0.49969	0.49970	0.49971	0.49972	0.49973	0.49974	0.49975	0.
3.5	0.49977	0.49978	0.49978	0.49979	0.49980	0.49981	0.49981	0.49982	0.49983	0.
3.6	0.49984	0.49985	0,49985	0.49986	0.49986	0.49987	0.49987	0.49988	0.49988	0.
3.7	0.49989	0.49990	0,49990	0.49990	0.49991	0.49991	0,49992	0.49992	0.49992	Q.
3.8	0.49993	0.49993	0.49993	0.49994	0.49994	0.49994	0.49994	0.49995	0.49995	0.
3.9	0.49995	0.49995	0,49996	0.49996	0.49996	0.49996	0.49996	0,49996	0.49997	υ.
4.0	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0,49998	0.49998	0.49998	ų.

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file://C:\Statistical%20Analysis\7\_2\_6\_3\_%20Tolerance%20intervals%20for%20a%20norm... 1/13/03

3. 
$$Y_{IJ} = \bar{Y} + k_1 s_{q0}$$
,  $u_{5}^{\zeta}$ ,  $e^{\zeta c}$ .

8/11 90,80,70, etc. where the k factors are determined so that the intervals cover at least a proportion p' of the population with confidence,  $\gamma$ .

Calculation of If the data are from a normally distributed population, an k factor for a approximate value for the factor as a function of p and y for a twosided tolerance interval (Howe, 1969) is two-sided tolerance limit for a normal

$$k_{2} = \sqrt{\frac{(N-1)\left(1+\frac{1}{N}\right)z_{(1-N)/2}^{2}}{\chi_{\gamma,N-1}^{2}}}$$

where  $\chi_{\gamma, N-1}$  is the critical value of the chi-square distribution with degrees of freedom, N - I, that is exceeded with probability  $\gamma$ 

and  $\frac{1}{1-\beta}$  is the critical value of the normal distribution which is exceeded with probability (1-p)/2.

Example of calculation

distribution

For example, suppose that we take a sample of N = 43 silicon wafers from a lot and measure their thicknesses in order to find tolerance limits within which a proportion p = 0.90 of the wafers in the lot fall with probability  $\gamma = 0.99$ .

Values of the k factor as a function of p and  $\gamma$  are tabulated in some textbooks, such as Dixon and Massey (1969). To use the tables in this handbook, follow the steps outlined below:

- 1. Calculate  $\alpha = (1 p)/2 = 0.05$
- 2. Go to the table of upper critical values of the normal distribution and under the column labeled 0.05 find  $\frac{1}{2}(1-p)^2 =$ 1.645.
- 3. Go to the table of lower critical values of the chi-square distribution and under the column labeled 0.99 in the row

labeled degrees of freedom = 42, find  $\chi^2_{\gamma,N-1} = 23.650$ . Calculate , this value must be square. 4. Calculate

$$k_{2} = \sqrt{\frac{(N-1)\left(1+\frac{1}{N}\right)z_{(1-\beta/2}^{2}}{\chi_{\gamma,N+1}^{2}}} = \sqrt{\frac{42\left(\frac{44}{43}\right)(1.645)^{2}}{23.650}} = 2.217$$

$$\frac{1}{\chi_{\gamma,N+1}^{2}} = \sqrt{\frac{42\left(\frac{44}{43}\right)(1.645)^{2}}{23.650}} = 2.217$$

$$\frac{1}{\chi_{\gamma,N+1}^{2}} = \sqrt{\frac{1}{\chi_{\gamma,N+1}^{2}}} = \sqrt{\frac{1}{\chi_$$

The tolerance limits are then computed from the sample mean,  $\vec{Y}$ , and standard deviation, S, according to case (1).

Use of tables in calculating two-sided tolerance

intervals

Important The notation for the critical value of the chi-square distribution can note be confusing. Values as tabulated are, in a sense, already squared; whereas the critical value for the normal distribution must be squared in the formula above.

The Dataplot commands are:

commands for calculating the k factor for a twosided tolerance interval

Dataplot

let n = 43
let nu = n - 1
let p = .90
let g = .99
let gl=l-g
let pl=(l+p)/2
let cg=chsppf(gl,nu)
let np=norppf(pl)
let k = nu\*(l+1/n)\*np\*\*2
let k2 = (k/cg)\*\*.5

and the output is:

THE COMPUTED VALUE OF THE CONSTANT K2 = 0.2217316E+01

Another note

The notation for tail probabilities in Dataplot is the converse of the notation used in this handbook. Therefore, in the example above it is necessary to specify the critical value for the chi-square distribution, say, as chsppf(1-.99, 42) and similarly for the critical value for the normal distribution.

Direct calculation of tolerance intervals using Dataplot Dataplot also has an option for calculating tolerance intervals directly from the data. The commands for producing tolerance intervals from twenty-five measurements of resistivity from a quality control study at a confidence level of 99% are:

read 100ohm.dat cr wafer mo day h min op hum ... probe temp y sw df tolerance y

Automatic output is given for several levels of coverage, and the tolerance interval for 90% coverage is shown below in bold:

2-SIDED NORMAL TOLERANCE LIMITS: XBAR +- K\*S

NUMBER OF OBSERVATIONS = 25 SAMPLE MEAN = 97.069832 SAMPLE STANDARD DEVIATION = 0.26798090E-01

CONFIDENCE = 99.% COVERAGE (%) LOWER LIMIT UPPER LIMIT 9/11

50.0 97.04242 97.09724 75.0 97.02308 97.11658 90.0 97.00299 97.13667 95.0 96.99020 97.14946 99.0 96.96522 97.17445 99.9 96.93625 97.20341

Calculation for a onesided tolerance interval for a normal distribution

The calculation of an approximate k factor for one-sided tolerance intervals comes directly from the following set of formulas (Natrella, 1963):

$$k_{1} = \frac{z_{(-p)} + \sqrt{z_{1-p}^{2} - ab}}{a}$$
$$a = 1 - \frac{z_{1-y}^{2}}{2(N-1)}; \ b = z_{1-p}^{2} - \frac{z_{1-y}^{2}}{N}$$

where  $\frac{1}{1-1}$  is the critical value from the normal distribution that

is exceeded with probability 1-p and I(1-p) is the critical value from the normal distribution that is exceeded with probability  $I-\gamma$ .

Dataplot commands for calculating the k factor for a onesided tolerance interval

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For the example above, it may also be of interest to guarantee with 0.99 probability (or 99% confidence) that 90% of the wafers have thicknesses less than an upper tolerance limit. This problem falls under case (3), and the Dataplot commands for calculating the factor for the one-sided tolerance interval are:

let n = 43
let p = .90
let g = .99
let nu = n-1
let zp = norppf(p)
let zg=norppf(g)
let a = 1 - ((zg\*\*2)/(2\*nu))
let b = zp\*\*2 - (zg\*\*2)/n
let k1 = (zp + (zp\*\*2 - a\*b)\*\*.5)/a

and the output is:

THE COMPUTED VALUE OF THE CONSTANT A = 0.9355727E+00THE COMPUTED VALUE OF THE CONSTANT B = 0.1516516E+01THE COMPUTED VALUE OF THE CONSTANT K1 = 0.1875189E+01

The upper (one-sided) tolerance limit is therefore 97.07 + 1.8752\*2.68 = 102.096.

#### TABLE 3 BACKGROUND WELL HISTORICAL RESULTS MONITORING WELL OW-9

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## Concentration (units as specified for MCL)

	Parameter	<u>DEC '03</u>	<u>SEP '03</u>	<u>JUN '03</u>	<u>MAR '03</u>	DEC 02*	JULY '02	MAR '01	<u>06C '00</u>
METALS	Antimony	<u>0.001</u>	<u>0.001</u>	0.001	<u>0.001</u>	<u>0.001</u>	0.005	0.005	<u>0.005</u>
	Arsenic	<u>0.005</u>	<u>0.005</u>	<u>0.005</u>	0.005	0.005	0.005	0.005	0.005
	Barium	0.012	0.018	0,013	0.022	0.13	0.005	0.31	0.035
	Beryllium	<u>0.0005</u>	<u>0.0005</u>	0.0005	0.0005	<u>0.0005</u>	0.0005	0.0068	0.0005
	Cadmium	<u>0.001</u>	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Chromium	<u>0.005</u>	0.005	0.005	0.081	0.078	0.005	0.092	0.011
	Cobait	<u>0.001</u>	0.001	0.001	0.0047	0.0320	0.0040	0.053	0.0065
	Copper	<u>0.005</u>	0.005	0.005	0.014	0,066	0.005	0.086	0.005
	Lead	0.002	0.002	0.0057	0.0052	0.048	0.002	0.061	0.010
	Nickel	<u>0.005</u>	0.005	0.005	0.073	0.064	0.005	0.070	0.013
	Selenium	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	Silver	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Thallium	<u>0.001</u>	0.001	0.001	0.001	0.001	0.0025	0.0025	0.003
	Vanadium	<u>0.005</u>	0.005	0.005	0.005	0.038	0.005	0.011	0.005
	Zinc	0.018	0.027	0.021	0.04	0.13	0.005	0.18	0.036
	Mercury	<u>0.0001</u>	0.00072	0.0001	0,0001	0.0001	0.0001	0.0001	0.0001
	Zinc Average (8)	0.057125							

Zinc Standard Deviation (8) 0.062802269

**APPENDIX J** 

**Reported Concentrations of MTBE** 




# APPENDIX K

**Quarterly Monitoring Reports** 



PARE

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May 31, 2018

Mr. Leo Hellested, P.E. Office of Waste Management Solid Waste Section Rhode Island Department of Environmental Management 235 Promenade Street Providence, Rhode Island 02908-5767

Attn: Mr. Robert Schmidt

# Re: Quarterly Monitoring Report 1st Quarter (March) 2018, Groundwater Monitoring, Sampling, and Analysis Tiverton Municipal Sanitary Landfill Pare Project No. 94139.24

Dear Mr. Hellested:

Enclosed herewith are results of the statistical analysis of groundwater monitoring data for the first quarterly monitoring round of Year 2018 from the Tiverton Landfill (Landfill). Pare Corporation (Pare) has prepared this report on behalf of the Town of Tiverton (Town). In the 2017 Annual Groundwater Monitoring Report, Pare recommended that overburden well OW-7 and bedrock well OW-16 be included in the groundwater monitoring program. As such, Pare conducted the groundwater sampling on March 28, 2018 at the background well OW-9 and compliance wells OW-7, OW-12, OW-13, OW-14, OW-15, and OW-16.

Groundwater samples were analyzed by New England Testing Laboratory (NETLAB) of West Warwick, Rhode Island for the constituents listed in Appendix A (Detection Monitoring) of the State Solid Waste Regulations, plus the Appendix B metals mercury and tin, which are routinely included. Certified laboratory results data are enclosed and are summarized on attached Tables 1-3.

Groundwater field parameters consisting of temperature, pH, and specific conductivity were measured at each monitoring well, in accordance with the RIDEM-approved Groundwater Monitoring Plan for the Landfill. Field parameters were collected until three successive measurements stabilized within  $\pm$  3% for temperature,  $\pm$  0.1 standard unit for pH, and  $\pm$  3% for specific conductivity, in accordance with US EPA's Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. Field parameters are documented on Field Sampling Data Sheets, which are enclosed.

Combustible gases are monitored at each well and at the top of the Landfill. Combustible gases were not detected at the Landfill in March 2018 and have never been detected at the Landfill in past quarterly monitoring rounds.

Recent sampling rounds have been during periods of dry conditions; as such, samples collected contained a high amount of silt and suspended particles. Reported concentrations of heavy metals were higher than usual, and the degree of suspended particles observed in the samples may have impacted heavy metal concentrations. Pare believes these results were an anomaly and not indicative of typical groundwater quality. Therefore, Pare



updated the groundwater monitoring program in the 2016 Annual Groundwater Monitoring Report to include a 10-15 minute period for turbidity to settle, before the sample is decanted and then stored in laboratory glassware with preservative. Additionally, during the March 2017 monitoring round, accumulated sediment in the wells at the Landfill was removed prior to sampling.

# HUMAN HEALTH THRESHOLD EVALUATION

<u>Compliance Well OW-7</u> - Seven (7) target metals were reported in the groundwater sample collected from OW-7. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-7. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-7.

<u>Compliance Well OW-12</u> - Three (3) target metals were reported in the groundwater sample collected from OW-12. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-12. No (0) target VOCs were reported above laboratory detection limits at OW-12.

<u>Compliance Well OW-13</u> - Nine (9) target metals were reported in the groundwater sample collected from OW-13. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-13. One (1) target VOC, chlorobenzene, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-13.

<u>Compliance Well OW-14</u> - Ten (10) target metals were reported in the groundwater sample collected from OW-14. One (1) reported metal, cadmium (0.005 mg/L) was reported at its MCL (0.005 mg/L). Two (2) target VOCs; chlorobenzene and MTBE; were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-14.

<u>Compliance Well OW-15</u> - Eight (8) target metals were reported in the groundwater sample collected from OW-15. Two (2) reported metals; arsenic (0.0200 mg/L) and cadmium (0.009 mg/L); exceeded their respective MCLs (0.01 mg/L and 0.005 mg/L, respectively). One (1) target VOC, chlorobenzene, was reported above its laboratory detection limit. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-15.

<u>Compliance Well OW-16 (new bedrock well)</u> - Seven (7) target metals were reported in the groundwater sample collected from OW-16. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-16. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-16.

<u>Background Well OW-9</u> - Eight (8) target metals were reported in the groundwater sample collected from OW-9. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-9. No (0) target VOCs were reported above laboratory detection limits at OW-9.

# TOLERANCE INTERVAL STATISTICAL EVALUATION

The Tolerance Interval (TI) approach was used to develop Tolerance Limits (TLs) for each target inorganic constituent (i.e., metals) using the background well analytical results from the eight preceding rounds for which



Mr. Leo Hellested, P.E.

analytical results are available. The background well, OW-9, could not be sampled in several previous monitoring rounds including in the June 2016, September 2016, June 2017, and September 2017 monitoring rounds due to dry conditions. Therefore, analytical results of the eight most recent rounds in which samples could be collected were utilized to generate the TLs for this monitoring round, dating back to December 2014. The TI approach is considered inappropriate for analysis of organic constituents and was therefore not performed to evaluate the results of reported VOCs. Table 2 summarizes historical results data from OW-9 used in the calculation of the TLs.

Two (2) of the metals concentration reported in March 2018; arsenic and barium; exceeded the corresponding TLs calculated during this monitoring round in at least one compliance well. In total, there were five (5) TL exceedances of these metals in this monitoring round. The TLs and the corresponding compliance well data from this monitoring round are presented in Table 3. Each of these metals is routinely detected in groundwater beneath the landfill.

# CUSUM METHOD STATISTICAL EVALUATION

The Shewhart-CUSUM Method, a supplemental statistical analysis method used in addition to the TI Method, was performed in accordance with the US EPA documents titled "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Interim Final Guidance, April 1989" and "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum to Interim Final Guidance, July, 1992".

Barium and nickel at OW-12; barium and zinc at OW-13; chromium and lead at OW-14; and lead at OW-15; exceeded both of their Shewhart-CUSUM thresholds during the March 2018 monitoring round.

The dry conditions present during the September 2016 monitoring round were believed by Pare to have resulted in higher than usual suspended solids in samples collected, which are believed to have also resulted in atypical metals concentrations. As a result, the results of the Shewhart-CUSUM analysis for September 2016 were believed to be an anomaly. In many cases these deviations are outside of the statistical range expected. With the inception of the updated groundwater monitoring program, Pare has reset the Shewhart-CUSUM levels for several metals at multiple wells in order to have an accurate representation of cumulative statistical analysis of these constituents. The metals that have had their Shewhart-CUSUM thresholds reset include: chromium, lead, nickel, vanadium, and zinc at OW-12; barium, cadmium, cobalt, copper, lead, and vanadium at OW-13; zinc at OW-14; and arsenic, cadmium, chromium, cobalt, lead, nickel, vanadium, and zinc at OW-14 is due to a statistical spike in the Shewhart-CUSUM limit during the September 2015 monitoring round (which was also sampled during dry conditions). These Shewhart-CUSUM parameters were reset prior to the March 2017 sampling round; therefore, data recorded from the March 2017 monitoring round is present in the analysis.

# ASSESSMENT MONITORING

The Shewhart-CUSUM analysis is utilized, along with the Tolerance Limits, to identify when Assessment Monitoring should be performed.

Pare performed Assessment Monitoring at OW-14 in the December 2017 monitoring round due to an exceedance of the Shewhart-CUSUM threshold of antimony in the June 2017 monitoring period. This



Mr. Leo Hellested, P.E.

Assessment Monitoring was delayed from September 2017 to December 2017 due to dry conditions in September, rendering a sample unattainable. One Appendix B parameter, sulfides (0.04 mg/L), was detected in the December 2017 monitoring round. In the 2017 Annual Groundwater Monitoring report, Pare recommended that groundwater samples from OW-14 in the March 2018 monitoring round be tested again for sulfides. Again, the Appendix B parameter sulfides (0.04 mg/L) was detected in the samples collected from OW-14 in March 2018.

# MTBE ANALYSIS

Many of the most recent Assessment Monitoring rounds have been conducted due to MTBE concentrations in groundwater. Reported MTBE concentrations have generally risen since September 2006, as depicted in the attached figure titled Reported Concentrations of MTBE. The figure compares the recent increases in reported MTBE concentrations at OW-13, OW-14 and OW-15 to historical concentrations and drinking water advisories defined in the US EPA document titled "2011 Edition of the Drinking Water Standards and Health Advisories". Although reported MTBE concentrations appear to be trending slowly upward, MTBE has never been reported above its odor threshold (0.020 mg/L) or its taste threshold (0.040 mg/L). The US EPA has not established a human health advisory concentration for MTBE.

Because the elevated concentrations of MTBE have recently triggered Assessment Monitoring at OW-13, OW-14, and OW-15, and that no Appendix B parameters were reported to a significant degree at these wells, it is Pare's opinion that the increasing trend in MTBE concentrations beneath the Landfill is an isolated phenomenon and not the result of a significant change in groundwater quality beneath the Landfill.

Despite CUSUM values of MTBE at OW-13, OW-14, and OW-15 remaining above their threshold during the September 2017 monitoring round, Pare does not recommend assessment monitoring due to the aforementioned MTBE trend. The lack of Appendix B parameters in the past, in conjunction with the lack of Appendix B parameters at OW-13 and OW-15 during the December 2016 monitoring round, and the lack of Appendix B parameters at OW-14 during the June 2016 monitoring round, suggests that the presence of MTBE trend does not indicate an increased likelihood that Appendix B parameters would be present beneath the Landfill.

## CONCLUSIONS AND RECOMMENDATIONS

Currently, the Landfill conducts Detection Monitoring for the parameters listed in Appendix A of the State Solid Waste Regulations, as well as mercury and tin. During this monitoring round, two (2) metals; arsenic and barium; exceeded their tolerance limits (TLs) in at least one well. Arsenic and barium also exceeded their TLs during the previous monitoring round at OW-15, and OW-13, OW-14, and OW-15, respectively. TL exceedances in two consecutive monitoring rounds is one of the criteria used to consider introducing Assessment Monitoring in subsequent monitoring rounds.

Pare recommends that Assessment Monitoring be performed in the June 2018 monitoring round due to criteria for Assessment Monitoring being met at compliance well OW-13 from the detection of barium. These criteria include constituents with two consecutive rounds with tolerance limit exceedances, and exceedances of both Shewhart-CUSUM threshold criteria.



During the 2016 and 2017 monitoring periods, a rising trend in detections of antimony at the compliance wells became apparent. Antimony was detected at the background well above its MCL during the December 2017 monitoring round. Previously, antimony had not been detected at the background well since the September 2011 monitoring round. The detection of antimony at compliance well OW-14 in the June 2017 monitoring round warranted Assessment Monitoring, which was performed in the December 2017 monitoring round. The Assessment Monitoring resulted in detection of one Appendix B parameter, sulfides (0.04 mg/L). However, antimony was not detected at any groundwater well during the December 2017 monitoring period. Analysis of the samples collected from OW-14 during the March 2018 monitoring round indicated another detection of sulfides (0.04 mg/L).

The EPA has no MCLs set for sulfides in groundwater. Water with dissolved hydrogen sulfide will smell musty or swampy around 0.5-1.0 mg/L, and Pare did not identify a noticeable smell emanating from the groundwater sample in either round during which the constituent was detected. Hydrogen sulfide gas can occur naturally in groundwater from plant materials rotting underground in anaerobic conditions. Hydrogen sulfide gas could also be resulting from gypsum buried at the Landfill. Pare recommends that sulfides be again tested for at OW-14 in the June 2018 monitoring round. Additionally, Pare recommends that the Town consider adding regular analysis of sulfides to the groundwater monitoring program.

Pare recommended that wells OW-7 and OW-16 be incorporated into the compliance monitoring regimen in the 2017 Annual Groundwater Monitoring Report. Despite OW-7 having several years of sampling data, the sampling rounds were selected on a rotating basis with wells OW-6 and OW-8 for alternate monitoring. Pare recommends that wells OW-7 and OW-16 be sampled for two years, or eight consecutive monitoring rounds, prior to initiating statistical analysis. The March 2018 monitoring period marks the first monitoring round that these wells are to be sampled consistently; therefore, it is estimated that statistical analysis for the bedrock and overburden wells will begin in the March 2020 monitoring round.

Samples have been unable to be collected at the background well OW-9 in recent monitoring rounds. Dating back to June 2016, four out of the last eight monitoring rounds have resulted in a dry well (although Pare was able to collect a sample in March 2018). The tolerance interval analysis is dependent on data collected from the background well; therefore, uncharacteristic TL exceedances may be a result of the lack of recent historical data from this well. Pare will be able to more accurately assess this potential changing trend in groundwater quality with more data collection from the background well.

Recent monitoring rounds also indicate there is an increasing trend of barium and cadmium in groundwater at the Landfill. However, Assessment Monitoring triggered by exceedances of barium and cadmium have resulted in no (0) detections of Appendix B parameters. In the next monitoring round, Pare recommends performing Assessment Monitoring at OW-13, and will monitor if there is a trend change in Appendix B parameters detected due to barium-triggered Assessment Monitoring. Pare will continue to evaluate antimony, barium, cadmium, and sulfides trends at the Landfill in subsequent monitoring rounds.



Mr. Leo Hellested, P.E.

Should the RIDEM have any questions regarding this letter or the attached data, please feel free to contact the undersigned at (401) 334-4100, thank you.

Very truly yours,

6 1

Timothy P. Thies, P.E. Vice President

TPT/TCJ/abv

#### Attachments

cc: Jay Lambert, Tiverton Landfill Subcommittee (w/encl.) Jan Reitsma, Tiverton Town Administrator (w/encl.) William Anderson, P.E., Tiverton Public Works Director (w/encl.) Travis C. Johnson, Pare Corporation (w/o encl.) George G. Palmisciano, P.E. Pare Corporation (w/o encl.)

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# <u>ATTACHMENT NO. 1</u> LABORATORY ANALYTICAL DATA REPORT



# **REPORT OF ANALYTICAL RESULTS**

# NETLAB Work Order Number: 8C29032 Client Project: 94139 - Tiverton Landfill

Report Date: 05-April-2018

Prepared for:

Travis Johnson Pare Corporation 8 Blackstone Valley Place Lincoln, RI 02865

Richard Warila, Laboratory Director New England Testing Laboratory, Inc. 59 Greenhill Street West Warwick, RI 02893 rich.warila@newenglandtesting.com

# Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
8C29032-01	OW-7	Water	03/28/2018	03/29/2018
8C29032-02	OW-9	Water	03/28/2018	03/29/2018
8C29032-03	OW-12	Water	03/28/2018	03/29/2018
8C29032-04	OW-13	Water	03/28/2018	03/29/2018
8C29032-05	OW-14	Water	03/28/2018	03/29/2018
8C29032-06	OW-15	Water	03/28/2018	03/29/2018
8C29032-07	OW-16	Water	03/28/2018	03/29/2018

# **Request for Analysis**

# OW-12 (Lab Number: 8C29032-03)

Analvsis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

# OW-13 (Lab Number: 8C29032-04)

Analvsis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

# OW-14 (Lab Number: 8C29032-05)

# AnalvsisMethodAntimonyEPA 6010CArsenicEPA 6010CBariumEPA 6010CBerylliumEPA 6010CCadmiumEPA 6010CChromiumEPA 6010C

# OW-14 (Lab Number: 8C29032-05) (continued)

Analvsis	Method
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

# OW-15 (Lab Number: 8C29032-06)

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

(continued)

# OW-16 (Lab Number: 8C29032-07)

Analvsis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

# OW-7 (Lab Number: 8C29032-01)

Analvsis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

# Request for Analysis

(continued)

# OW-9 (Lab Number: 8C29032-02)

Analvsis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

# **Case Narrative**

# **CASE NARRATIVE:**

#### Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

# Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

#### Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.038	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.005	0.001
7440-48-4	Cobalt	6010C	0.019	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.021	0.001
7782-49-2	Selenium	6010C	0.01	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	0.0003	0.0002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.018	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.013	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.002	0.001
7440-47-3	Chromium	6010C	0.007	0.001
7440-48-4	Cobalt	6010C	0.001	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	0.002	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.004	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-62-2	Vanadium	7010	0.002	0.001
7440-66-6	Zinc	6010C	0.019	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.017	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	ND	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.020	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.007	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	0.007	0.002
7440-39-3	Barium	6010C	0.115	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.004	0.001
7440-47-3	Chromium	6010C	0.002	0.001
7440-48-4	Cobalt	6010C	0.013	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	0.002	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.012	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	0.0003	0.0002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.017	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.224	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.005	0.001
7440-47-3	Chromium	6010C	0.006	0.001
7440-48-4	Cobalt	6010C	0.014	0.001
7440-50-8	Copper	6010C	0.009	0.005
7439-92-1	Lead	6010C	0.006	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.022	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	0.0003	0.0002
7440-62-2	Vanadium	7010	0.007	0.001
7440-66-6	Zinc	6010C	0.048	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	0.02	0.002
7440-39-3	Barium	6010C	0.128	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.009	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	0.010	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	0.002	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.020	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-62-2	Vanadium	7010	0.006	0.001
7440-66-6	Zinc	6010C	0.021	0.005
7440-34-5	Tin	6010C	ND	0.002

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.019	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.006	0.001
7440-48-4	Cobalt	6010C	0.005	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.010	0.001
7782-49-2	Selenium	6010C	0.01	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	0.0003	0.0002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.024	0.005
7440-34-5	Tin	6010C	ND	0.002

Sample: OW-7 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Method: 8260C

#### Case Number: 8C29032

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	6.8	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	99	70-130
1,2-Dichloroethane d4	101	70-130
4 BFB	98	70-130

Sample: OW-9 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-9 Method: 8260C

#### Case Number: 8C29032

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	99	70-130
1,2-Dichloroethane d4	102	70-130
4 BFB	98	70-130

Sample: OW-12 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

# Sample: OW-12 Method: 8260C

#### Case Number: 8C29032

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	99	70-130
1,2-Dichloroethane d4	99	70-130
4 BFB	97	70-130

Sample: OW-13 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0
71-55-6	1,1,1-Trichloroethane	ND	5.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0
79-00-5	1,1,2-Trichloroethane	ND	5.0
75-34-3	1,1-Dichloroethane	ND	5.0
75-35-4	1,1-Dichloroethylene	ND	5.0
563-58-6	1,1-Dichloropropene	ND	5.0
96-18-4	1,2,3-Trichloropropane	ND	5.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	5.0
106-93-4	1,2-Dibromoethane	ND	5.0
107-06-2	1,2-Dichloroethane	ND	5.0
78-87-5	1,2-Dichloropropane	ND	5.0
142-28-9	1,3-Dichloropropane	ND	5.0
594-20-7	2,2-Dichloropropane	ND	5.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	25.0
108-10-1	4-Methyl-2-pentanone	ND	25.0
67-64-1	Acetone	ND	25.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	25.0
107-02-8	Acrolein	ND	25.0
107-13-1	Acrylonitrile	ND	25.0
107-05-1	Allyl chloride	ND	25.0
71-43-2	Benzene	ND	5.0
74-97-5	Bromochloromethane	ND	5.0
75-27-4	Bromodichloromethane	ND	5.0
75-25-2	Bromoform (Tribromomethane)	ND	5.0
75-15-0	Carbon disulfide	ND	25.0
56-23-5	Carbon tetrachloride	ND	5.0
108-90-7	Chlorobenzene	5.4	5.0
75-00-3	Chloroethane (Ethyl chloride)	ND	5.0
67-66-3	Chloroform (Trichloromethane)	ND	5.0
126-99-8	Chloroprene	ND	25.0
156-59-2	cis-1,2-Dichloroethylene	ND	5.0
10061-01-5	cis-1,3-Dichloropropene	ND	5.0
124-48-1	Dibromochloromethane	ND	5.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	5.0
97-63-2	Ethyl methacrylate	ND	25.0
100-41-4	Ethylbenzene	ND	5.0
78-83-1	Isobutyl alcohol	ND	100
465-73-6	Isodrin	ND	25.0
541-73-1	m-Dichlorobenzene	ND	5.0
126-98-7	Methacrylonitrile	ND	50.0
74-83-9	Methyl bromide (Bromomethane)	ND	5.0

# Sample: OW-13 Method: 8260C

#### Case Number: 8C29032

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	5.0
78-93-3	Methyl ethyl ketone (MEK)	ND	25.0
74-88-4	Methyl iodide (Iodomethane)	ND	25.0
80-62-6	Methyl methacrylate	ND	50.0
74-95-3	Methylene bromide (Dibromomethane)	ND	5.0
75-09-2	Methylene chloride (Dichloromethane)	ND	5.0
95-50-1	o-Dichlorobenzene	ND	5.0
106-46-7	p-Dichlorobenzene	ND	5.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	100
100-42-5	Styrene	ND	5.0
127-18-4	Tetrachloroethylene	ND	5.0
1634-04-4	tert-Butylmethylether	ND	5.0
108-88-3	Toluene	ND	5.0
156-60-5	trans-1,2-Dichloroethylene	ND	5.0
10061-02-6	trans-1,3-Dichloropropene	ND	5.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	25.0
79-01-6	Trichloroethylene	ND	5.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	5.0
108-05-4	Vinyl acetate	ND	25.0
75-01-4	Vinyl chloride (Chloroethene)	ND	5.0
1330-20-7	Xylene (total)	ND	5.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	99	70-130
1,2-Dichloroethane d4	101	70-130
4 BFB	97	70-130

Sample: OW-14 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0
71-55-6	1,1,1-Trichloroethane	ND	5.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0
79-00-5	1,1,2-Trichloroethane	ND	5.0
75-34-3	1,1-Dichloroethane	ND	5.0
75-35-4	1,1-Dichloroethylene	ND	5.0
563-58-6	1,1-Dichloropropene	ND	5.0
96-18-4	1,2,3-Trichloropropane	ND	5.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	5.0
106-93-4	1,2-Dibromoethane	ND	5.0
107-06-2	1,2-Dichloroethane	ND	5.0
78-87-5	1,2-Dichloropropane	ND	5.0
142-28-9	1,3-Dichloropropane	ND	5.0
594-20-7	2,2-Dichloropropane	ND	5.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	25.0
108-10-1	4-Methyl-2-pentanone	ND	25.0
67-64-1	Acetone	ND	25.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	25.0
107-02-8	Acrolein	ND	25.0
107-13-1	Acrylonitrile	ND	25.0
107-05-1	Allyl chloride	ND	25.0
71-43-2	Benzene	ND	5.0
74-97-5	Bromochloromethane	ND	5.0
75-27-4	Bromodichloromethane	ND	5.0
75-25-2	Bromoform (Tribromomethane)	ND	5.0
75-15-0	Carbon disulfide	ND	25.0
56-23-5	Carbon tetrachloride	ND	5.0
108-90-7	Chlorobenzene	10.8	5.0
75-00-3	Chloroethane (Ethyl chloride)	ND	5.0
67-66-3	Chloroform (Trichloromethane)	ND	5.0
126-99-8	Chloroprene	ND	25.0
156-59-2	cis-1,2-Dichloroethylene	ND	5.0
10061-01-5	cis-1,3-Dichloropropene	ND	5.0
124-48-1	Dibromochloromethane	ND	5.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	5.0
97-63-2	Ethyl methacrylate	ND	25.0
100-41-4	Ethylbenzene	ND	5.0
78-83-1	Isobutyl alcohol	ND	100
465-73-6	Isodrin	ND	25.0
541-73-1	m-Dichlorobenzene	ND	5.0
126-98-7	Methacrylonitrile	ND	50.0
74-83-9	Methyl bromide (Bromomethane)	ND	5.0

# Sample: OW-14 Method: 8260C

#### Case Number: 8C29032

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	5.0
78-93-3	Methyl ethyl ketone (MEK)	ND	25.0
74-88-4	Methyl iodide (lodomethane)	ND	25.0
80-62-6	Methyl methacrylate	ND	50.0
74-95-3	Methylene bromide (Dibromomethane)	ND	5.0
75-09-2	Methylene chloride (Dichloromethane)	ND	5.0
95-50-1	o-Dichlorobenzene	ND	5.0
106-46-7	p-Dichlorobenzene	ND	5.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	100
100-42-5	Styrene	ND	5.0
127-18-4	Tetrachloroethylene	ND	5.0
1634-04-4	tert-Butylmethylether	9.4	5.0
108-88-3	Toluene	ND	5.0
156-60-5	trans-1,2-Dichloroethylene	ND	5.0
10061-02-6	trans-1,3-Dichloropropene	ND	5.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	25.0
79-01-6	Trichloroethylene	ND	5.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	5.0
108-05-4	Vinyl acetate	ND	25.0
75-01-4	Vinyl chloride (Chloroethene)	ND	5.0
1330-20-7	Xylene (total)	ND	5.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	100	70-130
1,2-Dichloroethane d4	100	70-130
4 BFB	98	70-130

Sample: OW-15 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0
71-55-6	1,1,1-Trichloroethane	ND	5.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0
79-00-5	1,1,2-Trichloroethane	ND	5.0
75-34-3	1,1-Dichloroethane	ND	5.0
75-35-4	1,1-Dichloroethylene	ND	5.0
563-58-6	1,1-Dichloropropene	ND	5.0
96-18-4	1,2,3-Trichloropropane	ND	5.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	5.0
106-93-4	1,2-Dibromoethane	ND	5.0
107-06-2	1,2-Dichloroethane	ND	5.0
78-87-5	1,2-Dichloropropane	ND	5.0
142-28-9	1,3-Dichloropropane	ND	5.0
594-20-7	2,2-Dichloropropane	ND	5.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	25.0
108-10-1	4-Methyl-2-pentanone	ND	25.0
67-64-1	Acetone	ND	25.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	25.0
107-02-8	Acrolein	ND	25.0
107-13-1	Acrylonitrile	ND	25.0
107-05-1	Allyl chloride	ND	25.0
71-43-2	Benzene	ND	5.0
74-97-5	Bromochloromethane	ND	5.0
75-27-4	Bromodichloromethane	ND	5.0
75-25-2	Bromoform (Tribromomethane)	ND	5.0
75-15-0	Carbon disulfide	ND	25.0
56-23-5	Carbon tetrachloride	ND	5.0
108-90-7	Chlorobenzene	17.0	5.0
75-00-3	Chloroethane (Ethyl chloride)	ND	5.0
67-66-3	Chloroform (Trichloromethane)	ND	5.0
126-99-8	Chloroprene	ND	25.0
156-59-2	cis-1,2-Dichloroethylene	ND	5.0
10061-01-5	cis-1,3-Dichloropropene	ND	5.0
124-48-1	Dibromochloromethane	ND	5.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	5.0
97-63-2	Ethyl methacrylate	ND	25.0
100-41-4	Ethylbenzene	ND	5.0
78-83-1	Isobutyl alcohol	ND	100
465-73-6	Isodrin	ND	25.0
541-73-1	m-Dichlorobenzene	ND	5.0
126-98-7	Methacrylonitrile	ND	50.0
74-83-9	Methyl bromide (Bromomethane)	ND	5.0

# Sample: OW-15 Method: 8260C

#### Case Number: 8C29032

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	5.0
78-93-3	Methyl ethyl ketone (MEK)	ND	25.0
74-88-4	Methyl iodide (lodomethane)	ND	25.0
80-62-6	Methyl methacrylate	ND	50.0
74-95-3	Methylene bromide (Dibromomethane)	ND	5.0
75-09-2	Methylene chloride (Dichloromethane)	ND	5.0
95-50-1	o-Dichlorobenzene	ND	5.0
106-46-7	p-Dichlorobenzene	ND	5.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	100
100-42-5	Styrene	ND	5.0
127-18-4	Tetrachloroethylene	ND	5.0
1634-04-4	tert-Butylmethylether	ND	5.0
108-88-3	Toluene	ND	5.0
156-60-5	trans-1,2-Dichloroethylene	ND	5.0
10061-02-6	trans-1,3-Dichloropropene	ND	5.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	25.0
79-01-6	Trichloroethylene	ND	5.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	5.0
108-05-4	Vinyl acetate	ND	25.0
75-01-4	Vinyl chloride (Chloroethene)	ND	5.0
1330-20-7	Xylene (total)	ND	5.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	99	70-130
1,2-Dichloroethane d4	97	70-130
4 BFB	99	70-130

Sample: OW-16 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0
71-55-6	1,1,1-Trichloroethane	ND	5.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0
79-00-5	1,1,2-Trichloroethane	ND	5.0
75-34-3	1,1-Dichloroethane	ND	5.0
75-35-4	1,1-Dichloroethylene	ND	5.0
563-58-6	1,1-Dichloropropene	ND	5.0
96-18-4	1,2,3-Trichloropropane	ND	5.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	5.0
106-93-4	1,2-Dibromoethane	ND	5.0
107-06-2	1,2-Dichloroethane	ND	5.0
78-87-5	1,2-Dichloropropane	ND	5.0
142-28-9	1,3-Dichloropropane	ND	5.0
594-20-7	2,2-Dichloropropane	ND	5.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	25.0
108-10-1	4-Methyl-2-pentanone	ND	25.0
67-64-1	Acetone	ND	25.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	25.0
107-02-8	Acrolein	ND	25.0
107-13-1	Acrylonitrile	ND	25.0
107-05-1	Allyl chloride	ND	25.0
71-43-2	Benzene	ND	5.0
74-97-5	Bromochloromethane	ND	5.0
75-27-4	Bromodichloromethane	ND	5.0
75-25-2	Bromoform (Tribromomethane)	ND	5.0
75-15-0	Carbon disulfide	ND	25.0
56-23-5	Carbon tetrachloride	ND	5.0
108-90-7	Chlorobenzene	ND	5.0
75-00-3	Chloroethane (Ethyl chloride)	ND	5.0
67-66-3	Chloroform (Trichloromethane)	ND	5.0
126-99-8	Chloroprene	ND	25.0
156-59-2	cis-1,2-Dichloroethylene	ND	5.0
10061-01-5	cis-1,3-Dichloropropene	ND	5.0
124-48-1	Dibromochloromethane	ND	5.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	5.0
97-63-2	Ethyl methacrylate	ND	25.0
100-41-4	Ethylbenzene	ND	5.0
78-83-1	Isobutyl alcohol	ND	100
465-73-6	Isodrin	ND	25.0
541-73-1	m-Dichlorobenzene	ND	5.0
126-98-7	Methacrylonitrile	ND	50.0
74-83-9	Methyl bromide (Bromomethane)	ND	5.0

# Sample: OW-16 Method: 8260C

#### Case Number: 8C29032

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	5.0
78-93-3	Methyl ethyl ketone (MEK)	ND	25.0
74-88-4	Methyl iodide (lodomethane)	ND	25.0
80-62-6	Methyl methacrylate	ND	50.0
74-95-3	Methylene bromide (Dibromomethane)	ND	5.0
75-09-2	Methylene chloride (Dichloromethane)	ND	5.0
95-50-1	o-Dichlorobenzene	ND	5.0
106-46-7	p-Dichlorobenzene	ND	5.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	100
100-42-5	Styrene	ND	5.0
127-18-4	Tetrachloroethylene	ND	5.0
1634-04-4	tert-Butylmethylether	7.8	5.0
108-88-3	Toluene	ND	5.0
156-60-5	trans-1,2-Dichloroethylene	ND	5.0
10061-02-6	trans-1,3-Dichloropropene	ND	5.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	25.0
79-01-6	Trichloroethylene	ND	5.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	5.0
108-05-4	Vinyl acetate	ND	25.0
75-01-4	Vinyl chloride (Chloroethene)	ND	5.0
1330-20-7	Xylene (total)	ND	5.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	99	70-130
1,2-Dichloroethane d4	101	70-130
4 BFB	98	70-130




# **REPORT OF ANALYTICAL RESULTS**

# NETLAB Work Order Number: 8C29030 Client Project: 94139 - Tiverton Landfill

Report Date: 05-April-2018

Prepared for:

Travis Johnson Pare Corporation 8 Blackstone Valley Place Lincoln, RI 02865

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### Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
8C29030-01	OW-14	Water	03/28/2018	03/29/2018

# Request for Analysis

#### OW-14 (Lab Number: 8C29030-01)

**Analvsis** Sulfide Method SM4500-S-D

#### **Case Narrative**

#### Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

#### Wet Chemistry

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures.

#### Sample: OW-14

#### Case Number: 8C29030

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
18496-25-8	Sulfide	376.2	0.04	0.02

ND = Not Detected



# ATTACHMENT NO. 2 ANALYTICAL SUMMARY TABLES



JUN '14 MAR '14 DEC MAR '18 DEC '17 SEP '17 JUN '17 MAR '17 DEC '16 SEP '16 JUN '16 MAR EP 13 JUN 13 MAR 13 DEC 12 SEP 12 JUN 12 MAR 12 DEC 11 SEP 11 JUN 11 MAR 11 DEC 10 SEP 10 JUN 10 MAR '10 Threshold Astimory Astenics Astenics Barium Cashinum Cashi 
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ss 10000 µg/L\* Nb ND NT NT Herbsdwit deher (MTBE) 20-40 µg/L\* Nb ND NT NT = Exceeded MCL Analytical data reported since commencement of low flow progring and sampling. Low flow pro July 2002 represents the first time low flow progring and sampling was conducted at OW-9. taken at OW-9 at this time

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Dirixing Water Standards and Health Advisories 2. Threshold value given is the Biteme health advisory as provided in the USEPA 2004 Edition of the Dirixing Water Standards and Health Advisories 1. Threshold value given is the Bitematory Toring Water Regulation (SURV) as provided in the USEPA 2004 Edition of the Dirixing Water Standards and Health Advisories 4. Threshold value given is the Dirixing Water Advisory as provided in the USEPA 2004 Edition of the Dirixing Water Standards and Health Advisories 6. Constituent consentration was regorded at the SUSEPA 2004 Edition of the Dirixing Water Standards and Health Advisories 6. Constituent consentration was regorded at the Region previous grant given the October 2002 USEPA Region 9 ReGio Table 2022 Update 6. Constituent consentration was regorded at the Region previous grant given the October 2002 USEPA Region 9 ReGio Table 2021 Update 6. Constituent consentration was regorded at the Region previous grant given the October 2002 USEPA Region 9 ReGio Table 2021 Update 6. Constituent consentration was regorded at the Region previous grant given previous grant given the Region Standard Region Re

# TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-7 Concentration (expressed in same units as Threshold Value)

Advance         Bit Mo         No.         No.        No.         No.	Parameter	Threshold Value	MAR '19	NOV '17	SED '17	MAR '17	MAR '16	SED '15	MAR '15	DEC 14	MAR '14	SED 113	MAR '13	SED '12	MAR '12	IUN '44	MAR '11	SEP '10	IUN 30	SEP '00	II IN '07	SEP '05	ILIN '05
Amme         Bit         Bit </td <td>Antimony</td> <td>0.006 mg/L<sup>1</sup></td> <td>ND</td> <td>ND</td> <td>ND</td> <td>0.0070</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>NT</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>0.0250</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td>	Antimony	0.006 mg/L <sup>1</sup>	ND	ND	ND	0.0070	ND	ND	ND	NT	ND	ND	ND	ND	ND	0.0250	ND	ND	ND	ND	ND	ND	ND
	Arsenic	0.01 mg/L <sup>1</sup>	ND	ND	ND	ND	0.0070	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	ND	ND	ND	ND	ND
	Barium	2 mg/L	0.0380	0.0350	0.0330	0.0380	0.0390	0.0300	0.0330	NT	0.0310	0.0200	0.0310	0.0260	0.0280	0.0350	0.0398	0.0375	0.0370	0.0310	0.0340	0.0240	0.0280
	Cadmium	0.004 mg/L	ND	ND	ND	0.0010	ND	0.0010	ND	NT	0.0010	ND	ND	0.0050	ND	ND	0.0012	0.0419	0.0410	ND	ND	ND	ND
Cale         Cale <th< td=""><td>Chromium</td><td>0.1 mg/L<sup>1</sup></td><td>0.0050</td><td>0.0050</td><td>0.0040</td><td>0.0060</td><td>ND</td><td>ND</td><td>ND</td><td>NT</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>0.0010</td><td>0.0080</td><td>ND</td><td>0.0054</td><td>0.0048</td><td>0.0530</td><td>ND</td><td>ND</td><td>ND</td></th<>	Chromium	0.1 mg/L <sup>1</sup>	0.0050	0.0050	0.0040	0.0060	ND	ND	ND	NT	ND	ND	ND	ND	0.0010	0.0080	ND	0.0054	0.0048	0.0530	ND	ND	ND
Char         1         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0        0         0         0	Cobalt	0.73 mg/L <sup>5</sup>	0.0190	0.0180	0.0180	0.0250	0.0280	0.0200	0.0250	NT	0.0220	0.0130	0.0250	0.0160	0.0200	0.0200	0.0353	0.0229	0.0250	0.0250	0.0200	0.0190	0.0220
max         max <td>Copper</td> <td>1.3 mg/L<sup>1</sup></td> <td>ND</td> <td>0.0050</td> <td>ND</td> <td>0.0060</td> <td>0.0060</td> <td>0.0080</td> <td>0.0250</td> <td>NT</td> <td>0.0180</td> <td>0.0040</td> <td>ND</td> <td>0.0080</td> <td>0.0040</td> <td>0.0390</td> <td>0.0056</td> <td>0.2180</td> <td>0.5000</td> <td>0.0058</td> <td>0.0098</td> <td>ND</td> <td>ND</td>	Copper	1.3 mg/L <sup>1</sup>	ND	0.0050	ND	0.0060	0.0060	0.0080	0.0250	NT	0.0180	0.0040	ND	0.0080	0.0040	0.0390	0.0056	0.2180	0.5000	0.0058	0.0098	ND	ND
	Lead	0.015 mg/L	ND 0.0210	ND 0.0210	ND 0.0190	ND 0.0250	ND	0.0010	0.0050	NI	0.0060	0.0040	0.0020	0.0020	0.0040	0.0460	0.0033	0.0074	0.0060	0.0043	0.0042	ND 0.0220	ND 0.0370
Sher         0.1         mode         No         No        No        No        N	Selenium	0.05 mg/L <sup>1</sup>	0.0210	ND	0.0030	ND	0.1070	0.0200	0.1880	NT	0.1830	0.1410	0.1800	0.1920	0.2260	0.0340	ND	ND	ND	0.0120	0.0110	0.0140	ND
The Mark         DEC         DE         NO         NO        NO        NO <th< td=""><td>Silver</td><td>0.1 mg/L<sup>2</sup></td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>NT</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>0.0054</td><td>ND</td><td>ND</td><td>0.0035</td></th<>	Silver	0.1 mg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0054	ND	ND	0.0035
	Thallium	0.002 mg/L <sup>1</sup>	0.0003	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0032	ND	ND	0.0420	0.0440	ND	0.0140
mark         mark         origi         o	Tin	22 mg/L <sup>o</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	0.0060	ND	ND	ND	ND 0.0470	ND	ND 0.0054	ND 0.0070	ND 0.0000	ND	ND	ND
Network         000 arg         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         <	Zinc	5 mg/L <sup>3</sup>	0.0180	0.0200	0.0120	0.0210	0.0050	0.0120	0.0060	0.0060	########	ND	0.0150	0.0100	0.0130	0.0170 ND	0.0250	0.0472	0.0380	0.0230	0.0240	0.0160	0.0180
	Mercury	0.002 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Acetone	610 ug/l <sup>5</sup>	ND	ND	ND	5.8	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Acrylonitrate	0.039 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Benzene Bromochloromethane	5 ug/l 80 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bendom       90       90       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N       N	Bromodichloromethane	90 ug/1	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cachoolandia:         100         op <sup>1</sup> N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N	Bromoform	80 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bencemation         D         D         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N <th< td=""><td>Carbon disulfide</td><td>1000 ug/l<sup>5</sup></td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>NT</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td></th<>	Carbon disulfide	1000 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calculation         0         0         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N <th< td=""><td>Bromomethane</td><td>10 ug/l<sup>2</sup></td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>NT</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td></th<>	Bromomethane	10 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Construction         B         B         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N <t< td=""><td>Carbon tetrachioride</td><td>5 ug/l</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>NI</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND 1.0</td><td>ND 2.0</td><td>ND</td><td>1.4</td><td>ND 1.8</td><td>ND 2.7</td><td>ND 1.7</td><td>ND</td></t<>	Carbon tetrachioride	5 ug/l	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND 1.0	ND 2.0	ND	1.4	ND 1.8	ND 2.7	ND 1.7	ND
Chalondmane 40 graft 40 No	Chlorodibromomethane	Inconductionmethane         80 ugi <sup>1</sup> ND         ND <th< td=""></th<>																					
Choomedamie 4.6 gef 4.7 a.7 a. 1.6 v. 1.6 v. 1.6 v. 1.6 v. 1.7 v. 1.7 v. 1.7 v. 1.8 v	Chloroform	80 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chormentaniane 30 grif N0	Chloroethane	4.6 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	2.2	ND	1.3	1.6	1.5	3.8	ND	ND
1.2.00000000000000000000000000000000000	Chloromethane	uioroentane         4.0 ugri         NU																					
Deformation         61 of         ND	1,2-Dibromo-3-chioropropane 1,2-Dibromoethane	Jacomethane         30 ugf <sup>4</sup> ND																					
1:2:0:10:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0	Dibromomethane	UDROMGSCANDORDFORDARE U.2. Ugyr' NU ND																					
1.4-Delandocemenen       75       yg1       ND	1,2-Dichlorobenzene	Jouromotemane         Usu gri         NU																					
trans.14.2bit.doc.doc.mb         up1         ND	1,4-Dichlorobenzene	-Dichlorobenzene 660 ug1 <sup>1</sup> ND														ND							
1,1,2-Enthologentylene         5         0.91         N.0	trans-1,4-Dichlo-2-butene	ucreatoresenzation         600         upit         ND         ND </td <td>ND</td>														ND							
circle         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1 <td>1,1-Dichloroethane</td> <td colspan="14">ucramaconsensative fs ugin Nu Nu</td>	1,1-Dichloroethane	ucramaconsensative fs ugin Nu																					
Trans-12-behologethylene         100         golf         N0         N0 </td <td>cis-1,2-Dichloroethylene</td> <td colspan="14">s-1.4-Dichio-2-butene ug1 ND ND</td>	cis-1,2-Dichloroethylene	s-1.4-Dichio-2-butene ug1 ND																					
1,1-Delha       7       91       ND	Trans-1,2-Dichloroethylene	Dickloroethane         5 ugh <sup>1</sup> ND																					
1.2-Delactographic me       5 ug1       ND	1,1-Dichloroethylene	7 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lat1.5. Oblighting         u.gl         N.D	1,2-Dichloropropane	5 ug/l	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methy final         5 $u_0^{-1}$ ND	trans-1.3-Dichloropropene	ug/l	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-2rtanchoredhane       70       0gr <sup>2</sup> ND	Methylene chloride	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2,Tetrachkoncethane       0,3, ugf       ND       ND <td>1,1,1,2-Tetrachloroethane</td> <td>70 ug/l<sup>2</sup></td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>NT</td> <td>ND</td>	1,1,1,2-Tetrachloroethane	70 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Internationality inder(-CE)       5       9.091       N.D	1,1,2,2-Tetrachloroethane	0.3 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
The instructure         Log orging         ND	1 etrachioroethylene(PCE)	5 ug/l 200 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichocodety/ener(TCE)       5. ug1       ND	1,1,2-Trichloroethane	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorodouromethane         200 ugh <sup>2</sup> ND	Trichloroethylene(TCE)	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Viryl chindindie       2 ugl       ND	Trichloroflouromethane	2000 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Entyplant/Zahle         TOO Gy1         ND         ND <td>Vinyl chloride</td> <td>2 ug/l'</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>NT</td> <td>ND</td>	Vinyl chloride	2 ug/l'	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Number         Note         ND         <	Toluepe	1000 ug/l	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methy laty (katone)         160         up1         ND         ND </td <td>Xylenes</td> <td>10000 ug/l<sup>1</sup></td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>NT</td> <td>ND</td>	Xylenes	10000 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methy letro-bury ether (MTEB)         20 - 40 ug/1         Image: Additional strange and the strange	Methyl butyl ketone(2-Hexanone)	160 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methy ledge         400 ugf         ND	Methyl tert-butyl ether (MTBE)	20 - 40 ug/l <sup>4</sup>	6.8	5.9	5.36	10.3	8.8	ND	ND	NT	9.7	5.6	11.9	8.0	11.2	10.7	15.7	7.2	8.2	9.0	12.0	7.4	2.1
matery         regr         <	Methyl iodide	4000 ug/f	ND	ND	ND ND	ND	ND	ND	ND ND	NT	ND	ND ND	ND ND	ND	ND	ND	ND	ND	ND ND	ND ND	ND	ND	ND
Styrene         100 ug1         ND         ND         ND         ND         4.9         ND	4-Methyl-2-pentanone	ug/l	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2.3-Trichloropropane       40 ug/f       ND	Styrene	100 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	4.9	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Viny accested       410 ug/f       ND	1,2,3-Trichloropropane	40 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Two the variant and senting uses along years the variation 2000 fillottimum (out)       = Exceeded MCL         1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories       = Exceeded MCL         2. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories       = Exceeded MCL         3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories       =         4. Threshold value given is the Polininary Remedial Goal (PRC) for tap water, as provided in the October 2002 USEPA Region 9 PROS Table 2002 Update       =         6. Constituent concentration was reported above its bloardowr them dotection in the Drinking Water Standards and Health Advisories       =         6. Constituent concentration was reported above its bloardowr them to October 2002 USEPA Region 9 PROS Table 2002 Update       =         6. Constituent concentration was reported above its bloardowr them to October 2002 USEPA Region 9 PROS Table 2002 Update       =         Nighter than previous reporting limits. Therefore, to be consistent with historical dates on the historical reporting limit were reported as non-detect.       =         No threshold value has been convided for nameters and badvised above       =       =	Vinyl acetate	410 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories 3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories 4. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories 5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update 6. Constituent concentration was reported advects to laboratory reporting limit and historical reporting limit. Therefore, to be consistent with historical data, only those constituents with concentration was reporting limits. Therefore, to be consistent with historical data, only those constituents with concentration was reported advects. Distributed abs been provided for parameters not identified in the sources listend advector material advisories 1. Threshold walue has been provided for parameters not identified in the sources listend advector material advisories 2. Threshold walue given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update 3. Constituent concentration was reported advector. 3. Threshold walue given is the provide steporting limit the sources listend with historical date, only those constituents with concentration was reported as non-detect. 3. Threshold walue has been provided for parameters not identified in the sources listend advector material advectore material advector material advector material advector material	1. Threshold value given is the Max	kimum Contamina	nt Level (N	e 2005 m ICL) as pi	rovided in	the USEP	A 2004 Edit	ion of the	Drinking W	ater Stan	dards and H	lealth Adv	isories									= Exceeded	MCL
3. Intersolv avue given is the secondary umking Water Kequilation (SUWK) as provided in the USEP A2044 Edition of the Dimking Water Standards and Health Advisories 4. Threshold value given is the Dimking Water Advisory as provided in the USEP A2044 Edition of the Dimking Water Standards and Health Advisories 5. Threshold value given is the Dreliminary Remedial Goal (PRC) for tap water, as provided in the October 2002 USEPA Region 9 PRCs Table 2002 Update 6. Constituent concentration was reported advection in the USEP Advisories 6. Constituent concentration was reported advection limit, but over than its laboratory method health Istoriar approximation in the story as observation and historiar largoriting limit. Therefore, to be consistent with historical data, only those constituents with concentration was reporting limits. Therefore, to be consistent with historical data, only those constituents with concentration was reported abvects. 1. No threshold value has been provided for parameters not identified in the sources listed advect. 1. No threshold value has been provided for parameters not identified in the sources listed advect. 2. No threshold value has been provided for parameters not identified in the sources listed advect. 2. No threshold value has been provided for parameters not identified in the sources listed advect. 3. No threshold value has been provided for parameters not identified in the sources listed advect. 3. No threshold value has been provided for parameters not identified in the sources listed advect. 3. No threshold value has been provided for parameters not identified in the sources listed advect. 3. No threshold value has been provided for parameters not identified in the sources listed advect. 3. No threshold value has been provided for parameters not identified in the sources listed advect. 3. No threshold value has been provided for parameters not identified in the sources listed advect. 3. No threshold value has been provided for parameters not identified in the sources listed adv	2. Threshold value given is the lifeti	ime health advisor	ry as provid	ded in the	USEPA 2	004 Editio	of the Drir	king Wate	er Standard	is and He	alth Advisori	ies											
5. Threshold value given is the Preliminary Remedial Goat (PRC) for tay water, as provided in the October 2002 UpCate 6. Constituent concentration was reported above its bloarcatory method detection limit, bloarcatory reporting limit and historical reporting limit, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentration was the historical reporting limit were reported as non-detect. No threshold value has been provided for parameters not identified in the sources listed above.	<ol> <li>Inreshold value given is the Sec</li> <li>Threshold value given is the Drin</li> </ol>	ondary Drinking V king Water Advis	vater Regu ory as prov	uiation (SI vided in th	UWR) as j ie USEPA	provided in 2004 Editi	the USEP/ on of the D	a 2004 Ed rinking Wa	ition of the ater Standa	Urinking Irds and H	vvater Stand lealth Adviso	ards and ories	Health Adv	sories									
6. Constituent concentration was reported advow its taboratory method detection limit, but lower than its taboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect. No threshold value has been provided for parameters not identified in the sources listed advow.	5. Threshold value given is the Prel	liminary Remedial	Goal (PR	G) for tap	water, as	provided in	the Octobe	r 2002 US	EPA Regi	on 9 PRG	s Table 200	2 Update											
No threshold value has been provided for parameters not identified in the sources listed days	<li>b. Constituent concentration was re higher than previous reporting ling</li>	ported above its la hits. Therefore to	aboratory r	nethod de tent with H	tection lim	ata, only th	r than its lai	poratory re uents with	eporting lim	it and hist	orical reporti r than histori	ing limit. H	nowever, th	e reporting	umit this ro	ound was s etect.	ignificantly						
	No threshold value has been provid	led for parameters	not identif	fied in the	sources li	sted above							J										



Parameter	Threshold Value	MAR '18	DEC '17	SEP '17	<u>JUN '17</u>	MAR '17	DEC '16	SEP '16	<u>JUN '16</u>	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	<u>JUN '14</u>	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	1 JUN '11	MAR '11	DEC '10	SEPT '10	JUN '10
Antimony	0.006 mg/L1	ND	0.0210	ND	0.0010	0.0250	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	ND	ND	ND	0.0100	0.0600	ND	ND	ND	ND
Arsenic	0.010 mg/L1	ND	0.0050	ND	0.0090	ND	ND	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0300	ND	ND	ND	ND
Barium	2 mg/L <sup>1</sup>	0.0170	0.0240	0.0260	0.0240	0.0410	0.0260	0.0670	0.0360	0.0200	0.0260	0.0250	0.0190	0.0600	0.0160	0.0210	0.0120	0.0140	0.0130	0.0150	0.0080	0.0130	0.0180	0.0170	0.0160	0.0160	0.0100	0.0280	0.0130	0.0113	0.0151	0.0156	0.0094
Beryllium	0.004 mg/L	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND*	ND	ND
Chromium	0.005 mg/L <sup>1</sup>	ND	ND	0.0030	0.0010	0.0010	ND	0.0180	0.0130	ND	0.0020	ND	ND	ND	ND	0.0020	0.0020	0.0020	0.0010	0.0020	ND	0.0020	ND	ND	ND	0.0010	ND	ND	ND	ND <sup>6</sup>	ND <sup>4</sup>	0.0014	0.0025
Cobalt	0.73 mg/L <sup>5</sup>	ND	ND	0.0020	ND	0.0020	ND	0.0090	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	0.0006	ND <sup>6</sup>	ND
Copper	1.3 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	0.0200	0.0150	ND	0.0330	ND	ND	ND	ND	ND	0.0020	0.0030	0.0060	0.0020	0.0010	ND	ND	ND	ND	0.0010	ND	0.0100	0.0400	ND	0.0013	ND	0.0019
Lead	0.015 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	0.0150	0.0120	ND	ND	0.0020	ND	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	0.0010	0.0010	0.0020	0.0020	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND	0.0012
Mercury	0.002 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	ND	ND
Selecture	0.05 mg/L	0.0200 ND	0.0170 ND	0.0140 ND	0.0090 ND	0.0140 ND	0.0070 ND	0.0220 ND	0.0130 ND	0.0060	0.0080	0.0040 ND	0.0060 ND	0.0040 ND	0.0040	0.0060 ND	0.0040	0.0040	0.0040	0.0050 ND	0.0020 ND	0.0040 ND	0.0050 ND	0.0040 ND	0.0030 ND	0.0050	0.0030	0.0070 ND	0.0110	0.0034 ND	0.0028 ND	0.0037 ND	0.0023 ND
Silver	0.1 mg/L <sup>2,3</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1350	ND	ND	ND	ND
Thallium	0.002 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22 mg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	0.0980	ND	0.1800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	0.26 mg/L <sup>5</sup>	ND	ND	0.0030	ND	0.0040	ND	0.0200	0.0200	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0057
Zinc	2 mg/L	0.0070 ND	0.0060 ND	0.0130 ND	0.0100 ND	0.0220 ND	ND ND	0.0500 ND	0.0420 ND	ND	ND	0.0050 ND	0.0070 ND	ND	ND	ND	ND	ND	ND	ND	0.0080	0.0100 ND	ND	ND	0.0080 ND	0.0070 ND	0.0080 ND	0.0160 ND	ND	0.0170 ND	0.0147 ND	0.0151 ND	0.0130 ND
Aprylonitrile	0.039 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform Contrast disabilities	80 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	80 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80 µg/L'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromosthane (EDB)	0.2 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2-Dichlorobenzene	600 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	-Bocharoentame 5 igal NO																																
cis-1.2-Dichloroethene	чалаластиятт зида, по																																
trans-1,2-Dichloroethene	2achorembrane 7 изц <sup>11</sup> NO															ND																	
1,2-Dichloropropane	120-016/00044mme 70 usli <sup>1</sup> NO															ND																	
cis-1,3-Dichloropropene																																	
trans-1,3-Dichloropropene	μg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene Methyl hutul ketope/2-Mexanope)	160 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 µg/L'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone) Methyl iodide	4000 µg/L	ND	ND	ND	ND	ND	ND ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	μg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 µg/L	ND	ND	ND	ND	ND	ND ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.1.1-Trichloroethane	200 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroflouromethane	2000 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl abetate Vinyl chloride	410 μg/L 2 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L <sup>4</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	= Exce	eded MCL																															
1. Threshold value given is the Max	ximum Contamin	ant Level	(MCL) as	provided	in the US	SEPA 200	4 Edition	of the Dri	inking W	ater Stan	dards and	i Health A	Advisorie	в																			
2. Threshold value given is the lifet	lime health advis	ory as pro	vided in th	e USEP/	2004 E	dition of th	ne Drinki	ing Water	- Standard	is and He	alth Advi:	sories																					
3. Threshold value given is the Sec	condary Drinking	Water Re	gulation (	SDWR) a	s provide	ed in the l	JSEPA 2	2004 Editio	on of the	Drinking	Nater Sta	andards a	and Healt	h Advisor	ies																		
4. Threshold value given is the Drin	nking Water Adv	isory as pi	ovided in	the USE	PA 2004	Edition of	the Drin	king Wate	r Standa	rds and H	lealth Ad	visories																					
5. Threshold value given is the Pre	liminary Remedi	al Goal (Pl	RG) for ta	p water, a	as provide	ed in the (	October	2002 USE	PA Regi	on 9 PRG	s Table 2	002 Upd	ate																				
6. Constituent concentration was re	eported above it:	s laborator	y method	detection	limit, bu	t lower the	an its lat	poratory re	porting li	mit and h	istorical r	eporting I	imit.																				
However, the reporting limit this	round was signif	ficantly hig	her than p	revious r	eporting	limits. Th	erefore,	to be con	sistent w	ith histori	al data,	only thos	e																				
constituents with concentrations	lower than histo	prical report	ting limits	were rep	orted as	non-deter	st.																										

No threshold value has been provided for parameters not identified in the sources listed above

# TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-13 Concentration (Expressed in same units as Threshold Value)

Number      Nu	Parameter	Threshold	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	<u>JUN '16</u>	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	<u>JUN '14</u>	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	<u>JUN '11</u>	MAR '11	DEC '10	SEPT'10
Desc         Desc        Desc        Desc        Desc        Desc        Desc        Desc        Desc        Desc        Desc <td>Antimony</td> <td>0.006 mg/l 1</td> <td>ND</td> <td>0.0360</td> <td>ND</td> <td>0.0020</td> <td>0.0080</td> <td>ND</td> <td>0.0110</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>0.0050</td> <td>ND</td> <td>0.0100</td> <td>0.0200</td> <td>ND</td> <td>ND</td> <td>ND</td>	Antimony	0.006 mg/l 1	ND	0.0360	ND	0.0020	0.0080	ND	0.0110	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	0.0200	ND	ND	ND
NameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNameNam	Amenic	0.010 mg/l 1	0.0070	0.0300 ND	0.0050	0.0200	0.0080	ND	0.0110	ND	0.0190	0.0100	0.0110	0.0070	0.0040	0.0200	0.0070	0.0000	0.0140	0.0160	0.0070	0.0080	0.0070	ND	ND	0.0060	0.0050	0.0050	0.0090	0.0200	0.0096	0.0094	0.0108
Depin         Depin <td>Barium</td> <td>2 mg/L<sup>1</sup></td> <td>0.1150</td> <td>0.0970</td> <td>0.0460</td> <td>0.0860</td> <td>0.1080</td> <td>0.0990</td> <td>0.1830</td> <td>0.0890</td> <td>0.1700</td> <td>0.0910</td> <td>0.0870</td> <td>0.0900</td> <td>0.0890</td> <td>0.1400</td> <td>0.0870</td> <td>0.0700</td> <td>0.1180</td> <td>0.0780</td> <td>0.0650</td> <td>0.0690</td> <td>0.0750</td> <td>0.0770</td> <td>0.0760</td> <td>0.0720</td> <td>0.0760</td> <td>0.0650</td> <td>0.0760</td> <td>0.0800</td> <td>0.0912</td> <td>0.0817</td> <td>0.0807</td>	Barium	2 mg/L <sup>1</sup>	0.1150	0.0970	0.0460	0.0860	0.1080	0.0990	0.1830	0.0890	0.1700	0.0910	0.0870	0.0900	0.0890	0.1400	0.0870	0.0700	0.1180	0.0780	0.0650	0.0690	0.0750	0.0770	0.0760	0.0720	0.0760	0.0650	0.0760	0.0800	0.0912	0.0817	0.0807
	Beryllium	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cadmium	0.005 mg/L <sup>1</sup>	0.0040	ND	0.0020	0.0030	0.0050	ND	0.0290	ND	0.0050	0.0040	0.0040	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	0.0020	ND	0.0004	0.0004	0.0004
Chan         Chan         Chan         Cond         Cond        Cond        Cond        Cond        Cond        Cond	Chromium	0.1 mg/L <sup>1</sup>	0.0020	0.0010	ND	0.0040	0.0030	ND	0.0330	0.0050	ND	0.0040	ND	ND	ND	0.0090	ND	0.0010	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND
Char      Char      Con	Cobalt	0.73 mg/L <sup>5</sup>	0.0130	0.0120	0.0070	0.0120	0.0140	0.0140	0.0280	0.0130	0.0150	0.0130	0.0120	0.0140	0.0160	0.0180	0.0110	0.0100	0.0120	0.0100	0.0090	0.0130	0.0120	ND	0.0100	0.0130	0.0120	0.0110	0.0120	0.0090	0.0192	0.0156	0.0138
Lat         Lat        Lat        Lat <thlat< th=""> <thlat< th=""> <thlat< th=""></thlat<></thlat<></thlat<>	Copper	1.3 mg/L <sup>1</sup>	ND	ND	ND	0.0100	ND	ND	0.0900	ND	0.0060	ND	0.0020	ND	0.0050	0.0730	0.0050	0.0050	0.0080	0.0230	0.0030	0.0050	ND	ND	ND	0.0060	0.0040	0.0020	0.0090	0.0300	0.0028	0.0018	0.0027
matrix         1         matrix         matrix         1         matrix       matrix       matrix </td <td>Lead</td> <td>0.015 mg/L</td> <td>0.0020</td> <td>ND</td> <td>ND</td> <td>0.0010</td> <td>ND</td> <td>0.0070</td> <td>0.0350</td> <td>0.0190</td> <td>ND</td> <td>ND</td> <td>0.0020</td> <td>0.0030</td> <td>0.0030</td> <td>0.0170</td> <td>0.0040</td> <td>0.0040</td> <td>0.0070</td> <td>0.0020</td> <td>0.0020</td> <td>0.0030</td> <td>0.0020</td> <td>0.0020</td> <td>0.0020</td> <td>ND</td> <td>0.0020</td> <td>ND</td> <td>0.0040</td> <td>0.0130</td> <td>0.0015</td> <td>ND</td> <td>ND</td>	Lead	0.015 mg/L	0.0020	ND	ND	0.0010	ND	0.0070	0.0350	0.0190	ND	ND	0.0020	0.0030	0.0030	0.0170	0.0040	0.0040	0.0070	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	ND	0.0020	ND	0.0040	0.0130	0.0015	ND	ND
Image	Mercury	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND"	ND
math         math <th< td=""><td>NICKEI Selenium</td><td>0.1 mg/L</td><td>0.0120 ND</td><td>0.0290</td><td>0.0060</td><td>0.0120</td><td>0.0350</td><td>0.0140</td><td>0.0465</td><td>0.0130</td><td>0.0130</td><td>0.0120</td><td>0.0120 ND</td><td>0.0130</td><td>0.0130</td><td>0.0220</td><td>0.0110</td><td>0.0100</td><td>0.0120</td><td>0.0100</td><td>0.0090</td><td>0.0100</td><td>0.0100</td><td>0.0100</td><td>0.0100</td><td>0.00110</td><td>0.0100</td><td>0.0090</td><td>0.00110</td><td>0.0060</td><td>0.0141</td><td>0.012/</td><td>0.0121 ND</td></th<>	NICKEI Selenium	0.1 mg/L	0.0120 ND	0.0290	0.0060	0.0120	0.0350	0.0140	0.0465	0.0130	0.0130	0.0120	0.0120 ND	0.0130	0.0130	0.0220	0.0110	0.0100	0.0120	0.0100	0.0090	0.0100	0.0100	0.0100	0.0100	0.00110	0.0100	0.0090	0.00110	0.0060	0.0141	0.012/	0.0121 ND
Descr         Descr <th< td=""><td>Silver</td><td>0.1 mg/L<sup>2,3</sup></td><td>ND</td><td>ND</td><td>0.0020</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>0.0350 ND</td><td>ND</td><td>ND</td><td>ND</td><td>0.0000</td><td>ND</td><td>0.0050</td><td>0.00120</td><td>0.0030</td><td>0.0020</td><td>ND</td><td>0.0400</td><td>0.0010</td><td>ND</td><td>0.0020</td><td>0.0040</td><td>0.0020</td><td>ND</td><td>0.0030</td><td>0.0340</td><td>ND</td><td>ND</td><td>ND</td></th<>	Silver	0.1 mg/L <sup>2,3</sup>	ND	ND	0.0020	ND	ND	ND	ND	ND	0.0350 ND	ND	ND	ND	0.0000	ND	0.0050	0.00120	0.0030	0.0020	ND	0.0400	0.0010	ND	0.0020	0.0040	0.0020	ND	0.0030	0.0340	ND	ND	ND
The         The         No         No        No        No        No        No        No        No        No	Thalium	0.002 mg/L <sup>1</sup>	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Visual wit         Visual wit        Visual wit       Visual wit	Tin	22 mg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	0.2800	0.1100	ND	0.0120	ND	ND	0.0010	ND	ND	ND	0.0170	0.0400	0.0090	0.0180	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	ND
Desc         Desc        Desc        Desc        Desc        Des	Vanadium	0.26 mg/L <sup>5</sup>	ND	0.0020	ND	ND	ND	0.0060	0.0390	0.0030	ND	ND	ND	ND	ND	0.0130	0.0020	ND	0.0010	0.0040	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	0.0200	ND	ND	ND
Actor         B         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C        C        C        C        C	Zinc	2 mg/L <sup>2,3</sup>	0.0170	0.0070	0.0070	0.0200	0.0170	ND	0.1300	0.0130	0.0060	ND	0.0070	ND	ND	0.0470	ND	ND	0.0090	ND	ND	0.0110	0.0100	ND	ND	0.0230	0.0050	0.0050	0.0090	ND	0.0178	0.0092	0.0098
Addepart	Acetone	610 μg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Acrylonitrile	0.039 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barrow         Barrow        Barrow        Barrow <td>Benzene</td> <td>5 µg/L1</td> <td>ND</td> <td>ND<sup>o</sup></td> <td>ND</td> <td>ND</td>	Benzene	5 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>o</sup>	ND	ND
aligned         bit	Bromochloromethane	80 µg/L*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
matrix         matrix         No         No        No       No <t< td=""><td>Bromodichloromethane (THM)</td><td>90 µg/L</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td></t<>	Bromodichloromethane (THM)	90 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b         b	Carbon disulfide	1000 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
consistential         consiste	Carbon tetrachloride	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
choores         4.4         victor         No         No        No         No       No </td <td>Chlorobenzene</td> <td>100 µg/L<sup>1</sup></td> <td>5.40</td> <td>ND</td> <td>5.23</td> <td>5.03</td> <td>6.8</td> <td>ND</td> <td>5.5</td> <td>2.5</td> <td>6.6</td> <td>7.4</td> <td>63</td> <td>6.1</td> <td>7.4</td> <td>8.1</td> <td>ND</td> <td>7.1</td> <td>7.2</td> <td>6.4</td> <td>22</td> <td>3.9</td> <td>6.8</td> <td>63</td> <td>1.6</td> <td>4.2</td> <td>67</td> <td>6.5</td> <td>6.0</td> <td>37</td> <td>6.2</td> <td>5.6</td> <td>5.9</td>	Chlorobenzene	100 µg/L <sup>1</sup>	5.40	ND	5.23	5.03	6.8	ND	5.5	2.5	6.6	7.4	63	6.1	7.4	8.1	ND	7.1	7.2	6.4	22	3.9	6.8	63	1.6	4.2	67	6.5	6.0	37	6.2	5.6	5.9
Choole         Object         No         NO        NO       NO </td <td>Chloroethane</td> <td>4.6 µg/L<sup>5</sup></td> <td>ND</td> <td>1.1</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td>1.3</td>	Chloroethane	4.6 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	1.3
Cheensembane         Cheensembane         Cheense	Chloroform	80 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-Decompare (BEC)         0.2         a.d.         No         No        No         No       No	Chlorodibromomethane (THM)	80 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2-Decomparisment (ED) 1.2-DEC 1.2-DEC 1.2-DEC 1.2-DE	1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2.Decisessmane         60         90 <sup>1</sup> N0         ND         ND       ND	1,2-Dibromoethane (EDB)	0.05 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1         1         1         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N	1,2-Dichlorobenzene	600 µg/L1	ND	ND	1.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sind         No         No        No         No        No<	1,4-Dichlorobenzene	75 µg/L	ND	ND	1.11 ND	ND	ND	ND	ND	ND	ND	ND	1.4 ND	1.2 ND	1.3 ND	ND	ND	1.4 ND	ND	ND	ND	ND	1.0 ND	1.2 ND	ND	ND	1.2 ND	ND	1.4 ND	1.0 ND	ND	1.1 ND	1.2 ND
12-02-03-03-03         5 ard.         ND         ND        ND	1 1-Dichlomethane	5 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-1-0-classingline         7         as1         ND         ND        ND	1.2-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bit         bit         N0         N0        N0        N0         N0<	1.1-Dichloroethylene	7 ug/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
non-12-Dictactorestandeme         100         infl         N0         N0        N0         N0 <th< td=""><td>cis-1,2-Dichloroethene</td><td>70 µg/L1</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td></th<>	cis-1,2-Dichloroethene	70 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2-Deck         1.2-Deck         No         No        No         No        No	trans-1,2-Dichloroethene	100 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ciri 1-3-0-0it         mote         N0         N0        N0	1,2-Dichloropropane	5 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
interin-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3	cis-1,3-Dichloropropene	µq/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ehylestructer         Total         NO         ND         ND        ND	trans-1,3-Dichloropropene	μα/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mathy batch	Ethylbenzene	700 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
absolute         bit         visit         No	Methyl butyl ketone(2-Hexanone)	160 µg/L <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Debugger         Object         ND         ND        ND	Stomomethane	10 µg/L 20 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methydepication:         Net         No         No        No	Dibromomethane	61 ug/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methy identify         Bub         No	Methylene chloride	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methy loades         upl         ND	Methyl ethyl ketone(2-Butanone)	4000 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
444.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84%         244.84% <t< td=""><td>Methyl iodide</td><td>µg/L</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td>ND</td></t<>	Methyl iodide	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sympleme         100         ind <sup>1</sup> ND	4-Methyl-2-pentanone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.1.12-freededware       70       uol-12       ND       <	Styrene	100 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2:4:finationsettaine       0.3; ioit       ND       ND <td>1,1,1,2-Tetrachloroethane</td> <td>70 µg/L*</td> <td>ND</td>	1,1,1,2-Tetrachloroethane	70 µg/L*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Instrumentation         Instrumentation         No         <	1,1,2,2-Tetrachloroethane	0.3 µg/L <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Teluese	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11.2 Tradiscipationamic frame       5 (p1)       ND       ND </td <td>1 1 1.Trichlomethane</td> <td>200 ug/L</td> <td>ND</td>	1 1 1.Trichlomethane	200 ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Techstandyment (CE) 5 und 1 NO	1 1 2-Trichloroethane	5 ug/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Techstrokommentane         2000         inft         ND         ND<	Trichloroethylene(TCE)	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12.3-Tricholograppine 44 usl <sup>2</sup> ND	Trichloroflouromethane	2000 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Virgitability         ND	1,2,3-Trichloropropane	40 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Very debides 2 ust 1 ND	Vinyl acetate	410 μg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes         10000 ig9L <sup>1</sup> ND         ND <td>Vinyl chloride</td> <td>2 μg/L<sup>1</sup></td> <td>ND</td>	Vinyl chloride	2 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl terhoutyl ether (MTBE) 20-40 µoL ND NO 3.70 3.53 6.1 ND 3.6 2.6 4.1 4.9 3.2 5.2 4.5 2.9 NO 4.2 5.0 5.4 3.3 3.3 5.0 4.5 2.8 3.8 4.5 2.8 4.7 3.2 7.9 3.8 3.4	Xylenes	10000 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Methyl tert-butyl ether (MTBE)	20-40 µ9/L*	ND	ND	3.70	3.53	6.1	ND	3.6	2.6	4.1	4.9	3.2	5.2	4.5	2.9	ND	4.2	5.0	5.4	3.3	3.3	5.0	4.5	2.8	3.8	4.5	2.8	4.7	3.2	7.9	3.8	3.4

Threshold value given is the Maximum Contaminant Level (MCI) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Maximum Contaminant Level (MCI) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Sociatory Dhinking Water (Standards and Health Advisories
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 Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
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 Threshold value given is the Drinking Mater Advisory as provided in the USEPA 2004 Edition of the Drinking Water Advisories
 Threshold value given is the Drinking Mater Advisory as provided in the USEPA 2004 Edition of the Drinking Water Advisories
 Constituent concentration was reported above is blocmotry method detection limit, but were than the short advisory approving limit and historical data, only those
 constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-14 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	<u>JUN '16</u>	MAR '16	DEC '15	SEP '15	<u>JUN '15</u>	MAR '15	DEC '14	SEP '14	<u>JUN '14</u>	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10	JUN '10
Antimony	0.006 mg/L1	ND	0.0350	NT	0.0050	0.0410	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	0.0110	0.0170	ND	ND	NT	ND
Arsenic	0.010 mg/L1	ND	0.0030	NT	0.0200	0.0120	ND	NT	ND	0.0070	0.0050	0.0050	NT	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	NT	ND	ND	ND	0.0060	ND	0.0074	ND	NT	0.0070
Barium	2 mg/L <sup>1</sup>	0.2240	0.1990	NT	0.2400	0.2490	0.2290	NT	0.1380	0.1750	0.1980	0.1140	NT	0.2020	0.0910	NT	0.1570	0.1840	0.0790	NT	0.1440	0.1760	0.1370	NT	0.1750	0.1770	0.1470	0.1610	0.2100	0.2700	0.2030	NT	0.1900
Beryllium	0.004 mg/L1	ND	ND	NT	0.0030	ND	ND	NT	0.0010	0.0010	ND	0.0010	NT	ND	ND	NT	ND	ND	0.0010	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0010	NT	ND
Cadmium	0.005 mg/L'	0.0050	ND	NT	0.0050	0.0060	ND	NT	ND	0.0070	0.0080	0.0060	NT	ND	ND	NT	0.0050	0.0010	ND	NT	ND	0.0020	ND	NT	ND	0.0040	0.0030	0.0030	ND	ND"	ND"	NT	ND
Chromium	0.1 mg/L'	0.0060	0.0020	NT	0.0010	0.0020	ND	NT	0.0110	0.0030	0.0030	0.0170	NT	0.0050	0.0050	NT	0.0040	0.0010	0.0080	NT	ND	0.0050	ND	NT	ND	ND	ND	ND	ND	ND	0.0065	NT	0.0018
Cobait	0.73 mg/L	0.0140	0.0090	NI	0.0140	0.0130	0.0360	NI	0.0100	0.0100	0.0100	0.0120	IN I	0.0170	0.0120	NI	0.0080	0.0150	0.0120	NI	0.0080	0.0160	0.0370	NI	0.0140	0.0100	0.0100	0.0160	0.0090	0.0457	0.0261	NI	0.0130
Lopper	1.3 mg/L	0.0090	ND	NT	0.0170	ND	0.0200 ND	NT	0.0010	0.0010	ND	0.0170	NI	0.0100	0.0090	NT	0.0070	0.0050	0.0200	NT	0.0030	0.0080	0.0100	NT	0.0020	ND	0.0010	0.0090	ND	0.0049 ND	0.0140	NT	0.0050
Mercury	0.002 mg/l <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Nickel	0.1 mg/L <sup>2</sup>	0.0220	0.0320	NT	0.0220	0.0470	0.0400	NT	0.0160	0.0160	0.0170	0.0200	NT	0.0270	0.0180	NT	0.0150	0.0230	0.0200	NT	0.0120	0.0200	0.0350	NT	0.0190	0.0170	0.0150	0.0180	0.0180	0.0460	0.0407	NT	0.0170
Selenium	0.05 mg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	0.0350	0.0140	NT	ND	ND	0.0260	NT	ND	ND	ND	NT	0.0200	0.0310	0.0240	0.0300	ND	ND	ND	NT	ND
Silver	0.1 mg/L <sup>2,3</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	0.0040	NT	0.0020	ND	NT	0.0020	0.0020	ND	NT	ND	0.0020	ND	NT	ND	0.0040	ND	0.0050	ND	ND	ND	NT	ND
Thallium	0.002 mg/L <sup>1</sup>	0.0003	0.0003	NT	ND	ND	ND	NT	ND	ND	ND	0.0010	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	0.0010	ND	ND	ND	ND	NT	ND
Tin	22 mg/L <sup>5</sup>	ND	ND	NT	ND	ND	ND	NT	0.0350	ND	0.0070	0.0010	NT	ND	ND	NT	ND	0.0220	0.0180	NT	0.0310	ND	ND	NT	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	NT	ND
Vanadium	0.26 mg/L <sup>5</sup>	0.0070	0.0030	NT	0.0070	ND	ND	NT	0.0170	ND	ND	0.0140	NT	0.0080	0.0050	NT	0.0050	0.0020	0.0080	NT	0.0030	0.0060	ND	NT	ND	ND	ND	ND	0.0290	ND	0.0063	NT	0.0028
Zinc	2 mg/L**	0.0480	0.0160	NT	0.0600	0.0230	0.0300	NT	0.0280	0.0170	0.0140	0.0680	NT	0.0240	0.0190	NT	0.0070	0.0100	0.0310	NT	0.0120	0.0310	0.0210	NT	0.0160	0.0070	0.0070	0.0270	ND	0.0453	0.0570	NT	0.0094
Acetone	610 µg/L	ND	ND	NI	ND	6.9	ND	NI	ND	ND	ND	ND	IN I	ND	ND	NI	ND	ND	ND	NI	6.4	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	NI	ND
Acrytonistie Bestene	0.039 µg/L	ND	ND	NT	3.2	4.1	ND	NT	2.7	3.1	2.0	2.0	NI	2.5	ND	NT	3.2	26	ND	NT	2.9	4.3	1.0	NT	1.8	3.5	ND 3.6	4.1	2.1	3.7	1.7	NT	2.6
Bromochloromethane	80 µg/l <sup>2</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromodichloromethane (THM)	90 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromoform	80 µg/L1	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon disulfide	1000 µg/L <sup>5</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon tetrachloride	5 µg/L1	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chlorobenzene	100 µg/L <sup>1</sup>	10.8	ND	NT	13.42	15.6	ND	NT	12.5	13.5	15.4	10.7	NT	16.7	5.3	NT	15.7	15.7	3.2	NT	11.3	19.1	8.0	NT	7.0	14.3	14.6	16.5	7.1	15.3	6.1	NT	14.0
Chloroethane	4.6 µg/L <sup>5</sup>	ND	ND	NT	2.27	ND	ND	NT	3.3	ND	2.0	1.5	NT	ND	ND	NT	ND	ND	ND	NT	ND	2.5	ND	NT	ND	1.4	2.4	ND	1.6	1.3	ND	NT	3.0
Chloroform	80 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chlorodibromomethane (THM)	80 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1.2-Dibromoethane (EDB)	0.05 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1.2-Dichlorobenzene	600 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1.4-Dichlorobenzene	75 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	1.8	ND	ND	2.2	NT	3.3	ND	NT	3.4	ND	ND	NT	2.2	2.9	1.8	NT	1.4	2.7	2.2	3.2	1.8	2.7	1.9	NT	3.0
trans-1,4-Dichloro-2-butene	µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethane	5 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloroethane	5 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethylene	7 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,2-Dichloroethene	70 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,2-Dichloroethene	100 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloropropane	5 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1 3-Dichloropropene	µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Ethylbenzene	700 ug/l <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl butyl ketone(2-Hexanone)	160 µg/L <sup>5</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromomethane	10 µg/L <sup>2</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chloromethane	30 µg/L <sup>2</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Dibromomethane	61 µg/L <sup>5</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methylene chloride	5 µg/L'	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L*	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl iodide	µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
4-metriy-2-peritarione	400 uml 1	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	AUT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	AUT	ND
1 1 1 2-Tetrachloroethane	70 µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1.1.2.2-Tetrachloroethane	0.3 µg/L <sup>2</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Tetrachloroethylene(PCE)	5 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Toluene	1000 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1-Trichloroethane	200 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2-Trichloroethane	5 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Trichloroethylene(TCE)	5 µg/L <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Trichloroflouromethane	2000 µg/L <sup>2</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2,3-Trichloropropane	40 µg/L*	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
vinyi autorate	410 μg/L <sup>-</sup> 2 μg/l <sup>-1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Xvienes	10000 ug/l <sup>1</sup>	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L <sup>4</sup>	9.4	ND	NT	7.08	16.5	ND	NT	67	77	12.3	6.9	NT	11.2	17	NT	6.6	14.8	43	NT	6.9	11.9	11.0	NT	7.5	84	6.6	12.4	7.0	16.3	12.3	NT	53
							-				2.00								14			110								1.0			

 Methy terbund ether (MTBE)
 20-40 yolk
 8.4
 ND
 NT
 6.7
 7.7
 7.12
 6.8
 NT
 1.12

 1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Diriking Water Standards and Health Advisories
 2.
 Threshold value given is the Kellen health advisory as provided in the USEPA 2004 Edition of the Diriking Water Standards and Health Advisories
 3.

 3. Threshold value given is the Scoodary Diriking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Diriking Water Standards and Health Advisories
 4.

 3. Threshold value given is the Diriking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Diriking Water Standards and Health Advisories
 5.

 4. Threshold value given is the Diriking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Diriking Water Standards and Health Advisories
 6.

 5. Threshold value given is the Diriking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Diriking Water Standards and Health Advisories
 6.

 6. Constituent concentration was reported above is taboratory method detection limit, but over than its baboratory reporting limit. Therefore, the constituent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above NT = Not Tested due to dry conditions at well.

TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPEDDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-15 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value	MAR '18	DEC '17	SEP '17	<u>JUN '17</u>	MAR '17	DEC '16	SEP '16	<u>JUN '16</u>	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	<u>JUN '14</u>	MAR '14	DEC '13	SEPT '13	<u>JUN '13</u>	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	<u>JUN '11</u>	MAR '11	DEC '10	SEPT '10	JUN '10
Antimony	0.006 mg/L <sup>1</sup>	ND	0.0300	ND	0.0020	0.0340	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	0.0070	0.0060	0.0400	ND	ND	ND	ND	ND
Arsenic	0.010 mg/L1	0.0200	0.0200	0.0300	0.0300	ND	ND	0.0700	0.0130	0.0320	0.0170	ND	ND	0.0160	ND	0.0350	ND	ND	0.0050	0.0280	0.0130	0.0180	0.0040	0.0300	ND	ND	0.0110	ND	ND	0.0023	0.0338	0.0362	ND
Barium	2 mg/L'	0.1280	0.1240	0.0850	0.0890	0.1230	0.1560	0.3100	0.0600	0.1130	0.1840	0.1390	0.2230	0.1260	0.1350	0.1060	0.1810	0.1180	0.1340	0.0750	0.1510	0.1550	0.1340	0.1010	0.2360	0.2350	0.1620	0.1930	ND 0.00F0	0.1890	0.1260	0.1110 ND <sup>6</sup>	0.2900
Cadmium	0.005 mg/L <sup>1</sup>	0.0090	ND	0.0100	0.0050	0.0100	0.0050	0.0460	ND	0.0100	0.0080	0.0070	ND	ND	ND	ND	0.0100	0.0010	ND	0.0010	ND	0.0040	ND	0.0020	ND	0.0060	0.0010	0.0040	ND	ND	ND <sup>6</sup>	ND <sup>6</sup>	ND
Chromium	0.1 mg/L1	ND	ND	0.0030	ND	0.0020	ND	0.1180	0.0020	0.0010	0.0050	0.0020	0.0010	ND	ND	0.0030	0.0030	0.0030	ND	ND	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND <sup>6</sup>	0.0018	0.0018
Cobalt	0.73 mg/L <sup>5</sup>	0.0100	0.0090	0.0180	0.0130	0.0040	ND	0.2300	0.0080	0.0180	0.0070	0.0040	0.0020	0.0120	ND	0.0190	0.0020	ND	0.0010	0.0140	0.0100	0.0060	0.0020	0.0170	0.0030	0.0040	0.0090	0.0020	ND	0.0039	0.0185	0.0244	0.0017
Copper	1.3 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	0.1400	ND	ND	ND	ND	ND	0.0020	ND	ND	0.0080	0.0040	0.0240	0.0050	0.0060	0.0060	ND	ND	ND	0.0030	0.0040	0.0100	0.2400	ND	0.0012	0.0059	0.0028
Lead	0.002 mg/L	0.0020 ND	ND	ND	0.0020 ND	ND	0.0050 ND	0.1350 ND	0.0140 ND	ND	ND	ND	0.0040 ND	0.0020 ND	0.0040 ND	0.0110 ND	0.0040 ND	0.0020 ND	0.0030 ND	0.0020 ND	0.0050 ND	0.0050 ND	0.0030	0.0050 ND	0.0020 ND	0.0020 ND	0.0010 ND	0.0030 ND	ND	ND	0.0025 ND	0.0025 ND	0.0013 ND
Nickel	0.1 mg/L <sup>2</sup>	0.0200	0.0510	0.0350	0.0240	0.0520	0.0110	0.6610	0.0140	0.0290	0.0170	0.0100	0.0110	0.0180	0.0080	0.0330	0.0120	0.0070	0.0110	0.0230	0.0190	0.0150	ND	0.0270	0.0110	0.0130	0.0160	0.0090	0.0140	0.0086	0.0374	0.0396	0.0097
Selenium	0.05 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0220	ND	ND	ND	ND	0.0160	ND	ND	ND	ND	0.0100	0.0120	0.0180	0.0110	0.0190	0.0400	ND	ND <sup>6</sup>	ND	ND
Silver	0.1 mg/L <sup>2,3</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0030	0.0020	0.0150	0.0030	0.0030	0.0050	0.0020	0.0030	0.0030	ND	0.0040	ND	0.0050	ND	0.0050	ND	ND	ND <sup>6</sup>	ND <sup>6</sup>	ND
Thallium	0.002 mg/L	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND ND <sup>6</sup>	ND ND <sup>6</sup>	ND ND <sup>6</sup>	ND
Vapadium	0.26 mg/l <sup>5</sup>	0.0060	0.0040	0.0110	ND	ND	0.0150	0.1560	0.0050	ND	0.0470 ND	0.0020	ND	0.0040	0.0050	0.0060	0.0040	0.0270	0.0780	0.0210	0.0400	0.0040	0.0040	0.0030	0.0030	0.0020	0.0020	ND	0.0160	ND	0.0012	0.0023	0.0023
Zinc	2 mg/L <sup>2,3</sup>	0.0210	0.0100	0.0300	0.0200	0.0140	ND	0.9700	ND	0.0120	0.0150	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	0.0150	0.0200	ND	0.0280	0.0090	0.0120	0.0060	0.0170	ND	0.0181	0.0012	0.0227	ND
Apetone	610 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	5.2	ND	ND	6.7	ND	ND	ND	ND	ND	ND	5.6	ND	ND	ND	18.6	ND	ND	ND	ND	ND	ND	ND	6.8	ND	ND	ND
Acrylonitrile	0.039 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 µg/L'	ND	ND	3.59	2.83	ND	ND	3.4	3.2	2.1	3.2	1.7	2.0	2.8	2.8	3.6	2.2	2.1	2.8	3.4	2.7	2.8	2.5	3.4	3.1	2.7	3.2	3.5	2.1	1.9	3.3	3.5	2.5
Bromochioromethane Bromodichloromethane (THM)	90 µg/l <sup>1</sup>	ND	ND	ND	ND	1.0 ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 µg/L'	17	15.2	18.19	21.26	17.4	21.5	16.0	16.8	17.7	18.3	21.0	21.1	19.7	26.9	19.0	27.0	25.0	32.5	18.9	14.3	20.0	29.0	15.5	12.4	16.9	15.8	25.0	11.8	23.1	19.8	16.9	12.0
Chloroform	4.6 µg/L 80 µg/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	2.8 ND	ND	1.9 ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1 ND	ND	ND	ND	ND	2.9 ND	1.4 ND
Chlorodibromomethane (THM)	80 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600 µg/L'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	1.0	1.3	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene trans-1.4-Dichloro-2-butene	/5 µg/L	ND	ND	2.51 ND	ND	1.6 ND	ND	ND	2.1 ND	ND	ND	3.4 ND	2.9 ND	3.0 ND	ND	ND	3.4 ND	ND	ND	Z1 ND	Z.3 ND	2.6 ND	3.2 ND	1.9 ND	1.9 ND	2.3 ND	1.5 ND	3.1 ND	Z1 ND	2.9 ND	2.4 ND	2.4 ND	2.1 ND
1,1-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene																																	
1 2 Dichloropropage	-2004-constrained - 2004-constrained - 2004-constra																																
cis-1,3-Dichloropropene	μg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 µg/L <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1 1 1-Trichlorpethane	200 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroflouromethane	2000 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40 µg/L <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl aberate Vinyl chloride	2 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	3.3	ND	ND	2.2	5.4	ND	ND	3.1	ND	6.1	2.0	3.9	ND	ND	6.5
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L <sup>4</sup>	ND	6.3	7.52	7.69	8.5	ND	7.9	7.9	6.8	7.8	6.7	12.2	7.1	4.2	6.0	9.4	5.4	7.7	8.3	10.3	6.1	3.9	8.8	9.5	9.5	5.5	7.5	7.1	7.9	6.1	7.6	5.7
	= Excee	eded MCL																															
1. Threshold value given is the Max	imum Contamina	ant Level (	(MCL) as	provided	in the US	SEPA 2004	4 Edition	of the Dri	nking W	ater Stan	dards and	Health /	Advisorie	s																			
2. Threshold value given is the lifeti	ime health advis	ory as pro	vided in th	he USEP/	2004 E	dition of th	ne Drinki	ng Water	Standar	ds and He	alth Advis	sories																					
3. Threshold value given is the Sec	ondary Drinking	Water Re	gulation (	SDWR) a	s provide	ed in the L	JSEPA 2	004 Editio	in of the	Drinking	Water Sta	andards a	and Healt	th Advisor	ies																		
4. Threshold value given is the Drin	iking Water Advi	isory as pr	rovided in	the USEI	PA 2004	Edition of	the Drini	king Wate	r Standa	ards and H	lealth Adv	/isories																					
5. Threshold value given is the Prel	liminary Remedia	al Goal (Pf	RG) for ta	p water, a	is provide	ed in the C	October 2	2002 USEI	PA Regi	ion 9 PRG	s Table 2	002 Upd	ate																				
6. Constituent concentration was re	aported above its	aborator	y method	detection	limit, bu	t lower that	an its lab	oratory re	porting I	limit and h	istorical r	eporting I	imit.																				
However, the reporting limit this	round was signifi	icantly hig	her than p	previous r	eporting	limits. Th	erefore,	to be cons	sistent w	vith histori	cal data, o	only thos	e																				
constituents with concentrations	lower than histo	rical repor	ting limits	were rep	orted as	non-detec	<b>:</b> t.																										

No threshold value has been provided for parameters not identified in the sources listed above

					TABLE 1 (CONT.)
		А	SUMM/ PPENDIX	A - CO	GROUNDWATER MONITORING RESULTS INSTITUENTS FOR DETECTION MONITORING
			Concent	ration (E	MONITORING WELL OW-16 Expressed in same units as Threshold Value)
Parameter	Three	shold lue	MAR '18	NOV '17	
Antimony	0.006	mg/L <sup>1</sup>	ND	ND	
Arsenic	0.010	mg/L1	ND	ND	
Barium	2	mg/L <sup>1</sup>	0.0190	0.1000	
Beryllium	0.004	mg/L'	ND	ND	
Chromium	0.005	mg/L mg/l <sup>1</sup>	0.0060	0.0050	
Cobalt	0.73	ma/L <sup>6</sup>	0.0050	0.0050	
Copper	1.3	mg/L <sup>1</sup>	ND	ND	
Lead	0.015	mg/L <sup>1</sup>	ND	ND	
Mercury	0.002	mg/L <sup>1</sup>	ND	ND	
Nickel	0.1	mg/L <sup>-</sup>	0.0100	0.0100	
Silver	0.05	mg/L mg/l <sup>2,3</sup>	0.0100 ND	0.0050 ND	
Thallium	0.002	ma/L <sup>1</sup>	0.0003	ND	
Tin	22	mg/L <sup>5</sup>	ND	ND	
Vanadium	0.26	mg/L <sup>5</sup>	ND	ND	
Zinc	2	mg/L <sup>2,3</sup>	0.024	0.0210	
Apetone	610	µg/L°	ND	ND	
Acrylonitrile	0.039	µg/L	ND	ND	
Bromochloromethane	80	ug/L <sup>2</sup>	ND	ND	
Bromodichloromethane (THM)	90	ug/L <sup>1</sup>	ND	ND	
Bromoform	80	μg/L <sup>1</sup>	ND	ND	
Carbon disulfide	1000	µg/L <sup>5</sup>	ND	ND	
Carbon tetrachloride	5	μg/L1	ND	ND	
Chlorobenzene	100	µg/L'	ND	ND	
Chloroform	4.6	µg/L	ND	ND	
Chlorodibromomethane (THM)	80	ug/L <sup>1</sup>	ND	ND	
1,2-Dibromo-3-chloropropane (DBCP)	0.2	µg/L <sup>1</sup>	ND	ND	
1,2-Dibromoethane (EDB)	0.05	μg/L <sup>1</sup>	ND	ND	
1,2-Dichlorobenzene	600	µg/L <sup>1</sup>	ND	ND	
1,4-Dichlorobenzene	75	µg/L'	ND	ND	
trans-1,4-Dichloro-2-butene 1.1-Dichloroethane	6	μg/L μg/l	ND	ND	
1.2-Dichloroethane	5	ug/L	ND	ND	
1,1-Dichloroethylene	7	μg/L <sup>1</sup>	ND	ND	
cis-1,2-Dichloroethene	70	μg/L <sup>1</sup>	ND	ND	
trans-1,2-Dichloroethene	100	μg/L1	ND	ND	
1,2-Dichloropropane	5	μg/L'	ND	ND	
cis-1,3-Dichloropropene		µg/L	ND	ND	
Ethylben rene	700	µg/L µg/1 <sup>1</sup>	ND	ND	
Methyl butyl ketone(2-Hexanone)	160	μg/L <sup>5</sup>	ND	ND	
Bromomethane	10	µg/L <sup>2</sup>	ND	ND	
Chloromethane	30	μg/L <sup>×</sup>	ND	ND	
Dibromomethane	61	μg/L <sup>5</sup>	ND	ND	
Methylene chloride	5	μg/L'	ND	ND	
Methyl ethyl ketone(2-Butanone)	4000	μg/L μg/L	ND	ND	
A-Methyl-2-pentanone		ug/l	ND	ND	
Styrene	100	ug/L <sup>1</sup>	ND	ND	
1,1,1,2-Tetrachloroethane	70	$\mu g/L^2$	ND	ND	
1,1,2,2-Tetrachloroethane	0.3	$\mu$ g/L <sup>2</sup>	ND	ND	
Tetrachloroethylene(PCE)	5	µg/L <sup>1</sup>	ND	ND	
Toluene	1000	µg/L'	ND	ND	
1,1,1-Inchloroethane	200	μg/L <sup>1</sup>	ND	ND	
Trichloroethylene(TCE)	5	ug/L <sup>1</sup>	ND	ND	
Trichloroflouromethane	2000	μg/L <sup>2</sup>	ND	ND	
1,2,3-Trichloropropane	40	µg/L <sup>2</sup>	ND	ND	
Vinyl acetate	410	μg/L <sup>5</sup>	ND	ND	
Vinyl chloride	2	µg/L'	ND	ND	
Xylenes	10000	µg/L'	ND	ND	
metnyi tert-butyl ether (MTBE)	20 - 40	µs/L	1.8	4.6	

<u>Methy technol whe (MTBE)</u>
<u>20.40 (wh<sup>2</sup>, 7.8 46</u>
<u>5 - Exceeded MUC)</u>
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No threshold value has been provided for parameters not identified in the sources listed above

# <u>ATTACHMENT NO. 3</u> HISTORICAL DETECTED METALS GRAPHS

#### Detected Appendix A Metals in OW-9 Tiverton Landfill



<sup>◆</sup>Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ◆Chromium +Cobalt -Copper -Lead Nickel ESelenium ▲Silver ×Thallium ×Tin ●Vanadium →Zinc -Mercury



TRUNCATED GRAPH

#### Detected Appendix A Metals in OW-7 Tiverton Landfill

**COMPLETE GRAPH** 



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel Selenium ■Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



#### **Detected Appendix A Metals in OW-12** Tiverton Landfill

**COMPLETE GRAPH** 



Beryllium Zinc Antimony Arsenic Barium \*Cadmium •Chromium +Cobalt •Copper -Lead •Nickel Selenium Silver Thallium ×Tin x Vanadium + Mercury



#### Detected Appendix A Metals in OW-13 Tiverton Landfill

**COMPLETE GRAPH** 



Antimony 
 Arsenic 
 ABarium × Beryllium × Cadmium 
 Chromium + Cobalt - Copper - Lead - Nickel 
 Selenium 
 Silver 
 AThallium × Tin × Vanadium 
 Zinc + Mercury



#### **Detected Appendix A Metals in OW-14** Tiverton Landfill



 Antimony ×Beryllium \*Cadmium •Chromium +Cobalt •Copper -Lead •Nickel Thallium ×Vanadium •Zinc + Mercury Arsenic Barium Selenium Silver ×Tin



Date

# Detected Appendix A Metals in OW-15 Tiverton Landfill

**COMPLETE GRAPH** 0.4 0.36 0.32 ۸ 0.28 Concentration (mg/L) 0.24 + 0.2 0.16 -0.12 0.08 0.04 0 JUNOS No Na Na Nã ß 0 0 ŝ 0 S 0 S 0 S 0 S 0 S Q S 0 1 S Δ 1  $O_{\kappa}$  $\mathcal{O}_{\mathsf{A}}$ 0 70 సి ζ5 6  $\tilde{\mathcal{A}}$  $Q_c$ c7, Z. '3 6 6 6 6 '.< Date

> Bervllium Arsenic Barium \*Cadmium •Chromium +Cobalt •Copper -Lead •Nickel Selenium Silver Thallium ×Tin × Vanadium Zinc + Mercurv Antimony



#### Detected Appendix A Metals at Surface Water Sampling Location SW-1 Tiverton Landfill



Ars \*Cadmium 
Chromium +Cobalt 
Copper 
Lead Nickel Selenium Silver Thallium ×Tin × Vanadium Zinc + Mercury Antimony nic Barium Beryllium







 Chromium + Cobalt • Copper - Lead Nickel Selenium Zinc + Mercury \* Cadmium Silv Thallium Tin Van



#### Detected Appendix A Metals at Surface Water Sampling Location SW-3 Tiverton Landfill



♦Antimony ■Arsenic ▲Barium ×Beryllium ≭Cadmium ●Chromium +Cobalt -Copper -Lead +Nickel Selenium =Silver ▲Thallium ×Tin ×Vanadium =Zinc +Mercury



# <u>ATTACHMENT NO. 4</u> TOLERANCE INTERVAL STATISTICAL EVALUATION

#### TABLE 3 SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON MAR 2018 - SAMPLE ROUND

Concentration (units as specified for Threshold Value)

		0	W-9		Background Well		Compliance wel	ls	
		Toleran	ce Limit *	Threshol	d				
	Parameter	<u>TL=AV</u>	/G+K*S	Value	OW-9	OW-12	OW-13	OW-14	OW-15
METALS	Antimony	0.0290	mg/L	0.006 mg/	L <sup>1</sup> ND	ND	ND	ND	ND
	Arsenic	0.0030	mg/L	0.010 mg/	L'ND	ND	0.0070	ND	0.0200
	Barium	0.0645	mg/L	2 mg/	L 0.0130	0.0170	0.1150	0.2240	0.1280
	Beryllium	0.0005	mg/L	0.004 mg/	L'ND	ND	ND	ND	ND
	Cadmium	0.3650	mg/L	0.005 mg/	(L' 0.0020	ND	0.0040	0.0050	0.0090
	Chromium	0.0453	mg/L	0.1 mg/	(L' 0.0070	ND	0.0020	0.0060	ND
	Cobalt	0.0100	mg/L	0.73 mg/	<sup>(L°</sup> 0.0010	ND	0.0130	0.0140	0.0100
	Copper	0.0600	mg/L	1.3 mg/	L'ND	ND	ND	0.0090	ND
	Lead	0.2245	mg/L	0.015 mg/	(L' 0.0020	ND	0.0020	0.0060	0.0020
	Mercury	0.0001	mg/L	0.002 mg/	L'ND	ND	ND	ND	ND
	Nickel	0.0369	mg/L	0.1 mg/	(L <sup>2</sup> 0.0040	0.0200	0.0120	0.0220	0.0200
	Selenium	0.0100	mg/L	0.05 mg/	(L' ND	ND	ND	ND	ND
	Silver	0.0005	mg/L	0.1 mg/	(L <sup>2,3</sup> ND	ND	ND	ND	ND
	Thallium	0.0005	mg/L	0.002 mg/	L'ND	ND	0.0003	0.0003	ND
	Tin	0.0025	mg/L	22 mg/	L <sup>s</sup> ND	ND	ND	ND	ND
	Vanadium	0.0140	mg/L	0.26 mg/	(L <sup>s</sup> 0.0020	ND	ND	0.0070	0.0060
	Zinc	13.7193	mg/L	2 - 5 mg/	(L <sup>2,3</sup> 0.0190	0.0700	0.0170	0.0480	0.0210
VOC'S	Acetone			610 µg/	L <sup>3</sup>				
	Acrylonitrile			0.039 µg/	L <sup>3</sup>				
	Benzene			5 µg/	L.				
	Bromochloromethane			80 µg/	L-				
	Bromodichloromethane (THM)			90 µg/					
	Bromoform			80 µg/	L'				
	Carbon disulfide			1000 µg/					
	Carbon tetrachloride			5 μg/					
	Chlorobenzene			100 µg/	L 1 3				
	Chloroethane			4.6 μg/	L 1'				
	Chlorodibromomothone (TLIM)			80 µg/	1'				
	1 2 Dibromo 2 obloropropago (DBCD)			0.2 µg/	1'				
	1,2-Dibromosthana (EDR)			0.2 µg/	1'				
	1.2-Diblomoentane (EDB)			600 µg/	1'				
	1 4-Dichlorobenzene			75 μα/	_ L'				
	trans-1.4-Dichloro-2-butene			μq/	L				
	1.1 -Dichloroethane			5 µg/	L				
	1.2-Dichloroethane			5 μg/	L'				
	1,1-Dichloroethylene			7 μg/	Ľ'				
	cis-1,2-Dichloroethene			70 μg/	Ľ'				
	trans-1,2-Dichloroethene			100 µg/	'L'				
	1,2-Dichloropropane			5 μg/	'L'				
	cis-1,3-Dichloropropene			μg/	L				
	trans-1,3-Dichloropropene			μg/	Ľ				
	Ethylbenzene			700 μg/	Ľ'				
	Methyl butyl ketone(2-Hexanone)			160 µg/	L <sup>3</sup>				
	Bromomethane			10 µg/	L-				
	Chloromethane			30 µg/	L-				
	Dibromomethane			61 µg/					
	Methylene chloride			5 μg/	L 1 4				
	Methyl ethyl ketone(2-Butanone)			4000 μg/					
	Methyl 2 pentanana			μg/ μg/	1				
	4-Methyl-2-pentanone			μg/ 100 μg/	1'				
				70 µg/	14				
	1,1,2-Tetrachloroethane			0 3 µg/	14				
	Tetrachloroethylene/PCE)			5 µg/	_ L'				
	Toluene			1000 μα/	L'				
	1,1,1-Trichloroethane			200 µg/	L'				
	1,1,2-Trichloroethane			5 μg/	L'				
	Trichloroethylene(TCE)			5 μg/	L'				
	Trichloroflouromethane			2000 µg/	Ľ				
	1,2,3-Trichloropropane			40 µg/	Ľ				
	Vinyl acetate			410 µg/	L°				
	Vinyl chloride			2 µg/	L'				
	Xylenes			10000 μg/	'L'				
	Methyl tert-butyl ether (MTBE)			20 - 40 μg/	'L <sup>4</sup>				

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit.

However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

#### No threshold value has been provided for parameters not identified in the sources listed above

" = Exceedance of TL ND = Not Detected \* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

## Historical Tolerance Limit Concentrations from Background Well Tiverton Landfill Compliance Sampling



# <u>ATTACHMENT NO. 5</u> CUSUM METHOD STATISTICAL EVALUATION



#### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Complaince Well OW-9



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Background Well OW-9

Sampling Date





CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

Series1 Series2



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

---- Series1 ------ Series2



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

---- Series1 ----- Series2



CUSUM Control Chart for Lead Tiverton Landfill Groundwater Background Well OW-9



#### CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Background Well OW-9


# CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Background Well OW-9



## CUSUM Control Chart for Tin Tiverton Landfill Groundwater Background Well OW-9

Series1 Series2



## CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-12

#### CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-12



Sampling Date



CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-12



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-12



## CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-12



#### CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-12



## CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-12

Sampling Date

- Series1 



### CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-12



### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Complaince Well OW-13



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-13

#### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-13





#### CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Selenium Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Silver Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for 1,4-Dichlorobenzene - Adjusted Baseline Tiverton Landfill Groundwater Complaince Well OW-13



### CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-13



## CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-14

Series1 Series2



## CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-14



### CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-14



### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-14


#### CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



#### CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-14



#### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-15

----- Series1 ------ Series2



#### CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Complaince Well OW-15



#### CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Complaince Well OW-15



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Complaince Well OW-15



#### CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Xylenes Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-15

#### <u>ATTACHMENT NO. 6</u> REPORTED CONCENTRATIONS OF MTBE FIGURE



### ATTACHMENT NO. 7 FIELD SAMPLING DATA SHEETS

PROJECT NAME: PARE PROJECT NO.:	TIVERTON 94139.01	N LANDFILL /021	DATE: WEATHER:	3/28/2018 Sunny 50s
FIELD TESTING RESULTS	<u>S:</u>			
SURFACE WATER LOO	CATION:	SW-1		
	READ	DING 1		
pH: SPEC. COND: TEMPERATURE:	6.20 0.42 7.2	_pH UNITS _mS/cm _°C		
SURFACE WATER LOO	<u>SW-2</u>			
	READ	DING 1		
pH: SPEC. COND: TEMPERATURE:	5.38 0.18 9	pH UNITS mS/cm °C		
SURFACE WATER LOO	<u>SW-3</u>			
	READ	DING 1		
pH: SPEC. COND: TEMPERATURE:	5.98 0.52 10	pH UNITS mS/cm °C		

PROJECT NAME: PARE PROJECT NO	TIVERTO .: 94139.24	N LANDFILL 4		DATE: WEATHEF	3/28 R: Suni	8/2018 ny 50s
WELL ID: OW-9	-			DIAMETER	R (INCHES):	2
PURGE DATA						
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16 0.6 Perista	_feet _gallons ltic pump	MEASUR PURGE R ELAPSED	e point: Ate (gpm): Time (min)	Top of 	f Casing I/A I/A
WATER LEVEL DAT	<u>A</u>					
DEPTH: MEASURE POINT:	12.6 Top of Ca	_feet sing	ELEVATIO DEVICE:	ON:	See Site Pla Water Level	n Indicator
FIELD TESTING RES	<u>SULTS</u>					
	REA	DING 1		RE	ADING 2	
pH: SPEC. COND: TEMPERATURE:	5.71 0.065 8.4	pH UNITS mS/cm °C		5.69 0.068 8.3	pH UNITS mS/cm °C	
NOTES:						

Samples were noted as generally clear and low in turbidity based on visual inspections of samples. Samples were collected at 4:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTO 94139.24	N LANDFILL	DATE: WEATHE	R:	3/28/2018 Sunny 50s
WELL ID: OW-12	-		DIAMETE	R (II	NCHES): 2
PURGE DATA					
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16.2 2.40 Peristal	_feet _gallons ltic pump	MEASURE POINT: PURGE RATE (GPM ELAPSED TIME (MIN	): N):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA					
DEPTH: MEASURE POINT:	2.2 Top of	_feet Casing	ELEVATION: DEVICE:	<u></u>	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>				
	READING 1		RE	READING 2	
pH: SPEC. COND: TEMPERATURE:	5.79 0.285 9.3	pH UNITS mS/cm °C	5.79 0.27 9.2	۲ م	bH UNITS mS/cm <sup>2</sup> C
NOTES:					
Samples were noted as generally clear and low in turbidity based on visual inspections of samples.					

Samples were collected at 3:15 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	3/28/2018 Sunny 50s
WELL ID: OW-13	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	<u>14.5</u> feet <u>1.80</u> gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	3.8 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>		
	READING 1	READI	NG 2
pH: SPEC. COND: TEMPERATURE:	6.23 pH UNITS 1.115 mS/cm 7.3 °C	6.23 1.119 7.3	_pH UNITS _mS/cm _°C
NOTES:			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 6:30 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON 94139.24	LANDFILL	DATE: WEATHER:	3/28/2018 Sunny 50s
WELL ID: OW-14	-		DIAMETER	(INCHES): <u>2</u>
PURGE DATA				
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	10.6 1.2 Peristalt	feet gallons ic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA				
DEPTH: MEASURE POINT:	3.6 Top of	feet Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>8</u>			
	READ	ING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	6.03 1.495 6.8	pH UNITS mS/cm °C	6.04 6.8 1.495	pH UNITS mS/cm °C
NOTES:				
Samples were noted as ger	nerally clear	with a reddish	tinge and low in turbidity l	based on

visual inspection of the samples.

Samples were collected at 5:30 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	3/28/2018 Sunny 50s
WELL ID: OW-15	-	DIAMETER (	(INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	<u>16.8</u> feet <u>1.7</u> gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	7.2 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	6.28 pH UNITS 1.116 mS/cm 9.7 °C	6.28 1.119 9.6	pH UNITS mS/cm °C
NOTES:			

Samples were noted as generally clear with a brownish tinge and low in turbidity based on

visual inspection of the samples.

Samples were collected at 6:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	3/28/2018 Sunny 50s
WELL ID: OW-7	-	DIAMETER (	(INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	11.8 feet 1.9 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	0 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>3</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	6.17 pH UNITS 0.847 mS/cm 8.4 °C	6.17 0.860 8.6	_pH UNITS _mS/cm _°C
<u>NOTES:</u>			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 1:15 PM.
# FIELD SAMPLING DATA SHEET

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	3/28/2018 Sunny 50s
WELL ID: OW-16	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	45.8 feet 7.5 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	0.3 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>6</u>		
	READING 1	READ	NG 2
pH: SPEC. COND: TEMPERATURE:	6.24 pH UNITS 0.908 mS/cm 10.7 °C	6.24 0.904 10.6	_pH UNITS _mS/cm °C
<u>NOTES:</u>			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples. Samples were collected at 2:00 PM.



PARE

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August 2, 2018

Mr. Leo Hellested, P.E. Office of Waste Management Solid Waste Section Rhode Island Department of Environmental Management 235 Promenade Street Providence, Rhode Island 02908-5767

Attn: Mr. Robert Schmidt

#### Re: Quarterly Monitoring Report 2nd Quarter (June) 2018, Groundwater Monitoring, Sampling, and Analysis Tiverton Municipal Sanitary Landfill Pare Project No.: 94139.24

Dear Mr. Hellested:

Enclosed herewith are results of the statistical analysis of groundwater monitoring data for the second quarterly monitoring round of Year 2018 from the Tiverton Landfill (Landfill). Pare Corporation (Pare) has prepared this report on behalf of the Town of Tiverton (Town). In the 2017 Annual Groundwater Monitoring Report, Pare recommended that overburden well OW-7 and bedrock well OW-16 be included in the groundwater monitoring program. As such, Pare conducted the groundwater sampling on June 7, 2018 at the background well OW-9 and compliance wells OW-7, OW-12, OW-13, OW-14, OW-15, and OW-16.

Groundwater samples were analyzed by New England Testing Laboratory (NETLAB) of West Warwick, Rhode Island for the constituents listed in Appendix A (Detection Monitoring) of the State Solid Waste Regulations, plus the Appendix B metals mercury and tin, which are routinely included. Certified laboratory results data are enclosed and are summarized on attached Tables 1-3.

Groundwater field parameters consisting of temperature, pH, and specific conductivity were measured at each monitoring well, in accordance with the RIDEM-approved Groundwater Monitoring Plan for the Landfill. Field parameters were collected until three successive measurements stabilized within  $\pm$  3% for temperature,  $\pm$  0.1 standard unit for pH, and  $\pm$  3% for specific conductivity, in accordance with US EPA's Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. Field parameters are documented on Field Sampling Data Sheets, which are enclosed.

Combustible gases are monitored at each well and at the top of the Landfill. Combustible gases were unable to be monitored at the Landfill in June 2018 due to a malfunction of the gas monitoring equipment at the time of sampling.

Recent sampling rounds have been during periods of dry conditions; as such, samples collected contained a high amount of silt and suspended particles. Reported concentrations of heavy metals were higher than usual, and the degree of suspended particles observed in the samples may have impacted heavy metal concentrations. Pare believes these results were an anomaly and not indicative of typical groundwater quality. Therefore, Pare



Mr. Leo Hellested, P.E.

updated the groundwater monitoring program in the 2016 Annual Groundwater Monitoring Report to include a 10-15 settling minute period for turbidity to drop out of suspension, before the sample is decanted and then stored in laboratory glassware with preservative. Additionally, during the March 2017 monitoring round, accumulated sediment in the bottom of wells at the Landfill was removed prior to sampling.

## HUMAN HEALTH THRESHOLD EVALUATION

<u>Compliance Well OW-7</u> – Six (6) target metals were reported in the groundwater sample collected from OW-7. One (1) reported metal, arsenic (0.01 mg/L), was reported at its MCL (0.01 mg/L). One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-7.

<u>Compliance Well OW-12</u> – Five (5) target metals were reported in the groundwater sample collected from OW-12. One (1) reported metal, arsenic (0.01 mg/L), was reported at its MCL (0.01 mg/L). No (0) target VOCs were reported above laboratory detection limits at OW-12.

<u>Compliance Well OW-13</u> – Eight (8) target metals were reported in the groundwater sample collected from OW-13. One (1) reported metal, arsenic (0.02 mg/L), was reported above its MCL (0.01 mg/L). Two (2) target VOCs; chlorobenzene and MTBE; were reported above laboratory detection limits at OW-13.

<u>Compliance Well OW-14</u> – Seven (7) target metals were reported in the groundwater sample collected from OW-14. Two (2) reported metals; arsenic (0.01 mg/L) and cadmium (0.006 mg/L); were reported at or above their MCLs (0.01 mg/L and 0.005 mg/L, respectively). Four (4) target VOCs; benzene, chlorobenzene, 1,4-dichlorobenzene and MTBE; were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-14.

<u>Compliance Well OW-15</u> – Six (6) target metals were reported in the groundwater sample collected from OW-15. Two (2) reported metals; arsenic (0.03 mg/L) and cadmium (0.01 mg/L); exceeded their MCLs (0.01 mg/L and 0.005 mg/L, respectively). Three (3) target VOCs; benzene, chlorobenzene and MTBE; were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-15.

<u>Compliance Well OW-16 (new bedrock well)</u> – Seven (7) target metals were reported in the groundwater sample collected from OW-16. One (1) reported metal, arsenic (0.01 mg/L), was reported at its MCL (0.01 mg/L). One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-16.

<u>Background Well OW-9</u> – Five (5) target metals were reported in the groundwater sample collected from OW-9. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-9. No (0) target VOCs were reported above laboratory detection limits at OW-9.



#### August 2, 2018

### TOLERANCE INTERVAL STATISTICAL EVALUATION

The Tolerance Interval (TI) approach was used to develop Tolerance Limits (TLs) for each target inorganic constituent (i.e., metals) using the background well analytical results from the eight preceding rounds for which analytical results are available. The background well, OW-9, could not be sampled in several previous monitoring rounds including in the September 2016, June 2017, and September 2017 monitoring rounds due to dry conditions. Therefore, analytical results of the eight most recent rounds in which samples could be collected were utilized to generate the TLs for this monitoring round, dating back to December 2014. The TI approach is considered inappropriate for analysis of organic constituents and was therefore not performed to evaluate the results of reported VOCs. Table 2 summarizes historical results data from OW-9 used in the calculation of the TLs.

Three (3) of the metals concentration reported in June 2018; arsenic, barium and cobalt; exceeded the corresponding TLs calculated during this monitoring round in at least one compliance well. In total, there were ten (10) TL exceedances of these metals in this monitoring round. The TLs and the corresponding compliance well data from this monitoring round are presented in Table 3. Each of these metals is routinely detected in groundwater beneath the landfill.

#### CUSUM METHOD STATISTICAL EVALUATION

The Shewhart-CUSUM Method, a supplemental statistical analysis method used in addition to the TI Method, was performed in accordance with the US EPA documents titled "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Interim Final Guidance, April 1989" and "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum to Interim Final Guidance, July, 1992".

Barium and nickel at OW-12; and cadmium at OW-15; exceeded both of their Shewhart-CUSUM thresholds during the June 2018 monitoring round.

The dry conditions present during the September 2016 monitoring round were believed by Pare to have resulted in higher than usual suspended solids in samples collected, which are believed to have also resulted in atypical metals concentrations. As a result, the results of the Shewhart-CUSUM analysis for September 2016 were believed to be an anomaly. In many cases these deviations are outside of the statistical range expected. With the inception of the updated groundwater monitoring program, Pare has reset the Shewhart-CUSUM levels for several metals at multiple wells in order to have an accurate representation of cumulative statistical analysis of these constituents. The metals that have had their Shewhart-CUSUM thresholds reset include: chromium, lead, nickel, vanadium, and zinc at OW-12; barium, cadmium, cobalt, copper, lead, and vanadium at OW-13; zinc at OW-14; and arsenic, cadmium, chromium, cobalt, lead, nickel, vanadium, and zinc at OW-14 is due to a statistical spike in the Shewhart-CUSUM limit during the September 2015 monitoring round (which was also sampled during dry conditions). These Shewhart-CUSUM parameters were reset prior to the March 2017 sampling round; therefore, data recorded from the March 2017 monitoring round is present in the analysis.



### **ASSESSMENT MONITORING**

The Shewhart-CUSUM analysis is utilized, along with the Tolerance Limits, to identify when Assessment Monitoring should be performed.

Pare performed Assessment Monitoring at OW-14 in the December 2017 monitoring round due to an exceedance of the Shewhart-CUSUM threshold of antimony in the June 2017 monitoring period. This Assessment Monitoring was delayed from September 2017 to December 2017 due to dry conditions in September, rendering a sample unattainable. One Appendix B parameter, sulfides (0.04 mg/L), was detected in the December 2017 monitoring round. In the 2017 Annual Groundwater Monitoring report, Pare recommended that groundwater samples from OW-14 in the March 2018 monitoring round be tested again for sulfides. Again, the Appendix B parameter sulfides (0.04 mg/L) was detected in the samples collected from OW-14 in March 2018.

Pare performed Assessment Monitoring at OW-13 in the June 2018 monitoring round due to an exceedance of both the TL and the Shewhart-CUSUM threshold of barium in the March 2018 monitoring round. No (0) Appendix B parameters were reported in samples collected from OW-13. Sulfides were not detected at OW-13 in the June 2018 monitoring round.

### **MTBE ANALYSIS**

Many of the most recent Assessment Monitoring rounds have been conducted due to MTBE concentrations in groundwater. Reported MTBE concentrations have generally risen since September 2006, as depicted in the attached figure titled Reported Concentrations of MTBE. The figure compares the recent increases in reported MTBE concentrations at OW-13, OW-14 and OW-15 to historical concentrations and drinking water advisories defined in the US EPA document titled "2011 Edition of the Drinking Water Standards and Health Advisories". Although reported MTBE concentrations appear to be trending slowly upward, MTBE has never been reported above its odor threshold (0.020 mg/L) or its taste threshold (0.040 mg/L). The US EPA has not established a human health advisory concentration for MTBE.

Because the elevated concentrations of MTBE have recently triggered Assessment Monitoring at OW-13, OW-14, and OW-15, and that no Appendix B parameters were reported to a significant degree at these wells, it is Pare's opinion that the increasing trend in MTBE concentrations beneath the Landfill is an isolated phenomenon and not the result of a significant change in groundwater quality beneath the Landfill.

Despite CUSUM values of MTBE at OW-13, OW-14, and OW-15 remaining above their threshold during the September 2017 monitoring round, Pare does not recommend assessment monitoring due to the aforementioned MTBE trend. The lack of Appendix B parameters in the past, in conjunction with the lack of Appendix B parameters at OW-13 and OW-15 during the December 2016 monitoring round, and the lack of Appendix B parameters at OW-14 during the June 2016 monitoring round, suggests that the presence of MTBE trend does not indicate an increased likelihood that Appendix B parameters would be present beneath the Landfill.



#### **CONCLUSIONS AND RECOMMENDATIONS**

Currently, the Landfill conducts Detection Monitoring for the parameters listed in Appendix A of the State Solid Waste Regulations, as well as mercury and tin. During this monitoring round, three (3) metals; arsenic, barium and cobalt; exceeded their tolerance limits (TLs) in at least one well. Arsenic and barium also exceeded their TLs during the previous monitoring round at OW-13 and OW-15, and OW-13, OW-14 and OW-15, respectively. TL exceedances in two consecutive monitoring rounds is one of the criteria used to consider introducing Assessment Monitoring in subsequent monitoring rounds.

Pare recommends that Assessment Monitoring be discontinued at OW-13 due to the lack of Appendix B parameters detected during the Assessment Monitoring performed in the June 2018 monitoring round. Additionally, Pare does not recommend Assessment Monitoring at the Landfill during the upcoming September 2018 monitoring round as the criteria to warrant Assessment Monitoring were not met in the June 2018 monitoring round.

During the 2016 and 2017 monitoring periods, a rising trend in detections of antimony at the compliance wells became apparent. Antimony was detected at the background well above its MCL during the December 2017 monitoring round. Previously, antimony had not been detected at the background well since the September 2011 monitoring round. The detection of antimony at compliance well OW-14 in the June 2017 monitoring round triggered Assessment Monitoring, which was performed in the December 2017 monitoring round. The Assessment Monitoring resulted in detection of one Appendix B parameter, sulfides (0.04 mg/L). However, antimony was not detected at any groundwater well during the December 2017 monitoring period. Analysis of the samples collected from OW-14 during the March 2018 monitoring round indicated another detection of sulfides (0.04 mg/L). Assessment Monitoring was not performed at OW-14 in June, but was performed at OW-13. Sulfides were not detected in the Assessment Monitoring performed at OW-13 during the June 2018 monitoring round.

The EPA has no MCL for sulfides in groundwater. Water with dissolved hydrogen sulfide will smell musty or swampy around 0.5-1.0 mg/L, and Pare did not identify a noticeable smell emanating from the groundwater sample in either round during which the constituent was detected. Hydrogen sulfide gas can occur naturally in groundwater from plant materials rotting underground in anaerobic conditions. Hydrogen sulfide gas could also be resulting from gypsum buried at the Landfill. Pare recommends that sulfides be again tested for at OW-14 in the September 2018 monitoring round. Additionally, Pare recommends that the Town consider adding regular analysis of sulfides to the groundwater monitoring program.

Pare recommended that wells OW-7 and OW-16 be incorporated into the compliance monitoring regimen in the 2017 Annual Groundwater Monitoring Report. Despite OW-7 having several years of sampling data, the sampling rounds were selected on a rotating basis with wells OW-6 and OW-8 for alternate monitoring. Pare recommends that wells OW-7 and OW-16 be sampled for two years, or eight consecutive monitoring rounds, prior to initiating statistical analysis. The June 2018 monitoring period marks the second monitoring round that these wells are to be sampled consistently; therefore, it is estimated that statistical analysis for the bedrock and overburden wells will begin in the March 2020 monitoring round.



Samples have been unable to be collected at the background well OW-9 in recent monitoring rounds. Dating back to September 2016, three out of the last eight monitoring rounds have resulted in a dry well (although Pare was able to collect a sample in June 2018). The tolerance interval analysis is dependent on data collected from the background well; therefore, uncharacteristic TL exceedances may be a result of the lack of recent historical data from this well. Pare will be able to more accurately assess this potential changing trend in groundwater quality with more data collection from the background well.

Recent monitoring rounds also indicate there is an increasing trend of barium and cadmium in groundwater at the Landfill. However, Assessment Monitoring triggered by exceedances of barium and cadmium have resulted in no (0) detections of Appendix B parameters. Pare will continue to evaluate antimony, barium, cadmium, and sulfides trends at the Landfill in subsequent monitoring rounds.

Should the RIDEM have any questions regarding this letter or the attached data, please feel free to contact the undersigned at (401) 334-4100, thank you.

Very truly yours,

Timothy P. Thies, P.E. Vice President

TPT/TCJ/abv

Attachments

cc: Jay Lambert, Tiverton Landfill Subcommittee (w/encl.) Jan Reitsma, Tiverton Town Administrator (w/encl.) Travis C. Johnson, Pare Corporation (w/o encl.) George G. Palmisciano, P.E. Pare Corporation (w/o encl.)

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# <u>ATTACHMENT NO. 1</u> LABORATORY ANALYTICAL DATA REPORT



# **REPORT OF ANALYTICAL RESULTS**

# NETLAB Work Order Number: 8F08028 Client Project: 94139 - Tiverton Landfill

Report Date: 15-June-2018

Prepared for:

Travis Johnson Pare Corporation 8 Blackstone Valley Place Lincoln, RI 02865

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# Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 06/08/18. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 8F08028. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
8F08028-01	OW-7	Water	06/07/2018	06/08/2018
8F08028-02	OW-9	Water	06/07/2018	06/08/2018
8F08028-03	OW-12	Water	06/07/2018	06/08/2018
8F08028-04	OW-14	Water	06/07/2018	06/08/2018
8F08028-05	OW-15	Water	06/07/2018	06/08/2018
8F08028-06	OW-16	Water	06/07/2018	06/08/2018

# **Request for Analysis**

At the client's request, the analyses presented in the following table were performed on the samples submitted.

# OW-12 (Lab Number: 8F08028-03)

<u>Analysis</u>	<u>Method</u>
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C
OW-14 (Lab Number: 8F08028-04)	
Analysis	<u>Method</u>
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	
•	EPA 6010C
Cadmium	EPA 6010C EPA 6010C
Cadmium Chromium	EPA 6010C EPA 6010C EPA 6010C
Cadmium Chromium Cobalt	EPA 6010C EPA 6010C EPA 6010C EPA 6010C
Cadmium Chromium Cobalt Copper	EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C
Cadmium Chromium Cobalt Copper Lead	EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C
Cadmium Chromium Cobalt Copper Lead Mercury	EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 7470A
Cadmium Chromium Cobalt Copper Lead Mercury Nickel	EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 7470A EPA 6010C
Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium	EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 7470A EPA 6010C EPA 6010C
Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium Silver	EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 7470A EPA 6010C EPA 6010C EPA 6010C EPA 6010C
Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium Silver Thallium	EPA 6010C EPA 7010
Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium Silver Thallium Tin	EPA 6010C EPA 7010 EPA 6010C
Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium Silver Thallium Tin Vanadium	EPA 6010C EPA 6010C
Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium Silver Thallium Tin Vanadium Volatile Organic Compounds	EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 7470A EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C EPA 6010C
Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium Silver Thallium Tin Vanadium Volatile Organic Compounds Zinc	EPA 6010C EPA 6010C

# OW-15 (Lab Number: 8F08028-05)

## <u>Analysis</u>

Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C

Method

# Request for Analysis (continued)

## OW-15 (Lab Number: 8F08028-05) (continued)

Analysis	Method
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

## OW-16 (Lab Number: 8F08028-06)

<u>Analysis</u>	<u>Method</u>
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

## Method

EPA 6010C

# Request for Analysis (continued)

### OW-7 (Lab Number: 8F08028-01)

## **Analysis**

Antimony	EPA 60
Arsenic	EPA 60
Barium	EPA 60
Beryllium	EPA 60
Cadmium	EPA 60
Chromium	EPA 60
Cobalt	EPA 60
Copper	EPA 60
Lead	EPA 60
Mercury	EPA 74
Nickel	EPA 60
Selenium	EPA 60
Silver	EPA 60
Thallium	EPA 70
Tin	EPA 60
Vanadium	EPA 60
Volatile Organic Compounds	EPA 82
Zinc	EPA 60

## OW-9 (Lab Number: 8F08028-02)

#### Analysis **Method** Antimony EPA 6010C EPA 6010C Arsenic EPA 6010C Barium Beryllium EPA 6010C Cadmium EPA 6010C Chromium EPA 6010C Cobalt EPA 6010C EPA 6010C Copper Lead EPA 6010C Mercury EPA 7470A Nickel EPA 6010C Selenium EPA 6010C Silver EPA 6010C Thallium EPA 7010 Tin EPA 6010C Vanadium EPA 6010C Volatile Organic Compounds EPA 8260C Zinc

## Method References

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

## **Method**

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EPA 6010C

#### **Case Narrative**

#### **CASE NARRATIVE:**

#### Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

#### Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

#### Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	0.01	0.002
7440-39-3	Barium	6010C	0.028	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.004	0.001
7440-48-4	Cobalt	6010C	0.015	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.018	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.014	0.005

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.009	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.003	0.001
7440-48-4	Cobalt	6010C	ND	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	0.001	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.001	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.009	0.005

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.001	0.001
7440-38-2	Arsenic	6010C	0.01	0.002
7440-39-3	Barium	6010C	0.020	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	ND	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.025	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.009	0.005

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	0.01	0.002
7440-39-3	Barium	6010C	0.155	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.006	0.001
7440-47-3	Chromium	6010C	0.001	0.001
7440-48-4	Cobalt	6010C	0.006	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.012	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.031	0.005

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	0.03	0.002
7440-39-3	Barium	6010C	0.096	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.010	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	0.012	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.023	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.032	0.005

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.002	0.001
7440-38-2	Arsenic	6010C	0.01	0.002
7440-39-3	Barium	6010C	0.011	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.004	0.001
7440-48-4	Cobalt	6010C	0.002	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.009	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.022	0.005

Sample: OW-7 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Method: 8260C

#### Case Number: 8F08028

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.56	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	95.2	70-130
1,2-Dichloroethane d4	94.1	70-130
4 BFB	93.5	70-130

Sample: OW-9 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-9 Method: 8260C

#### Case Number: 8F08028

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	96.9	70-130
1,2-Dichloroethane d4	99.2	70-130
4 BFB	89.8	70-130

Sample: OW-12 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-12 Method: 8260C

#### Case Number: 8F08028

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	96.8	70-130
1,2-Dichloroethane d4	97.5	70-130
4 BFB	89.2	70-130

Sample: OW-14 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	2.77	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	13.3	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-14 Method: 8260C

#### Case Number: 8F08028

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.62	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	6.23	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	95.8	70-130
1,2-Dichloroethane d4	96.7	70-130
4 BFB	94.9	70-130

Sample: OW-15 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND 1.0	
79-34-5	1,1,2,2-Tetrachloroethane	ND 1.0	
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	1.67	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	12.72	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-15 Method: 8260C

#### Case Number: 8F08028

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	6.61	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	95.8	70-130
1,2-Dichloroethane d4	94.9	70-130
4 BFB	98.9	70-130

Sample: OW-16 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND 1.0	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-16 Method: 8260C

#### Case Number: 8F08028

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	6.53	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	94.6	70-130
1,2-Dichloroethane d4	95.5	70-130
4 BFB	90.7	70-130





# **REPORT OF ANALYTICAL RESULTS**

# NETLAB Work Order Number: 8F08027 Client Project: 94139 - Tiverton Landfill

Report Date: 15-June-2018

Prepared for:

Travis Johnson Pare Corporation 8 Blackstone Valley Place Lincoln, RI 02865

Richard Warila, Laboratory Director New England Testing Laboratory, Inc. 59 Greenhill Street West Warwick, RI 02893 rich.warila@newenglandtesting.com

# Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 06/08/18. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 8F08027. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
8F08027-01	OW-13	Water	06/07/2018	06/08/2018

# **Request for Analysis**

At the client's request, the analyses presented in the following table were performed on the samples submitted.

## OW-13 (Lab Number: 8F08027-01)

<u>Analysis</u>	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Cyanide	SM4500-CN-E
Herbicides	EPA 8151A
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
PCBs	EPA 8082A
Pesticides	EPA 8081B
Selenium	EPA 6010C
Semivolatile Organic Compounds	EPA 8270D
Silver	EPA 6010C
Sulfide	SM4500-S-D
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

# Method References

*Standard Methods for the Examination of Water and Wastewater, 20th Edition*, APHA/ AWWA-WPCF, 1998

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA
### **Case Narrative**

### Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

### Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

### Herbicides

All samples were extracted and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria.

### <u>PCBs</u>

All samples were extracted and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria.

### Pesticides

All samples were extracted and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria.

### Semi-volatile Compounds

All samples were extracted and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria.

### Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

### Wet Chemistry

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures.

# Sample: OW-13

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
57-12-5	Cyanide	9014	ND	0.01
18496-25-8	Sulfide	376.2	ND	0.01

ND = Not Detected

# Sample: OW-13

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.002	0.001
7440-38-2	Arsenic	6010C	0.02	0.002
7440-39-3	Barium	6010C	0.089	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.004	0.001
7440-47-3	Chromium	6010C	0.002	0.001
7440-48-4	Cobalt	6010C	0.011	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.011	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.012	0.005

ND = Not Detected

# Sample: OW-13

Method: 8151A

CAS RN	Common Name	Result, ppb	PQL (ppb)
93-76-5	2,4,5-T	ND	1.0
94-75-7	2,4-D	ND	1.0
88-85-7	Dinoseb	ND	1.0
93-72-1	Silvex (2,4,5-TP)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
DCMA	106	30-150

Method: 8081B & 8082A

CAS RN	Common Name	Result, ppb	PQL (ppb)
72-54-8	4,4'-DDD	ND	0.02
72-55-9	4,4'-DDE	ND	0.02
50-29-3	4,4'-DDT	ND	0.02
309-00-2	Aldrin	ND	0.02
319-84-6	alpha-BHC	ND	0.02
319-85-7	beta-BHC	ND	0.02
319-86-8	delta-BHC	ND	0.02
60-57-1	Dieldrin	ND	0.02
959-98-8	Endosulfan I	ND	0.02
33213-65-9	Endosulfan II	ND	0.02
1031-07-8	Endosulfan sulfate	ND	0.02
72-20-8	Endrin	ND	0.02
7421-93-4	Endrin aldehyde	ND	0.02
58-89-9	gamma-BHC (Lindane)	ND	0.02
76-44-8	Heptachlor	ND	0.02
1024-57-3	Heptachlor epoxide	ND	0.02
72-43-5	Methoxychlor	ND	0.02
8001-35-2	Toxaphene (chlorinated camphene)	ND	0.50
	Polychlorinated biphenyls (PCBs)	ND	0.2

# Surrogates:

Compound	% Recovery	Limits
тсмх	54.8	30-129
DCMP	74.1	30-126

ND = Not Detected Sample: OW-13 Method: 8270

CAS RN	Common Name	Result, ppb	PQL (ppb)
126-68-1	0,0,0-Triethyl phosphorothioate	ND	4.0
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	4.0
20-82-1	1,2,4-Trichlorobenzene	ND	4.0
130-15-4	1,4-Naphthoquinone	ND	4.0
134-32-7	1-Naphthylamine	ND	4.0
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.0
95-95-4	2,4,5-Trichlorophenol	ND	4.0
88-06-2	2,4,6-Trichlorophenol	ND	2.0
120-83-2	2,4-Dichlorophenol	ND	2.0
105-67-9	2,4-Dimethylphenol (m-Xylenol)	ND	2.0
51-28-5	2,4-Dinitrophenol	ND	2.0
121-14-2.	2,4-Dinitrotoluene	ND	4.0
87-65-0	2,6-Dichlorophenol	ND	4.0
606-20-2	2,6-Dinitrotoluene	ND	4.0
53-96-3	2-Acetylaminofluorene (2-AAF)	ND	8.0
91-58-7	2-Chloronaphthalene	ND	4.0
95-57-8	2-Chlorophenol	ND	2.0
91-57-6	2-Methylnaphthalene	ND	4.0
91-59-8	2-Naphthylamine	ND	4.0
91-94-1	3,3'-Dichlorobenzidine	ND	8.0
119-93-7	3,3'-Dimethylbenzidine	ND	4.0
56-49-5	3-Methylcholanthrene	ND	4.0
534-52-1	4,6-Dinitro-o-cresol	ND	20.0
92-67-1	4-Aminobiphenyl	ND	8.0
101-55-3	4-Bromophenyl phenyl ether	ND	4.0
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.0
99-55-8	5-Nitro-o-toluidine	ND	4.0
57-97-6	7,12-Dimethylbenz[a]anthracene	ND	4.0
83-32-9	Acenaphthene	ND	4.0
208-96-8	Acenaphthylene	ND	4.0
98-86-2	Acetophenone	ND	4.0
120-12-7	Anthracene	ND	4.0
56-55-3	Benzo[a]anthracene (Benzanthracene)	ND	4.0
50-32-8	Benzo[a]pyrene	ND	4.0
205-99-2	Benzo[b]fluoranthene	ND	4.0
191-24-2	Benzo[ghi]perylene	ND	4.0
207-08-9	Benzo[k]fluoranthene	ND	4.0
100-51-6	Benzyl alcohol	ND	8.0
111-91-1	Bis(2-chloroethoxy)methane	ND	2.0
111-44-4	Bis(2-chloroethyl) ether	ND	2.0
108-60-1	Bis-(2-chloroisopropyl) ether	ND	4.0
117-81-7	Bis(2-ethylhexyl) phthalate	ND	8.0

Sample: OW-13 Method: 8270

CAS RN	Common Name	Result, ppb	PQL (ppb)
85-68-7	Butyl benzyl phthalate	ND	2.0
	Chlordane (technical)	ND	20.0
510-15-6	Chlorobenzilate	ND	4.0
218-01-9	Chrysene	ND	4.0
2303-16-4	Diallate	ND	4.0
53-70-3	Dibenz[a,h]anthracene	ND	4.0
132-64-9	Dibenzofuran	ND	4.0
84-66-2	Diethyl phthalate	ND	2.0
60-51-5	Dimethoate	ND	8.0
131-11-3	Dimethyl phthalate	ND	2.0
84-74-2	Di-n-butyl phthalate	ND	2.0
117-84-0	Di-n-octyl phthalate	ND	4.0
122-39-4	Diphenylamine	ND	4.0
298-04-4	Disulfoton	ND	4.0
62-50-0	Ethyl methanesulfonate	ND	8.0
52-85-7	Famphur	ND	8.0
206-44-0	Fluoranthene	ND	4.0
86-73-7	Fluorene	ND	4.0
118-74-1	Hexachlorobenzene	ND	4.0
87-68-3	Hexachlorobutadiene	ND	4.0
77-47-4	Hexachlorocyclopentadiene	ND	4.0
67-72-1	Hexachloroethane	ND	4.0
1888-71-7	Hexachloropropene	ND	4.0
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.0
78-59-1	Isophorone	ND	4.0
120-58-1	Isosafrole	ND	4.0
143-50-0	Керопе	ND	8.0
108-39-4	m-Cresol (3-methylphenol)	ND	4.0
99-65-0	m-Dinitrobenzene	ND	8.0
91-80-5	Methapyrilene	ND	40.0
66-27-3	Methyl methanesulfonate	ND	4.0
298-00-0	Methyl parathion	ND	4.0
99-09-2	m-Nitroaniline (3-Nitroaniline)	ND	2.0
91-20-3	Naphthalene	ND	2.0
98-95-3	Nitrobenzene	ND	4.0
55-18-5	N-Nitrosodiethylamine	ND	8.0
62-75-9	N-Nitrosodimethylamine	ND	2.0
924-16-3	N-Nitrosodi-n-butylamine	ND	4.0
86-30-6	N-Nitrosodiphenylamine	ND	2.0
621-64-7	N-Nitrosodipropylamine	ND	4.0
10595-95-6	N-Nitrosomethylethalamine	ND	4.0
100-75-4	N-Nitrosopiperidine	ND	8.0

Sample: OW-13 Method: 8270

CAS RN	Common Name	Result, ppb	PQL (ppb)
930-55-2	N-Nitrosopyrrolidine	ND	10.0
95-48-7	o-Cresol (2-methylphenol)	ND	4.0
88-74-4	o-Nitroaniline (2-Nitroaniline)	ND	2.0
88-75-5	o-Nitrophenol (2-Nitrophenol)	ND	2.0
95-53-4	o-Toluidine	ND	4.0
60-11-7	p-(Dimethylamino)azobenzene	ND	4.0
56-38-2	Parathion	ND	4.0
106-47-8	p-Chloroaniline	ND	8.0
59-50-7	p-Chloro-m-cresol	ND	2.0
106-44-5	p-Cresol; 4-methylphenol	ND	4.0
608-93-5	Pentachlorobenzene	ND	4.0
82-68-8	Pentachloronitrobenzene	ND	8.0
87-86-5	Pentachlorophenol	ND	2.0
62-44-2	Phenacetin	ND	8.0
85-01-8	Phenanthrene	ND	4.0
108-95-2	Phenol	ND	1.0
298-02-2	Phorate	ND	4.0
100-01-6	p-Nitroaniline ( 4-Nitroaniline)	ND	8.0
100-02-7	p-Nitrophenol (4-Nitrophenol)	ND	4.0
106-50-3	p-Phenylenediamine	ND	4.0
23950-58-5	Pronamide	ND	4.0
129-00-0	Pyrene	ND	4.0
94-59-7	Safrole	ND	4.0
99-35-4	sym-Trinitrobenzene	ND	4.0
297-97-2	Thionazin	ND	8.0

### Surrogates:

Compound	% Recovery	Limits
Nitrobenzene d5	86	30-130
2-Fluorobiphenyl	96	30-123
p-Terphenyl d14	123	30-130
Phenol d6	22	10-83
2,4,6-Tribromophenol	119	18-120
2-Fluorophenol	30	10-81

ND = Not Detected

Sample: OW-13 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	4.72	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

### Sample: OW-13 Method: 8260C

### Case Number: 8F08027

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.26	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

### Surrogates:

Compound	% Recovery	Limits
Toluene d8	96.6	70-130
1,2-Dichloroethane d4	99.6	70-130
4 BFB	92.0	70-130

ND = Not Detected

	A CON	REMARKS				 	Special Instructions: List Specific Detection Limit Requirements: Turnatround (Business Days)
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NEW ENGLAND TESTING LABORATORY, IN 59 Greenhill Street West Warwick, RI 02893 1-888-863-8522	PROJ. NO. PROJECT NAMELOCATION 94139.01 - 11VERTON LANDFILL - ASSESSMENT	CLIENT PREPORT TO: REPORT TO: ARCE TO: DATE TIME OF A PARE CORPORATION SAMPLE ID. SAMPLE ID.	6/7 X OW-13				Sampled by: (Signature) Date/Time Received by: (Signature)

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# ATTACHMENT NO. 2 ANALYTICAL SUMMARY TABLES

TABLE 2 BACKGROUND WELL HISTORICAL RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OV-9 Concentration (Expressed in same units as Threshold Value)

Parameter Threshold JUN 18 MR 18 DEC 17 SEP 17 JUN 17 MAR 17 DEC 16 SEP 16 JUN 16 MAR 14 DEC 15 SEP 15 JUN 15 MAR 15 DEC 14 SEP 14 JUN 14 MAR 14 DEC 13 SEP 13 JUN 13 MAR 13 DEC 12 SEP 12 JUN 12 DAR 12 DEC 11 SEP 11 JUN 11 MAR	DEC '10 SEP '10 JUN '10 MAR '10
Value	
Antimony 0.006 mg/L ND ND 0.0290 NT NT ND ND NT NT ND ND NT NT ND ND ND ND NT ND	ND NT ND ND
Arsenic 0.010 m9/L ND ND NT NT 0.003 ND NT NT ND ND NT NT ND ND NT ND ND NN NT ND ND ND NT ND ND NT ND	ND NT ND 0.0079
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Chromium 0.1 mayl <sup>1</sup> 0.003 0.0070 0.0390 NT NT 0.0040 ND NT NT 0.0050 0.0070 NT NT 0.0060 0.0270 NT 0.0060 0.0070 0.0150 NT 0.0070 0.0120 NT 0.0050 0.0080 0.0040 0.0020 ND 0.02	0.0068 NT 0.0230 0.0270
Cobait 0.73 m9/L <sup>5</sup> ND 0.0010 0.0020 NT NT ND ND NT NT ND ND NT NT ND 0.0100 NT ND 0.0030 NT 0.0020 0.0030 NT ND 0.0020 ND ND ND 0.00	0.0015 NT 0.0086 0.0110
Copper 1.3 mg/L <sup>1</sup> ND ND0600 NT NT ND ND NT NT 0.0020 ND NT NT 0.0020 NT ND 0.0060 NT 0.0070 ND 0.0060 NT ND 0.0080 0.0010 0.0100 0.0400 0.00	0.0043 NT 0.0200 0.0170
Lead 0.015 mg/L 0.001 0.0220 0.1820 NT NT 0.0220 0.0660 NT NT ND 0.0050 NT NT 0.0010 0.0160 NT 0.0060 0.0330 0.1320 NT 0.0080 0.0220 0.0080 NT ND 0.0110 0.0010 0.0040 0.0060 NC	ND NT 0.0140 0.0024
Mercury 0.002 mg/L ND ND ND NT NT ND ND NT NT ND ND NT NT ND ND NT NT ND ND NT ND ND NT ND ND ND ND ND ND ND ND	ND NT ND ND
Neckel 0.1 may-2 0.001 0.0040 0.0240 NT NT 0.0040 ND NT NT 0.0030 0.0030 NT NT 0.0170 0.0190 NT 0.0030 0.0040 0.0090 0.0050 0.0070 NT 0.0030 0.0040 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080	0.0037 NT 0.0150 0.0180
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Zinc 2 mg/L <sup>23</sup> 0.0090 0.0190 11.1000 NT NT 0.0970 ND NT NT 0.0100 0.0050 NT NT ND 0.0410 NT 0.0110 0.0080 0.0170 NT 0.0120 0.0160 NT 0.0150 0.0120 0.0090 0.0140 ND 0.02	0.0190 NT 0.0330 0.0350
Acetone 610 µg <sup>12</sup> ND ND NT NT NT NT NT NT ND ND NT NT ND ND NT NT ND ND NT ND ND NT ND ND NT ND	ND NT ND ND
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Carbon tetrachioride 5 μg/L <sup>3</sup> ND ND ND NT NT ND NT NT ND ND NT NT ND ND NT NT ND ND NT ND ND ND NT ND	ND NT ND ND
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1.2-Dichlorobenzene 600 HPL' ND ND ND NT NT ND NT NT ND ND NT NT ND ND NT ND ND NT ND	ND NT ND ND
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Ethylbenzene 700 µ9/L <sup>3</sup> ND ND ND NT NT ND NT NT ND ND NT NT ND ND NT ND	ND NT ND ND
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4-Methyl-2-pentanone μg/L ND ND ND NT NT NT NT NT ND ND NT NT ND ND NT ND	ND NT ND ND
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# TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-7 Concentration (expressed in same units as Threshold Value)

_	Threshold																						
Parameter Antimony	Value	JUN '18	MAR '18	NOV '17	SEP '17	MAR '17	MAR '16	SEP '15	MAR '15	DEC '14	MAR '14	SEP '13	MAR '13	SEP '12	MAR '12	JUN '11	MAR '11	SEP '10	JUN '10	SEP '09	JUN '07	SEP '05	JUN '05
Arsenic	0.006 mg/L	0.0100	ND	ND	ND	0.0070	0.0070	ND	ND	NT	ND	ND	ND	ND	ND	0.0250 ND	ND <sup>6</sup>	ND	ND	ND	ND	ND	ND
Barium	2 ma/L <sup>1</sup>	0.0280	0.0380	0.0350	0.0330	0.0380	0.0390	0.0300	0.0330	NT	0.0310	0.0200	0.0310	0.0260	0.0280	0.0350	0.0398	0.0375	0.0370	0.0310	0.0340	0.0240	0.0280
Beryllium	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND <sup>6</sup>	ND	ND	ND	ND	ND
Cadmium	0.005 mg/L1	ND	ND	ND	ND	0.0010	ND	0.0010	ND	NT	0.0010	ND	ND	0.0050	ND	ND	0.0012	0.0419	0.0410	ND	ND	ND	ND
Chromium	0.1 mg/L <sup>1</sup>	0.0040	0.0050	0.0050	0.0040	0.0060	ND	ND	ND	NT	ND	ND	ND	ND	0.0010	0.0080	ND	0.0054	0.0048	0.0530	ND	ND	ND
Cobalt	0.73 mg/L <sup>5</sup>	0.0150	0.0190	0.0180	0.0180	0.0250	0.0280	0.0200	0.0250	NT	0.0220	0.0130	0.0250	0.0160	0.0200	0.0200	0.0353	0.0229	0.0250	0.0250	0.0200	0.0190	0.0220
Copper	1.3 mg/L	ND	ND	0.0050	ND	0.0060	0.0060	0.0080	0.0250	NT	0.0180	0.0040	ND	0.0080	0.0040	0.0390	0.0056	0.2180	0.5000	0.0058	0.0098	ND	ND
Lead	0.015 mg/L	ND 0.0190	ND 0.0210	ND 0.0210	ND 0.0190	ND 0.0250	ND	0.0010	0.0050	NI	0.0060	0.0040	0.0020	0.0020	0.0040	0.0460	0.0033	0.0074	0.0060	0.0043	0.0042	ND 0.0220	ND 0.0370
Selenium	0.05 mg/L <sup>1</sup>	ND	0.0100	ND	0.0030	0.0250 ND	0.1070	0.0070	0.1880	NT	0.1830	0.1410	0.1800	0.1920	0.2260	0.0340	ND	ND	ND	0.0120	0.0110	0.0140	ND
Silver	0.1 mg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0054	ND	ND	0.0035
Thallium	0.002 mg/L1	ND	0.0003	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0032	ND	ND	0.0420	0.0440	ND	0.0140
Tin	22 mg/L⁵	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	0.26 mg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	0.0170	ND	0.0051	0.0072	0.0230	0.0240	ND	ND
Zinc	5 mg/L <sup>3</sup>	0.0140	0.0180	0.0200	0.0120	0.0210	0.0050	0.0120	0.0060	0.0060	190.0000	ND	0.0150	0.0100	0.0130	ND	0.0250	0.0472	0.0380	0.0120	0.0110	0.0160	0.0180
Mercury	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	0.039.ug/15	ND	ND	ND	ND	5.8 ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 ug/1	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	90 ug/l1	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 ug/l*	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodenzene	100 ug/i	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	1.0	2.0	ND	1.4 ND	1.8 ND	2.7	1.7 ND	ND
Chloroform	80 ug/1	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	2.2	ND	1.3	1.6	1.5	3.8	ND	ND
Chloromethane	30 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	0.2 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.05 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 ug/l°	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene trans-1.4-Dichlo-2-butene	75 Ug/I	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.1-Dichloroethane	5 ug/1	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	70 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2-Dichloroethylene	100 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5 ug/l'	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 ug/1	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.1.1.2-Tetrachloroethane	70 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 ug/l <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinvl chloride	2000 ug/l 2 un/l <sup>1</sup>		ND	ND			ND		ND	NT	ND					ND				ND	ND		ND
Ethylbenzene	700 ug/1	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 ug/l1	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 ug/l <sup>4</sup>	3.56	6.8	5.9	5.36	10.3	8.8	ND	ND	NT	9.7	5.6	11.9	8.0	11.2	10.7	15.7	7.2	8.2	9.0	12.0	7.4	2.1
Methyl ethyl ketone(2-Butanone)	4000 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl-2-pentanana	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
styrene	100 ug/l	ND	ND	ND	ND	ND	ND	49	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2.3-Trichloropropane	40 ua/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410 ug/1 <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Note: Low flow purging and samplin	g used starting w	ith the June	e 2005 m	onitoring	round																_	-	
<ol> <li>Threshold value given is the Maxies</li> <li>Threshold value given is the lifeti</li> <li>Threshold value given is the Sect</li> <li>Threshold value given is the Preil</li> <li>Constituent concentration was replication was replication was replication was replicated by the threshold value has been provided</li> </ol>	mum Contaminar me health advisor ondary Drinking W king Water Advisor minary Remedial ported above its la its. Therefore, to ad for parameters	nt Level (M0 y as provide / ater Regul ory as provi Goal (PRG aboratory m be consist not identifi	CL) as pr ed in the lation (SE ided in th a) for tap wethod de went with I ed in the	ovided in USEPA 2 DWR) as e USEPA water, as itection lin historical sources	the USEP 2004 Editic provided in 2004 Edit provided i provided i nit, but low data, only isted abov	A 2004 Edi on of the Dr h the USEF tion of the E n the Octob rer than its I those const re	tion of the inking Wat 2A 2004 Ed Drinking Wat per 2002 Us laboratory r tituents with	Drinking V er Standar lition of the ater Stand SEPA Reg eporting lin h concentr	Vater Stand ds and Hea Drinking W ards and He ion 9 PRGs mit and histe ations lower	ards and Ith Adviso / ater Star salth Advisor Table 20 prical report r than hist	Health Advis ories adards and H sories 002 Update orting limit. I corical report	sories Health Adv However, t ting limits v	isories the reportir were repor	ng limit this ted as non-	round was detect.	significant	У					= Exceeded	IMCL

TABLE 1 SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-12 Concentration (Expressed in same units as Threshold Value)

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No threshold value has been provided for parameters not identified in the sources listed ab

# TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-13 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	<u>JUN '15</u>	MAR '15	DEC '14	SEP '14	<u>JUN '14</u>	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006 mg/l 1	0.002	ND	0.0360	ND	0.0020	0.0080	ND	0.0110	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	0.0200	ND	ND	ND
Arsenic	0.010 mg/L <sup>1</sup>	0.02	0.0070	ND	0.0050	0.0200	ND	ND	0.0100	ND	0.0190	0.0100	0.0110	0.0070	0.0040	0.0200	0.0070	ND	0.0140	0.0160	0.0070	0.0080	0.0070	ND	ND	0.0060	0.0050	0.0050	0.0090	ND	0.0096	0.0094	0.0108
Barium	2 mg/L <sup>1</sup>	0.089	0.1150	0.0970	0.0460	0.0860	0.1080	0.0990	0.1830	0.0890	0.1700	0.0910	0.0870	0.0900	0.0890	0.1400	0.0870	0.0700	0.1180	0.0780	0.0650	0.0690	0.0750	0.0770	0.0760	0.0720	0.0760	0.0650	0.0760	0.0800	0.0912	0.0817	0.0807
Beryllium	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	0.005 mg/L <sup>1</sup>	0.004	0.0040	ND 0.0010	0.0020 ND	0.0030	0.0050	ND	0.0290	ND 0.0050	0.0050 ND	0.0040	0.0040 ND	ND	ND	0.0020	ND	0.0020	ND 0.0050	ND	ND	ND	0.0020 ND	ND	ND	ND	ND	ND	0.0020 ND	ND	0.0004 ND	0.0004 ND <sup>6</sup>	0.0004 ND
Cobalt	0.73 mg/L <sup>5</sup>	0.011	0.0130	0.0120	0.0070	0.0120	0.0140	0.0140	0.0280	0.0130	0.0150	0.0130	0.0120	0.0140	0.0160	0.0180	0.0110	0.0100	0.0120	0.0100	0.0090	0.0130	0.0120	ND	0.0100	0.0130	0.0120	0.0110	0.0120	0.0090	0.0192	0.0156	0.0138
Copper	1.3 mg/L <sup>1</sup>	ND	ND	ND	ND	0.0100	ND	ND	0.0900	ND	0.0060	ND	0.0020	ND	0.0050	0.0730	0.0050	0.0050	0.0080	0.0230	0.0030	0.0050	ND	ND	ND	0.0060	0.0040	0.0020	0.0090	0.0300	0.0028	0.0018	0.0027
Lead	0.015 mg/L <sup>1</sup>	ND	0.0020	ND	ND	0.0010	ND	0.0070	0.0350	0.0190	ND	ND	0.0020	0.0030	0.0030	0.0170	0.0040	0.0040	0.0070	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	ND	0.0020	ND	0.0040	0.0130	0.0015	ND	ND
Mercury	0.002 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND
Selenium	0.05 mg/l <sup>1</sup>	0.011 ND	0.0120 ND	0.0290 ND	0.0060 ND	0.0120 ND	0.0350 ND	0.0140 ND	0.0465 ND	0.0130 ND	0.0130	0.0120 ND	0.0120 ND	0.0130 ND	0.0130	0.0220	0.0590	0.0100	0.0120	0.0100	0.0090	0.0100	0.0100 ND	0.0100 ND	0.0100	0.0640	0.0100	0.0090	0.0110	0.0060	0.0141 ND	0.0127 ND	0.0121 ND
Silver	0.1 mg/L <sup>2,3</sup>	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	0.0010	0.0020	0.0020	ND	0.0010	0.0010	ND	0.0020	ND	0.0020	ND	0.0030	0.0340	ND	ND	ND
Thallium	0.002 mg/L <sup>1</sup>	ND	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22 mg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	0.2800	0.1100	ND	0.0120	ND	ND	0.0010	ND	ND	ND	0.0170	0.0400	0.0090	0.0180	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>e</sup>	ND	ND
Vanadium	0.26 mg/L <sup>-</sup>	ND	ND	0.0020	ND 0.0070	ND 0.0200	ND 0.0170	0.0060	0.0390	0.0030	ND	ND	ND	ND	ND	0.0130	0.0020	ND	0.0010	0.0040	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	0.0200	ND 0.0178	ND	ND 0.0008
Acetone	610 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	0.1300 ND	ND	0.0060 ND	ND	0.0070 ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	ND
Bromochloromethane	80 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodicniorometnane (THM) Bromoform	90 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 µg/L <sup>1</sup>	4.72	5.40	ND	5.23	5.03	6.8	ND	5.5	2.5	6.6	7.4	6.3	6.1	7.4	8.1	ND	7.1	7.2	6.4	2.2	3.9	6.8	6.3	1.6	4.2	6.7	6.5	6.0	3.7	6.2	5.6	5.9
Chloroform	4.6 µg/L <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1 ND	ND	ND	ND	ND	1.3 ND
Chlorodibromomethane (THM)	80 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600 µg/L1	ND	ND	ND	1.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichloropenzene trans,1.4-Dichloro,2-butene	/6 µg/L	ND	ND	ND	1.11 ND	ND	ND	ND	ND	ND	ND	ND	1.4 ND	1.2 ND	1.3 ND	ND	ND	1.4 ND	ND	ND	ND	ND	1.0 ND	1.2 ND	ND	ND	1.2 ND	ND	1.4 ND	1.0 ND	ND	1.1 ND	1.2 ND
1,1-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2-Dichloropropane	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene Male d kutol kater (2 klassere)	700 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 µg/L'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide	4000 μα/	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-1 etrachioroethane Tetrachioroethalene/PCE)	0.3 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 µg/L.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2.3-Trichloropropane	40 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2 μg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
moury (en-buty) ether (MTBE)	20 · 40 µg/L*	3.26	ND	ND	3.70	3.53	0.1	NU	3.0	2.0	4.1	4.9	3.2	D.2	4.0	2.9	ND	4.2	D.U	D.4	3.3	3.3	D.U	4.5	2.8	3.8	4.D	2.8	4./	3.2	1.9	3.8	3.4
1 Threshold value given is the Max	imum Conternio	eaea MCL	(MCL) ~~	provided	in the Lic	EPA 200	4 Edition	of the D	rinking W	ater Ston	darde on	Health	Advisoria																				
2 Threshold value given is the lifet	ime health orbits	on/ se pro	wided in *	he LISED:	uie 03 1 2004 ⊑-	dition of t	- couldt	on Water	r Standor	le anvi Li	ourus dill solth &dui	e oriee	- unisonet	-																			
3 Threshold value given is the Sec	ondary Drinking	Water Re	aulation i	(SDW/R)	e provide	ad in the l	ISEPA 2	004 Editi	ion of the	Drinking	Water St	andarde	and Healt	h Advien	riae																		
4 Threshold value given is the Driv	wing Water Adv	ienni se ni	ouided in	the LISE	20 2004	Edition of	the Drink	cing Wat	on Standa	rde and s	Health Ad	vienniec	unu riedit																				
5 Threshold value given is the Pre	liminary Remedi	al Goal /P	RG) for to	n water	as provide	ed in the	October 9	2002 1158	EPA Reni	n 9 PPC	is Table 3		late																				
6. Constituent concentration was re	eported above it	s laborator	v method	detection	limit, bu	t lower th	an its lah	oratory n	eporting li	mit and F	istorical r	eporting	limit.																				
However, the reporting limit this	round was signil	ficantly him	her than	previous	eporting	limits. Th	erefore	to be con	nsistent w	th histori	cal data	only those	se																				
constituents with concentrations	lower than histo	prical repo	rting limits	s were rec	orted as	non-dete	ct.					,	-																				
			-																														

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL 0W-14 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10	<u>JUN '10</u>
Antimony	0.005 moll 1	ND	ND	0.0350	NT	0.0050	0.0410	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	0.0110	0.0170	ND	ND	NT	ND
Arsenic	0.010 mg/L <sup>1</sup>	0.01	ND	0.0030	NT	0.0200	0.0120	ND	NT	ND	0.0070	0.0050	0.0050	NT	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	NT	ND	ND	ND	0.0060	ND	0.0074	ND	NT	0.0070
Barium	2 mg/L1	0.155	0.2240	0.1990	NT	0.2400	0.2490	0.2290	NT	0.1380	0.1750	0.1980	0.1140	NT	0.2020	0.0910	NT	0.1570	0.1840	0.0790	NT	0.1440	0.1760	0.1370	NT	0.1750	0.1770	0.1470	0.1610	0.2100	0.2700	0.2030	NT	0.1900
Beryllium	0.004 mg/L1	ND	ND	ND	NT	0.0030	ND	ND	NT	0.0010	0.0010	ND	0.0010	NT	ND	ND	NT	ND	ND	0.0010	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0010	NT	ND
Cadmium	0.005 molL1	0.006	0.0050	ND	NT	0.0050	0.0060	ND	NT	ND	0.0070	0.0080	0.0060	NT	ND	ND	NT	0.0050	0.0010	ND	NT	ND	0.0020	ND	NT	ND	0.0040	0.0030	0.0030	ND	ND <sup>6</sup>	ND <sup>6</sup>	NT	ND
Cobalt	0.1 molt	0.001	0.0060	0.0020	NT	0.0010	0.0020	ND 0.0360	NT	0.0110	0.0030	0.0030	0.0170	NT	0.0050	0.0050	NT	0.0040	0.0010	0.0080	NT	ND 0.00P0	0.0050	ND 0.0270	NT	ND 0.0140	ND 0.0100	ND 0.0100	ND 0.0160	ND 0.0090	ND 0.0457	0.0065	NT	0.0018
Copper	1.3 ma/L <sup>1</sup>	ND	0.0090	ND	NT	0.0100	ND	0.0200	NT	0.0010	0.0010	ND	0.0170	NT	0.0100	0.0090	NT	0.0070	0.0050	0.0200	NT	0.0030	0.0080	0.0100	NT	ND	ND	0.0010	0.0090	ND	0.0049	0.0140	NT	0.0050
Lead	0.015 mg/L <sup>1</sup>	ND	0.0060	ND	NT	0.0170	ND	ND	NT	0.0160	0.0070	ND	0.0090	NT	0.0050	0.0050	NT	0.0040	0.0040	0.0070	NT	0.0020	0.0050	0.0030	NT	0.0020	ND	0.0090	0.0020	ND	ND	0.0039	NT	0.0011
Mercury	0.002 mg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Nickel	0.1 mg/L <sup>2</sup>	0.012	0.0220	0.0320	NT	0.0220	0.0470	0.0400	NT	0.0160	0.0160	0.0170	0.0200	NT	0.0270	0.0180	NT	0.0150	0.0230	0.0200	NT	0.0120	0.0200	0.0350	NT	0.0190	0.0170	0.0150	0.0180	0.0180	0.0460	0.0407	NT	0.0170
Selenium	0.05 mg/L'	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	0.0350	0.0140	NT	ND	ND	0.0260	NT	ND	ND	ND	NT	0.0200	0.0310	0.0240	0.0300	ND	ND	ND	NT	ND
Thalium	0.002 mol 1	ND	0.0002	0.0002	NT	ND	ND	ND	NI	ND	ND	ND	0.0040	NT	0.0020 ND	ND	NI	0.0020 ND	0.0020 ND	ND	NT	ND	0.0020 ND	ND	NI	ND	0.0040 ND	0.0010	0.0050 ND	ND	ND	ND	NT	ND
Tin	22 ma/L <sup>6</sup>	ND	ND	ND	NT	ND	ND	ND	NT	0.0350	ND	0.0070	0.0010	NT	ND	ND	NT	ND	0.0220	0.0180	NT	0.0310	ND	ND	NT	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	NT	ND
Vanadium	0.26 mg/L <sup>6</sup>	ND	0.0070	0.0030	NT	0.0070	ND	ND	NT	0.0170	ND	ND	0.0140	NT	0.0080	0.0050	NT	0.0050	0.0020	0.0080	NT	0.0030	0.0060	ND	NT	ND	ND	ND	ND	0.0290	ND	0.0063	NT	0.0028
Zinc	2 mg/L <sup>2,3</sup>	0.031	0.0480	0.0160	NT	0.0600	0.0230	0.0300	NT	0.0280	0.0170	0.0140	0.0680	NT	0.0240	0.0190	NT	0.0070	0.0100	0.0310	NT	0.0120	0.0310	0.0210	NT	0.0160	0.0070	0.0070	0.0270	ND	0.0453	0.0570	NT	0.0094
Acetone	610 µg/L <sup>b</sup>	ND	ND	ND	NT	ND	6.9	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	6.4	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Acrylonitrile	0.039 µg/L*	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND 4.7	NT	ND
Bromochloromethane	80 µg/L <sup>2</sup>	2.77 ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	4.3 ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromodichloromethane (THM)	90 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromoform	80 µg/L <sup>1</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon disulfide	1000 μg/L <sup>b</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon tetrachloride	5 µg/L'	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chiorobenzene	100 µg/L	13.3	10.8	ND	NI	13.42	15.6	ND	NI	12.5	13.5	15.4	10.7	NI	16.7	5.3	NI	15.7	15.7	3.2	NI	11.3	19.1	8.0	NI	7.0	14.3	14.6	16.5	7.1	15.3	6.1 N/D	NI	14.0
Chloroform	80 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chlorodibromomethane (THM)	80 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromoethane (EDB)	0.05 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichlorobenzene	600 µ9/L'	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,4-Dichlorobenzene trans,1,4-Dichloro,2-butene	75 µg/L	2.62 ND	ND	ND	NT	ND	ND	ND	NI	1.8 ND	ND	ND	2.2	NT	3.3 ND	ND	NI	3.4 ND	ND	ND	NT	2.2 ND	2.9 ND	1.8 ND	NI	1.4 ND	2.7 ND	2.2 ND	3.2 ND	1.8 ND	2.7 ND	1.9 ND	NT	3.U ND
1.1-Dichloroethane	5 µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloroethane	5 µ9/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethylene	7 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,2-Dichloroethene	70 µg/L'	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,2-Dichloroethene	100 µg/L*	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
cis-13-Dichloropropene	ug/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,3-Dichloropropene	μg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Ethylbenzene	700 μg/L <sup>1</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl butyl ketone(2-Hexanone)	160 μg/L <sup>9</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromomethane	10 µg/L <sup>-</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Disconceptage	30 µg/L 61 µ0/1 <sup>5</sup>	ND	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	ND	NT	ND	ND	NI	ND	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methylene chloride	5 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L <sup>2</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl iodide	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
4-Methyl-2-pentanone	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Styrene	100 µg/L	ND	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	ND	NI	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	NI	ND
1.1.2.2-Tetrachloroethane	0.3 µg/L <sup>2</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Tetrachloroethylene(PCE)	5 µ9/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Toluene	1000 µg/L <sup>1</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1-Trichloroethane	200 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2-Trichloroethane	5 µ0/L'	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Trichloroflouromethane	2000 µg/L <sup>2</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2,3-Trichloropropane	40 µg/L <sup>2</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl acetate	410 µg/L <sup>5</sup>	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl chloride	2 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Xylenes	10000 µg/L1	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L*	6.23	9.4	ND	NT	7.08	16.5	ND	NT	6.7	7.7	12.3	6.9	NT	11.2	1.7	NT	6.6	14.8	4.3	NT	6.9	11.9	11.0	NT	7.5	8.4	6.6	12.4	7.0	16.3	12.3	NT	5.3
	= Excee	aded MCL																																
<ol> <li>Inreshold value given is the Max</li> </ol>	mum Contamina	nt Level (N	ACL) as p	rovided in	the USE	PA 2004	Edition of	the Drinki	ng Wat	er Standar	ds and He	saith Advi	sories																					
<ol><li>Threshold value given is the lifeti</li></ol>	me health adviso	ry as provi	ded in the	USEPA 2	2004 Edi	tion of the	Drinking	Water Sta	ndards	and Health	n Advisori	es																						
<ol><li>Threshold value given is the Sec</li></ol>	ondary Drinking \	Nater Reg	ulation (S	DWR) as	provided	in the US	SEPA 200	4 Edition of	of the Dr	inking Wa	ter Standa	ards and I	Health Adv	isories																				
<ol><li>Threshold value given is the Drin</li></ol>	king Water Advis	iory as pro	vided in th	he USEPA	2004 E	dition of th	ne Drinkin	g Water S	tandard	s and Hea	Ith Adviso	ries																						
<ol><li>Threshold value given is the Prel</li></ol>	iminarv Remedia	I Goal (PR	G) for tap	water. as	provide	d in the O	ctober 20	02 USEPA	Region	9 PRGs 1	Table 200	2 Update																						
<ol><li>Constituent concentration was re</li></ol>	ported above its I	laboratory	method d	etection lin	nit, but k	ower than	its labora	atory repor	ting limi	and histo	rical repor	ting limit.																						
However, the reporting limit this	round was signific	cantly high	er than pr	evious rep	orting lir	nits. The	refore, to	be consist	ent with	historical	data, only	those																						
constituents with concentrations	lower than historic	cal reportir	ng limits w	ere report	ed as no	n-detect.																												

No threshold value has been provided for parameters not identified in the sources listed above NT = Not Tested due to dry conditions at well.

TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL (W-15 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10	JUN '10
A-1	value	ND	ND	0.0200	ND	0.0000	0.0340	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NID	ND	ND	ND	0.0050	0.0070	0.0050	0.0400	ND	ND	ND	ND	ND
Americ	0.000 mgl 1	0.02	0.0200	0.0300	0.0200	0.0300	ND	ND	0.0700	0.0120	0.0220	0.0170	ND	ND	0.0160	ND	0.0350	ND	ND	0.0050	0.0290	0.0120	0.0190	0.0040	0.0200	ND	ND	0.0080	ND	ND	0.0022	0.0228	0.0262	ND
Barium	2 mg/L <sup>1</sup>	0.095	0.1280	0.1240	0.0850	0.0890	0.1230	0.1560	0.3100	0.0500	0.1130	0.1840	0.1390	0 2230	0.1260	0.1350	0.1050	0 1810	0 1 180	0.1340	0.0750	0.1510	0.1550	0 1340	0.1010	0 2360	0 2350	0.1620	0 1930	ND	0.1890	0.1250	0.1110	0 2900
Bervlium	0.004 mg/L1	ND	ND	ND	ND	ND	ND	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND <sup>6</sup>	ND
Cadmium	0.005 mg/L1	0.010	0.0090	ND	0.0100	0.0050	0.0100	0.0050	0.0460	ND	0.0100	0.0080	0.0070	ND	ND	ND	ND	0.0100	0.0010	ND	0.0010	ND	0.0040	ND	0.0020	ND	0.0060	0.0010	0.0040	ND	ND	ND <sup>6</sup>	ND <sup>6</sup>	ND
Chromium	0.1 mg/L <sup>1</sup>	ND	ND	ND	0.0030	ND	0.0020	ND	0.1180	0.0020	0.0010	0.0050	0.0020	0.0010	ND	ND	0.0030	0.0030	0.0030	ND	ND	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND <sup>6</sup>	0.0018	0.0018
Cobalt	0.73 mg/L <sup>5</sup>	0.012	0.0100	0.0090	0.0180	0.0130	0.0040	ND	0.2300	0.0080	0.0180	0.0070	0.0040	0.0020	0.0120	ND	0.0190	0.0020	ND	0.0010	0.0140	0.0100	0.0060	0.0020	0.0170	0.0030	0.0040	0.0090	0.0020	ND	0.0039	0.0185	0.0244	0.0017
Copper	1.3 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	0.1400	ND	ND	ND	ND	ND	0.0020	ND	ND	0.0080	0.0040	0.0240	0.0050	0.0060	0.0060	ND	ND	ND	0.0030	0.0040	0.0100	0.2400	ND	0.0012	0.0059	0.0028
Lead	0.015 mg/L	ND	0.0020	ND	ND	0.0020	ND	0.0050	0.1350	0.0140	ND	ND	ND	0.0040	0.0020	0.0040	0.0110	0.0040	0.0020	0.0030	0.0020	0.0050	0.0050	0.0030	0.0050	0.0020	0.0020	0.0010	0.0030	ND	ND	0.0025	0.0025	0.0013
Mercury	0.002 mgiL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0070	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	0.1 mg/L-	0.023	0.0200	0.0510	0.0350	0.0240	0.0520	0.0110	0.6610	0.0140	0.0290	0.0170	0.0100	0.0110	0.0180	0.0080	0.0330	0.0120	0.0070	0.0110	0.0230	0.0190	0.0150	ND	0.0270	0.0110	0.0130	0.0160	0.0090	0.0140	0.0086	0.0374	0.0396	0.0097
Selenium	0.05 mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0220	0.0000	NU	0.0020	ND	0.0160	0.0000	ND	0.0020	ND	0.0100	0.0120	0.0180	0.0110	0.0190	0.0400	ND	ND <sup>6</sup>	ND <sup>6</sup>	ND
Thalium	0.002 mgl <sup>1</sup>	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	0.0030 ND	0.0020 ND	ND	0.0030 ND	0.0030 ND	0.0050 ND	0.0020 ND	0.0030 ND	ND	ND	ND	ND	0.0050 ND	ND	ND	ND	ND	ND	ND	ND
Tin	22 mg/L <sup>6</sup>	ND	ND	ND	ND	ND	ND	ND	1 0500	ND	ND	0.0470	ND	ND	ND	ND	ND	ND	0.0270	0.0780	0.0210	0.0400	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND <sup>6</sup>	ND <sup>6</sup>	ND
Vanadium	0.26 mg/L <sup>5</sup>	ND	0.0060	0.0040	0.0110	ND	ND	0.0150	0.1560	0.0050	ND	ND	0.0020	ND	0.0040	0.0050	0.0060	0.0040	0.0030	0.0090	0.0030	0.0050	0.0040	0.0040	0.0030	0.0030	0.0020	0.0020	ND	0.0160	ND	0.0012	0.0023	0.0023
Zinc	2 mg/L <sup>2,3</sup>	0.032	0.0210	0.0100	0.0300	0.0200	0.0140	ND	0.9700	ND	0.0120	0.0150	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	0.0150	0.0200	ND	0.0280	0.0090	0.0120	0.0060	0.0170	ND	0.0181	0.0147	0.0227	ND
Acetone	610 µgL <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	5.2	ND	ND	6.7	ND	ND	ND	ND	ND	ND	5.6	ND	ND	ND	18.6	ND	ND	ND	ND	ND	ND	ND	6.8	ND	ND	ND
Acrylonitrile	0.039 µg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 µ9L'	1.67	ND	ND	3.59	2.83	ND	ND	3.4	3.2	2.1	3.2	1.7	2.0	2.8	2.8	3.6	2.2	2.1	2.8	3.4	2.7	2.8	2.5	3.4	3.1	2.7	3.2	3.5	2.1	1.9	3.3	3.5	2.5
Bromochloromethane	80 µ91L*	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90 µ9/L.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon dirufide	1000 unt <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 unt 1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 µgt <sup>1</sup>	12.72	17	15.2	18 19	21.26	17.4	21.5	16.0	16.8	17.7	18.3	21.0	21.1	19.7	26.9	19.0	27.0	25.0	32.5	18.9	14.3	20.0	29.0	15.5	12.4	16.9	15.8	25.0	11.8	23.1	19.8	16.9	12.0
Chloroethane	4.6 ugL <sup>6</sup>	ND	ND	ND	ND	ND	ND	ND	ND	2.8	ND	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	2.9	1.4
Chloroform	80 µ91L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodbromomethane (THM)	80 µ9€'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chibropropane (DBCP)	0.2 µ9L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05 µ9 <sup>®</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600 HAL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	1.0	1.3	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75 µg/L'	ND	ND	ND	2.51	ND	1.6	ND	ND	2.1	ND	ND	3.4	2.9	3.0	ND	ND	3.4	ND	ND	2.1	2.3	2.6	3.2	1.9	1.9	2.3	1.5	3.1	2.1	2.9	2.4	2.4	2.1
trans-1,4-Dichloro-2-outene	ugit.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2-Dichlosoethane	s uni	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1 1-Dichloroethylene	7 ug/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1.2-Dichloroethene	70 µg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5 µQL'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	μgt	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	μgL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700 µgt.'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 µgL"	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 µg/c	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Choromethane	30 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 ug/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 µ9L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide	μgL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	µgL.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µgL <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 μgL <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 µ91L'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1+Inchoroethane	200 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichbroethdene(TCE)	5 µat 1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichbroflouromethane	2000 unt <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2.3-Trichloropropane	40 ugL <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410 µgL <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2 µ91L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µ9€1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	3.3	ND	ND	2.2	5.4	ND	ND	3.1	ND	6.1	2.0	3.9	ND	ND	6.5
Methyl tert-butyl ether (MTBE)	20-40 µ9L <sup>4</sup>	6.61	ND	6.3	7.52	7.69	8.5	ND	7.9	7.9	6.8	7.8	6.7	12.2	7.1	4.2	6.0	9.4	5.4	7.7	8.3	10.3	6.1	3.9	8.8	9.5	9.5	5.5	7.5	7.1	7.9	6.1	7.6	5.7
	= Exce	eded MCL																																
1. Threshold value given is the Max	kimum Contamina	ant Level (1	MCL) as p	rovided in	h the USE	PA 2004	Edition of	the Drin	king Wate	r Standa	rds and H	ealth Adv	risories																					
2. Threshold value given is the lifet	ime health adviso	rv as prov	ided in the	USEPA	2004 Edit	ion of the	e Drinkina	Water S	andards :	and Healt	h Advisor	ies																						
3 Threshold value given is the Sec	ondary Drinking	Water Red	ulation (S	DWR) as	nrovided	in the U	SEPA 200	4 Edition	of the Dri	nking Wa	ater Stand	ards and	Health Ar	tvisories																				
4 Threshold value given is the Drir	king Water Advi	eonu se nro	wided in t	he LISED	A 2004 E/	Etion of th	he Drinkin	a Water	Standards	and Ha	alth Advies	niae																						
<ul> <li>Thread out of value given is the Drift</li> </ul>	ang malei Auvi	any as pro	0.4	COSEF/	12004 EL		No Orlina	g maler		0.0000	T-1-1- 000	0.11- 4-1-																						
<ol> <li>Threshold value given is the Pre</li> <li>Operative stress stress</li> </ol>	miniary remedia	a Goal (PR	.c) for tap	water, as	s provideo	a in the C	wooder 20	UZ USEP	A Region	5 PKGS	able 200	~ update																						
<ul> <li>Constituent concentration was re</li> </ul>	sported above its	aboratory	method d	etection li	mit, but k	wer than	1 Its labora	nory repo	irting limit	and histo	incai repo	rang limi	ι.																					
However, the reporting limit this	round was signifi	cantry high	er than pr	evious re	porting lir	nits. The	sretore, to	be consis	stent with	nistorical	data, only	/ mose																						
constituents with concentrations	tower than histori	cal reportin	ng limits v	vere repor	rted as no	n-detect.																												

No threshold value has been provided for parameters not identified in the sources listed above

			SU	MMARY	T/ OF GROUI	ABLE 1 (CONT.) NDWATER MONITORING RESULTS
			APPEN	IDIX A -	CONSTITU	IENTS FOR DETECTION MONITORING
			Cor	ncentratio	n (Express	ed in same units as Threshold Value)
Parameter	Thre	shold	JUN '18	MAR '18	NOV '17	
Antimory	0.006	na'L'	0.002	ND	ND	
Arsenic	0.010	mg/L <sup>1</sup>	0.01	ND	ND	
Barium	2	mg/L1	0.011	0.0190	0.1000	
Beryllum	0.004	mg/L1	ND	ND	ND	
Cadmium	0.005	mg/L'	ND	ND	ND	
Cobalt	0.1	mal <sup>6</sup>	0.004	0.0060	0.0050	
Copper	1.3	mg/L <sup>1</sup>	ND	ND	ND	
Lead	0.015	mg/L <sup>1</sup>	ND	ND	ND	
Mercury	0.002	mg/L1	ND	ND	ND	
Nickel	0.1	mg/L <sup>2</sup>	0.009	0.0100	0.0100	
Selenium	0.05	mgiL.	ND	0.0100	0.0050	
Thalium	0.002	mail.1	ND	0.0003	ND	
Tin	22	mg/L <sup>6</sup>	ND	ND	ND	
Vanadium	0.26	mg/L <sup>5</sup>	ND	ND	ND	
Zinc	2	mg/L <sup>2,3</sup>	0.022	0.024	0.0210	
Acetone	610	µgt."	ND	ND	ND	
Acryionitrie	0.039	ugit 1	ND	ND	ND	
Bromochloromethane	80	ugl <sup>2</sup>	ND	ND	ND	
Bromodichloromethane (THM)	90	µg/L1	ND	ND	ND	
Bromoform	80	µgL1	ND	ND	ND	
Carbon disulfide	1000	μgL <sup>5</sup>	ND	ND	ND	
Carbon tetrachibride	5	μg¢L'	ND	ND	ND	
Chlorosthapa	100	ugit.	ND	ND	ND	
Chloroform	4.0	ugt1	ND	ND	ND	
Chlorodibromomethane (THM)	80	µg/L1	ND	ND	ND	
1,2-Dibromo-3-chibropropane (DBCP)	0.2	µgL1	ND	ND	ND	
1,2-Dibromoethane (EDB)	0.05	μg/L1	ND	ND	ND	
1,2-Dichlorobenzene	600	µgL'	ND	ND	ND	
trans_1_4-Dichloro_2-butana	15	ugit	ND	ND	ND	
1.1-Dichloroethane	5	μgiL	ND	ND	ND	
1,2-Dichloroethane	5	μgt	ND	ND	ND	
1,1-Dichloroethylene	7	μg/L1	ND	ND	ND	
cis-1,2-Dichloroethene	70	μgiL'	ND	ND	ND	
trans-1,2-Dichloroethene	100	μg/L	ND	ND	ND	
cir.1.2-Dichloropropane	5		ND	ND	ND	
trans-1.3-Dichloropropene		μgL	ND	ND	ND	
Ethylberizene	700	µgL'	ND	ND	ND	
Methyl butyl ketone(2-Hexanone)	160	hâr,	ND	ND	ND	
Bromomethane	10	µgt.2	ND	ND	ND	
Chloromethane	30	hôr.	ND	ND	ND	
Metholece chicride	5		ND	ND	ND	
Methyl ethyl ketone(2-Butanone)	4000	µgL <sup>2</sup>	ND	ND	ND	
Methyl iodide		μgt	ND	ND	ND	
4-Methyl-2-pentanone		μgiL	ND	ND	ND	
Styrene	100	µgL'	ND	ND	ND	
1,1,1,2-Tetrachloroethane	70	µgL'	ND	ND	ND	
1,1,2,2+1 etrachioroethane	0.3	ugit 1	ND	ND	ND	
Toluene	1000	μg1.1	ND	ND	ND	
1,1,1-Trichloroethane	200	µgL1	ND	ND	ND	
1,1,2-Trichloroethane	5	µgL1	ND	ND	ND	
Trichloroethylene(TCE)	5	µgL <sup>1</sup>	ND	ND	ND	
Trichloroflouromethane	2000	µgL <sup>2</sup>	ND	ND	ND	
1,2,3+1 nonioropropane	40	ugit."	ND	ND	ND	
Vinvi chloride	410	µgL1	ND	ND	ND	
Xylenes	10000	µg/L1	ND	ND	ND	
Methyl tert-butyl ether (MTBE)	20 - 40	µgL4	6.53	7.8	4.6	
		= Exce	eded MCL			

10 V 10<sup>-10</sup>
 10<sup>-10</sup>

No threshold value has been provided for parameters not identified in the sources listed above

# <u>ATTACHMENT NO. 3</u> HISTORICAL DETECTED METALS GRAPHS

### Detected Appendix A Metals in OW-9 Tiverton Landfill



<sup>◆</sup>Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ◆Chromium +Cobalt -Copper -Lead Nickel ■Selenium ▲Silver ×Thallium ×Tin ●Vanadium +Zinc -Mercury



**TRUNCATED GRAPH** 

### **Detected Appendix A Metals in OW-12** Tiverton Landfill

**COMPLETE GRAPH** 



 Antimony Arsenic Barium \*Cadmium •Chromium +Cobalt •Copper -Lead •Nickel Selenium Silver Thallium ×Tin x Vanadium Zinc + Mercury Beryllium



### Detected Appendix A Metals in OW-13 Tiverton Landfill

**COMPLETE GRAPH** 



Antimony 
 Arsenic 
 Barium ×Beryllium ×Cadmium 
 Chromium +Cobalt -Copper -Lead -Nickel Selenium Silver 
 Thallium ×Tin ×Vanadium 
 Zinc +Mercury



Date

### Detected Appendix A Metals in OW-14 Tiverton Landfill



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel Selenium Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



Date

### Detected Appendix A Metals in OW-15 Tiverton Landfill

**COMPLETE GRAPH** 0.4 0.36 0.32 0.28 Concentration (mg/L) 0.24 + 0.2 0.16 \_ 0.12 0.08 0.04 0 Un. 1 ß 0 2 0 S S ୍ଦ୍ S 0 1 S 0 Ŋ S 0 S 0 S 1  $\diamond$ 70 25 6 70 ∕> 3 6 1 6 ', /-6 .: '.< 6 Date

Antimony 
 Arsenic 
 Barium 
 Selenium 
 Codalt 
 -Copper 
 -Lead 
 -Nickel 
 Selenium 
 Silver 
 AThallium 
 XTin 
 XVanadium 
 Zinc 
 -Mercury



### Detected Appendix A Metals at Surface Water Sampling Location SW-1 Tiverton Landfill



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel ◎Selenium ◎Silver ▲Thallium ×Tin ×Vanadium ◎Zinc +Mercury







 Chromium + Cobalt • Copper - Lead • Nickel Selenium × Van Zinc + Mercury \* Cadmium Silve Thallium Tin



### Detected Appendix A Metals at Surface Water Sampling Location SW-3 Tiverton Landfill



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper –Lead •Nickel Selenium Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



# <u>ATTACHMENT NO. 4</u> TOLERANCE INTERVAL STATISTICAL EVALUATION

### TABLE 3 SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON JUN 2018 - SAMPLE ROUND

Concentration (units as specified for Threshold Value)

		0	W-9		Background Well		Compliance well	s	
		Toleran	ce Limit *	Threshold					
	Parameter	TL=A	/G+K*S	Value	OW-9	OW-12	OW-13	OW-14	OW-15
METALS	Antimony	0.0290	mg/L	0.006 mg/L1	ND	0.0010	0.0020	ND	ND
	Arsenic	0.0030	mg/L	0.010 mg/L <sup>1</sup>	ND	0.0100	0.0200	0.0100	0.0300
	Barium	0.0491	mg/L	2 mg/L1	0.0090	0.0200	0.0890	0.1550	0.0960
	Beryllium	0.0005	mg/L	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND
	Cadmium	0.3650	mg/L	0.005 mg/L <sup>1</sup>	ND	ND	0.0040	0.0060	0.0100
	Chromium	0.0364	mg/L	0.1 mg/L <sup>1</sup>	0.0030	ND	0.0020	0.0010	ND
	Cobalt	0.0020	mg/L	0.73 mg/L <sup>3</sup>	ND	ND	0.0110	0.0060	0.0120
	Copper	0.0600	mg/L	1.3 mg/L'	ND	ND	ND	ND	ND
	Lead	0.2245	mg/L	0.015 mg/L	0.0010	ND	ND	ND	ND
	Mercury	0.0001	mg/L	0.002 mg/L	ND	ND	ND	ND	ND
	Nickel	0.0337	mg/L	0.1 mg/L	0.0010	0.0250	0.0110	0.0120	0.0230
	Selenium	0.0100	mg/L	0.05 mg/L	ND ND	ND	ND	ND	ND
	Thallium	0.0005	mg/L	0.1 mg/L	ND		ND	ND	ND
	Tip	0.0005	mg/L	22 mg/l 5	ND	ND	ND	ND	ND
	Vanadium	0.0025	mg/L	0.26 mg/L°	ND	ND	ND	ND	ND
	Zinc	13 7203	ma/L	2 - 5 mg/L <sup>2,3</sup>	3 0.0090	0.0090	0.0120	0.0310	0.0320
VOC'S	Acetone	10.7200	iiig/ E	610 µg/L°	0.0000	0.0000	0.0120	0.0010	0.0020
	Acrylonitrile			0.039 µg/L°					
	Benzene			5 μg/L'					
	Bromochloromethane			80 μg/L <sup>2</sup>					
	Bromodichloromethane (THM)			90 μg/L'					
	Bromoform			80 μg/L'					
	Carbon disulfide			1000 μg/L°					
	Carbon tetrachloride			5 μg/L'					
	Chlorobenzene			100 μg/L'					
	Chloroethane			4.6 μg/L°					
	Chloroform			80 μg/L'					
	Chlorodibromomethane (THM)			80 μg/L'					
	1,2-Dibromo-3-chloropropane (DBCP)			0.2 μg/L'					
	1,2-Dibromoethane (EDB)			0.05 µg/L					
	1,2-Dichlorobenzene			600 µg/L					
	1,4-Dichlorobenzene			75 µg/L					
	trans-1,4-Dichloro-2-butene			μg/L					
	1,1 -Dichloroethane			5 μg/L					
	1,2-Dichloroethane			5 μg/∟ 7 μg/L'					
	r, 1-Dichloroethylene			7 μg/∟ 70 μg/L¹					
	trans-1 2-Dichloroethene			100 μg/L					
	1 2-Dichloropropage			5 µg/L1					
	cis-1.3-Dichloropropene			μq/L					
	trans-1.3-Dichloropropene			μg/L					
	Ethylbenzene			700 μg/L'					
	Methyl butyl ketone(2-Hexanone)			160 μg/L°					
	Bromomethane			10 µg/L <sup>∠</sup>					
	Chloromethane			30 μg/L <sup>2</sup>					
	Dibromomethane			61 μg/L°					
	Methylene chloride			5 μg/L'					
	Methyl ethyl ketone(2-Butanone)			4000 μg/L²					
	Methyl iodide			μg/L					
	4-Methyl-2-pentanone			μg/L					
	Styrene			100 µg/L'					
	1,1,1,2-Tetrachloroethane			70 μg/L <sup>2</sup>					
	1,1,2,2-Tetrachloroethane			0.3 µg/L <sup>2</sup>					
	retrachioroethylene(PCE)			5 µg/L					
	I Oluene			1000 µg/L					
	1, 1, 1-Trichloroethane			200 μg/L 5 μα/l <sup>-1</sup>					
				5 µg/L 5 µg/l 1					
	Trichloroflouromethane			2000 ud/l -					
	1 2 3-Trichloropropage			2000 µg/L 40 µg/L					
	Vinvl acetate			410 µg/L°					
	Vinvl chloride			2 µg/L					
	Xvlenes			10000 µg/L'					
	Methyl tert-butyl ether (MTBE)			20 - 40 µg/L <sup>4</sup>					

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit.

However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

### No threshold value has been provided for parameters not identified in the sources listed above

" " = Exceedance of TL ND = Not Detected \* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

# Historical Tolerance Limit Concentrations from Background Well Tiverton Landfill Compliance Sampling



Date

# <u>ATTACHMENT NO. 5</u> CUSUM METHOD STATISTICAL EVALUATION



### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Complaince Well OW-9



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Background Well OW-9

Series1 Series2



CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

Series1 Series2



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

---- Series1 ------ Series2



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

---- Series1 ----- Series2


CUSUM Control Chart for Lead Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Background Well OW-9



# CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Tin Tiverton Landfill Groundwater Background Well OW-9

Series1 Series2



# CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Background Well OW-9

CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-12



### CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-12





# CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-12



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-12



# CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-12



### CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-12



## CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-12







CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-12



CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Complaince Well OW-13



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-13



CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Selenium Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Silver Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for 1,4-Dichlorobenzene - Adjusted Baseline Tiverton Landfill Groundwater Complaince Well OW-13



CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-14

Series1 Series2



## CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-14


#### CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



#### CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-14



#### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-15



## CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-15



## CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-15

----- Series1 ------ Series2



### CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Complaince Well OW-15



## CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Complaince Well OW-15



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-15



# CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-15



## CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Complaince Well OW-15



#### CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Xylenes Tiverton Landfill Groundwater Compliance Well OW-15



## CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-15

# <u>ATTACHMENT NO. 6</u> REPORTED CONCENTRATIONS OF MTBE FIGURE



# ATTACHMENT NO. 7 FIELD SAMPLING DATA SHEETS

PROJECT NAME: PARE PROJECT NO	TIVERTO .: 94139.24	N LANDFILL 4		DATE: WEATHEF	6/ R: Su	7/2018 nny 70s
WELL ID: <u>OW-9</u>	_			DIAMETER	R (INCHES):	2
PURGE DATA						
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16 0.4 Perista	_ feet _ gallons altic pump	MEASUR PURGE F ELAPSEI	e point: Rate (gpm): D time (min)	Top (	of Casing N/A N/A
WATER LEVEL DAT	A					
DEPTH: MEASURE POINT:	13.6 Top of Ca	_feet ising	ELEVATIO DEVICE:	ON:	See Site Pl Water Leve	an el Indicator
FIELD TESTING RES	<u>SULTS</u>					
	REA	DING 1		READING 2		
pH: SPEC. COND: TEMPERATURE:	5.74 0.062 11.6	pH UNITS mS/cm °C		5.76 0.068 11.7	pH UNITS mS/cm °C	
NOTES:						

Samples were noted as generally clear and low in turbidity based on visual inspections of samples. Samples were collected at 3:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	6/7/2018 Sunny 70s	
WELL ID: OW-7	-	DIAMETER (	INCHES): 2	
PURGE DATA				
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	<u>11.8</u> feet <u>1.9</u> gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-	
WATER LEVEL DATA				
DEPTH: MEASURE POINT:	0 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator	
FIELD TESTING RESULTS	<u>S</u>			
	READING 1	READING 2		
pH: SPEC. COND: TEMPERATURE:	6.52 pH UNITS 0.719 mS/cm 12.9 °C	6.52 0.720 12.9	pH UNITS mS/cm °C	
<u>NOTES:</u>				

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 1:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTO 94139.24	/ERTON LANDFILL DATE: 4139.24 WEAT		6/7/2018 Sunny 70s		
WELL ID: OW-12	-		DIAMETER (	INCHES): 2		
PURGE DATA						
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16.2 2.10 Perista	_feet _gallons ltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-		
WATER LEVEL DATA						
DEPTH: MEASURE POINT:	3.5 Top o	_feet f Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator		
FIELD TESTING RESULTS	<u>S</u>					
	REA	DING 1	READ	READING 2		
pH: SPEC. COND: TEMPERATURE:	6.07 0.41 11.4	pH UNITS mS/cm °C	6.07 0.408 11.3	pH UNITS mS/cm °C		
NOTES:						
Samples were noted as get	nerally clea	r and low in turb	idity based on visual insp	ections of samples.		

Samples were collected at 2:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	6/7/2018 Sunny 70s		
WELL ID: OW-13	-	DIAMETER (	INCHES): 2		
PURGE DATA					
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	14.5 feet 1.70 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-		
WATER LEVEL DATA					
DEPTH: MEASURE POINT:	4.4 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator		
FIELD TESTING RESULTS					
	READING 1	READING 2			
pH: SPEC. COND: TEMPERATURE:	6.48 pH UNITS <u>1.178</u> mS/cm <u>12.5</u> °C	6.48 1.171 12.5	pH UNITS mS/cm °C		
<u>NOTES:</u>					

Samples were noted as generally clear and low in turbidity based on visual inspections of

supernatant sample after a 15-minute decanting period.

Samples were collected at 5:30 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTOI 94139.24	N LANDFILL	DATE: WEATHER:	6/7/2018 Sunny 70s	
WELL ID: OW-14	-		DIAMETER	(INCHES): <u>2</u>	
PURGE DATA					
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	10.6 1 Perista	_feet gallons ltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-	
WATER LEVEL DATA					
DEPTH: MEASURE POINT:	4.6 Top of	feet Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator	
FIELD TESTING RESULTS					
	REA	DING 1	READ	READING 2	
pH: SPEC. COND: TEMPERATURE:	6.38 1.51 15.6	pH UNITS mS/cm °C	6.39 1.524 15.6	pH UNITS mS/cm °C	
NOTES:					
Samples were noted as ger	nerally clea	r and low in turb	idity based on visual insp	ections of	

supernatant sample after a 15-minute decanting period.

Samples were collected at 4:30 PM.
# FIELD SAMPLING DATA SHEET

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	6/7/2018 Sunny 70s
WELL ID: OW-15	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	<u>16.8</u> feet <u>1.6</u> gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	7.6 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	6.60 pH UNITS 1.365 mS/cm 12.7 °C	6.60 1.375 12.6	pH UNITS mS/cm °C
<u>NOTES:</u>			

Samples were noted as generally clear and low in turbidity based on visual inspections of

supernatant sample after a 15-minute decanting period.

Samples were collected at 5:00 PM.

# FIELD SAMPLING DATA SHEET

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	6/7/2018 Sunny 70s
WELL ID: OW-16	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	45.8 feet 7.2 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	2.4 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>S</u>		
	READING 1	READI	ING 2
pH: SPEC. COND: TEMPERATURE:	6.53 pH UNITS 0.772 mS/cm 12.4 °C	6.54 0.782 12.4	_pH UNITS _mS/cm °C
NOTES:			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 12:30 PM.

# FIELD SAMPLING DATA SHEET

PROJECT NAME: PARE PROJECT NO.:	TIVERTO 94139.01	N LANDFILL /021	DATE: WEATHER:	6/7/2018 Sunny 70s
FIELD TESTING RESULTS	<u>S:</u>			
SURFACE WATER LOO	CATION:	SW-1		
	REAL	DING 1		
pH: SPEC. COND: TEMPERATURE:	6.92 0.54 15.5	pH UNITS mS/cm °C		
SURFACE WATER LOO	CATION:	<u>SW-2</u>		
	READ	DING 1		
pH: SPEC. COND: TEMPERATURE:	5.66 0.09 16.4	_pH UNITS _mS/cm _°C		
SURFACE WATER LOO	CATION:	SW-3		
	REAL	DING 1		
pH: SPEC. COND: TEMPERATURE:	6.70 0.62 16.5	_pH UNITS _mS/cm _°C		



PARE

PARECORP.COM

October 25, 2018

Mr. Leo Hellested, P.E. Office of Waste Management Solid Waste Section Rhode Island Department of Environmental Management 235 Promenade Street Providence, Rhode Island 02908-5767

Attn: Mr. Robert Schmidt

#### Re: Quarterly Monitoring Report 3rd Quarter (September) 2018, Groundwater Monitoring, Sampling, and Analysis Tiverton Municipal Sanitary Landfill Pare Project No.: 94139.24

Dear Mr. Hellested:

Enclosed herewith are results of the statistical analysis of groundwater monitoring data for the third quarterly monitoring round of Year 2018 from the Tiverton Landfill (Landfill). Pare Corporation (Pare) has prepared this report on behalf of the Town of Tiverton (Town). In the 2017 Annual Groundwater Monitoring Report, Pare recommended that overburden well OW-7 and bedrock well OW-16 be included in the groundwater monitoring program. As such, Pare conducted the groundwater sampling on September 27, 2018 at the compliance wells OW-7, OW-12, OW-13, OW-15, and OW-16. Pare was unable to retrieve groundwater samples at the background well OW-9 and compliance well OW-14 due to dry conditions.

Groundwater samples were analyzed by New England Testing Laboratory (NETLAB) of West Warwick, Rhode Island for the constituents listed in Appendix A (Detection Monitoring) of the State Solid Waste Regulations. Certified laboratory results data are enclosed and are summarized on attached Tables 1-3.

Groundwater field parameters consisting of temperature, pH, and specific conductivity were measured at each monitoring well, in accordance with the RIDEM-approved Groundwater Monitoring Plan for the Landfill. Field parameters were collected until three successive measurements stabilized within  $\pm$  3% for temperature,  $\pm$  0.1 standard unit for pH, and  $\pm$  3% for specific conductivity, in accordance with US EPA's Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. Field parameters are documented on Field Sampling Data Sheets, which are enclosed. pH was unable to be monitored at the Landfill in September 2018 due to a malfunction of the equipment at the time of sampling.

Combustible gases are monitored at each well and at the top of the Landfill. Combustible gases were unable to be monitored at the Landfill in September 2018 due to a malfunction of the gas monitoring equipment at the time of sampling.

Recent sampling rounds have been during periods of dry conditions; as such, samples collected contained a high amount of silt and suspended particles. Reported concentrations of heavy metals were higher than usual, and the degree of suspended particles observed in the samples may have impacted heavy metal concentrations.



Pare believes these results were an anomaly and not indicative of typical groundwater quality. Therefore, Pare updated the groundwater monitoring program in the 2016 Annual Groundwater Monitoring Report to include a 10-15 settling minute period for turbidity to drop out of suspension, before the sample is decanted and then stored in laboratory glassware with preservative. Additionally, during the March 2017 monitoring round, accumulated sediment in the bottom of wells at the Landfill was removed prior to sampling.

#### HUMAN HEALTH THRESHOLD EVALUATION

<u>Compliance Well OW-7</u> – Nine (9) target metals were reported in the groundwater sample collected from OW-7. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-7. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-7.

<u>Compliance Well OW-12</u> – Six (6) target metals were reported in the groundwater sample collected from OW-12. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-12. No (0) target VOCs were reported above laboratory detection limits at OW-12.

<u>Compliance Well OW-13</u> – Nine (9) target metals were reported in the groundwater sample collected from OW-13. One (1) reported metal, arsenic (0.01 mg/L), was reported at its MCL (0.01 mg/L). No (0) target VOCs were reported above laboratory detection limits at OW-13.

<u>Compliance Well OW-14</u> – No samples were collected from OW-14 due to dry conditions.

<u>Compliance Well OW-15</u> – Nine (9) target metals were reported in the groundwater sample collected from OW-15. Two (2) reported metals; arsenic (0.03 mg/L) and cadmium (0.007 mg/L); exceeded their MCLs (0.01 mg/L and 0.005 mg/L, respectively). Two (2) target VOCs; chlorobenzene and MTBE; were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-15.

<u>Compliance Well OW-16 (new bedrock well)</u> – Six (6) target metals were reported in the groundwater sample collected from OW-16. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-16. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-16.

Background Well OW-9 – No samples were collected from OW-9 due to dry conditions.



#### October 25, 2018

#### TOLERANCE INTERVAL STATISTICAL EVALUATION

The Tolerance Interval (TI) approach was used to develop Tolerance Limits (TLs) for each target inorganic constituent (i.e., metals) using the background well analytical results from the eight preceding rounds for which analytical results are available. The background well, OW-9, could not be sampled in this monitoring round along with several previous monitoring rounds including in the June 2016, September 2016, June 2017, and September 2017 monitoring rounds due to dry conditions. Therefore, analytical results of the eight most recent rounds in which samples could be collected were utilized to generate the TLs for this monitoring round, dating back to March 2015. The TI approach is considered inappropriate for analysis of organic constituents and was therefore not performed to evaluate the results of reported VOCs. Table 2 summarizes historical results data from OW-9 used in the calculation of the TLs.

Four (4) of the metals concentration reported in September 2018; arsenic, barium, cobalt, and vanadium; exceeded their corresponding TLs calculated during this monitoring round in at least one compliance well. In total, there were eight (8) TL exceedances of these metals in this monitoring round. The TLs and the corresponding compliance well data from this monitoring round are presented in Table 3. Each of these metals is routinely detected in groundwater beneath the landfill.

#### CUSUM METHOD STATISTICAL EVALUATION

The Shewhart-CUSUM Method, a supplemental statistical analysis method used in addition to the TI Method, was performed in accordance with the US EPA documents titled "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Interim Final Guidance, April 1989" and "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum to Interim Final Guidance, July, 1992".

Barium and nickel at OW-12 exceeded both of their respective Shewhart-CUSUM thresholds during the September 2018 monitoring round.

The dry conditions present during the September 2016 monitoring round were believed by Pare to have resulted in higher than usual suspended solids in samples collected, which are believed to have also resulted in atypical metals concentrations. As a result, the results of the Shewhart-CUSUM analysis for September 2016 were believed to be an anomaly. In many cases these deviations are outside of the statistical range expected. With the inception of the updated groundwater monitoring program, Pare has reset the Shewhart-CUSUM levels for several metals at multiple wells in order to have an accurate representation of cumulative statistical analysis of these constituents. The metals that have had their Shewhart-CUSUM thresholds reset include: chromium, lead, nickel, vanadium, and zinc at OW-12; barium, cadmium, cobalt, copper, lead, and vanadium at OW-13; zinc at OW-14; and arsenic, cadmium, chromium, cobalt, lead, nickel, vanadium, and zinc at OW-14 is due to a statistical spike in the Shewhart-CUSUM limit during the September 2015 monitoring round (which was also sampled during dry conditions). These Shewhart-CUSUM parameters were reset prior to the March 2017 sampling round; therefore, data recorded from the March 2017 monitoring round is present in the analysis.



#### **ASSESSMENT MONITORING**

The Shewhart-CUSUM analysis is utilized, along with the Tolerance Limits, to identify when Assessment Monitoring should be performed.

Pare performed Assessment Monitoring at OW-14 in the December 2017 monitoring round due to an exceedance of the Shewhart-CUSUM threshold of antimony in the June 2017 monitoring period. This Assessment Monitoring was delayed from September 2017 to December 2017 due to dry conditions in September, rendering a sample unattainable. One Appendix B parameter, sulfides (0.04 mg/L), was detected in the December 2017 monitoring round. In the 2017 Annual Groundwater Monitoring report, Pare recommended that groundwater samples from OW-14 in the March 2018 monitoring round be tested again for sulfides. Again, the Appendix B parameter sulfides (0.04 mg/L) was detected in the samples collected from OW-14 in March 2018.

Pare performed Assessment Monitoring at OW-13 in the June 2018 monitoring round due to an exceedance of both the TL and the Shewhart-CUSUM threshold of barium in the March 2018 monitoring round. No (0) Appendix B parameters were reported in samples collected from OW-13. Sulfides were not detected at OW-13 in the June 2018 monitoring round.

Pare attempted to sample OW-14 in the September 2018 monitoring round to test for sulfides; however, a sample was unobtainable due to dry conditions.

#### MTBE ANALYSIS

Many of the most recent Assessment Monitoring rounds have been conducted due to MTBE concentrations in groundwater. Reported MTBE concentrations have generally risen since September 2006, as depicted in the attached figure titled Reported Concentrations of MTBE. The figure compares the recent increases in reported MTBE concentrations at OW-13, OW-14 and OW-15 to historical concentrations and drinking water advisories defined in the US EPA document titled "2011 Edition of the Drinking Water Standards and Health Advisories". Although reported MTBE concentrations appear to be trending slowly upward, MTBE has never been reported above its odor threshold (0.020 mg/L) or its taste threshold (0.040 mg/L). The US EPA has not established a human health advisory concentration for MTBE.

Because the elevated concentrations of MTBE have recently triggered Assessment Monitoring at OW-13, OW-14, and OW-15, and that no Appendix B parameters were reported to a significant degree at these wells, it is Pare's opinion that the increasing trend in MTBE concentrations beneath the Landfill is an isolated phenomenon and not the result of a significant change in groundwater quality beneath the Landfill.

Despite CUSUM values of MTBE at OW-13, OW-14, and OW-15 remaining above their threshold during the September 2017 monitoring round, Pare does not recommend assessment monitoring due to the aforementioned MTBE trend. The lack of Appendix B parameters in the past, in conjunction with the lack of Appendix B parameters at OW-13 and OW-15 during the December 2016 monitoring round, and the lack of Appendix B parameters at OW-14 during the June 2016 monitoring round, suggests that the presence of MTBE trend does not indicate an increased likelihood that Appendix B parameters would be present beneath the Landfill.



#### CONCLUSIONS AND RECOMMENDATIONS

Currently, the Landfill conducts Detection Monitoring for the parameters listed in Appendix A of the State Solid Waste Regulations, as well as mercury and tin. During this monitoring round, four (4) metals; arsenic, barium, cobalt and vanadium; exceeded their tolerance limits (TLs) in at least one well. Arsenic, barium and cobalt also exceeded their TLs during the previous monitoring round at OW-13 and OW-15. TL exceedances in two consecutive monitoring rounds is one of the criteria used to consider introducing Assessment Monitoring in subsequent monitoring rounds.

Pare does not recommend Assessment Monitoring at the Landfill during the upcoming December 2018 monitoring round as the criteria to warrant Assessment Monitoring were not met in the September 2018 monitoring round.

During the 2016 and 2017 monitoring periods, a rising trend in detections of antimony at the compliance wells became apparent. Antimony was detected at the background well above its MCL during the December 2017 monitoring round. Previously, antimony had not been detected at the background well since the September 2011 monitoring round. The detection of antimony at compliance well OW-14 in the June 2017 monitoring round triggered Assessment Monitoring, which was performed in the December 2017 monitoring round. The Assessment Monitoring round well during the December 2017 monitoring period. The Assessment Monitoring round well during the December 2017 monitoring period. Analysis of the samples collected from OW-14 during the March 2018 monitoring round indicated another detection of sulfides (0.04 mg/L). Assessment Monitoring was not performed at OW-14 in June but was performed at OW-13. Sulfides were not detected in the Assessment Monitoring performed at OW-13 during the June 2018 monitoring round.

The EPA has no MCL for sulfides in groundwater. Water with dissolved hydrogen sulfide will smell musty or swampy around 0.5-1.0 mg/L and Pare did not identify a noticeable smell emanating from the groundwater sample in either round during which the constituent was detected. Hydrogen sulfide gas can occur naturally in groundwater from plant materials rotting underground in anaerobic conditions. Hydrogen sulfide gas could also be resulting from gypsum buried at the Landfill. Pare recommends that sulfides be again tested for at OW-14 in the December 2018 monitoring round as a sample was unobtainable in the September 2018 monitoring round due to dry conditions. Additionally, Pare recommends that the Town consider adding regular analysis of sulfides to the groundwater monitoring program.

Pare recommended that wells OW-7 and OW-16 be incorporated into the compliance monitoring regimen in the 2017 Annual Groundwater Monitoring Report. Despite OW-7 having several years of sampling data, the sampling rounds were selected on a rotating basis with wells OW-6 and OW-8 for alternate monitoring. Pare recommends that wells OW-7 and OW-16 be sampled for two years, or eight consecutive monitoring rounds, prior to initiating statistical analysis. The June 2018 monitoring period marks the second monitoring round that these wells are to be sampled consistently; therefore, it is estimated that statistical analysis for the bedrock and overburden wells will begin in the March 2020 monitoring round.



Samples have been unable to be collected at the background well OW-9 in recent monitoring rounds. Dating back to June 2016, five out of the last ten monitoring rounds have resulted in a dry well. The tolerance interval analysis is dependent on data collected from the background well; therefore, uncharacteristic TL exceedances may be a result of the lack of recent historical data from this well. Pare will be able to more accurately assess this potential changing trend in groundwater quality with more data collection from the background well.

Recent monitoring rounds also indicate there is an increasing trend of barium and cadmium in groundwater at the Landfill. However, Assessment Monitoring triggered by exceedances of barium and cadmium have resulted in no (0) detections of Appendix B parameters. Pare will continue to evaluate antimony, barium, cadmium, and sulfides trends at the Landfill in subsequent monitoring rounds.

Should the RIDEM have any questions regarding this letter or the attached data, please feel free to contact the undersigned at (401) 334-4100, thank you.

Very truly yours,

Timothy P. Thies, P.E. Vice President

TPT/TCJ/abv

Attachments

cc: Richard Rogers, Tiverton Public Works Director (w/encl.) Jay Lambert, Tiverton Landfill Subcommittee (w/encl.) Jan Reitsma, Tiverton Town Administrator (w/encl.) Travis C. Johnson, Pare Corporation (w/o encl.) George G. Palmisciano, P.E. Pare Corporation (w/o encl.)

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# <u>ATTACHMENT NO. 1</u> LABORATORY ANALYTICAL DATA REPORT



# **REPORT OF ANALYTICAL RESULTS**

# NETLAB Work Order Number: 8l28041 Client Project: 94139 - Tiverton Landfill

Report Date: 05-October-2018

Prepared for:

Travis Johnson Pare Corporation 8 Blackstone Valley Place Lincoln, RI 02865

Richard Warila, Laboratory Director New England Testing Laboratory, Inc. 59 Greenhill Street West Warwick, RI 02893 rich.warila@newenglandtesting.com

# Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 09/28/18. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 8I28041. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
0700044 04	014.42		00/27/2010	00/20/2010
8128041-01	OW-12	Water	09/2//2018	09/28/2018
8I28041-02	OW-7	Water	09/27/2018	09/28/2018
8I28041-03	OW-16	Water	09/27/2018	09/28/2018
8I28041-04	OW-15	Water	09/27/2018	09/28/2018
8I28041-05	OW-13	Water	09/27/2018	09/28/2018
8I28041-06	SW-1	Water	09/27/2018	09/28/2018
8I28041-07	SW-2	Water	09/27/2018	09/28/2018
8I28041-08	SW-3	Water	09/27/2018	09/28/2018

# **Request for Analysis**

At the client's request, the analyses presented in the following table were performed on the samples submitted.

#### OW-12 (Lab Number: 8I28041-01)

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C
OW-13 (Lab Number: 8I28041-05)	
Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Nickel	EPA 6010C
Selenium	EPA 6010C

Nickel Selenium Silver Thallium Vanadium Volatile Organic Compounds

# OW-15 (Lab Number: 8I28041-04)

#### <u>Analysis</u>

Zinc

Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C

EPA 6010C

EPA 6010C

EPA 8260C EPA 6010C

**Method** 

EPA 7010

# Request for Analysis (continued)

#### OW-15 (Lab Number: 8I28041-04) (continued)

Analysis	<u>Method</u>
Lead	EPA 6010C
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

#### OW-16 (Lab Number: 8I28041-03)

<u>Analysis</u>	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

#### OW-7 (Lab Number: 8I28041-02)

#### <u>Analysis</u>

Antimony	EPA 60100
Arsenic	EPA 60100
Barium	EPA 60100
Beryllium	EPA 60100
Cadmium	EPA 60100
Chromium	EPA 60100
Cobalt	EPA 60100
Copper	EPA 60100
Lead	EPA 60100
Nickel	EPA 60100
Selenium	EPA 60100
Silver	EPA 60100
Thallium	EPA 7010
Vanadium	EPA 60100
Volatile Organic Compounds	EPA 82600
Zinc	EPA 60100

EPA 6010C

#### <u>Method</u>

2

# Request for Analysis (continued)

## SW-1 (Lab Number: 8I28041-06)

#### <u>Analysis</u>

Antimony	EPA
Arsenic	EPA
Barium	EPA
Beryllium	EPA
Cadmium	EPA
Chromium	EPA
Cobalt	EPA
Copper	EPA
Lead	EPA
Nickel	EPA
Selenium	EPA
Silver	EPA
Thallium	EPA
Vanadium	EPA
Zinc	EPA

#### SW-2 (Lab Number: 8I28041-07)

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Vanadium	EPA 6010C
Zinc	EPA 6010C

#### SW-3 (Lab Number: 8I28041-08)

Analysis	<u>Method</u>
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Vanadium	EPA 6010C
Zinc	EPA 6010C

#### <u>Method</u>

6010C 7010 6010C EPA 6010C

#### Mathod

# Method References

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

#### **Case Narrative**

#### **CASE NARRATIVE:**

#### Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

#### Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

#### Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

## Sample: OW-12

i otar ivietais	Total	Metals
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CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.023	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.002	0.001
7440-48-4	Cobalt	6010C	0.002	0.001
7440-50-8	Copper	6010C	ND	0.004
7439-92-1	Lead	6010C	ND	0.001
7440-02-0	Nickel	6010C	0.025	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.001	0.001
7440-66-6	Zinc	6010C	0.026	0.004

Sample: OW-7

Case Number: 8I28041

CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.054	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.004	0.001
7440-47-3	Chromium	6010C	0.018	0.001
7440-48-4	Cobalt	6010C	0.022	0.001
7440-50-8	Copper	6010C	0.03	0.004
7439-92-1	Lead	6010C	0.006	0.001
7440-02-0	Nickel	6010C	0.032	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.016	0.001
7440-66-6	Zinc	6010C	0.085	0.004

## Sample: OW-16

i otar ivietais	Total	Metals
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CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.027	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.003	0.001
7440-48-4	Cobalt	6010C	0.004	0.001
7440-50-8	Copper	6010C	ND	0.004
7439-92-1	Lead	6010C	ND	0.001
7440-02-0	Nickel	6010C	0.010	0.001
7782-49-2	Selenium	6010C	0.003	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	ND	0.001
7440-66-6	Zinc	6010C	0.019	0.004

Sample: OW-15

Case Number: 8I28041

CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	0.004	0.001
7440-38-2	Arsenic	6010C	0.03	0.002
7440-39-3	Barium	6010C	0.084	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.007	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	0.014	0.001
7440-50-8	Copper	6010C	ND	0.004
7439-92-1	Lead	6010C	0.002	0.001
7440-02-0	Nickel	6010C	0.029	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.011	0.001
7440-66-6	Zinc	6010C	0.015	0.004

## Sample: OW-13

i otar ivietais	Total	Metals
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CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	0.002	0.001
7440-38-2	Arsenic	6010C	0.01	0.002
7440-39-3	Barium	6010C	0.089	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	0.003	0.001
7440-47-3	Chromium	6010C	0.002	0.001
7440-48-4	Cobalt	6010C	0.010	0.001
7440-50-8	Copper	6010C	ND	0.004
7439-92-1	Lead	6010C	ND	0.001
7440-02-0	Nickel	6010C	0.012	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.004	0.001
7440-66-6	Zinc	6010C	0.010	0.004

Sample: SW-1

Case Number: 8I28041

CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.036	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	ND	0.001
7440-50-8	Copper	6010C	ND	0.004
7439-92-1	Lead	6010C	ND	0.001
7440-02-0	Nickel	6010C	0.003	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.001	0.001
7440-66-6	Zinc	6010C	0.005	0.004

## Sample: SW-2

**Total Metals** 

CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	0.003	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.017	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	0.002	0.001
7440-50-8	Copper	6010C	ND	0.004
7439-92-1	Lead	6010C	ND	0.001
7440-02-0	Nickel	6010C	0.002	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.001	0.001
7440-66-6	Zinc	6010C	0.006	0.004

Sample: SW-3

Case Number: 8I28041

CAS RN	Common Name	Method	Result, mg/l	PQL, mg/l
7440-36-0	Antimony	6010C	0.003	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.018	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	ND	0.001
7440-48-4	Cobalt	6010C	0.004	0.001
7440-50-8	Copper	6010C	ND	0.004
7439-92-1	Lead	6010C	ND	0.001
7440-02-0	Nickel	6010C	0.006	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	7010	ND	0.0002
7440-62-2	Vanadium	6010C	0.003	0.001
7440-66-6	Zinc	6010C	0.011	0.004

Sample: OW-12 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

#### Sample: OW-12 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	98.18	70-130
1,2-Dichloroethane d4	111.32	70-130
4 BFB	91.30	70-130

ND = Not Detected

Sample: OW-7 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	4.87	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	107.54	70-130
1,2-Dichloroethane d4	129.52	70-130
4 BFB	105.38	70-130

ND = Not Detected

Sample: OW-16 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

#### Sample: OW-16 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.42	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	108.90	70-130
1,2-Dichloroethane d4	117.76	70-130
4 BFB	105.42	70-130

ND = Not Detected

Sample: OW-15 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0
71-55-6	1,1,1-Trichloroethane	ND	5.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0
79-00-5	1,1,2-Trichloroethane	ND	5.0
75-34-3	1,1-Dichloroethane	ND	5.0
75-35-4	1,1-Dichloroethylene	ND	5.0
563-58-6	1,1-Dichloropropene	ND	5.0
96-18-4	1,2,3-Trichloropropane	ND	5.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	5.0
106-93-4	1,2-Dibromoethane	ND	5.0
107-06-2	1,2-Dichloroethane	ND	5.0
78-87-5	1,2-Dichloropropane	ND	5.0
142-28-9	1,3-Dichloropropane	ND	5.0
594-20-7	2,2-Dichloropropane	ND	5.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	25.0
108-10-1	4-Methyl-2-pentanone	ND	25.0
67-64-1	Acetone	ND	25.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	25.0
107-02-8	Acrolein	ND	25.0
107-13-1	Acrylonitrile	ND	25.0
107-05-1	Allyl chloride	ND	25.0
71-43-2	Benzene	ND	5.0
74-97-5	Bromochloromethane	ND	5.0
75-27-4	Bromodichloromethane	ND	5.0
75-25-2	Bromoform (Tribromomethane)	ND	5.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	5.0
108-90-7	Chlorobenzene	14	5.0
75-00-3	Chloroethane (Ethyl chloride)	ND	5.0
67-66-3	Chloroform (Trichloromethane)	ND	5.0
126-99-8	Chloroprene	ND	25.0
156-59-2	cis-1,2-Dichloroethylene	ND	5.0
10061-01-5	cis-1,3-Dichloropropene	ND	5.0
124-48-1	Dibromochloromethane	ND	5.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	5.0
97-63-2	Ethyl methacrylate	ND	25.0
100-41-4	Ethylbenzene	ND	5.0
78-83-1	Isobutyl alcohol	ND	100.0
465-73-6	Isodrin	ND	25.0
541-73-1	m-Dichlorobenzene	ND	5.0
126-98-7	Methacrylonitrile	ND	50.0
74-83-9	Methyl bromide (Bromomethane)	ND	5.0

#### Sample: OW-15 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	5.0
78-93-3	Methyl ethyl ketone (MEK)	ND	25.0
74-88-4	Methyl iodide (lodomethane)	ND	25.0
80-62-6	Methyl methacrylate	ND	50.0
74-95-3	Methylene bromide (Dibromomethane)	ND	5.0
75-09-2	Methylene chloride (Dichloromethane)	ND	5.0
95-50-1	o-Dichlorobenzene	ND	5.0
106-46-7	p-Dichlorobenzene	ND	5.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	100.0
100-42-5	Styrene	ND	5.0
127-18-4	Tetrachloroethylene	ND	5.0
1634-04-4	tert-Butylmethylether	7.0	5.0
108-88-3	Toluene	ND	5.0
156-60-5	trans-1,2-Dichloroethylene	ND	5.0
10061-02-6	trans-1,3-Dichloropropene	ND	5.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	25.0
79-01-6	Trichloroethylene	ND	5.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	5.0
108-05-4	Vinyl acetate	ND	25.0
75-01-4	Vinyl chloride (Chloroethene)	ND	5.0
1330-20-7	Xylene (total)	ND	5.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	105.18	70-130
1,2-Dichloroethane d4	115.80	70-130
4 BFB	99.12	70-130

ND = Not Detected

Sample: OW-13 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

#### Sample: OW-13 Method: 8260C

#### Case Number: 8I28041

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (lodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

#### Surrogates:

Compound	% Recovery	Limits
Toluene d8	104.40	70-130
1,2-Dichloroethane d4	117.50	70-130
4 BFB	100.04	70-130

ND = Not Detected



# ATTACHMENT NO. 2 ANALYTICAL SUMMARY TABLES

TABLE 2 BACKGROUND WELL HISTORICAL RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL 0V-9 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEP '11	JUN '11	MAR '11	DEC '10	SEP '10	JUN '10	MAR '10
	Value																																			
Antimony	0.006 mg/L	NT	ND	ND	0.0290	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	0.0160	0.2000	ND	ND	NT	ND	ND
Arsenic	0.010 mg/L	NT	ND	ND	ND	NT	NT	0.0030	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND 0.0070	ND	ND	ND	ND 0.00000	NT	ND	0.0079
Bandium	0.004 mg/l <sup>1</sup>	NT	ND	ND	0.0410	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	0.0420 ND	NT	ND	ND	0.0200 ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	0.0221 ND	ND	NT	0.0016	ND
Cadmium	0.005 mg/L <sup>1</sup>	NT	ND	0.0020	0.3650	NT	NT	ND	ND	NT	NT	0.0010	ND	NT	NT	ND	0.0020	NT	ND	ND	0.0050	NT	0.0040	ND	0.0010	NT	ND	ND	ND	0.0020	ND	ND	ND	NT	ND	ND
Chromium	0.1 mg/L1	NT	0.003	0.0070	0.0300	NT	NT	0.0040	ND	NT	NT	0.0050	0.0070	NT	NT	0.0060	0.0270	NT	0.0060	0.0070	0.0150	NT	0.0070	0.0070	0.0120	NT	0.0050	0.0080	0.0040	0.0020	ND	0.0079	0.0068	NT	0.0230	0.0270
Cobalt	0.73 mg/L <sup>5</sup>	NT	ND	0.0010	0.0020	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	0.0100	NT	ND	0.0010	0.0030	NT	0.0020	0.0020	0.0030	NT	ND	0.0020	ND	ND	ND	0.0019	0.0015	NT	0.0086	0.0110
Copper	1.3 mg/L <sup>1</sup>	NT	ND	ND	0.0600	NT	NT	ND	ND	NT	NT	0.0020	ND	NT	NT	0.0020	0.0170	NT	ND	0.0060	0.0140	NT	0.0070	ND	0.0060	NT	ND	0.0080	0.0010	0.0100	0.0400	0.0041	0.0043	NT	0.0200	0.0170
Lead	0.015 mg/L <sup>1</sup>	NT	0.001	0.0020	0.1820	NT	NT	0.0020	0.0060	NT	NT	ND	0.0050	NT	NT	0.0010	0.0160	NT	0.0060	0.0030	0.1020	NT	0.0080	0.0020	0.0060	NT	ND	0.0110	0.0010	0.0040	0.0060	ND	ND	NT	0.0140	0.0024
Mercury	0.002 mg/L	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Nickel Salasium	0.1 mg/L	NI	0.001	0.0040	0.0240	NI	NI	0.0040	ND	NI	NI	0.0030	0.0030	NI	NI	0.0170	0.0180	NI	0.0030	0.0040	0.0090	NI	0.0050	0.0050	0.0070	NI	0.0030	0.0040	0.0020	0.0080	0.0080	0.0046	0.0037	NI	0.0150	0.0180
Silver	0.00 ma/L <sup>2,3</sup>	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	0.1180	ND	ND	NT	ND	ND
Thallium	0.002 mg/L1	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Tin	22 mg/L <sup>5</sup>	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	0.0080	0.1310	NT	ND	ND	ND	NT	ND	ND	ND	ND	0.0190	ND	ND	NT	ND	ND
Vanadium	0.26 ma/L <sup>5</sup>	NT	ND	0.0020	ND	NT	NT	ND	ND	NT	NT	0.0010	0.0020	NT	NT	ND	0.0140	NT	0.0020	0.0030	0.0070	NT	0.0030	0.0020	0.0040	NT	ND	0.0010	ND	ND	ND	0.0034	0.0034	NT	0.0150	0.0110
Zinc	2 mg/L <sup>2,1</sup>	NT	0.0090	0.0190	11.1000	NT	NT	0.0070	ND	NT	NT	0.0100	0.0050	NT	NT	ND	0.0410	NT	0.0110	0.0080	0.0170	NT	0.0210	0.0120	0.0160	NT	0.0150	0.0120	0.0090	0.0140	ND	0.0257	0.0190	NT	0.0330	0.0350
Acetone	610 µg/L	NI	ND	ND	ND	NI	NI	ND	NI	NI	NI	ND	ND	NI	NI	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND
Benzene	5 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Bromochloromethane	80 µg/L*	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Bromodichloromethane (THM)	90 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Bromoform	80 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Carbon disulfide	1000 µg/L"	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Carbon tetrachloride	5 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Chlorobenzene	100 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Chloroform (TkiM)	4.0 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Chlorodibromomethane (THM)	80 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DBC	0.2 µg/L1	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L <sup>1</sup>	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,2-Dichlorobenzene	600 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,4-Dichlorobenzene	75 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
trans-1,4-Lichioro-2-butene	E ugh	NI	ND	ND	ND	NI	NI	ND	NI	NI	NI	ND	ND	NI	NI	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND
1.2-Dichlomethane	5 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,1-Dichloroethylene	7 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
cis-1,2-Dichloroethene	70 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
trans-1,2-Dichloroethene	100 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,2-Dichloropropane	5 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
cis-1,3-Dichloropropene	µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Ethylbeozene	700 µg/L	NI	ND	ND	ND	NI	NI	ND	NI	NI	NI	ND	ND	NI	NI	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND
Methyl butyl ketone(2-Hexanone)	160 µg/L"	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Bromomethane	10 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Chloromethane	30 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Dibromomethane	61 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Methylene chloride	5 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Method indide	4000 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ALT	ND	ND
4-Methyl-2-pentanone	ug/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Styrene	100 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Tetrachloroethylene(PCE)	5 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	2.1	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Toluene	1000 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1.1.2.Trichloroethane	5 ug/1	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Trichloroethylene(TCE)	5 µg/L'	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Trichloroflouromethane	2000 µg/L*	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
1,2,3-Trichloropropane	40 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Vinyl acetate	410 µg/L <sup>5</sup>	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Vinyl chloride	2 μg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Aylenes Mathud test husbol athen (AFTRE)	10000 µg/L	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
wearlyn terroodyn ether (MTBE)	20 - 40 µg/L	INI .	ND	ND	мD	rs I	ril	мD	IN]	rs(1	rél	ND	ND	ril	ri I	ND	мD	Di I	ND	ND	нD	ini i	нD	мD	ND	IN I	nu)	ND	ND	мD	ND	inD	ND)	nd	neD.	reD
	= Excel	eueu MCL																																		
Note: Analytical data reported since of	commencement of	low now pu	rging and	sampling. L	ow now purin	g and sa	imping co	ommence	a in May :	2002, but	no samp	ore was tai	cen at O	w-9 at the	s ume.																					
July 2002 represents the first	and low now purp	jing and sar	uping wa	s conducted	at OW-9.																															

Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Dinning Water Standards and Health Advicories
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 the Occhaer 2002 Ugebae
 Constituents concentration was reported above its laboratory method detector initit, but lower than its blocatory coprise jimt at Materia Seglicataryh higher the provison genoting initits
 Constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above \* - One half of the laboratory detection limit "DL" NT = Not Tested due to dry conditions at well.

# TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-7 Concentration (expressed in same units as Threshold Value)

	Threshold																							
Parameter	Value	SEP '18	JUN '18	MAR '18	NOV '17	SEP '17	MAR '17	MAR '16	SEP '15	MAR '15	DEC '14	MAR '14	SEP '13	MAR '13	SEP '12	MAR '12	JUN '11	MAR '11	SEP '10	JUN '10	SEP '09	JUN '07	SEP '05	JUN '05
Anamony	0.008 mg/L	ND	0.0100	ND	ND	ND	0.0070 ND	0.0070	ND	ND	NT	ND	ND	ND	ND	ND	0.0250 ND	ND <sup>6</sup>	ND	ND	ND	ND	ND	ND
Barium	2 mg/L1	0.0540	0.0280	0.0380	0.0350	0.0330	0.0380	0.0390	0.0300	0.0330	NT	0.0310	0.0200	0.0310	0.0260	0.0280	0.0350	0.0398	0.0375	0.0370	0.0310	0.0340	0.0240	0.0280
Beryllium	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND <sup>6</sup>	ND	ND	ND	ND	ND
Cadmium	0.005 mg/L <sup>1</sup>	0.004	ND	ND	ND	ND	0.0010	ND	0.0010	ND	NT	0.0010	ND	ND	0.0050	ND	ND 0.0000	0.0012	0.0419	0.0410	ND 0.0500	ND	ND	ND
Cobalt	0.73 mg/L <sup>5</sup>	0.0220	0.0040	0.0050	0.0050	0.0040	0.0250	0.0280	0.0200	0.0250	NT	0.0220	0.0130	0.0250	0.0160	0.0200	0.0200	0.0353	0.0054	0.0250	0.0250	0.0200	0.0190	0.0220
Copper	1.3 mg/L <sup>1</sup>	0.03	ND	ND	0.0050	ND	0.0060	0.0060	0.0080	0.0250	NT	0.0180	0.0040	ND	0.0080	0.0040	0.0390	0.0056	0.2180	0.5000	0.0058	0.0098	ND	ND
Lead	0.015 mg/L1	0.006	ND	ND	ND	ND	ND	ND	0.0010	0.0050	NT	0.0060	0.0040	0.0020	0.0020	0.0040	0.0460	0.0033	0.0074	0.0060	0.0043	0.0042	ND	ND
Nickel	0.1 mg/L <sup>2</sup>	0.0320	0.0180	0.0210	0.0210	0.0190	0.0250	ND	0.0200	0.0240	NT	0.0190	0.0120	0.0220	0.0150	0.0020	0.0220	0.0302	0.0270	0.0280	0.0390	0.0240	0.0220	0.0370
Selenium	0.05 mg/L <sup>2</sup>	ND	ND	0.0100	ND	0.0030	ND	0.1070	0.0070	0.1880	NT	0.1830	0.1410	0.1800	0.1920	0.2260	0.0340	ND	ND	ND	0.0120	0.0110	0.0140	ND 0.0035
Thallium	0.002 mg/L <sup>1</sup>	ND	ND	0.0003	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0032	ND	ND	0.0420	0.0440	ND	0.0000
Tin	22 mg/L <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	0.26 mg/L <sup>5</sup>	0.016	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	0.0170	ND	0.0051	0.0072	0.0230	0.0240	ND	ND
Zinc	5 mg/L <sup>3</sup>	0.0850	0.0140	0.0180	0.0200	0.0120	0.0210	0.0050	0.0120	0.0060	0.0060	#######	ND	0.0150	0.0100	0.0130	ND	0.0250	0.0472	0.0380	0.0120	0.0110	0.0160	0.0180
Acetone	610 uq/l <sup>5</sup>	ND	ND	ND	ND	ND	ND 5.8	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrate	0.039 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	90 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 ug/l'	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	1.0	2.0	ND	1.4	1.8	2.7	1.7	ND
Chlorodibromomethane	80 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	2.2	ND	1.3	1.6	1.5	3.8	ND	ND
Chloromethane	30 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	0.2 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.05 ug/l'	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2-Dichlorobenzene	600 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichlo-2-butene	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane cis-1.2-Dichloroethylene	5 ug/l 70 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NI	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2-Dichloroethylene	100 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene trans-1.3-Dichloropropene	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 ug/l'	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200 ug/1 5 ug/1 <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroflouromethane	2000 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700 ug/l <sup>-</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xvlenes	10000 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 ug/l <sup>4</sup>	4.87	3.56	6.80	5.9	5.36	10.3	8.8	ND	ND	NT	9.7	5.6	11.9	8.0	11.2	10.7	15.7	7.2	8.2	9.0	12.0	7.4	2.1
Methyl ethyl ketone(2-Butanone)	4000 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	ug/i	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 ug/l <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	4.9	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40 ug/l <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410 ug/l <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
Threshold value given is the Max     Threshold value given is the lifeti     Threshold value given is the Sec     Threshold value given is the Sec	imum Contamina me health adviso ondary Drinking V	nt Level (I ry as prov Vater Reg	MCL) as ided in th gulation (	provided e USEP/ SDWR) a	in the US A 2004 Ec as provide	EPA 2004 dition of the	Edition of Drinking SEPA 200	the Drinki Water Sta 4 Edition o	ng Water ndards an of the Drini	Standards d Health A king Water	and Healt dvisories Standard	h Advisorie: s and Healt	s h Advisori	ies									= Exceeded	MCL
<ol> <li>Inreshold value given is the Drin 5. Threshold value given is the Prel 6. Constituent concentration was re higher than previous reporting lin No threshold value has been provid</li> </ol>	King Water Advis iminary Remedial oported above its l nits. Therefore, to led for parameters	ory as pro Goal (PR aboratory be consi s not ident	ovided in RG) for ta method istent wit tified in th	the USEI p water, a detection h historic ne source	PA 2004 I as provide limit, but al data, or is listed al	≡dition of t ad in the O lower than hly those c bove	ne Drinkin ctober 200 its labora onstituent	g Water Si )2 USEPA tory reportin s with cond	tandards a Region 9 ng limit an centrations	Ind Health PRGs Tab d historical lower thar	Advisories le 2002 U reporting historica	s pdate limit. Howe I reporting li	ever, the r mits were	eporting lir reported a	nit this rour is non-dete	nd was sig ct.	nificantly							



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 0.001 0.01 0.01 0.02 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 ND 0.0 (FT) NDC 0.0214 NDC 0.0214 NDC 0.022 NDC 0.0022 NDC 0.002 NDC 0.00  $\begin{smallmatrix} \mathsf{ND} \\ \mathsf{$ ND 00111 ND 00111 ND 00111 ND 00111 ND 00111 ND 0010 ND 0010 ND 00010 ND 00010 ND 00010 ND 00010 ND 00010 ND 000 N 1,2,3-Trichloropropane Vinyl acetate Vinyl chloride 

shold value has been provided for parameters not identified in the sources listed above
TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-13 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	<u>JUN '14</u>	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006 mg1 <sup>1</sup>	0.002	0.002	ND	0.0360	ND	0.0020	0.0090	ND	0.0110	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	0.0200	ND	ND	ND
Arsenic	0.010 mg/L <sup>1</sup>	0.001	0.02	0.0070	ND	0.0050	0.0200	ND	ND	0.0100	ND	0.0190	0.0100	0.0110	0.0070	0.0040	0.0200	0.0070	ND	0.0140	0.0160	0.0070	0.0080	0.0070	ND	ND	0.0060	0.0050	0.0050	0.0090	ND	0.0096	0.0094	0.0108
Barium	2 mg/L1	0.089	0.089	0.1150	0.0970	0.0460	0.0860	0.1080	0.0990	0.1830	0.0890	0.1700	0.0910	0.0870	0.0900	0.0890	0.1400	0.0870	0.0700	0.1180	0.0780	0.0650	0.0690	0.0750	0.0770	0.0760	0.0720	0.0760	0.0650	0.0760	0.0800	0.0912	0.0817	0.0807
Beryllum	0.004 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	0.005 mg/L	0.003	0.004	0.0040	ND	0.0020	0.0030	0.0050	ND	0.0290	ND	0.0050	0.0040	0.0040	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	0.0020	ND	0.0004	0.0004	0.0004
Coholt	0.1 mg/L	0.002	0.002	0.0020	0.0010	0.0070	0.0040	0.0030	0.0140	0.0330	0.0050	0.0150	0.0040	ND 0.0120	0.0140	0.0160	0.0090	0.0110	0.0010	0.0050	ND 0.0100	0.0090	ND 0.0120	0.0120	ND	ND 0.0100	NU 0.0120	0.0120	0.0110	0.0120	0.0090	0.0192	ND 0.0156	ND 0.0138
Copper	1.3 mgl <sup>1</sup>	ND	ND	ND	ND	ND	0.0100	ND	ND	0.0200	ND	0.0060	ND	0.0020	ND	0.0050	0.0730	0.0050	0.0050	0.0080	0.0230	0.0030	0.0050	ND	ND	ND	0.0060	0.0040	0.0020	0.00120	0.0300	0.0028	0.0018	0.0027
Lead	0.015 mg/L1	ND	ND	0.0020	ND	ND	0.0010	ND	0.0070	0.0350	0.0190	ND	ND	0.0020	0.0030	0.0030	0.0170	0.0040	0.0040	0.0070	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	ND	0.0020	ND	0.0040	0.0130	0.0015	ND	ND
Mercury	0.002 mg/L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND
Nickel	0.1 mg/L <sup>2</sup>	0.012	0.011	0.0120	0.0290	0.0060	0.0120	0.0350	0.0140	0.0465	0.0130	0.0130	0.0120	0.0120	0.0130	0.0130	0.0220	0.0110	0.0100	0.0120	0.0100	0.0090	0.0100	0.0100	0.0100	0.0100	0.0110	0.0100	0.0090	0.0110	0.0060	0.0141	0.0127	0.0121
Selenium	0.05 mg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0390	ND	ND	ND	0.0800	0.0210	0.0590	0.0120	0.0330	0.0700	0.0350	0.0400	ND	ND	0.0700	0.0640	0.0620	0.0710	0.0690	0.0100	ND	ND	ND
Thallum	0.002 mgl <sup>1</sup>	ND	ND	0.0002	ND 0.0002	0.0020 ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0020 ND	ND	ND	0.0010 ND	0.0020 ND	0.0020 ND	ND	0.0010 ND	0.0010 ND	ND	0.0020 ND	ND	0.0020 ND	ND	0.0030 ND	0.0340 ND	ND	ND	ND
Tin	22 mg/L <sup>6</sup>	ND	ND	ND	ND	ND	ND	ND	ND	0.2800	0.1100	ND	0.0120	ND	ND	0.0010	ND	ND	ND	0.0170	0.0400	0.0090	0.0180	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	ND
Vanadium	0.26 mg/L <sup>5</sup>	0.004	ND	ND	0.0020	ND	ND	ND	0.0060	0.0390	0.0030	ND	ND	ND	ND	ND	0.0130	0.0020	ND	0.0010	0.0040	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	0.0200	ND	ND	ND
Zinc	2 mg/L <sup>2,3</sup>	0.01	0.012	0.0170	0.0070	0.0070	0.0200	0.0170	ND	0.1300	0.0130	0.0060	ND	0.0070	ND	ND	0.0470	ND	ND	0.0090	ND	ND	0.0110	0.0100	ND	ND	0.0230	0.0050	0.0050	0.0090	ND	0.0178	0.0092	0.0098
Acetone	610 µ9°L"	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Actylonithe	0.039 µ91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	ND
Bromochloromethane	80 µ9°L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90 µ9°L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80 μgL <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 µgL"	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chiprobergane	5 µg/L	ND	ND 4.72	5.40	ND	5 22	5.02	6 9	ND	ND 5.5	2.5	ND 6.6	7.4	6.2	ND 6.1	7.4	ND 9.1	ND	7.1	7.2	ND 6.4	2.2	ND 2.9	6.9	6.2	16	4.2	6.7	ND 6.5	ND 6.0	3.7	6.2	ND 5.6	5 Q
Chloroethane	4.6 μ9 <sup>L</sup> <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	1.3
Chloroform	80 µ9%L1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80 µ9%_1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µ9L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dipromoetnane (EDB)	0.05 µg/L	ND	ND	ND	ND	1.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.4-Dichlorobenzene	75 µgL <sup>1</sup>	ND	ND	ND	ND	1.11	ND	ND	ND	ND	ND	ND	ND	1.4	1.2	1.3	ND	ND	1.4	ND	ND	ND	ND	1.0	1.2	ND	ND	1.2	ND	1.4	1.0	ND <sup>6</sup>	1.1	1.2
trans-1,4-Dichloro-2-butene	μ9%L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5 µ9%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5 µ9%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 µ9%.'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1 2-Dichbroethene	100 µgL <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5 µgL <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	μgL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	μgL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylberizene Mathud hut diretere (2 Managara)	700 µ9%.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 µ9"L2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30 µ9℃²	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 µ9€ <sup>5</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 µ9°L'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Bulanone) Methyl iodide	4000 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	ugi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µ9%L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 µ9℃2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µ9L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachoroemylene(PCE)	1000 µg1 <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 μg1L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichbroethylene(TCE)	5 µgL'	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroflouromethane	2000 µ9°L <sup>2</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3+1 nonioropropane	40 µ91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2 µg/L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µ9L <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20-40 μgL <sup>4</sup>	ND	3.26	ND	ND	3.70	3.53	6.1	ND	3.6	2.6	4.1	4.9	3.2	5.2	4.5	2.9	ND	4.2	5.0	5.4	3.3	3.3	5.0	4.5	2.8	3.8	4.5	2.8	4.7	3.2	7.9	3.8	3.4
	= Excee	eded MCL																																
1. Threshold value given is the Max	imum Contamina	nt Level (N	/ICL) as p	rovided ir	the USE	PA 2004	Edition of	the Drink	ing Wat	er Standare	ds and H	ealth Adv	isories																					
2. Threshold value given is the lifeti	me health adviso	ry as provi	ided in the	USEPA	2004 Edit	ion of the	Drinking	Water Sta	andards	and Health	Advisor	ies																						
3. Threshold value given is the Sec	ondary Drinking V	Vater Reg	ulation (S	DWR) as	provided	in the US	SEPA 200	4 Edition	of the Dr	inking Wat	er Stand	ards and	Health Ad	dvisories																				
4. Threshold value given is the Drin	king Water Advis	ory as pro	vided in t	ne USEP/	A 2004 Ec	lition of th	ne Drinkin	g Water S	tandard	s and Heal	th Adviso	ories																						
5. Threshold value given is the Prel	iminary Remedial	I Goal (PR	G) for tap	water, as	provided	I in the O	ctober 20	02 USEP/	Region	9 PRGs 1	able 200	2 Update																						
6. Constituent concentration was re	ported above its I	aboratory	method d	etection li	mit, but lo	wer than	its labora	tory repor	ting limi	t and histor	rical repo	rting limi	L.																					
However, the reporting limit this	round was signific	antly high	er than pr	evious rep	porting lin	nits. The	refore, to	be consis	tent with	historical	data, only	/ those																						
constituents with concentrations I	ower than historic	al reportir	ng limits v	ere repor	ted as no	n-detect.																												

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-14 Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10 \$	SEPT '10	JUN '10
Antimory	0.006 mg/L <sup>1</sup>	NT	ND	ND	0.0350	NT	0.0050	0.0410	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	0.0110	0.0170	ND	ND	NT	ND
Arsenic	0.010 mg/L <sup>1</sup>	NT	0.01	ND	0.0030	NT	0.0200	0.0120	ND	NT	ND	0.0070	0.0050	0.0050	NT	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	NT	ND	ND	ND	0.0060	ND	0.0074	ND	NT	0.0070
Barium	2 mg/L1	NT	0.155	0.2240	0.1990	NT	0.2400	0.2490	0.2290	NT	0.1380	0.1750	0.1980	0.1140	NT	0.2020	0.0910	NT	0.1570	0.1840	0.0790	NT	0.1440	0.1760	0.1370	NT	0.1750	0.1770	0.1470	0.1610	0.2100	0.2700	0.2030	NT	0.1900
Beryllium	0.004 maiL1	NT	ND	ND	ND	NT	0.0030	ND	ND	NT	0.0010	0.0010	ND	0.0010	NT	ND	ND	NT	ND	ND	0.0010	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0010	NT	ND
Cadmium	0.005 malL	NT	0.006	0.0050	ND	NT	0.0050	0.0060	ND	NT	ND	0.0070	0.0080	0.0060	NT	ND	ND	NT	0.0050	0.0010	ND 0.00000	NT	ND	0.0020	ND	NT	ND	0.0040	0.0030	0.0030	ND	ND*	ND*	NT	ND
Cobalt	0.73 mol <sup>5</sup>	NT	0.001	0.0060	0.0020	NT	0.0010	0.0020	0.0360	NT	0.0100	0.0030	0.0030	0.0120	NT	0.0030	0.0050	NT	0.0040	0.0010	0.0080	NT	0.0080	0.0050	0.0370	NT	0.0140	0.0100	0.0100	0.0160	0.0090	0.0457	0.0065	NT	0.00130
Copper	1.3 mg/L <sup>1</sup>	NT	ND	0.0090	ND	NT	0.0100	ND	0.0200	NT	0.0010	0.0010	ND	0.0170	NT	0.0100	0.0090	NT	0.0070	0.0050	0.0200	NT	0.0030	0.0080	0.0100	NT	ND	ND	0.0010	0.0090	ND	0.0049	0.0140	NT	0.0050
Lead	0.015 mg/L1	NT	ND	0.0060	ND	NT	0.0170	ND	ND	NT	0.0160	0.0070	ND	0.0090	NT	0.0050	0.0050	NT	0.0040	0.0040	0.0070	NT	0.0020	0.0050	0.0030	NT	0.0020	ND	0.0090	0.0020	ND	ND	0.0039	NT	0.0011
Mercury	0.002 mg/L1	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Nickel Coloria	0.1 mg/L-	NT	0.012	0.0220	0.0320	NT	0.0220	0.0470	0.0400	NT	0.0160	0.0160	0.0170	0.0200	NT	0.0270	0.0180	NT	0.0150	0.0230	0.0200	NT	0.0120	0.0200	0.0350	NT	0.0190	0.0170	0.0150	0.0180	0.0180	0.0460	0.0407	NT	0.0170
Silver	0.1 mg/L <sup>2,3</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	0.0040	NT	0.0020	ND ND	NT	0.0020	0.0020	0.0260 ND	NT	ND	0.0020	ND	NT	ND	0.0310	0.0240 ND	0.0050	ND	ND	ND	NT	ND
Thalium	0.002 mg/L <sup>1</sup>	NT	ND	0.0003	0.0003	NT	ND	ND	ND	NT	ND	ND	ND	0.0010	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	0.0010	ND	ND	ND	ND	NT	ND
Tin	22 mg/L <sup>6</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0350	ND	0.0070	0.0010	NT	ND	ND	NT	ND	0.0220	0.0180	NT	0.0310	ND	ND	NT	ND	ND	ND	ND	ND	ND <sup>6</sup>	ND	NT	ND
Vanadium	0.26 mg/L <sup>-</sup>	NT	ND	0.0070	0.0030	NT	0.0070	ND 0.00000	ND 0.0300	NT	0.0170	ND 0.0170	ND	0.0140	NT	0.0080	0.0050	NT	0.0050	0.0020	0.0080	NT	0.0030	0.0060	ND	NT	ND	ND 0.0070	ND 0.0070	ND	0.0290	ND	0.0063	NT	0.0028
Acetone	610 µg/L <sup>6</sup>	NT	ND	0.0480 ND	ND	NT	ND	6.9	0.0300 ND	NT	0.0280 ND	ND	0.0140 ND	0.0680 ND	NT	0.0240 ND	0.0190 ND	NT	ND	ND	ND	NT	6.4	0.0310 ND	ND	NT	0.0160 ND	0.0070 ND	0.0070 ND	ND	ND	0.0453 ND	ND	NT	ND
Acrylonitrile	0.039 µg/L <sup>5</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Benzene	5 µg/L1	NT	2.77	ND	ND	NT	3.2	4.1	ND	NT	2.7	3.1	3.9	2.0	NT	3.5	ND	NT	3.3	3.6	ND	NT	2.9	4.3	1.9	NT	1.8	3.5	3.6	4.1	2.1	3.7	1.7	NT	3.6
Bromochloromethane	80 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromodicnioromethane (THM) Bromoform	90 µg/L 80 µg/l <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon disulfide	1000 µg/L <sup>5</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon tetrachloride	5 µg/L <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chlorobenzene	100 µg/L <sup>1</sup>	NT	13.3	10.8	ND	NT	13.42	15.6	ND	NT	12.5	13.5	15.4	10.7	NT	16.7	5.3	NT	15.7	15.7	3.2	NT	11.3	19.1	8.0	NT	7.0	14.3	14.6	16.5	7.1	15.3	6.1	NT	14.0
Chloroethane	4.6 µg/L*	NT	ND	ND	ND	NT	2.27	ND	ND	NT	3.3	ND	2.0	1.5	NT	ND	ND	NT	ND	ND	ND	NT	ND	2.5	ND	NT	ND	1.4	2.4	ND	1.6	1.3	ND	NT	3.0 ND
Chlorodibromomethane (THM)	80 µg/L1	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromoethane (EDB)	0.05 µg/L <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichlorobenzene	600 µg/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1.4-Dichloro-2-butene	/5 µg/L	NT	2.02 ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	3.4 ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethane	5 µg/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloroethane	5 µ9/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethylene	7 µg/L1	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,2-Dichloroethene	100 µ00 <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	ND	NI	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloropropane	5 µg/L <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,3-Dichloropropene	µg/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,3-Dichloropropene	µg/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Ethylbenzene Methyl bythi ketoce/2-Meyzoooa)	700 µg/L <sup>-</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromomethane	10 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chloromethane	30 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Dibromomethane	61 µg/L <sup>9</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methylene chloride	5 µg/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl colide	4000 pg/L ug/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
4-Methyl-2-pentanone	µg/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Styrene	100 µg/L <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1,2-Tetrachloroethane	70 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2,2-Tetrachioroethane Tetrachioroethaleos(PCE)	0.3 µg/L 5 µ0/1 <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	ND	NI	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Toluene	1000 µg/L1	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1-Trichloroethane	200 µg/L <sup>1</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2-Trichloroethane	5 µg/L	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Trichlorofouromethane	5 µg/L 2000 µn/l <sup>2</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	ND	NI	ND	ND	NT	ND	ND	ND	NI	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2,3-Trichloropropane	40 µg/L <sup>2</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl acetate	410 µg/L <sup>5</sup>	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl chloride	2 µg/L1	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Xylenes Method text-build other (MTRE)	10000 µg/L'	NT	ND	ND 9.4	ND	NT	ND 7.08	ND	ND	NT	ND 6.7	ND 7.7	ND 12.2	ND 6.9	NT	ND	ND 1.7	NT	ND	ND 14 P	ND 4.3	NT	ND 6.9	ND 11.9	ND 11.0	NT	ND 7.5	ND 8.4	ND	ND	ND 7.0	ND	ND 12.2	NT	ND 5.2
many derough errer (MTBC)	- Even	NI NOI	0.23	2.4	nu	111	7.00	10.0	nu	nu.	0.7	1.1	14.3	0.3	1911	11.4	1.7	1911	0.0	14.6	*.3	1911	0.9	11.2	11.0	00	1.0	0.4	0.0	14.4	7.9	10.3	12.3	nu -	0.0
1 Threshold value diven is the Mov	= EXC86	nt Level /*	(CI) 96 0	mided -	the LISE	20.04	Edition of	the Drink	ina Wata	r Stando	de and L	alth Art-in	enriae																						
2 Threehold value given is the lifeti	me health advice	ni se nrod	ded in the	a LISEDA	2004 Even	2004	a Drinking	Water Ct.	ang virdit andarde r	nd Heat	h Arbierri	AND I MUNE	and 100																						
<ol> <li>Threehold value given is the Service</li> </ol>	andary Drinking k	Noter Reg	ulation (S	DWP) 98	provided i	in the II	SEPA 200	4 Edition	of the Dri	aking Ws	ter Stand	uu arde and k	-lealth &c	hienriae																					
4 Threshold value given is the Drin	king Water Arbie	iony as pro-	vided in #	he USEP	A 2004 Edi	tion of #	he Drinking	n Water 9	Standarde	and Hes	with Artivier	ries																							
5 Threshold value given is the Prei	iminary Remedia	I Goal (PP	G) for ten	water of	s provided	in the C	Ctober 200	2 LISEP	A Region	9 PRGe	Table 200	2 Undate																							
6. Constituent concentration was re-	ported above its I	aboratory	method d	letection li	mit. but lo	wer than	n its labora	tory report	rting limit	and histr	rical reno	rting limit																							
However, the reporting limit this	ound was signific	antly high	er than pr	revious re	porting lim	its. The	erefore, to I	be consis	tent with I	historical	data, only	those																							
constituents with concentrations	ower than historic	cal reportir	a limits v	vere repo	rted as nor	-detect																													

No threshold value has been provided for parameters not identified in the sources listed above NT = Not Tested due to dry conditions at well.

TABLE 1 (CONT.) SUMMARY OF GROUNDWATER MONITORING RESULTS APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING MONITORING WELL OW-15 Concentration (Expressed in same units as Threshold Value)

Name         Name       Name        Name        Nam
matrix         matrix        matrix        matrix
matrix         matrix        matrix </td
methy         No         No       No        No         No<
constant
Chead         Chead <th< td=""></th<>
Cala         Cala       Cala        Cala         Ca
Capper         1         marl         No         No        No        No        No        No       No        No         No
Liast         0015         mpl <sup>1</sup> 0020         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N        N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N        N       N       N       N         N<
Machery         0.022         rol         N.0         N.0        N.0        N.0        N.0         N.0<
Name         1         Pipi-         Color         Colo
State         O         O         NO         NO       NO         NO         NO </td
matrix         matrix<
nn         22         ref.         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100
visuality         0.28         cm11         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29         0.29        0.29        0.29        <
Zacc         2         moli         3         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5        5        5         5
Action         Main         <
Act yolanish         00000 ipl-1         No         No        No        No        No
binder         5         99 <sup>14</sup> No         No        No        No <th< td=""></th<>
Bitempotentifie         Bit         All         All         No         No        No
Bitemach
Description         Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>
S and         S and         No         No        No <th< td=""></th<>
Observation         100         94 <sup>1</sup> 140         120         170         12.2         170         12.2         170         12.3         170         12.3         170         12.3         170         12.3         170         12.3         170         12.3         170         12.3         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170        170
Observation         44         94 <sup>1</sup> NO         NO        NO
Chiedrom         80         94 <sup>1</sup> No         No        No       <
Observationsemandament (1+M)         0         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2         1/2 </td
1.2.Decressing and analysis of the series of
1.2 Determinanter (ED)     (25, ast. 4 No
1.2 Octoberosemene 400 (at 1 km V NO
1.4-Labeliconsequence 15 and L NO NO NO NO 2.51 NO 15 NO NO 2.1 NO 15 NO NO 2.1 NO 15 23 3.2 1.2 2.3 15 2.3 15 2.3 15 2.3 15 2.4 2.4 2.1 2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1
Bits         Accesses         Bits         B
$ \begin{array}{c} 1, 1, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$
11-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-
ale 12 defendementement 70 ind L NO
mare 12-obterestimes 5 4 5 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5
1.2-Dichloropropane 5 µgL <sup>1</sup> NO
as-1,3-binonopropene page אם
trans-1,3-Dichioropropene µgL ND
Ethybercene 700 H9L <sup>2</sup> ND
Methylketore(2-Hexanone) 169/99 <sup>12</sup> ND
שמותאת אות אות אות אות אות אות אות אות אות
טא ט
Methyletskylkescne(2-8utanone) 4000 µg L <sup>2</sup> ND
Methylicidae pall ND
4-Mathyl-2-pentanone µgL ND
Styrene 100 µ9 L NO
1,1,1,2-Tentradioroefhane 70 H9 4 ND
1,1,2,2-Tetracholore#ane 0,3, mg-1 ND
ופראסראסראסראסראסראסראסראסראסראסראסראסראסר
וטטמוד של ער של
Trichioroethydene[TCE] 5 µgl <sup>1</sup> ND
Trichterdiouromethane 2000 ing 1,2 ND
1,2,3-Trichterprepane 40 #9 <sup>1,2</sup> ND
Vinylacetade 410 #9 <sup>1,4</sup> ND
Vinjebinde 2 igu <sup>1</sup> ND
Xybenes 10000 #3L NO
Memprishroughemer (Mithe) 20-40 upt / / U boi NU b.5 / 52 / 69 85 NU / Y / Y b.8 / 8 b.7 122 7.1 42 60 9.4 5.4 7.7 8.3 10.3 61 39 8.8 95 9.5 55 7.5 7.1 7.9 61 7.6 5.7

No threshold value has been provided for parameters not identified in the sources listed above

			AP	SUMMA PENDIX	ARY OF C	TAI SROUNI STITUE	BLE 1 (CONT.) DWATER MONITORING RESULTS INTS FOR DETECTION MONITORING
				Concent	N tration (E	xpresse	RING WELL OW-16 d in same units as Threshold Value)
Parameter	Thre	shold	SEP '18	JUN '18	MAR '18	NOV '17	
Antimony	0.006	mg/L <sup>1</sup>	ND	0.002	ND	ND	
Arsenic	0.010	mg/L1	ND	0.01	ND	ND	
Barium	2	mg/L'	0.027	0.011	0.0190	0.1000	
Cadmium	0.004	mail 1	ND	ND	ND	ND	
Chromium	0.000	mg/L <sup>1</sup>	0.003	0.004	0.0060	0.0050	
Cobalt	0.73	mg/L <sup>6</sup>	0.004	0.002	0.0050	0.0050	
Copper	1.3	mg/L <sup>1</sup>	ND	ND	ND	ND	
Lead	0.015	mg/L'	ND	ND	ND	ND	
Nercury	0.002	mgit 2	0.01	0.009	0.0100	0.0100	
Selenium	0.05	mg/L <sup>1</sup>	0.003	ND	0.0100	0.0050	
Silver	0.1	mg/L <sup>23</sup>	ND	ND	ND	ND	
Thalium	0.002	mg/L <sup>1</sup>	ND	ND	0.0003	ND	
Tin	22	mg/L°	ND	ND	ND	ND	
Vanadium	0.26	mgL"	ND	ND	ND	ND	
Acetone	£10	mgit."	0.019 ND	0.022 ND	0.024 ND	0.0210 ND	
Acrylonitrile	0.039	µgL <sup>6</sup>	ND	ND	ND	ND	
Benzene	5	µg/L1	ND	ND	ND	ND	
Bromochloromethane	80	µgL <sup>2</sup>	ND	ND	ND	ND	
Bromodichloromethane (THM)	90	µgt.	ND	ND	ND	ND	
Bromotorm	80	HQL.	ND	ND	ND	ND	
Carbon disultide	1000	ug/L	ND	ND	ND	ND	
Chiptobenzene	100	ugl <sup>1</sup>	ND	ND	ND	ND	
Chloroethane	4.6	µgL <sup>6</sup>	ND	ND	ND	ND	
Chibroform	80	µg/L1	ND	ND	ND	ND	
Chlorodibromomethane (THM)	80	µg/L]	ND	ND	ND	ND	
1,2-Dibromo-3-chloropropane (DBCP)	0.2	µgt.'	ND	ND	ND	ND	
1,2-Dibromoetnane (EDB)	0.05	ug/L	ND	ND	ND	ND	
1.4-Dichlorobenzene	75	unt 1	ND	ND	ND	ND	
trans-1,4-Dichloro-2-butene		μgiL	ND	ND	ND	ND	
1,1-Dichloroethane	5	μgiL	ND	ND	ND	ND	
1,2-Dichloroethane	5	μgit	ND	ND	ND	ND	
1,1-Dichloroethylene	7	hBr.	ND	ND	ND	ND	
cis-1,2-Dichloroethene	100	ugt'	ND	ND	ND	ND	
1.2-Dichloropropane	5	μg/L'	ND	ND	ND	ND	
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	
trans-1,3-Dichloropropene		μgiL	ND	ND	ND	ND	
Ethylbenzene	700	μgt.'	ND	ND	ND	ND	
Methyl butyl ketone(2-Hexanone)	160	HOL .	ND	ND	ND	ND	
Chipromethane	30	ugt <sup>2</sup>	ND	ND	ND	ND	
Dibromomethane	61	µgt."	ND	ND	ND	ND	
Methylene chloride	5	μgt.'	ND	ND	ND	ND	
Methyl ethyl ketone(2-Butanone)	4000	µg/L <sup>2</sup>	ND	ND	ND	ND	
Methyl iodide		HBC.	ND	ND	ND	ND	
4-Methyl-2-pentanone		pge 1	ND	ND	ND	ND	
Styrene 1.1.1.2-Tetrachlomethase	100	ugt <sup>2</sup>	ND	ND	ND	ND	
1.1.2.2-Tetrachloroethane	0.3	µg122	ND	ND	ND	ND	
Tetrachloroethylene(PCE)	5	µgL1	ND	ND	ND	ND	
Toluene	1000	µgt.]	ND	ND	ND	ND	
1,1,1-Trichloroethane	200	μ <b>g</b> t.'	ND	ND	ND	ND	
1,1,2-Trichloroethane	5	µQL'	ND	ND	ND	ND	
Trichloroflouromethane	2000	ugl <sup>2</sup>	ND	ND	ND	ND	
1.2.3-Trichloropropane	40	µg1_2	ND	ND	ND	ND	
Viryl acetate	410	µg/L <sup>6</sup>	ND	ND	ND	ND	
Vinyl chloride	2	µg/L1	ND	ND	ND	ND	
Xylenes	10000	ugt.'	ND	ND	ND	ND	
wearys seft-butys ether (MTBE)	∠u - 40	HQL.	3.42	0.53	7.8	4.0	
1. Threehold value along is the Max	imum Cr	= Excee	saed MCL	(C1.) oo o	rouid od ir	the LICE	DA 2004 Edition of the Drinking Water Stands

Exceeded MCL
 Threshold value given is the Mammun Cortaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
 Threshold value given is the Mittern banking vas provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
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 Constituent contrasting was reported advoci the USEPA 2004 Edition of the Drinking Vater Standards and Health Advisories
 Constituent contrasting was reported advoci the USEPA 2004 Delates
 Constituent contrasting was reported advoci the USEPA 2004 Delates
 Constituent contrasting was reported an theories
 Threshold edited.colimit, Threshove, to be consistent with historical data, only hose
 constituent avaits
 Constituent contrasting Water Advisors
 Threshove, the reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

# <u>ATTACHMENT NO. 3</u> HISTORICAL DETECTED METALS GRAPHS

#### Detected Appendix A Metals in OW-9 Tiverton Landfill



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ◆Chromium +Cobalt -Copper -Lead Nickel Selenium ▲Silver ×Thallium ×Tin ●Vanadium +Zinc -Mercury



**TRUNCATED GRAPH** 

## Detected Appendix A Metals in OW-7 Tiverton Landfill

**COMPLETE GRAPH** 



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt -Copper -Lead -Nickel Selenium ■Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



## Detected Appendix A Metals in OW-12 Tiverton Landfill

**COMPLETE GRAPH** 



Antimony
Arsenic
Abarium
Xearyllium
Xearyllium
Corponium
Corponium
Copper
Lead
Nickel
Selenium
Silver
Tin
Xuanadium
Zin
Abarium
Zin



## **Detected Appendix A Metals in OW-13 Tiverton Landfill**

**COMPLETE GRAPH** 



 Antimony Arsenic Barium × Beryllium Selenium Silver AThallium ×Tin × Vanadium Zinc + Mercury



## Detected Appendix A Metals in OW-14 Tiverton Landfill



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel Selenium Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury



Date

# Detected Appendix A Metals in OW-15 Tiverton Landfill



 Antimony Arsenic Barium Rervilium \*Cadmium 
Chromium +Cobalt 
Copper 
Lead 
Nickel Selenium Silver Thallium ×Tin × Vanadium Zinc + Mercurv



Date

### Detected Appendix A Metals at Surface Water Sampling Location SW-1 Tiverton Landfill



◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel ◎Selenium ◎Silver ▲Thallium ×Tin ×Vanadium ◎Zinc +Mercury







♦Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt =Copper —Lead =Nickel ◎Selenium ◎Silver ▲Thallium ×Tin ×Vanadium ◎Zinc +Mercury



## Detected Appendix A Metals at Surface Water Sampling Location SW-3 Tiverton Landfill



♦Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt •Copper =Lead •Nickel Selenium Silver ▲Thallium ×Tin ×Vanadium ©Zinc +Mercury



# <u>ATTACHMENT NO. 4</u> TOLERANCE INTERVAL STATISTICAL EVALUATION

#### TABLE 3 SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON SEPT 2018 - SAMPLE ROUND

Concentration (units as specified for Threshold Value)

		0	W-9		Background	Well	Compliance wel	ls	
		Toleran	ce Limit *	Thresh	old				
	Parameter	TL=A	/G+K*S	Value	<u>e</u> OW-9	OW-12	OW-13	OW-14	OW-15
					al				
METALS	Antimony	0.0290	mg/L	0.006 m	g/L' NT	ND	0.002	NT	0.004
	Arsenic	0.0030	mg/L	0.010 m	g/L NT	ND	0.010	NT	0.030
	Barium	0.0491	mg/L	2 m	9/L NI	0.023	0.089	NI	0.084
	Beryllium	0.0005	mg/L	0.004 m	9/L NI g/L <sup>1</sup> NT	ND	ND	NI	ND
	Cadmium	0.3650	mg/L	0.005 11	g/∟ NI g/L <sup>1</sup> NT	ND	0.003	NI	0.007
	Coholt	0.0364	mg/L	0.1 10	g/L NI g/L <sup>5</sup> NT	0.002	0.002	NI	ND
	Copper	0.0020	mg/L	0.73 11	g/L NT g/L <sup>1</sup> NT	0.002	0.010	NT	0.014
	Lood	0.0000	mg/L	0.015 m	g/L NT	ND	ND	NT	0.0020
	Mercury	0.2245	mg/L	0.013	9/L <sup>1</sup> NT	ND	ND	NT	0.0020
	Nickel	0.0001	mg/L	0.002	9/2 NT	0.025	0.012	NT	0.029
	Selenium	0.0337	mg/L	0.05 m	g/L <sup>1</sup> NT	0.025 ND	ND	NT	ND
	Silver	0.0005	ma/l	0.00	a/L <sup>2,3</sup> NT	ND	ND	NT	ND
	Thallium	0.0005	ma/L	0.002 m	a/L <sup>1</sup> NT	ND	ND	NT	ND
	Tin	0.0025	ma/l	22 m	a/L <sup>5</sup> NT	ND	ND	NT	ND
	Vanadium	0.0020	ma/l	0.26 m	a/L° NT	0.001	0.004	NT	0.0110
	Zinc	13 7203	ma/l	2-5 m	a/L <sup>2,3</sup> NT	0.026	0.004	NT	0.015
VOC'S	Acetone	10.1200	g/ =	610 µ0	a/L°	0.020	0.01		0.010
<u></u>	Acrylonitrile			0.039 µ0	a/L°				
	Benzene			5 μ(	g/L'				
	Bromochloromethane			80 µ0	g/L <sup>2</sup>				
	Bromodichloromethane (THM)			90 µ0	g/L'				
	Bromoform			80 µ0	g/L'				
	Carbon disulfide			1000 µg	g/L°				
	Carbon tetrachloride			5 µ(	g/L'				
	Chlorobenzene			100 µg	g/L'				
	Chloroethane			<b>4.6</b> μ	g/L°				
	Chloroform			80 µg	g/L'				
	Chlorodibromomethane (THM)			80 µg	g/L'				
	1,2-Dibromo-3-chloropropane (DBCP)			0.2 μ <u></u>	g/L'				
	1,2-Dibromoethane (EDB)			0.05 μg	g/L'				
	1,2-Dichlorobenzene			600 µg	g/L'				
	1,4-Dichlorobenzene			<b>75</b> μ	g/L'				
	trans-1,4-Dichloro-2-butene			μί	g/L				
	1,1 -Dichloroethane			5 μ	g/L				
	1,2-Dichloroethane			5 μ	g/L'				
	1,1-Dichloroethylene			7 μί	g/L'				
	cis-1,2-Dichloroethene			70 µg	g/L'				
	trans-1,2-Dichloroethene			100 µg	g/L '				
	1,2-Dichloropropane			5 μ	g/L '				
	cis-1,3-Dichloropropene			μ	g/L ~/				
	trans-1,3-Dichloropropene			μί 700 μί	J/L ≈/L '				
	Ethylbenzene			700 µQ	y/L n/l <sup>-2</sup>				
	Nethyl butyl ketone(2-Hexanone)			160 µg	y/⊑ ∾/I <sup>∠</sup>				
	Chloremethane			10 µ(	g/⊑ n/I <sup>∠</sup>				
	Dibromethane			30 µ(	y/∟ n/l <sup>⊃</sup>				
	Methylene ebleride			οι μ <u>ε</u>	9/L n/l <sup>-1</sup>				
	Methyl ethyl kotopo(2 Putopopo)			4000 µ0	g/⊑ n/l -				
	Methyl iodide			4000 P	9/ <b></b> n/l				
	4-Methyl-2-pentanope			110	a/L				
	Styrene			100 µ0	a/L'				
	1 1 1 2-Tetrachloroethane			70 10	n/l <sup>∠</sup>				
	1 1 2 2-Tetrachloroethane			03 40	g, _ n/L-				
	Tetrachloroethylene(PCF)			5 10	, g/L'				
	Toluene			1000 10	, g/L'				
	1.1.1-Trichloroethane			200 10	a/L'				
	1.1.2-Trichloroethane			5 u0	a/L'				
	.,.,			5 10	a/L'				
	Trichloroethylene(TCE)			.,					
	Trichloroethylene(TCE) Trichloroflouromethane			2000 LU	g/L <sup>_</sup>				
	Trichloroethylene(TCE) Trichloroflouromethane 1.2.3-Trichloropropane			2000 µ9 40 µ0	g/L <sup>_</sup> g/L <sup>_</sup>				
	Trichloroethylene(TCE) Trichloroflouromethane 1,2,3-Trichloropropane Vinyl acetate			2000 μ 40 μ 40 μ	g/L <sup>2</sup> g/L <sup>2</sup> g/L <sup>2</sup>				
	Trichloroethylene(TCE) Trichloroflouromethane 1,2,3-Trichloropropane Vinyl acetate Vinyl chloride			2000 μς 40 μς 410 μς 2 μς	g/L <sup></sup> g/L <sup></sup> g/L <sup>°</sup> g/L <sup>°</sup>				
	Trichloroethylene(TCE) Trichloroflouromethane 1,2,3-Trichloropropane Vinyl acetate Vinyl chloride Xylenes			2000 μ 2000 μ 40 μ 410 μ 2 μ 10000 μ	y/L <sup>4</sup> g/L <sup>4</sup> g/L <sup>3</sup> g/L <sup>1</sup>				

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories

5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with

concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

" = Exceedance of TL ND = Not Detected

\* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

# Historical Tolerance Limit Concentrations from Background Well Tiverton Landfill Compliance Sampling



# <u>ATTACHMENT NO. 5</u> CUSUM METHOD STATISTICAL EVALUATION



# CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Complaince Well OW-9



CUSUM Control Chart for Barium Tiverton Landfill Groundwater Background Well OW-9

Series1 Series2



CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

Series1 Series2



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

---- Series1 ------ Series2



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Background Well OW-9

Sampling Date

Series1 Series2



# CUSUM Control Chart for Lead Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Background Well OW-9



# CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Background Well OW-9



## CUSUM Control Chart for Tin Tiverton Landfill Groundwater Background Well OW-9





# CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Background Well OW-9



CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-12

## CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-12



Sampling Date



CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-12



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-12



# CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-12



## CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-12



# CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-12




CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-12



CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Complaince Well OW-13



CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-13

#### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-13





## CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Selenium Tiverton Landfill Groundwater Compliance Well OW-13



### CUSUM Control Chart for Silver Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Thallium Tiverton Landfill Groundwater Compliance Well OW-13



CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-13



# CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for 1,4-Dichlorobenzene - Adjusted Baseline Tiverton Landfill Groundwater Complaince Well OW-13



### CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-13



#### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-14



## CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Copper Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Compliance Well OW-14



# CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-14



### CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-14



CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-14



### CUSUM Control Chart for Antimony Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Arsenic Tiverton Landfill Groundwater Compliance Well OW-15


### CUSUM Control Chart for Barium Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Cadmium Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Chromium Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Cobalt Tiverton Landfill Groundwater Compliance Well OW-15



#### CUSUM Control Chart for Copper Tiverton Landfill Groundwater Complaince Well OW-15

----- Series1 ------ Series2



CUSUM Control Chart for Lead Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Nickel Tiverton Landfill Groundwater Complaince Well OW-15



### CUSUM Control Chart for Vanadium Tiverton Landfill Groundwater Complaince Well OW-15



CUSUM Control Chart for Zinc Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Benzene Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for Chlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Chloroethane Tiverton Landfill Groundwater Complaince Well OW-15



#### CUSUM Control Chart for 1,4-Dichlorobenzene Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Xylenes Tiverton Landfill Groundwater Compliance Well OW-15



### CUSUM Control Chart for MTBE Tiverton Landfill Groundwater Compliance Well OW-15

### <u>ATTACHMENT NO. 6</u> REPORTED CONCENTRATIONS OF MTBE FIGURE



### ATTACHMENT NO. 7 FIELD SAMPLING DATA SHEETS

PROJECT NAME: PARE PROJECT NO.	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	9/27/2018 Sunny 70s		
WELL ID: <u>OW-9</u>	-	DIAMETER	(INCHES): <u>2</u>		
PURGE DATA					
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16 feet N/A gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing N/A N/A		
WATER LEVEL DATA					
DEPTH: MEASURE POINT:	N/A feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator		
FIELD TESTING RES	<u>ULTS</u>				
	READING 1	REAL	DING 2		
pH: SPEC. COND: TEMPERATURE:	N/A pH UNITS N/A mS/cm N/A °C	N/A N/A N/A	pH UNITS mS/cm °C		
NOTES:					
Well was was complet	Well was was completely dry: therefore no readings or samples were collected.				

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	9/27/2018 Sunny 70s
WELL ID: OW-7	-	DIAMETER (	INCHES): 2
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	11.8 feet 1.6 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	2.4 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u> </u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	<u>N/A</u> pH UNITS 0.797 mS/cm <u>17.4</u> °C	N/A 0.798 17.4	_pH UNITS mS/cm °C
<u>NOTES:</u>			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 1:00 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	9/27/2018 Sunny 70s
WELL ID: OW-12		DIAMETER (	(INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16.2 feet 0.90 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	10.9 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>5</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	N/A pH UNITS 0.608 mS/cm 14.2 °C	N/A 0.601 14.3	_pH UNITS _mS/cm _°C
NOTES:			
Samples were noted as ge	nerally clear and low in turb	pidity based on visual insp	ections of samples.

Samples were collected at 11:45 AM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	9/27/2018 Sunny 70s
WELL ID: OW-13	-	DIAMETER (	INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	14.5 feet 1.70 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	4.1 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	3		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	N/A pH UNITS 1.215 mS/cm 18.3 °C	N/A 1.216 18.4	pH UNITS mS/cm °C
NOTES:			
Samples were noted as get	nerally clear and low in turl	bidity based on visual insp	ections of

supernatant sample after a 15-minute decanting period.

Samples were collected at 5:30 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	9/27/2018 Sunny 70s
WELL ID: OW-14	-	DIAMETER (	(INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	10.6 feet N/A gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing N/A N/A
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	N/A feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>3</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	N/A pH UNITS N/A mS/cm N/A °C	N/A N/A N/A	_pH UNITS _mS/cm _°C
NOTES:			
Well was was completely d	ry; therefore no readings o	r samples were collected.	

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	9/27/2018 Sunny 70s
WELL ID: OW-15	-	DIAMETER (	(INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	16.8 feet 1.2 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.1 +/- 15 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	9.5 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u>6</u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	N/A pH UNITS <u>1.550</u> mS/cm <u>14.9</u> °C	N/A 1.557 14.7	_pH UNITS _mS/cm _°C
NOTES:			

Samples were noted as generally clear and low in turbidity based on visual inspections of

supernatant sample after a 15-minute decanting period.

Samples were collected at 4:30 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTON LANDFILL 94139.24	DATE: WEATHER:	9/27/2018 Sunny 70s
WELL ID: OW-16	-	DIAMETER (	INCHES): <u>2</u>
PURGE DATA			
WELL DEPTH: PURGE VOLUME (GAL): PURGER TYPE:	45.8 feet 6.8 gallons Peristaltic pump	MEASURE POINT: PURGE RATE (GPM): ELAPSED TIME (MIN):	Top of Casing 0.3 +/- 20 +/-
WATER LEVEL DATA			
DEPTH: MEASURE POINT:	4.5 feet Top of Casing	ELEVATION: DEVICE:	See Site Plan Water Level Indicator
FIELD TESTING RESULTS	<u> </u>		
	READING 1	READ	ING 2
pH: SPEC. COND: TEMPERATURE:	<u>N/A</u> pH UNITS 0.739mS/cm 14.5°C	N/A 0.737 14.6	pH UNITS mS/cm °C
<u>NOTES:</u>			

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 1:45 PM.

PROJECT NAME: PARE PROJECT NO.:	TIVERTO 94139.01	N LANDFILL /021	DATE: WEATHER:	9/27/2018 Sunny 70s
FIELD TESTING RESULT	<u>'S:</u>			
SURFACE WATER LO	CATION:	SW-1		
	REA	DING 1		
pH: SPEC. COND: TEMPERATURE:	N/A 0.62 18.4	_pH UNITS _mS/cm _°C		
SURFACE WATER LO	CATION:	<u>SW-2</u>		
	REA	DING 1		
pH: SPEC. COND: TEMPERATURE:	N/A 0.34 18.9	_pH UNITS _mS/cm _°C		
SURFACE WATER LO	CATION:	<u>SW-3</u>		
	REA	DING 1		
pH: SPEC. COND: TEMPERATURE:	N/A 0.57 19.4	_pH UNITS _mS/cm _°C		
NOTES:				

# **APPENDIX L**

**Bedrock Well Installation Report** 



PARECORP.COM



December 4, 2017

William Anderson, P.E., Director Tiverton DPW Town of Tiverton 343 Highland Road Tiverton, Rhode Island 02878

#### Re: Bedrock Well Installation Tiverton Municipal Sanitary Landfill Pare Project No. 94139.01/Task 27

Dear Mr. Anderson:

On October 4 and 5, 2017, a bedrock well (OW-16) was installed at the Tiverton Landfill in Tiverton, Rhode Island by New England Boring Contractors and observed by Pare Corporation (Pare). The bedrock well was installed using a track mounted drill rig with an air drill. The bedrock well was constructed using 4-inch steel casing, slotted PVC pipe, and solid PVC pipe.

The 4-inch casing was installed to a depth of 42 feet below the ground surface to approximately 2 feet above the ground surface. The top of bedrock was discovered at 10.5 feet below the ground surface with groundwater first being discovered at 17 feet below the ground surface. At the beginning of the day on October 5, the groundwater level has risen to 2 feet below the ground surface. From a depth of 32 feet to 42 feet below the ground surface slotted PVC pipe was installed. From a depth of 32 feet to the top of casing, solid PVC pipe was installed. Between the outside of the PVC pipe and the inside of the steel casing, holliston sand, bentonite, grout, and quickcrete were installed. Holliston sand was installed from the bottom of the hole to 15 feet below the ground surface. A bentonite seal was established from the top of rock to 15 feet below the ground surface. The rest of the hole was filled with grout. A detail drawing of the bedrock well and site photography are attached.

Personnel from Pare went to sample OW-16 and the adjacent overburden well OW-7 on November 8, 2017. During the purge and sampling of OW-16, the water level of OW-7 was unchanged, implicating that the wells are not directly connected. Attached are an analytical summary table and analytical results for the sampling of both wells.

Should you have any questions regarding this letter or the attached data, please feel free to contact the undersigned at (401) 334-4100, thank you.

Very truly yours,

Timothy P. Thies, P.E. Vice President

TPT/TCJ/abv

8 BLACKSTONE VALLEY PLACE LINCOLN, RI 02865 T 401.334.4100 F 401.334.4108



William Anderson, P.E., Director Tiverton DPW

December 4, 2017

Attachments: Bedrock Well Detail Site Photography Analytical Summary Table Analytical Data Report

cc: Jay Lambert, Tiverton Landfill Subcommittee (w/encl.) Matthew Wojcik, Tiverton Town Administrator (w/encl.) Travis C. Johnson, Pare Corporation (w/o encl.) George G. Palmisciano, P.E. Pare Corporation (w/o encl.)

Z:\JOBS\01 - Earlier Jobs\94139.00\94139.01\Task 027 Bedrock Well Installation\Bedrock Well Letter Report





	Tiverton Landfill Monitoring Well Sampling Results				
				11/8/	2017
				Overburden Well	Bedrock Well
	Parameter	Threshold Value	Method Detection Limit	OW-7	OW-16
METALS	Antimony	0.006 mg/L <sup>1</sup>	0.001 mg/L <sup>1</sup>	ND	ND
	Arsenic	0.010 mg/L <sup>1</sup>	0.002 mg/L <sup>1</sup>	ND	ND
	Barium	2 mg/L <sup>1</sup>	0.001 mg/L <sup>1</sup>	0.035	0.100
	Beryllium	0.004 mg/L <sup>1</sup>	0.001 mg/L <sup>1</sup>	ND	ND
	Cadmium	0.005 mg/L <sup>1</sup>	0.001 mg/L <sup>1</sup>	ND	ND
	Chromium	0.1 mg/L <sup>1</sup>	0.001 mg/L <sup>1</sup>	0.005	0.005
	Cobalt	0.73 mg/L <sup>5</sup>	0.001 mg/L <sup>5</sup>	0.018	0.005
	Copper	1.3 mg/L <sup>1</sup>	0.005 mg/L <sup>1</sup>	0.005	ND
	Lead	0.015 mg/L <sup>1</sup>	0.001 mg/L <sup>1</sup>	ND	ND
	Mercury	0.002 mg/L <sup>1</sup>	0.0002 mg/L <sup>1</sup>	ND	ND
	Nickel	0.1 mg/L <sup>2</sup>	0.001 mg/L <sup>2</sup>	0.021	0.010
	Selenium	0.05 mg/L <sup>1</sup>	0.002 mg/L <sup>1</sup>	ND	0.005
	Silver	0.1 mg/L <sup>2,3</sup>	0.001 mg/L <sup>2,3</sup>	ND	ND
	Thallium	0.002 mg/L <sup>1</sup>	0.0002 mg/L <sup>1</sup>	ND	ND
	Tin	22 mg/L <sup>5</sup>	0.002 mg/L <sup>5</sup>	ND	ND
	Vanadium	0.26 mg/L <sup>5</sup>	0.001 mg/L <sup>5</sup>	ND	ND
	Zinc	2 - 5 mg/L <sup>2,3</sup>	0.005 mg/L <sup>2,3</sup>	0.020	0.021
VOC's	MTBE	20-40 μg/L <sup>4</sup>	1.0 μg/L <sup>4</sup>	5.9	4.6
	= Exceedan	ce of Threshold Value			



# **REPORT OF ANALYTICAL RESULTS**

# NETLAB Work Order Number: 7K09004 Client Project: 94139 - Tiverton Landfill

Report Date: 16-November-2017

Prepared for:

Travis Johnson Pare Corporation 8 Blackstone Valley Place Lincoln, RI 02865

Richard Warila, Laboratory Director New England Testing Laboratory, Inc. 59 Greenhill Street West Warwick, RI 02893 rich.warila@newenglandtesting.com

Project: 94139 - Tiverton Landfill

Case Number: 7K09004

### Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
7K09004-01	OW-7	Water	11/08/2017	11/09/2017
7K09004-02	OW-16	Water	11/08/2017	11/09/2017

# **Request for Analysis**

OW-16	
Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C
OW-7	
Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C

### Project: 94139 - Tiverton Landfill

Case Number: 7K09004

Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C
Project: 94139 - Tiverton Landfill Case Number: 7K09004

### **Case Narrative**

### **CASE NARRATIVE:**

#### Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

#### <u>Metals</u>

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

### Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

# Sample: OW-7

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.035	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.005	0.001
7440-48-4	Cobalt	6010C	0.018	0.001
7440-50-8	Copper	6010C	0.005	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.021	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.020	0.005

# Sample: OW-16

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.100	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.005	0.001
7440-48-4	Cobalt	6010C	0.005	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.010	0.001
7782-49-2	Selenium	6010C	0.005	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.021	0.005

Sample: OW-7 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	5.9	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

### Surrogates:

Compound	% Recovery	Limits
Toluene d8	108	70-130
1,2-Dichloroethane d4	100	70-130
4 BFB	103	70-130

Sample: OW-16 Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	Acetonitrile (Methyl cyanide)	ND	5.0
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	Allyl chloride	ND	5.0
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	Chloroprene	ND	5.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	Ethyl methacrylate	ND	5.0
100-41-4	Ethylbenzene	ND	1.0
78-83-1	Isobutyl alcohol	ND	20.0
465-73-6	Isodrin	ND	5.0
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	Methacrylonitrile	ND	10.0
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

## Sample: OW-16 Method: 8260C

### Case Number: 7K09004

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	Methyl iodide (Iodomethane)	ND	5.0
80-62-6	Methyl methacrylate	ND	10.0
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	Propionitrile (Ethyl cyanide)	ND	20.0
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	4.6	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	Vinyl acetate	ND	5.0
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

### Surrogates:

Compound	% Recovery	Limits
Toluene d8	96	70-130
1,2-Dichloroethane d4	94	70-130
4 BFB	103	70-130

