RSEC

August 3, 2021

Mr. Gregory Gould, P.E.
Environmental Engineer
Washington State Department of Ecology
Solid Waste Management, Industrial Section
POB 47600
Olympia, WA 98504-7600

RE: 2020 – 2021 Annual Remedial Action Report, Emerald Kalama Chemical, LLC, Kalama, Washington.

Dear Mr. Gould:

On behalf of Emerald Kalama Chemical, LLC (EKC), RSEC Environmental & Engineering Consulting, Inc. (RSEC) is pleased to provide the attached 2020 – 2021 Annual Remedial Action Report for the Emerald Kalama Chemical facility in Kalama, Washington.

In summary, the remedial systems at the facility continue to operate as designed. At this time, EKC is not proposing changes to the monitoring and operations program for the upcoming 2021 – 2022 operations period. A PDF of the entire report and appendices has also been sent via email.

Please feel free to contact me (541) 490-4223 / rich@rsecinc.com if you have any questions or need additional copies of the document.

Sincerely,

RSEC Environmental & Engineering Consulting, Inc.

Richard Truax, P.E.
Senior Project Manager

cc: C. Culp, EKC
P. Oyer, EKC

RSEC

Prepared for:

Emerald Kalama Chemical, LLC
Kalama, Washington

Prepared by:

RSEC Environmental &
Engineering Consulting

2020-2021
Annual Remedial Action Report
Emerald Kalama Chemical, LLC

August 2021

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2020-2021
Remedial Action Annual Report
Emerald Kalama Chemical, LLC

August 2021

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1.0 Introduction

This document presents the annual monitoring report for ongoing remediation activities pursuant to the 2008 Consent Decree (CD) between the Washington State Department of Ecology (Ecology), and BF Goodrich, Inc. and Emerald Kalama Chemical, LLC (Emerald), at the Emerald facility in Kalama, Washington. The CD requires operation of the remedial actions (RA) presented in the *Cleanup Action Plan* (CAP) (Exhibit B of the CD; RETEC 2004a). The RAs presented in the CAP constitute the final cleanup actions for the site. This report describes maintenance, operation, and compliance monitoring of the RAs from May 2020 through April 2021.

The remediation systems design, operations, and compliance monitoring are described in the following documents:

- *Revised Design Report – North Impacted Area Interception Trench* (EMCON 1994)
- *West Impacted Area Interim Corrective Measure Phase 3 Final Design Report* (EMCON 1995)
- *Shallow Interception Trench System Operation and Maintenance Guidelines* (RETEC 1997)
- *Feasibility Study* (RETEC 2003)
- *Corrective Action Plan* (CAP; RETEC 2004a)
- *Compliance Monitoring Plan* (CMP; RETEC 2007)
- *Engineering Design Report* (EDR; ENSR/AECOM 2008)
- *Operations and Maintenance Plan* (O&M Plan; AECOM 2009).

Cleanup levels (CUL's) referred to in this document are those presented in the CAP and approved by Ecology on October 11, 2004 (RETEC 2004a). Additional relevant discussion of the location and behavior of contaminants in the intermediate sand at the site are also available in the RCRA WIA ICM Dispute Resolution September 23 – October 4,1996 Documents, ICM Scope of Work WIA (RETEC, November 1996), and ICM Annual Report (RETEC, April 1998) – collectively referred to herein as "ICM DR Documents".

1.1 Background

Historic spills at the Emerald facility resulted in impacts to the subsurface. These releases are described in the *Remedial Investigation Report, Rev. 2* (ThermoRetec 2000). As detailed in the Remedial Investigation Report, the impacts are contained within the upper sand unit at the remediation areas identified as the NIA and WIA, and the intermediate sand layer that extends under the WIA. The remediation monitoring and systems are therefore located in the North Impacted Area (NIA, shallow sand), West Impacted Area (WIA, shallow sand), and the intermediate sand unit beneath the WIA shallow sand. The layout of the Emerald facility is shown on Figure 1-1.

1.2 Summary of Remediation Activities and Contaminant Status

This section provides a summary description of remediation activities at the facility, and current contaminant(s) status in each area.

1.2.1 North Impacted Area

The NIA remediation consists of an interception trench system (Figure 1-1) that was constructed between October and November 1995 and continues to operate pursuant to the CD. The system objectives are to capture affected groundwater in the upper sand aquifer.

The upper sand aquifer is the uppermost hydrostratigraphic unit at the facility. In the NIA, the upper sand aquifer consists of approximately 9 to 17 feet of hydraulically placed sand fill overlying 3 to 7 feet of interbedded sands and silts. The interception trench is approximately 1,500 feet long and is constructed to variable depths such that it extends to the top of the underlying upper silt (collects groundwater from the shallow formation above the silt). The trench includes two collection sumps: an east sump collecting from approximately 950 feet of the trench, and a west sump collecting from the remaining approximately 550 feet of trench. Water from the sumps is pumped to the Emerald Low/High COD ModuTanks and eventually to the Emerald wastewater treatment system. The base and downgradient faces of the trench are lined with an impermeable geosynthetic liner. The liner contains groundwater within the trench and reduces the inflow of standing water that may be seasonally present in a wetland downgradient of the trench.

In the NIA East sump, diphenyl oxide (DPO) concentrations continue to be detected but have been below the approved cleanup level (CUL) since 2010. Benzene was detected above the CUL this monitoring year in the East sump samples (toluene continued to be below the method detection limit). The NIA West sump continued stable to decreasing benzene concentrations approaching the CUL (October 2019 and 2020 were below the benzene CUL). Toluene in the West sump continued at low detection level to non-detect concentrations far below the CUL. DPO concentrations at the West sump continued above the CUL comparable to recent past sample seasons. The combined east and west sumps of the NIA pump an average of 20- to 30-million gallons of water through the EKC water treatment plant each year. The sumps pumped 29-million gallons of water in 2020-21 resulting in the removal of approximately four pounds of benzene, less than half a pound of toluene, and 103 pounds of DPO.

1.2.2 Central Impacted Area

The Central Impacted Area (CIA, Figure 1-1) contains portions of the shallow sand aquifer upgradient of the WIA and NIA. Remediation efforts in the CIA have targeted mass reduction of toluene via use of a soil vapor extraction system, and more recently, mass reduction of DPO via use of Waterloo Emitters™; a device intended to provide controlled release of oxygen to groundwater to enhance biodegradation. The soil vapor extraction system was successful in achieving the intended toluene removal goal and was closed with the approval of Ecology in December 2013. The CIA Waterloo Emitter™ system consisted of 55 emitter wells connected to a pressurized oxygen supply and began operating in February 2009. The effectiveness of the oxygen emitter system was evaluated during the 2015-16 operation year, and it was determined that the system was not providing further benefit toward mass reduction of DPO. Ecology approved Emerald’s request to cease operations and close the system in May 2017.

The monitoring well data within the CIA are reported in the NIA and WIA data tables and maps according to the shallow upper sand aquifer groundwater flow direction at the wells (northerly [NIA] and westerly [WIA]).

1.2.3 West Impacted Area

The WIA remediation has consisted of two components (Figure 1-1):

- Two shallow interception trenches (identified as north and south) parallel to the river in the upper sand aquifer. This portion of the WIA remediation has reached CUL and was shut down with Ecology approval in November 2018 as further described in Section 1.2.3.1.
- A groundwater capture system comprised of ten recovery wells with submersible pumps in the intermediate sand aquifer and aligned parallel to the river (ISRW system).

Summaries of WIA systems are provided in the following subsections.

1.2.3.1 WIA Shallow Interception Trench

The WIA shallow interception trench system was constructed as an ICM during November 1997. The system is comprised of a south and a north trench each with sump and pump. The system objective was to collect contaminated groundwater (originally focused on toluene) from the upper sand aquifer, preventing discharge to the Columbia River. Toluene has been below the CUL since 2008. With the absence of toluene, DPO was the only constituent that continued to be detected but has been below the CUL since 2013 in the North sump and 2011 in the South sump. With the below CUL concentrations and resultant lack of constituent mass, EKC requested Ecology approval to cease operation of the trenches. Ecology approved EKC's request in the November 14, 2018 Recommended Changes to System Operations Letter. Per EKC's proposal and Ecology's approval the WIA shallow trench system remains in place and operable but is no longer operated unless future groundwater data indicates reason to restart the system.

1.2.3.2 WIA Intermediate Sand Recovery Wells (ISRW)

The ISRW system was installed as an ICM during April 1997 and upgraded pursuant to the CAP during February 2009. The system objective is to minimize discharge of affected intermediate sand aquifer groundwater to the Columbia River and reduce the mass of constituents in the aquifer. This is accomplished by maintaining an inward gradient to the recovery wells from upgradient and somewhat from the river. Submersible pumps in the recovery wells transfer water to the Emerald low COD ModuTank (Fig 1-1) which discharges to the wastewater treatment plant.

The ISRW system includes 10 recovery wells (ISRW-1 through ISRW-10). Seven of the recovery wells (ISRW-1 through ISRW- 7) were installed during February and March 1997. Recovery wells ISRW-1, ISRW-2b, ISRW-3, and ISRW-4 began operation during April 1997. ISRW-1 -2b, -3, and -4 were installed based on aquifer modeling to intercept the targeted intermediate sand aquifer flow, and subsequent operation data confirmed the modeled design basis (ICM DR Documents). At the request of Ecology, pumping of recovery wells ISRW-5, ISRW-6, and ISRW-7 was added during November and December 1997; this was done for added groundwater capture protection and operational backup redundancy of the system. Recovery wells ISRW-8, ISRW-9, and ISRW-10 were then added during February 2009 pursuant to the CAP and began operation during March 2009. These additional wells were requested by Ecology to ensure containment capability and redundancy even further.

An important ISRW operations understanding is that the 10-well system provides significant capture zone overlap and dewatering redundancy. As a result, the capture alignment is maintained even in the event of some ISRW's being temporarily off-line; for example, ISRW-1, -2, -3, and -4 captured the entire targeted alignment on their own when first constructed. EKC continues to maintain the system in a manner to keep all wells operational and maximize benzene and toluene mass removal.

Although they have decreased over time, benzene and toluene concentrations remain above their CUL in most of the ISRW's (exceptions are ISRW-7 has been consistently below CUL and ISRW-6

has been near and below CUL). As discussed in later sections of this report, the data show some wells collecting higher constituent concentrations whereas other wells are likely on the fringes of remaining constituents and/or primarily pumping river water in-flow. Emerald continues to utilize the collected data to focus ISRW operations on constituent mass removal and minimizing discharge to the river. The ISRW wells pumped 1.36 million gallons of water to the EKC water treatment plant in 2020 – 2021 resulting in the removal of 497 pounds of toluene and 0.8 pounds of benzene.

1.3 Report Format

The NIA area groundwater monitoring and interception trench performance is described in Section 2. The WIA shallow groundwater monitoring is described in Section 3. The WIA intermediate sand groundwater monitoring and ISRW system performance is described in Section 4. References are provided in Section 5.

Note that NIA, CIA, and WIA shallow groundwater potentiometric maps are reported on combined figures 2-1 and 2-2 (potentiometric) and 2-3 and 2-4 (constituent concentrations) to provide a site-wide perspective of shallow groundwater

Supporting documentation includes Appendix A – October 21, 2020 Ecology Letter: Recommended Changes to System Operation; Appendix B – potentiometric surface water level data tables; Appendix C - laboratory analytical reports (transmitted via e-file with e-copy of this report), and; Appendix D – 1998 ICM Annual Report Potentiometric Maps. A PDF of this entire document has also been transmitted via email e-file.

2.0 NIA Well Monitoring & Interception Trench System

2.1 Monitoring Program Description

The monitoring plan for the upper sand aquifer NIA interception trench consists of three primary components:

1. Collection of data to evaluate the ongoing groundwater quality in the NIA.
2. Collection of groundwater elevation data to monitor ongoing flow direction and gradient in the NIA including the barrier trench and sumps.
3. Visual inspection of ground surface integrity to assure no erosion or other damage of the length of interception trench.

The NIA monitoring program scope is described in the following sections and summarized in Table 2-1. All NIA monitoring locations are shown on Figure 2-1.

2.2 Visual Inspection of Integrity of NIA Trench

The entire 1,500-foot length of the NIA trench and barrier wall was inspected for ground surface indications of damage, leaks, or erosion during the April 2021 groundwater sampling event. This inspection involved walking the top of the soil berm above the barrier wall / trench alignment. No indications of damage, leaks or erosion were observed. The entire length is heavily vegetated, firm, and well established. The inspection did identify an area of downed trees and brush beginning to obstruct trench monitoring piezometers – the trees and brush were cleared as part of ongoing maintenance.

2.3 Groundwater Levels and Flow

NIA groundwater levels were measured semi-annually at the following locations:

- Shallow (upper) sand monitor wells and piezometers (KC-8, KC-9, KC-21, KC-23, PZ-102, PDW-117, MW-210, MW-230, MW-231, MW-232, MW-245, and MW-256) located upgradient of the trench. These locations include NIA and CIA areas from which groundwater is generally flowing northerly towards the NIA barrier and recovery trench.
- Three piezometers (NTP-1, NTP-2, NTP-3) installed along the length of the trench that monitor groundwater elevations in the trench.
- Wetland staff gauge.

Tables B NIA and CIA (Appendix B) summarize the groundwater and wetland elevation data. The data were used to construct shallow sand potentiometric surface maps (Figures 2-1 and 2-2) for October of 2020 and April of 2021. Note that EKC proposed in the 2019 – 2020 Annual Report and Ecology approved (Appendix A) ending elevation gauging at NIA locations MW-201, MW-205, NTP-WS, and NTP-ES hence they are not included here.

2.3.1 NIA Upper Sand Aquifer Groundwater Levels

As expected, lower groundwater elevations were observed during the dry season October 2020, and higher elevations were observed during the wet season April 2021. Similarly, the wetland was dry in October and contained water in April. The winter and spring months bring precipitation and areal floodplain runoff to the wetland along with higher groundwater elevations. NOAA precipitation data (https://www.nwrfc.noaa.gov/WAT_RES_wy_summary/20210712/SeasonalMAP_WY2021_OCT_APR.2021071214.png) indicates the 2020 – 2021 precipitation period to be in the range of 50% - 70% of

normal in the uplands east of the EKC site and 70% - 90% of normal in the immediate area of the site (i.e., below normal). This is reflected by the wetland staff gauge April water level of 1.3-feet which is below typical wetter winter/spring levels which can result in staff gauge levels of 3 – 5 feet. The latter portion (March – April 2021) of the 2020 – 2021 monitoring year began more pronounced drought conditions and resulted in some reduction of water pumping volumes. As shown on Figures 2-1 and 2-2, in both October and April, water elevations in the trench were stable and below up-gradient groundwater elevations indicating the ongoing normal operation of the trench.

2.3.2 Upper Sand Aquifer Groundwater Flow

NIA aquifer groundwater flow is towards the north (Figures 2-1 and 2-2). This flow pattern was observed under both low and high groundwater table conditions (October and April respectively) and is consistent with historical monitoring results. The groundwater gradient is shallow in the CIA region of northerly flow and steepens as it approaches the containment recovery trench. The average of the October and April gradients across this area was 0.006 ft/ft.

2.4 Groundwater Quality

The NIA groundwater quality monitoring network is comprised of six wells (MW-245, MW-256, MW-230, MW-231, PDW-117, and KC-9), and the east and west NIA trench sumps.

Monitoring results are described below and presented in Table 2-2. Areal distributions for benzene and DPO are provided on Figures 2-3 and 2-4 respectively and include an overlay of the potentiometric contours. Laboratory data reports are provided in Appendix C (e-file).

2.4.1 Sampling and Analytical Procedures

All sampling and laboratory analyses were completed in accordance with the *Sampling and Analysis Plan* (SAP; RETEC 2004c). Samples were submitted to Specialty Analytical Laboratory, Portland, Oregon, and analyzed using the following methods (varies by well per Table 2-1):

- Volatile organic compounds (VOCs) [benzene and toluene] using EPA Method 8260C.
- Semi-volatile organic compounds (SVOCs) [diphenyl oxide (DPO), and biphenyl (east and west sumps only)] using EPA Method 8270D.

2.4.2 Upper Sand Aquifer Sampling Results

The analytical results are detailed on Table 2-2. Benzene and DPO are the two constituents detected at some locations in the NIA at concentrations that exceed the CULs. Figures 2-3 (benzene) and 2-4 (DPO) provide areal map views of concentration data for these constituents.

VOCs

The 2020 – 2021 VOC (benzene and toluene) results for the NIA generally agree with the concentrations and trends of the existing historical data. An exception to this historical agreement is the reappearance of benzene above CUL concentrations in the NIA east sump samples. An additional sample was collected at the east sump in January 2021 and again indicated benzene above the CUL as did the April 2021 sample. The NIA west sump was below the benzene CUL in October 2020 (0.970 ug/L vs 1.2 ug/L CUL), but above the CUL at 15.2 ug/L and 4.51 ug/L in January and April 2021 samples respectively. The January samples were in addition to the regular monitoring regimen for the purpose of further data related to the reappearance of benzene at the east sump. Neither sump has shown a toluene CUL (2,000 ug/L) exceedance since 2008. EKC will continue to monitor the reappearance of benzene in the east sump via continued planned sampling. The east sump benzene data is believed to be a localized event indicative of the NIA trench operating as intended.

Monitor well KC-9 (upgradient of the NIA west sump) continued to exhibit low exceedances of the benzene CUL in October 2020 and April 2021 (2.79 ug/L and 2.37 ug/L respectively vs CUL of 1.2 ug/L). Monitor location PDW-117 upgradient of KC-9 and the west sump showed continued lower benzene concentrations with a detection level (0.500 ug/L) result in October and below detection (<0.300 ug/L) in April. As noted, these data agree with and continue to indicate an overall downward trend of benzene in the northerly / trench area of the NIA.

Further upgradient of the NIA trench in the northerly groundwater flow portion of the CIA area, wells MW-230 and -231 have shown historical benzene (both wells) and toluene (MW-231) CUL exceedances. As shown on Table 2-2, these concentrations have also steadily decreased over time with recent results varying from near the CUL (1.2 ug/L) to below detection level (<0.300 ug/L). As detailed in the 2019 – 2020 Annual Report, a recent past outlier of elevated benzene and toluene concentrations was indicated at MW-231 in April 2020. Additional sampling including a blind duplicate in May 2020 (Table 2-2) indicated below CUL / below detection limit results as do the 2020 – 2021 data including duplicates reported herein.

SVOCs

The 2020 – 2021 NIA SVOC monitoring results continue to agree with the historical data. Diphenyl Oxide (DPO) is the only SVOC with historical and ongoing CUL exceedances in the NIA. As shown on Table 2-2, the ongoing detection concentrations of DPO are trending downward with intermittent up / down spikes. DPO CUL (410 ug/L) exceedances this year are indicated at the West Sump (874 and 690 ug/L) and upgradient at wells KC-9 (2,660 and 2,870 ug/L), PDW-117 (1,570 and 1,070 ug/L), and MW-231 (1,670 in October and 56.1 ug/L below CUL in April). The East Sump and MW's -230, -232, -245, and -256, have been below the DPO CUL generally since October 2011 or earlier (the exception being MW-230 since April 2017).

Biphenyl has been detected in portions of the NIA but has never exceeded the CUL (230 ug/L) in the sumps and as a result has not been monitored in the sumps since April 2014. Biphenyl had continued to be part of the monitoring program in some upgradient wells of the NIA and former CIA. After the 2017 – 18 sample year Ecology approved EKC's proposal to cease biphenyl sampling in the NIA wells but requested biphenyl sampling be resumed in the sumps. Beginning with the April 2019 sampling, biphenyl analysis has been included in both the East and West sumps. The East sump biphenyl results for October 2020 and April 2021 are non-detect and the West are 13.1 and 8.82 ug/L respectively. These results are similar or below previous (2014) biphenyl concentrations in the sumps.

2.5 NIA Trench & Sump System Monitoring

The NIA interception trench system operated continuously throughout the monitoring period. Monitoring results are described below and summarized in Tables 2-3 and 2-4.

2.5.1 Groundwater Extraction

Table 2-3 summarizes the east and west sump pump operation data, the volume of water removed from the trench, and the average pumping rates during the 2020 - 2021 performance period. Approximately 29 million gallons of water were pumped from the NIA interception trench during this performance period; 12.6 million gallons from the west sump and 16.4 million gallons from the east sump. The 29-million-gallon total volume is somewhat above average of typical annual volumes (27.4 million gallons is annual average since 1999). The NIA trench system water volumes are of course heavily dependent on annual precipitation totals and the flows vary with wetter / drier seasons. As shown on Table 2-3, the lowest average GPM and volumes were August to November, with the highest being January to May.

2.5.2 Mass Removal

Table 2-4 provides data for the East and West Sump discharges and the approximate mass of contaminants removed during the 2020 - 2021 performance period. The contaminant mass calculations were determined by multiplying semi-annual sump sample concentration data by the cumulative pump discharge volume for the corresponding 6-month period. Approximately 4.2-pounds of benzene, 0.3-pounds of toluene, and 103.3 pounds of DPO were removed during this reporting period.

As discussed in Section 2.4.2, the concentrations of benzene, toluene and DPO in the NIA have decreased over the system operating time frame. The annual quantities of benzene, toluene and DPO removed from the 2007-2008 monitoring period to present are summarized in the table below. Historical soil vapor extraction system operations also played a role in the NIA VOC reductions as shown by the significant reductions in benzene and toluene mass removals (and analytical sample concentrations) in the earlier years of NIA operations.

Performance Period	Benzene removed (lbs)	Toluene removed (lbs)	DPO removed (lbs)
2020-21	4.2	0.3	103.3
2019-20	0.5	0.5	89.9
2018-19	0.9	0.5	82.7
2017-18	1.5	0.7	97.8
2016-17	4.5	2.9	58.9
2015-16	3.5	2.4	35.1
2014-15	3.2	3.4	91.3
2013-14	5.4	7.5	90.1
2012-13	5.1	7.8	103.5
2011-12	6.4	24.0	98.0
2010-11	7.6	16.6	105
2009-10	6.0	38.1	103
2008-09	6.6	46.1	127
2007-08	26.4	254	207
Total	**81.8**	**404.8**	**1,393**

2.5.3 System Maintenance

EKC has maintained system flows via regular maintenance including pipe cleaning using compressed air agitation and line-pigging. Other significant maintenance efforts conducted from time to time as needed include vacuum removal of sediments from the sump bottoms, flushing the NIA trench collection pipe, replacing old PVC piping with stainless steel piping, and replacing/repairing pumps. This maintenance work is conducted in partial day events avoiding extended system shutdowns. For the 2020 – 2021 operations year, line flushing and pigging was conducted approximately quarterly, and one complete overhaul cleanout of each pump was conducted. In addition, the sump areas and outlying NIA wells and piezometers are maintained with tree and brush clearing for access along with paint and label identification upkeep.

2.6 Performance Evaluation

Overall, the NIA data set dating back to October 2007 is indicative of the groundwater constituent plume being in a state of ongoing intrinsic biodegradation, decreasing constituent concentrations, and continued recovery trench operation to contain any residuals that may eventually migrate to the trench. The following are conclusions about the performance and effectiveness of the NIA interception trench system, based on monitoring data collected during the 2020-2021 performance period:

- The NIA trench system removed 4.2-pounds of benzene, 0.3-pounds of toluene, and 103.3-pounds of DPO in the 2020 – 2021 operational year. This performance is comparable to ongoing NIA mass removal trends as shown in Section 2.5.2. The 4.2 pounds of benzene removal is somewhat above the past several years and reflects benzene occurrence in the East sump.
- The trench system continues to fulfill its purpose of hydraulic control of the NIA, preventing discharge of groundwater from the upper sand aquifer to the wetland. This is illustrated on potentiometric figures 2-1 and 2-2.
- The overall data set from 2007 to present indicates a continued decreasing trend in the concentration of detected contaminants. However, during the 2020 – 2021 monitoring period benzene indicated minor fluctuations with a below CUL result in the West sump but above CUL results in the East sump.

2.7 Recommended Changes to System Operation / Monitoring

No changes are proposed for the NIA monitoring and operations for the 2021 – 22 period.

3.0 WIA Shallow Wells & Interception Trench System

3.1 Monitoring Program Description

The monitoring plan for the shallow WIA wells consists of two primary components:

1) collection of water elevation data to define groundwater flow direction and gradient, and

2) collection of water quality data to evaluate the occurrence and movement, if any, of dissolved residual constituents of interest.

The WIA shallow well monitoring is described in the following sections and summarized in Table 3-1. All monitoring locations are shown on Figures 2-1 and 2-2.

3.2 Groundwater Levels and Flow

Water levels were measured semi-annually at the following upper sand (shallow) locations:

- KC-24R, PZ-104, PZ-107, USRW-2, KC-13, MW-238, MW-255, PZ-110, and the North and South trench sumps.

Table B-4 (Appendix B) summarizes semiannual groundwater elevation data. The data were used to construct the shallow potentiometric surface maps for October 2020 and April 2021 (Figures 2-1 and 2-2 respectively).

3.3 WIA Upper Sand Aquifer Groundwater Flow

In the WIA, groundwater flow within the upper sand aquifer is westerly from a nearly flat gradient in the PZ-104 / -107 / MW-230 area (Figures 2-1 and 2-2). This flow pattern was observed during both high and low water table conditions (April and October), and is consistent with historical monitoring results. The hydraulic gradient across the WIA upper sand is consistent at 0.007 ft/ft in October and 0.009 ft/ft in April.

The PZ-104 / -107 area and further east / upgradient is influenced by the shallow gradient in this area of the site (Figures 2-1 and 2-2) with little potentiometric gradient over much of this area. The June 29, 2016, Evaluation Report of Oxygen Emitter Effectiveness (RSEC letter to Ecology) provides detail of this lack of constituent migration, shallow groundwater gradient, and even indication of occasional reversing gradient.

3.4 WIA Upper Sand Groundwater Quality

Groundwater samples were collected from WIA upper sand wells USRW-2, PZ-104, and PZ-107. Well MW-230 is reported in the NIA Section 2.0 of this report (Table 2-2) although groundwater from this area may influence both the NIA and WIA areas.

3.4.1 Sampling and Analytical Procedures

All sampling and laboratory analyses were completed in accordance with the SAP and analyte revisions approved by Ecology. Groundwater samples were submitted to Specialty Analytical

Laboratory (Portland, OR) and analyzed using one or both of the following methods per the sample analytical requirement (Table 3-1):

- Volatile organic compounds (VOCs) [benzene and toluene] using EPA Method 8260C.
- Semi-volatile organic compounds (SVOCs) [DPO, biphenyl, and bis(2-ethylhexyl) phthalate] using EPA Method 8270D.

Laboratory data are included in Appendix C (e-file).

3.4.2 Upper Sand Aquifer Sampling Results

The WIA upper sand data are summarized in Table 3-2 and shown on Figures 2-3 (benzene) and 2-4 (DPO).

DPO concentrations in the area of the WIA shallow trench (USRW-2) agree with past data indicating continued downward trends below the 410 ug/L CUL (October 280 ug/L / April <0.478). The data set continues to support the approved November 2018 shutdown of the WIA Shallow Trench System.

Over 300-feet upgradient of the WIA trenches, in the nearly flat westerly flow portion of the CIA area, wells PZ-104 and PZ-107 continue to show detections of DPO and biphenyl. Benzene is detected above the CUL at PZ-104 but is not detected at PZ-107. These data are displayed on Table 3-2 and Figures 2-3 and 2-4. The concentration of DPO at these two wells has been relatively consistent over time, although PZ-107 has shown some decreasing trend and a below CUL result in April 2020 and 2021. Biphenyl concentrations have varied but primarily below the 230 ug/L CUL at PZ-104 and have trended downward at PZ-107 to below the CUL during the past couple years excepting October 2020. Benzene concentrations have been generally consistent at CUL order of magnitude at PZ-104 (1.7 ug/L to 12 ug/L since 2018) and below the CUL since 2018 at PZ-107 (<0.300 ug/L).

3.5 WIA Shallow Trench Discharge Monitoring

The WIA shallow interception trench system was recommended to be shut down in the 2017-18 Annual Report and Ecology approved this recommendation in the November 14, 2018 Recommended Changes letter. Pumping of the shallow trench was ceased on November 28, 2018, and in accordance with Ecology's approval the system remains in place and operable. The north and south trench pumps are briefly operated approximately once a month to assure continued operational status. The system will remain in place for possible future use if indicated by ongoing shallow WIA aquifer monitoring.

3.6 Recommended Changes to System Operation

No changes are proposed for the WIA monitoring program for the 2021 – 22 period.

4.0 WIA Intermediate Sand System

4.1 Monitoring Program Description

The monitoring plan for the WIA intermediate sand recovery well (ISRW) system consists of the following components: 1) weekly monitoring of recovery system operation and water volume production; 2) semi-annual sampling of recovery wells discharge water quality; and 3) semi-annual water quality sampling and water elevation gauging of monitoring wells. WIA intermediate Sand monitoring is described in the following sections and is summarized in Table 4-1. The behavior of the subject VOCs (benzene and toluene) in relation to the intermediate sand aquifer continue to be evaluated and compared with hypotheses used to design the system as described in the ICM DR Documents (RETEC 1996, RETEC 1998).

In addition to the required semi-annual (April and October) monitoring program, in 2018 EKC elected to collect water samples for benzene and toluene analysis from the 10 ISRW wells in July and January. This resulted in quarterly ISRW water quality data, and semi-annual monitor well sampling and water elevation data. The additional ISRW data are to assist in focusing benzene and toluene mass removal efforts at the ISRW wells as described further in the following sections.

4.2 Groundwater and River Elevations and Groundwater Flow

Intermediate sand aquifer groundwater elevations were measured semi-annually in October 2020 and April 2021 per Ecology approvals to date. In addition, ISRW groundwater elevation data is collected during the EKC proposed additional quarterly sampling events. Groundwater elevations are recorded at the following locations:

- Recovery wells ISRW-1 through ISRW-10
- Monitoring wells KC-6, KC-14, MW-239, MW-243, and MW-250
- Piezometers PZ-117 and PZ-118.

Table B-3 (Appendix B) summarizes the quarterly groundwater elevation data. The data was used to construct WIA potentiometric surface maps quarterly for the intermediate sand zone (Figures 4-1 through 4-4). As shown on Figures 4-1 through 4-4, the ISRW well alignment maintains an inward groundwater depression capturing intermediate sand groundwater and some portion of river water. The ISRW water levels are controlled by the recovery pump operations and maintain containment of the intermediate sand groundwater. Further discussion of the intermediate sand and ISRW system operation and performance is provided in Section 4.6.

4.3 Groundwater Quality

Current monitoring program groundwater samples were collected semi-annually (October and April) from 10 recovery wells (ISRW-1 through ISRW-10) and four monitoring wells: KC-14, MW-239, MW-243, and MW-250. Laboratory data reports are included in Appendix C (e-file). As noted earlier, EKC also elected to continue to collect two additional rounds (January and July) of groundwater samples for benzene and toluene analysis from just the 10 ISRW wells resulting in quarterly data for the ISRW wells.

4.3.1 Sampling and Analytical Procedures

All semi-annual monitoring program sampling and laboratory analyses were completed in accordance with the SAP (RETEC 2004c), and Ecology approved revisions reported in past Annual

Reports and the most recent October 21, 2020 Ecology approval letter (Appendix A). Groundwater samples were submitted to Specialty Analytical Laboratory (Portland, OR) for VOCs [benzene and toluene] using EPA Method 8260C at the four monitoring wells and EPA Method 8021 for the 10 recovery wells.

4.3.2 Intermediate Sand Aquifer Sampling Results

The monitor well and ISRW groundwater quality analytical results are summarized in Table 4-2, and Figures 4-5 and 4-6. In summary, the 2020-21 data set compares similarly with the recent past few years at the respective wells and the overall trends for the ISRW area. The remainder of this section 4.3.2 discusses individual well data. Further discussion of overall system performance and operations is also provided in Section 4.6.

The ISRW alignment groundwater quality monitoring includes four intermediate sand monitoring wells (MW-239, - 243, and -250, and KC-14). Three of the four intermediate sand monitoring network wells (MW-243, KC-14, MW-250) indicate non-detect results for benzene and toluene with one exception; MW-243 indicated 7.98 ug/L toluene (CUL = 2,000 ug/L). These results agree with the historical data at these wells. Monitor well MW-239 results were above cleanup levels for both benzene and toluene with concentrations that compare with historical data at this well. This data is interesting when compared with adjacent ISRW data; for example, MW-250 is adjacent to ISRW-7 which also indicates below CUL results. However, KC-14 which indicates non-detect results is bracketed by ISRW's -3 and -8 which both indicate some of the higher ISRW removal concentrations in the network. MW-239 indicates consistently above CUL data and EKC strives to maximize removal from the adjacent wells ISRW-4 and -10; however, ISRW-4 is notably low to below CUL detections whereas ISRW-10 indicates concentrations similar to MW-239. River flow direction likely influences the ISRW wells, particularly those closer to the river including ISRW-4 and -10 and may therefore play a role in the higher ISRW-10 concentrations compared to ISRW-4. These focused pumping intensity efforts are part of EKC's efforts to maximize mass removal as part of the ISRW operation.

The ISRW wells were sampled quarterly using Method 8021. The samples are collected from sample ports mounted at each wellhead with the normal cycling of the well recovery pump. The ISRW results (Table 4-2) are generally similar to the past few years of data from each well with a few exceptions. ISRW-7 has continually trended below CUL and even below method detection levels for several years now. ISRW-6 has more recently trended below CUL although April 2021 data is back above the CUL. This might be expected as these wells are located at the north and south ends of the overall WIA ISRW alignment. The October 2020 toluene result of 328,000 ug/L at ISRW-10 is an outlier in that it is one of the highest ever recorded toluene concentrations and the preceding and subsequent sample results are much lower and in agreement with historical at the well. The remaining ISRW's show some variations in individual sample event results but overall, each well has shown similar range / order of magnitude results. EKC continues to focus ISRW pumping effort on wells showing higher concentrations to maximize contaminant mass removal while maintaining the desired capture zone. Pumping efforts are further discussed in the System Performance Section 4.6.

4.4 Groundwater Extraction Mass Removal

Table 4-3 presents the ISRW water extraction volumes for the monitoring period including the total volume of groundwater pumped from each well. As shown, approximately 1.4-million gallons of groundwater were extracted from the WIA intermediate sand aquifer during the 2020–2021 performance period. Table 4-4 combines the 2020 – 2021 groundwater extraction volumes and average benzene and toluene concentrations to calculate the mass removals for each of the ISRW wells. Approximately 0.8-pounds of benzene and 497 pounds of toluene were removed during the 2020-2021 performance period. Based on statements from historical reports and calculation of more

recent data, approximately 52,328 pounds of toluene have been removed since ISRW system startup in April 1997 (approximately 7,268 gallons at 7.2 pounds per gallon). Similar calculations for benzene mass removal are not provided due to the historical analytical dilutions required for the high toluene concentrations.

4.5 System Maintenance

The ISRW operated continuously throughout the monitoring period, except during short-duration individual well shutdowns (typically 1 – 2 hours for an individual well while other wells continue to operate). The ISRW maintenance activities for the current reporting period included:

- Pump and float removal, cleaning, and reinstallation. This maintenance is conducted on an approximately monthly per well rolling schedule.
- As-needed replacement of electrical system fuses, capacitors, level floats, totalizers, and power cables due to normal wear.
- Replacement of submersible pumps and/or motors when required – typically due to wear of bearings, pump mechanisms, and pump motors.
- Ongoing maintenance of above ground apparatus including well-heads, hoses, and connections.

These ongoing maintenance efforts have ensured continued uninterrupted operation of the ISRW system.

4.6 Performance Evaluation

The WIA ISRW system continues to minimize discharge of affected intermediate sand groundwater to the Columbia River and reduce the mass of constituents in the aquifer. Ongoing appropriate system monitoring, and maintenance have reduced pump down times and equipment replacement requirements.

ISRW System Arrangement and Operation

This section provides background on the basic arrangement and operation of the Intermediate Sand Recovery Well (ISRW) system comprised of 10 recovery wells. This explanation is provided each year as helpful narrative for readers. Figure 4-7 provides a cross section of the 10 well alignment including screen depths, top of the intermediate sand layer, and the pump floats and intake locations. Each well contains a ½-horsepower electric submersible pump that is controlled by two floats and a programmable logic control (PLC) system. The lower float is activated by rising water in the well and starts a delay timer (delays the start of the pump as set at the PLC panel). The pump starts at the end of the delay and pumps until the water drops below the low float. Each well also has a high-level float which is activated in the event water in the well reaches that upper level in which case the pump immediately starts (no delay). The high-level start event occurs when either there is a failure with the low-level float (typically the float is fouled in some manner) or if surrounding groundwater levels are high enough to reach the high-level float before the delay timer starts the pump (in these cases the operator repairs the floats and/or reduces the delay programming). Each well head also has a numeric (non-electronic) flow totalizer for recording gallons pumped by each well, a backflow valve to prevent flow of water back into the well, and a valve for flow control. All ten wells pump into a single

pipe trunk line that carries the water to an EKC storage tank which then pumps to the EKC water treatment plant.

Figure 4-7 is helpful in describing the arrangement of the floats and pump operations. The ISRW wells were primarily finished with 10-foot intake screens extending downward from the top of the intermediate sand. ISRW 1 – 7 were installed in 1997 as part of Interim Corrective Measures, and ISRW 8, 9, and 10 were installed in 2007 as part of the final remedy. The well pump intakes are set approximately at the bottom or just below the bottom of each well screen (each well has a 2-foot sump bottom below the screen). The low floats are placed immediately above the top of the well pump. The high floats are approximately three- to five-feet above the low floats. As also shown on Figure 4-7, the river surface elevation fluctuates during the year but is typically above the top-of-sand elevation and always above the low floats' elevation; Hence the ISRW well water levels are maintained below the river elevation and create an inward water gradient.

2020 – 2021 ISRW Operations and Performance Discussion

The primary goal of the CAP and EKC is to "*minimize the discharge of affected intermediate sand groundwater to the Columbia River*", and secondly to maximize the mass of benzene and toluene removed from the intermediate sand. During the past year EKC continued efforts to determine if the benzene and toluene concentrations vary significantly between wells during changes in aquifer elevation such as higher or lower seasonal water elevations. This included consideration of the ICM DR documents which suggest a confined dome in the central area of the ISRW alignment (somewhat visible on Figure 4-7 in the area of ISRW-2b, -5, and -10). The Table 4-2 data indicates that the ISRW wells often indicate higher benzene and toluene concentrations in the wetter higher groundwater (and river) elevation months (January, April, and river spring runoff). One result has been programming more frequent ISRW well starts during times of more water availability to further maximize mass removal along with containment.

Table 4-5 provides annual water extraction volumes and mass removals over the years of system operations (1997-1998) through the current year. The data indicates that the annual mass contaminant removals are decreasing, as expected with the decreasing VOC concentrations compared to earlier years of operations (Table 4-2). The Table 4-5 data also indicates that the volume of water extracted has been decreasing over the period of operations. As discussed in previous reports, the lower extraction volumes correlate with NOAA precipitation data which indicates the past several years to be below average for the Kalama area (AHPS Precipitation Analysis, water.weather.gov/precip/#, yearly archive). The NOAA data indicates below average precipitation for the Kalama area for most years back to at least 2010, the same time-period that Table 4-5 indicates steadily dropping extraction volumes. Over the past couple years there has also been a reduction in pumping at ISRW-6 and especially ISRW-7 due to near or below CUL concentrations; for example, ISRW-7 pumped 600,000-gallons of below CUL water in 2018-19 and its current shut-down status also influences the total volume of annual water removal.

This Section 4.6 of the 2018 – 19 Annual Report discussed in detail the observed reduced groundwater extraction volumes, and the limited size and capacity of the intermediate sand aquifer. In addition, the 2018 – 19 Annual Report provided details from the 1998 ICM Annual Report, Section 4, Intermediate Sand Recovery Well System including potentiometric maps (Figs 4-2e thru 4-2i) indicating intermediate sand groundwater capture of the ISRW alignment area via pumping only wells 1 through 4 (provided herein Appendix D for ease of reference). The 2018 – 19 Annual Report went on to propose an ISRW operational adjustment to focus pumping on wells with higher contaminant concentrations while maintaining the desired capture zone. The basis being that the capture zone has been shown to be maintained by four wells (Appendix D ICM reference, ISRW-1, -2, -3, & -4). Although ten wells are available for pumping and to provide backup / assurance, fewer than 10 wells

can be operated in a manner to focus on contaminant mass recovery and maintain the capture zone). This proposed operational adjustment was approved in the October 22, 2019 Ecology letter, Appendix A of the 2019 – 2020 Annual Report.

During this 2020 – 21 operational year ISRW-6 was not operated during May and June, and ISRW-7 was not operated from May through July. Both wells were then restarted but at reduced pumping rates compared to their past operations. Based on the April 2021 sampling results, ISRW-6 continues to operate, and ISRW-7 is currently shut-down. Observations from the resulting data set include:

- The desired containment and reduction of discharge to the Columbia River is maintained in all cases (Section 4.2 Groundwater and River Elevations).
- Reduced or no pumping at ISRW-7 may allow river water in-flow (and formation contaminant mass movement) to flow to ISRW's 1-, 10- and 4-, however a direct increase in mass removal is not yet apparent.
- Periods of higher groundwater and river elevations appear to result in some of the higher benzene and toluene sample concentrations, and as expected available water to pump, all resulting in some of the higher mass removal months. It is possible that higher groundwater elevations and river in-flow to the intermediate sand assist with pump extraction of remaining contaminant mass in upper portions of the intermediate sand that are only occasionally saturated. EKC is vigilant to operate the pumps at their highest rates during these periods of elevated river and/or groundwater elevations.
- ISRW-7 was previously pumping the highest water volume of any well and yet the constituent concentrations were below CUL and now below detection level. Hence – reduction and/or stopping pumping at ISRW-7 is appropriate while these concentrations continue and containment of discharge to the river is maintained.

In summary of the noted observations – the ability to remove elevated mass of contaminants is highly dependent on naturally occurring groundwater and river elevations. Years and seasons of high water provide opportunity for higher removals and EKC continues to operate the ISRW system accordingly.

2021 – 22 ISRW Operations Plan

ISRW operations will continue much as they have in the recent past. We have restarted ISRW-6 as we do see low level CUL exceedances there. Nearby ISRW's -8 and -3 have been shown to contain the ISRW-6 area but continued shut-down of ISRW-6 does not appear to provide a particular benefit provided it is removing above CUL groundwater. ISRW-7 is currently shut-down and expected to remain that way unless groundwater samples return to above CULs. ISRW-7 is highly influenced by river in-flow and therefore pumps large amounts of river water resulting in significant volumes of below CUL and even below detection level water pumping without any apparent benefit. With ISRW-7 off, it is possible some of the river in-flow continues through the intermediate sand formation to ISRW's -1, -4, and -10 possibly assisting in contaminant mass movement to these extraction wells. This possibility has not been directly proven by the data to date, but likewise there is no apparent operational draw-back. The beginning of the 2021 – 22 operating year is a period of drought conditions that may extend well into the year. During this period EKC pumps as much water as practically available while not dewatering the formation and potentially creating capillary blocks to mass recovery and/or well effectiveness.

4.7 Recommended Changes to System Operation

EKC is not proposing any revisions to the ISRW operations and monitoring program for this year.

5.0 References

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Tables

Table 2-1
NIA Monitoring Program 2020 - 2021
Emerald Kalama Chemical, Kalama, WA

Well Location	Sampling Frequency	Field Parameters	Analytical Parameters	Gauging Frequency
NTP-1, NTP-2, NTP-3, KC-8, KC-9, KC-21, KC-23, MW-210, MW-231, MW-232, MW-230, PZ-102, PDW-117, MW-245, MW-256, Wetland Staff Gauge	—	—	—	Semiannually
East Sump, West Sump	Semiannually	—	Benzene, Toluene, Biphenyl, DPO	
MW-231, KC-9, PDW-117, MW-230	Semiannually	Temperature, pH, ORP, conductivity, turbidity, DO	Benzene, Toluene, DPO	
MW-245, MW-256	Semiannually	Temperature, pH, ORP, conductivity, turbidity, DO	DPO	
Observation Walk Length of NIA Containment Trench Ground Surface	Annually	Visual observation for surface damage that may impact trench & subsurface containment berm	—	—

Notes:
DO = dissolved oxygen; ORP = oxidation reduction potential; NIA = North Impacted Area; DEHP / Bis(2-ethylhexyl)phthalate not required at MW-232, -245 & -256 Ecy 112916 & 111418; DPO = Diphenyl Oxide; biphenyl add NIA E&W, remove -210, -231, -230, -9, -117 Ecy 111418. Cease sampling MW-210 & -232 (continue gauging) Ecy 111418.

Table 2-2
NIA Groundwater Analytical Data (10/2007 – 4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)		SVOCs (µg/L) (EPA Method 8270C SIM)				
		Benzene	Toluene	Benzoic Acid	Biphenyl	Bis (2-ethylhexyl) phthalate	Diphenyl Oxide	Phenol
	Cleanup Level	**1.2**	**2,000**	**24,590**	**230**	**1.8**	**410**	**2,560**
MW-210	10/20/2009	**51**	< 1.0	< 9.6 J	**74**	< 0.96	**1,800**	**19**
	4/22/2010	**23**	< 1.0	<10 J	**79**	< 1.0	**820**	**27**
	10/21/2010	**22**	< 1.0	< 9.8	**39**	<0.98	**1,700**	**17**
	10/10/2011	**7.7**	< 1.0	<9.3	**100**	**<2.4**	**1,400**	**11**
	4/18/2012	**16**	< 1.0	**9.6**	**150**	<0.93	**990**	**40**
	11/8/2012	**5.7**	< 1.0	<9.5 UJ	**21**	<0.95	**850**	**4.8**
	4/11/2013	**1.5**	< 1.0	<9.5	**10**	<0.95	**580**	**4.9**
	10/15/2013	< 1.0	< 1.0	<9.9 UJ	<0.99	<0.99	**250**	**7.6**
	4/16/2014	< 1.0	< 1.0	<9.5	<0.95	<0.95	**490**	<1.9
	10/23/2014	< 0.060	< 0.11	< 0.39 H	< 0.095 H	< 0.26 H	**590 H**	**1.2 JH**
	4/22/2015	< 0.42	< 0.44	< 0.39	< 0.095	**1.2 JB**	**330**	**2.2 J**
	10/20/2015	< 1.0	< 1.0	< 9.5	< 0.95	< 0.95	**1,500 D**	**14**
	4/13/2016	< 1.0	< 1.0	< 9.5	< 0.95	< 0.95	**44**	**8.5**
	10/28/2016	< 1.0	< 1.0	NA	**1.6**	NA	**780 D**	NA
	4/11/2017	< 0.50	< 1.0	NA	**1.8**	NA	**32**	NA
	10/5/2017	< 0.50	< 1.0	NA	< 0.97	NA	**210**	NA
	4/26/2018	< 1.0	< 1.0	NA	< 0.96	NA	**88**	NA
	10/2/2018	< 0.30	< 1.0	NA	< 0.47	NA	**654 D**	NA
		MW-210 Ecy Approved Cease Sampling, Continue Water Level Gauging 11-14-18						
MW-230	10/22/2009	**32**	**9.9**	**91 J**	**380**	**1.7**	**520**	**12**
	4/23/2010	**18**	**5.9**	**< 200 J**	**350**	**<20**	**390**	**93**
	10/20/2010	**23**	**5.2**	**74**	**470**	**6.8**	**590**	**44**
	10/11/2011	**44**	**5.2**	**22**	**450**	**<2.4**	**460**	**27**
	4/18/2012	**10**	**1.3**	**180**	**160**	<0.95	**220**	**38**
	11/7/2012	**16**	**2.7**	**30 J**	**130**	<0.95	**220**	**48**
	4/11/2013	**31**	**5.4**	**130**	**160**	<0.95	**240**	**39**
	10/16/2013	**8.8**	**8.0**	**79,000 J**	**170**	<1.1	**420**	**210**
	4/15/2014	**7.9**	**6.0**	<48	**500**	**<4.8**	**520**	**22**
	10/23/2014	**6.4**	**1.2**	< 0.39 H	**490 H**	< 0.26 H	**690 H**	**22 H**
	10/23/2014 Dup	**4.8**	**0.87 J**	**9.3 JH**	**520 H**	< 0.26 H	**690 H**	**23 H**
	4/22/2015	**14**	**0.90 J**	**28**	**250**	**2.5 JB**	**320**	**20 J**
	10/21/2015	**7.4**	**3.8**	< 9.5	**150**	< 0.95	**480 D**	**7.4**
	10/21/2015 Dup	**7.5**	**3.6**	< 9.5	**160**	< 0.95	**400 D**	**6.8**
	4/12/2016	**11**	< 1.0	**15**	**200**	< 0.95	**260 D**	**11**
	10/28/2016	**10**	**1.0**	**60**	**190**	< 0.95	**450 D**	**51**
	10/28/2016 Dup	**11**	**1.0**	**64**	**200**	<0.95	**420**	**45**
	4/11/2017	**2.4**	< 1.0	NA	**110 D**	NA	**180 D**	NA
	4/11/2017 Dup	**2.3**	< 1.0	NA	**99 D**	NA	**160 D**	NA
	10/5/2017	**7.0**	< 1.0	NA	**190**	NA	**240**	NA
	10/5/2017 Dup	**6.8**	< 1.0	NA	**160**	NA	**230**	NA
	4/25/2018	**1.4**	< 1.0	NA	**120**	NA	**120**	NA
	4/25/2018 Dup	**1.5**	< 1.0	NA	**130**	NA	**130**	NA
	10/2/2018	**1.8**	**1.6**	NA	**109 D**	NA	**192 D**	NA
	10/2/2018 Dup	**2.5**	**2.0**	NA	**89**	NA	**172**	NA
	4/15/2019	**0.98**	< 1.0	NA	NA	NA	**119 D**	NA
	4/15/2019 Dup	**0.64**	< 1.0	NA	NA	NA	**129 D**	NA
	10/15/2019	**1.75**	**1.99**	NA	NA	NA	**312**	NA
	4/9/2020	<0.300	<1.00	NA	NA	NA	**74.6 D**	NA
	10/20/2020	**1.70**	**1.13**	NA	NA	NA	**312 D**	NA
	4/12/2021	**1.18**	**1.82**	NA	NA	NA	**373 D**	NA
MW-231	10/22/2009	**110**	**68,000**	**30 J**	**840**	<0.95	**2,300**	**14**
	4/22/2010	**48**	**18,000**	**14 J**	**410**	<0.95	**920**	**4.7**
	10/20/2010	**110**	**48,000**	**23**	**260**	<0.96	**710**	**2.5**
	10/11/2011	**50**	**48,000**	**13**	**560**	**<2.4**	**1,700**	**44**
	4/18/2012	**5.3**	**1,200**	<9.5	**32**	<0.95	**110**	**4.0**
	11/8/2012	**75**	**23,100**	**15 J**	**210**	<0.95	**730**	**5.5**
	4/11/2013	**25**	**14,000**	**22**	**220**	<0.95	**930**	**14**
	10/16/2013	**13**	**15,000**	**230 J**	**240**	<0.95	**820**	**3.9**
	4/15/2014	**9.1**	**6,200**	<9.5	**77**	<0.95	**370**	**3.4**
	10/23/2014	**< 60**	**6,600**	< 0.39 H	**450 H**	**0.86 JH**	**2,200 H**	**3.5 JH**
	4/22/2015	**< 21**	**3,600**	< 0.39	**320**	**1.3 JB**	**1,700**	**2.6 J**
	4/22/2015 Dup	**< 100**	**3,800**	< 0.39	**300**	**1.4 JB**	**1,800**	**3.8 J**
	10/19/2015	**13 D**	**14,000 D**	**11**	**200**	< 0.95	**1,700 D**	**3.3**
	4/11/2016	< 1.0	**52**	< 9.5	< 0.95	< 0.95	**1.3**	< 1.9
	4/11/2016 Dup	< 1.0	**63**	< 9.5	< 0.95	< 0.95	**5.5**	< 1.9
	10/27/2016	< 2.0	**1,800 D**	NA	**160**	NA	**850 D**	NA
	4/10/2017	< 1.0	**13**	NA	**17**	NA	**67.0**	NA
	10/4/2017	< 0.50	**3,600 D**	NA	**370 D**	NA	**1,200 D**	NA
	4/26/2018	< 1.0	< 1.0	NA	**5.6**	NA	**26**	NA
	10/2/2018	1.0	**1,110 D**	NA	**163**	NA	**639**	NA
	4/12/2019	**16.1**	**61.9**	NA	NA	NA	**1060 D**	NA
	10/15/2019	**1.1**	**2.68**	NA	NA	NA	**1190 D**	NA
	4/9/2020	**1,370 D**	**57,800 D**	NA	NA	NA	**91.0 D**	NA
	5/12/2020	**0.590**	<1.00	NA	NA	NA	NA	NA
	5/12/2020 Dup	**0.540**	<1.00	NA	NA	NA	NA	NA
	10/20/2020	**0.710**	**2.88**	NA	NA	NA	**1,670 D**	NA
	10/20/2020 Dup	**0.770**	**3.22**	NA	NA	NA	**1,650 D**	NA
	4/13/2021	< 0.300	< 1.00	NA	NA	NA	**56.1**	NA
	4/13/2021 Dup	< 0.300	< 1.00	NA	NA	NA	**52.9**	NA
MW-232	10/22/2009	< 1.0	< 1.0	< 9.7 J	<0.97	<0.97	**280**	**7.3**
	4/22/2010	< 1.0	< 1.0	<10 J	< 1.0	< 1.0	**220**	**9.2**
	10/20/2010	< 1.0	< 1.0	<9.6	<0.96	<0.96	**260**	**3.5**
	10/10/2011	<1.0	< 1.0	<9.3	<0.93	<0.93	**190 J**	**10 J**
	4/19/2012	<1.0	< 1.0	<9.5	<0.95	**<2.4**	**110**	**3.3**
	11/8/2012	<1.0	< 1.0	**<9.5 UJ**	<0.95	<0.95	**200**	**7.0**
	4/10/2013	<1.0	< 1.0	11	<0.95	**1.9**	**160**	**6.7**
	10/15/2013	<1.0	< 1.0	<10 UJ	<1.0	<1.0	**130**	**23**
	4/16/2014	< 1.0	< 1.0	<9.5	<0.95	<0.95	**140**	8.3
	10/21/2014	< 0.06	NA	NA	NA	< 0.26	**92**	NA
	4/21/2015	< 0.42	NA	NA	NA	1.3 JB	**190**	NA
	10/20/2015	< 0.50	NA	NA	NA	< 0.95	**150**	NA
	4/13/2016	< 0.50	NA	NA	NA	< 0.95	**84**	NA
	10/27/2016	NA	NA	NA	NA	NA	**180**	NA
	4/11/2017	NA	NA	NA	NA	NA	**96**	NA
	10/5/2017	NA	NA	NA	NA	NA	**160**	NA
	4/25/2018	NA	NA	NA	NA	NA	**68**	NA
	10/1/2018	NA	NA	NA	NA	NA	**52 D**	NA
		MW-232 Ecy Approved Cease Sampling, Continue Water Level Gauging 11-14-18						

Table 2-2
NIA Groundwater Analytical Data (10/2007 – 4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)		SVOCs (µg/L) (EPA Method 8270C SIM)				
		Benzene	Toluene	Benzoic Acid	Biphenyl	Bis (2-ethylhexyl) phthalate	Diphenyl Oxide	Phenol
	Cleanup Level	**1.2**	**2,000**	**24,590**	**230**	**1.8**	**410**	**2,560**
MW-245	10/25/2007	**4.4**	< 1.0	<10 UJ	< 1.0	< 1.0	**870**	**18**
	4/17/2008	**3.2**	< 1.0	<9.6 UJ	<0.96	<0.96	**1,600**	**23**
	10/24/2008	< 1	< 1.0	NA	<0.98	<0.98	**700**	**17**
	4/20/2009	< 1.0	< 1.0	< 9.6 J	<0.96	<0.96	**770**	**12**
	10/22/2009	< 1.0	< 1.0	**< 9.6 J**	<0.96	<0.96	400	**7.3**
	4/22/2010	< 1.0	< 1.0	< 9.0 J	<0.99	<0.99	**470**	**14**
	10/21/2010	< 1.0	< 1.0	< 10	< 1.0	< 1.0	**320**	**15**
	10/10/2011	<1.0	< 1.0	<9.3	<0.93	<0.93	**330 J**	**12 J**
	4/19/2012	<1.0	< 1.0	<9.5	<0.95	**<2.4**	**350**	**8.3**
	11/7/2012	<1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**180**	**2.1**
	4/10/2013	<1.0	< 1.0	<9.6	<0.96	<0.96	**260**	**7.5**
	10/16/2013	<1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**150**	**5.7**
	4/15/2014	< 1.0	< 1.0	<9.5	<0.95	**21**	**130**	3.0
	10/21/2014	< 0.06	NA	NA	NA	< 0.26	**140**	NA
	4/21/2015	< 0.42	NA	NA	NA	**1.1 JB**	**200**	NA
	10/20/2015	< 0.50	NA	NA	NA	< 0.95	**77**	NA
	4/13/2016	< 0.50	NA	NA	NA	< 0.95	**180**	NA
	10/27/2016	NA	NA	NA	NA	< 0.96	**140**	NA
	4/11/2017	NA	NA	NA	NA	< 0.95	**130**	NA
	10/5/2017	NA	NA	NA	NA	< 2.5	**96**	NA
	4/26/2018	NA	NA	NA	NA	< 0.96	**120**	NA
	10/1/2018	NA	NA	NA	NA	< 0.50	**81**	NA
	4/12/2019	NA	NA	NA	NA	NA	**161 D**	NA
	10/15/2019	NA	NA	NA	NA	NA	**74**	NA
	4/7/2020	NA	NA	NA	NA	NA	**124 D**	NA
	10/20/2020	NA	NA	NA	NA	NA	**97.5 D**	NA
	4/12/2021	NA	NA	NA	NA	NA	**105 D**	NA
MW-256	10/25/2007	< 1.0	< 1.0	<11 UJ	< 1.1	< 1.1	**200**	**6.6**
	4/17/2008	< 1.0	< 1.0	**< 9.5 UJ**	<0.95	<0.95	**120**	**1.9**
	10/28/2008	< 1.0	< 1.0	17 J	<0.95	<0.95	**150**	4.7
	4/20/2009	< 1.0	< 1.0	<9.6 J	<0.96	<0.96	**47**	< 2
	10/22/2009	< 1.0	< 1.0	<9.5 J	<0.95	<0.95	**22**	<1.9
	4/22/2010	< 1.0	< 1.0	<9.0 J	<0.95	<0.95	**28**	<1.0
	10/21/2010	< 1.0	< 1.0	<9.9	<0.99	<0.99	**25**	<2.0
	10/10/2011	< 1.0	< 1.0	<9.3	<0.93	<0.93	**31 J**	<1.9
	4/18/2012	< 1.0	< 1.0	<9.7	<0.97	**<2.4**	**5.9**	<2.0
	11/8/2012	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**23**	<1.9
	4/10/2013	< 1.0	< 1.0	<9.5	<0.95	<0.95	**5.6**	<1.9
	10/16/2013	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**23**	<1.9
	4/15/2014	< 1.0	< 1.0	<9.5	<0.95	<0.95	**24**	<1.9
	10/21/2014	< 0.06	NA	NA	NA	NA	**27**	NA
	4/21/2015	< 0.42	NA	NA	NA	NA	**26**	NA
	10/20/2015	< 0.50	NA	NA	NA	NA	**16**	NA
	4/13/2016	< 0.50	NA	NA	NA	NA	**30**	NA
	10/27/2016	NA	NA	NA	NA	NA	**10**	NA
	4/11/2017	NA	NA	NA	NA	NA	**1.5**	NA
	10/5/2017	NA	NA	NA	NA	NA	**23**	NA
	4/26/2018	NA	NA	NA	NA	NA	**5.0**	NA
	10/1/2018	NA	NA	NA	NA	NA	**14.9**	NA
	4/12/2019	NA	NA	NA	NA	NA	**17.5**	NA
	10/15/2019	NA	NA	NA	NA	NA	**21.3**	NA
	4/7/2020	NA	NA	NA	NA	NA	<0.517	NA
	10/20/2020	NA	NA	NA	NA	NA	**21.6**	NA
	4/12/2021	NA	NA	NA	NA	NA	**8.64**	NA
KC-9	10/22/2009	**28**	**1.7**	< 9.5 J	**1300**	< 0.95	**5,400**	**21**
	4/23/2010	**5**	< 1.0	< 9.0 J	**170**	< 0.98	**730**	**7.4**
	10/21/2010	**14**	< 1.0	< 9.6	**840**	< 0.96	**3,600**	**18**
	10/10/2011	**10**	<1.0	<9.3	**420**	**<2.4**	**1,900**	**21**
	4/18/2012	**3.6**	<1.0	<9.5	**150**	<0.93	**600**	**8.7**
	11/8/2012	**2.2**	<1.0	<9.5 UJ	**170**	<0.95	**1,000**	**10**
	4/10/2013	**3.7**	< 1.0	**11**	**110**	<0.95	**810**	**5.1**
	10/16/2013	**4.3**	< 1.0	<9.5 UJ	**99**	<0.95	**1,300**	**6.6**
	4/15/2014	**2.8**	< 1.0	<9.5	**51**	<0.95	**740**	**6.4**
	10/21/2014	**Inaccessible due to construction; not sampled**						
	4/21/2015	**5.8**	< 0.44	**5.4 J**	**150**	**1.2 JB**	**1,300**	**9.4 J**
	10/20/2015	**18**	< 1.0	< 9.5	**570 D**	< 0.95	**4,000 D**	**25**
	4/13/2016	**3.5**	< 1.0	< 9.5	**100**	**< 0.95**	**690 D**	**12**
	10/27/2016	**3.0**	< 1.0	NA	**120**	**NA**	**1,800 D**	NA
	4/11/2017	**1.3**	< 1.0	NA	**62**	NA	**810 D**	NA
	10/5/2017	**2.2**	< 1.0	NA	**73**	NA	**1,900 D**	NA
	4/26/2018	**2.9**	< 1.0	NA	**57**	NA	**1,600 D**	NA
	10/1/2018	**4.9**	< 1.0	NA	**53 D**	NA	**2,010 D**	NA
	4/15/2019	**2.09**	< 1.0	NA	NA	NA	**5,980 D**	NA
	10/15/2019	**3.58**	<1.00	NA	NA	NA	**3,290 D**	NA
	4/7/2020	<0.300	<1.00	NA	NA	NA	**1,930 D**	NA
	10/20/2020	**2.79**	<1.00	NA	NA	NA	**2,660 D**	NA
	4/12/2021	**2.37**	<1.00	NA	NA	NA	**2,870 D**	NA
PDW-117	10/22/2009	**21**	**5.4**	**36 J**	**750**	**6.5**	**1,700**	**6.2**
	4/22/2010	**< 1.0**	< 1.0	<9.0 J	**47**	<0.95	**140**	**5.6**
	10/20/2010	**5.7**	< 1.0	<9.9	**180**	<0.99	**970**	**15**
	10/11/2011	**7.6**	< 1.0	<9.5	**57**	**<2.4**	**400**	**8.4**
	4/18/2012	**1.1**	< 1.0	<9.5	**41**	<0.95	**180**	**4.4**
	11/8/2012	**23**	< 1.0	<9.5 UJ	**48**	<0.95	**360**	**20**
	4/11/2013	**4.4**	< 1.0	<9.5	**160**	<0.95	**1,200**	**6.3**
	10/15/2013	**5.9**	< 1.0	< 10 UJ	**150**	<1.0	**1,000**	**12**
	4/16/2014	**4.7**	< 1.0	<9.5	**59**	<0.95	**740**	**6.3**
	10/23/2014	**7**	**0.23 J**	**4.8 JH**	**22 H**	< 0.26 H	**1,700 H**	**8.6 JH**
	4/22/2015	**3.6**	< 0.44	< 0.40	**8.7**	< 0.26	**1,900**	**16**
	10/20/2015	**7.1**	< 1.0	< 9.5	**34**	< 0.95	**2,500 D**	**19**
	4/13/2016	< 1.0	< 1.0	< 9.5	**38**	< 0.95	**310 D**	**4.9**
	10/28/2016	< 1.0	< 1.0	NA	**1.0**	NA	**140**	NA
	4/11/2017	< 1.0	< 1.0	NA	**7.9**	NA	**150**	NA
	10/5/2017	**2**	< 1.0	NA	< 0.97	NA	**540 D**	NA
	4/26/2018	< 1.0	< 1.0	NA	< 0.96	NA	**1,700 D**	NA
	10/2/2018	**2.6**	< 1.0	NA	**9.6 D**	NA	**524 D**	NA
	4/15/2019	**0.99**	< 1.0	NA	NA	NA	**4,600 D**	NA
	10/15/2019	**2.06**	<1.00	NA	NA	NA	**1950 D**	NA
	4/9/2020	**0.860**	<1.00	NA	NA	NA	**2040 D**	NA
	4/9/2020 Dup	**0.930**	<1.00	NA	NA	NA	**1560 D**	NA
	10/20/2020	**0.500**	<1.00	NA	NA	NA	**1,570 D**	NA
	4/12/2021	< 0.300	< 1.00	NA	NA	NA	**1,070 D**	NA

Table 2-2
NIA Groundwater Analytical Data (10/2007 – 4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)		SVOCs (µg/L) (EPA Method 8270C SIM)				
		Benzene	Toluene	Benzoic Acid	Biphenyl	Bis (2-ethylhexyl) phthalate	Diphenyl Oxide	Phenol
	Cleanup Level	**1.2**	**2,000**	**24,590**	**230**	**1.8**	**410**	**2,560**
East Sump	7/25/2007	**7.5**	**30**	< 9.5 U	**29**	<0.95 U	**910 D**	**8**
	10/24/2007	**6**	**16**	< 9.0 UJ	**13**	<0.96	**960**	**11**
	1/17/2008	**9.7 D**	**160 D**	< 9.5 U	**13**	<0.95 U	**650 D**	**8.1**
	4/15/2008	**12**	**710**	< 9.5 UJ	**19**	<0.95	**730**	**27**
	7/28/2008	**5.6**	**69**	< 9.6	**21**	<0.96	**600**	**5.6**
	10/24/2008	**7.9**	**57**	NA	**17**	<0.97	**1,200**	**14**
	1/30/2009	**2.3**	< 1	< 9.5	**13**	<0.95	**580**	**6.2**
	4/20/2009	**4.3**	79	< 9.6 J	**7.6**	<0.96	**590**	**3.6**
	10/21/2009	**2.4**	< 1.0	< 11 J	**3.4**	< 1.1	**500**	**15**
	4/22/2010	**1.9**	< 1.0	< 10 J	**4.4**	< 1.0	**330**	**4.4**
	10/21/2010	**14**	< 1.0	< 10	**6.7**	< 1.0	**760**	**18**
	10/10/2011	**9.7**	< 1.0	<9.5	**3.3 J**	<0.95	**310 J**	**5.1 J**
	4/19/2012	**1.9**	< 1.0	<9.5	**4.4**	<2.4	**280**	<1.9
	11/7/2012	<1.0	< 1.0	<9.5 UJ	**2.4**	<0.95	**220**	**2.4**
	4/10/2013	<1.0	< 1.0	<9.5	**2.0**	<0.95	**200**	**2.8**
	10/16/2013	<1.0	< 1.0	<9.5 UJ	**1.8**	<0.95	**260**	**2.8**
	4/14/2014	< 1.0	< 1.0	<9.5	**1.6**	<0.95	**190**	<1.9
	10/21/2014	< 0.06	< 0.11	NA	NA	NA	**200**	NA
	4/20/2015	< 0.42	**1.2 J**	NA	NA	NA	**150**	NA
	10/20/2015	< 1.0	< 1.0	NA	NA	NA	<0.95	NA
	4/13/2016	< 1.0	< 1.0	NA	NA	NA	**260 D**	NA
	10/27/2016	< 1.0	< 1.0	NA	NA	NA	**53**	NA
	4/10/2017	< 1.0	< 1.0	NA	NA	NA	**170**	NA
	10/4/2017	< 0.50	< 1.0	NA	NA	NA	**360 D**	NA
	4/23/2018	< 1.0	< 1.0	NA	NA	NA	**140**	NA
	10/2/2018	< 0.3	< 1.0	NA	NA	NA	**92 D**	NA
	4/12/2019	< 0.3	< 1.0	NA	< 0.644	NA	**112**	NA
	10/15/2019	<0.300	<1.00	NA	<0.473	NA	**266**	NA
	4/7/2020	<0.300	<1.00	NA	<0.475	NA	**80.5 D**	NA
	10/19/2020	**54.5**	<1.00	NA	<0.481	NA	**216 D**	NA
	10/19/2020 Dup	**55.1**	<1.00	NA	<0.483	NA	**278**	NA
	1/15/2021	**5.98**	<1.00	NA	NA	NA	NA	NA
	4/8/2021	**15.5**	<1.00	NA	<0.479	NA	**117 D**	NA
West Sump	7/25/2007	**270 D**	**1,900 D**	**12**	**180 D**	<0.95 U	**1,600 D**	**9.5**
	7/25/2007 Dup	**270 D**	**1,500 D**	**11**	**160 D**	**2.5**	**1,600 D**	**14**
	10/24/2007	**270 J**	**1,300 J**	**32 J**	**190**	<0.96	**2,200**	**22 J**
	10/24/2007 Dup	**450 J**	**2,000 J**	**20 J**	**210**	<0.95	**2,100**	**16 J**
	1/17/2008	**410 D**	**8,300 D**	9.8	**45**	<0.96 U	**620 D**	**62 D**
	1/17/2008 Dup	**400 D**	**7,900 D**	< 9.7 U	**42**	<0.97 U	**600 D**	**55 D**
	4/15/2008	**79**	**820**	< 9.5 UJ	**160**	**1.1**	**1,200**	**8.7**
	4/15/2008 Dup	**83**	**780**	< 9.5 UJ	**160**	<0.95	**1,200**	**8.4**
	7/28/2008	**200**	**740**	< 9.5	**140**	<0.95	**1,300**	**18**
	7/28/2008 Dup	**200**	**740**	< 9.5	**140**	<0.95	**1,200**	**21**
	10/24/2008	**140**	**1,700**	**26 J-**	**110**	<0.95	**1,000**	**15**
	1/30/2009	**160**	**1,400**	26	**78**	<0.95	**880**	**2.5**
	1/30/2009 Dup	**150**	**1,300**	< 9.5	**110**	<0.95	**870**	**17**
	4/20/2009	**26**	**78**	< 9.6 J	**150**	<0.96	**1,100**	**5.7**
	4/20/2009 Dup	**27**	**78**	< 9.6 J	**130**	<0.96	**1,000**	**5.3**
	10/20/2009	**100**	**1,100**	< 9.5 J	**5.0 J**	<0.95	**570 J**	**31**
	10/21/2009 Dup	**100**	**1,100**	< 9.5 J	**59 J**	<0.95	**970 J**	**28**
	4/22/2010	**56**	**77**	< 9.0 J	**46**	<0.95	**490**	**5**
	4/22/2010 Dup	**59**	**85**	< 9.0 J	**45**	<0.99	**490**	**6.8**
	10/21/2010	**42**	**69**	< 9.8	**15**	< 0.98	**470**	**100**
	10/10/2011	**33**	**210**	<9.5	**45 J**	<0.95	**730 J**	**8.7 J**
	10/10/2011 Dup	**33**	**210**	<9.3	**23 J**	<0.93	**560 J**	**20 J**
	4/19/2012	**71**	**230**	<9.5	**27**	**< 2.4**	**320**	**4.2**
	4/19/2012 Dup	**71**	**230**	<9.5	**27**	**< 2.4**	**310**	**4.3**
	11/7/2012	**52**	**109**	<9.5 UJ	**49**	<0.95	**760**	**6.1**
	11/7/2012 Dup	**48**	**101**	<9.5 UJ	**46**	<0.95	**750**	**6.1**
	4/10/2013	**34**	**23**	**12**	**42**	<0.95	**410**	**5.0**
	4/10/2013 Dup	**34**	**22**	**9.8**	**42**	<0.95	**430**	**5.3**
	10/16/2013	**33**	**18**	<9.5	**45**	<0.95	**770**	**4.6**
	10/16/2013 Dup	**33**	**19**	<9.5	**42**	<0.95	**750**	**5.1**
	4/14/2014	**67**	**120**	<9.5 UJ	**47**	<0.95	**520**	**7.4**
	4/14/2014 Dup	**72**	**120**	<9.5 UJ	**46**	<0.95	**520**	**8.4**
	10/21/2014	**4.4**	**0.91**	NA	NA	NA	**830**	NA
	10/21/2014 Dup	**4.4**	**0.85**	NA	NA	NA	**980**	NA
	4/20/2015	**56**	**60**	NA	NA	NA	**550**	NA
	10/20/2015	**4.4**	< 1.0	NA	NA	NA	200	NA
	10/20/2015 Dup	4.5	< 1.0	NA	NA	NA	**200**	NA
	4/13/2016	**74**	**51**	NA	NA	NA	**180**	NA
	4/13/2016 Dup	**71**	**50**	NA	NA	NA	**190**	NA
	10/27/2016	**5.0**	**5.5**	NA	NA	NA	**1,100 D**	NA
	10/27/2016 Dup	**6.1**	**7.1**	NA	NA	NA	**1,100 D**	NA
	4/10/2017	**65 D**	**40 D**	NA	NA	NA	**100**	NA
	4/10/2017 Dup	**68 D**	**42 D**	NA	NA	NA	**100**	NA
	10/4/2017	**2.7**	**3.7**	NA	NA	NA	**790 D**	NA
	10/4/2017 Dup	**2.8**	**3.4**	NA	NA	NA	**770 D**	NA
	4/23/2018	**21**	**8.6**	NA	NA	NA	**300 D**	NA
	4/23/2018 Dup	**21**	**8.6**	NA	NA	NA	**300 D**	NA
	10/2/2018	**3.3**	**< 1.0**	NA	NA	NA	**844 D**	NA
	10/2/2018 Dup	**2.9**	**< 1.0**	NA	NA	NA	**595 D**	NA
	4/12/2019	**18.2**	**11.8**	NA	**37.8**	NA	**898 D**	NA
	4/12/2019 Dup	**18.6**	**12.4**	NA	**37.8**	NA	**962 D**	NA
	10/15/2019	**1.11**	<1.00	NA	**22.1**	NA	**996 D**	NA
	10/15/2019 Dup	**1.16**	<1.00	NA	**24.1**	NA	**1020 D**	NA
	4/7/2020	**9.57**	**11.8**	NA	**11.9**	NA	**532 D**	NA
	4/7/2020 Dup	**9.69**	**10.7**	NA	**12.9**	NA	**603 D**	NA
	10/19/2020	**0.970**	<1.00	NA	**13.1**	NA	**874 D**	NA
	1/15/2021	**15.2**	**2.45**	NA	**NA**	NA	**NA**	NA
	4/8/2021	**4.51**	**1.86**	NA	**8.82**	NA	**690 D**	NA

Notes:
< - Result is non-detected above the laboratory detection limit.
< - Detection limit above cleanup level.
Bold indicates detection.
Dup - Field Duplicate Sample.
NA - Not analyzed per Ecology approval.
J - Estimated concentration.
UJ - Not detected, estimate concentration.
Bold and shaded Detection above cleanup level.
EPA = U.S. Environmental Protection Agency; µg/L micrograms per liter; mg/L = milligrams per liter; NIA = North Impacted Area;

Table 2-3
NIA Interception Trench Sump Pump Operation Data (2020-2021)
Emerald Kalama Chemical, Kalama, WA

Current Reporting Year: Monthly Data	Total Groundwater Extracted			Days of Operation	Average Flow Rate[1]	
	East Sump (gallons)	West Sump (gallons)	Combined (gallons)		(gallons per day)	(gallons per minute)
April 2021	1,446,138	1,056,977	2,503,115	29	86,314	60
March 2021	2,188,349	1,637,611	3,825,960	35	109,313	76
February 2021	1,735,925	1,505,745	3,241,670	28	115,774	80
January 2021	1,939,440	1,239,731	3,179,171	29	109,627	76
December 2020	1,708,399	934,051	2,642,450	32	82,577	57
November 2020	954,439	552,210	1,506,649	29	51,953	36
October 2020	705,610	533,350	1,238,960	34	36,440	25
September 2020	434,431	440,569	875,000	29	30,172	21
August 2020	512,530	487,470	1,000,000	28	35,714	25
July 2020	1,439,330	1,620,000	3,059,330	34	89,980	62
June 2020	1,655,451	1,317,000	2,972,451	28	106,159	74
May 2020	1,682,340	1,285,750	2,968,090	29	102,348	71
Data by Year (1999 – 2021)						
May 2020 - April 2021 Total			29,012,846	364	79,706	55
May 2019 - April 2020 Total			25,672,040	364	70,528	49
May 2018 - April 2019 Total			26,892,240	365	73,677	51
May 2017 - April 2018 Total			34,527,000	365	94,595	66
May 2016 - April 2017 Total			27,211,420	357	76,222	53
May 2015 - April 2016 Total			22,279,780	364	61,208	43
May 2014 - April 2015 Total			28,283,351	364	77,702	54
May 2013 - April 2014 Total			26,146,043	364	71,830	50
May 2012 - April 2013 Total			32,377,430	367	88,222	61
May 2011 - April 2012 Total			29,560,750	364	81,211	56
May 2010 - April 2011 Total			27,198,659	364	74,722	52
May 2009 - April 2010 Total			23,801,041	365	66,114	46
May 2008 - April 2009 Total			24,827,910	365	68,022	47
May 2007 - April 2008 Total			24,318,988	366	66,493	46
May 2006 - April 2007 Total			30,981,555	365	85,000	59
May 2005 - April 2006 Total			28,741,209	365	78,986	55
May 2004 - April 2005 Total			22,890,809	365	62,791	44
May 2003 - April 2004 Total			25,980,637	366	71,036	49
May 2002 - April 2003 Total			22,689,839	363	62,700	44
May 2001 - April 2002 Total			18,336,898	365	50,465	35
May 2000 - April 2001 Total			16,158,522	365	44,230	31
May 1999 - April 2000 Total			27,663,437	366	75,565	53
		Averages:	27,407,257		75,287	52

Notes:

[1] Calculated based on weekly totalizer readings.

NIA = North Impacted Area

Table 2-4
NIA Discharge Data (2020 – 2021)
Emerald Kalama Chemical, Kalama, WA

East Sump

Chemical Name	Average Concentration (µg/L)*		May 2020 - October 2020 Contaminant Removal (lb)	November 2020 - April 2021 Contaminant Removal (lb)	Total Removal (lb)
	10/19/2020	4/8/2021			
Volatile Organic Compounds (EPA Method 8260)					
Benzene	**27.4**	**25.4**	1.47	2.11	3.58
Toluene	0	0	0.00	0.000	0.00
Semivolatile Organic Compounds (EPA Method 8270 mod.)					
Diphenyl Oxide	**163.8**	**182**	8.79	15.15	23.94

West Sump

Chemical Name	Average Concentration (µg/L)*		May 2020 - October 2020 Contaminant Removal (lb)	November 2020 - April 2021 Contaminant Removal (lb)	Total Removal (lb)
	10/19/2020	4/8/2021			
Volatile Organic Compounds (EPA Method 8260)					
Benzene	**5.3**	**6.9**	0.25	0.40	0.65
Toluene	**5.6**	**1.4**	0.27	0.08	0.35
Semivolatile Organic Compounds (EPA Method 8270 mod.)					
Diphenyl Oxide	**721**	**782**	34.20	45.20	79.40

Total

Chemical Name	May 2020 - October 2020 Contaminant Removal (lb)	November 2020 - April 2021 Contaminant Removal (lb)	Total Removal (lb)
Volatile Organic Compounds (EPA Method 8260)			
Benzene	1.72	2.51	4.2
Toluene	0.27	0.08	0.3
Semivolatile Organic Compounds (EPA Method 8270 mod.)			
Diphenyl Oxide	42.99	60.35	103.3

Notes:
East Sump groundwater extracted = 16,402,382
West Sump groundwater extracted = 12,610,464
***Chemical concentrations are average for the period (May&Oct, Oct&April)**
Contaminant removal results are rounded.
EPA = U.S. Environmental Protection Agency; lb = pound; µg/L = micrograms per liter; NIA = North Impacted Area

Table 3-1
WIA Shallow Interception Trench Monitoring Program 2020 - 2021
Emerald Kalama Chemical, Kalama, WA

Well Location	Sampling Frequency	Field Parameters	Analytical Parameters	Gauging Frequency
KC-13, KC-24R, PZ-110, MW-238, MW-255, N&S Sumps	—	—	—	Semiannually
PZ-104, PZ-107	Semiannually	Temperature, pH, ORP, conductivity, turbidity, DO	Benzene, Toluene, Biphenyl, DEHP, DPO	
USRW-2	Semiannually	Temperature, pH, ORP, conductivity, turbidity, DO	DPO	

Notes:
DO = dissolved oxygen; ORP = oxidation reduction potential; DPO = Diphenyl Oxide; DEHP = Bis (2-ethylhexyl) phthalate.
Ecy 11-28-17 Approval of EKC recommendation: Remove Well KC-11 from sampling and gauging list (already sampled Oct 2017)
Ecy 11-14-18 Approval cease WIA shallow sump pumping & sampling, but maintain system functionality
Ecy 10-21-20 Approval cease MW-244 gauging & sampling, and STP-1 gauging

Table 3-2
WIA Upper Sand Analytical Data (10/2007 – 4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B / 8260) Benzene	Toluene	SVOCs (µg/L) (EPA Method 8270C SIM) Benzoic Acid	Biphenyl	Bis (2-ethylhexyl) phthalate	Diphenyl Oxide	Phenol
	Cleanup Level	**1.2**	**2,000**	**24,590**	**230**	**1.8**	**410**	**2,560**
PZ-104	10/20/2009	**5.8**	< 1.0	<9.7 J	**550**	<0.97	**3,600**	**12**
	4/23/2010	**4.5**	< 1.0	<9.0 J	**180**	<0.95	**2,600**	**8.6**
	10/20/2010	**8.3**	< 1.0	< 10	**260**	< 1.0	**4,100**	**83**
	10/10/2011	**7.7**	< 1.0	<9.5	**150**	**<2.4**	**4,700**	**69**
	4/19/2012	**5.8**	< 1.0	<9.5	**29**	<0.95	**3,600**	**37**
	11/8/2012	**9.2**	< 1.0	<9.5 UJ	**36**	<0.95	**4,600**	**80**
	4/11/2013	**5.5**	< 1.0	<9.5	**47**	<0.95	**3,100**	**30**
	10/16/2013	**5.5**	< 1.0	<9.5 UJ	**4.9**	<0.95	**2,600**	**38**
	4/15/2014	**2.9**	< 1.0	<9.5	**13**	<0.95	**2,400**	**37**
	10/23/2014	**5.3**	< 0.11	< 0.40 H	**10 H**	< 0.26 H	**4,800 H**	**38 H**
	4/22/2015	**3**	< 0.44	< 0.40	**6.4**	**1.3 JB**	**3000**	**52**
	4/22/2015 Dup	**3**	< 0.44	< 0.39	**6.3**	**1.2 JB**	**3100**	**46**
	10/20/2015	**1.9**	< 1.0	< 9.5	**2.3**	< 0.95	**3,300 D**	**48**
	4/12/2016	< 1.0	< 1.0	< 9.5	**2.8**	**69**	**1,700 D**	**31**
	10/28/2016	**1.9**	< 1.0	NA	< 0.95	< 0.95	**3,700 D**	NA
	4/12/2017	< 0.50	< 1.0	NA	**2.2**	< 0.95	**1,600**	NA
	10/5/2017	**2.2**	< 1.0	NA	**4.7**	< 2.5	**2,800 D**	NA
	4/25/2018	< 1.0	< 1.0	NA	< 0.96	< 0.96	**1,600 D**	NA
	10/2/2018	**4.3**	**6.8**	NA	**50.2 D**	< 4.7 D	**3,620 D**	NA
	4/15/2019	**12.2**	< 1.0	NA	**381 D**	< 0.505	**8,350 D**	NA
	10/15/2019	**5.29**	<1.00	NA	**0.665**	<0.475	**2,740 D**	NA
	4/9/2020	**9.28**	<1.00	NA	**79.7 D**	**47.3 D**	**4,740 D**	NA
	5/12/2020	NA	NA	NA	**268 D**	<0.484	**12,100 D**	NA
	10/20/2020	**1.65**	<1.00	NA	**16.6**	<0.478	**3,140 D**	NA
	10/20/2020 Dup M	**1.66**	<1.00	NA	**22.4 D**	<0.479	**3,420 D**	NA
	4/12/2021	**5.67**	<1.00	NA	**86.1**	<0.478	**4,530 D**	NA
PZ-107	10/22/2009	**NA**	**NA**	**NA**	**NA**	NA	**NA**	NA
	4/23/2010	**5.3**	**590**	**1,300 J**	**1,500**	**<4.0**	**3,600**	**210**
	10/20/2010	**37**	**5,300**	**4,300**	**24,000**	**<200**	**65,000**	< 390
	10/11/2011 [s]	**100**	**5,300**	**38,000**	**110,000**	**3.4**	**300,000**	**220**
	4/19/2012 [s]	**18**	**130**	**7,400**	**1,700**	**600**	**4,300**	**140**
	11/7/2012 [s]	**19**	**227**	**900 J**	**4,400**	**30**	**12,000**	**41**
	4/11/2013 [s]	**160**	**2,000**	**8,000**	**140,000**	**1,200**	**330,000**	**270**
	10/16/2013 [s]	**13**	**200**	**450 J**	**1,200**	**6.4**	**4,400**	**40**
	4/15/2014 [s]	**5.5**	**57**	**640**	**1,000**	**<9.5**	**2,800**	**53**
	10/23/2014 [s]	**Not sampled**						
	4/23/2015 [s]	**6.6**	**82**	**2100**	**720**	**6.2 B**	**2,200**	**19**
	10/20/2015 [s]	**12**	**530 D**	**2,600 D**	**5,700 D**	**62 D**	**20,000 D**	< 48
	4/12/2016	**2.5**	**30**	**1,200 D**	**930 D**	<0.95	**2,300 D**	**36**
	10/28/2016	< 1.0	**6.8**	NA	**760 D**	< 0.96	**2,100 D**	NA
	4/12/2017	**0.62**	**15**	NA	**860 D**	< 9.5	**1,900 D**	NA
	10/5/2017	**1.2**	**32 D**	NA	**440 D**	2.7	**1,100 D**	NA
	4/25/2018	< 1.0	**1.7**	NA	**670 D**	< 9.6	**1,600 D**	NA
	10/3/2018	< 0.30	**3.9**	NA	**404 D**	< 4.7 D	**936 D**	NA
	4/15/2019	< 0.30	< 1.0	NA	**269 D**	<0.625	**622 D**	NA
	10/15/2019	<0.300	**1.45**	NA	**209**	<0.473	**1,080 D**	NA
	4/9/2020	<0.300	<1.00	NA	**22.1**	**1.08**	**176 D**	NA
	5/12/2020	NA	NA	NA	**159 D**	<0.487	**1,430 D**	NA
	10/20/2020	<0.300	<1.00	NA	**261 D**	<0.480	**649 D**	NA
	4/12/2021	<0.300	**3.67**	NA	**33.4**	<0.478	**85.8 D**	
MW-244	10/24/2007	**1.1**	< 1.0	< 9.8 UJ	< 0.98	< 0.98	**720**	**30**
	4/17/2008	**1.1**	< 1.0	< 9.7 UJ	< 0.97	< 0.97	**560**	**16**
	10/27/2008	**3**	< 1.0	**11 J**	< 0.95	< 0.95	**960**	**20**
	4/22/2009	**1**	< 1.0	< 9.6 J	< 0.96	< 0.96	**1,300**	**9.1**
	10/20/2009	**1.3**	< 1.0	< 9.8 J	< 0.98	< 0.98	**820**	**41**
	4/22/2010	< 1.0	< 1.0	< 9.0 J	< 0.98	< 0.98	**1,000**	**38**
	10/19/2010	< 1.0	< 1.0	< 9.6	< 0.96	< 0.96	**340**	**5.7**
	10/11/2011	< 1.0	< 1.0	<9.5	<0.95	<0.95	**68**	<1.9
	4/18/2012	< 1.0	**2,400**	<9.5	<0.95	**<2.4**	**550**	**4.8**
	11/8/2012	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**590**	**7.8**
	11/8/2012 Dup	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**600**	**8.4**
	4/11/2013	< 1.0	< 1.0	<9.5	<0.95	<0.95	**530**	**14**
	4/11/2013 Dup	< 1.0	< 1.0	<9.5	<0.95	<0.95	**610**	**14**
	10/17/2013	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**410**	**8.2**
	4/15/2014	< 1.0	< 1.0	<9.5	<0.95	<0.95	**600**	**9.4**
	10/22/2014	**0.12 J**	< 0.11	NA	NA	< 0.28	**570**	NA
	4/21/2015	< 0.42	< 0.44	NA	NA	**1.2 JB**	**450**	NA
	10/20/2015	NA	NA	NA	NA	NA	**780 D**	NA
	4/13/2016	NA	NA	NA	NA	NA	**190**	NA
	10/27/2016	NA	NA	NA	NA	NA	**470 D**	NA
	4/11/2017	NA	NA	NA	NA	NA	**68**	NA
	10/3/2017	NA	NA	NA	NA	NA	**330 D**	NA
	4/24/2018	NA	NA	NA	NA	NA	**340 D**	NA
	10/1/2018	NA	NA	NA	NA	NA	**207**	NA
	4/15/2019	NA	NA	NA	NA	NA	**269 D**	NA
	10/15/2019	NA	NA	NA	NA	NA	**79.7 D**	NA
	4/9/2020	NA	NA	NA	NA	NA	**156 D**	NA
Cease sampling Oct 2020 Sampling Round Per Ecy 10/21/20 Approval								

Table 3-2
WIA Upper Sand Analytical Data (10/2007 – 4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B / 8260)		SVOCs (µg/L) (EPA Method 8270C SIM)				
		Benzene	Toluene	Benzoic Acid	Biphenyl	Bis (2-ethylhexyl) phthalate	Diphenyl Oxide	Phenol
	Cleanup Level	**1.2**	**2,000**	**24,590**	**230**	**1.8**	**410**	**2,560**
KC-11	10/20/2009 *	NS	NS	NS	NS	NS	NS	NS
	4/23/2010 *	NS	NS	NS	NS	NS	NS	NS
	10/11/2011	< 1.0	**2.8**	**26**	**28**	**<9.9**	**160**	<9.9
	4/19/2012	**1.4**	< 1.0	<9.5	<0.95	**<2.4**	**4.6**	<1.9
	11/7/2012 *	NS	NS	NS	NS	NS	NS	NS
	4/10/2013	<1.0	<1.0	<9.5	<0.95	<0.95	**38**	<1.9
	10/16/2013	**1.0**	<1.0	<10 UJ	<1.0	<1.0	**18**	<2.0
	4/15/2014	< 1.0	< 1.0	<9.5	<0.95	<0.95	**4.3**	<1.9
	10/22/2014 *	NS	NS	NS	NS	NS	NS	NS
	4/22/2015	< 0.42	< 0.44	NA	NA	**1.3 JB**	**4.9**	NA
	10/20/2015 *	NS	NS	NS	NS	NS	NS	NS
	4/12/2016	NA	NA	NA	NA	NA	**2.6**	NA
	10/27/2016	NA	NA	NA	NA	NA	**3.2**	NA
	4/10/2017	NA	NA	NA	NA	NA	**31**	NA
	10/4/2017	NA	NA	NA	NA	NA	NS	NA
	Cease Monitoring & Gauging KC-11 Per Ecy Approval 11-28-17							
KC-13	10/20/2009 *	NS	NS	NS	NS	NS	NS	NS
	4/23/2010 *	NS	NS	NS	NS	NS	NS	NS
	10/11/2011 *	NS	NS	NS	NS	NS	NS	NS
	4/19/2012 *	NS	NS	NS	NS	NS	NS	NS
	11/7/2012 *	NS	NS	NS	NS	NS	NS	NS
	4/10/2013 *	NS	NS	NS	NS	NS	NS	NS
	10/16/2013 *	NS	NS	NS	NS	NS	NS	NS
	4/15/2014 *	NS	NS	NS	NS	NS	NS	NS
	10/22/2014 *	NS	NS	NS	NS	NS	NS	NS
	4/22/2015	< 0.42	< 0.44	NA	NA	**1.7 JB**	**1.7 J**	NA
	10/20/2015 *	NS	NS	NS	NS	NS	NS	NS
	4/12/2016 *	NS	NS	NS	NS	NS	NS	NS
	Cease Monitoring KC-13, Continue Gauging Per Ecy 11/29/16 Ltr.							
USRW-2	10/25/2007	**2.8**	< 1.0	< 9.9 UJ	< 0.99	< 0.99	**1,500**	**39**
	10/25/2007 Dup	**2.7**	< 1.0	< 9.9 UJ	< 0.99	< 0.99	**1,400**	**40**
	4/17/2008	< 1.0	< 1.0	< 9.7 UJ	< 0.97	< 0.97	< 0.97	< 2
	4/17/2008 Dup	< 1.0	< 1.0	< 9.7 UJ	< 0.97	< 0.97	< 0.97	< 2
	10/28/2008	**1.2**	< 1.0	< 9.5 J	< 0.95	< 0.95	**1,500**	**22**
	10/28/2008 Dup	**1.1**	< 1.0	< 9.5 J	< 0.95	< 0.95	**1,600**	**23**
	4/22/2009	< 1.0	< 1.0	< 9.6 J	< 0.96	< 0.96	**1,000**	**10**
	4/22/2009 Dup	< 1.0	< 1.0	< 9.6 J	< 0.96	< 0.96	**1,100**	**8.4**
	10/20/2009	**1.2**	< 1.0	< 11 J	< 1.1	< 1.1	**800**	**41**
	10/20/2009 Dup	**1.2**	< 1.0	< 10 J	< 1.0	< 1.0	**970**	**43**
	4/22/2010	< 1.0	< 1.0	< 10 J	< 1.0	< 1.0	**850**	**20**
	4/22/2010 Dup	< 1.0	< 1.0	< 9.0 J	< 0.99	< 0.99	**780**	**20**
	10/19/2010	< 1.0	< 1.0	< 9.8	**5**	< 0.98	**880**	**43**
	10/11/2011	< 1.0	< 1.0	<9.5	<0.95	<0.95	**310**	**5.5**
	10/11/2011 Dup	< 1.0	< 1.0	<9.5	<0.95	<0.95	**490**	**6.7**
	4/19/2012	< 1.0	< 1.0	<9.5	<0.95	**<2.4**	**400**	**9.6**
	4/19/2012 Dup	< 1.0	< 1.0	<9.5	<0.95	**<2.4**	**400**	**9.3**
	11/7/2012	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**500**	**11**
	11/7/2012 Dup	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**410**	**9.4**
	4/11/2013	< 1.0	< 1.0	<9.5	<0.95	<0.95	**430**	**7.5**
	10/17/2013	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**380**	**6.3**
	10/17/2013 Dup	< 1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**380**	**8.1**
	4/15/2014	< 1.0	< 1.0	<9.5	<0.95	<0.95	**330**	**6.1**
	4/15/2014 Dup	< 1.0	< 1.0	<9.5	<0.95	<0.95	**340**	**6.4**
	10/23/2014	< 0.060	< 0.11	NA	NA	< 0.27 H	**370 H**	NA
	10/23/2014 Dup	< 0.060	< 0.11	NA	NA	< 0.26 H	**360 H**	NA
	4/22/2015	< 0.42	< 0.44	NA	NA	**1.2 JB**	**270**	NA
	10/20/2015	NA	NA	NA	NA	NA	**430 D**	NA
	4/13/2016	NA	NA	NA	NA	NA	**340 D**	NA
	10/27/2016	NA	NA	NA	NA	NA	**290 D**	NA
	4/11/2017	NA	NA	NA	NA	NA	< 1.0	NA
	10/3/2017	NA	NA	NA	NA	NA	**390 D**	NA
	4/25/2018	NA	NA	NA	NA	NA	**140**	NA
	10/1/2018	NA	NA	NA	NA	NA	**204**	NA
	4/15/2019	NA	NA	NA	NA	NA	< 1.0	NA
	10/15/2019	NA	NA	NA	NA	NA	**178 D**	NA
	4/9/2020	NA	NA	NA	NA	NA	**1.43**	NA
	10/20/2020	NA	NA	NA	NA	NA	**280**	NA
	4/12/2021	NA	NA	NA	NA	NA	<0.478	NA

Table 3-2
WIA Upper Sand Analytical Data (10/2007 – 4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B / 8260)		SVOCs (µg/L) (EPA Method 8270C SIM)				
		Benzene	Toluene	Benzoic Acid	Biphenyl	Bis (2-ethylhexyl) phthalate	Diphenyl Oxide	Phenol
	Cleanup Level	**1.2**	**2,000**	**24,590**	**230**	**1.8**	**410**	**2,560**
North Sump	7/25/2007	< 1 U	< 1 U	< 9.5 U	< 0.95 U	< 0.95 U	**550 D**	**38**
	10/23/2007	< 1.0	< 1.0	< 9.0 UJ	< 0.95	< 0.95	**600**	**13**
	1/17/2008	< 1 U	< 1 U	< 11 U	< 1.1 U	< 1.1 U	**330 D**	**8.4**
	4/15/2008	< 1.0	< 1.0	< 9.5 UJ	< 0.95	< 0.95	**490**	**5.2**
	7/28/2008	< 1.0	< 1.0	< 9.5	< 0.95	< 0.95	**950**	**19**
	10/24/2008	**140**	**1,500**	**27 J**	**120**	< 0.95	**1,100**	**16**
	11/3/2008	< 1.0	< 1.0	< 10 J	< 1	< 1	**140**	**38**
	1/30/2009	< 1.0	< 1.0	< 9.8	< 0.98	< 0.98	**710**	**24**
	4/22/2009	< 1.0	< 1.0	< 11 J	< 1.1	**3.7**	**570**	**15**
	10/21/2009 *	NS	NS	NS	NS	NS	NS	NS
	4/21/2010	< 1.0	< 1.0	< 9.0 J	< 0.97	< 0.97	**290**	**15**
	10/19/2010	< 1.0	< 1.0	< 9.6	< 0.96	< 0.96	**390**	**9.3**
	10/11/2011	<1.0	< 1.0	<9.7	<0.97	<0.97	**470**	**8.5**
	4/19/2012	<1.0	< 1.0	<9.5	<0.95	**<2.4**	**320**	**6.2**
	11/7/2012	<1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**380**	**11**
	4/10/2013	<1.0	<1.0	<9.5	<0.95	<0.95	**310**	**5.2**
	10/16/2013	<1.0	<1.0	<9.5 UJ	<0.95	<0.95	**460**	**7.7**
	4/14/2014	< 1.0	< 1.0	<9.7	<0.97	<0.97	**340**	**8.7**
	10/21/2014	< 0.060	< 0.11	NA	NA	< 0.30	**210**	NA
	4/20/2015	< 0.42	< 0.44	NA	NA	**1.1 JB**	**370**	NA
	10/19/2015	NA	NA	NA	NA	NA	**180**	NA
	4/12/2016	NA	NA	NA	NA	NA	**140**	NA
	10/24/2016	NA	NA	NA	NA	NA	**99**	NA
	4/10/2017	NA	NA	NA	NA	NA	**130**	NA
	10/4/2017	NA	NA	NA	NA	NA	**190**	NA
	4/23/2018	NA	NA	NA	NA	NA	**190**	NA
	10/2/2018	NA	NA	NA	NA	NA	**268**	NA
		Ceased Sump Pumping & Sampling, Maintain Functionality - Ecy Approval 11-14-18						
South Sump	7/25/2007	**2.2**	**1.9**	< 9.6 U	<0.96 U	<0.96 U	**73 D**	**28**
	10/23/2007	< 1.0	**2.5**	< 9.0 UJ	<0.97	<0.97	**1.5 J**	< 2.0
	1/17/2008	< 1 U	< 1 U	< 9.5 U	<0.95 U	<0.95 U	< 0.95	< 1.9 U
	4/15/2008	< 1.0	**1.7**	< 9.6 UJ	<0.96	<0.96	**140**	**12**
	7/28/2008	**10**	**3**	< 9.6	<0.96	<0.96	**370**	**5.5**
	1/30/2009	< 1.0	**700**	< 9.9	<0.99	<0.99	**380**	**7.9**
	4/22/2009	< 1.0	**4.8**	< 9.6 J	<0.96	<0.96	**620**	**6.4**
	10/21/2009 *	NS	NS	NS	NS	NS	NS	NS
	4/21/2010	< 1.0	< 1.0	< 9.0 J	< 0.97	<0.97	**130 J**	**13 J**
	10/19/2010	< 1.0	< 1.0	< 9.6	<0.96	<0.96	**38**	**9.7**
	10/11/2011	<1.0	<1.0	<9.5	<0.95	<0.95	**550**	**11**
	4/19/2012	<1.0	**3.4**	<9.7	<0.97	<0.97	**110**	**2.8**
	11/7/2012	<1.0	< 1.0	<9.5 UJ	<0.95	<0.95	**130**	**2.2**
	4/10/2013	<1.0	<1.0	**11**	<0.95	<0.95	**76**	**6.7 J**
	10/16/2013	<1.0	<1.0	<9.5 UJ	<0.95	<0.95	**230**	**5.2**
	4/14/2014	<1.0	<1.0	<9.5	<0.95	<0.95	**130**	**3.3**
	10/21/2014	< 0.060	< 0.11	NA	NA	< 0.26	**200**	NA
	4/20/2015	< 0.42	< 0.44	NA	NA	**1.1 JB**	**160**	NA
	10/19/2015	NA	NA	NA	NA	NA	**320**	NA
	4/12/2016	NA	NA	NA	NA	NA	**1.6**	NA
	10/24/2016	NA	NA	NA	NA	NA	< 0.95	NA
	4/10/2017	NA	NA	NA	NA	NA	< 0.96	NA
	10/4/2017	NA	NA	NA	NA	NA	**65**	NA
	4/23/2018	NA	NA	NA	NA	NA	**71**	NA
	10/2/2018	NA	NA	NA	NA	NA	**63**	NA
		Ceased Sump Pumping & Sampling, Maintain Functionality - Ecy Approval 11-14-18						

Notes:
< - Constituent Non-detect
Bold indicates detection.
Dup - Field Duplicate Sample.
NA - Not analyzed, Ecy Apprvl.
J - Estimated concentration.
H - Sample prep or analyzed beyond specified holding time
Bold and shaded Detection above cleanup level.
* NS - Not sampled due to lack of water.
EPA = U.S. Environmental Protection Agency; µg/L = micrograms per liter; SVOC = semivolatile organic compound; WIA = West Impacted Area

Table 4-1
WIA Intermediate Sand Aquifer Groundwater Monitoring Program 2020 - 2021
Emerald Kalama Chemical, Kalama, WA

Well Location	Sampling Frequency	Field Parameters	Analytical Parameters	Gauging Frequency
KC-6, PZ-117, PZ-118, Columbia River	—	—	—	Quarterly (Per EKC Temporary Request)
ISRW-1, ISRW-2B, ISRW-3, ISRW-4, ISRW-5, ISRW-6, ISRW-7, ISRW-8, ISRW-9, ISRW-10	Quarterly (Per EKC Temporary Request)	—	Benzene, Toluene (8021)	
KC-14, MW-239, MW-243, MW-250	Semi-Annual	Temperature, pH, ORP, conductivity, turbidity, DO	Benzene, Toluene (8260)	

Notes:
DO = dissolved oxygen; ORP = oxidation reduction potential; WIA = West Impacted Area
Ecy 11-28-17 approval of EKC recommendation: remove wells MW-247, MW-248, & KCP-3 from gauging list.
Ecy 11-14-18 approval GW Elev gauging one time at sampling (cease high/low tide, but compare new data to historic)
2019 / 2020 - Ecy approved EKC requests to use Method 8021 for ISRW benzene and toluene analyses (MW semi-annual analyses continue 826
2019 / 2020 - Ecy approved EKC request to temporarily sample the ISRW wells (not the MW's) on a quarterly basis.

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date		VOCs (µg/L) (EPA Method 8021B/8260)			
			Benzene		Toluene	
	Cleanup Level		1.2		2,000	
ISRW-1	7/25/2007		290	D	35,000	D
	7/25/2007	Dup	310	D	34,000	D
	10/23/2007		380		61,000	
	10/23/2007	Dup	370		59,000	
	1/17/2008		390	D	65,000	D
	1/17/2008	Dup	390	D	69,000	D
	4/15/2008		350		55,000	
	4/15/2008	Dup	360		54,000	
	7/28/2008		550		56,000	
	7/28/2008	Dup	570		63,000	
	10/23/2008		250		27,000	
	10/23/2008	Dup	240		29,000	
	1/30/2009		360		35,000	
	1/30/2009	Dup	340		35,000	
	4/20/2009		100		26,000	J
	4/20/2009	Dup	110		45,000	J
	10/21/2009		400		58,000	
	10/21/2009	Dup	410		58,000	
	4/21/2010		430		47,000	
	4/21/2010	Dup	440		49,000	
	10/19/2010		190		23,000	
	10/11/2011		250		49,000	
	10/11/2011	Dup	260		49,000	
	4/19/2012		200		36,000	
	4/19/2012	Dup	200		35,000	
	11/6/2012		153		40,600	
	11/6/2012	Dup	170		45,700	
	4/9/2013		230		66,000	
	4/9/2013	Dup	230		66,000	
	10/16/2013		160		49,000	
	10/16/2013	Dup	150		47,000	
	4/14/2014		240		55,000	
	4/14/2014	Dup	240		55,000	
	10/21/2014		< 600		68,000	
	4/20/2015		170		46,000	
	10/19/2015		110	D	33,000	D
	4/11/2016		200	D	61,000	D
	10/24/2016		120	D	48,000	D
	4/10/2017		240	D	63,000	D
	10/4/2017		160	D	48,000	D
	4/23/2018	all on	200	D	72,000	D
	4/26/2018	5-10off	270	D	110,000	D
	5/16/2018	HiRVR	280	D	110,000	D
	8/6/2018	Smr1/4	107		35,800	D
	10/2/2018		99	D	43,100	D
	1/16/2019		87		51,800	D
	4/12/2019		166		92,500	
	7/30/2019		45.0		12,300	D
	10/15/2019		30.3		11,100	D
	1/7/2020		91.2		45,800	D
	4/7/2020 VOA#1(4/15)		37.3		4,140	D
	4/7/2020 VOA#3(4/24)		NA		21,100	H
	7/28/2020		89.8		19,700	D
	10/19/2020		39.0		16,100	D
	10/19/2020	Dup ISRW-	36.0		11,400	D
	1/15/2021		68.6		51,400	D
	1/15/2021	Dup ISRW-	86.6		50,600	D
	4/8/2021		23.8	D	13,600	D
ISRW-2B	7/25/2007		14	D	8,500	D
	10/23/2007		7.6		3,000	
	1/17/2008		45	D	22,000	D
	4/15/2008		60		20,000	
	7/28/2008		150		36,000	
	10/23/2008		130		31,000	
	1/30/2009		77		33,000	
	4/20/2009		230		150,000	
	10/21/2009		330		260,000	
	4/21/2010		470		720,000	
	10/11/2011		95		83,000	
	4/19/2012		300		23,000	
	11/6/2012		71		53,900	

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)			
		Benzene		Toluene	
	Cleanup Level	1.2		2,000	
ISRW-2B Cont'd	4/9/2013	130		61,000	
	10/16/2013	97		68,000	
	4/14/2014	94		72,000	
	10/21/2014	< 600		75,000	
	4/20/2015	94	J	72,000	
	10/19/2015	47	D	18,000	D
	4/11/2016	160	D	110,000	D
	10/24/2016	< 20		11,000	D
	4/10/2017	110	D	92,000	D
	10/4/2017	130	D	74,000	D
	4/23/2018 all on	54	D	9,800	D
	4/26/2018 5-10off	130	D	89,000	D
	8/6/2018 Smr1/4	58		23,600	D
	10/2/2018	59	D	43,200	D
	1/16/2019	96		77,200	D
	4/12/2019	75		52,900	
	7/30/2019	42.6		16,600	D
	10/15/2019	62.8		18,500	D
	1/7/2020	56.1		32,500	D
	4/7/2020 VOA#1(4/15)	100		5,760	D
	4/7/2020 VOA#3(4/24)	NA		50,700	H
	7/28/2020	53.3		18,400	D
	10/19/2020	33.1		8,090	D
	1/15/2021	45.9		54,200	D
	4/8/2021	57.6		20,200	D
ISRW-3	7/25/2007	150	D	110,000	D
	10/23/2007	110		82,000	
	1/17/2008	210	D	130,000	D
	4/15/2008	150		100,000	
	7/28/2008	150		110,000	
	10/23/2008	< 500		140,000	
	1/30/2009	98		97,000	
	4/20/2009	13		14,000	
	10/21/2009	9.4		25,000	J
	4/21/2010	17,000		980,000	
	10/19/2010	13		34,000	
	10/11/2011	20		47,000	
	4/19/2012	70		65,000	
	11/6/2012	25		45,000	
	4/9/2013	50		58,000	
	10/16/2013	16		22,000	
	4/14/2014	23		33,000	
	10/21/2014	< 600		47,000	
	4/20/2015	56	J	51,000	
	10/19/2015	55	D	71,000	D
	4/11/2016	120	D	150,000	D
	10/24/2016	290	D	200,000	D
	4/10/2017	< 50	U	74,000	D
	10/4/2017	140	D	100,000	D
	4/23/2018 all on	< 50	U	19,000	D
	4/26/2018 5-10off	< 100	U	67,000	D
	8/6/2018 Smr1/4	54		23,700	D
	10/2/2018	54	D	30,800	D
	1/16/2019	129		93,000	D
	4/12/2019	337		172,000	
	7/30/2019	97.4		63,400	D
	10/15/2019	80.4		51,900	D
	1/7/2020	204	D	142,000	D
	4/7/2020 VOA#1(4/15)	117		17,200	D
	4/7/2020 VOA#3(4/24)	NA		81,400	H
	7/28/2020	157		44,300	D
	10/19/2020	92.4		56,400	D
	1/15/2021	206	D	204,000	D
	4/8/2021	92.5	D	61,400	D
	4/8/2021 Dup ISRW-	106	D	72,500	D

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)			
		Benzene		Toluene	
	Cleanup Level	1.2		2,000	
ISRW-4	7/25/2007	35	D	20,000	D
	10/23/2007	350		65,000	
	1/17/2008	130	D	34,000	D
	4/15/2008	430		77,000	
	7/28/2008	48		24,000	
	10/23/2008	130		55,000	
	1/30/2009	120		59,000	
	4/20/2009	28		10,000	
	10/21/2009	3.1		4,700	
	4/21/2010	3.7		7,300	
	10/19/2010	7.8		3,200	
	10/11/2011	20		14,000	
	4/19/2012	< 1.0		650	
	11/6/2012	< 0.5		29	
	4/9/2013	0.57		200	
	10/16/2013	< 1.0		59	
	4/14/2014	< 1.0		35	
	10/21/2014	< 600		32,000	
	4/20/2015	15		6,400	
	10/19/2015	8.8	D	29,000	D
	4/11/2016	2.1		1,000	D
	10/24/2016	14		3,100	D
	4/10/2017	< 0.50	U	< 1.0	U
	10/4/2017	< 50	U	9,000	D
	4/23/2018 all on	< 25	U	18,000	D
	4/26/2018 5-10off	< 50	U	15,000	D
	8/6/2018 Smr1/4	6		526	D
	10/2/2018	34	D	6,280	D
	1/16/2019	167	D	34,600	D
	4/12/2019	140		27,800	
	7/30/2019	62.2	D	1,440	D
	10/15/2019	41.2		261	
	1/7/2020	94.5	D	10,000	D
	4/7/2020 VOA#1(4/15)	30.6		2,200	D
	4/7/2020 VOA#3(4/24)	NA		5,640	H
	7/28/2020	6.03		1,250	D
	10/19/2020	96.9		25,100	D
	1/15/2021	0.918		40	
	4/8/2021	6.76	D	296	D
ISRW-5	7/25/2007	110	D	37,000	D
	10/23/2007	110		45,000	
	1/17/2008	170	D	62,000	D
	4/15/2008	140		68,000	
	7/28/2008	360		110,000	
	10/23/2008	130		47,000	
	1/30/2009	100		33,000	
	4/22/2009	79		52,000	
	10/21/2009	40		20,000	
	4/21/2010	7.5		2,400	
	10/19/2010	26		7,900	
	10/11/2011	36		15,000	
	4/19/2012	30		12,000	
	11/6/2012	402		48,500	
	4/9/2013	94		46,000	
	10/16/2013	160		92,000	
	4/14/2014	37		16,000	
	10/21/2014	< 600		19,000	
	4/20/2015	76	J	25,000	
	10/19/2015	84	D	17,000	D
	4/11/2016	< 100		31,000	D
	10/24/2016	120	D	130,000	D
	4/10/2017	50	D	46,000	D
	10/4/2017	80	D	53,000	D
	4/23/2018	190	D	110,000	D
	8/6/2018 Smr1/4	88		59,700	D
	10/2/2018	72	D	106,000	D
	1/16/2019	79		60,300	D
	4/12/2019	106		90,200	
	7/30/2019	72.5		56,000	D
	10/15/2019	20.9		15,900	D
	1/7/2020	58.6		71,900	D

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)			
		Benzene		Toluene	
	Cleanup Level	1.2		2,000	
ISRW-5 Cont'd	4/7/2020 VOA#1(4/15)	42.2		11,000	D
	4/7/2020 VOA#3(4/24)	NA		93,800	H
	5/12/20 VOA#1	66.9		74,700	D
	5/12/20 VOA #3	68.4		74,300	D
	7/28/2020	110		45,400	D
	10/19/2020	47.2		28,900	D
	1/15/2021	256	D	158,000	D
	4/8/2021	25.4	D	46,400	D
ISRW-6	7/25/2007	150	D	59,000	D
	10/23/2007	120		47,000	
	1/17/2008	150	D	58,000	D
	4/15/2008	190		69,000	
	7/28/2008	140		53,000	
	10/23/2008	< 200		62,000	
	1/30/2009	140		61,000	
	4/20/2009	15		16,000	
	10/21/2009	1.4		270	
	4/21/2010	56		22,000	
	10/19/2010	49		42,000	
	10/11/2011	4.3		1,000	
	4/19/2012	18		14,000	
	11/7/2012	2.0		1,420	
	4/9/2013	8.6		6,900	
	10/16/2013	1.1		1,200	
	4/14/2014	6.1		8,100	
	10/21/2014	1.3	J	890	
	4/20/2015	0.73	J	790	
	10/19/2015	1.7		270	D
	4/11/2016	3.7	D	2,300	D
	10/24/2016	140	D	57,000	D
	4/12/2017	< 0.50	U	< 1.0	U
	10/4/2017	< 50	U	10,000	D
	4/23/2018	1.8		1,400	D
	5/16/2018 HiRvr	1.1		1,400	D
	8/6/2018 Smr1/4	0.6		377	D
	10/2/2018	2.7		2,220	D
	1/16/2019	34	D	10,100	D
	4/12/2019	32.6		5,940	
	7/30/2019	45.4		2,470	D
	10/15/2019	33.2		1,860	D
	1/7/2020	7.90	D	341	D
	4/7/2020 VOA#1(4/15)	1.35		120	D
	4/7/2020 VOA#3(4/24)	NA		630	H
	7/28/2020	0.750		1,340	D
	10/19/2020	0.710		365	D
	1/15/2021	< 3.00	D	3,120	D
	4/8/2021	3.94	D	2,990	D
ISRW-7	7/25/2007	1,100	D	24,000	D
	10/23/2007	350		9,400	
	1/17/2008	540	D	19,000	D
	4/15/2008	200		11,000	
	7/28/2008	520		32,000	
	10/23/2008	280		14,000	
	1/30/2009	120		9,100	
	4/20/2009	83		5,900	
	10/21/2009	3,400		45,000	
	4/21/2010	2,700		30,000	
	10/19/2010	17,000		18,000	
	10/11/2011	4,000		27,000	
	4/19/2012	1,100		18,000	
	11/6/2012	1,220		18,700	
	4/9/2013	180		9,900	
	10/16/2013	380		6,600	
	4/14/2014	900		14,000	
	10/21/2014	530		1,800	
	4/20/2015	12		2,100	
	10/19/2015	170	D	1,700	D
	4/11/2016	54	D	4,300	D
	10/24/2016	92	D	1,600	D
	4/10/2017	190	D	10,000	D
	10/4/2017	180	D	2,800	D

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date		VOCs (µg/L) (EPA Method 8021B/8260)					
			Benzene			Toluene		
	Cleanup Level		1.2			2,000		
ISRW-7 Cont'd	4/23/2018		72	D		330	D	
	5/16/2018	HiRvr	270	D		1,700	D	
	8/6/2018	Smr1/4	8			46		
	10/2/2018		1.1			< 1.0		
	1/16/2019		0.6			< 1.00		
	4/12/2019		< 0.300			< 1.00		
	7/30/2019		0.500			3.24		
	10/15/2019		< 0.300			19.7		
	1/7/2020		7.27			730	D	
	4/7/2020 VOA#1(4/15)		4.51			124	D	
	4/7/2020 VOA#3(4/24)		NA			372	H	
	7/28/2020		0.32			123	D	
	10/19/2020		< 0.300			28.7		
	1/15/2021		< 0.300			0.515		
	4/8/2021		< 0.300			< 0.500		
ISRW-8	4/20/2009		90			66,000		
	10/21/2009		45			50,000		
	4/21/2010		71			57,000		
	10/19/2010		31			72,000		
	10/11/2011		52			54,000		
	4/19/2012		53			40,000		
	11/6/2012		69			51,200		
	4/9/2013		58			33,000		
	10/16/2013		64			39,000		
	4/14/2014		61			40,000		
	10/21/2014		< 600			36,000		
	4/20/2015		84	J		51,000		
	10/19/2015		58	D		39,000	D	
	4/11/2016		< 100			79,000	D	
	10/24/2016		140	D		74,000	D	
	4/10/2017		17	D		20,000	D	
	10/4/2017		140	D		84,000	D	
	4/23/2018		< 100	U		44,000	D	
	4/26/2018	5-10off	< 100	U		69,000	D	
	8/6/2018	Smr1/4	127			49,500	D	
	10/2/2018		170			61,800	D	
	1/16/2019		148			67,400	D	
	4/12/2019		164			107,000		
	7/30/2019		102			49,100	D	
	10/15/2019		130			34,800		
	1/7/2020		107			69,700	D	
	4/7/2020 VOA#1(4/15)		115			7,240	D	
	4/7/2020 VOA#3(4/24)		NA			62,700	H	
	7/28/2020		111			33,200	D	
	10/19/2020		115			31,700	D	
	1/15/2021		81.6			43,400	D	
	4/8/2021		64.0	D		45,800	D	
ISRW-9	4/20/2009		120			62,000		
	10/21/2009		71			36,000		
	4/21/2010		81			42,000		
	10/19/2010		71			55,000		
	10/11/2011		4.1			920		
	4/19/2012		22			16,000		
	11/6/2012		40			20,100		
	4/9/2013		47			35,000		
	10/16/2013		83			73,000		
	4/14/2014		39			35,000		
	10/21/2014		< 600			30,000		
	4/20/2015		79	J		64,000		
	10/19/2015		55	D		44,000	D	
	4/11/2016		< 100			53,000	D	
	10/24/2016		77	D		95,000	D	
	4/10/2017		19	D		19,000	D	
	10/4/2017		< 50	U		22,000	D	
	4/23/2018		< 100	U		83,000	D	
	5/16/2018	HiRvr	< 200	U		59,000	D	
	8/6/2018	Smr1/4	27			11,500	D	
	10/2/2018		36			12,600	D	
	1/16/2019		28			25,300	D	
	4/12/2019		81.3			77,900		
	7/30/2019		20.3			8,570	D	

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)			
		Benzene		Toluene	
	Cleanup Level	1.2		2,000	
ISRW-9 Cont'd	10/15/2019	**58.5**		**45,800**	D
	1/7/2020	**64.4**		**71,700**	D
	4/7/2020 VOA#1(4/15)	**45.7**		**3,440**	D
	4/7/2020 VOA#3(4/24)	**NA**		**33,300**	H
	7/28/2020	**31.2**		**18,600**	D
	10/19/2020	**26.3**		**14,200**	D
	1/15/2021	**42.0**		**48,800**	D
	4/8/2021	**60.8**	D	**40,900**	D
ISRW-10	4/20/2009	**180**		**38,000**	
	10/21/2009	**3.8**		**1,400**	
	4/21/2010	**2**		**380**	
	10/19/2010	< 1.0		**63**	
	10/11/2011	**16**		**1,100**	
	4/19/2012	**85**		**15,000**	
	11/6/2012	< 1.0		**2.5**	
	4/9/2013	**34**		**3,300**	
	10/16/2013	**96**		**8,300**	
	4/14/2014	< 1.0		**7.7**	
	10/21/2014	**3.9**		**140**	
	4/20/2015	< 0.42		**13**	
	10/19/2015	**52**	D	**3,800**	D
	4/11/2016	**49**	D	**4,700**	D
	10/24/2016	**190**	D	**29,000**	D
	4/10/2017	**29**		**4,300**	D
	10/4/2017	**110**	D	**43,000**	D
	4/23/2018	**220**	D	**30,000**	D
	8/6/2018	**36**		**2,900**	D
	10/2/2018	**151**		**18,800**	D
	1/16/2019	**204**	D	**78,300**	D
	4/12/2019	**385**		**113,000**	
	7/30/2019	**160**	D	**43,900**	D
	10/15/2019	**82.9**		**22,600**	D
	1/7/2020	**243**	D	**80,200**	D
	4/7/2020 VOA#1(4/15)	**72.5**		**4,300**	D
	4/7/2020 VOA#3(4/24)	**NA**		**29,300**	H
	7/28/2020	**319**		**34,900**	D
	10/19/2020	**135**	D	**328,000**	D
	1/15/2021	**145**		**50,200**	D
	4/8/2021	**53.8**	D	**20,600**	D
KC-14	10/24/2007	**2.9**		**940**	
	4/16/2008	< 1.0		**180**	
	10/27/2008	**3.1**		**1,100**	
	4/22/2009	< 1.0		**99**	
	10/20/2009	**1.3**		**1,300**	
	4/23/2010	0.92		**690**	
	10/19/2010	**14**		**270,000**	
	10/10/2011	< 1.0		**420**	
	4/18/2012	**1.4**	J	**140**	J
	11/7/2012	< 1.0		< 1.0	
	4/10/2013	< 0.5		**200**	
	10/17/2013	**4.2**		**88**	
	4/16/2014	< 1.0		**30**	
	10/22/2014	< 0.060		< 0.11	
	4/22/2015	< 0.42		< 0.44	
	4/22/2015 Dup	< 0.42		< 0.44	
	10/20/2015	< 1.0		**66**	D
	4/12/2016	< 1.0		**20**	
	10/24/2016	< 1.0		**1.9**	
	4/12/2017	**2.5**		**160**	D
	10/4/2017	< 0.50		< 1.0	
	4/25/2018	< 1.0		**20**	
	10/1/2018	NS		NS	
	4/15/2019	**0.420**		**7.15**	
	10/15/2019	< 0.300		**1.14**	
	4/9/2020	< 0.300		**9.52**	
	10/21/2020	< 0.300		< 1.00	
	4/13/2021	< 0.300		< 1.00	

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)			
		Benzene		Toluene	
	Cleanup Level	1.2		2,000	
MW-239	10/24/2007	**660**		**120,000**	
	4/16/2008	**1200**		**190,000**	
	10/27/2008	**580**		**100,000**	
	4/22/2009	< 1.0		< 1.0	
	10/20/2009	< 1.0		**1.4**	
	4/23/2010	**9.3**		**3,500**	
	10/19/2010	**7.7**		**260**	
	10/11/2011	**310**		**55,000**	
	4/18/2012	< 1.0		< 1.0	
	11/7/2012	**413**		**35,300**	
	4/10/2013	**71**		**390**	
	10/17/2013	**180**		**15,000**	
	4/16/2014	< 1.0		< 1.0	
	10/23/2014	**5.2**		**0.62**	
	4/23/2015	**80**	**J**	**8,400**	
	10/20/2015	**280**	**D**	**8,200**	**D**
	10/20/2015 Dup	**290**	**D**	**8,500**	**D**
	4/12/2016	**90**	**D**	**810**	D
	4/12/2016 Dup	**87**	**D**	**1,000**	D
	10/24/2016	**340**	**D**	**43,000**	**D**
	10/24/2016 Dup	**360**	**D**	**43,000**	**D**
	4/11/2017	< 0.50	U	< 1.0	U
	4/11/2017 Dup MW	< 0.50	U	< 1.0	U
	10/3/2017	**580**	**D**	**140,000**	**D**
	4/25/2018	**130**	**D**	**3,100**	**D**
	4/25/2018 Dup MW97	**140**	**D**	**3,200**	**D**
	10/3/2018	**320**	**D**	**32,700**	**D**
	10/3/2018 Dup 97	**370**	**D**	**40,200**	**D**
	4/15/2019	**454**	**D**	**39,700**	**D**
	4/15/2019 Dup 97	**450**	**D**	**39,100**	**D**
	10/15/2019	**178**		**15,700**	**D**
	10/15/2019 Dup 97	**175**		**15,400**	**D**
	4/9/2020	**160**		**11,200**	**D**
	4/9/2020 Dup 97	**< 0.300**		**24.4**	
	10/21/2020	**341**	**D**	**17,300**	**D**
	10/21/2020 Dup 97	**407**	**D**	**17,600**	**D**
	4/13/2021	**426**	**D**	**32,300**	**D**
MW-243	10/24/2007	< 1.0		< 1.0	
	4/17/2008	< 1.0		< 1.0	
	10/27/2008	< 1.0		< 1.0	
	4/22/2009	< 1.0		< 1.0	
	10/20/2009	< 1.0		< 1.0	
	4/22/2010	< 1.0		< 1.0	
	10/19/2010	< 1.0		< 1.0	
	10/11/2011	< 1.0		< 1.0	
	4/18/2012	< 1.0		< 1.0	
	11/7/2012	< 1.0		< 1.0	
	4/10/2013	< 1.0		< 1.0	
	10/17/2013	< 1.0		< 1.0	
	4/15/2014	< 1.0		< 1.0	
	10/22/2014	< 0.06		< 0.11	
	4/21/2015	< 0.42		< 0.44	
	10/20/2015	< 1.0		< 1.0	
	4/13/2016	< 1.0		< 1.0	
	10/24/2016	< 1.0		< 1.0	
	4/12/2017	< 0.50		< 1.0	
	10/4/2017	< 0.50		< 1.0	
	4/24/2018	< 1.0		< 1.0	
	10/1/2018	< 0.30		< 1.0	
	4/15/2019	< 0.30		< 1.00	
	10/15/2019	< 0.300		< 1.00	
	4/9/2020	< 0.300		< 1.00	
	10/21/2020	< 0.300		< 1.00	
	4/13/2021	< 0.300		**7.98**	

Table 4-2
WIA Intrmdiate Sand Aquifer Anlyticl Data (10/2007-4/2021)
Emerald Kalama Chemical, Kalama, WA

Well	Date	VOCs (µg/L) (EPA Method 8021B/8260)	
		Benzene	Toluene
	Cleanup Level	**1.2**	**2,000**
MW-249	10/24/2007	< 1.0	< 1.0
	4/16/2008	< 1.0	< 1.0
	10/27/2008	< 1.0	< 1.0
	4/22/2009	< 1.0	< 1.0
	10/20/2009	< 1.0	< 1.0
	4/23/2010	< 1.0	< 1.0
	10/20/2010	< 1.0	< 1.0
	10/10/2011	< 1.0	< 1.0
	4/18/2012	< 1.0	< 1.0
	11/7/2012	< 1.0	< 1.0
	4/10/2013	< 1.0	< 1.0
	10/17/2013	< 1.0	< 1.0
	4/15/2014	< 1.0	< 1.0
	10/22/2014	< 0.060	< 1.0
	4/23/2015	< 0.42	< 1.0
	10/20/2015	< 1.0	< 1.0
	4/12/2016	< 1.0	< 1.0
	MW-249 Monitoring Ceased Per 112916 Ecy Ltr.		
MW-250	10/25/2007	< 1.0	< 1.0
	4/17/2008	< 1.0	< 1.0
	4/17/2008 Dup	< 1.0	< 1.0
	10/27/2008	< 1.0	**3**
	10/27/2008 Dup	< 1.0	**3**
	4/23/2009	< 1.0	< 1.0
	4/23/2009 Dup	< 1.0	< 1.0
	10/20/2009 Dup	< 1.0	< 1.0
	10/20/2009	< 1.0	< 1.0
	4/23/2010 Dup	< 1.0	< 1.0
	4/23/2010	< 1.0	< 1.0
	10/19/2010	< 1.0	< 1.0
	10/11/2011	< 1.0	< 1.0
	10/11/2011 Dup	< 1.0	< 1.0
	4/18/2012	< 1.0	< 1.0
	11/7/2012	< 1.0	< 1.0
	4/10/2013	< 1.0	< 1.0
	4/10/2013 Dup	< 1.0	< 1.0
	10/17/2013	< 1.0	< 1.0
	10/17/2013 Dup	< 1.0	< 1.0
	4/15/2014	< 1.0	< 1.0
	4/15/2014 Dup	< 1.0	< 1.0
	10/22/2014	< 0.060	< 0.1
	10/22/2014 Dup	< 0.060	< 0.1
	4/23/2015	< 0.42	< 0.4
	4/23/2015 Dup	< 0.42	< 0.4
	10/20/2015	< 1.0	< 1.0
	4/12/2016	**< 73 D**	< 1.0
	10/24/2016	< 1.0	< 1.0
	4/12/2017	< 0.50	< 1.0
	10/4/2017	< 0.50	< 1.0
	4/25/2018	< 1.0	< 1.0
	10/3/2018	< 0.30	**13.8**
	4/15/2019	< 0.30	**3.47**
	10/16/2019	< 0.30	< 1.0
	4/9/2020	< 0.300	**13.8**
	10/21/2020	< 0.300	< 1.00
	4/13/2021	< 0.300	< 1.00

Notes:

(1) - ISRW pump wells sampled by peristaltic pump October 2015 & April 2016

< - Result is non-detected above the laboratory reporting limit.

< - Detection limit above cleanup level.

Bold indicates detection.

Dup - Field Duplicate Sample.

D - Laboratory analtyical dilution

J - Estimated concentration.

Bold and sha Detection above cleanup level.

Table 4-3
WIA ISRW Groundwater Extraction Pump Volume Data (2020 - 2021)
Emerald Kalama Chemical, Kalama, WA

Date	Groundwater Extracted (gallons)										
	ISRW-1	ISRW-2	ISRW-3	ISRW-4	ISRW-5	ISRW-6	ISRW-7	ISRW-8	ISRW-9	ISRW-10	Total
April 2021	9,949	5,326	7,602	2,022	8,110	2,020	8,840	8,198	4,526	11,154	**67,747**
March 2021	14,501	7,250	11,330	2,510	10,730	4,787	17,180	11,850	6,760	15,390	**102,288**
February 2021	14,899	9,070	9,470	2,740	14,160	7,913	26,180	15,920	10,470	15,370	**126,192**
January 2021	28,321	14,530	11,360	4,060	21,320	8,282	56,990	25,440	16,440	20,230	**206,973**
December 2020	17,779	12,110	10,830	2,210	13,760	3,818	31,570	16,210	15,230	19,150	**142,667**
November 2020	10,677	9,200	7,120	1,740	8,260	2,595	19,410	11,160	10,540	14,020	**94,722**
October 2020	13,092	6,518	5,590	1,974	5,923	1,207	10,943	9,445	9,775	7,675	**72,142**
September 2020	12,031	6,812	3,980	1,386	5,567	898	11,067	8,135	8,155	7,675	**65,706**
August 2020	7,259	8,086	4,225	1,300	7,485	2,674	379,750	10,752	9,787	9,480	**440,798**
July 2020	21,441	13,514	7,715	2,780	14,935	4,626	-	22,538	10,593	14,620	**112,762**
June 2020	25,614	18,306	11,122	3,270	30,400	-	-	35,420	16,288	14,710	**155,130**
May 2020	31,186	17,084	10,518	2,530	27,050	-	-	30,700	16,682	11,850	**147,600**
Total	**206,749**	**127,806**	**100,862**	**28,522**	**167,700**	**38,820**	**561,930**	**205,768**	**135,246**	**161,324**	**1,734,727**

Table 4-4
WIA ISRW Discharge Analytical/Mass Removal Data (2020 - 2021)
Emerald Kalama Chemical, Kalama, WA

Well	May 2020 - October 2020					November 2020 - April 2021					May 2020 - April 2021	
	Groundwater Extracted (gallons)	Avg Benz (Apr, Jul, Oct) (ug/L)	Benz Remvd (lb)	Avg Toluene (Apr, Jul, Oct) (ug/L)	Toluene Remvd (lb)	Groundwater Extracted (gallons)	Avg Benz (Oct, Jan, Apr) (ug/L)	Benz Remvd (lb)	Avg Toluene (Oct, Jan, Apr) (ug/L)	Toluene Remvd (lb)	Benz Remvd (lb)	Toluene Remvd (lb)
ISRW-1	110,623	55	0.05	18,183	16.8	96,126	46	0.0	26,117	24.1	0.1	41
ISRW-2B	70,320	62	0.04	25,730	15.1	57,486	46	0.0	27,497	16.1	0.1	31
ISRW-3	43,150	122	0.04	60,700	21.8	57,712	133	0.0	109,117	39.3	0.1	61
ISRW-4	13,240	44	0.00	10,663	1.2	15,282	35	0.0	8,479	0.9	0.0	2
ISRW-5	91,360	67	0.05	56,033	42.7	76,340	110	0.1	77,767	59.2	0.1	102
ISRW-6	9,405	1	0.00	778	0.1	29,415	2	0.0	2,158	0.2	0.0	0
ISRW-7	30,880	1.6	0.00	175	0.0	160,170	0	0.0	10	0.0	0.0	0
ISRW-8	116,990	114	0.11	42,533	41.5	88,778	87	0.1	40,300	39.3	0.2	81
ISRW-9	71,280	34	0.02	22,033	13.1	63,966	43	0.0	34,633	20.6	0.0	34
ISRW-10	66,010	176	0.10	130,733	71.9	95,314	111	0.1	132,933	73.2	0.2	145
Total	**623,258**		**0.42**		**224**	**740,589**		**0.4**		**273**	**0.8**	**497**

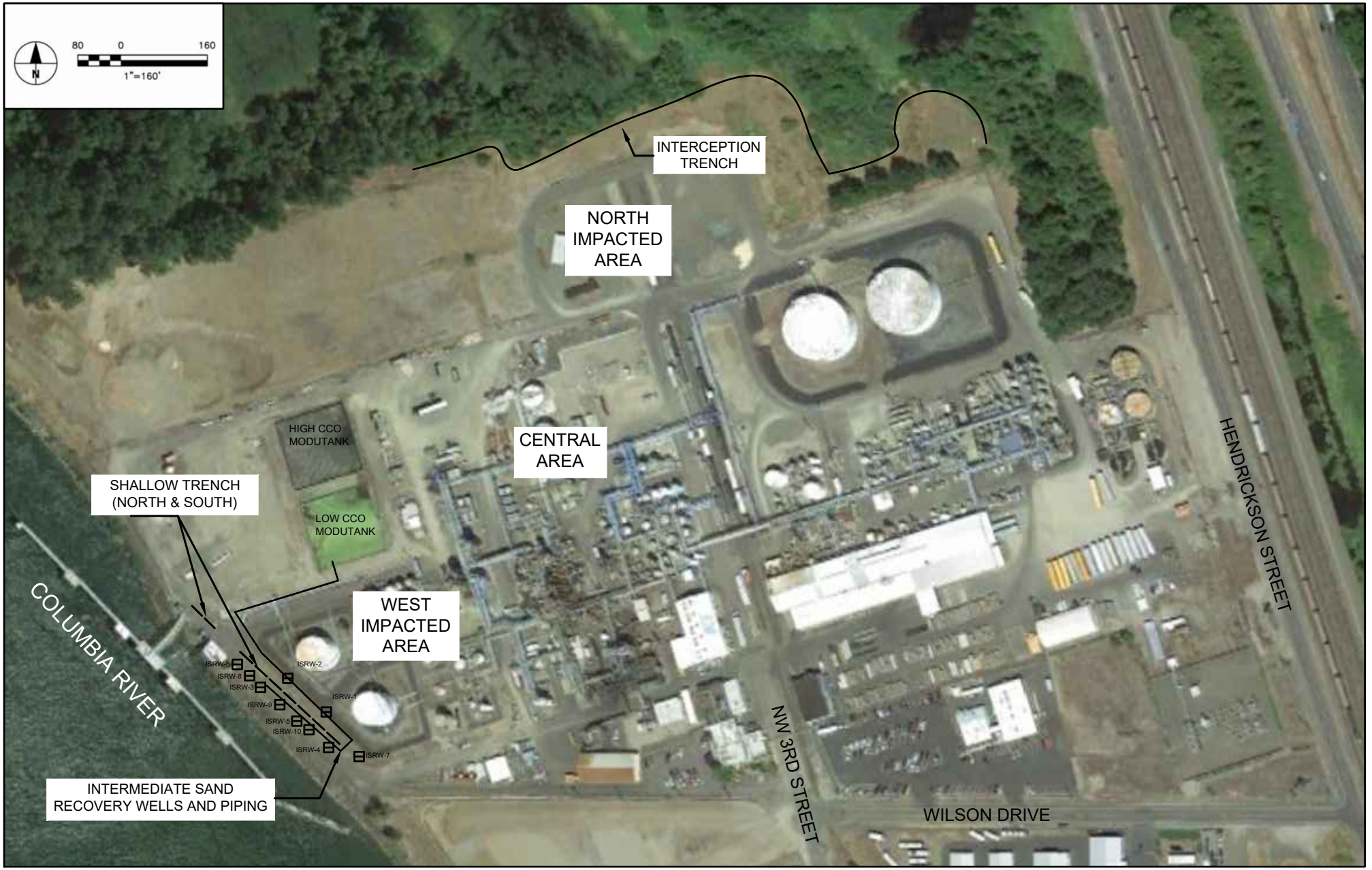
Notes:
Averages include duplicate samples.
Average concentration values are rounded.
ISRW = intermediate sand recovery well; lb = pounds; ug/L = micrograms per liter

Table 4-5
WIA ISRW Discharge Annual Mass Removal Data (1997 - 2021 As Listed)
Emerald Kalama Chemical, Kalama, WA

Year (April - April)	Groundwater Extracted (gallons)	Annual Benzene & Toluene Removal By ISRW Well (lbs)																				Totals	
		ISRW-1		ISRW-2		ISRW-3		ISRW-4		ISRW-5		ISRW-6		ISRW-7		ISRW-8		ISRW-9		ISRW-10			
		Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol	Benz	Tol
2020-2021	1,737,727	0.1	41	0.1	31	0.1	61	0	2	0.1	102	0	0	0	1	0.2	81	0	34	0.2	145	**1**	**498**
2019-2020	1,087,500	0.1	34	0.1	30	0.1	34	0	1	0	26	0	1	0	0	0.2	78	0.1	75	0	10	**1**	**289**
2018-2019	1,658,473	0.2	76	0.1	45	0.1	54	0	10	0.1	109	0	3	0.1	0	0.4	184	0	49	0	11	**1**	**541**
2017-2018	2,213,000	1	157	0	76	0	164	0	6	0	173	0	10	1	20	0	128	0	84	0	18	**2**	**836**
2016-2017	3,004,478	0	119	0	97	0	256	0	1	0	154	0	25	1	59	0	107	0	155	0	9	**3**	**982**
2015-2016	3,534,000	0	87	0	174	0	135	0	17	0	12	0	2	11	216	0	150	0	137	0	1	**12**	**931**
2014-2015	4,388,000	0	99	1	279	0	56	0	3	0	5	0	1	3	21	2	520	1	266	0	0	**8**	**1,250**
2013-2014	4,418,508	1	137	0	69	0	21	0	5	0	15	0	9	10	157	1	338	0	288	0	1	**12**	**1,040**
2012-2013	7,786,000	2	443	0	188	0	71	0	0	0	25	0	13	16	324	1	723	0	136	0	1	**19**	**1,924**
2011-2012	9,825,000	3	515	1	187	0	85	0	34	0	20	0	44	45	399	1	1,071	0	91	0	11	**50**	**2,457**
2008-2009	6,307,000	NA	373	NA	231	NA	122	NA	103	NA	181	NA	159	NA	601	NA	225	NA	131	NA	48	**NA**	**2,174**
2004-2005	5,579,000	NA	930	NA	44	NA	373	NA	78	NA	680	NA	190	NA	541	NA	NA	NA	NA	NA	NA	**NA**	**2,836**
2001-2002	5,642,000	NA	797	NA	63	NA	967	NA	78	NA	646	NA	634	NA	531	NA	NA	NA	NA	NA	NA	**NA**	**3,716**
1997-1998	2,733,000	NA	874	NA	407	NA	953	NA	983	NA	355	NA	177	NA	257	NA	NA	NA	NA	NA	NA	**NA**	**4,006**
TOTAL		**7**	**4,531**	**2**	**1,815**	**1**	**3,203**	**0**	**1,308**	**0**	**2,266**	**0**	**1,264**	**87**	**3,126**	**5**	**3,262**	**2**	**1,288**	**0**	**90**	**105**	**22,153**

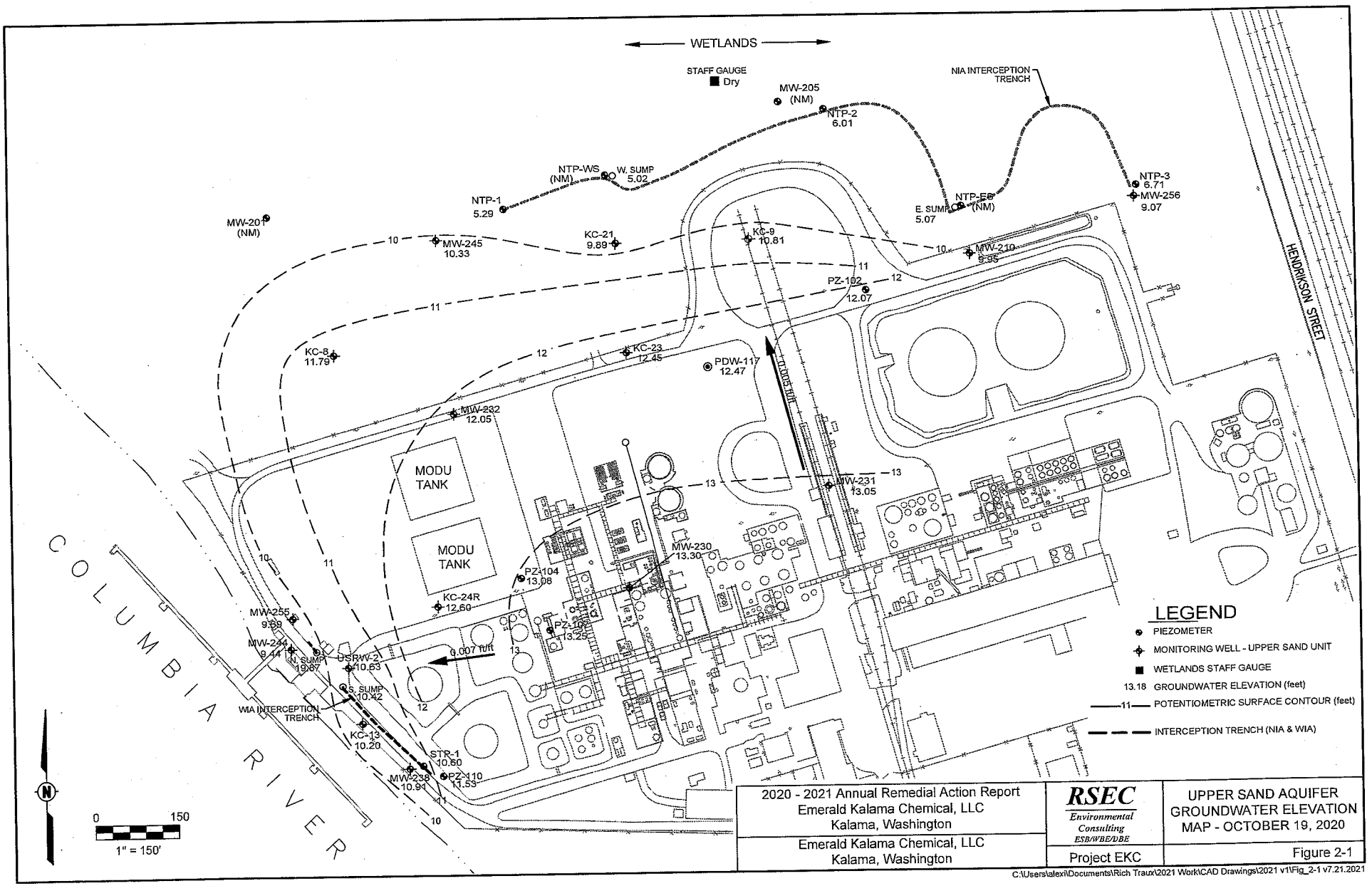
NOTES: ISRW-7 shut down October 2019. Operated intermitently since. Historically produced highest water volumes but lowest B&T concentrations (Below CUL or BDL more recently). 600K gal of water/year 2017-18 and 2018-19.
1997 - 1998 first full year of system operation

Figures



Kalama Facility Site Layout

Figure 1-1



2020 - 2021 Annual Remedial Action Report
Emerald Kalama Chemical, LLC
Kalama, Washington

Emerald Kalama Chemical, LLC
Kalama, Washington

RSEC
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Project EKC

UPPER SAND AQUIFER
GROUNDWATER ELEVATION
MAP - OCTOBER 19, 2020

Figure 2-1

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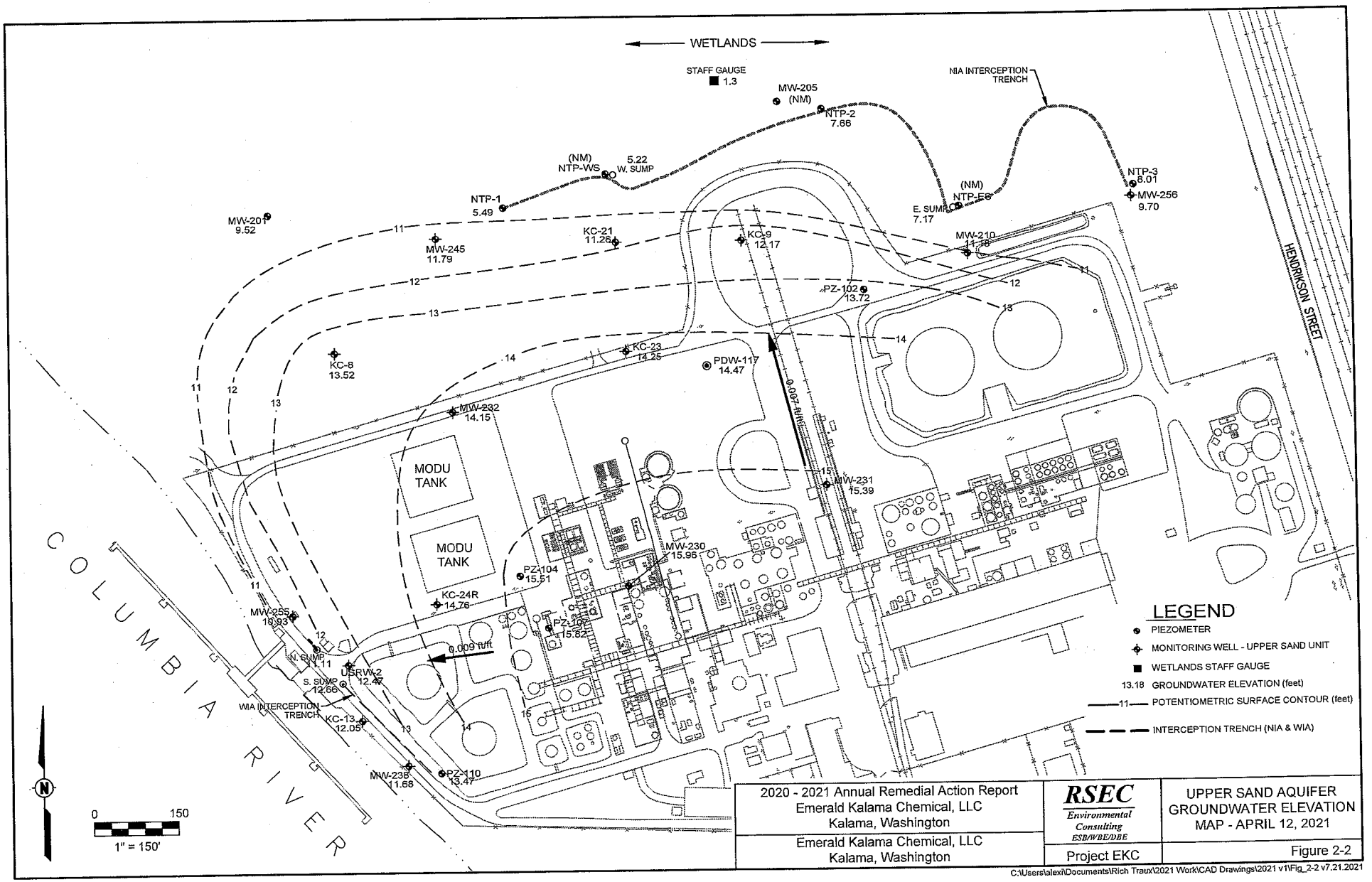

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Emerald Kalama Chemical, LLC
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UPPER SAND AQUIFER GROUNDWATER ELEVATION MAP - APRIL 12, 2021

Figure 2-2

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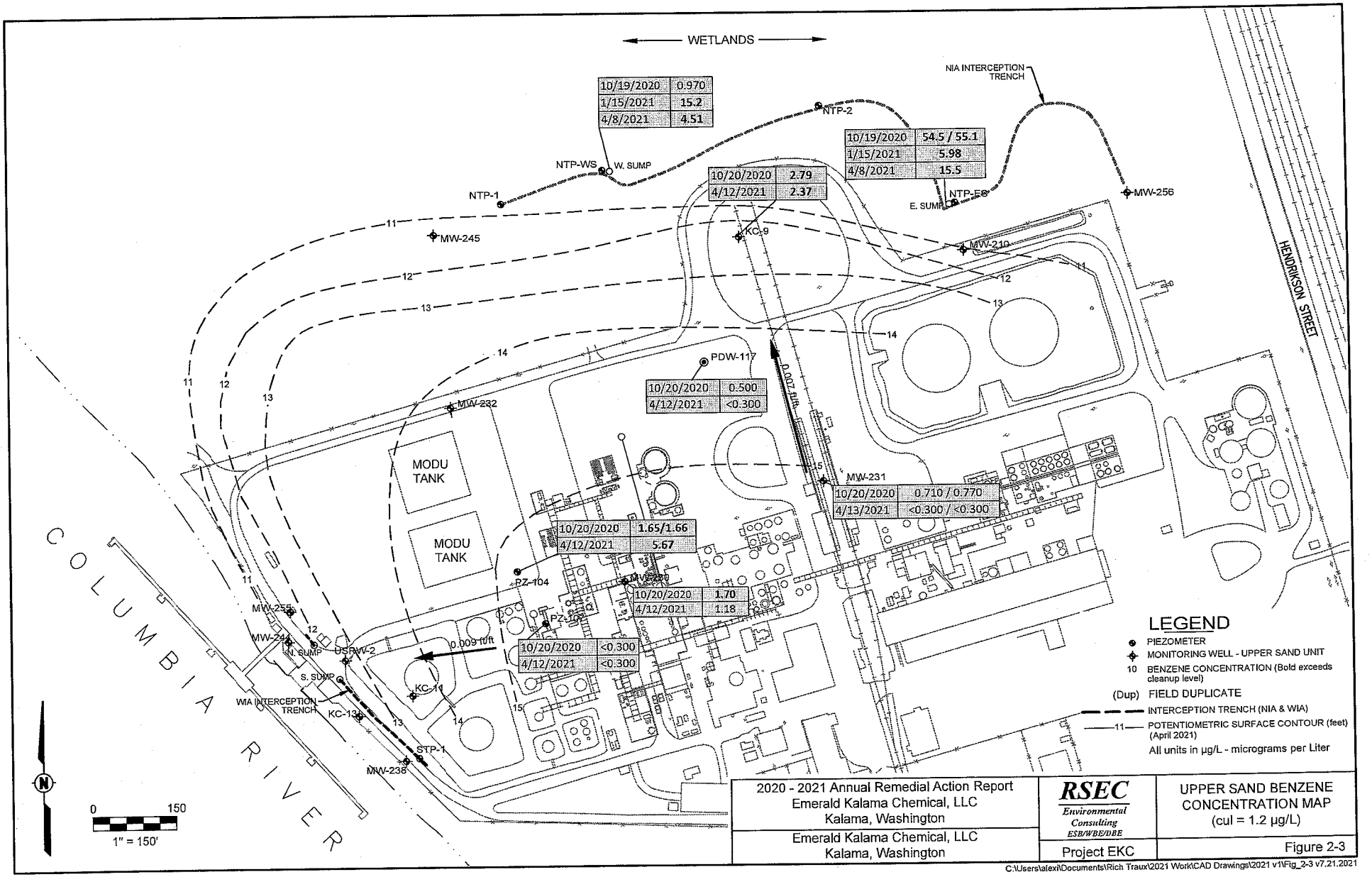

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UPPER SAND BENZENE CONCENTRATION MAP
(cul = 1.2 µg/L)

Figure 2-3

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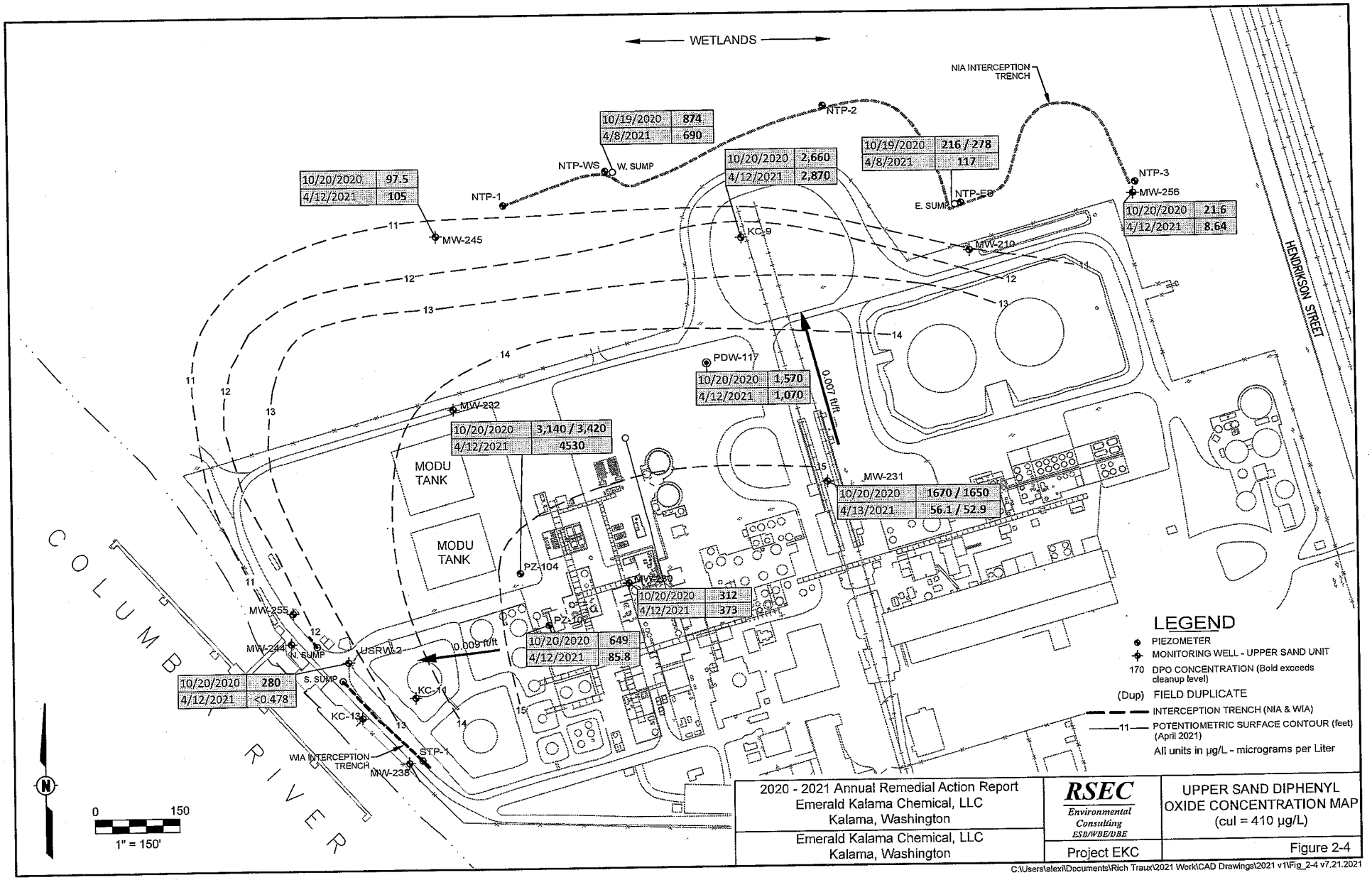

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Emerald Kalama Chemical, LLC
Kalama, Washington

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UPPER SAND DIPHENYL OXIDE CONCENTRATION MAP
(cul = 410 µg/L)

Figure 2-4

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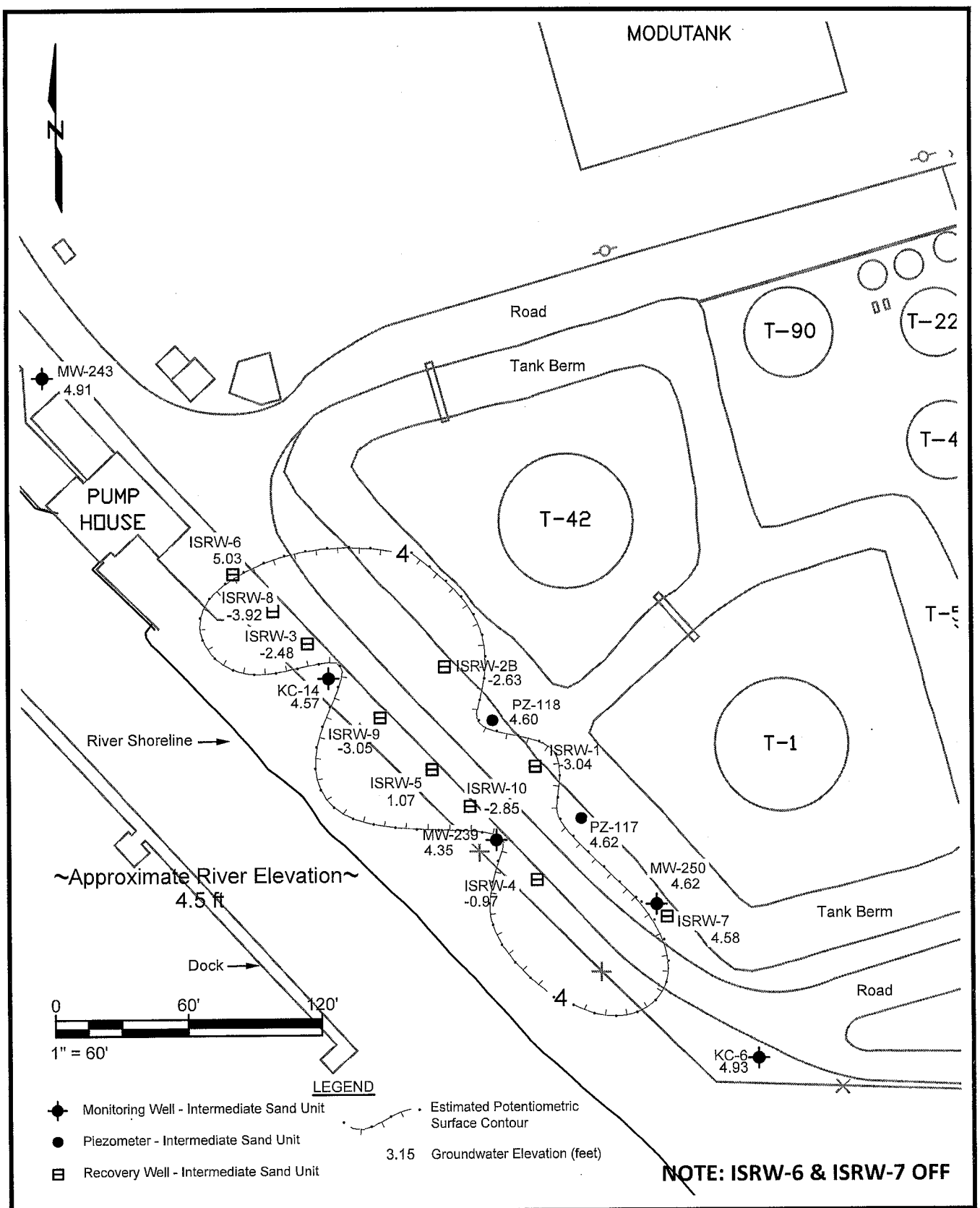

2020 - 2021 Annual Remedial Action Report Emerald Kalama Chemical, LCC Kalama, Washington	RSEC Environmental Consulting ESB/WBE/DBE	WIA Intermediate Sand Aquifer Potentiometric Surface Map July 14, 2020
Emerald Kalama Chemical, LCC Kalama, Washington	Project EKC	Figure 4-1

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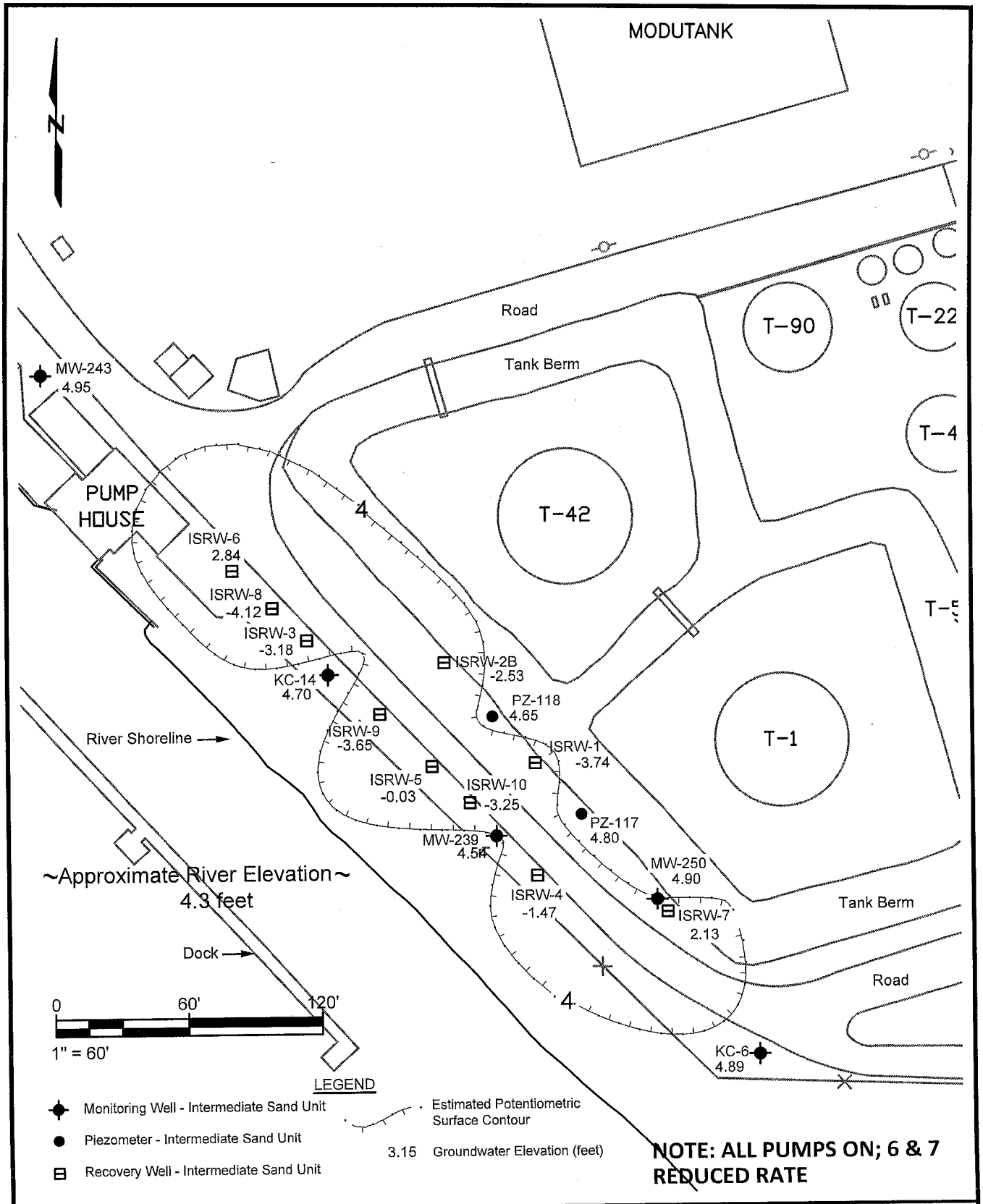

2020 - 2021 Annual Remedial Action Report Emerald Kalama Chemical, LCC Kalama, Washington	RSEC Environmental Consulting ESB/WBE/DBE	WIA Intermediate Sand Aquifer Potentiometric Surface Map October 19, 2020
Emerald Kalama Chemical, LCC Kalama, Washington	Project EKC	Figure 4-2

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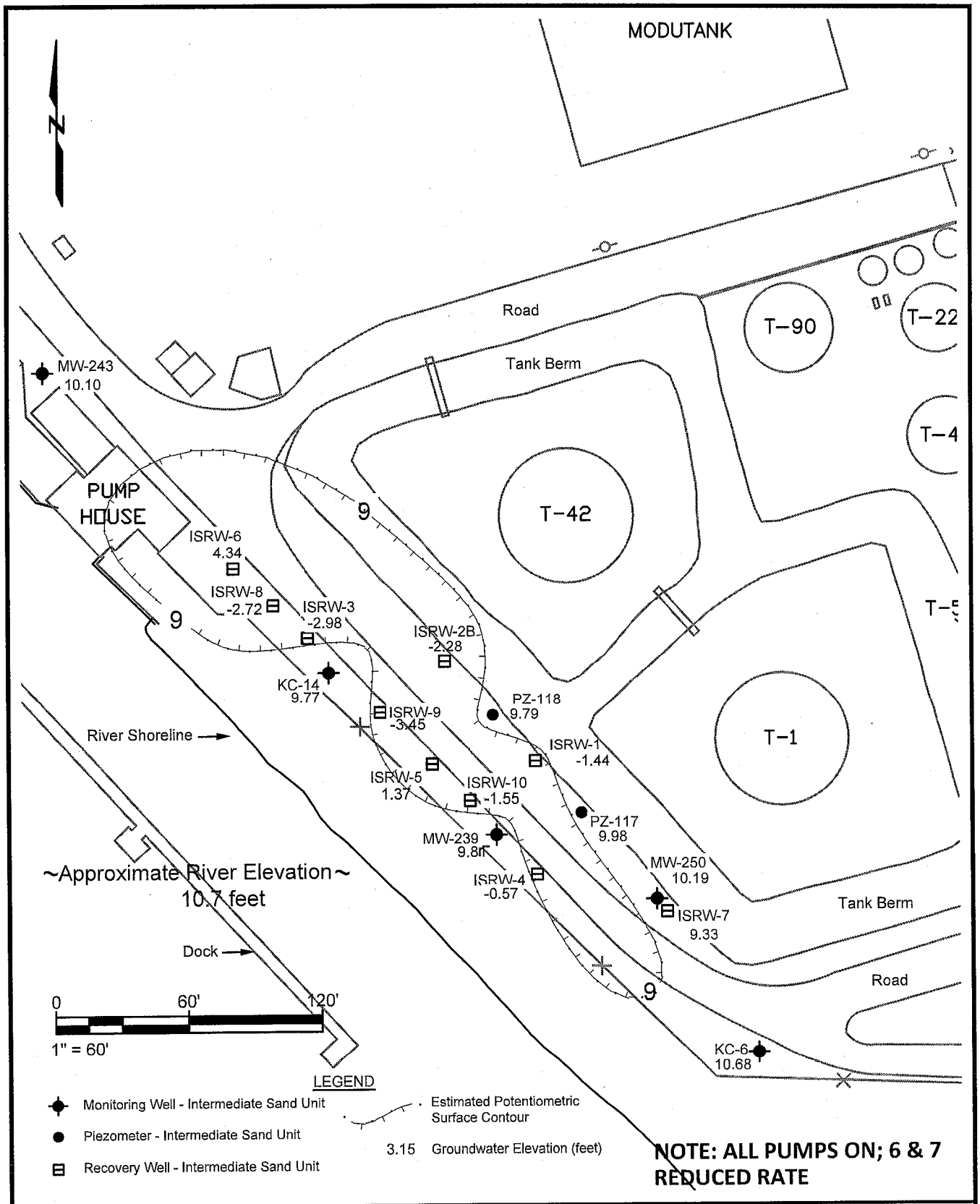

2020 - 2021 Annual Remedial Action Report Emerald Kalama Chemical, LCC Kalama, Washington	RSEC Environmental Consulting ESB/WBE/DBE	WIA Intermediate Sand Aquifer January 15, 2021
Emerald Kalama Chemical, LCC Kalama, Washington	Project EKC	Figure 4-3

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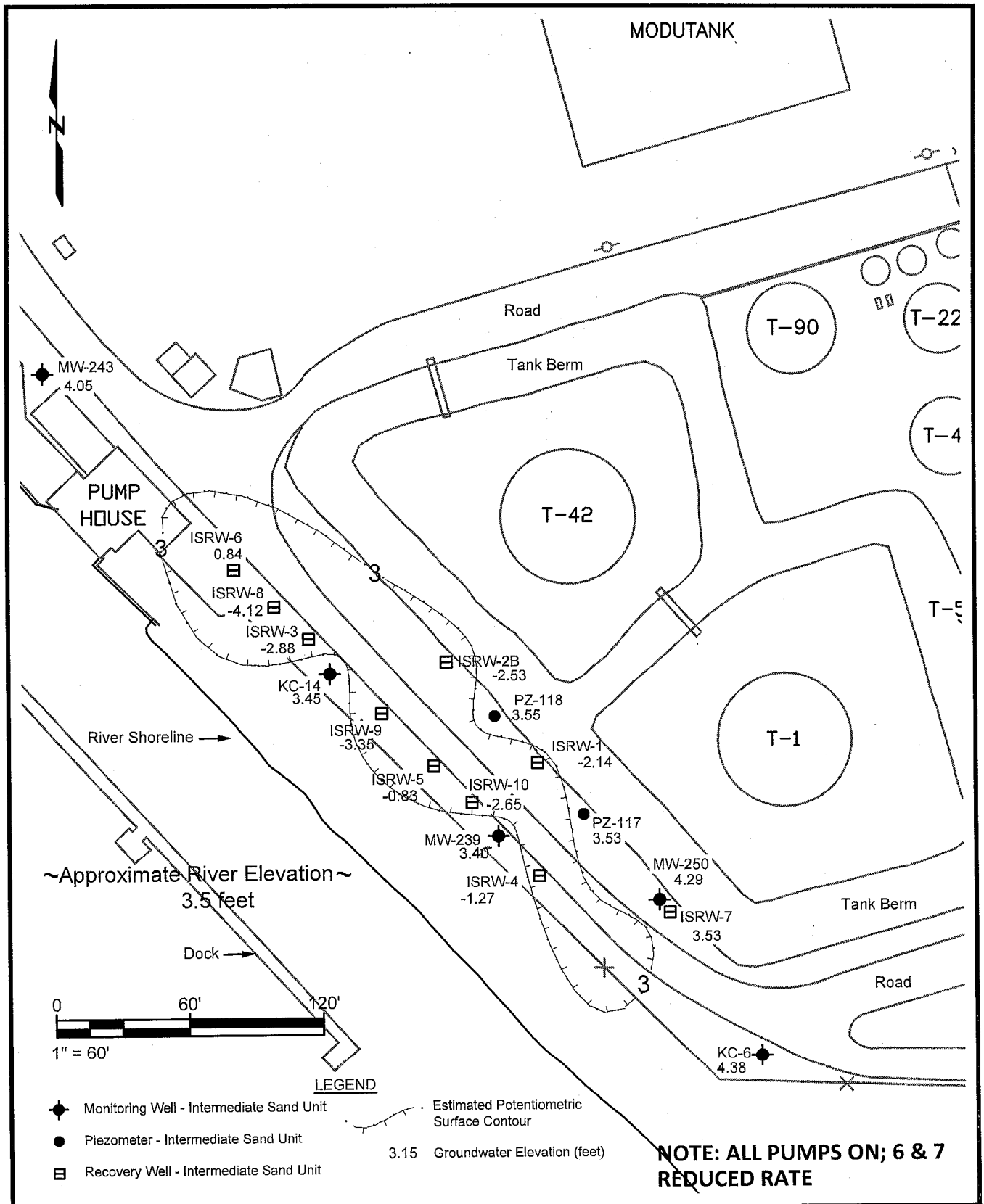

2020 - 2021 Annual Remedial Action Report Emerald Kalama Chemical, LCC Kalama, Washington	**RSEC** *Environmental Consulting* *ESB/WBE/DBE*	WIA Intermediate Sand Aquifer April 13, 2021
Emerald Kalama Chemical, LCC Kalama, Washington	Project EKC	Figure 4-4

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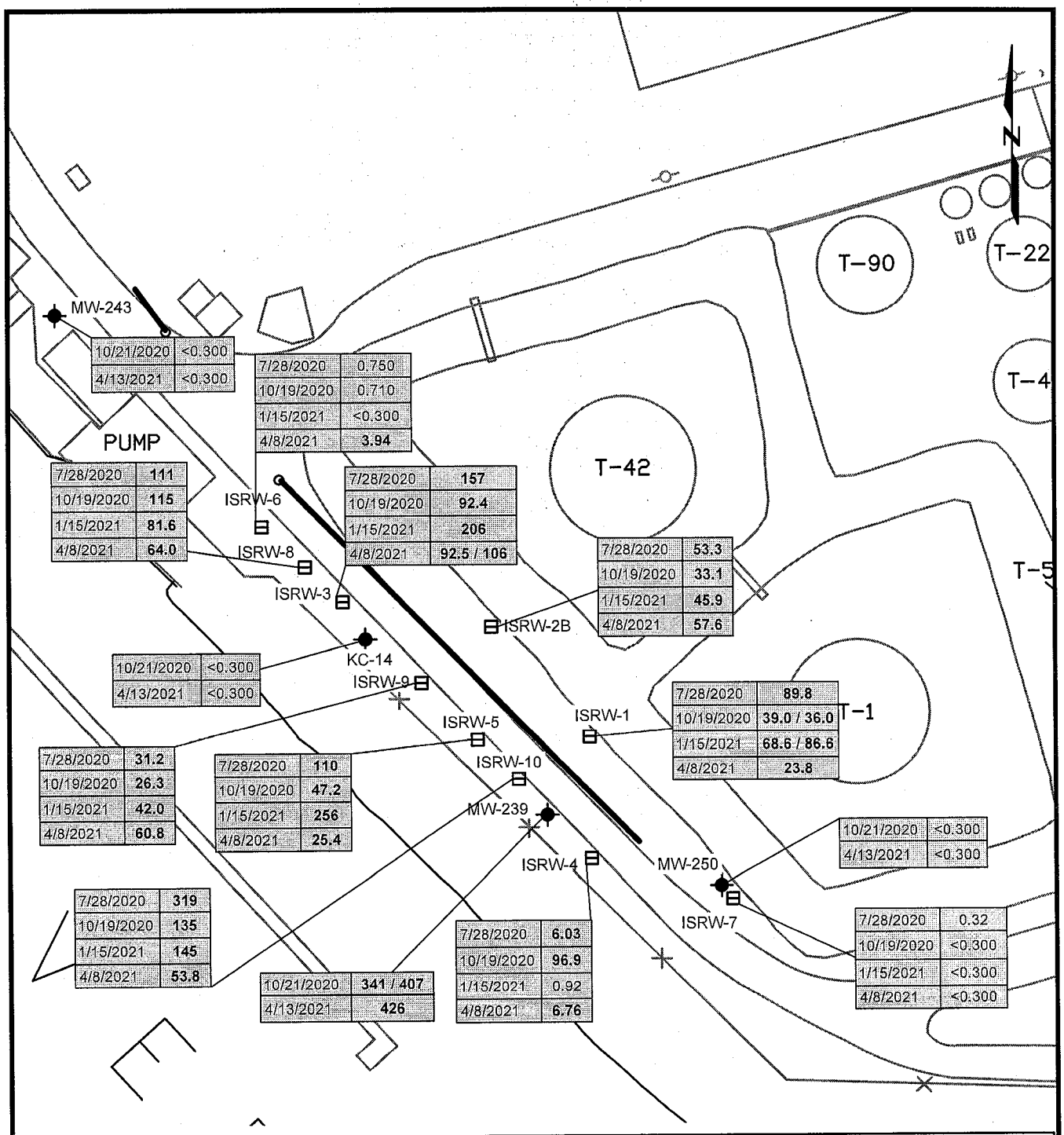

2020 - 2021 Annual Remedial Action Report
Emerald Kalama Chemical, LLC
Kalama, Washington

RSEC
Environmental Consulting
ESB/WBE/DBE

WIA Intermediate Sand Aquifer
Benzene Concentrations
(cul = 1.2 µg/L)

Emerald Kalama Chemical, LLC
Kalama, Washington

Project EKC

Figure 4-5

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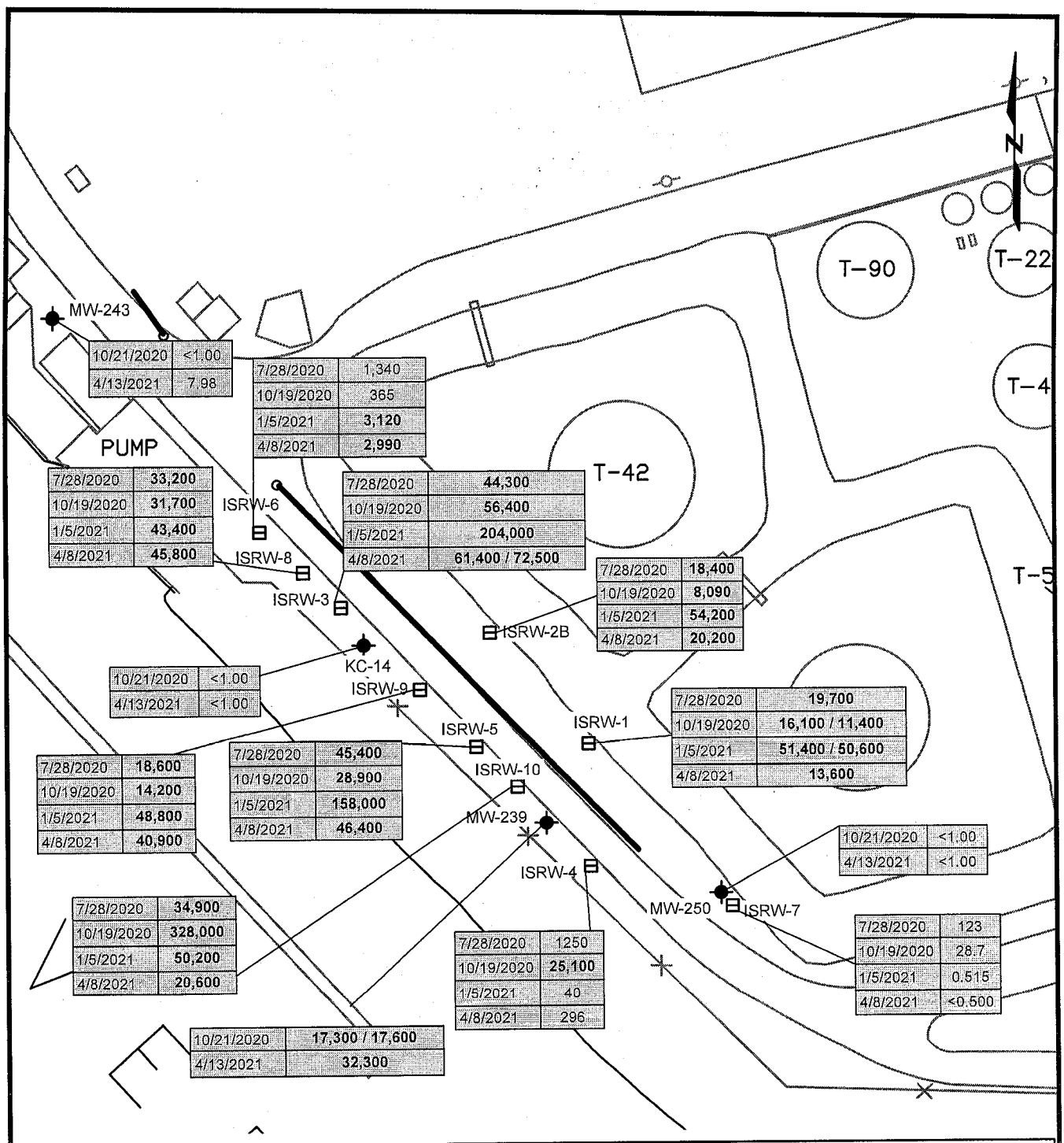

2020 - 2021 Annual Remedial Action Report
Emerald Kalama Chemical, LLC
Kalama, Washington

RSEC
Environmental Consulting
ESB/WBE/DBE

WIA Intermediate Sand Aquifer
Toluene Concentrations
(cul = 2,000 µg/L)

Emerald Kalama Chemical, LLC
Kalama, Washington

Project EKC

Figure 4-6

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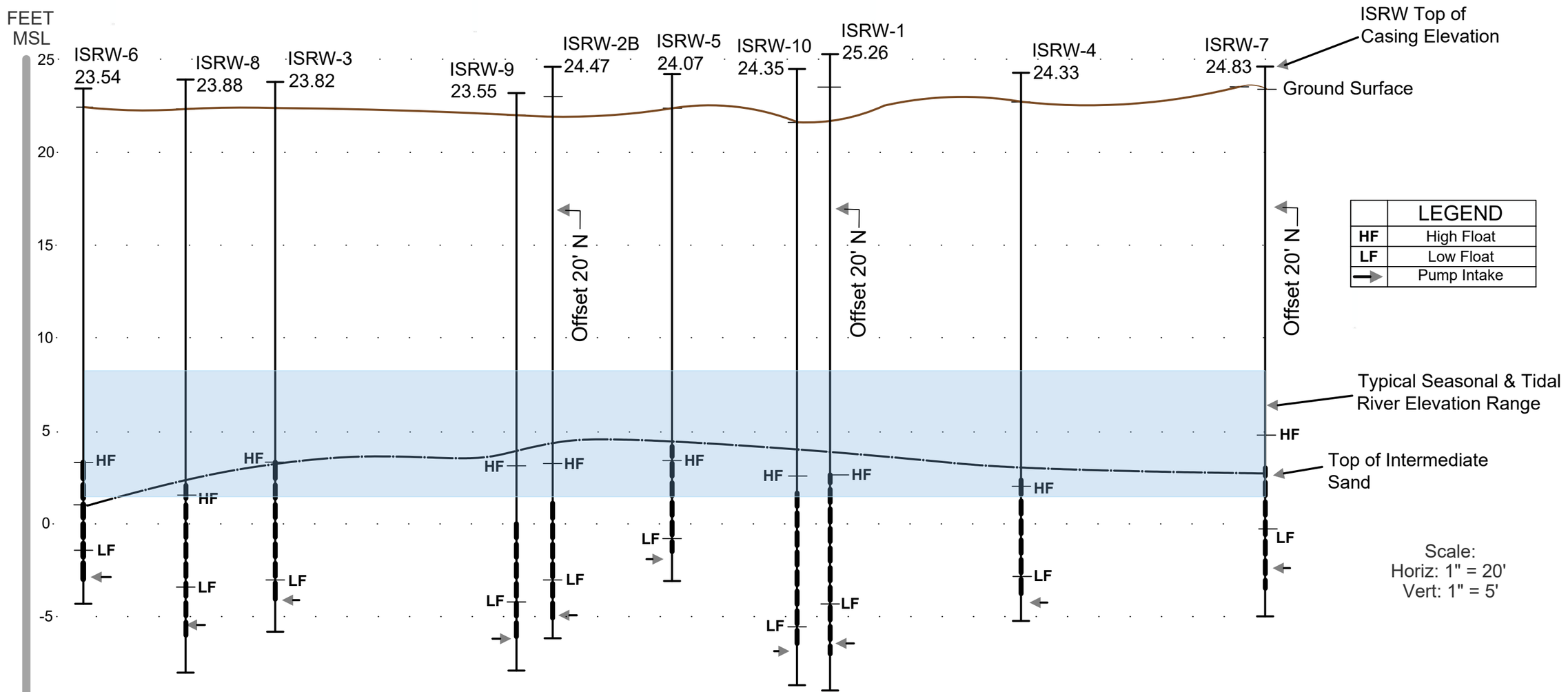
Figure 4-7 ISRW X-Sect.



Site:	Emerald Kalama Chemical	Drawing: 1	Project: 1	Drawn: AK	Notes:	RSEC-INC Environmental & Engineering consulting, INC.
Title:	ISRW Wells X-sect	Scale: Hor 1:20 Vert 1:5	Date: 8.14.2020	Rev: A		

Appendix A

Recommended Changes to System Operation – Ecology 10/21/2020

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

October 21, 2020

Phil Oyer, Environmental Manager
Emerald Kalama Chemical, LLC
1296 Third Street NW
Kalama, WA 98625

Re: Recommended Changes to System Operation

Dear Phil Oyer:

The Washington State Department of Ecology (Ecology) reviewed Emerald Kalama Chemical, LLC's (Emerald) 2019-2020 Annual Remedial Action Report dated September 10, 2020. The report was submitted in accordance with the 2008 Consent Decree between Ecology, BF Goodrich, Inc., and Emerald. The following are Ecology's responses to Emerald's recommended changes to the system operation as described in the report and summarized below.

Section 2.7 Recommended Changes to System Operation/Monitoring

a) The report states that Emerald proposes to remove wells MW-201 and MW-205 from the North Impacted Area (NIA) groundwater elevation gauging monitoring program. The report states that these two wells are often inaccessible due to flooding or overgrowth. Also, the report states that since these two wells are north of the NIA trench, the groundwater elevation data does not help in determining the operations of the NIA trench.

   Ecology Response: According to Appendix B in the report, Table B shows that four of the most recent seven groundwater elevation monitoring attempts at well MW-201 were successfully measured. Table B also shows that one of the most recent seven groundwater elevation monitoring attempts at well MW-205 were successfully measured. The unsuccessful attempts to measure groundwater elevation were due to flooding or overgrowth. According to Figure 2-1 of the report, well MW-201 is over 300 feet west of the NIA trench and well MW-205 is approximately 50 feet north of the NIA trench. Ecology concurs with the recommendation to remove wells MW-201 and MW-205 from the NIA groundwater elevation gauging monitoring program based on the evidence that the wells are often inaccessible due to flooding or overgrowth, and the locations of the wells do not add significant information for operation of the NIA trench.

b) The report states that Emerald proposes to remove piezometer locations NTP-WS and NTP-ES from the North Impacted Area (NIA) groundwater elevation gauging monitoring program. The report states that these two piezometer locations are close in proximity to the NIA trench West and East sumps, and that the water level is nearly identical between the piezometer locations and the sumps.

Ecology Response: According to Figure 2-1 of the report, piezometer location NTP-WS is adjacent to the West sump and piezometer location NTP-ES is adjacent to the East sump. According to Appendix B in the report, Table B shows that the most recent seven groundwater elevation measurements at piezometer location NTP-WS were very similar to the groundwater elevation measurements from the West sump. Although Table B does not include groundwater elevation measurements at piezometer location NTP-ES, Ecology believes these measurements would likely be very similar to the East sump based on the locations' close proximity. Ecology concurs with the recommendation to remove piezometer locations NTP-WS and NTP-ES from the North Impacted Area (NIA) groundwater elevation gauging monitoring program based on the evidence that the piezometer locations are very close to the West and East sumps, and based on the evidence from recent groundwater elevation monitoring that show the measurements at NTP-WS are very similar to the West sump.

Section 3.6 Recommended Changes to System Operation

a) The report states that Emerald proposes to remove piezometer STP-1 and well MW-244 from the West Impacted Area (WIA) groundwater elevation gauging monitoring program. The report states that piezometer STP-1 was historically used to monitor the WIA shallow trench water level and operations. The report states that the trench is currently shut down, Emerald continues to monitor the trench sumps, and PZ-110 and MW-238 provide relevant groundwater measurements. The report states that in the area of MW-244, sufficient groundwater elevation data is provided by nearby locations MW-255, the WIA North Sump, and USRW-2.

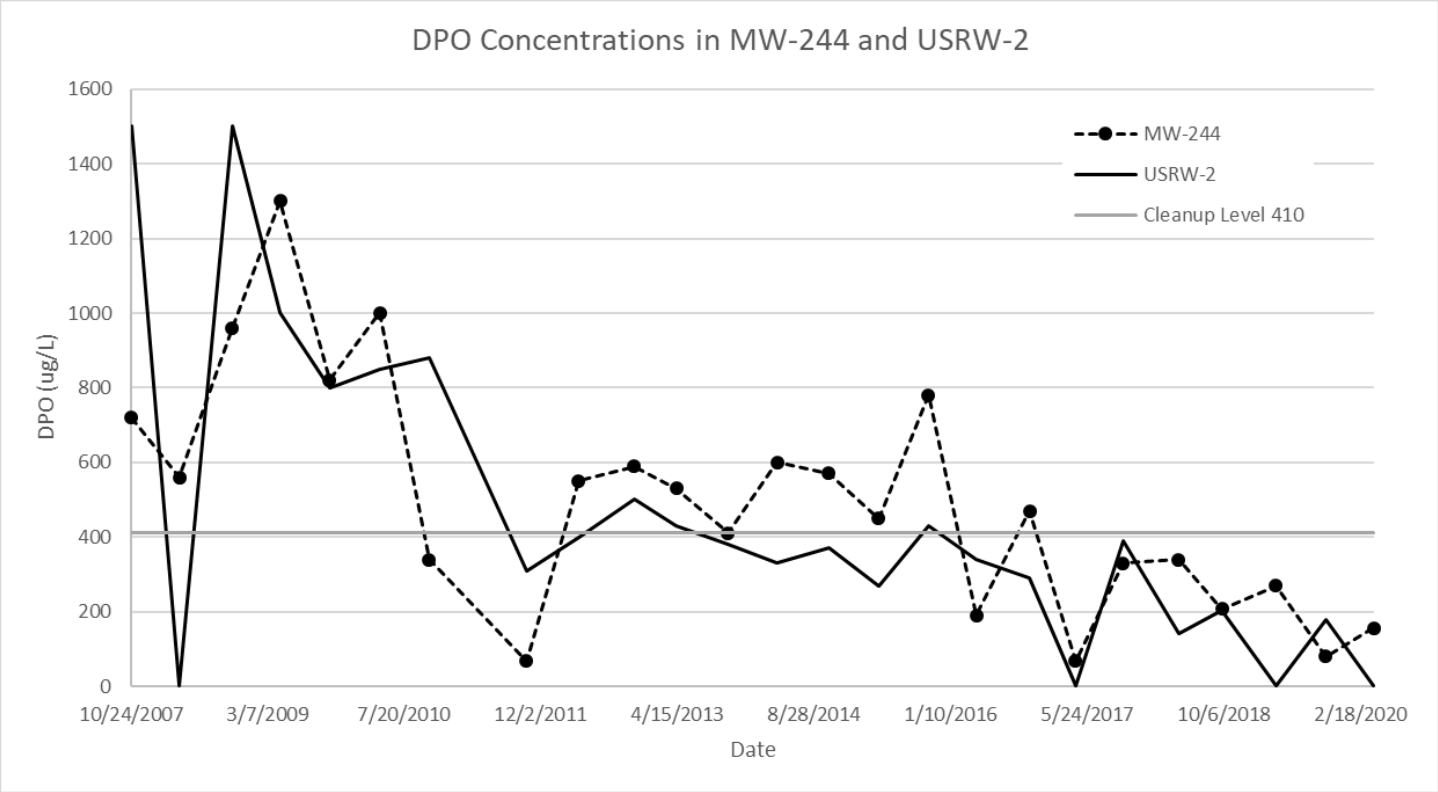
Ecology Response: According to Figure 2-1 in the report, piezometer STP-1 is near PZ-110 and MW-238, and MW-244 is near MW-255, the WIA North Sump, and USRW-2. Ecology concurs that removing piezometer STP-1 and well MW-244 from the WIA groundwater elevation gauging monitoring program based on the close proximity of other monitoring locations should provide sufficient groundwater elevation data.

b) The report states that Emerald proposes to cease groundwater analytical sampling at monitoring well MW-244. The report states that diphenyl oxide (DPO) is the only remaining parameter that is sampled at MW-244. The report says that MW-244 has been below the cleanup action level since 2016 and well USRW-2 will be an indicator in the event of rising DPO concentrations.

Ecology Response: According to Table 3-2 in the report, DPO concentrations at MW-244 have been below the cleanup level in the most recent seven samples (since April 2017). As shown in Figure 1 below, DPO results from MW-244 and USRW-2 indicate a general downward trend in concentrations.

Also, Figure 1 shows a visual correlation between the DPO results from MW-244 and USRW-2. Ecology concurs with the recommendation to remove MW-244 from the sampling program based on the data that shows DPO concentrations have been below the cleanup level in recent years, DPO concentrations are on a downward trend, and DPO concentrations from MW-244 appear to correlate with the concentrations from USRW-2. Ecology requires that MW-244 be left intact and available for sampling in the event that USRW-2 shows an increasing trend in DPO concentrations.

Figure 1 DPO Results.



Section 4.7 Recommended Changes to System Operation

The report states that Emerald proposes to monitor groundwater elevations in the Intermediate Sand Recovery Wells (ISRW) on a quarterly basis rather than monthly. The report states that Emerald evaluated monthly groundwater elevation monitoring of the ISRW wells to see if the results could improve the system operation. The report states that results from the past year show that quarterly groundwater elevation measurements are sufficient.

Ecology Response: Ecology approved the monthly groundwater elevation measurements last year as a way to determine if the more frequent measurements would improve system operations.

Ecology concurs with the recommendation to monitor ISRW groundwater elevations on a quarterly schedule based on Emerald's conclusion that groundwater elevations are seasonal and that monthly monitoring did not appear to significantly benefit the system operations.

If you have any questions, please contact me at (360) 480-6170 or greg.gould@ecy.wa.gov.

Sincerely,

Gregory Gould, P.E.
Industrial Section
Solid Waste Management Program

cc: Chris Culp, Emerald
Richard Truax, RSEC Environmental & Engineering Consulting, Inc.

Appendix B

Ground Water Level Tables

Table B WIA Upper Sand Gauging Data

Well	MP Elevation	4/13/2021			10/19/2020			4/7/2020			10/15/2019			4/12/2019			10/2/2018			4/23/2018		
		Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation
KC-13	23.34	1448	11.29	12.05	918	13.14	10.2	1420	11.20	12.14	1315	14.4	8.94	1450	10.32	13.02	1452	14.6	8.74	1351	13.26	10.08
KC-24R	24.76	1445	10	14.76	936	12.16	12.6	1415	10.14	14.62	1245	12.57	12.19	1409	10.24	14.52	1501	12.38	12.38	1400	10.11	14.65
MW-238	25.10	1452	13.42	11.68	920	14.19	10.91	1430	13.28	11.82	1318	15.01	10.09	1447	12.32	12.78	1448	14.55	10.55	1349	14.92	10.18
MW-244	25.98				914	16.54	9.44	1405	15.65	10.33	1305	16.92	9.06	1455	13.30	12.68	1358	16.99	8.99	1356	15.96	10.02
MW-255	21.96	1515	11.03	10.93	935	12.27	9.69	1400	10.98	10.98	1303	12.83	9.13	1405	9.63	12.33	1355	12.83	9.13	1418	11.1	10.86
PZ-110	25.76	1500	12.29	13.47	925	14.23	11.53	1432	12.59	13.17	1320	14.59	11.17	1442	12.19	13.57	1435	14.17	11.59	1346	12.55	13.21
USRW-2	22.85	1720	10.38	12.47	932	12.22	10.63	1410	10.26	12.59	1416	12.88	9.97	1403	9.69	13.16	1402	12.86	9.99	1411	11.28	11.57
STP-1	23.15				939	12.55	10.6	1430	10.58	12.57	1418	12.9	10.25	1358	9.98	13.17	1450	dry	dry	1345	12.34	10.81
N. SUMP	23.29	1442	12.18	11.11	934	13.42	9.87	1403	12.00	11.29		nm		1400	10.7	12.59	1400	14.1	9.19	1355	14.55	8.74
S. SUMP	23.34	1440	10.68	12.66	930	12.92	10.42	1408	10.55	12.79		nm		1401	9.95	13.39	1405	14.7	8.64	1354	14.55	8.79

Table B WIA Intermediate Sand Gauging Data

Well	Updated MP Elevation 7-2019 (#4,5,7,8 stkup lowered 7-15-19)	4/13/2021			January 15, 2021			October 19, 2020			September 21, 2020			August 18, 2020			7/14/2020			6/26/2020			5/19/2020			4/7/2020			3/18/2020			2/12/2020	
		1300LT+0.23/1740HT+3.4						0630HT+2.7/1330LT+0.4									LT+1@7a/HT+2.6@noon			HT+4@0730 / LT~0@1540			LT0950(+.5)/HT2:43p(+3.2)			LT:1115 / HT:4p			H@1130 +3.72/L@1800			H540a+4.2/L1p+0.4/	
		Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW
River	0 - MSL		2.5(+/- 0.5?)		1220		10.7	910		4.3	1330		3.5	1300		3.0	1410		4.5?(est)	940		7.8	940		7.2	1635		7	1330		5.2	1115	
KC-6	25.02	1303	20.64	4.38		14.34	10.68	921	20.13	4.89		20.95	4.07		20.90	4.12	1450	20.09	4.93	1006	16.96	8.06	1030	17.26	7.76	1659	18.66	6.36		19.53	5.49		16.78
KC-14	23.29	1300	19.84	3.45		13.52	9.77	915	18.59	4.70		20.00	3.29		19.90	3.39		18.72	4.57	953	15.59	7.70	958	16.01	7.28	1640	17.13	6.16		18.18	5.11		15.99
MW-239	25.35	1215	21.95	3.40		15.54	9.81	919	20.81	4.54		22.45	2.90		22.00	3.35	1456	21.00	4.35	1025	17.79	7.56	1018	18.19	7.16	1648	19.09	6.26		20.44	4.91		18.29
MW-243	25.9	1330	21.85	4.05		15.80	10.10	912	20.95	4.95		21.00	4.90		21.00	4.90	1412	20.99	4.91	950	18.20	7.70	945	18.26	7.64	1638	20.20	5.70		20.77	5.13		17.98
MW-250	26.12	1135	21.83	4.29		15.93	10.19	923	21.22	4.90		21.90	4.22		21.80	4.32	1446	21.50	4.62	1002	18.34	7.78	1035	18.43	7.69	1655	19.95	6.17		20.99	5.13		18.19
PZ-117	25.92	1457	22.39	3.53		15.94	9.98	926	21.12	4.80		21.75	4.17		21.70	4.22	1444	21.30	4.62	959	18.26	7.66	1010	17.86	8.06	1651	20.26	5.66		20.90	5.02		18.25
PZ-118	25.18	1450	21.63	3.55		15.39	9.79	928	20.53	4.65		21.25	3.93		21.20	3.98	1431	20.58	4.60	955	17.58	7.60	1040	18.52	6.66	1643	19.25	5.93		20.19	4.99		17.78
ISRW-1	25.26	1312	27.4	-2.14		26.70	-1.44	1007	29.00	-3.74		28.6	-3.34		28.8	-3.54	1434	28.3	-3.04	1136	26.6	-1.34	1013	28.2	-2.94	1708	24.6	0.66		28.6	-3.34		28.90
ISRW-2b	24.47	1320	27.0	-2.53		26.75	-2.28	958	27.00	-2.53		26.6	-2.13		26.5	-2.03	1424	27.1	-2.63	1053	26.0	-1.53	1005	26.6	-2.13	1725	26.3	-1.83		26.8	-2.33		26.30
ISRW-3	23.82	1323	26.7	-2.88		26.80	-2.98	954	27.00	-3.18		24.5	-0.68		24.7	-0.88		26.3	-2.48	1050	25.9	-2.03	955	26.3	-2.48	1730	26.7	-2.88		26.6	-2.78		26.55
ISRW-4	24.33	1308	25.6	-1.27		24.90	-0.57	1012	25.80	-1.47		25.0	-0.67		24.8	-0.47	1452	25.3	-0.97	1149	25.1	-0.77	1022	25.4	-1.07	1702	25.3	-0.92		25.4	-1.07		24.90
ISRW-5	24.07	1315	24.9	-0.83		22.70	1.37	1003	24.10	-0.03		23.2	0.87		23.0	1.07	1427	23.0	1.07	1111	20.0	4.07	1007	23.3	0.77	1710	23.0	1.07		23.5	0.57		23.00
ISRW-6	23.54	1326	22.7	0.84		19.20	4.34	950	20.70	2.84		22.3	1.24		22.0	1.54	1414	18.5	5.03	1035	15.7	7.84	950	15.7	7.82	1735	18.5	5.07		18.5	5.04		15.58
ISRW-7	24.83	1305	21.3	3.53		15.50	9.33	1014	22.70	2.13		20.5	4.33		21.0	3.83		20.3	4.58	1003	17.0	7.80	1025	17.4	7.45	1700	18.7	6.10		19.8	5.03		17.15
ISRW-8	23.88	1325	28.0	-4.12		26.60	-2.72	952	28.00	-4.12		26.6	-2.72		26.5	-2.62		27.8	-3.92	1040	24.8	-0.92	953	27.0	-3.12	1732	27.9	-4.02		27.7	-3.82		26.60
ISRW-9	23.55	1318	26.9	-3.35		27.00	-3.45	953	27.20	-3.65		27.3	-3.75		27.2	-3.65		26.6	-3.05	1104	25.5	-1.95	1000	27.6	-4.05	1720	27.0	-3.45		27.7	-4.15		27.40
ISRW-10	24.35	1310	27.0	-2.65		25.90	-1.55	1010	27.60	-3.25		26.5	-2.15		26.6	-2.25		27.2	-2.85	1120	26.0	-1.65	1015	27.4	-3.05	1705	27.3	-2.90	1430	27.3	-2.95	1230	27.20

Notes:

River Gauge Hard to read 10ths 2/12: HT:LT 4' differe

June 26,2020 GW Elev meas in ISRWs at end of start delay = highest level reached in op cycle - adjstng to reach higher elev in Int. Sand while staying below Rvr Elev / maintain containment

ISRW #6 restarted 6/26/20, H-flt removed, L-flt set approx = top of Int Sand, delay ~ 600s, maintain containment & flow to inner wells

JUNE 16&26, 2020 adjstmnts
made to achieve GW removed
from bottom of screen to top

NOTE TOS Elev highest at
ISRW's 2,4,5,10; then 1,3,9 -

Wells MW-236, MW-249, and KC-17 removed from elevation gauging program per 11/29/16 Ecology approval Letter

around the 5' mark (+/- 0.3?) Meas. Just before low

River staff gauge used to estimate elevation of Columbia River, High/Low Tide based on NOAA Tide Table

ambient MWs slower

NM - Not measured.

elev drop then river. A

ISRW 1 - 10 are pumping wells, water levels set by control floats & pump cycles

curious always big dif

10/2/18 HT 1022 +2.7 / LT 1614 +1.2

	1/7/2020			12/11/2019			11/20/19 monthly			10/15/19 Semi-Ann Smpling			7/30/19 interim/Qtrly			4 /12/ 2019 Semi-Annual Smpling			10/2/18 Semi-Ann Smpling			4/23&24/2018					
46p+4.2	H 12:20 +4.3			L9am+0.98/H2:20p+4.7			Hi-tide @ 10a.m.			Lo-Tide @ Noon +0.5' / Hi @ 6p			NOAA Tide Lo -0.46@1100/Hi+2.24@			NOAA Tide Hi +4.3@0900, Lo -0.5@1800			Ecy Apprvd Chnge to no Hi/Lo Tide			4/23 Low Tide - (+1 @4pm)			4/24 High Tide - (+4 @ 10a.m.)		
GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elev (7-15-19 MP)	Time	DTW	GW Elevation (new 7-15-19) MP Elev	Time	DTW	Ground-water Elevation	Time	10/2/18 Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation
6.8			7.1			5.6	1000		5.1	1425		3.7	1100		2.90	1200		12.7	1500	-	3.1		-	6.3		-	7.5
8.24	11-1230	19.10	5.92	1130-1230	20.76	4.26	10-1130	20.53	4.49	1330	21.54	3.48	1122	21.09	3.93	1440	12.90	12.04	1430	21.15	3.79	1640	17.63	7.31	1045	17.51	7.43
7.30		17.11	6.18		18.53	4.76		18.59	4.70	1350	20.38	2.91	1106	20.14	3.15	1449	11.32	12.01	1000	19.10	4.23	1658	16.48	6.85	1055	15.89	7.44
7.06		19.37	5.98		20.98	4.37		20.75	4.60	1355	22.41	2.94	1118	22.33	3.02	1444	13.30	12.00	1030 (10/3)	22.00	3.30	1646	18.60	6.70	1051	17.93	7.37
7.92		19.99	5.91		21.23	4.67		21.41	4.49	1307	22.55	3.35	1103	21.90	4.00	1458	14.10	11.80	1357	21.85	4.05	1706	18.49	7.41	1057	18.31	7.59
7.93		20.35	5.77		21.96	4.16		21.50	4.62	1332	22.86	3.26	1115	22.26	3.86	1441	14.19	11.87	900 (10/3)	22.97	3.09	1643	18.90	7.16	1048	18.86	7.20
7.67		20.45	5.47		21.79	4.13		21.49	4.43	1340	22.76	3.16	1110	22.25	3.67	1443	13.97	11.91	1442	22.11	3.77	1650	18.85	7.03	1050	18.80	7.08
7.40		19.38	5.80		20.72	4.46		20.69	4.49	1345	22.10	3.08	1112	21.68	3.50	1448	13.38	11.75	1451	21.50	3.63	1651	17.96	7.17	1053	17.58	7.55
-3.64		27.00	-1.74		25.50	-0.24		28.50	-3.24	1343	28.62	-3.36	1143	28.90	-3.64	1145	25.7	-0.38	1422	24.6	0.77	1649	25.6	-0.3	1107	25.6	-0.3
-1.83		26.60	-2.13		26.50	-2.03		26.90	-2.43	1347	26.90	-2.43	1140	26.70	-2.23	1152	25.3	-0.68	1411	26.4	-1.78	1657	23.8	0.8	1109	23.8	0.8
-2.73		26.50	-2.68		26.40	-2.58		24.76	-0.94	1410	24.97	-1.15	1128	24.80	-0.98	1155	23.5	0.49	1410	23.7	0.26	1702	23.3	0.7	1114	23.3	0.7
-0.57		24.50	-0.17		24.50	-0.17		22.90	1.43	1337	24.72	-0.39	1153	24.90	-0.57	1140	26.1	-0.82	1425	26.0	-0.67	1645	25.4	-0.1	1104	25.4	-0.1
1.07		23.00	1.07		23.80	0.27		23.90	0.17	1400	24.54	-0.47	1135	22.55	1.52	1147	22.3	3.2	1415	22.0	3.5	1655	22.0	3.5	1111	22.0	3.5
7.96		23.80	-0.26		24.00	-0.46		24.40	-0.86	1415	24.83	-1.29	1120	24.35	-0.81	1159	24.8	-1.23	1407	24.3	-0.72	1704	21.5	2.1	1119	21.5	2.1
7.68		19.06	5.77		20.59	4.24		20.40	4.43	1335	21.79	3.04	1200	23.00	1.83	1137	22.4	3.81	1427	24.1	2.11	1641	26.9	-0.7	1102	26.9	-0.7
-2.72		27.30	-3.42		27.40	-3.52		27.65	-3.77	1412	27.94	-4.06	1125	26.90	-3.02	1157	26.4	-1.60	1408	27.4	-2.55	1703	24.1	0.7	1116	24.1	0.7
-3.85		27.20	-3.65		27.80	-4.25		27.00	-3.45	1403	26.50	-2.95	1145	27.05	-3.50	1150	26.8	-2.66	1413	24.8	-0.61	1656	24.0	0.1	1112	24.0	0.1
-2.85		26.90	-2.55		26.20	-1.85		26.95	-2.60	1358	26.85	-2.50	1158	26.80	-2.45	1142	25.5	-2.15	1420	27.6	-4.30	1648	24.1	-0.8	1106	24.1	-0.8

nce

r tide

on gw

LSO ISRW-4 had been fouled & not-starting prev 2-3days.

f KC-14&MW-239 to adjacent ISRW's

Table B NIA Upper Sand Gauging Data

Well	MP Elevation	4/12/2021			10/19/2020			4/7/2020			10/15/2019			4/12/2019			10/2/2018			4/23/2018		
		Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation
KC-8	24.57	1445	11.05	13.52	1251	12.78	11.79	1210	11.06	13.51	1155	13.4	11.17	1245	11.14	13.43	1331	13.2	11.37	1611	10.1	14.47
KC-9 (2)	21.07	1215	8.9	12.17	1332	10.26	10.81	1242	8.95	12.12	1105	10.8	10.27	1427	9.06	12.01	10/1-1800	10.81	10.26	1159	8.24	12.83
KC-21	24.61	1340	13.35	11.26	1256	14.72	9.89	1215	13.41	11.20	1140	15.11	9.50	1242	13.61	11.00	1318	15.01	9.60	1550	12.64	11.97
KC-23	23.87	1330	9.62	14.25	1335	11.42	12.45	1330	9.72	14.15	1130	11.9	11.97	1421	9.88	13.99	1315	11.78	12.09	1451	9.31	14.56
MW-210	26.44	1055	15.26	11.18	1324	16.49	9.95	1040	15.40	11.04	1122	17.77	8.67	1236	15.4	11.04	1307	16.66	9.78	1543	14.61	11.83
MW-232	24.59	1500	10.44	14.15	1350	12.54	12.05	1350	10.73	13.86	1215	13.04	11.55	1418	10.74	13.85	1342	12.85	11.74	1430	9.9	14.69
MW-245	25.81	1400	14.02	11.79	1249	15.48	10.33	1125	14.09	11.72	1010	15.8	10.01	0115	14.24	11.57	1328	15.68	10.13	1608	13.33	12.48
MW-256	19.09	1105	9.39	9.70	1322	10.02	9.07	1020	9.46	9.63	930	10.5	8.59	1232	9.40	9.69	10/1-1325	10.45	8.64	1506	8.87	10.22
PZ-102	25.76	1050	12.04	13.72	1326	13.69	12.07	1325	12.10	13.66	1120	14.12	11.64	1426	12.21	13.55	1312	14.09	11.67	1540	11.62	14.14
NTP-1	23.99	1338	18.5	5.49	1248	18.7	5.29	1220	18.14	5.85	1150	18.73	5.26	1230	18.66	5.33	1323	18.50	5.49	1609	16.15	7.84
NTP-2	16.91	1205	9.25	7.66	#######	10.9	6.01	1105	9.77	7.14	1141	NM	NM	1239	10.54	6.37	NM	NM	NM	1525	7.86	9.05
NTP-3	15.61	1140	7.6	8.01	1320	8.9	NM	NM	NM	NM	945	8.8	6.81	1233	8.26	7.35	1302	8.78	6.83	1515	6.24	9.37
NTP-WS	14.79				1246	dry	dry	1051	9.2	5.59	dry		dry	1226	9.7	5.09	1321	9.4	5.39	1558	7.05	7.74
MW-201	14.76				obstructed		NM	1215	5.24	9.52	NM		NM	1249	4.8	9.96	NM	NM	NM	1615	4.14	10.62
MW-205	12.77				obstructed		NM	tree obstruction		NM	NM		NM	NM	NM	NM	NM	NM	NM	NM		NM
East Sump	13.47	1200	6.3	7.17	1315	8.4	5.07	1045	8.05	5.42	1115	8.4	5.07	1234	7.83	5.64	1300	9.25	4.22	1513	4.5	8.97
West Sump	13.62	1335	8.4	5.22	1245	8.6	5.02	1050	8.07	5.55	1146	8.75	4.87	1225	9.24	4.38	1320	8.3	5.32	1554	5.9	7.72
Staff Gauge	NA	1350	~2	~2	1250	dry	dry	1100	1.3	1.30	1143	dry	dry	1330	~1.6	~1.6		Dry	Dry	dry		

Notes:

Wetlands staff gauge used to measure surface water elevation

NM - Not Measured - due to either wetland flooding or other obstruction.

NTP-ES&WS, MW-201 & -205 Removed from gauging per Ecy 10/21/20 apprvl.

(2) - New MP elevation starting April 20, 2015 data due to RR infrastructure changes

Table B CIA Upper Sand Gauging Data

Well	MP Elevation	4/12/2021			10/19/2020			4/7/2020			10/15/2019			4/12/2019			10/2/2018			4/23/2018		
		Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation	Time	Depth to Water	Ground-water Elevation
KC-9 (2)	21.07	1215	8.9	12.17	1332	10.26	10.81	1242	8.95	12.12	1330	10.8	10.27	1427	9.06	12.01	10/1 - 1800	10.81	10.26	1450	8.24	12.83
MW-210	26.44	1055	15.26	11.18	1324	16.49	9.95	1040	15.40	11.04	1122	17.77	8.67	1236	15.40	11.04	1307	16.66	9.78	1543	14.61	11.83
MW-230	26.16	1610	10.2	15.96	1342	12.86	13.30	1340	10.42	15.74	1238	13.18	12.98	1350	10.62	15.54	1645	13.05	13.11	1441	10.66	15.50
MW-231 (2)	22.15	0930	6.76	15.39			22.15	4/9 - 1445	6.91	15.24	1900	9.49	12.66	1635	7.10	15.05	1755	9.31	12.84	0830	6.73	15.42
PDW-117	25.85	1000	11.38	14.47	1337	13.38	12.47	1035	11.49	14.36	1100	13.90	11.95	1422	11.62	14.23	0815	13.77	12.08	1455	11.15	14.70
PZ-104	24.83	1510	9.32	15.51	1349	11.75	13.08	1350	9.53	15.30	1230	12.14	12.69	1345	9.66	15.17	0905	11.97	12.86	1447	9.56	15.27
PZ-107	25.5	1810	9.68	15.82	1346	12.25	13.25	1345	9.90	15.60	1235	12.64	12.86	1347	10.03	15.47	10/3 - 1100	12.48	13.02	1444	10.05	15.45

Notes: 1 - Facility RR extension temporarily blocked well

Notes: 2 - New MP elevation starting April 20, 2015 data due to RR infrastructure changes

Appendix C

Laboratory Reports: Oct.-2020 and April-2021 (transmitted via e-file)

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

August 06, 2020

Rich Truax
RSEC Environmental Inc.
958 Hood View Ct.
Hood River, OR 97031

TEL: (541) 490-4223
FAX
RE: EKC July 2020 / EKC 0720

Dear Rich Truax: Order No.: 2007186

Specialty Analytical received 10 sample(s) on 7/28/2020 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

Specialty Analytical

Date Reported: 06-Aug-20

CLIENT: RSEC Environmental Inc.
Project: EKC July 2020 / EKC 0720

Lab Order: 2007186

Lab ID: 2007186-001 **Collection Date:** 7/28/2020 9:30:00 AM
Client Sample ID: ISRW-1 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	89.8	0.300		µg/L	1	8/5/2020 4:39:00 PM
Toluene	19700	100		µg/L	200	8/5/2020 9:20:00 AM
Surr: 4-Bromofluorobenzene	101	74.8-126		%REC	200	8/5/2020 9:20:00 AM

Lab ID: 2007186-002 **Collection Date:** 7/28/2020 9:40:00 AM
Client Sample ID: ISRW-2b **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	53.3	0.300		µg/L	1	8/5/2020 5:27:00 PM
Toluene	18400	250		µg/L	500	8/5/2020 10:08:00 AM
Surr: 4-Bromofluorobenzene	102	74.8-126		%REC	500	8/5/2020 10:08:00 AM

Lab ID: 2007186-003 **Collection Date:** 7/28/2020 9:50:00 AM
Client Sample ID: ISRW-3 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	157	0.300		µg/L	1	8/5/2020 7:02:00 PM
Toluene	44300	500		µg/L	1000	8/5/2020 12:25:00 PM
Surr: 4-Bromofluorobenzene	99.9	74.8-126		%REC	1000	8/5/2020 12:25:00 PM

Lab ID: 2007186-004 **Collection Date:** 7/28/2020 10:00:00 AM
Client Sample ID: ISRW-4 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	6.03	0.300		µg/L	1	8/5/2020 5:03:00 PM
Toluene	1250	100		µg/L	200	8/5/2020 9:44:00 AM
Surr: 4-Bromofluorobenzene	101	74.8-126		%REC	200	8/5/2020 9:44:00 AM

Specialty Analytical

Date Reported: 06-Aug-20

CLIENT: RSEC Environmental Inc.
Project: EKC July 2020 / EKC 0720

Lab Order: 2007186

Lab ID: 2007186-005 **Collection Date:** 7/28/2020 10:10:00 AM
Client Sample ID: ISRW-5 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	110	0.300		µg/L	1	8/5/2020 7:26:00 PM
Toluene	45400	500		µg/L	1000	8/5/2020 1:18:00 PM
Surr: 4-Bromofluorobenzene	100	74.8-126		%REC	1000	8/5/2020 1:18:00 PM

Lab ID: 2007186-006 **Collection Date:** 7/28/2020 10:20:00 AM
Client Sample ID: ISRW-6 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	0.750	0.300		µg/L	1	8/5/2020 3:51:00 PM
Toluene	1340	25.0		µg/L	50	8/5/2020 8:29:00 AM
Surr: 4-Bromofluorobenzene	98.4	74.8-126		%REC	50	8/5/2020 8:29:00 AM

Lab ID: 2007186-007 **Collection Date:** 7/28/2020 10:30:00 AM
Client Sample ID: ISRW-7 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	0.320	0.300		µg/L	1	8/5/2020 4:15:00 PM
Toluene	123	25.0		µg/L	50	8/5/2020 8:56:00 AM
Surr: 4-Bromofluorobenzene	99.8	74.8-126		%REC	50	8/5/2020 8:56:00 AM

Lab ID: 2007186-008 **Collection Date:** 7/28/2020 10:40:00 AM
Client Sample ID: ISRW-8 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	111	0.300		µg/L	1	8/5/2020 5:51:00 PM
Toluene	33200	250		µg/L	500	8/5/2020 10:31:00 AM
Surr: 4-Bromofluorobenzene	101	74.8-126		%REC	500	8/5/2020 10:31:00 AM

Specialty Analytical

Date Reported: 06-Aug-20

CLIENT: RSEC Environmental Inc.
Project: EKC July 2020 / EKC 0720

Lab Order: 2007186

Lab ID: 2007186-009 **Collection Date:** 7/28/2020 10:50:00 AM
Client Sample ID: ISRW-9 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	31.2	0.300		µg/L	1	8/5/2020 6:14:00 PM
Toluene	18600	250		µg/L	500	8/5/2020 10:55:00 AM
Surr: 4-Bromofluorobenzene	102	74.8-126		%REC	500	8/5/2020 10:55:00 AM

Lab ID: 2007186-010 **Collection Date:** 7/28/2020 11:00:00 AM
Client Sample ID: ISRW-10 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	319	3.00		µg/L	10	8/6/2020 10:00:00 AM
Toluene	34900	250		µg/L	500	8/5/2020 11:19:00 AM
Surr: 4-Bromofluorobenzene	101	74.8-126		%REC	500	8/5/2020 11:19:00 AM

QC SUMMARY REPORT

WO#: **2007186**

06-Aug-20

Specialty Analytical

Client: RSEC Environmental Inc.

Project: EKC July 2020 / EKC 0720 **TestCode:** **BTEXRBC_W**

Sample ID **CCV** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **CCV** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/5/2020** SeqNo: **476727**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.1	0.300	50.00	0	96.2	85	115				
Toluene	49.2	0.500	50.00	0	98.3	85	115				

Sample ID **LCS-R36720** SampType: **LCS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **LCSW** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/5/2020** SeqNo: **476728**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.1	0.300	50.00	0	96.2	85	115				
Toluene	49.2	0.500	50.00	0	98.3	85	115				

Sample ID **MB-R36720** SampType: **MBLK** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **PBW** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/5/2020** SeqNo: **476729**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	0.500									
Surr: 4-Bromofluorobenzene	102		100.0		102	74.8	126				

Sample ID **CCV** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **CCV** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/5/2020** SeqNo: **476740**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2007186**

06-Aug-20

Specialty Analytical

Client: RSEC Environmental Inc.

Project: EKC July 2020 / EKC 0720 **TestCode:** **BTEXRBC_W**

Sample ID **CCV** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **CCV** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/5/2020** SeqNo: **476740**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	49.2	0.300	50.00	0	98.3	85	115				
Toluene	50.8	0.500	50.00	0	102	85	115				

Sample ID **2007186-006AMS** SampType: **MS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **ISRW-6** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/5/2020** SeqNo: **476741**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2510	15.0	2500	0	100	67.8	118				
Toluene	3420	25.0	2500	1342	83.1	74.7	117				

Sample ID **2007186-006AMSD** SampType: **MSD** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **ISRW-6** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/5/2020** SeqNo: **476742**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2580	15.0	2500	0	103	67.8	118	2507	2.68	20	
Toluene	3500	25.0	2500	1342	86.4	74.7	117	3420	2.37	20	

Sample ID **CCV** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **36720**

Client ID: **CCV** Batch ID: **R36720** TestNo: **SW8021B** Analysis Date: **8/6/2020** SeqNo: **476777**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	55.0	0.300	50.00	0	110	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2007186**

Specialty Analytical

06-Aug-20

Client: RSEC Environmental Inc.

Project: EKC July 2020 / EKC 0720 **TestCode:** **BTEXRBC_W**

Sample ID **CCV**	SampType: **CCV**	TestCode: **BTEXRBC_W**	Units: **µg/L**	Prep Date:			RunNo: **36720**					
Client ID: **CCV**	Batch ID: **R36720**	TestNo: **SW8021B**		Analysis Date: **8/6/2020**			SeqNo: **476777**					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

KEY TO FLAGS

Rev. May 12, 2010

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
A4	The product appears to be aged or degraded diesel.
B	The blank exhibited a positive result great than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
G	Result may be biased high due to biogenic interferences. Clean up is recommended.
H	Sample was analyzed outside recommended holding time.
HT	At clients request, samples was analyzed outside of recommended holding time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits; post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

www.specialtyanalytical.com

Chain of Custody Record

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Date: 7/28/20 Page: 1 of: 1
Project Name: EKC July 2020
Project No: EKC 0720 PO No:
Collected by: R. Truex
State Collected: OR (WA) OTHER
Report To (PM):
PM Email:

Laboratory Project No (internal): 2007186
Temperature on Receipt: 4.2 °C on ice
Custody Seal: Y / N
Intact / Broken Cooler / Bottle
Shipped Via: Client
Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: RSEC, Inc.
Address: 958 Hood View Ct.
City, State, Zip: Hood River, OR, 97031
Telephone: 541-490-4223
AP Email: richard@rsecinc.com

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8021 Benz. Tol.	Comments
1	ISRW-1	7/28	0930	GW	3		*Note Most of these likely
2	ISRW-2b		0940		3		benz. > 10 ug/L
3	ISRW-3		0950		3		Tol. > 500 → 1,000 ug/L
4	ISRW-4		1000		3		Some >> [illegible]
5	ISRW-5		1010		3	Don't use Vial Marked (BAD) unless have to	[illegible]
6	ISRW-6		1020		3		[illegible] ISRW 6+7 probably
7	ISRW-7		1030		3		Lower.
8	ISRW-8		1040		3		
9	ISRW-9		1050		3		
10	ISRW-10		1100		3		

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x [signature]	7/28/20 2:50pm	x [signature]	7/28/2020 2:50 pm
x		x	
x		x	

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

October 27, 2020

Rich Truax
RSEC Environmental Inc.
958 Hood View Ct.
Hood River, OR 97031

TEL: (541) 490-4223
FAX
RE: EKC / EKC-1020

Dear Rich Truax: Order No.: 2010165

Specialty Analytical received 36 sample(s) on 10/19/2020 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

Specialty Analytical

Date Reported: 27-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-1020

Lab Order: 2010165

Lab ID: 2010165-001 **Collection Date:** 10/19/2020 10:30:00 AM
Client Sample ID: ISRW-1 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	39.0	0.300		µg/L	1	10/23/2020 10:39:30 PM
Toluene	16100	100		µg/L	200	10/23/2020 3:30:30 PM
Surr: 4-Bromofluorobenzene	99.1	74.8-126		%REC	200	10/23/2020 3:30:30 PM

Lab ID: 2010165-004 **Collection Date:** 10/19/2020 10:35:00 AM
Client Sample ID: ISRW-2b (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	33.1	0.300		µg/L	1	10/23/2020 11:50:30 PM
Toluene	8090	250		µg/L	500	10/23/2020 4:41:30 PM
Surr: 4-Bromofluorobenzene	99.7	74.8-126		%REC	500	10/23/2020 4:41:30 PM

Lab ID: 2010165-007 **Collection Date:** 10/19/2020 10:40:00 AM
Client Sample ID: ISRW-3 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	92.4	3.00		µg/L	10	10/26/2020 4:51:30 PM
Toluene	56400	500		µg/L	1000	10/23/2020 5:05:30 PM
Surr: 4-Bromofluorobenzene	99.6	74.8-126		%REC	1000	10/23/2020 5:05:30 PM

Lab ID: 2010165-010 **Collection Date:** 10/19/2020 10:45:00 AM
Client Sample ID: ISRW-4 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	96.9	0.300		µg/L	1	10/24/2020 1:01:00 AM
Toluene	25100	100		µg/L	200	10/23/2020 5:29:30 PM
Surr: 4-Bromofluorobenzene	99.0	74.8-126		%REC	200	10/23/2020 5:29:30 PM

Specialty Analytical

Date Reported: 27-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-1020

Lab Order: 2010165

Lab ID: 2010165-013 **Collection Date:** 10/19/2020 10:50:00 AM
Client Sample ID: ISRW-5 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	47.2	0.300		µg/L	1	10/24/2020 1:25:00 AM
Toluene	28900	500		µg/L	1000	10/23/2020 5:53:30 PM
Surr: 4-Bromofluorobenzene	102	74.8-126		%REC	1000	10/23/2020 5:53:30 PM

Lab ID: 2010165-016 **Collection Date:** 10/19/2020 10:55:00 AM
Client Sample ID: ISRW-6 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	0.710	0.300		µg/L	1	10/24/2020 2:13:00 AM
Toluene	365	25.0		µg/L	50	10/23/2020 6:16:30 PM
Surr: 4-Bromofluorobenzene	101	74.8-126		%REC	50	10/23/2020 6:16:30 PM

Lab ID: 2010165-019 **Collection Date:** 10/19/2020 11:00:00 AM
Client Sample ID: ISRW-7 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	ND	0.300		µg/L	1	10/24/2020 2:36:00 AM
Toluene	28.7	0.500		µg/L	1	10/24/2020 2:36:00 AM
Surr: 4-Bromofluorobenzene	108	74.8-126		%REC	1	10/24/2020 2:36:00 AM

Lab ID: 2010165-022 **Collection Date:** 10/19/2020 11:05:00 AM
Client Sample ID: ISRW-8 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	115	0.300		µg/L	1	10/24/2020 3:00:00 AM
Toluene	31700	250		µg/L	500	10/23/2020 7:04:30 PM
Surr: 4-Bromofluorobenzene	101	74.8-126		%REC	500	10/23/2020 7:04:30 PM

Specialty Analytical

Date Reported: 27-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-1020

Lab Order: 2010165

Lab ID: 2010165-025 **Collection Date:** 10/19/2020 11:10:00 AM
Client Sample ID: ISRW-9 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	26.3	0.300		µg/L	1	10/24/2020 3:24:00 AM
Toluene	14200	250		µg/L	500	10/23/2020 7:28:30 PM
Surr: 4-Bromofluorobenzene	102	74.8-126		%REC	500	10/23/2020 7:28:30 PM

Lab ID: 2010165-028 **Collection Date:** 10/19/2020 11:15:00 AM
Client Sample ID: ISRW-10 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	135	3.00		µg/L	10	10/26/2020 5:15:30 PM
Toluene	328000	5000		µg/L	10000	10/26/2020 4:28:30 PM
Surr: 4-Bromofluorobenzene	100	74.8-126		%REC	10000	10/26/2020 4:28:30 PM

Lab ID: 2010165-031 **Collection Date:** 10/19/2020 1:30:00 PM
Client Sample ID: MS/MSD **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Biphenyl	ND	0.483		µg/L	1	10/23/2020 1:55:00 PM
Diphenyl ether	278	4.83		µg/L	10	10/23/2020 12:25:00 PM
Surr: 2,4,6-Tribromophenol	0	33.1-129.7		%REC	1	10/23/2020 1:55:00 PM
Surr: 2-Fluorobiphenyl	69.3	33.1-126.2		%REC	1	10/23/2020 1:55:00 PM
Surr: 2-Fluorophenol	0	13.4-127.1		%REC	1	10/23/2020 1:55:00 PM
Surr: 4-Terphenyl-d14	80.8	41-140		%REC	1	10/23/2020 1:55:00 PM
Surr: Nitrobenzene-d5	0	28.9-129.9		%REC	1	10/23/2020 1:55:00 PM
Surr: Phenol-d6	0	10.6-128.5		%REC	1	10/23/2020 1:55:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	55.1	0.300		µg/L	1	10/23/2020 2:07:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 2:07:00 PM
Surr: 1,2-Dichloroethane-d4	91.6	75.3-126		%REC	1	10/23/2020 2:07:00 PM
Surr: 4-Bromofluorobenzene	96.8	78.1-120		%REC	1	10/23/2020 2:07:00 PM
Surr: Dibromofluoromethane	92.2	74.2-122		%REC	1	10/23/2020 2:07:00 PM
Surr: Toluene-d8	102	76.2-135		%REC	1	10/23/2020 2:07:00 PM

Specialty Analytical

Date Reported: 27-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-1020

Lab Order: 2010165

Lab ID: 2010165-032
Collection Date: 10/19/2020 1:15:00 PM
Client Sample ID: E-Sump
Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Biphenyl	ND	0.481		µg/L	1	10/23/2020 2:25:00 PM
Diphenyl ether	216	4.81		µg/L	10	10/23/2020 12:55:00 PM
Surr: 2,4,6-Tribromophenol	0	33.1-129.7		%REC	1	10/23/2020 2:25:00 PM
Surr: 2-Fluorobiphenyl	54.6	33.1-126.2		%REC	1	10/23/2020 2:25:00 PM
Surr: 2-Fluorophenol	0	13.4-127.1		%REC	1	10/23/2020 2:25:00 PM
Surr: 4-Terphenyl-d14	73.8	41-140		%REC	1	10/23/2020 2:25:00 PM
Surr: Nitrobenzene-d5	0	28.9-129.9		%REC	1	10/23/2020 2:25:00 PM
Surr: Phenol-d6	0	10.6-128.5		%REC	1	10/23/2020 2:25:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	54.5	0.300		µg/L	1	10/23/2020 2:28:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 2:28:00 PM
Surr: 1,2-Dichloroethane-d4	91.5	75.3-126		%REC	1	10/23/2020 2:28:00 PM
Surr: 4-Bromofluorobenzene	97.0	78.1-120		%REC	1	10/23/2020 2:28:00 PM
Surr: Dibromofluoromethane	92.3	74.2-122		%REC	1	10/23/2020 2:28:00 PM
Surr: Toluene-d8	102	76.2-135		%REC	1	10/23/2020 2:28:00 PM

Specialty Analytical

Date Reported: 27-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-1020

Lab Order: 2010165

Lab ID: 2010165-033 **Collection Date:** 10/19/2020 1:00:00 PM
Client Sample ID: W-Sump **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Biphenyl	13.1	0.478		µg/L	1	10/23/2020 2:55:00 PM
Diphenyl ether	874	9.55		µg/L	20	10/23/2020 1:25:00 PM
Surr: 2,4,6-Tribromophenol	0	33.1-129.7		%REC	1	10/23/2020 2:55:00 PM
Surr: 2-Fluorobiphenyl	65.4	33.1-126.2		%REC	1	10/23/2020 2:55:00 PM
Surr: 2-Fluorophenol	0	13.4-127.1		%REC	1	10/23/2020 2:55:00 PM
Surr: 4-Terphenyl-d14	79.6	41-140		%REC	1	10/23/2020 2:55:00 PM
Surr: Nitrobenzene-d5	0	28.9-129.9		%REC	1	10/23/2020 2:55:00 PM
Surr: Phenol-d6	0	10.6-128.5		%REC	1	10/23/2020 2:55:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	0.970	0.300		µg/L	1	10/23/2020 2:49:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 2:49:00 PM
Surr: 1,2-Dichloroethane-d4	108	75.3-126		%REC	1	10/23/2020 2:49:00 PM
Surr: 4-Bromofluorobenzene	97.7	78.1-120		%REC	1	10/23/2020 2:49:00 PM
Surr: Dibromofluoromethane	107	74.2-122		%REC	1	10/23/2020 2:49:00 PM
Surr: Toluene-d8	100	76.2-135		%REC	1	10/23/2020 2:49:00 PM

Lab ID: 2010165-034 **Collection Date:** 10/19/2020 11:30:00 AM
Client Sample ID: ISRW-11 (1) **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC		**SW8021B**				Analyst: **BW**
Benzene	36.0	0.300		µg/L	1	10/24/2020 4:12:30 AM
Toluene	11400	250		µg/L	500	10/23/2020 8:16:30 PM
Surr: 4-Bromofluorobenzene	101	74.8-126		%REC	500	10/23/2020 8:16:30 PM

QC SUMMARY REPORT

WO#: **2010165**

Specialty Analytical

27-Oct-20

Client: RSEC Environmental Inc.

Project: EKC / EKC-1020 **TestCode:** **8260_W**

Sample ID **MB**	SampType: **MBLK**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **PBW**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489802**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	103		100.0		103	75.3	126				
Surr: 4-Bromofluorobenzene	96.4		100.0		96.4	78.1	120				
Surr: Dibromofluoromethane	105		100.0		105	74.2	122				
Surr: Toluene-d8	103		100.0		103	76.2	135				

Sample ID **2010165-031AMS**	SampType: **MS**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **MS/MSD**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489816**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	89.8	0.300	40.00	55.10	86.8	74.1	136				
Toluene	44.1	1.00	40.00	0	110	68.4	135				

Sample ID **2010165-031AMSD**	SampType: **MSD**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **MS/MSD**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489817**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	97.1	0.300	40.00	55.10	105	74.1	136	89.83	7.78	20	
Toluene	44.8	1.00	40.00	0	112	68.4	135	44.06	1.69	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010165**

Specialty Analytical

27-Oct-20

Client: RSEC Environmental Inc.

Project: EKC / EKC-1020 **TestCode:** **8260_W**

Sample ID **40 PPB ICV**	SampType: **LCS**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **LCSW**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489818**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.1	0.300	40.00	0	97.7	76.8	125				
Toluene	45.5	1.00	40.00	0	114	82	122				

Sample ID **40 PPB ICAL**	SampType: **CCV**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **CCV**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489819**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.4	0.300	40.00	0	91.1	80	120				
Toluene	39.9	1.00	40.00	0	99.8	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010165**

27-Oct-20

Specialty Analytical

Client: RSEC Environmental Inc.

Project: EKC / EKC-1020 **TestCode:** **8270LL_W**

Sample ID **BP+DPE 40PPM** SampType: **CCV** TestCode: **8270LL_W** Units: **µg/L** Prep Date: RunNo: **37799**

Client ID: **CCV** Batch ID: **16804** TestNo: **SW8270E** **SW 3510C** Analysis Date: **10/23/2020** SeqNo: **489825**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	45.6	0.500	40.00	0	114	80	120				
Diphenyl ether	43.7	0.500	40.00	0	109	80	120				

Sample ID **MB-16804** SampType: **MBLK** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **10/20/2020** RunNo: **37799**

Client ID: **PBW** Batch ID: **16804** TestNo: **SW8270E** **SW 3510C** Analysis Date: **10/23/2020** SeqNo: **489826**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	ND	0.500									
Diphenyl ether	ND	0.500									
Surr: 2,4,6-Tribromophenol	0				0	33.1	129.7				
Surr: 2-Fluorobiphenyl	59.2		100.0		59.2	33.1	126.2				
Surr: 2-Fluorophenol	0				0	13.4	127.1				
Surr: 4-Terphenyl-d14	78.9		100.0		78.9	41	140				
Surr: Nitrobenzene-d5	0				0	28.9	129.9				
Surr: Phenol-d6	0				0	10.6	128.5				

Sample ID **LCS-16804** SampType: **LCS** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **10/20/2020** RunNo: **37799**

Client ID: **LCSW** Batch ID: **16804** TestNo: **SW8270E** **SW 3510C** Analysis Date: **10/23/2020** SeqNo: **489835**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	41.9	0.500	40.00	0	105	50	130				
Diphenyl ether	30.2	0.500	40.00	0	75.5	50	130				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010165**

Specialty Analytical

27-Oct-20

Client: RSEC Environmental Inc.

Project: EKC / EKC-1020 **TestCode:** **8270LL_W**

Sample ID	**2010165-031BMS**	SampType:	**MS**	TestCode:	**8270LL_W**	Units:	**µg/L**	Prep Date:	**10/20/2020**	RunNo:	**37799**
Client ID:	**MS/MSD**	Batch ID:	**16804**	TestNo:	**SW8270E**	**SW 3510C**		Analysis Date:	**10/23/2020**	SeqNo:	**489842**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	38.5	4.82	38.57	0	99.8	30	140				
Diphenyl ether	308	4.82	38.57	277.7	78.8	30	140				

Sample ID	**2010165-031BMSD**	SampType:	**MSD**	TestCode:	**8270LL_W**	Units:	**µg/L**	Prep Date:	**10/20/2020**	RunNo:	**37799**
Client ID:	**MS/MSD**	Batch ID:	**16804**	TestNo:	**SW8270E**	**SW 3510C**		Analysis Date:	**10/23/2020**	SeqNo:	**489843**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	39.7	4.79	38.35	0	104	30	140	38.48	3.11	30	
Diphenyl ether	310	4.79	38.35	277.7	84.6	30	140	308.1	0.667	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010165**

Specialty Analytical

27-Oct-20

Client: RSEC Environmental Inc.
Project: EKC / EKC-1020 **TestCode:** **BTEXRBC_W**

Sample ID **CCV** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**
Client ID: **CCV** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/23/2020** SeqNo: **489655**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.4	0.300	50.00	0	96.8	85	115				
Toluene	48.9	0.500	50.00	0	97.8	85	115				

Sample ID **LCS-R37784** SampType: **LCS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**
Client ID: **LCSW** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/23/2020** SeqNo: **489656**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.4	0.300	50.00	0	96.8	85	115				
Toluene	48.9	0.500	50.00	0	97.8	85	115				

Sample ID **MB-R37784** SampType: **MBLK** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**
Client ID: **PBW** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/23/2020** SeqNo: **489657**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	0.500									
Surr: 4-Bromofluorobenzene	97.7		100.0		97.7	74.8	126				

Sample ID **2010165-001AMS** SampType: **MS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**
Client ID: **ISRW-1 (1)** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/23/2020** SeqNo: **489659**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010165**

27-Oct-20

Specialty Analytical

Client: RSEC Environmental Inc.

Project: EKC / EKC-1020 **TestCode:** **BTEXRBC_W**

Sample ID **2010165-001AMS** SampType: **MS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**

Client ID: **ISRW-1 (1)** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/23/2020** SeqNo: **489659**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	9380	60.0	10000	30.00	93.5	67.8	118				
Toluene	23100	100	10000	16050	70.5	74.7	117				S

Sample ID **2010165-001AMSD** SampType: **MSD** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**

Client ID: **ISRW-1 (1)** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/23/2020** SeqNo: **489660**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	9230	60.0	10000	30.00	92.0	67.8	118	9378	1.61	20	
Toluene	22800	100	10000	16050	67.4	74.7	117	23100	1.34	20	S

Sample ID **CCV** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**

Client ID: **CCV** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/23/2020** SeqNo: **489671**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	52.8	0.300	50.00	0	106	85	115				
Toluene	53.8	0.500	50.00	0	108	85	115				

Sample ID **CCV** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **37784**

Client ID: **CCV** Batch ID: **R37784** TestNo: **SW8021B** Analysis Date: **10/26/2020** SeqNo: **489873**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	53.7	0.300	50.00	0	107	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010165**

27-Oct-20

Specialty Analytical

Client: RSEC Environmental Inc.

Project: EKC / EKC-1020 **TestCode:** **BTEXRBC_W**

Sample ID **CCV**	SampType: **CCV**	TestCode: **BTEXRBC_W**	Units: **µg/L**	Prep Date:	RunNo: **37784**
Client ID: **CCV**	Batch ID: **R37784**	TestNo: **SW8021B**		Analysis Date: **10/26/2020**	SeqNo: **489873**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	56.4	0.500	50.00	0	113	85	115				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

KEY TO FLAGS

Rev. May 12, 2010

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
A4	The product appears to be aged or degraded diesel.
B	The blank exhibited a positive result great than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
G	Result may be biased high due to biogenic interferences. Clean up is recommended.
H	Sample was analyzed outside recommended holding time.
HT	At clients request, samples was analyzed outside of recommended holding time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits; post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

Chain of Custody Record

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Date: 10/19/20 | Page: 1 of: 2

Project Name: EKC

Project No: EKC-1020 PO No: EKC-1020

Collected by: R. Truex

State Collected: OR (WA) OTHER

Report To (PM): richard@rsecinc.com

PM Email: —"—

Laboratory Project No (internal): 2010165

Temperature on Receipt: 11.1°C on ice

Custody Seal: Y / N Intact / Broken

Notes:

Shipped Via: Client

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: RSEC

Address: 958 Hood View Ct.

City, State, Zip: Hood River, OR. 97031

Telephone: 541-490-4223

Invoice To: richard@rsecinc.com

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8021 benzene + toluene	Comments
1	ISRW-1	10/19/20	1030	GW	3	X	~~X~~ NOTE Some Likly
2	ISRW-2b		1035				toluene >10,000 ug/L
3	ISRW-3		1040				and Some may be ND/
4	ISRW-4		1045				<100 ug/L
5	ISRW-5		1050				Sample bottles marked,
6	ISRW-6		1055				-1, -2, -3 for collection
7	ISRW-7		1100				order each location
8	ISRW-8		1105				Please analyze
9	ISRW-9		1110				bottle "-1" use -2, -3
10	ISRW-10	↓	1115	↓	↓	↓	only if needed.

*Matrix: A=Air, AQ=Aqueous, L=Liquid, O=Other, P=Product, S=Soil, SD=Sediment, SL=Solid, W=Water, DW=Drinking Water, GW=Ground Water, SW=Storm Water, WW=Waste Water

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished: x [signature] Date/Time: 10/19/20

Relinquished: x Date/Time:

Received: x [signature] Date/Time: 10/19/2020 3:40 pm

Received: x Date/Time:

www.specialtyanalytical.com

Chain of Custody Record

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Date: 10/19/20 | Page: 2 of: 2 | Laboratory Project No (internal): 2010165

Project Name: EKC | Temperature on Receipt: 11.1 °C on ice

Client: RSEC | Project No: EKC-1020 PO No: EKC1020 | Custody Seal: Y / N

Address: 958 Hood View Ct. | Collected by: R.T. | Intact / Broken | Cooler / Bottle

City, State, Zip: Hood River, OR 97031 | State Collected: OR (WA) OTHER | Shipped Via: Client

Telephone: 541-490-4223 | Report To (PM): richo@rsecinc.com | Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

AP Email: richo@rsecinc.com | PM Email: —"—

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8260 benzene + toluene	8270 See Notes	8021 BTT	Comments
1	MS/MSD	10/19	1330	GW	7	X	X		collected @ E. Sump
2	E-Sump	10/19	1315	GW	4	X	X		8270: biphenyl and
3	W-Sump	10/19	1300	GW	4	X	X		diphenyl ether
4	ISRW-11	10/19	1130	GW	3			X	
5									
6									
7									
8									
9									
10									

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x [signature]	10/19/20	x [signature]	10/19/2020 3:40 pm
x		x	
x		x	

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

October 28, 2020

Rich Truax
RSEC Environmental Inc.
958 Hood View Ct.
Hood River, OR 97031

TEL: (541) 490-4223
FAX
RE: EKC / ECK-1020

Dear Rich Truax: Order No.: 2010195

Specialty Analytical received 17 sample(s) on 10/21/2020 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

Specialty Analytical

Date Reported: 28-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / ECK-1020

Lab Order: 2010195

Lab ID: 2010195-001 **Collection Date:** 10/20/2020 9:30:00 AM
Client Sample ID: MW-256 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	21.6	0.477		µg/L	1	10/26/2020 10:52:00 AM
Surr: 2-Fluorobiphenyl	58.0	33.1-126.2		%REC	1	10/26/2020 10:52:00 AM
Surr: 4-Terphenyl-d14	74.2	41-140		%REC	1	10/26/2020 10:52:00 AM

Lab ID: 2010195-002 **Collection Date:** 10/20/2020 10:30:00 AM
Client Sample ID: MW-245 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	97.5	4.82		µg/L	10	10/26/2020 11:22:00 AM
Surr: 2-Fluorobiphenyl	66.6	33.1-126.2		%REC	10	10/26/2020 11:22:00 AM
Surr: 4-Terphenyl-d14	86.1	41-140		%REC	10	10/26/2020 11:22:00 AM

Lab ID: 2010195-003 **Collection Date:** 10/20/2020 10:00:00 AM
Client Sample ID: KC-9 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	2660	47.8		µg/L	100	10/26/2020 11:52:00 AM
Surr: 2-Fluorobiphenyl	66.0	33.1-126.2		%REC	100	10/26/2020 11:52:00 AM
Surr: 4-Terphenyl-d14	86.0	41-140		%REC	100	10/26/2020 11:52:00 AM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	2.79	0.300		µg/L	1	10/23/2020 3:11:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 3:11:00 PM
Surr: 1,2-Dichloroethane-d4	94.8	75.3-126		%REC	1	10/23/2020 3:11:00 PM
Surr: 4-Bromofluorobenzene	98.1	78.1-120		%REC	1	10/23/2020 3:11:00 PM
Surr: Dibromofluoromethane	92.4	74.2-122		%REC	1	10/23/2020 3:11:00 PM
Surr: Toluene-d8	99.8	76.2-135		%REC	1	10/23/2020 3:11:00 PM

Specialty Analytical

Date Reported: 28-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / ECK-1020

Lab Order: 2010195

Lab ID: 2010195-004 **Collection Date:** 10/20/2020 9:00:00 AM
Client Sample ID: PDW-117 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	1570	47.8		µg/L	100	10/26/2020 12:22:00 PM
Surr: 2-Fluorobiphenyl	86.0	33.1-126.2		%REC	100	10/26/2020 12:22:00 PM
Surr: 4-Terphenyl-d14	80.0	41-140		%REC	100	10/26/2020 12:22:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	0.500	0.300		µg/L	1	10/23/2020 3:32:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 3:32:00 PM
Surr: 1,2-Dichloroethane-d4	106	75.3-126		%REC	1	10/23/2020 3:32:00 PM
Surr: 4-Bromofluorobenzene	99.2	78.1-120		%REC	1	10/23/2020 3:32:00 PM
Surr: Dibromofluoromethane	107	74.2-122		%REC	1	10/23/2020 3:32:00 PM
Surr: Toluene-d8	99.4	76.2-135		%REC	1	10/23/2020 3:32:00 PM

Lab ID: 2010195-005 **Collection Date:** 10/20/2020 9:00:00 AM
Client Sample ID: MW-230 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	312	48.1		µg/L	100	10/26/2020 12:52:00 PM
Surr: 2-Fluorobiphenyl	62.0	33.1-126.2		%REC	100	10/26/2020 12:52:00 PM
Surr: 4-Terphenyl-d14	65.0	41-140		%REC	100	10/26/2020 12:52:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	1.70	0.300		µg/L	1	10/23/2020 3:53:00 PM
Toluene	1.13	1.00		µg/L	1	10/23/2020 3:53:00 PM
Surr: 1,2-Dichloroethane-d4	105	75.3-126		%REC	1	10/23/2020 3:53:00 PM
Surr: 4-Bromofluorobenzene	98.0	78.1-120		%REC	1	10/23/2020 3:53:00 PM
Surr: Dibromofluoromethane	108	74.2-122		%REC	1	10/23/2020 3:53:00 PM
Surr: Toluene-d8	100	76.2-135		%REC	1	10/23/2020 3:53:00 PM

Specialty Analytical

Date Reported: 28-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / ECK-1020

Lab Order: 2010195

Lab ID: 2010195-006 **Collection Date:** 10/20/2020 11:30:00 AM
Client Sample ID: PZ-104 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Biphenyl	16.6	4.78		µg/L	10	10/26/2020 1:22:00 PM
Bis(2-ethylhexyl)phthalate	ND	0.478		µg/L	1	10/26/2020 7:33:00 PM
Diphenyl ether	3140	47.8		µg/L	100	10/26/2020 2:21:00 PM
Surr: 2-Fluorobiphenyl	48.1	33.1-126.2		%REC	10	10/26/2020 1:22:00 PM
Surr: 4-Terphenyl-d14	75.3	41-140		%REC	10	10/26/2020 1:22:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	1.65	0.300		µg/L	1	10/23/2020 4:14:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 4:14:00 PM
Surr: 1,2-Dichloroethane-d4	103	75.3-126		%REC	1	10/23/2020 4:14:00 PM
Surr: 4-Bromofluorobenzene	98.5	78.1-120		%REC	1	10/23/2020 4:14:00 PM
Surr: Dibromofluoromethane	107	74.2-122		%REC	1	10/23/2020 4:14:00 PM
Surr: Toluene-d8	101	76.2-135		%REC	1	10/23/2020 4:14:00 PM

Lab ID: 2010195-007 **Collection Date:** 10/20/2020 12:00:00 PM
Client Sample ID: PZ-107 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Biphenyl	261	9.60		µg/L	20	10/26/2020 1:51:00 PM
Bis(2-ethylhexyl)phthalate	ND	0.480		µg/L	1	10/26/2020 7:03:00 PM
Diphenyl ether	649	9.60		µg/L	20	10/26/2020 1:51:00 PM
Surr: 2-Fluorobiphenyl	68.4	33.1-126.2		%REC	20	10/26/2020 1:51:00 PM
Surr: 4-Terphenyl-d14	77.4	41-140		%REC	20	10/26/2020 1:51:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	ND	0.300		µg/L	1	10/23/2020 4:35:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 4:35:00 PM
Surr: 1,2-Dichloroethane-d4	98.1	75.3-126		%REC	1	10/23/2020 4:35:00 PM
Surr: 4-Bromofluorobenzene	98.4	78.1-120		%REC	1	10/23/2020 4:35:00 PM
Surr: Dibromofluoromethane	102	74.2-122		%REC	1	10/23/2020 4:35:00 PM
Surr: Toluene-d8	99.9	76.2-135		%REC	1	10/23/2020 4:35:00 PM

Specialty Analytical

Date Reported: 28-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / ECK-1020

Lab Order: 2010195

Lab ID: 2010195-008 **Collection Date:** 10/20/2020 12:30:00 PM
Client Sample ID: MW-401 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Biphenyl	22.4	9.58		µg/L	20	10/26/2020 2:52:00 PM
Bis(2-ethylhexyl)phthalate	ND	0.479		µg/L	1	10/26/2020 8:03:00 PM
Diphenyl ether	3420	47.9		µg/L	100	10/26/2020 6:32:00 PM
Surr: 2-Fluorobiphenyl	55.2	33.1-126.2		%REC	20	10/26/2020 2:52:00 PM
Surr: 4-Terphenyl-d14	64.0	41-140		%REC	20	10/26/2020 2:52:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	1.66	0.300		µg/L	1	10/23/2020 4:55:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 4:55:00 PM
Surr: 1,2-Dichloroethane-d4	104	75.3-126		%REC	1	10/23/2020 4:55:00 PM
Surr: 4-Bromofluorobenzene	99.2	78.1-120		%REC	1	10/23/2020 4:55:00 PM
Surr: Dibromofluoromethane	108	74.2-122		%REC	1	10/23/2020 4:55:00 PM
Surr: Toluene-d8	100	76.2-135		%REC	1	10/23/2020 4:55:00 PM

Lab ID: 2010195-009 **Collection Date:** 10/20/2020 8:00:00 AM
Client Sample ID: MW-132 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	1650	24.0		µg/L	50	10/26/2020 3:22:00 PM
Surr: 2-Fluorobiphenyl	61.0	33.1-126.2		%REC	50	10/26/2020 3:22:00 PM
Surr: 4-Terphenyl-d14	80.5	41-140		%REC	50	10/26/2020 3:22:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	0.770	0.300		µg/L	1	10/23/2020 5:17:00 PM
Toluene	3.22	1.00		µg/L	1	10/23/2020 5:17:00 PM
Surr: 1,2-Dichloroethane-d4	92.2	75.3-126		%REC	1	10/23/2020 5:17:00 PM
Surr: 4-Bromofluorobenzene	98.6	78.1-120		%REC	1	10/23/2020 5:17:00 PM
Surr: Dibromofluoromethane	94.1	74.2-122		%REC	1	10/23/2020 5:17:00 PM
Surr: Toluene-d8	99.3	76.2-135		%REC	1	10/23/2020 5:17:00 PM

Specialty Analytical

Date Reported: 28-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / ECK-1020

Lab Order: 2010195

Lab ID: 2010195-010 **Collection Date:** 10/20/2020 6:30:00 PM
Client Sample ID: MW-231 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	1670	24.0		µg/L	50	10/26/2020 3:53:00 PM
Surr: 2-Fluorobiphenyl	77.0	33.1-126.2		%REC	50	10/26/2020 3:53:00 PM
Surr: 4-Terphenyl-d14	76.0	41-140		%REC	50	10/26/2020 3:53:00 PM
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	0.710	0.300		µg/L	1	10/23/2020 5:38:00 PM
Toluene	2.88	1.00		µg/L	1	10/23/2020 5:38:00 PM
Surr: 1,2-Dichloroethane-d4	92.3	75.3-126		%REC	1	10/23/2020 5:38:00 PM
Surr: 4-Bromofluorobenzene	98.5	78.1-120		%REC	1	10/23/2020 5:38:00 PM
Surr: Dibromofluoromethane	93.3	74.2-122		%REC	1	10/23/2020 5:38:00 PM
Surr: Toluene-d8	99.2	76.2-135		%REC	1	10/23/2020 5:38:00 PM

Lab ID: 2010195-011 **Collection Date:** 10/21/2020 9:00:00 AM
Client Sample ID: MW-250 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	ND	0.300		µg/L	1	10/23/2020 5:59:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 5:59:00 PM
Surr: 1,2-Dichloroethane-d4	95.0	75.3-126		%REC	1	10/23/2020 5:59:00 PM
Surr: 4-Bromofluorobenzene	99.2	78.1-120		%REC	1	10/23/2020 5:59:00 PM
Surr: Dibromofluoromethane	93.5	74.2-122		%REC	1	10/23/2020 5:59:00 PM
Surr: Toluene-d8	99.9	76.2-135		%REC	1	10/23/2020 5:59:00 PM

Specialty Analytical

Date Reported: 28-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / ECK-1020

Lab Order: 2010195

Lab ID: 2010195-012 **Collection Date:** 10/21/2020 9:30:00 AM
Client Sample ID: MW-243 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	ND	0.300		µg/L	1	10/23/2020 6:21:00 PM
Toluene	ND	1.00		µg/L	1	10/23/2020 6:21:00 PM
Surr: 1,2-Dichloroethane-d4	95.2	75.3-126		%REC	1	10/23/2020 6:21:00 PM
Surr: 4-Bromofluorobenzene	98.3	78.1-120		%REC	1	10/23/2020 6:21:00 PM
Surr: Dibromofluoromethane	92.9	74.2-122		%REC	1	10/23/2020 6:21:00 PM
Surr: Toluene-d8	99.8	76.2-135		%REC	1	10/23/2020 6:21:00 PM

Lab ID: 2010195-014 **Collection Date:** 10/20/2020 10:30:00 AM
Client Sample ID: USRW-2 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL		**SW8270E**				Analyst: **CK**
Diphenyl ether	280	4.81		µg/L	10	10/26/2020 4:23:00 PM
Surr: 2-Fluorobiphenyl	59.3	33.1-126.2		%REC	10	10/26/2020 4:23:00 PM
Surr: 4-Terphenyl-d14	74.5	41-140		%REC	10	10/26/2020 4:23:00 PM

Lab ID: 2010195-015 **Collection Date:** 10/21/2020 11:00:00 AM
Client Sample ID: MW-239 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	341	30.0		µg/L	100	10/26/2020 2:08:00 PM
Toluene	17300	100		µg/L	100	10/26/2020 2:08:00 PM
Surr: 1,2-Dichloroethane-d4	89.1	75.3-126		%REC	100	10/26/2020 2:08:00 PM
Surr: 4-Bromofluorobenzene	90.0	78.1-120		%REC	100	10/26/2020 2:08:00 PM
Surr: Dibromofluoromethane	91.3	74.2-122		%REC	100	10/26/2020 2:08:00 PM
Surr: Toluene-d8	91.0	76.2-135		%REC	100	10/26/2020 2:08:00 PM

Specialty Analytical

Date Reported: 28-Oct-20

CLIENT: RSEC Environmental Inc.
Project: EKC / ECK-1020

Lab Order: 2010195

Lab ID: 2010195-016 **Collection Date:** 10/21/2020 11:30:00 AM
Client Sample ID: MW-97 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	407	30.0		µg/L	100	10/26/2020 2:41:00 PM
Toluene	17600	100		µg/L	100	10/26/2020 2:41:00 PM
Surr: 1,2-Dichloroethane-d4	90.2	75.3-126		%REC	100	10/26/2020 2:41:00 PM
Surr: 4-Bromofluorobenzene	86.3	78.1-120		%REC	100	10/26/2020 2:41:00 PM
Surr: Dibromofluoromethane	101	74.2-122		%REC	100	10/26/2020 2:41:00 PM
Surr: Toluene-d8	90.3	76.2-135		%REC	100	10/26/2020 2:41:00 PM

Lab ID: 2010195-017 **Collection Date:** 10/21/2020 12:00:00 PM
Client Sample ID: KC-14 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS		**SW8260D**				Analyst: **CK**
Benzene	ND	0.300		µg/L	1	10/26/2020 12:18:00 PM
Toluene	ND	1.00		µg/L	1	10/26/2020 12:18:00 PM
Surr: 1,2-Dichloroethane-d4	90.6	75.3-126		%REC	1	10/26/2020 12:18:00 PM
Surr: 4-Bromofluorobenzene	97.5	78.1-120		%REC	1	10/26/2020 12:18:00 PM
Surr: Dibromofluoromethane	94.1	74.2-122		%REC	1	10/26/2020 12:18:00 PM
Surr: Toluene-d8	99.6	76.2-135		%REC	1	10/26/2020 12:18:00 PM

QC SUMMARY REPORT

WO#: **2010195**

Specialty Analytical

28-Oct-20

Client: RSEC Environmental Inc.

Project: EKC / ECK-1020 **TestCode:** **8260_W**

Sample ID **MB**	SampType: **MBLK**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **PBW**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489802**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	103		100.0		103	75.3	126				
Surr: 4-Bromofluorobenzene	96.4		100.0		96.4	78.1	120				
Surr: Dibromofluoromethane	105		100.0		105	74.2	122				
Surr: Toluene-d8	103		100.0		103	76.2	135				

Sample ID **2010165-031AMS**	SampType: **MS**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **ZZZZZZ**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489816**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	89.8	0.300	40.00	55.10	86.8	74.1	136				
Toluene	44.1	1.00	40.00	0	110	68.4	135				

Sample ID **2010165-031AMSD**	SampType: **MSD**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37797**
Client ID: **ZZZZZZ**	Batch ID: **R37797**	TestNo: **SW8260D**		Analysis Date: **10/23/2020**	SeqNo: **489817**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	97.1	0.300	40.00	55.10	105	74.1	136	89.83	7.78	20	
Toluene	44.8	1.00	40.00	0	112	68.4	135	44.06	1.69	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010195**

Specialty Analytical

28-Oct-20

Client: RSEC Environmental Inc.

Project: EKC / ECK-1020 **TestCode:** **8260_W**

Sample ID	**40 PPB ICV**	SampType:	**LCS**	TestCode:	**8260_W**	Units:	**µg/L**	Prep Date:		RunNo:	**37797**	
Client ID:	**LCSW**	Batch ID:	**R37797**	TestNo:	**SW8260D**			Analysis Date:	**10/23/2020**	SeqNo:	**489818**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.1	0.300	40.00	0	97.7	76.8	125				
Toluene	45.5	1.00	40.00	0	114	82	122				

Sample ID	**40 PPB ICAL**	SampType:	**CCV**	TestCode:	**8260_W**	Units:	**µg/L**	Prep Date:		RunNo:	**37797**	
Client ID:	**CCV**	Batch ID:	**R37797**	TestNo:	**SW8260D**			Analysis Date:	**10/23/2020**	SeqNo:	**489819**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.4	0.300	40.00	0	91.1	80	120				
Toluene	39.9	1.00	40.00	0	99.8	80	120				

Sample ID	**CCV MSVWS-3041**	SampType:	**CCV**	TestCode:	**8260_W**	Units:	**µg/L**	Prep Date:		RunNo:	**37802**	
Client ID:	**CCV**	Batch ID:	**R37802**	TestNo:	**SW8260D**			Analysis Date:	**10/26/2020**	SeqNo:	**489878**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.3	0.300	40.00	0	103	80	120				
Toluene	47.6	1.00	40.00	0	119	80	120				

Sample ID	**MB**	SampType:	**MBLK**	TestCode:	**8260_W**	Units:	**µg/L**	Prep Date:		RunNo:	**37802**	
Client ID:	**PBW**	Batch ID:	**R37802**	TestNo:	**SW8260D**			Analysis Date:	**10/26/2020**	SeqNo:	**489879**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010195**

Specialty Analytical

28-Oct-20

Client: RSEC Environmental Inc.

Project: EKC / ECK-1020 **TestCode:** **8260_W**

Sample ID **MB**	SampType: **MBLK**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37802**
Client ID: **PBW**	Batch ID: **R37802**	TestNo: **SW8260D**		Analysis Date: **10/26/2020**	SeqNo: **489879**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	90.9		100.0		90.9	75.3	126				
Surr: 4-Bromofluorobenzene	96.9		100.0		96.9	78.1	120				
Surr: Dibromofluoromethane	93.7		100.0		93.7	74.2	122				
Surr: Toluene-d8	98.6		100.0		98.6	76.2	135				

Sample ID **LCS**	SampType: **LCS**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37802**
Client ID: **LCSW**	Batch ID: **R37802**	TestNo: **SW8260D**		Analysis Date: **10/26/2020**	SeqNo: **489883**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	45.0	0.300	40.00	0	112	76.8	125				
Toluene	46.7	1.00	40.00	0	117	82	122				

Sample ID **LCSD**	SampType: **LCSD**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **37802**
Client ID: **LCSS02**	Batch ID: **R37802**	TestNo: **SW8260D**		Analysis Date: **10/26/2020**	SeqNo: **489884**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.9	0.300	40.00	0	105	76.8	125	44.99	7.14	20	
Toluene	41.4	1.00	40.00	0	103	82	122	46.66	12.0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010195**

Specialty Analytical

28-Oct-20

Client: RSEC Environmental Inc.
Project: EKC / ECK-1020 **TestCode:** **8270LL_W**

Sample ID **CCV BP+DPE 20PP**	SampType: **CCV**	TestCode: **8270LL_W**	Units: **µg/L**	Prep Date:	RunNo: **37809**
Client ID: **CCV**	Batch ID: **16823**	TestNo: **SW8270E**	**SW 3510C**	Analysis Date: **10/26/2020**	SeqNo: **489994**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	20.4	0.500	20.00	0	102	80	120				
Bis(2-ethylhexyl)phthalate	18.3	0.500	20.00	0	91.3	80	120				
Diphenyl ether	20.0	0.500	20.00	0	100	80	120				

Sample ID **MB-16823**	SampType: **MBLK**	TestCode: **8270LL_W**	Units: **µg/L**	Prep Date: **10/22/2020**	RunNo: **37809**
Client ID: **PBW**	Batch ID: **16823**	TestNo: **SW8270E**	**SW 3510C**	Analysis Date: **10/26/2020**	SeqNo: **489995**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	ND	0.500									
Bis(2-ethylhexyl)phthalate	ND	0.500									
Diphenyl ether	ND	0.500									
Surr: 2-Fluorobiphenyl	47.6		100.0		47.6	33.1	126.2				
Surr: 4-Terphenyl-d14	54.6		100.0		54.6	41	140				

Sample ID **LCS-16823**	SampType: **LCS**	TestCode: **8270LL_W**	Units: **µg/L**	Prep Date: **10/22/2020**	RunNo: **37809**
Client ID: **LCSW**	Batch ID: **16823**	TestNo: **SW8270E**	**SW 3510C**	Analysis Date: **10/26/2020**	SeqNo: **490008**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	38.7	0.500	40.00	0	96.7	50	130				
Bis(2-ethylhexyl)phthalate	35.0	0.500	40.00	0	87.5	50	130				
Diphenyl ether	28.6	0.500	40.00	0	71.5	50	130				

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **2010195**

Specialty Analytical

28-Oct-20

Client: RSEC Environmental Inc.

Project: EKC / ECK-1020 **TestCode:** **8270LL_W**

Sample ID	**LCSD-16823**	SampType:	**LCSD**	TestCode:	**8270LL_W**	Units:	**µg/L**	Prep Date:	**10/22/2020**	RunNo:	**37809**
Client ID:	**LCSS02**	Batch ID:	**16823**	TestNo:	**SW8270E**	**SW 3510C**		Analysis Date:	**10/26/2020**	SeqNo:	**490009**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	38.4	0.500	40.00	0	95.9	50	130	38.66	0.779	30	
Bis(2-ethylhexyl)phthalate	32.9	0.500	40.00	0	82.3	50	130	34.99	6.10	30	
Diphenyl ether	28.4	0.500	40.00	0	70.9	50	130	28.59	0.808	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

KEY TO FLAGS

Rev. May 12, 2010

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
A4	The product appears to be aged or degraded diesel.
B	The blank exhibited a positive result great than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
G	Result may be biased high due to biogenic interferences. Clean up is recommended.
H	Sample was analyzed outside recommended holding time.
HT	At clients request, samples was analyzed outside of recommended holding time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits; post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

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Chain of Custody Record

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Date: 10/21/20 Page: 2 of: 2

Project Name: EKC

Project No: EKC-1020 PO No: EKC-1020

Collected by: RT

State Collected: OR (WA) OTHER

Report To (PM): rich@rsecinc.com

Laboratory Project No (internal): 2010195

Temperature on Receipt: 5.6 °C

Custody Seal: Y (N) Cooler w/ Ice

Intact / Broken Cooler / Bottle

Shipped Via: Client

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: RSEC

Address: 958 Hood View Ct

City, State, Zip: Hood River, OR 97031

Telephone: 541-490-4223

AP Email:

PM Email:

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8270	8260 benzene	Comments
1	MW-250	10/21/20	0900	GW	3		X	
2	MW-243		0930		3		X	
3	MW-244		1000		1	X		diphenylether (DPE)
4	USRW-2		1030		1	X		— 11 —
5	MW-239		1100		3		X	
6	MW-97		1130		3		X	
7	KC-1A		1200		3		X	
8								
9								
10								

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x	10/21/20 3.07pm	x	10/21/2020 1507
x		x	
x		x	

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Chain of Custody Record

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Date: 10/21/20 Page: 1 of: 2
Project Name: EKC
Project No: EKC-1020 PO No: EKC-1020
Collected by: RT
State Collected: OR (WA) OTHER
Report To (PM): richa@rsecinc.com
PM Email:

Laboratory Project No (internal): 2010195
Temperature on Receipt: 5.6 °C
Custody Seal: Y / (N) Coolers w/ Ice
Intact / Broken Cooler / Bottle
Shipped Via: Client
Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: RSEC
Address: 958 Hood View Ct
City, State, Zip: Hood River, OR 97031
Telephone: 541-490-4223
AP Email: richa@rsecinc.com

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8260 Bert+Tol Sat	8270 SGR	Comments
1	MW-256	10/20	0930	GW	1		X	diphenyl ether (DPO)
2	MW-245		1030		1		X	diphenyl ether (DPO)
3	KC-9		1000		4	X	X	—11—
4	PDW-117		0900		4	X	X	—11—
5	MW-230		1100		4	X	X	—11—
6	PZ-104		1130		4	X	X	biphenyl, bis(2-ethylhexyl)phthalate, diphenyl ether (DPO)
7	PZ-107		1200		4	X	X	
8	MW-401		1230		4	X	X	
9	MW-132		0800		4	X	X	Diphenyl ether (DPO)
10	MW-231		1830		4	X	X	—11—

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x	10/21/20 3:07p	x	10/21/2020 1507
x		x	
x		x	

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

January 27, 2021

Rich Truax
RSEC Environmental Inc.
958 Hood View Ct.
Hood River, OR 97031

TEL: (541) 490-4223
FAX:
RE: EKC / EKC-0121

Dear Rich Truax: Order No.: 2101132

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0121

Lab ID: 2101132-001 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-1 (1) **Collection Date:** 1/15/2021 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	68.6	0.300		µg/L	1	1/18/2021 2:13:00 PM
Toluene	51400	1000		µg/L	2000	1/26/2021 1:27:00 PM
Surr: 4-Bromofluorobenzene	90.2	74.8 - 126		%Rec	1	1/18/2021 2:13:00 PM

Lab ID: 2101132-004 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-2b (1) **Collection Date:** 1/15/2021 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	45.9	0.300		µg/L	1	1/18/2021 2:37:00 PM
Toluene	54200	1000		µg/L	2000	1/26/2021 1:50:00 PM
Surr: 4-Bromofluorobenzene	93.2	74.8 - 126		%Rec	1	1/18/2021 2:37:00 PM

Lab ID: 2101132-007 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-3 (1) **Collection Date:** 1/15/2021 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	206	75.0		µg/L	250	1/25/2021 11:33:00 PM
Toluene	204000	2500		µg/L	5000	1/26/2021 3:49:00 PM
Surr: 4-Bromofluorobenzene	99.6	74.8 - 126		%Rec	250	1/25/2021 11:33:00 PM

Lab ID: 2101132-010 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-4 (1) **Collection Date:** 1/15/2021 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	0.918	0.300		µg/L	1	1/25/2021 8:23:00 PM
Toluene	40.0	0.500		µg/L	1	1/25/2021 8:23:00 PM
Surr: 4-Bromofluorobenzene	103	74.8 - 126		%Rec	1	1/25/2021 8:23:00 PM

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike Recovery outside accepted recovery limits

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0121

Lab ID: 2101132-013 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-5 (1) **Collection Date:** 1/15/2021 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	256	150		µg/L	500	1/25/2021 8:46:00 PM
Toluene	158000	2500		µg/L	5000	1/26/2021 1:03:00 PM
Surr: 4-Bromofluorobenzene	104	74.8 - 126		%Rec	500	1/25/2021 8:46:00 PM

Lab ID: 2101132-016 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-6 (1) **Collection Date:** 1/15/2021 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	ND	3.00		µg/L	10	1/25/2021 11:09:00 PM
Toluene	3120	50.0		µg/L	100	1/26/2021 3:26:00 PM
Surr: 4-Bromofluorobenzene	99.7	74.8 - 126		%Rec	10	1/25/2021 11:09:00 PM

Lab ID: 2101132-019 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-7 (1) **Collection Date:** 1/15/2021 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	ND	0.300		µg/L	1	1/25/2021 7:59:00 PM
Toluene	0.515	0.500		µg/L	1	1/25/2021 7:59:00 PM
Surr: 4-Bromofluorobenzene	107	74.8 - 126		%Rec	1	1/25/2021 7:59:00 PM

Lab ID: 2101132-022 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-8 (1) **Collection Date:** 1/15/2021 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	81.6	0.300		µg/L	1	1/18/2021 5:12:00 PM
Toluene	43400	1000		µg/L	2000	1/26/2021 2:14:00 PM
Surr: 4-Bromofluorobenzene	92.4	74.8 - 126		%Rec	1	1/18/2021 5:12:00 PM

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike Recovery outside accepted recovery limits

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0121

Lab ID: 2101132-025 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-9 (1) **Collection Date:** 1/15/2021 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	42.0	0.300		µg/L	1	1/18/2021 5:36:00 PM
Toluene	48800	1000		µg/L	2000	1/26/2021 3:02:00 PM
Surr: 4-Bromofluorobenzene	96.4	74.8 - 126		%Rec	1	1/18/2021 5:36:00 PM

Lab ID: 2101132-028 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-10 (1) **Collection Date:** 1/15/2021 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	145	0.300		µg/L	1	1/18/2021 6:00:00 PM
Toluene	50200	1000		µg/L	2000	1/26/2021 2:38:00 PM
Surr: 4-Bromofluorobenzene	95.9	74.8 - 126		%Rec	1	1/18/2021 6:00:00 PM

Lab ID: 2101132-031 **Matrix:** GROUNDWATER
Client Sample ID: ISRW-20 (1) **Collection Date:** 1/15/2021 10:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**		Analyst: **TB**
Benzene	86.6	0.300		µg/L	1	1/18/2021 6:24:00 PM
Toluene	50600	1000		µg/L	2000	1/26/2021 4:13:00 PM
Surr: 4-Bromofluorobenzene	102	74.8 - 126		%Rec	1	1/18/2021 6:24:00 PM

Lab ID: 2101132-034 **Matrix:** GROUNDWATER
Client Sample ID: W-Sump (1) **Collection Date:** 1/15/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS				**SW8260D**		Analyst: **CK**
Benzene	15.2	0.300		µg/L	1	1/19/2021 11:24:00 AM
Toluene	2.45	1.00		µg/L	1	1/19/2021 11:24:00 AM
Surr: 1,2-Dichloroethane-d4	94.0	75.3 - 126		%Rec	1	1/19/2021 11:24:00 AM
Surr: 4-Bromofluorobenzene	100	78.1 - 120		%Rec	1	1/19/2021 11:24:00 AM
Surr: Dibromofluoromethane	94.8	74.2 - 122		%Rec	1	1/19/2021 11:24:00 AM
Surr: Toluene-d8	103	76.2 - 135		%Rec	1	1/19/2021 11:24:00 AM

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike Recovery outside accepted recovery limits

Specialty Analytical

WO#: **2101132**
Date Reported: **1/27/2021**

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0121

Lab ID: 2101132-037
Client Sample ID: E-Sump (1)

Matrix: GROUNDWATER
Collection Date: 1/15/2021 11:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS				**SW8260D**		Analyst: **CK**
Benzene	5.98	0.300		µg/L	1	1/19/2021 11:45:00 AM
Toluene	ND	1.00		µg/L	1	1/19/2021 11:45:00 AM
Surr: 1,2-Dichloroethane-d4	93.4	75.3 - 126		%Rec	1	1/19/2021 11:45:00 AM
Surr: 4-Bromofluorobenzene	98.9	78.1 - 120		%Rec	1	1/19/2021 11:45:00 AM
Surr: Dibromofluoromethane	94.1	74.2 - 122		%Rec	1	1/19/2021 11:45:00 AM
Surr: Toluene-d8	103	76.2 - 135		%Rec	1	1/19/2021 11:45:00 AM

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2101132**

1/27/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0121 **TestCode:** **8260_W**

Sample ID: **CCV MSVWS-3041** SampType: **CCV** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **38921**

Client ID: **CCV** Batch ID: **R38921** TestNo: **SW8260D** Analysis Date: **1/19/2021** SeqNo: **502915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.3	0.300	40.00	0	103	80	120				
Toluene	36.1	1.00	40.00	0	90.2	80	120				

Sample ID: **MB** SampType: **MBLK** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **38921**

Client ID: **PBW** Batch ID: **R38921** TestNo: **SW8260D** Analysis Date: **1/19/2021** SeqNo: **502916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	92.8		100.0		92.8	75.3	126				
Surr: 4-Bromofluorobenzene	98.4		100.0		98.4	78.1	120				
Surr: Dibromofluoromethane	95.4		100.0		95.4	74.2	122				
Surr: Toluene-d8	103		100.0		103	76.2	135				

Sample ID: **A2101113-001BMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **38921**

Client ID: **BatchQC** Batch ID: **R38921** TestNo: **SW8260D** Analysis Date: **1/19/2021** SeqNo: **502929**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	49.5	0.300	40.00	0	124	74.1	136				
Toluene	55.2	1.00	40.00	14.34	102	68.4	135				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2101132**

1/27/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0121 **TestCode:** **8260_W**

Sample ID: **A2101113-001BMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **38921**

Client ID: **BatchQC** Batch ID: **R38921** TestNo: **SW8260D** Analysis Date: **1/19/2021** SeqNo: **502929**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **A2101113-001BMSD** SampType: **MSD** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **38921**

Client ID: **BatchQC** Batch ID: **R38921** TestNo: **SW8260D** Analysis Date: **1/19/2021** SeqNo: **502930**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.7	0.300	40.00	0	122	74.1	136	49.47	1.55	20	
Toluene	53.8	1.00	40.00	14.34	98.7	68.4	135	55.19	2.53	20	

Sample ID: **LCS MSVWS-3041** SampType: **LCS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **38921**

Client ID: **LCSW** Batch ID: **R38921** TestNo: **SW8260D** Analysis Date: **1/19/2021** SeqNo: **502938**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.3	0.300	40.00	0	103	76.8	125				
Toluene	36.1	1.00	40.00	0	90.2	82	122				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2101132**

1/27/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0121 **TestCode:** **BTEXRBC_W**

Sample ID: **CCV-R38895** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38895**

Client ID: **CCV** Batch ID: **R38895** TestNo: **SW8021B** Analysis Date: **1/18/2021** SeqNo: **502638**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	52.3	0.300	50.00	0	105	85	115				

Sample ID: **LCS-R38895** SampType: **LCS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38895**

Client ID: **LCSW** Batch ID: **R38895** TestNo: **SW8021B** Analysis Date: **1/18/2021** SeqNo: **502639**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	52.3	0.300	50.00	0	105	85	115				

Sample ID: **MB-R38895** SampType: **MBLK** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38895**

Client ID: **PBW** Batch ID: **R38895** TestNo: **SW8021B** Analysis Date: **1/18/2021** SeqNo: **502640**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Surr: 4-Bromofluorobenzene	97.6		100.0		97.6	74.8	126				

Sample ID: **CCV-(ICV1)** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **CCV** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/25/2021** SeqNo: **503575**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2101132**

1/27/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0121 **TestCode:** **BTEXRBC_W**

Sample ID: **CCV-(ICV1)** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **CCV** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/25/2021** SeqNo: **503575**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	51.3	0.300	50.00	0	103	85	115				
Toluene	50.9	0.500	50.00	0	102	85	115				

Sample ID: **LCS-R38993** SampType: **LCS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **LCSW** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/25/2021** SeqNo: **503576**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	51.3	0.300	50.00	0	103	85	115				
Toluene	50.9	0.500	50.00	0	102	85	115				

Sample ID: **MB-R38993** SampType: **MBLK** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **PBW** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/25/2021** SeqNo: **503577**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	0.500									
Surr: 4-Bromofluorobenzene	106		100.0		106	74.8	126				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2101132**

1/27/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0121 **TestCode:** **BTEXRBC_W**

Sample ID: **2101132-031AMS** SampType: **MS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **ISRW-20 (1)** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/26/2021** SeqNo: **503589**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10200	60.0	10000	86.60	102	67.8	118				
Toluene	61200	100	10000	13170	480	74.7	117				SMC

Sample ID: **2101132-031AMSD** SampType: **MSD** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **ISRW-20 (1)** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/26/2021** SeqNo: **503590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10500	60.0	10000	86.60	105	67.8	118	10240	2.89	20	
Toluene	63600	100	10000	13170	504	74.7	117	61200	3.85	20	SMC

Sample ID: **CCV-1** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **CCV** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/26/2021** SeqNo: **503591**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	47.4	0.300	50.00	0	94.8	85	115				
Toluene	47.3	0.500	50.00	0	94.6	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2101132**

1/27/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0121 **TestCode:** **BTEXRBC_W**

Sample ID: **LCS-R38993** SampType: **LCS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **LCSW** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/26/2021** SeqNo: **503592**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	47.4	0.300	50.00	0	94.8	85	115				
Toluene	47.3	0.500	50.00	0	94.6	85	115				

Sample ID: **MB-R38993** SampType: **MBLK** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **38993**

Client ID: **PBW** Batch ID: **R38993** TestNo: **SW8021B** Analysis Date: **1/26/2021** SeqNo: **503593**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	0.500									
Surr: 4-Bromofluorobenzene	95.1		100.0		95.1	74.8	126				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 1/15/2021 | Page: 1 of: 2

Project Name: EKC

Project No: EKC-0121 PO No: EKC-0121

Collected by: R. Truex

State Collected: OR (WA) OTHER

Report To (PM): richa@rsecinc.com

PM Email: — " —

Laboratory Project No (internal): 2101132

Temperature on Receipt: 5.7 °C ice

Custody Seal: Y / N

Intact / Broken Cooler / Bottle

Shipped Via: Courier

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: RSEC Envmtl. Inc.

Address: 958 Hood View Ct.

City, State, Zip: Hood River OR. 97031

Telephone: 541-490-4223

AP Email: richa@rsecinc.com

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8021 BTEX	Comments
1	ISRW-1	1/15/21	0900	GW	3	X	*NOTE Each Sample Set of 3 bottles is Labeled (1), (2), (3) Please use bottle (1) for analysis and Save (2) + (3) for IF or AS needed
2	ISRW-2b		0910				
3	ISRW-3		0920				
4	ISRW-4		0930				
5	ISRW-5		0940				
6	ISRW-6		0950				
7	ISRW-7		1000				
8	ISRW-8		1010				
9	ISRW-9		1020				
10	ISRW-10	↓	1030	↓	↓	↓	

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x	1/15/21 / 4:10 pm	x	1/15/21 16:10
x		x	
x		x	

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 1/15/2021 Page: 2 of: 2

Project Name: EKC

Project No: EKC-0121 PO No: EKC-0121

Collected by: R. Trost

State Collected: OR (WA) OTHER

Report To (PM): Richa@rsecinc.com

PM Email:

Laboratory Project No (internal): 2101132

Temperature on Receipt: 5.7 °C on Ice

Custody Seal: Y / N

Intact / Broken Cooler / Bottle

Shipped Via: Client

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: RSEC Envmntl. Inc.

Address: 958 Hood View Ct.

City, State, Zip: Hood River, OR. 97031

Telephone: 541-490-4223

AP Email: Richa@rsecinc.com

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8021 B+T	8260 B+T	Comments
1	ISRW-20	1/15/21	1040	GW	3	X		
2		↓						
3	W-Sump		1100	GW	3		X	
4	E-Sump	↓	1130	GW	3		X	
5								
6								
7								
8								
9								
10								

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x [signature]	1/15/21 / 4:10p	x [signature] SAS 1/15	1/15/21 16:10
x		x	
x		x	

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Definition Only

WO#: **2101132**
Date: **1/27/2021**

Definitions:

KEY TO FLAGS

A: This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was qualified against gasoline calibration standards.

A1: This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was qualified against diesel calibration standards.

A2: This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was qualified against lube oil calibration standards.

A3: The results was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.

A4: The product appears to be aged or degraded.

B: The blank exhibited a positive result greater than the reporting limit for this compound.

CN: See Case Narrative.

E: Result exceeds the calibration range for this compound. The result should be considered an estimate.

F: The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.

FS: Follow-up testing is suggested.

G: Result may be biased high due to biogenic interferences. Clean up is recommended.

H: Sample was analyzed outside recommended holding time.

HT: At client's request, samples was analyzed outside of recommended holding time.

J: The results for this analyte is between the MDL and the PQL and should be considered an estimated concentration.

Specialty Analytical
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Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Definition Only

WO#: **2101132**
Date: **1/27/2021**

Definitions:

K: Diesel result is biased high due to amount of Oil contained in the sample.

L: Diesel result is biased high due to amount of Gasoline contained in the sample.

M: Oil result is biased high due to amount of Diesel contained in the sample.

N: Gasoline result is biased high due to amount of Diesel contained in the sample.

MC: Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.

MI: Result is outside control limits due to matrix interference.

NH: Sample matrix is non-homogeneous

MSA: Value determined by Method of Standard Addition.

O: Laboratory Control Standard (LCS) exceeded laboratory control limits but meets CCV criteria. Data meets EPA requirements.

Q: Detection levels elevated due to sample matrix.

R: RPD control limits were exceeded

RF: Duplicate failed due to result being at or near the method-reporting limit.

RP: Matrix spike values exceed established QC limits; post digestion spike is in control.

S: Recovery is outside control limits.

SC: CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.

SL: LCS exceeded recovery control limits, but associated MS/MSD passing. Data meets EPA requirements.

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, OR 97015
TEL: (503) 607-1331
Website: www.specialtyanalytical.com

April 20, 2021

Rich Truax
RSEC Environmental Inc.
958 Hood View Ct.
Hood River, OR 97031
TEL: (541) 490-4223
FAX:

RE: EKC / EKC-0421 Order No.: 2104058

Dear Rich Truax:

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104058-001 **Matrix:** GROUNDWATER
Client Sample ID ISRW-1 **Collection Date:** 4/8/2021 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	23.8	6.00		µg/L	20	4/15/2021 8:09:17 PM
Toluene	13600	100		µg/L	200	4/14/2021 4:58:00 PM
Surr: 4-Bromofluorobenzene	106	74.8 - 126		%Rec	20	4/15/2021 8:09:17 PM

Lab ID: 2104058-002 **Matrix:** GROUNDWATER
Client Sample ID ISRW-2b **Collection Date:** 4/8/2021 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	57.6	6.00		µg/L	20	4/15/2021 6:34:17 PM
Toluene	20200	250		µg/L	500	4/14/2021 6:34:00 PM
Surr: 4-Bromofluorobenzene	107	74.8 - 126		%Rec	20	4/15/2021 6:34:17 PM

Lab ID: 2104058-003 **Matrix:** GROUNDWATER
Client Sample ID ISRW-3 **Collection Date:** 4/8/2021 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	92.5	15.0		µg/L	50	4/15/2021 7:22:17 PM
Toluene	61400	500		µg/L	1000	4/14/2021 6:57:00 PM
Surr: 4-Bromofluorobenzene	107	74.8 - 126		%Rec	50	4/15/2021 7:22:17 PM

Lab ID: 2104058-004 **Matrix:** GROUNDWATER
Client Sample ID ISRW-4 **Collection Date:** 4/8/2021 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	6.76	0.600		µg/L	2	4/15/2021 6:10:17 PM
Toluene	296	1.00		µg/L	2	4/15/2021 6:10:17 PM
Surr: 4-Bromofluorobenzene	105	74.8 - 126		%Rec	2	4/15/2021 6:10:17 PM

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104058-005 **Matrix:** GROUNDWATER
Client Sample ID ISRW-5 **Collection Date:** 4/8/2021 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	25.4	6.00		µg/L	20	4/15/2021 9:44:00 PM
Toluene	46400	500		µg/L	1000	4/14/2021 7:45:00 PM
Surr: 4-Bromofluorobenzene	105	74.8 - 126		%Rec	20	4/15/2021 9:44:00 PM

Lab ID: 2104058-006 **Matrix:** GROUNDWATER
Client Sample ID ISRW-6 **Collection Date:** 4/8/2021 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	3.94	1.50		µg/L	5	4/15/2021 6:58:17 PM
Toluene	2990	25.0		µg/L	50	4/14/2021 8:09:00 PM
Surr: 4-Bromofluorobenzene	106	74.8 - 126		%Rec	5	4/15/2021 6:58:17 PM

Lab ID: 2104058-007 **Matrix:** GROUNDWATER
Client Sample ID ISRW-7 **Collection Date:** 4/8/2021 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	ND	0.300		µg/L	1	4/15/2021 5:46:17 PM
Toluene	ND	0.500		µg/L	1	4/15/2021 5:46:17 PM
Surr: 4-Bromofluorobenzene	106	74.8 - 126		%Rec	1	4/15/2021 5:46:17 PM

Lab ID: 2104058-008 **Matrix:** GROUNDWATER
Client Sample ID ISRW-8 **Collection Date:** 4/8/2021 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	64.0	6.00		µg/L	20	4/15/2021 9:21:00 PM
Toluene	45800	250		µg/L	500	4/14/2021 8:57:00 PM
Surr: 4-Bromofluorobenzene	106	74.8 - 126		%Rec	20	4/15/2021 9:21:00 PM

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104058-009 **Matrix:** GROUNDWATER
Client Sample ID ISRW-9 **Collection Date:** 4/8/2021 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	60.8	6.00		µg/L	20	4/15/2021 8:33:17 PM
Toluene	40900	250		µg/L	500	4/14/2021 9:20:00 PM
Surr: 4-Bromofluorobenzene	106	74.8 - 126		%Rec	20	4/15/2021 8:33:17 PM

Lab ID: 2104058-010 **Matrix:** GROUNDWATER
Client Sample ID ISRW-10 **Collection Date:** 4/8/2021 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	53.8	3.00		µg/L	10	4/15/2021 8:57:17 PM
Toluene	20600	250		µg/L	500	4/14/2021 9:44:00 PM
Surr: 4-Bromofluorobenzene	106	74.8 - 126		%Rec	10	4/15/2021 8:57:17 PM

Lab ID: 2104058-011 **Matrix:** GROUNDWATER
Client Sample ID ISRW-13 **Collection Date:** 4/8/2021 10:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
BTEX - RBC				**SW8021B**	**SW 5030B**	Analyst: **TB**
Benzene	106	15.0		µg/L	50	4/15/2021 7:45:17 PM
Toluene	72500	250		µg/L	500	4/14/2021 10:08:00 PM
Surr: 4-Bromofluorobenzene	107	74.8 - 126		%Rec	50	4/15/2021 7:45:17 PM

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104058-012 **Matrix:** GROUNDWATER
Client Sample ID W-Sump **Collection Date:** 4/8/2021 11:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Biphenyl	8.82	0.477		µg/L	1	4/15/2021 5:20:00 PM
Diphenyl ether	690	19.1		µg/L	40	4/16/2021 12:02:00 AM
Surr: 2,4,6-Tribromophenol	0	33.1 - 129.7		%Rec	1	4/15/2021 5:20:00 PM
Surr: 2-Fluorobiphenyl	59.4	33.1 - 126.2		%Rec	1	4/15/2021 5:20:00 PM
Surr: 2-Fluorophenol	0	13.4 - 127.1		%Rec	1	4/15/2021 5:20:00 PM
Surr: 4-Terphenyl-d14	127	41 - 140		%Rec	1	4/15/2021 5:20:00 PM
Surr: Nitrobenzene-d5	71.0	28.9 - 129.9		%Rec	1	4/15/2021 5:20:00 PM
Surr: Phenol-d6	0	10.6 - 128.5		%Rec	1	4/15/2021 5:20:00 PM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	4.51	0.300		µg/L	1	4/8/2021 8:11:00 PM
Toluene	1.86	1.00		µg/L	1	4/8/2021 8:11:00 PM
Surr: 1,2-Dichloroethane-d4	95.6	75.3 - 126		%Rec	1	4/8/2021 8:11:00 PM
Surr: 4-Bromofluorobenzene	97.2	78.1 - 120		%Rec	1	4/8/2021 8:11:00 PM
Surr: Dibromofluoromethane	95.9	74.2 - 122		%Rec	1	4/8/2021 8:11:00 PM
Surr: Toluene-d8	102	76.2 - 135		%Rec	1	4/8/2021 8:11:00 PM

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104058-013 **Matrix:** GROUNDWATER
Client Sample ID E-Sump + ms/msd **Collection Date:** 4/8/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Biphenyl	ND	0.479		µg/L	1	4/15/2021 7:31:00 PM
Diphenyl ether	117	1.92		µg/L	4	4/16/2021 12:17:00 AM
Surr: 2,4,6-Tribromophenol	0	33.1 - 129.7		%Rec	1	4/15/2021 7:31:00 PM
Surr: 2-Fluorobiphenyl	62.3	33.1 - 126.2		%Rec	1	4/15/2021 7:31:00 PM
Surr: 2-Fluorophenol	0	13.4 - 127.1		%Rec	1	4/15/2021 7:31:00 PM
Surr: 4-Terphenyl-d14	132	41 - 140		%Rec	1	4/15/2021 7:31:00 PM
Surr: Nitrobenzene-d5	95.4	28.9 - 129.9		%Rec	1	4/15/2021 7:31:00 PM
Surr: Phenol-d6	0	10.6 - 128.5		%Rec	1	4/15/2021 7:31:00 PM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	15.5	0.300		µg/L	1	4/8/2021 8:34:00 PM
Toluene	ND	1.00		µg/L	1	4/8/2021 8:34:00 PM
Surr: 1,2-Dichloroethane-d4	97.9	75.3 - 126		%Rec	1	4/8/2021 8:34:00 PM
Surr: 4-Bromofluorobenzene	97.6	78.1 - 120		%Rec	1	4/8/2021 8:34:00 PM
Surr: Dibromofluoromethane	96.5	74.2 - 122		%Rec	1	4/8/2021 8:34:00 PM
Surr: Toluene-d8	101	76.2 - 135		%Rec	1	4/8/2021 8:34:00 PM

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode:** **8260_W**

Sample ID: **MB** SampType: **MBLK** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40005**

Client ID: **PBW** Batch ID: **17727** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/8/2021** SeqNo: **514956**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	98.2		100.0		98.2	75.3	126				
Surr: 4-Bromofluorobenzene	97.8		100.0		97.8	78.1	120				
Surr: Dibromofluoromethane	96.2		100.0		96.2	74.2	122				
Surr: Toluene-d8	103		100.0		103	76.2	135				

Sample ID: **2104058-013AMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: **4/14/2021** RunNo: **40005**

Client ID: **E-Sump + ms/msd** Batch ID: **17727** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/8/2021** SeqNo: **514962**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	54.9	0.300	40.00	15.53	98.5	74.1	136				
Toluene	46.4	1.00	40.00	0	116	68.4	135				

Sample ID: **2104058-013AMSD** SampType: **MSD** TestCode: **8260_W** Units: **µg/L** Prep Date: **4/14/2021** RunNo: **40005**

Client ID: **E-Sump + ms/msd** Batch ID: **17727** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/8/2021** SeqNo: **514963**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	52.7	0.300	40.00	15.53	92.8	74.1	136	54.92	4.18	20	
Toluene	46.3	1.00	40.00	0	116	68.4	135	46.38	0.173	20	

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**
4/20/2021

Client: RSEC Environmental Inc.
Project: EKC / EKC-0421 **TestCode:** **8260_W**

Sample ID: **2104058-013AMSD**	SampType: **MSD**	TestCode: **8260_W**	Units: **µg/L**	Prep Date: **4/14/2021**	RunNo: **40005**
Client ID: **E-Sump + ms/msd**	Batch ID: **17727**	TestNo: **SW8260D**	**SW 5030B**	Analysis Date: **4/8/2021**	SeqNo: **514963**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **CCV MSVWS-3041**	SampType: **CCV**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **40005**
Client ID: **CCV**	Batch ID: **17727**	TestNo: **SW8260D**	**SW 5030B**	Analysis Date: **4/8/2021**	SeqNo: **514964**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.3	0.300	40.00	0	93.4	80	120				
Toluene	35.1	1.00	40.00	0	87.6	80	120				

Sample ID: **LCS MSVWS-3041**	SampType: **LCS**	TestCode: **8260_W**	Units: **µg/L**	Prep Date:	RunNo: **40005**
Client ID: **LCSW**	Batch ID: **17727**	TestNo: **SW8260D**	**SW 5030B**	Analysis Date: **4/8/2021**	SeqNo: **514965**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.3	0.300	40.00	0	93.4	76.8	125				
Toluene	35.1	1.00	40.00	0	87.6	82	122				

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode:** **8270LL_W**

Sample ID: **CCV DIPE+BP 20P** SampType: **CCV** TestCode: **8270LL_W** Units: **µg/L** Prep Date: RunNo: **40067**

Client ID: **CCV** Batch ID: **17702** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/15/2021** SeqNo: **515602**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	17.2	0.500	20.00	0	86.2	80	120				
Diphenyl ether	16.5	0.500	20.00	0	82.6	80	120				

Sample ID: **MB-17702** SampType: **MBLK** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/12/2021** RunNo: **40067**

Client ID: **PBW** Batch ID: **17702** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/15/2021** SeqNo: **515603**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	ND	0.500									
Diphenyl ether	ND	0.500									
Surr: 2,4,6-Tribromophenol	0				0	33.1	129.7				
Surr: 2-Fluorobiphenyl	75.1		100.0		75.1	33.1	126.2				
Surr: 2-Fluorophenol	0				0	13.4	127.1				
Surr: 4-Terphenyl-d14	88.4		100.0		88.4	41	140				
Surr: Nitrobenzene-d5	83.5		100.0		83.5	28.9	129.9				
Surr: Phenol-d6	0				0	10.6	128.5				

Sample ID: **2104058-013BMS** SampType: **MS** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/12/2021** RunNo: **40067**

Client ID: **E-Sump + ms/msd** Batch ID: **17702** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/15/2021** SeqNo: **515606**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8270LL_W**

Sample ID: **2104058-013BMS** SampType: **MS** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/12/2021** RunNo: **40067**

Client ID: **E-Sump + ms/msd** Batch ID: **17702** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/15/2021** SeqNo: **515606**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	24.5	0.480	38.39	0	63.8	30	140				
Diphenyl ether	128	0.480	38.39	103.5	64.0	30	140				

Sample ID: **2104058-013BMSD** SampType: **MSD** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/12/2021** RunNo: **40067**

Client ID: **E-Sump + ms/msd** Batch ID: **17702** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/15/2021** SeqNo: **515607**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	23.2	0.476	38.10	0	60.9	30	140	24.50	5.45	30	
Diphenyl ether	126	0.476	38.10	103.5	58.4	30	140	128.1	1.83	30	

Sample ID: **LCS-17702** SampType: **LCS** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/12/2021** RunNo: **40067**

Client ID: **LCSW** Batch ID: **17702** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/15/2021** SeqNo: **515608**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	29.9	0.500	40.00	0	74.8	50	130				
Diphenyl ether	29.7	0.500	40.00	0	74.2	50	130				

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode:** **8270LL_W**

Sample ID: **LCSD-17702** SampType: **LCSD** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/12/2021** RunNo: **40067**

Client ID: **LCSS02** Batch ID: **17702** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/15/2021** SeqNo: **515609**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	29.5	0.500	40.00	0	73.8	50	130	29.90	1.31	30	
Diphenyl ether	31.2	0.500	40.00	0	78.0	50	130	29.70	4.89	30	

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode:** **BTEXRBC_W**

Sample ID: **CCV-R40035** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **CCV** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515237**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	50.3	0.300	50.00	0	101	85	115				
Toluene	52.5	0.500	50.00	0	105	85	115				

Sample ID: **MB-17726** SampType: **MBLK** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **PBW** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	0.500									
Surr: 4-Bromofluorobenzene	105		100.0		105	74.8	126				

Sample ID: **2104058-001AMS** SampType: **MS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **ISRW-1** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515241**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4340	60.0	5000	14.76	86.5	67.8	118				
Toluene	19200	100	5000	13640	112	74.7	117				

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode:** **BTEXRBC_W**

Sample ID: **2104058-001AMSD** SampType: **MSD** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **ISRW-1** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515242**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4220	60.0	5000	14.76	84.1	67.8	118	4340	2.80	20	
Toluene	18800	100	5000	13640	103	74.7	117	19220	2.32	20	

Sample ID: **LCS-17726** SampType: **LCS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **LCSW** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515253**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	50.3	0.300	50.00	0	101	85	115				
Toluene	52.5	0.500	50.00	0	105	85	115				

Sample ID: **CCV-R40035** SampType: **CCV** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **CCV** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/15/2021** SeqNo: **515254**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.3	0.300	50.00	0	96.6	85	115				
Toluene	50.1	0.500	50.00	0	100	85	115				

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode:** **BTEXRBC_W**

Sample ID: **LCSD-17726** SampType: **LCSD** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **LCSS02** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/15/2021** SeqNo: **515255**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.3	0.300	50.00	0	96.6	85	115	50.30	4.06	20	
Toluene	50.1	0.500	50.00	0	100	85	115	52.50	4.68	20	

Sample ID: **CCB-R40035** SampType: **MBLK** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **PBW** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/15/2021** SeqNo: **515256**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	0.500									
Surr: 4-Bromofluorobenzene	107		100.0		107	74.8	126				

Sample ID: **2104058-005AMS** SampType: **MS** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **ISRW-5** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/15/2021** SeqNo: **515268**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	398	6.00	500.0	25.40	74.5	67.8	118				
Toluene	35200	10.0	500.0	41400	-1240	74.7	117				SMC

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104058**

4/20/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode:** **BTEXRBC_W**

Sample ID: **2104058-005AMSD** SampType: **MSD** TestCode: **BTEXRBC_W** Units: **µg/L** Prep Date: RunNo: **40035**

Client ID: **ISRW-5** Batch ID: **17726** TestNo: **SW8021B** **SW 5030B** Analysis Date: **4/15/2021** SeqNo: **515269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	412	6.00	500.0	25.40	77.3	67.8	118	398.0	3.46	20	
Toluene	36600	10.0	500.0	41400	-960	74.7	117	35200	3.90	20	SMC

Qualifiers: H Holding times for preparation or analysis exceeded S Spike Recovery outside accepted recovery limits

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Sample Receipt Checklist

Client Name RSEC Work Order Number 2104058

RcptNo: 1 Date and Time Received 4/8/2021 3:00:00 PM Received by: Julie Clay

Completed by Reviewed by:

Completed Date: 4/8/2021 3:41:30 PM Reviewed Date: 4/9/2021 8:33:49 AM

Carrier name: SA

Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐	Not Present	☐
Are matrices correctly identified on Chain of custody?	Yes ☑	No ☐		
Is it clear what analyses were requested?	Yes ☑	No ☐		
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present	☑
Samples in proper container/bottle?	Yes ☑	No ☐		
Were correct preservatives used and noted?	Yes ☑	No ☐	NA	☐
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
Were container lables complete (ID, Pres, Date)?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Was an attempt made to cool the samples?	Yes ☑	No ☐	NA	☐
All samples received at a temp. of > 0° C to 6.0° C?	Yes ☑	No ☐	NA	☐
Response when temperature is outside of range:				
Preservative added to bottles:				
Sample Temp. taken and recorded upon receipt?	Yes ☑	No ☐	To	2.8 ºC
Water - Were bubbles absent in VOC vials?	Yes ☑	No ☐	No Vials	☐
Water - Was there Chlorine Present?	Yes ☐	No ☐	NA	☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA	☐
Are Samples considered acceptable?	Yes ☑	No ☐		
Custody Seals present?	Yes ☑	No ☐		
Traffic Report or Packing Lists present?	Yes ☐	No ☑		
Airbill or Sticker?	Air Bill ☐	Sticker ☐	Not Present	☑
Airbill No:				
Sample Tags Present?	Yes ☐	No ☑		
Sample Tags Listed on COC?	Yes ☐	No ☑		
Tag Numbers:				
Sample Condition?	Intact ☑	Broken ☐	Leaking	☐

Case Number: SDG: SAS:

Adjusted? _____ Checked by

Any No and/or NA (not applicable) response must be detailed in the comments section be

Specialty Analytical
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Sample Receipt Checklist

Client Contacted? ☐ Yes ☑ No ☐ NA Person Contacted: Comments:

Contact Mode: ☐ Phone: ☐ Fax: ☐ Email: ☐ In Person:

Client Instructions:

Date Contacted: Contacted By:

Regarding:

CorrectiveAction:

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 4/8/21 Page: 1 of: 2
Project Name: EKC
Project No: EKC-0421 PO No: EKC-0421
Collected by: RT
State Collected: OR (WA) OTHER
Report To (PM): richards ecinc.com
PM Email:

Laboratory Project No (internal): 2104058
Temperature on Receipt: 1.8 °C ice
Custody Seal: (Y) / N
(Intact) / Broken (Cooler) / Bottle
Shipped Via: GH
Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 60 days)

Client: RSEC
Address: 958 Hood View Ct.
City, State, Zip: Hood River, OR. 97031
Telephone: 541-490-4223
AP Email:

Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8021 benzene + toluene	Comments
1 ISRW-1	4/8	0900	GW	3	X	Some concentrations
2 ISRW-2b		0910				will be elevated,
3 ISRW-3		0920				
4 ISRW-4		0930				#7 + #6 however
5 ISRW-5		0940				likely low or even ND
6 ISRW-6		0950				
7 ISRW-7		~~1000~~ 1000				
8 ISRW-8		1010				
9 ISRW-9		1020				
10 ISRW-10		1030				

*Matrix: A = Air, AQ = Aqueous, L = Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x	4/8/21 1250	x	4/8/21 1308
x	4-8-21 1500 Left coolers at EKC	x	4/9/21 1500
x	Date/Time First Grab for Course	x	Date/Time

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 4/8/21 Page: 2 of: 2
Project Name: EKC
Project No: EKC-0421 PO No: EKC-0421
Collected by: RT
State Collected: OR (WA) OTHER
Report To (PM): richard@rsecinc.com
PM Email: — " —

Laboratory Project No (internal): 2104058
Temperature on Receipt: 2.5 °C ice
Custody Seal: (Y) / N
(Intact) / Broken (Cooler) / Bottle
Shipped Via: GM
Sample Disposal: ☐ Return to client ☑ Disposal by lab (after 60 days)

Client: RSEC
Address: 958 Hood View ct.
City, State, Zip: Hood River, OR. 97031
Telephone: 541-490-4223
AP Email: →

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8021	8260	8270										Comments
1	ISRW-13	4/8	1040	GW	3	x												8021 benzene + toluene
2	W-Sump	↓	1130	↓	4		x	x										8260 benzene + toluene 8270: bi-phenyl + di-phenyl oxide (DPO)
3	E-Sump + MS/MSP	↓	1100	↓	7		x	x										— " —
4																		
5																		
6																		
7																		
8																		
9																		
10																		

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x [signature]	4/8/21 1250	x [signature]	4/8/21 1303
x [signature]	4-8-21 1500	x [signature]	4/8/21 1500
x	Date/Time	x	Date/Time

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Definition Only

WO#: **2104058**
Date: **4/20/2021**

Definitions:

KEY TO FLAGS

A: This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was qualified against gasoline calibration standards.

A1: This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was qualified against diesel calibration standards.

A2: This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was qualified against lube oil calibration standards.

A3: The results was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.

A4: The product appears to be aged or degraded.

B: The blank exhibited a positive result greater than the reporting limit for this compound.

CN: See Case Narrative.

E: Result exceeds the calibration range for this compound. The result should be considered an estimate.

F: The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.

FS: Follow-up testing is suggested.

G: Result may be biased high due to biogenic interferences. Clean up is recommended.

H: Sample was analyzed outside recommended holding time.

HT: At client's request, samples was analyzed outside of recommended holding time.

HP: Sample was analyzed outside recommended holding time due to VOA having pH >2.

J: The results for this analyte is between the MDL and the PQL and should be considered an

Definitions:

estimated concentration.

K: Diesel result is biased high due to amount of Oil contained in the sample.

L: Diesel result is biased high due to amount of Gasoline contained in the sample.

M: Oil result is biased high due to amount of Diesel contained in the sample.

N: Gasoline result is biased high due to amount of Diesel contained in the sample.

MC: Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.

MI: Result is outside control limits due to matrix interference.

NH: Sample matrix is non-homogeneous

MSA: Value determined by Method of Standard Addition.

O: Laboratory Control Standard (LCS) exceeded laboratory control limits but meets CCV criteria. Data meets EPA requirements.

Q: Detection levels elevated due to sample matrix.

R: RPD control limits were exceeded

RF: Duplicate failed due to result being at or near the method-reporting limit.

RP: Matrix spike values exceed established QC limits; post digestion spike is in control.

S: Recovery is outside control limits.

SC: CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.

SL: LCS exceeded recovery control limits, but associated MS/MSD passing. Data meets EPA requirements.

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, OR 97015
TEL: (503) 607-1331
Website: www.specialtyanalytical.com

April 21, 2021

Rich Truax
RSEC Environmental Inc.
958 Hood View Ct.
Hood River, OR 97031
TEL: (541) 490-4223
FAX:

RE: EKC / EKC-0421 Order No.: 2104106

Dear Rich Truax:

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104106-001 **Matrix:** GROUNDWATER
Client Sample ID PDW-117 **Collection Date:** 4/12/2021 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	1070	47.6		µg/L	100	4/20/2021 10:56:00 AM
Surr: 2-Fluorobiphenyl	35.0	22.5 - 126.2		%Rec	100	4/20/2021 10:56:00 AM
Surr: 4-Terphenyl-d14	119	41 - 140		%Rec	100	4/20/2021 10:56:00 AM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	ND	0.300		µg/L	1	4/14/2021 9:36:00 PM
Toluene	ND	1.00		µg/L	1	4/14/2021 9:36:00 PM
Surr: 1,2-Dichloroethane-d4	94.8	75.3 - 126		%Rec	1	4/14/2021 9:36:00 PM
Surr: 4-Bromofluorobenzene	99.4	78.1 - 120		%Rec	1	4/14/2021 9:36:00 PM
Surr: Dibromofluoromethane	91.2	74.2 - 122		%Rec	1	4/14/2021 9:36:00 PM
Surr: Toluene-d8	96.7	76.2 - 135		%Rec	1	4/14/2021 9:36:00 PM

Lab ID: 2104106-002 **Matrix:** GROUNDWATER
Client Sample ID MW-256 **Collection Date:** 4/12/2021 11:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	8.64	0.477		µg/L	1	4/19/2021 5:32:00 PM
Surr: 2-Fluorobiphenyl	89.2	33.1 - 126.2		%Rec	1	4/19/2021 5:32:00 PM
Surr: 4-Terphenyl-d14	129	41 - 140		%Rec	1	4/19/2021 5:32:00 PM

Qualifiers:
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104106-003 **Matrix:** GROUNDWATER
Client Sample ID KC-9 **Collection Date:** 4/12/2021 12:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	2870	47.8		µg/L	100	4/20/2021 11:25:00 AM
Surr: 2-Fluorobiphenyl	29.0	22.5 - 126.2		%Rec	100	4/20/2021 11:25:00 AM
Surr: 4-Terphenyl-d14	56.0	41 - 140		%Rec	100	4/20/2021 11:25:00 AM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	2.37	0.300		µg/L	1	4/14/2021 9:59:00 PM
Toluene	ND	1.00		µg/L	1	4/14/2021 9:59:00 PM
Surr: 1,2-Dichloroethane-d4	96.1	75.3 - 126		%Rec	1	4/14/2021 9:59:00 PM
Surr: 4-Bromofluorobenzene	101	78.1 - 120		%Rec	1	4/14/2021 9:59:00 PM
Surr: Dibromofluoromethane	104	74.2 - 122		%Rec	1	4/14/2021 9:59:00 PM
Surr: Toluene-d8	96.9	76.2 - 135		%Rec	1	4/14/2021 9:59:00 PM

Lab ID: 2104106-004 **Matrix:** GROUNDWATER
Client Sample ID MW-245 **Collection Date:** 4/12/2021 2:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	105	1.93		µg/L	4	4/20/2021 11:45:00 AM
Surr: 2-Fluorobiphenyl	56.3	33.1 - 126.2		%Rec	4	4/20/2021 11:45:00 AM
Surr: 4-Terphenyl-d14	126	41 - 140		%Rec	4	4/20/2021 11:45:00 AM

Qualifiers:
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104106-005 **Matrix:** GROUNDWATER
Client Sample ID PZ-104 **Collection Date:** 4/12/2021 3:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Biphenyl	86.1	0.478		µg/L	1	4/19/2021 7:04:00 PM
Bis(2-ethylhexyl)phthalate	ND	0.478		µg/L	1	4/19/2021 7:04:00 PM
Diphenyl ether	4530	47.8		µg/L	100	4/20/2021 12:14:00 PM
Surr: 2-Fluorobiphenyl	71.7	33.1 - 126.2		%Rec	1	4/19/2021 7:04:00 PM
Surr: 4-Terphenyl-d14	73.1	41 - 140		%Rec	1	4/19/2021 7:04:00 PM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	5.67	0.300		µg/L	1	4/14/2021 10:21:00 PM
Toluene	ND	1.00		µg/L	1	4/14/2021 10:21:00 PM
Surr: 1,2-Dichloroethane-d4	111	75.3 - 126		%Rec	1	4/14/2021 10:21:00 PM
Surr: 4-Bromofluorobenzene	100	78.1 - 120		%Rec	1	4/14/2021 10:21:00 PM
Surr: Dibromofluoromethane	111	74.2 - 122		%Rec	1	4/14/2021 10:21:00 PM
Surr: Toluene-d8	97.6	76.2 - 135		%Rec	1	4/14/2021 10:21:00 PM

Lab ID: 2104106-006 **Matrix:** GROUNDWATER
Client Sample ID MW-230 **Collection Date:** 4/12/2021 4:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	373	4.80		µg/L	10	4/20/2021 12:33:00 PM
Surr: 2-Fluorobiphenyl	57.8	33.1 - 126.2		%Rec	10	4/20/2021 12:33:00 PM
Surr: 4-Terphenyl-d14	135	41 - 140		%Rec	10	4/20/2021 12:33:00 PM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	1.18	0.300		µg/L	1	4/14/2021 10:44:00 PM
Toluene	1.82	1.00		µg/L	1	4/14/2021 10:44:00 PM
Surr: 1,2-Dichloroethane-d4	111	75.3 - 126		%Rec	1	4/14/2021 10:44:00 PM
Surr: 4-Bromofluorobenzene	99.4	78.1 - 120		%Rec	1	4/14/2021 10:44:00 PM
Surr: Dibromofluoromethane	113	74.2 - 122		%Rec	1	4/14/2021 10:44:00 PM
Surr: Toluene-d8	97.9	76.2 - 135		%Rec	1	4/14/2021 10:44:00 PM

Qualifiers:
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104106-007 **Matrix:** GROUNDWATER
Client Sample ID MW-132 **Collection Date:** 4/13/2021 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	52.9	0.480		µg/L	1	4/20/2021 10:20:00 AM
Surr: 2-Fluorobiphenyl	63.0	33.1 - 126.2		%Rec	1	4/20/2021 10:20:00 AM
Surr: 4-Terphenyl-d14		-		%Rec	1	4/20/2021 10:20:00 AM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	ND	0.300		µg/L	1	4/14/2021 11:06:00 PM
Toluene	ND	1.00		µg/L	1	4/14/2021 11:06:00 PM
Surr: 1,2-Dichloroethane-d4	109	75.3 - 126		%Rec	1	4/14/2021 11:06:00 PM
Surr: 4-Bromofluorobenzene	97.6	78.1 - 120		%Rec	1	4/14/2021 11:06:00 PM
Surr: Dibromofluoromethane	111	74.2 - 122		%Rec	1	4/14/2021 11:06:00 PM
Surr: Toluene-d8	97.6	76.2 - 135		%Rec	1	4/14/2021 11:06:00 PM

Lab ID: 2104106-008 **Matrix:** GROUNDWATER
Client Sample ID MW-231 **Collection Date:** 4/13/2021 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	56.1	0.477		µg/L	1	4/20/2021 10:37:00 AM
Surr: 2-Fluorobiphenyl	71.8	33.1 - 126.2		%Rec	1	4/20/2021 10:37:00 AM
Surr: 4-Terphenyl-d14	99.1	41 - 140		%Rec	1	4/20/2021 10:37:00 AM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	ND	0.300		µg/L	1	4/14/2021 11:28:00 PM
Toluene	ND	1.00		µg/L	1	4/14/2021 11:28:00 PM
Surr: 1,2-Dichloroethane-d4	91.0	75.3 - 126		%Rec	1	4/14/2021 11:28:00 PM
Surr: 4-Bromofluorobenzene	98.2	78.1 - 120		%Rec	1	4/14/2021 11:28:00 PM
Surr: Dibromofluoromethane	92.3	74.2 - 122		%Rec	1	4/14/2021 11:28:00 PM
Surr: Toluene-d8	98.2	76.2 - 135		%Rec	1	4/14/2021 11:28:00 PM

Qualifiers:
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104106-009 **Matrix:** GROUNDWATER
Client Sample ID MW-250 **Collection Date:** 4/13/2021 12:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	ND	0.300		µg/L	1	4/14/2021 11:51:00 PM
Toluene	ND	1.00		µg/L	1	4/14/2021 11:51:00 PM
Surr: 1,2-Dichloroethane-d4	92.6	75.3 - 126		%Rec	1	4/14/2021 11:51:00 PM
Surr: 4-Bromofluorobenzene	99.0	78.1 - 120		%Rec	1	4/14/2021 11:51:00 PM
Surr: Dibromofluoromethane	91.5	74.2 - 122		%Rec	1	4/14/2021 11:51:00 PM
Surr: Toluene-d8	98.6	76.2 - 135		%Rec	1	4/14/2021 11:51:00 PM

Lab ID: 2104106-010 **Matrix:** GROUNDWATER
Client Sample ID MW-239 **Collection Date:** 4/13/2021 12:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	426	30.0		µg/L	100	4/20/2021 4:44:00 PM
Toluene	32300	1000		µg/L	1000	4/20/2021 4:21:00 PM
Surr: 1,2-Dichloroethane-d4	102	75.3 - 126		%Rec	100	4/20/2021 4:44:00 PM
Surr: 4-Bromofluorobenzene	98.9	78.1 - 120		%Rec	100	4/20/2021 4:44:00 PM
Surr: Dibromofluoromethane	96.3	74.2 - 122		%Rec	100	4/20/2021 4:44:00 PM
Surr: Toluene-d8	101	76.2 - 135		%Rec	100	4/20/2021 4:44:00 PM

Lab ID: 2104106-011 **Matrix:** GROUNDWATER
Client Sample ID KC-14 **Collection Date:** 4/13/2021 1:20:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	ND	0.300		µg/L	1	4/20/2021 3:58:00 PM
Toluene	ND	1.00		µg/L	1	4/20/2021 3:58:00 PM
Surr: 1,2-Dichloroethane-d4	109	75.3 - 126		%Rec	1	4/20/2021 3:58:00 PM
Surr: 4-Bromofluorobenzene	95.6	78.1 - 120		%Rec	1	4/20/2021 3:58:00 PM
Surr: Dibromofluoromethane	93.5	74.2 - 122		%Rec	1	4/20/2021 3:58:00 PM
Surr: Toluene-d8	105	76.2 - 135		%Rec	1	4/20/2021 3:58:00 PM

Qualifiers:
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

CLIENT: RSEC Environmental Inc.
Project: EKC / EKC-0421

Lab ID: 2104106-012 **Matrix:** GROUNDWATER
Client Sample ID MW-243 **Collection Date:** 4/13/2021 1:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	ND	0.300		µg/L	1	4/15/2021 12:58:00 AM
Toluene	7.98	1.00		µg/L	1	4/15/2021 12:58:00 AM
Surr: 1,2-Dichloroethane-d4	114	75.3 - 126		%Rec	1	4/15/2021 12:58:00 AM
Surr: 4-Bromofluorobenzene	98.7	78.1 - 120		%Rec	1	4/15/2021 12:58:00 AM
Surr: Dibromofluoromethane	111	74.2 - 122		%Rec	1	4/15/2021 12:58:00 AM
Surr: Toluene-d8	97.9	76.2 - 135		%Rec	1	4/15/2021 12:58:00 AM

Lab ID: 2104106-013 **Matrix:** GROUNDWATER
Client Sample ID USRW-2 **Collection Date:** 4/12/2021 5:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Diphenyl ether	ND	0.478		µg/L	1	4/19/2021 9:06:00 PM
Surr: 2-Fluorobiphenyl	93.7	33.1 - 126.2		%Rec	1	4/19/2021 9:06:00 PM
Surr: 4-Terphenyl-d14	133	41 - 140		%Rec	1	4/19/2021 9:06:00 PM

Lab ID: 2104106-014 **Matrix:** GROUNDWATER
Client Sample ID PZ-107 **Collection Date:** 4/12/2021 6:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS-LOW LEVEL				**SW8270E**	**SW 3510C**	Analyst: **CK**
Biphenyl	33.4	0.478		µg/L	1	4/19/2021 9:36:00 PM
Bis(2-ethylhexyl)phthalate	ND	0.478		µg/L	1	4/19/2021 9:36:00 PM
Diphenyl ether	85.8	1.91		µg/L	4	4/20/2021 12:57:00 PM
Surr: 2-Fluorobiphenyl	75.0	33.1 - 126.2		%Rec	1	4/19/2021 9:36:00 PM
Surr: 4-Terphenyl-d14	110	41 - 140		%Rec	1	4/19/2021 9:36:00 PM
VOLATILE ORGANICS BY GC/MS				**SW8260D**	**SW 5030B**	Analyst: **CK**
Benzene	ND	0.300		µg/L	1	4/15/2021 1:20:00 AM
Toluene	3.67	1.00		µg/L	1	4/15/2021 1:20:00 AM
Surr: 1,2-Dichloroethane-d4	109	75.3 - 126		%Rec	1	4/15/2021 1:20:00 AM
Surr: 4-Bromofluorobenzene	97.5	78.1 - 120		%Rec	1	4/15/2021 1:20:00 AM
Surr: Dibromofluoromethane	111	74.2 - 122		%Rec	1	4/15/2021 1:20:00 AM
Surr: Toluene-d8	98.7	76.2 - 135		%Rec	1	4/15/2021 1:20:00 AM

Qualifiers:
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8260_W**

Sample ID: **CCV MSVWS-3041** SampType: **CCV** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40020**

Client ID: **CCV** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515188**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.3	0.300	40.00	0	98.3	80	120				
Toluene	39.0	1.00	40.00	0	97.5	80	120				

Sample ID: **MB** SampType: **MBLK** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40020**

Client ID: **PBW** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515189**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	98.3		100.0		98.3	75.3	126				
Surr: 4-Bromofluorobenzene	100		100.0		100	78.1	120				
Surr: Dibromofluoromethane	90.9		100.0		90.9	74.2	122				
Surr: Toluene-d8	98.5		100.0		98.5	76.2	135				

Sample ID: **A2104114-001AMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40020**

Client ID: **BatchQC** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515191**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.5	0.300	40.00	0	106	74.1	136				
Toluene	41.7	1.00	40.00	0	104	68.4	135				

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8260_W**

Sample ID: **A2104114-001AMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40020**

Client ID: **BatchQC** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515191**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **A2104114-001AMSD** SampType: **MSD** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40020**

Client ID: **BatchQC** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515192**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.3	0.300	40.00	0	101	74.1	136	42.48	5.19	20	
Toluene	45.4	1.00	40.00	0	114	68.4	135	41.69	8.63	20	

Sample ID: **LCS MSVWS-3041** SampType: **LCS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40020**

Client ID: **LCSW** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.3	0.300	40.00	0	98.3	76.8	125				
Toluene	39.0	1.00	40.00	0	97.5	82	122				

Sample ID: **CCV MSVWS-3041** SampType: **CCV** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40054**

Client ID: **CCV** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8260_W**

Sample ID: **CCV MSVWS-3041** SampType: **CCV** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40054**

Client ID: **CCV** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.3	0.300	40.00	0	98.3	80	120				
Toluene	39.0	1.00	40.00	0	97.5	80	120				

Sample ID: **MB** SampType: **MBLK** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40054**

Client ID: **PBW** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	98.3		100.0		98.3	75.3	126				
Surr: 4-Bromofluorobenzene	100		100.0		100	78.1	120				
Surr: Dibromofluoromethane	90.9		100.0		90.9	74.2	122				
Surr: Toluene-d8	98.5		100.0		98.5	76.2	135				

Sample ID: **B2104114-001AMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40054**

Client ID: **BatchQC** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515798**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.5	0.300	40.00	0	106	74.1	136				
Toluene	41.7	1.00	40.00	0	104	68.4	135				

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8260_W**

Sample ID: **B2104114-001AMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40054**

Client ID: **BatchQC** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515798**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **B2104114-001AMSD** SampType: **MSD** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40054**

Client ID: **BatchQC** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515799**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.3	0.300	40.00	0	101	74.1	136	42.48	5.19	20	
Toluene	45.4	1.00	40.00	0	114	68.4	135	41.69	8.63	20	

Sample ID: **LCS MSVWS-3041** SampType: **LCS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40054**

Client ID: **LCSW** Batch ID: **17728** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/14/2021** SeqNo: **515805**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.3	0.300	40.00	0	98.3	76.8	125				
Toluene	39.0	1.00	40.00	0	97.5	82	122				

Sample ID: **CCV MSVWS-3041** SampType: **CCV** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40093**

Client ID: **CCV** Batch ID: **17769** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/20/2021** SeqNo: **515909**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8260_W**

Sample ID: **CCV MSVWS-3041** SampType: **CCV** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40093**

Client ID: **CCV** Batch ID: **17769** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/20/2021** SeqNo: **515909**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.3	0.300	40.00	0	106	80	120				
Toluene	41.6	1.00	40.00	0	104	80	120				

Sample ID: **MB** SampType: **MBLK** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40093**

Client ID: **PBW** Batch ID: **17769** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/20/2021** SeqNo: **515910**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.300									
Toluene	ND	1.00									
Surr: 1,2-Dichloroethane-d4	95.0		100.0		95.0	75.3	126				
Surr: 4-Bromofluorobenzene	95.4		100.0		95.4	78.1	120				
Surr: Dibromofluoromethane	95.8		100.0		95.8	74.2	122				
Surr: Toluene-d8	104		100.0		104	76.2	135				

Sample ID: **A2104152-002AMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40093**

Client ID: **BatchQC** Batch ID: **17769** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/20/2021** SeqNo: **515914**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.0	0.300	40.00	0	105	74.1	136				
Toluene	33.1	1.00	40.00	0	82.7	68.4	135				

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8260_W**

Sample ID: **A2104152-002AMS** SampType: **MS** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40093**

Client ID: **BatchQC** Batch ID: **17769** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/20/2021** SeqNo: **515914**

Sample ID: **A2104152-002AMSD** SampType: **MSD** TestCode: **8260_W** Units: **µg/L** Prep Date: RunNo: **40093**

Client ID: **BatchQC** Batch ID: **17769** TestNo: **SW8260D** **SW 5030B** Analysis Date: **4/20/2021** SeqNo: **515915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	45.4	0.300	40.00	0	113	74.1	136	42.02	7.67	20	
Toluene	34.2	1.00	40.00	0	85.5	68.4	135	33.08	3.36	20	

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8270LL_W**

Sample ID: **CCV DPE+BP 20PP** SampType: **CCV** TestCode: **8270LL_W** Units: **µg/L** Prep Date: RunNo: **40100**

Client ID: **CCV** Batch ID: **17740** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/19/2021** SeqNo: **515973**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	17.7	0.500	20.00	0	88.6	80	120				
Bis(2-ethylhexyl)phthalate	17.7	0.500	20.00	0	88.4	80	120				
Diphenyl ether	20.9	0.500	20.00	0	105	80	120				

Sample ID: **MB-17740** SampType: **MBLK** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/15/2021** RunNo: **40100**

Client ID: **PBW** Batch ID: **17740** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/19/2021** SeqNo: **515974**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	ND	0.500									
Bis(2-ethylhexyl)phthalate	ND	0.500									
Diphenyl ether	ND	0.500									
Surr: 2-Fluorobiphenyl	79.3		100.0		79.3	33.1	126.2				
Surr: 4-Terphenyl-d14	74.8		100.0		74.8	41	140				

Sample ID: **LCS-17740** SampType: **LCS** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/15/2021** RunNo: **40100**

Client ID: **LCSW** Batch ID: **17740** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/19/2021** SeqNo: **515979**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	41.0	0.500	40.00	0	102	50	130				
Bis(2-ethylhexyl)phthalate	34.8	0.500	40.00	0	87.0	50	130				

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8270LL_W**

Sample ID: **LCS-17740** SampType: **LCS** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/15/2021** RunNo: **40100**

Client ID: **LCSW** Batch ID: **17740** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/19/2021** SeqNo: **515979**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diphenyl ether	41.3	0.500	40.00	0	103	50	130				

Sample ID: **LCSD-17740** SampType: **LCSD** TestCode: **8270LL_W** Units: **µg/L** Prep Date: **4/15/2021** RunNo: **40100**

Client ID: **LCSS02** Batch ID: **17740** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/19/2021** SeqNo: **515980**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	40.4	0.500	40.00	0	101	50	130	40.95	1.40	30	
Bis(2-ethylhexyl)phthalate	38.4	0.500	40.00	0	95.9	50	130	34.78	9.82	30	
Diphenyl ether	40.7	0.500	40.00	0	102	50	130	41.30	1.37	30	

Sample ID: **CCV DPE+BP 20PP** SampType: **CCV** TestCode: **8270LL_W** Units: **µg/L** Prep Date: RunNo: **40100**

Client ID: **CCV** Batch ID: **17740** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/20/2021** SeqNo: **515981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	20.7	0.500	20.00	0	103	80	120				
Diphenyl ether	22.8	0.500	20.00	0	114	80	120				

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2104106**

4/21/2021

Client: RSEC Environmental Inc.

Project: EKC / EKC-0421 **TestCode: 8270LL_W**

Sample ID: **CCB** SampType: **CCB** TestCode: **8270LL_W** Units: **µg/L** Prep Date: RunNo: **40100**

Client ID: **CCB** Batch ID: **17740** TestNo: **SW8270E** **SW 3510C** Analysis Date: **4/20/2021** SeqNo: **515982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Biphenyl	ND	0.500									
Diphenyl ether	ND	0.500									
Surr: 2-Fluorobiphenyl	72.5		100.0		72.5	33.1	96.2				
Surr: 4-Terphenyl-d14	93.8		100.0		93.8	41	122				

Qualifiers: H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Sample Receipt Checklist

Client Name RSEC Work Order Number 2104106

RcptNo: 1 Date and Time Received 4/13/2021 4:08:00 PM Received by: Katherine Lynch

Completed by Reviewed by:

Completed Date: 4/13/2021 4:34:00 PM Reviewed Date: 4/14/2021 2:28:00 PM

Carrier name: SA

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	Not Present ☐
Are matrices correctly identified on Chain of custody?	Yes ☑	No ☐	
Is it clear what analyses were requested?	Yes ☑	No ☐	
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Samples in proper container/bottle?	Yes ☑	No ☐	
Were correct preservatives used and noted?	Yes ☑	No ☐	NA ☐
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
Were container lables complete (ID, Pres, Date)?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
All samples received at a temp. of > 0° C to 6.0° C?	Yes ☑	No ☐	NA ☐
Response when temperature is outside of range:			
Preservative added to bottles:			
Sample Temp. taken and recorded upon receipt?	Yes ☑	No ☐	To 2.3 ºC
Water - Were bubbles absent in VOC vials?	Yes ☑	No ☐	No Vials ☐
Water - Was there Chlorine Present?	Yes ☐	No ☐	NA ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA ☐
Are Samples considered acceptable?	Yes ☑	No ☐	
Custody Seals present?	Yes ☑	No ☐	
Traffic Report or Packing Lists present?	Yes ☐	No ☑	
Airbill or Sticker?	Air Bill ☐	Sticker ☐	Not Present ☑
Airbill No:			
Sample Tags Present?	Yes ☐	No ☑	
Sample Tags Listed on COC?	Yes ☐	No ☑	
Tag Numbers:			
Sample Condition?	Intact ☑	Broken ☐	Leaking ☐

Case Number: SDG: SAS:

Adjusted? _____ Checked by

Any No and/or NA (not applicable) response must be detailed in the comments section be

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
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Website: www.specialtyanalytical.com

Sample Receipt Checklist

Client Contacted? ☑ Yes ☐ No ☐ NA Person Contacted:

Contact Mode: ☐ Phone: ☐ Fax: ☑ Email: ☐ In Person:

Client Instructions:

Date Contacted: 4/14/2021 Contacted By: Katherine Lynch

Regarding: Additional sample bottles, not on COC

CorrectiveAction:
Client confirmed samples and testing by email.

Comments:
Two samples arrived not accounted for on COC. Sample ID's PZ-107 & USRW-2. Client contacted.

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 4.13.21 Page: 1 of: 2

Project Name: EKC

Project No: EKC-0421 PO No: EKC-0421

Collected by: R. Truax

State Collected: OR (WA) OTHER

Report To (PM): richa@recinc.com

Laboratory Project No (internal): 2104106

Temperature on Receipt: 2.3 °C ice

Custody Seal: (Y) / N

(Intact) / Broken (Cooler) / Bottle

Shipped Via: SA

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 60 days)

Client: REC

Address: 958 Hood View Ct

City, State, Zip: Hood River, OR. 97031

Telephone: 541-490-4223

AP Email: →

PM Email: "

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8260 Bz+Tol only	8270											Comments
1	PDW-117	4.12.21	1030	GW	4	X	X											DPO = diphenyl oxide
2	MW-256	4.12.21	1140		1		X											"
3	KC-9	4.12.21	1250		4	X	X											"
4	MW-245	4.12	1430		1		X											"
5	PZ-104	4.12	1540		4	X	X											DPO, biphenyl, bis(2-ethylhexyl)phthalate
6	MW-230	4.12	1640		4	X	X											DPO only
7	MW-132	4.13	0900		4	X	X											"
8	MW-231	4.13	1015		4	X	X											"
9	MW-250	4.13	1200		3	X												
10	MW-239	4.13	1240	↓	3	X												

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: _____ 2 Day: _____ Next Day: _____ Same Day: _____

Relinquished	Date/Time	Received	Date/Time
x	4.13.21 / 1400	x	4-13-21 1415
x	4/13/21 1608	x	4-13-2021 1608
x		x	

EKC Gate Spotty Carrier P/U

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 4.13.21 | Page: 2 of: 2 | Laboratory Project No (internal): 21041016

Project Name: EKC | Temperature on Receipt: 2.3 °C ICE

Client: RSEC | Project No: EKC-0421 PO No: EKC-0421 | Custody Seal: (Y) / N

Address: 958 Hood View Ct | Collected by: R. Trux | (Intact) / Broken | (Cooler) / Bottle

City, State, Zip: Hood River, OR 97031 | State Collected: OR (WA) OTHER | Shipped Via: SA

Telephone: 541-490-4223 | Report To (PM): Richard@rsecinc.com | Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 60 days)

AP Email: ← | PM Email: —"—

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: 8260 BTEX	Comments
1	KC-14	4.13	1320	GW	3	X	
2	MW-243	4.13	1345	GW	3	X	
3							
4							
5							
6							
7							
8							
9							
10							

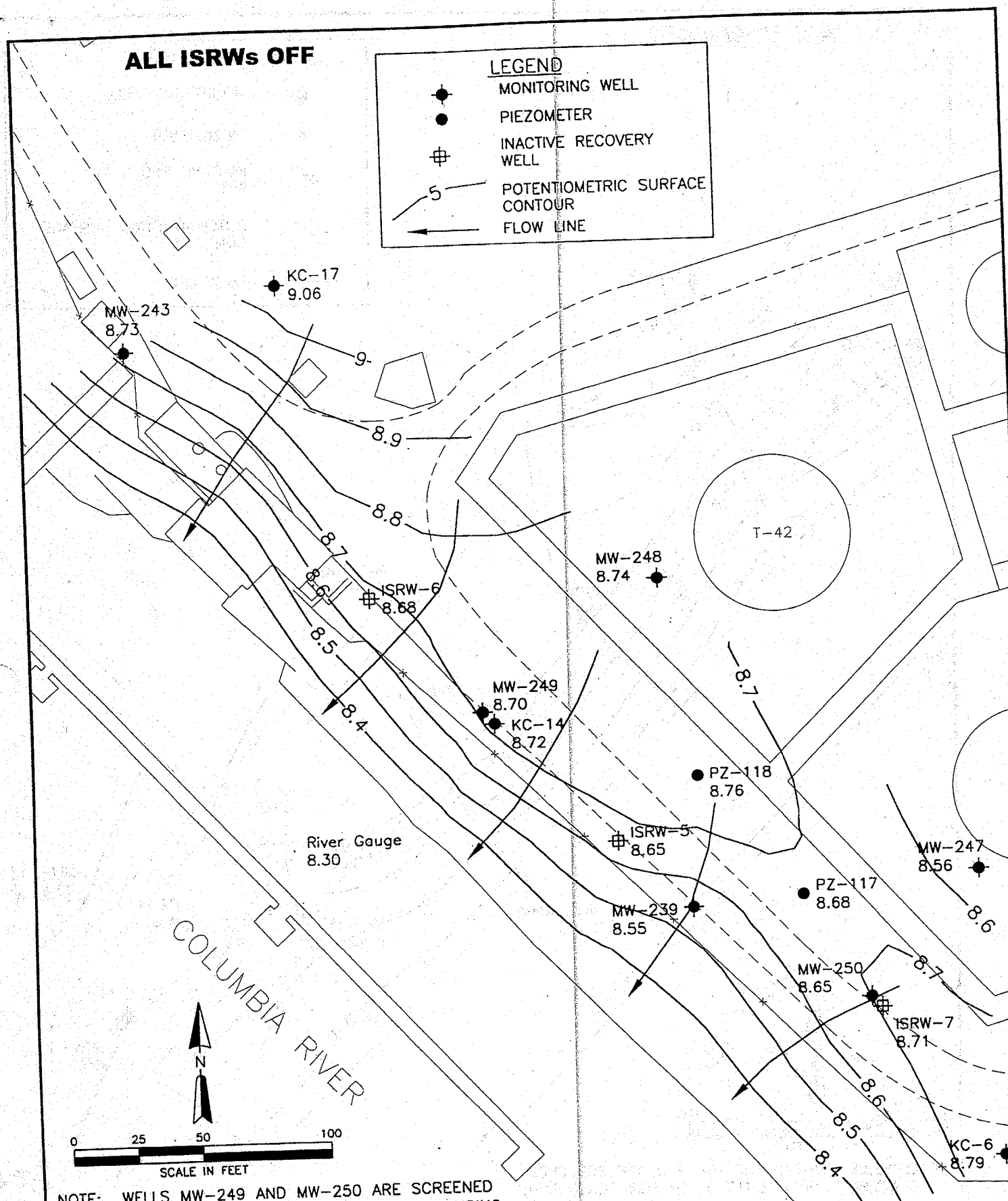
*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): X 3 Day: ____ 2 Day: ____ Next Day: ____ Same Day: ____

Relinquished	Date/Time	Received	Date/Time
x	4/13/21 1400 w EKC Goto Spoke Courier	x	4-13-21 1415
x	4/13/21 1608	x	4-13-2021 1608
x	Date/Time	x	Date/Time

Appendix D

1998 ICM Annual Report, Section 4 Potentiometric Maps



NOTE: WELLS MW-249 AND MW-250 ARE SCREENED DEEPER AND ARE NOT USED FOR CONTOURING

REF DWG	DESC.										
1											
0	N.S.	3/31/98	DRAFT		J.P.	3/31/98					
NO	DRWN	DATE	REVISION		CHKD	DATE	APPVD	DATE			

KALAMA CHEMICAL FACILITY

3-2207-600

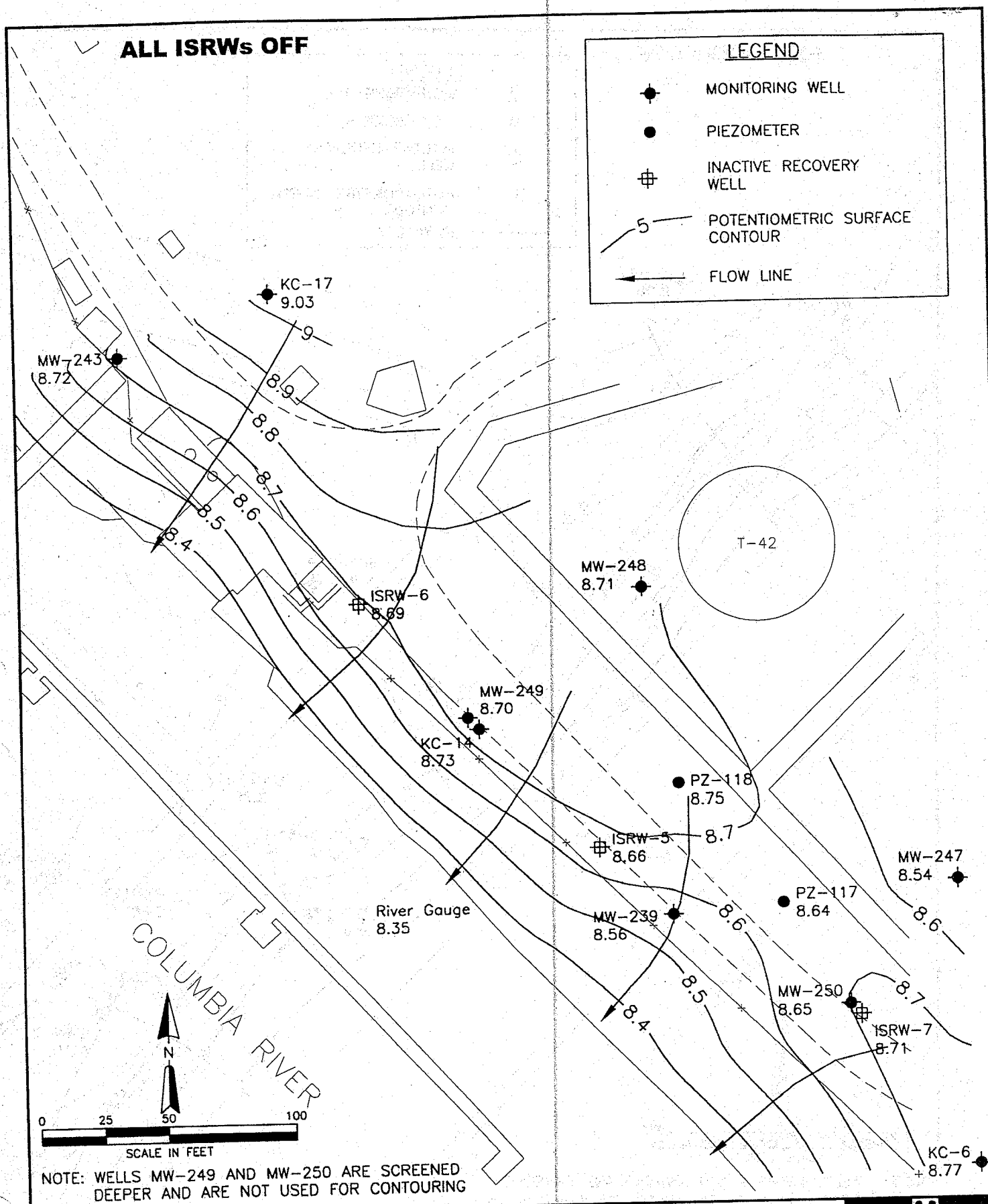
CUR. DATE: 4/3/98

CAD FILE 2207S341

INTERMEDIATE SAND AQUIFER
POTENTIOMETRIC SURFACE MAP
APRIL 4-7, 1997
72-HOUR MEAN

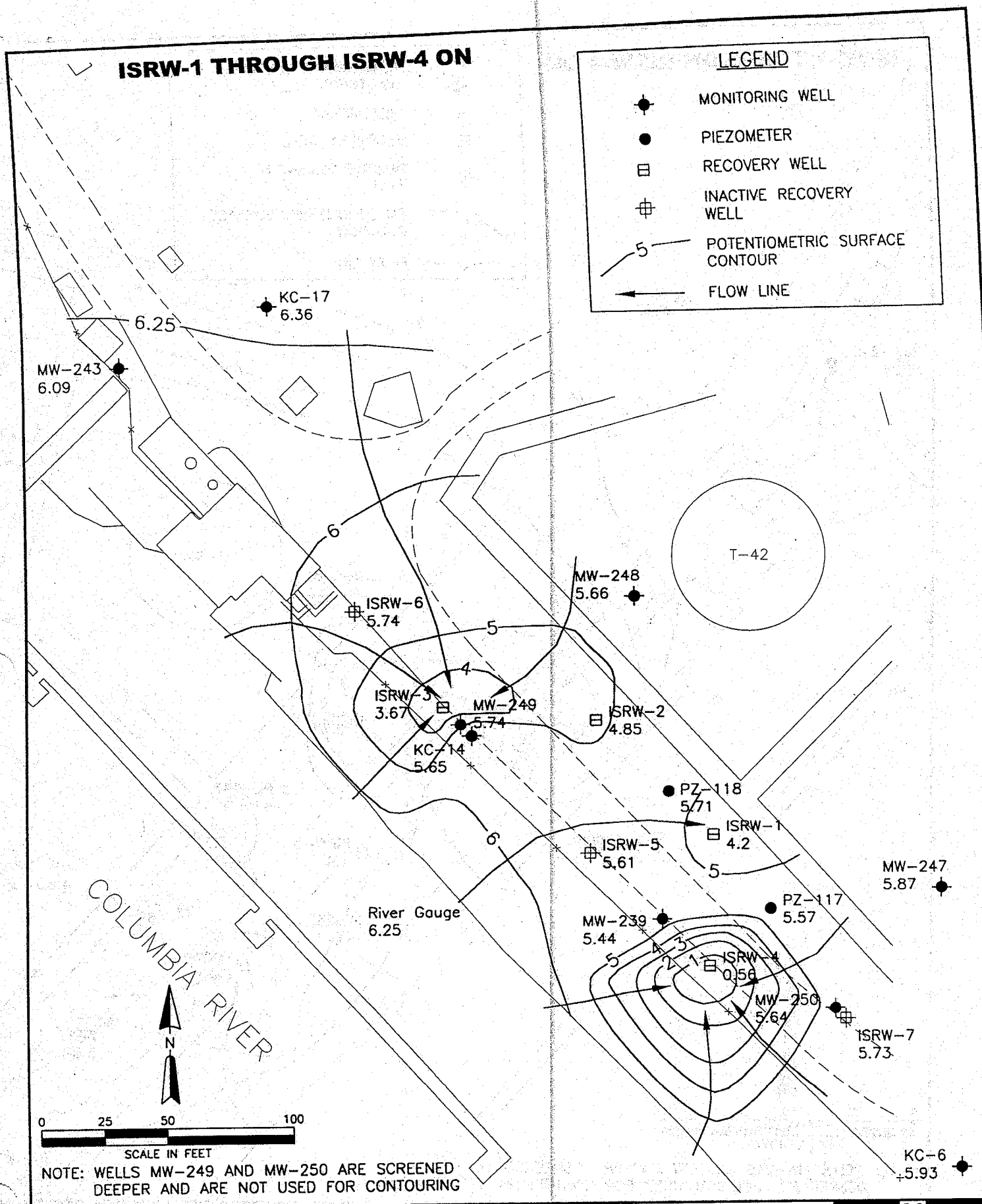
RETEC
REMEDIATION TECHNOLOGIES INC

DRAWING NO. FIGURE 4-2a REV 0

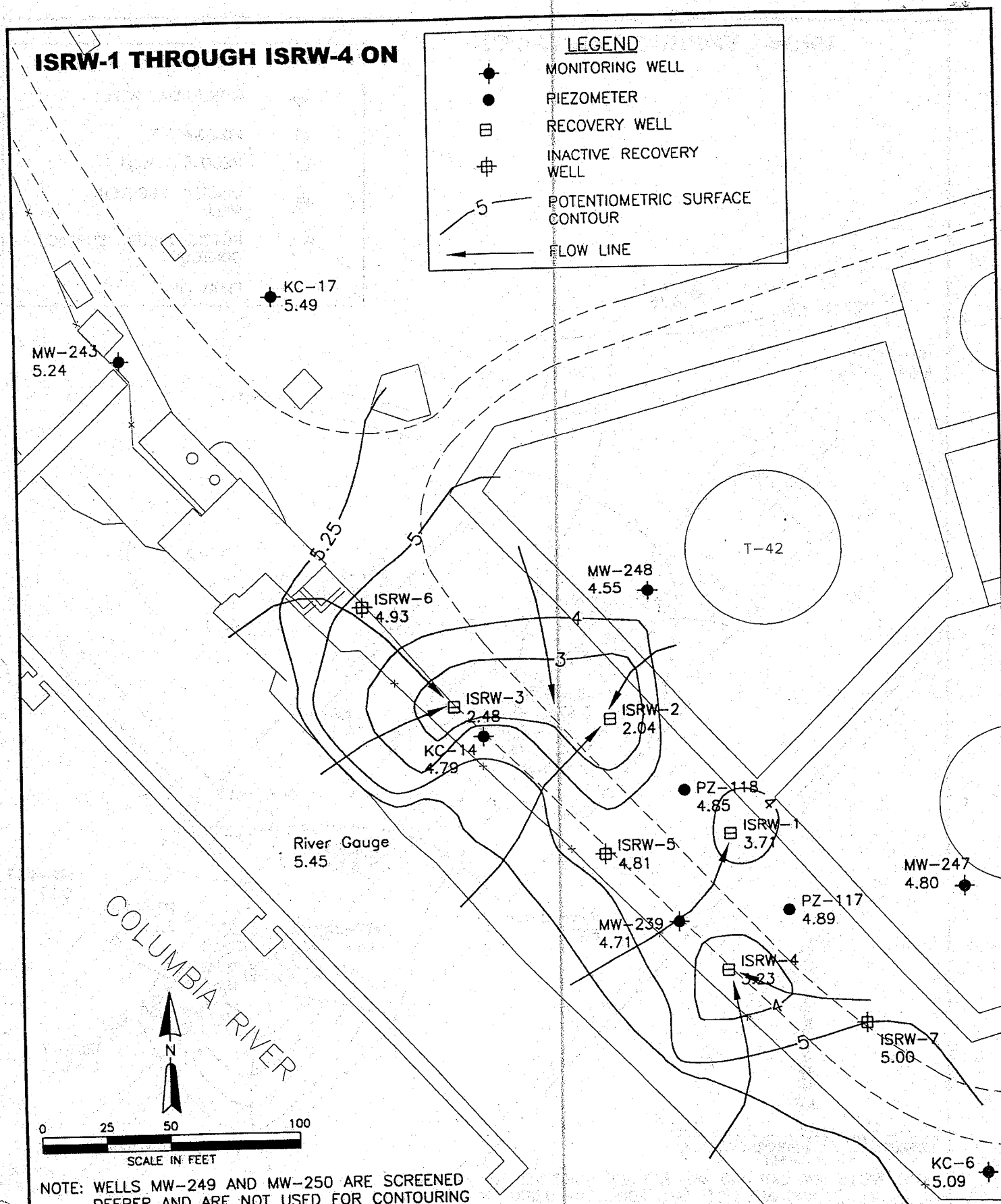


NOTE: WELLS MW-249 AND MW-250 ARE SCREENED DEEPER AND ARE NOT USED FOR CONTOURING

		KALAMA CHEMICAL FACILITY						CUR. DATE: 4/2/98	INTERMEDIATE SAND AQUIFER POTENTIOMETRIC SURFACE MAP APRIL 6, 1997 HIGH/LOW TIDE AVERAGE	RETEC REMEDIATION TECHNOLOGIES INC
			3-2207-600							DRAWING NO. FIGURE 4-2b
REF DWG	DESC.									
1										
0	N.S.	3/31/98	DRAFT	J.P.	3/31/98					
NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE	CAD FILE 2207S333		



		KALAMA CHEMICAL FACILITY						CUR. DATE: 4/2/98		INTERMEDIATE SAND AQUIFER POTENTIOMETRIC SURFACE MAP JULY 14, 1997 HIGH/LOW TIDE AVERAGE	RETEC REMEDIATION TECHNOLOGIES INC
		3-2207-600									
REF DWG	DESC.										
1											
0	N.S.	3/31/98	DRAFT	J.P.	3/31/98						DRAWING NO. FIGURE 4-2e REV. 0
NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE	CAD FILE	2207S329		



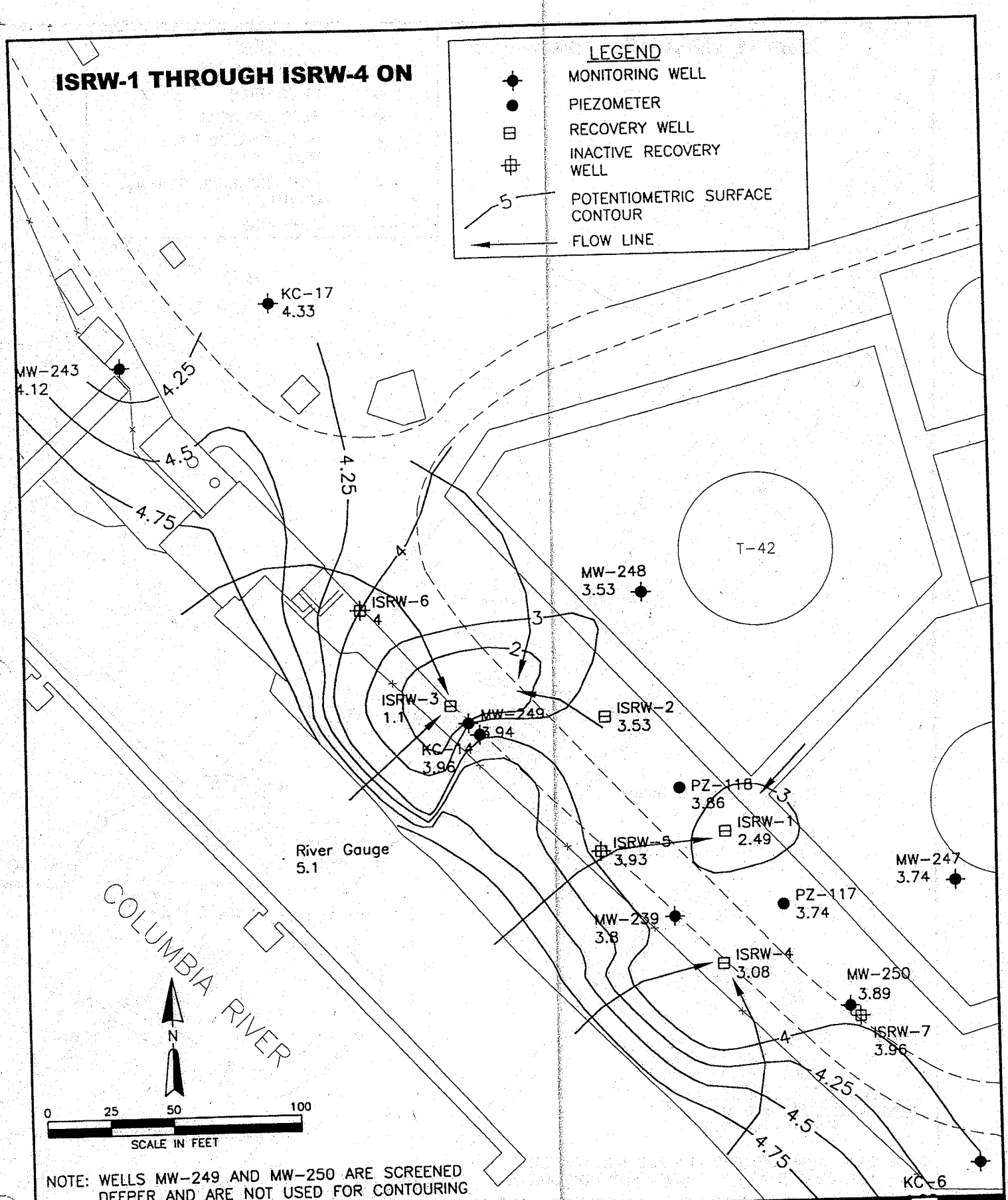
NOTE: WELLS MW-249 AND MW-250 ARE SCREENED DEEPER AND ARE NOT USED FOR CONTOURING

				KALAMA CHEMICAL FACILITY				CUR. DATE: 3/31/98			
				3-2207-600							
REF DWG	DESC.										
1											
0	N.S.	3/31/98	DRAFT			J.P.	3/31/98				
NO	DRWN	DATE	REVISION			CHKD	DATE	APPVD	DATE	CAD FILE	2207S339

INTERMEDIATE SAND AQUIFER
POTENTIOMETRIC SURFACE MAP
AUGUST 28, 1997
HIGH/LOW TIDE AVERAGE

REMEDIATION TECHNOLOGIES INC

DRAWING NO. FIGURE 4-2f



NOTE: WELLS MW-249 AND MW-250 ARE SCREENED DEEPER AND ARE NOT USED FOR CONTOURING

REF DWG	DESC.										
1											
0	N.S.	3/31/98	DRAFT			J.P.	3/31/98				
NO	DRWN	DATE	REVISION			CHKD	DATE	APPVD	DATE		

KALAMA CHEMICAL FACILITY

3-2207-600

CUR. DATE: 3/31/98

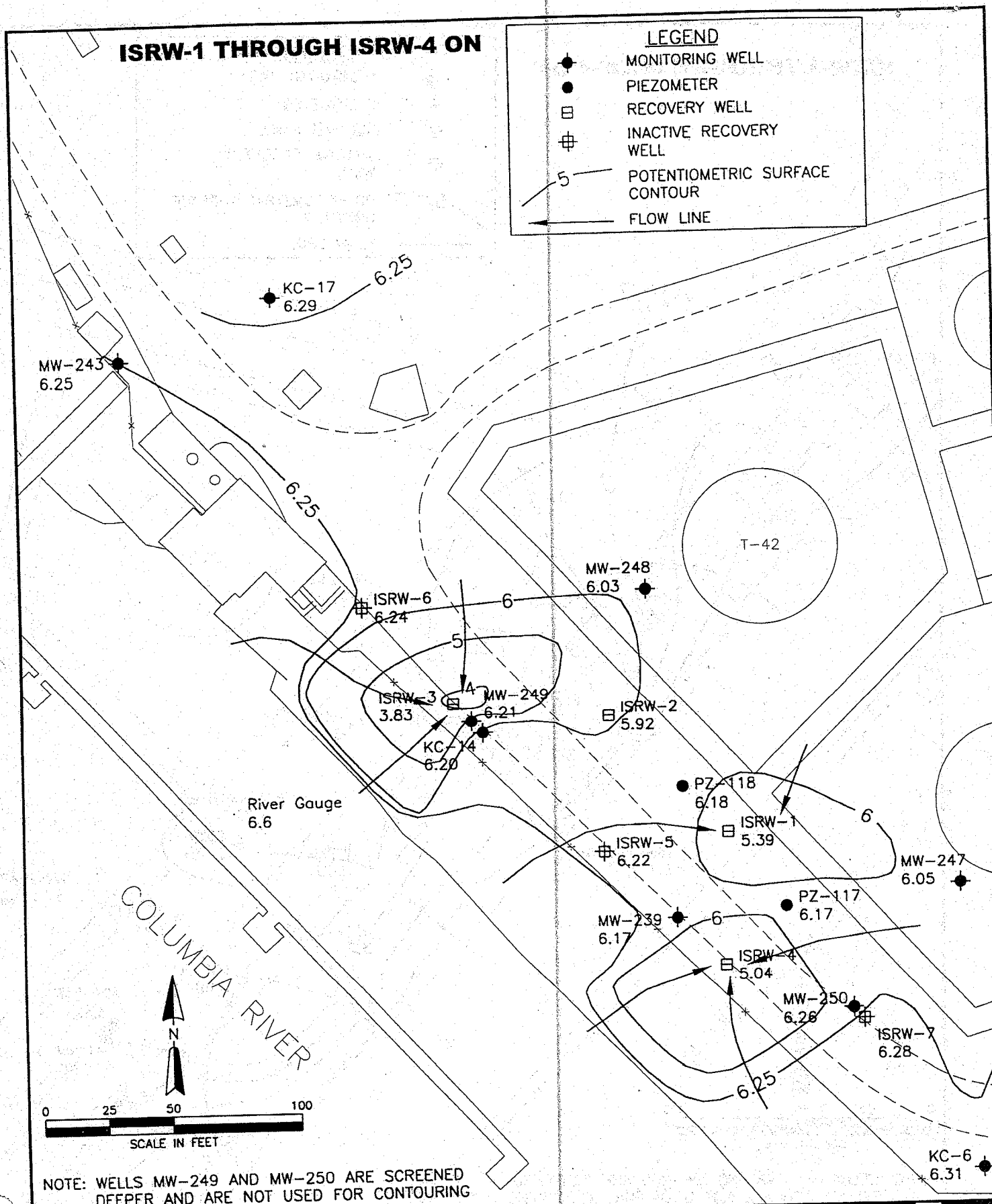
CAD FILE 2207S340

INTERMEDIATE SAND AQUIFER
POTENTIOMETRIC SURFACE MAP
SEPTEMBER 12, 1997
HIGH/LOW TIDE AVERAGE

REMEDIATION TECHNOLOGIES INC

DRAWING NO. FIGURE 4-2g

REV 0



NOTE: WELLS MW-249 AND MW-250 ARE SCREENED DEEPER AND ARE NOT USED FOR CONTOURING

REF DWG	DESC.							
1								
0	N.S.	3/31/98	DRAFT	J.P.	3/31/98			
NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE	

KALAMA CHEMICAL FACILITY

3-2207-600

CUR. DATE: 3/31/98

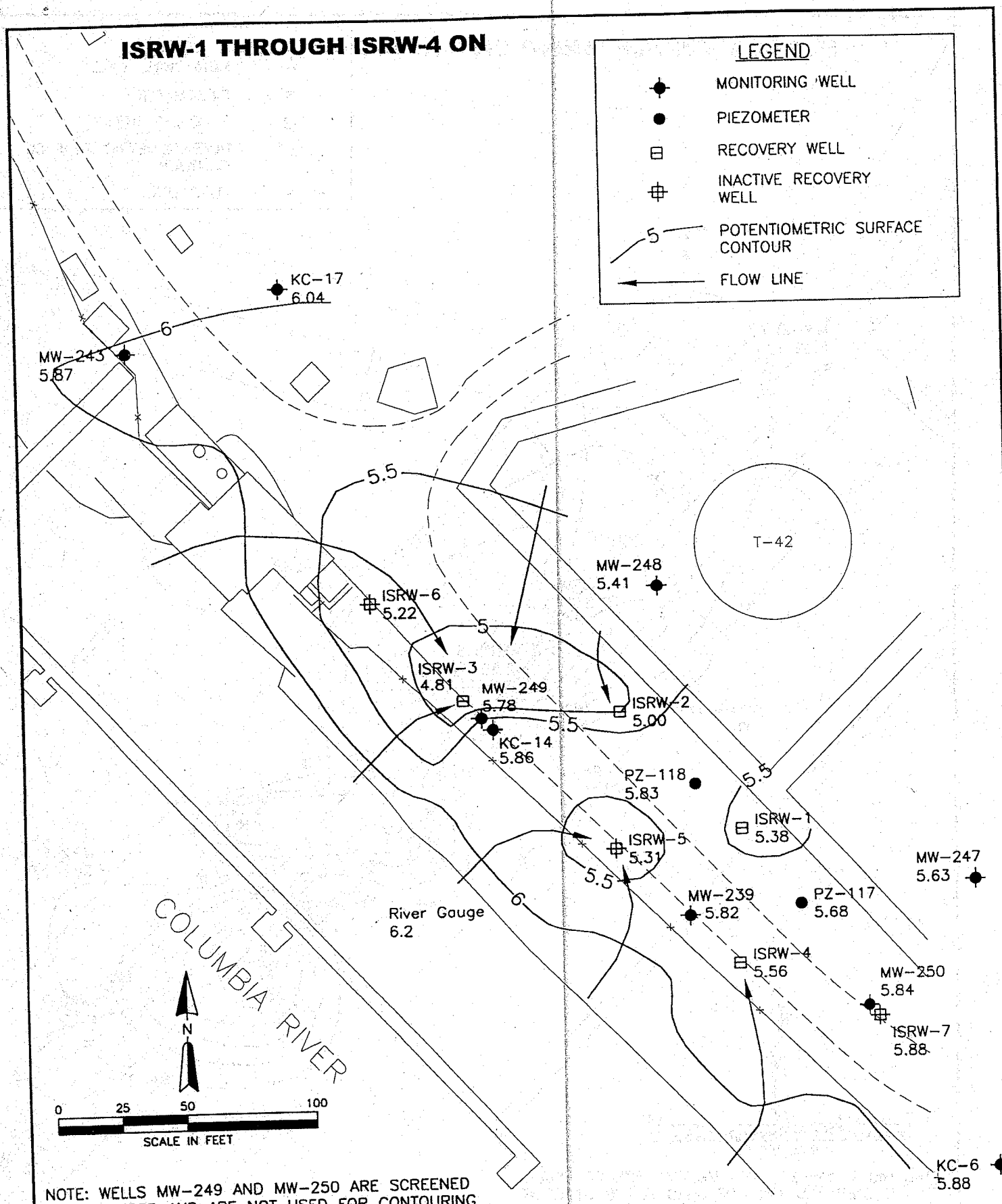
CAD FILE 2207S338

INTERMEDIATE SAND AQUIFER
POTENTIOMETRIC SURFACE MAP
OCTOBER 14, 1997
HIGH/LOW TIDE AVERAGE

RETEC
REMEDIATION TECHNOLOGIES INC

DRAWING NO.

FIGURE 4-2h



KALAMA CHEMICAL FACILITY

3-2207-600

CUR. DATE: 4/2/98

INTERMEDIATE SAND AQUIFER POTENTIOMETRIC SURFACE MAP NOVEMBER 6-7, 1997 HIGH/LOW TIDE AVARAGE

REMEDIATION TECHNOLOGIES INC

DRAWING NO. FIGURE 4-2i REV 0

REF	OWG	DESC.						
1								
0	N.S.	3/31/98	DRAFT	J.P.	3/31/98			
NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE	

CAD FILE 2207S330