

**Western Refining Southwest LLC**

A subsidiary of Marathon Petroleum Corporation

I-40 Exit 39
Jamestown, NM 87347

March 31, 2023

Mr. Dave Cobrain, Interim Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

RE: 2022 Annual Monitored Natural Attenuation Report
Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery
EPA ID# NMD000333211

Dear Mr. Cobrain,

Enclosed is the 2022 Annual Monitored Natural Attenuation Report for the Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery. If you have any questions or comments regarding the information contained herein, please do not hesitate to contact John Moore at (505) 879-7643.

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction of supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,
Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery

A handwritten signature in black ink, appearing to read 'Tim Peterkoski'.

Timothy J. Peterkoski
Director of Environment and Climate Strategy
Marathon Petroleum Company LP

Enclosure

cc: L. Andress, NMED HWB
S. Wells, NMOCD
H. Jones, Trihydro Corporation

L. King, EPA Region 6
K. Luka, Marathon Petroleum Company
J. Moore, Marathon Gallup Refinery



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**2022 ANNUAL MONITORED NATURAL
ATTENUATION REPORT**

WESTERN REFINING SOUTHWEST LLC

D/B/A MARATHON GALLUP REFINERY

MARCH 31, 2023



Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Executive Summary

This report presents the 2022 results of an ongoing monitored natural attenuation (MNA) evaluation of chlorinated volatile organic compounds (CVOCs) and methyl tert-butyl ether (MTBE) in the Hydrocarbon Seep Area of the Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) in Gallup, New Mexico (see Section 1.0, Figure 1-1). The Hydrocarbon Seep Area is located in the western portion of the Refinery to the west-southwest of the tank farm (see Section 1.0, Figure 1-2). Historically, the Hydrocarbon Seep Area has been impacted by releases of separate phase hydrocarbon (SPH) associated with refinery operation. In February 2018, the New Mexico Environment Department (NMED) requested in the “Disapproval, Interim Measures Report, Hydrocarbon Seep Area” (NMED 2018) that the Hydrocarbon Seep Area will be monitored for natural attenuation.

Sixteen wells are included as part of the MNA program. These monitoring wells are located in the Hydrocarbon Seep Area or in a hydraulically upgradient area. CVOCs detected in groundwater as part of routine quarterly monitoring in this area include tetrachloroethene, trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), 1,2 dichloroethane (1,2-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. Non-chlorinated volatile organic compounds detected in groundwater include benzene, toluene, ethylbenzene, total xylenes, and MTBE.

The MNA analysis used for this assessment follows the United States Environmental Protection Agency (USEPA) procedures for MNA evaluation of CVOCs (USEPA 1998), which includes:

- An evaluation of MNA by-products and pre-cursors to infer the presence of natural biodegradation over the period of 2018 to 2022 in 14 monitoring wells.
- A statistical evaluation of contaminant concentration trends over the period of 2014 to 2022 in eight wells.

Using USEPA’s scoring system for assessing the strength of evidence for inferring natural attenuation of CVOCs, the scores for 14 wells with detectable concentrations of CVOCs ranged from 7 to 13. Based on USEPA’s criteria and these scores, the evidence for natural attenuation was “Limited” in all 14 wells. There were no wells in which the evidence was deemed “Inadequate.” Two wells (MKTF-20 and MKTF-21) were not evaluated due to no detectable CVOCs from 2018 to 2022.

The results of the MNA statistical analysis of CVOc analytical data from eight wells conducted using Mann-Kendall (MK) trend analysis over the period of 2014 to 2022 indicate evidence of decreasing monotonic trends since 2014 (95% confidence) for 1,1-DCA, 1,1-DCE, cis-1,2-DCE in wells MKTF-02, MKTF-09, MKTF-24, and MKTF-25; and for TCE in wells MKTF-02, MKTF-09, and MKTF-25. Monotonic increasing trends were evident since 2014 (95% confidence) for 1,1-DCE in well MKTF-22, 1,2-DCA in well MKTF-10, and vinyl chloride in wells MKTF-02, MKTF-10, MKTF-16, MKTF-24, and MKTF-25. Other well/analyte pairs did not show a statistically significant trend.



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For MTBE, the MK trend analysis for 11 wells found evidence of decreasing monotonic trends since 2014 (95% confidence) in wells MKTF-09, MKTF-16, MKTF-21, and MKTF-24. The trend analysis showed evidence of monotonic increasing trend since 2014 (95% confidence) for MTBE in well MKTF-25. Other wells did not show a statistically significant trend. CVOC and MTBE trend analyses are presented in Tables 4-1 and 4-2, respectively, and summaries are included in Section 4.0 of this report.



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List of Acronyms

%	percent
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,2-DCA	1,2-dichloroethane
amsl	above mean sea level
BTEX	benzene, toluene, ethylbenzene, and total xylenes
cis-1,2-DCE	cis-1,2-dichloroethene
CVOC	chlorinated volatile organic compound
DO	dissolved oxygen
ft	feet
ft/d	feet per day
I-40	Interstate 40
MDL	method detection limit
mg/L	milligrams per liter
MK	Mann-Kendall
MKTF	Marketing Tank Farm
MNA	monitored natural attenuation
MTBE	methyl tert-butyl ether
ND	non-detect
NM	New Mexico
NMED	New Mexico Environment Department
ORP	oxidation reduction potential
PCE	tetrachloroethene
SPH	separate phase hydrocarbon
TCE	trichloroethene
USEPA	United States Environmental Protection Agency



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1.0 Introduction

This report presents the results of a monitored natural attenuation (MNA) evaluation of chlorinated volatile organic compounds (CVOCs) and methyl tert-butyl ether (MTBE) in the Hydrocarbon Seep Area of the Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) in Gallup, New Mexico (NM) (Figure 1-1). This evaluation was conducted in accordance with the approved “Response to Approval with Modifications, Natural Attenuation Assessment and Proposed Workplan for the Hydrocarbon Seep Area” (Work Plan) (Western 2021).

The Hydrocarbon Seep Area is located in the western portion of the Refinery to the west-southwest of the refinery tank farm (Figure 1-2). Historically, the Hydrocarbon Seep Area has been impacted by releases of separate phase hydrocarbon (SPH) associated with refinery operation. Hydrocarbon seeps were discovered in 2013. In February 2018, the New Mexico Environment Department (NMED) requested in the “Disapproval, Interim Measures Report, Hydrocarbon Seep Area” (NMED 2018) that the Hydrocarbon Seep Area will be monitored for natural attenuation.

Built in the 1950s, the Refinery is located within a rural and sparsely populated area east of Gallup, NM. The nearest population centers are the Pilot Flying J Travel Center refueling plaza, the Interstate 40 (I-40) corridor, and a small cluster of residential homes located on the south side of I-40 approximately two miles southwest of the Refinery (Jamestown, NM).

The Refinery was indefinitely idled on October 9, 2020. During operation, the Refinery was a crude oil refining and petroleum products manufacturing facility. There were no organic chemicals, plastics, or synthetic fibers manufactured that contributed to the process flow of wastewater. The Refinery did not manufacture lubricating oils. As a result of the processing steps, the Refinery produced a wide range of petroleum products including propane, butane, unleaded gasoline, diesel, residual fuel, and commercial products of fertilizer and solid elemental sulfur.

Historically, the Refinery primarily received crude oil via two 6-inch diameter pipelines, which entered the Refinery property from the north (Four Corners Area). In addition, the Refinery also received natural gasoline feedstock via a 4-inch diameter pipeline that came in from the west along the I-40 corridor from the Western Refining Southwest LLC – Wingate Plant, which is also indefinitely idled. Crude oil and other products also arrived at the Refinery via railroad cars. These feed stocks were then stored in tanks until refined into products.



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2.0 Site Conditions

The Refinery is located within a rural and sparsely populated section of McKinley County, NM. It is situated in the high desert plain on the western flank of the Continental Divide approximately 17 miles east of Gallup, NM. The surrounding land is primarily used for cattle and sheep grazing.

2.1 Site Topography

Local topography consists of a gradually inclined land surface from high ground in the southeast to a lowland fluvial plain in the northwest. The highest point on Refinery property is located at the southeast corner boundary (elevation approximately 7,040 feet [ft] above mean sea level [amsl]) and the lowest point is located at the northwest corner boundary (elevation approximately 6,860 ft amsl). Surface soils within most of the area of investigation are primarily Rehobeth silty clay loam. The Refinery is located on a flat man-made terrace.

2.2 Surface Water

Surface water in the Refinery consists of the man-made evaporation ponds and aeration basins. There are several storm water conveyance ditches located throughout the Refinery. These ditches are discharged into basins where storm water is collected and allowed to evaporate or discharged into two designated outfalls.

2.3 Geology

Site boring logs indicate that subsurface fluvial and alluvial soils are primarily comprised of clays and silts with discontinuous inter-bedded sand layers. Very low permeability bedrock (e.g., claystones and siltstones) underlie the surface soils. The Chinle Group, from the Upper Triassic period, crops out over a large area south of the Refinery. The uppermost subunit within the Chinle Group is the Petrified Forest Formation, which is also sometimes referred to as the Petrified Forest Member. Inter-bedded within the Chinle Group is the Sonsela Sandstone bed, which lies within and parallels the dip of the Chinle Group. Its high point is located southeast of the Refinery and slopes downward to the northwest as it passes under the Refinery. Due to the hydraulic confinement of the Petrified Forest Formation aquitard, the Sonsela Sandstone bed acts as a water-bearing reservoir and is artesian at its lower extremis. Artesian conditions exist through much of the central and western portions of the Refinery.

2.4 Hydrogeology

Groundwater flow within the shallow alluvium and the upper Chinle Formation is highly variable due to the presence of complex and irregular stratigraphy including sand stringers, cobble beds, and dense clay layers. According to previous reports, hydraulic conductivity ranges from 30 ft per day (ft/d) for gravel-like sands immediately overlying the Petrified Forest Formation to 3×10^{-5} ft/d in the clay soils located near the surface (Western 2020). Groundwater flow within the Lower Chinle Formation is extremely slow and typically averages less than 2.83×10^{-7} ft/d (i.e., less than 0.01 ft per year).



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Water level data are collected routinely at the Refinery. Wells at the Refinery have been categorized based on the hydrogeologic unit in which they are screened, including the Alluvial/Fluvial Upper Sand Aquifer, the Chinle/Alluvium Aquifer, and the Sonsela Aquifer. The Alluvial/Fluvial Upper Sand Aquifer has a limited aerial extent, existing only on the western margin on the Refinery. Groundwater occurrence in this aquifer is seasonal and limited.

The majority of the wells monitored lie within the shallow weathered sediments that comprise the Chinle/Alluvium Aquifer. Within the Chinle/Alluvium Aquifer, shallow groundwater located under the Refinery property generally flows along the upper contact of the Chinle Formation. The prevailing flow is from the southeast to the northwest, although localized areas may have varying flow directions based on the subsurface geology. The 16 wells in the MNA program are completed in this aquifer.

Groundwater within the Sonsela Aquifer flows southeast to northwest. Hydraulic heads measured within the Sonsela Aquifer are generally lower than those observed within the shallow aquifer near the topographic high on which the Refinery process area and tank farm are situated, and higher than those observed within the shallow aquifer in topographically low areas to the west and northwest, near the evaporation ponds. The higher head in the Sonsela Aquifer in low areas is due to confining pressure from lower permeability Chinle Formation bedrock between the shallow Chinle/Alluvium Aquifer and the Sonsela Aquifer bed at depth, which makes the Sonsela Aquifer artesian.



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3.0 MNA Monitoring Program

Per the approved Work Plan (Western 2021), 13 wells were selected for the MNA program. The wells consist of Marketing Tank Farm (MKTF) designated wells located within and hydraulically upgradient of the Hydrocarbon Seep Area. These wells contained CVOCs above the NMED Groundwater Cleanup Levels (New Mexico Administrative Code 20.6.2.3103) and MTBE above the NMED Tap Water Standards (Risk Assessment Guidance, Table A-1, Tap Water, March 2017) at the time of the sampling location evaluation. In addition, the selected wells did not contain detectable SPH in 2020.

The 13 MNA wells originally included: MKTF-02, MKTF-04, MKTF-09, MKTF-10, MKTF-13, MKTF-16, MKTF-17, MKTF-19, MKTF-20, MKTF-21, MKTF-22, MKTF-24, and MKTF-25. In 2021, wells MKTF-02R, MKTF-04R, and MKTF-17R replaced wells MKTF-02, MKTF-04 and MKTF-17, respectively. Data from MKTF-02, MKTF-04, and MKTF-17 are included in the 2022 evaluation alongside the new replacement well data. However, in future annual reports, data from MKTF-02, MKTF-04, and MKTF-17 will not be included, as they have been plugged and abandoned, and subsequently replaced. Figure 3-1 presents the 16 MNA wells that were evaluated.

The following analyte list was proposed for the MNA program in the approved Work Plan (Western 2021):

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), MTBE, tertiary butyl alcohol, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethane (1,2-DCA), and vinyl chloride
- Dissolved/total iron and manganese, nitrate/nitrite, and sulfate/sulfide to determine their availability as terminal electron receptors and the redox state
- Chloride as the end point of 1,1-DCA and 1,2-DCA degradation
- Field parameters such as pH, temperature, oxidation reduction potential (ORP), and dissolved oxygen (DO)

In addition, ethene, ethane, and methane analysis will be conducted in four monitoring wells with detectable vinyl chloride concentrations (MKTF-2, MKTF-10, MKTF-24, and MKTF-25).

3.1 MNA Sampling Results

Laboratory data are provided in Appendix A. Data validation reports are presented in Appendix B. Table 3-1 presents the most recent groundwater analytical data (2018 to 2022) from the Hydrocarbon Seep Area wells, including organic and inorganic analytes, DO, temperature, and ORP. DO and ORP measurements were conducted using bailed water from a well, which was then placed in a container for subsequent DO and ORP measurements using a calibrated field instrument equipped with a silver/silver chloride reference electrode. This method potentially introduces oxygen from exposure to air in the open container, which could potentially increase DO and ORP measurements.



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CVOCs detected in groundwater as part of routine quarterly monitoring in the Hydrocarbon Seep Area between 2014 and 2022, include: PCE, TCE, 1,1-DCE, 1,1-DCA, 1,2-DCA, cis-1,2-DCE, and vinyl chloride. Hydrocarbon volatile organic compounds detected in groundwater include BTEX and MTBE. Monitoring wells with CVOC and MTBE detection rates greater than 50 percent (%) between 2018 and 2022 are shown in Figure 3-1. Monitoring wells with a vinyl chloride detection rate of greater than 50% between 2018 and 2022 are shown in Figure 3-2.

3.2 MNA Criteria and Scoring

These data are used to evaluate the potential for MNA in procedures developed by the United States Environmental Protection Agency (USEPA) (USEPA 1998) and the American Petroleum Institute (API 2007). From a more quantitative standpoint, an evaluation was conducted on a well-by-well basis in accordance with USEPA guidance (USEPA 1998). Table 3-2 presents the scoring criteria from the USEPA and the applicability of the criteria to the Hydrocarbon Seep Area, given the analytical requirements of the approved Work Plan (Western 2021) and current field sampling practices. Table 3-2 shows the implementation of the scoring for each well, and presents the final evaluation score for each well, which summarizes the potential for CVOC natural attenuation (reductive dechlorination). Four categories of scores assess the potential for anaerobic biodegradation of CVOCs, as follows:

- > 20 Strong evidence
- 15 to 20 Adequate evidence
- 6 to 14 Limited evidence
- 0 to 5 Inadequate evidence

As shown in Table 3-3, the evidentiary scores for the 14 wells scored in the analysis ranged from 7 to 13, with all 14 wells deemed "Limited" category using USEPA's nomenclature for the scoring ranges. Two wells (MKTF-20 and MKTF-21) were not evaluated due to no detectable CVOCs from 2018 to 2022. In addition, MKTF-20 and MKTF-21 have not had detectable CVOCs.

3.3 Deviations from the Proposed Work Plan

Deviations to the approved Work Plan occurred during 2022. Completion of these elements is expected in 2023. The following work was not completed in 2022:

- Although not a deviation from the approved work plan, some wells were not sampled during third quarter 2022 due to the presence of SPH. Those wells were: MKTF-02R, MKTF-04R, MKTF-09, MKTF-10, MKTF-11, MKTF-13, MKTF-17, MKTF-19, MKTF-20, MKTF-21, MKTF-22, MKTF-24, and MKTF-25.
- Ethene analysis was proposed for wells MKTF-02 (now MKTF-02R), MKTF-10, MKTF-24, and MKTF-25 in the approved Work Plan (Western 2021) and was additionally requested in the "Approval with Modifications, 2021 Annual Monitored Natural Attenuation Report" (NMED



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2022). However, those wells were not sampled during the annual event due to the presence of SPH; therefore, no ethene results were collected during this reporting period.



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4.0 Statistical Analysis

The following section describes the methods used and results obtained during the 2022 statistical evaluation of the data from the Refinery. Data collected are used to determine if the analytical data results from the current monitoring period represent statistical upward or downward trends in analyte concentrations in the groundwater samples collected from MKTF-designated wells. Time series plots with nonparametric trend lines, when applicable, covering the period 2014 to 2022 for CVOCs and MTBE are shown in Appendix C and Appendix D, respectively.

4.1 Statistical Methods

4.1.1 Quality Assurance/Quality Control and Data Handling

Trace concentrations (estimated results between the reporting limit and the method detection limit [MDL]) reported since June 8, 2016, were treated as true detected values. Therefore, being the upper bound of non-detect (ND) results, the MDL was used as a substitute value for ND values in all statistical evaluations, unless stated otherwise (see Mann-Kendall [MK] trend analysis section). Results U-flagged by data validation were treated as reported by the laboratory (see the laboratory report in Appendix A and data validation report in Appendix B). R®, a programming language and software environment for statistical analysis, was used for all statistical needs (R Core Team 2022).

The statistical evaluation was performed for six CVOCs (1,1-DCA, 1,1-DCE, 1,2-DCA, cis-1,2-DCE, TCE, and vinyl chloride) and MTBE. All constituents were reported in milligrams per liter (mg/L). Eight wells for CVOCs (i.e., MKTF-02, MKTF-02R, MKTF-09, MKTF-10, MKTF-16, MKTF-22, MKTF-24, MKTF-25) and 13 wells for MTBE (i.e., MKTF-04, MKTF-04R, MKTF-09, MKTF-16, MKTF-17, MKTF-17R, MKTF-19, MKTF-20, MKTF-21, MKTF-22, MKTF-23, MKTF-24, MKTF-25) were part of the 2022 evaluation. Wells MKTF-02R, MKTF-04R, and MKTF-17R are replacement wells for MKTF-02, MKTF-04, and MKTF-17, respectively, and were installed in 2021.

4.1.2 Exploratory Data Analysis and General Statistics

Exploratory Data Analysis was performed on all well-analyte combinations and are presented in Table 4-1 and Table 4-2, for the CVOCs and MTBE respectively. For each analyte-location pair, these statistics include the number of samples collected since April 8, 2014, the overall detection rate, the minimum and maximum detected concentrations (in units of mg/L), the minimum and maximum MDLs reported by laboratories, the overall sample mean, median, and sample standard deviation, and the date range of the first and last sample.

4.1.3 Time Series Plots and Outlier Analysis

Outlier analysis was performed at a 95% confidence level using the Dixon's and Grubbs' tests when the sample size for each analyte-location pair, n , was more than 4 but less than 30, with at least one detected result. If the sample size was greater than 25, then the Rosner's test was used instead of or in



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addition to the two tests mentioned above and up to 3 potential outliers were considered. Because outlier tests' assumptions are often difficult to attain with real data, and the presence of one outlier can mask the detection of another, any extreme and unusual values flagged as outliers by any of the outlier tests (e.g., concentration 3 times greater or 1/3 smaller than the overall concentration, excluding the most recent result) were graphically confirmed using time series plots. The most recent results are never considered an outlier because there is not sufficient evidence that it is a one-time elevated concentration. Results from the outlier analysis are also presented in Table 4-1 (CVOCs) and Table 4-2 (MTBE).

For each analyte-location pair, time series plots were constructed to show any potential trend in CVOCs and MTBE. In addition, any graphically confirmed outliers were also shown on the time series plots (Appendices C [CVOCs] and D [MTBE]).

4.1.4 Nonparametric Trend Analysis

Non-parametric trend analysis was conducted for all analyte-location pairs with a sample size equal to or greater than eight (not including graphically confirmed outliers) and one detected result above the MDL to assess the temporal stationarity of the constituents' concentrations through time. To avoid trends in the MDLs driving the trend analysis results, the USEPA recommends ND values be assigned "a common value lower than any of the detected measurements" (Section 17.3.2 p. 17-31) (USEPA 2009). ND values were assigned half of the minimum MDLs in each location for all analyses related to the trend analysis. Trend analyses were performed using the nonparametric approach, MK's monotonic trend analysis. Traditional MK trend analysis relies on several assumptions such as no serial correlation, no outliers, and no seasonality. The presence of serial correlation was tested for at each location using the rank von Neumann ratio test at 95% confidence level and the results were graphically confirmed using Autocorrelation Function and Partial Autocorrelation Function. The presence of outliers in the data was addressed during the outlier analysis described above. Seasonal effects between the Summer-Fall (May to October) and Winter-Spring (November to April) sampling events were tested using Wilcoxon-Mann-Whitney tests at a 90% confidence level. The assumption of homogeneity of variance between the two seasons for the Wilcoxon tests for each constituent of concern and well combination was performed using the traditional Levene's test.

In the absence of both serial autocorrelation and seasonal effect, the traditional MK trend analysis test was used. When serial correlation was identified, a modified MK test for serially correlated data using the Yue and Wang (Yue 2004) variance correction approach was used. When seasonality was present in the data, a standard seasonal MK test, which performs a nonparametric test for a monotonic trend within each season based on Kendall's tau statistic, was used. Finally, if the presence of both serial correlation and seasonality in the data was confirmed, the seasonal MK approach was adapted to handle serial correlation. Results from all trend analyses for the CVOCs are presented in Table 4-1 and for MTBE in Table 4-2.



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4.2 Results

4.2.1 CVOCs

Nonparametric monotonic increasing trends were identified since 2014 for the following analyte-well pairs with 95% confidence (Table 4-1):

- 1,1-DCE in well MKTF-22.
- 1,2-DCA in well MKTF-10.
- Vinyl Chloride in wells MKTF-02, MKTF-10, MKTF-16, MKTF-24, and MKTF-25.

In addition, evidence of decreasing monotonic trends since 2014 was found, with 95% confidence (Table 4-1):

- 1,1-DCA in wells MKTF-02, MKTF-09, MKTF-24, and MKTF-25.
- 1,1-DCE in wells MKTF-02, MKTF-09, MKTF-24, and MKTF-25.
- Cis-1,2-DCE in wells MKTF-02, MKTF-09, MKTF-24, and MKTF-25.
- TCE in wells MKTF-02, MKTF-09, and MKTF-25.

All other analyte-well pairs meeting the sample size and detection requirements for trend analysis showed no evidence of an overall trend since 2014 at a 95% confidence level.

4.2.2 MTBE

The MK trend analysis test found evidence of a monotonic increasing trend since 2014 for MTBE in well MKTF-25 with 95% confidence (Table 4-2).

In addition, evidence of decreasing monotonic trends since 2014 was found, with 95% confidence, for MTBE in wells MKTF-09, MKTF-16, MKTF-21, and MKTF-24 (Table 4-2).

All other analyte-well pairs meeting the sample size and detection requirements for trend analysis showed no evidence of an overall trend since 2014 at a 95% confidence level.



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5.0 Conclusions

The MNA assessment used USEPA procedures for MNA evaluation (USEPA 1998), which included an evaluation of MNA by-products and pre-cursors to infer the presence of natural biodegradation over the period of 2018 to 2022 and a statistical evaluation of contaminant concentration trends over the period of 2014 to 2022. The date range for MNA was selected to represent current conditions for the analysis of the key MNA parameters. Statistical analysis, however, was conducted using data from the period 2014 through 2022 to evaluate long-term conditions. The report used monitoring well analytical data in the Hydrocarbon Seep Area and in hydraulically upgradient areas.

Using USEPA's scoring system for assessing the strength of evidence for inferring natural attenuation of CVOs, the scores for the 14 wells included in the analysis ranged from 7 to 13. Based on USEPA's criteria and these scores, the evidence for natural attenuation was "Limited" in all 14 wells. There were no wells in which the evidence was deemed "Inadequate." The time period of the analysis was 2018 to 2022 to best represent current geochemical conditions. Given that the SPH in the area is not expanding or migrating, the natural attenuation in these wells may continue to be slow.

The results of the MNA statistical analysis were presented in Sections 4.2.1 and 4.2.2. The next MNA sampling event will occur in third quarter 2023, and the 2023 annual MNA report will be submitted to NMED by March 31, 2024.



Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

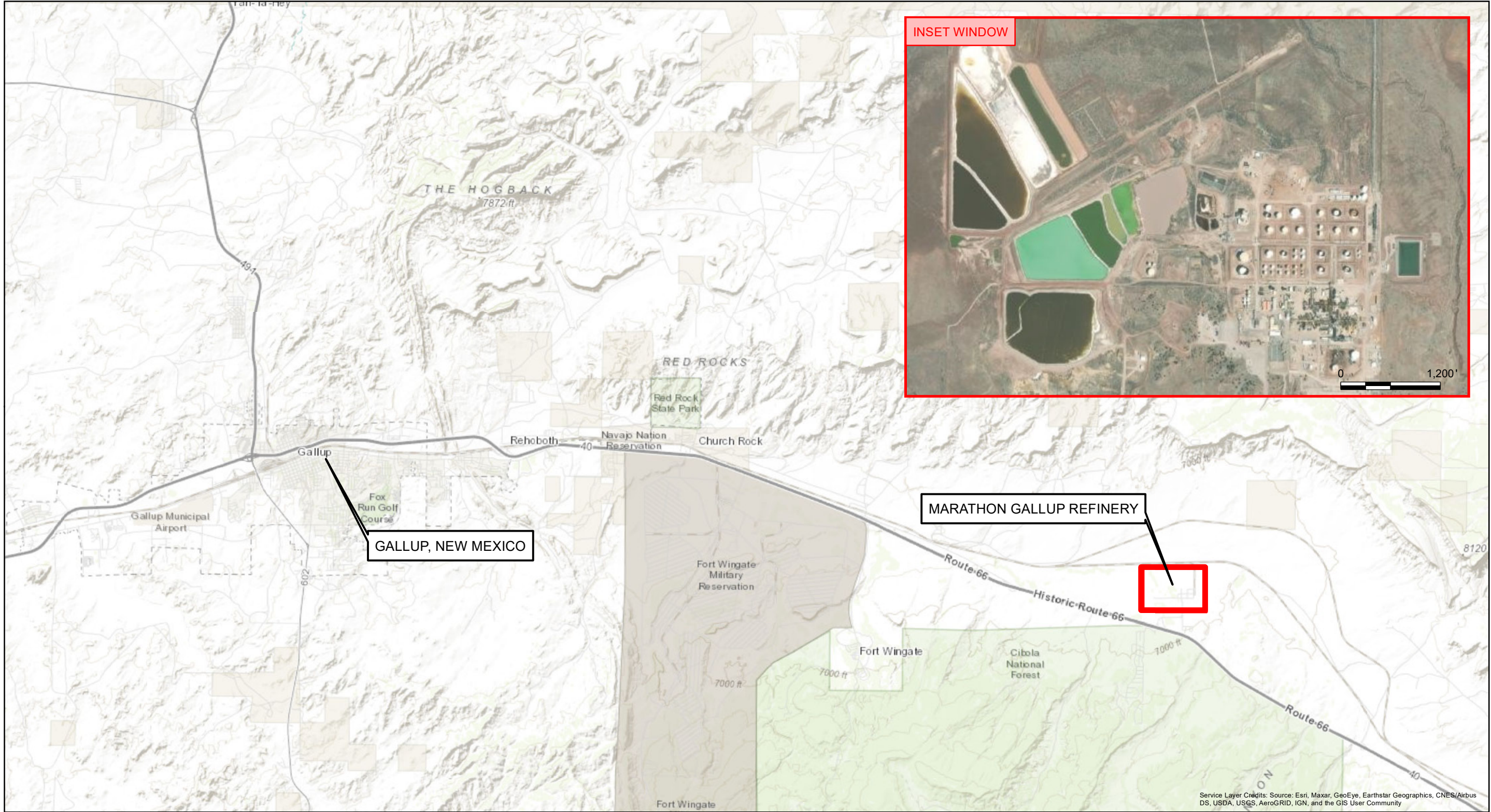
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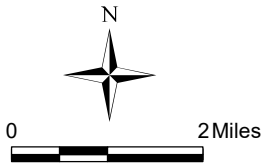
Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Figures



NOTE:

SITE LEGAL DESCRIPTION: TOWNSHIP 15 NORTH, RANGE 15 WEST, SECTION 33



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FIGURE 1-1

SITE LOCATION MAP

**WESTERN REFINING SOUTHWEST LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

Drawn By: BR Checked By: LA Scale: 1" = 2 Miles Date: 3/14/22 File: 1-1_SiteLocation_Fig1-1.mxd

\\TRIHYRO.COM\CLIENTS\ONMARATHON\GIS\GALLUP\MAPPGIS\TEWIDE-FIGURES\WELLS\202107-REFINERY\ADDITIONAL\WELLS\TALL-1-1-SITELOCATION-FIG-1.MXD

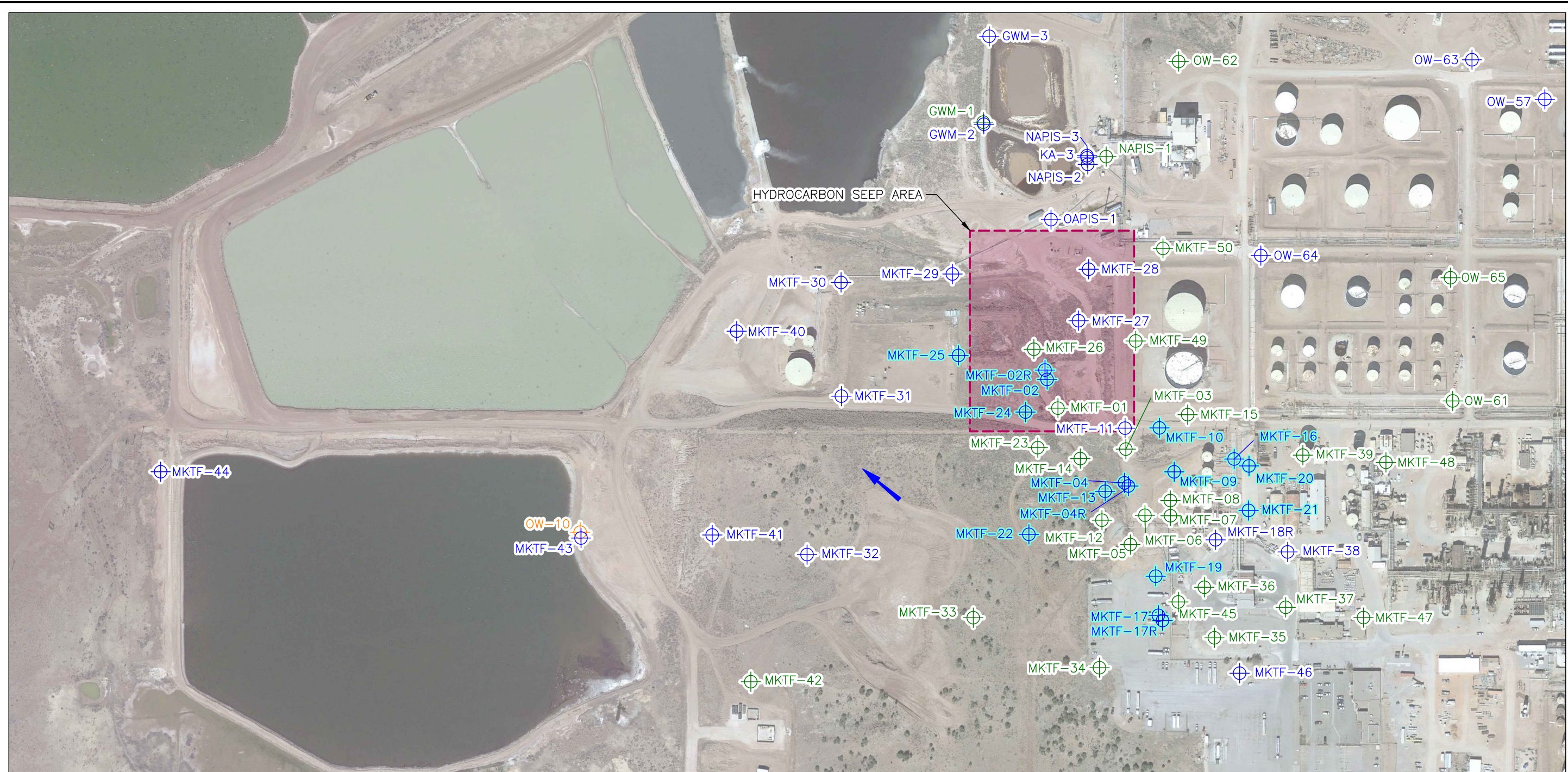
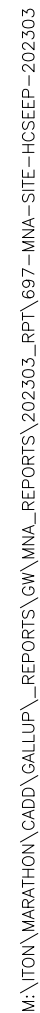


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NOTE:

SITE LEGAL DESCRIPTION -
TOWNSHIP 15 NORTH,
RANGE 15 WEST, SECTION 33

EXPLANATION

- | | | | | |
|---|---------|--|------|--|
|  | OW-10 | SONSELA WELL AND DESIGNATION | MKTF | MARKETING TANK FARM |
|  | MKTF-44 | CHINLE/ALLUVIUM INTERFACE WELL AND DESIGNATION | MNA | MONITORED NATURAL ATTENUATION |
|  | MKTF-42 | SPH MONITORING WELL AND DESIGNATION | SPH | SEPARATE PHASE HYDROCARBON (DETECTED DURING THIRD QUARTER 2022 SAMPLING EVENT) |
|  | MKTF-17 | MKTF MNA WELL | | |
|  | | GENERAL GROUNDWATER FLOW DIRECTION | | |
|  | | HYDROCARBON SEEP AREA | | |



FIGURE 1-2

HYDROCARBON SEEP AREA AND MNA WELL SET

**WESTERN REFINING SOUTHWEST LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**



Drawn By: REP	Checked By: BN	Scale: 1" = 300'	Date: 3/10/23	File: 697-MNA-SITE-HCSEEP-202303
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\\TRIHYRO.COM\CLIENTS\TON\MARATHON\GADD\GALLUP\REPORTS\GW\MNA_REPORTS\202303_RPT\697-MNA-SITE-CVOC-MTBE-202303

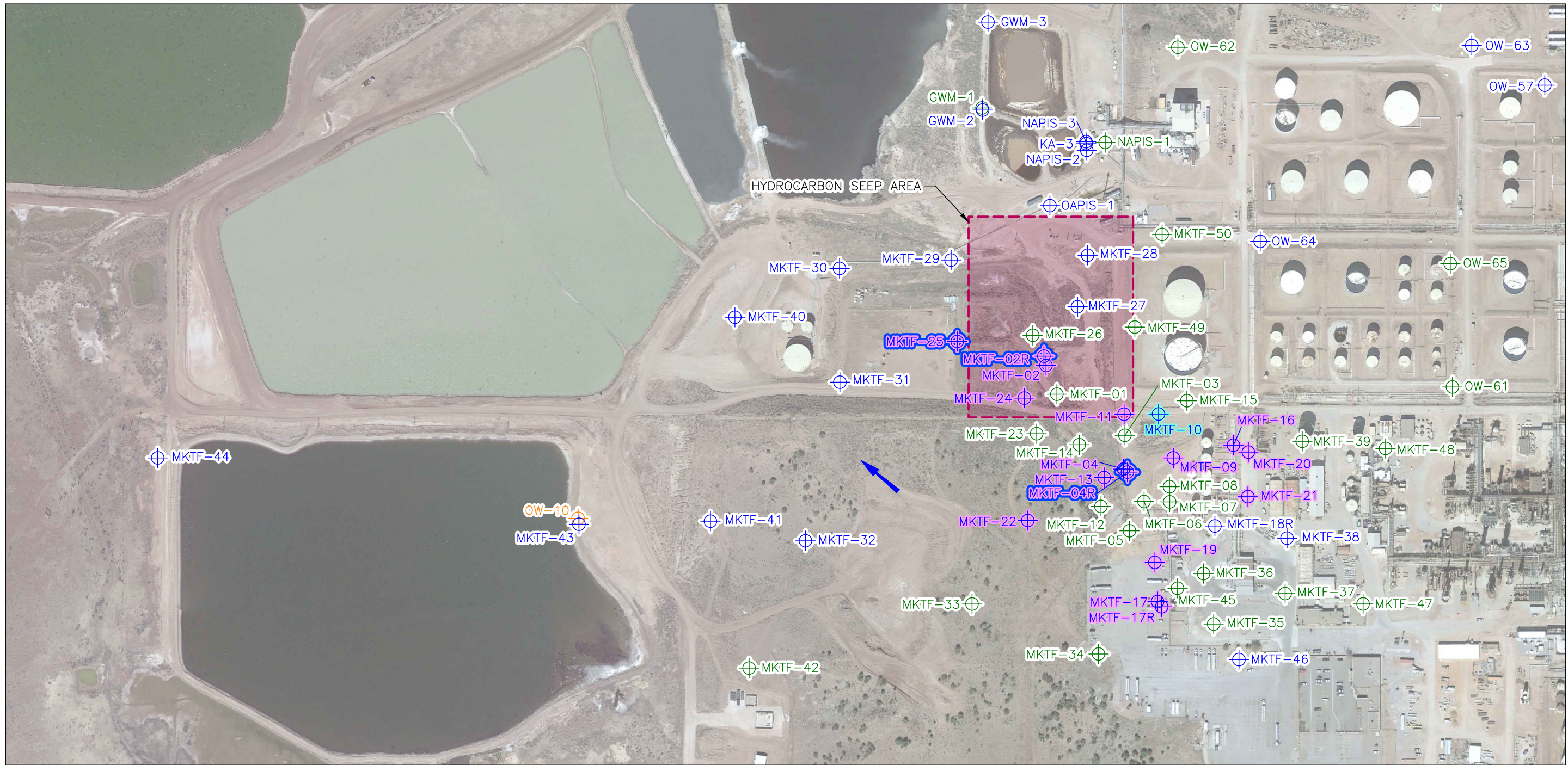


Image Citation: Google Earth Pro Imagery, Publication: March 2016.



QUADRANGLE LOCATION

NOTE:

SITE LEGAL DESCRIPTION -
TOWNSHIP 15 NORTH,
RANGE 15 WEST, SECTION 33

- OW-10 SONSELA WELL AND DESIGNATION
- MKTF-44 CHINLE/ALLUVIUM INTERFACE WELL AND DESIGNATION
- MKTF-42 SPH MONITORING WELL AND DESIGNATION
- MKTF-17 MKTF MNA WELL
- MKTF-04 MONITORING WELL WITH CONSISTENT DETECTION OF MTBE
- MKTF-09 MONITORING WELL WITH CONSISTENT DETECTION OF MTBE AND CHLORINATED COMPOUNDS

EXPLANATION



- CVOC CHLORINATED VOLATILE ORGANIC COMPOUND
- MKTF MARKETING TANK FARM
- MNA MONITORED NATURAL ATTENUATION
- MTBE METHYL TERT-BUTYL ETHER
- SPH SEPARATE PHASE HYDROCARBON (DETECTED DURING THIRD QUARTER 2022 SAMPLING EVENT)

NOTE:

CONSISTENT DETECTION IS DEFINED AS HAVING
GREATER THAN A 50 PERCENT RATE OF DETECTION.



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FIGURE 3-1
MNA WELLS WITH CVOC AND MTBE DETECTIONS
(2022)
WESTERN REFINING SOUTHWEST LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: REP | Checked By: BN | Scale: 1" = 300' | Date: 3/10/23 | File: 697-MNA-SITE-CVOC-MTBE-202303

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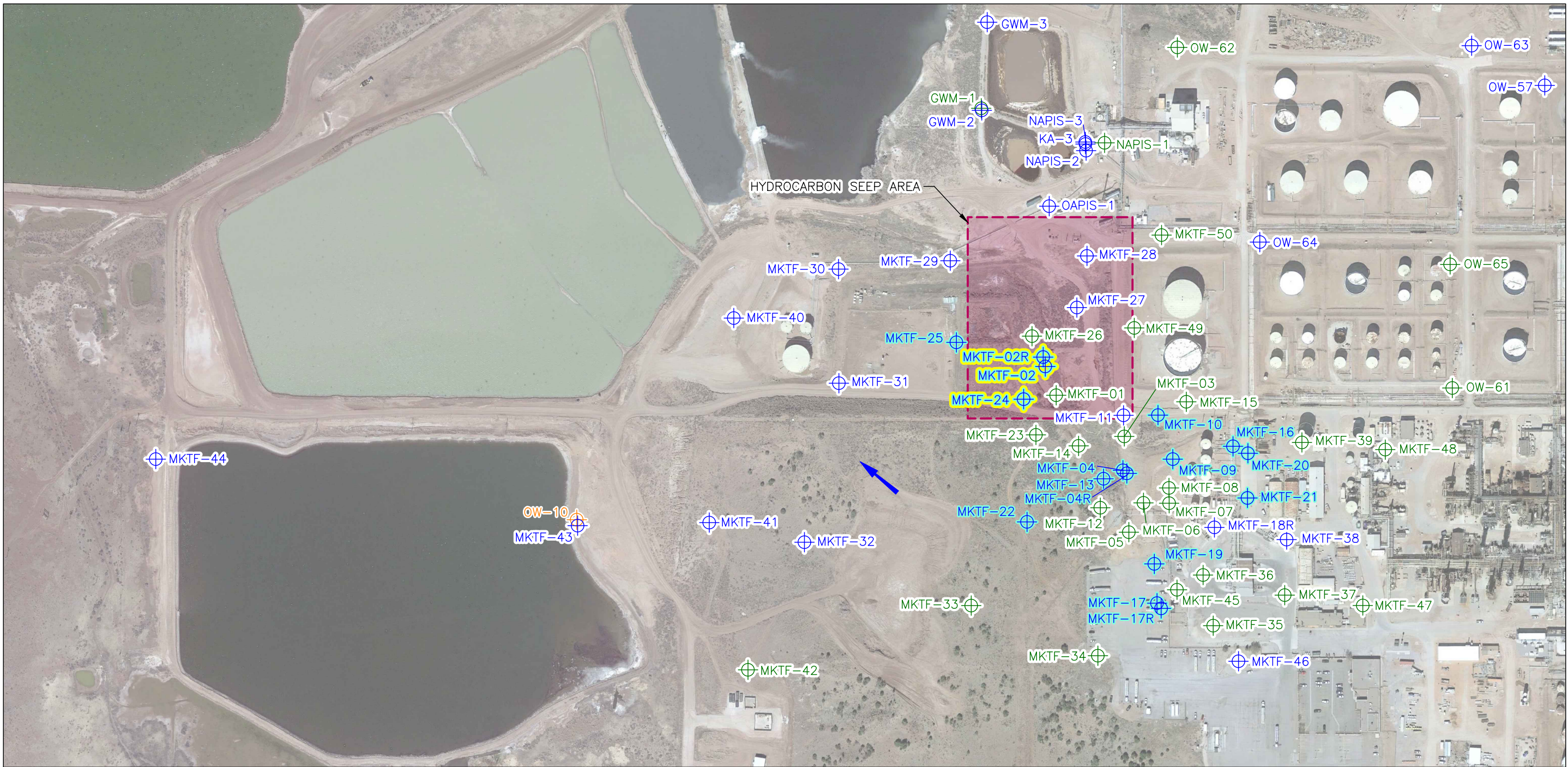
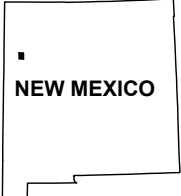


Image Citation: Google Earth Pro Imagery, Publication: March 2016.



NEW MEXICO

QUADRANGLE LOCATION

NOTE:
SITE LEGAL DESCRIPTION -
TOWNSHIP 15 NORTH,
RANGE 15 WEST, SECTION 33

EXPLANATION		
	OW-10	SONSELA WELL AND DESIGNATION
	MKTF-44	CHINLE/ALLUVIUM INTERFACE WELL AND DESIGNATION
	MKTF-42	SPH MONITORING WELL AND DESIGNATION
	MKTF-17	MKTF MNA WELL
	MKTF-24	MONITORING WELL WITH CONSISTENT DETECTION OF VINYL CHLORIDE
		GENERAL GROUNDWATER FLOW DIRECTION
		HYDROCARBON SEEP AREA
	MKTF	MARKETING TANK FARM
	MNA	MONITORED NATURAL ATTENUATION
	SPH	SEPARATE PHASE HYDROCARBON (DETECTED DURING THIRD QUARTER 2022 SAMPLING EVENT)

NOTE:
CONSISTENT DETECTION IS DEFINED AS HAVING
GREATER THAN A 50 PERCENT RATE OF DETECTION.





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FIGURE 3-2

MONITORING WELLS WITH CONSISTENT VINYL CHLORIDE CONCENTRATIONS (2022)

**WESTERN REFINING SOUTHWEST LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

Drawn By: REP

Checked By: BN

Scale: 1" = 300'

Date: 3/10/23

File: 697-MNA-SITE-VC-202203



Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Tables

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	PCE (mg/L)	TCE (mg/L)	TBA (mg/L)	cis-1,2-DCE (mg/L)	1,1-DCA (mg/L)	1,2-DCA (mg/L)	1,1-DCE (mg/L)	Vinyl Chloride (mg/L)	Benzene (mg/L)
MKTF-02R	3/16/2022	0.00036	0.023	--	0.0036	0.1	0.057	0.29	0.00075	0.078
	12/16/2021	<0.001	0.015	--	0.0023	0.074	0.04	0.31	0.001	0.069
	09/17/2021	<0.005	0.023	--	0.0031	0.11	0.067	0.28	0.0019	0.029
	07/22/2021	<0.036	<0.036	--	<0.036	0.021	0.014	<0.036	<0.036	0.027
MKTF-02	06/17/2021	<0.01	<0.01	--	<0.01	0.014	0.0061	<0.01	0.015	1.5
	03/10/2021	<0.005	<0.005	--	<0.005	0.013	<0.005	<0.005	0.015	1.6
	12/18/2020	<0.005	<0.005	--	<0.005	0.0291	0.034	0.00876	0.0241	0.885
	09/21/2020	<0.001	<0.001	--	0.0019	0.021	<0.001	0.0014	0.027	4
	02/25/2020	<0.005	<0.005	--	<0.005	0.0065	<0.005	<0.005	0.005	0.78
	11/19/2019	<0.005	<0.005	--	<0.005	0.019	0.0057	<0.005	0.022	0.36
	08/23/2019	<0.02	<0.02	--	<0.02	0.027	<0.02	<0.02	0.028	0.99
	05/06/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	0.95
	03/28/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	0.62
	11/28/2018	<0.01	<0.01	--	<0.01	0.044	<0.01	<0.01	0.028	5.5
	08/20/2018	<0.01	<0.01	--	<0.01	0.042	<0.01	0.024	<0.01	2.5
	05/01/2018	<0.01	0.0018	--	0.016	0.033	<0.01	0.011	<0.01	2.9
	02/06/2018	<0.005	<0.005	--	0.014	0.041	<0.005	0.018	<0.005	2.6
MKTF-04R	3/15/2022	<0.005	0.0025	--	0.02	0.041	0.0028	0.064	<0.005	0.5
	12/22/2021	<0.005	0.0033	--	0.026	0.054	0.0027	0.081	<0.005	0.19
	09/17/2021	<0.005	0.0021	--	0.018	0.035	0.0023	0.045	<0.005	1.1
	08/16/2021	<0.027	<0.027	--	<0.027	0.014	<0.027	0.014	<0.027	<0.014
MKTF-04	03/03/2020	<0.005	<0.005	--	<0.005	0.0091	<0.005	0.013	<0.005	0.8
	10/30/2019	<0.005	<0.005	--	<0.005	0.0055	<0.005	0.0073	<0.005	0.93
	08/21/2019	<0.005	<0.005	--	0.0091	0.013	0.0015	0.017	<0.005	0.82
	05/13/2019	<0.005	<0.005	--	<0.005	0.0054	<0.005	0.0081	<0.005	0.81
	03/26/2019	--	--	--	--	--	--	--	--	--
	11/20/2018	<0.002	<0.002	--	0.0071	0.011	<0.002	0.017	<0.002	1.1
	09/04/2018	<0.010	<0.010	--	<0.01	<0.01	<0.010	<0.010	<0.010	1.1
	05/02/2018	<0.010	<0.01	--	<0.01	0.014	<0.010	0.02	<0.010	1.1
	02/14/2018	<0.010	<0.010	--	0.011	<0.01	<0.010	0.012	<0.010	0.9

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	BTEX (mg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	MTBE (mg/L)	Chloride (mg/L)	Fe, Dissolved (mg/L)
MKTF-02R	3/16/2022	<0.001	<0.001	<0.0015	0.078	0.63	0.24	0.053	--	--
	12/16/2021	<0.001	<0.001	<0.0015	0.069	0.54	0.19	0.035	1900	0.029
	09/17/2021	<0.005	<0.005	<0.0075	0.029	0.56	0.22	0.045	1800	<0.02
	07/22/2021	0.014	0.79	1.7	2.531	260	41	<0.036	--	--
MKTF-02	06/17/2021	0.025	0.34	0.063	1.928	5.2	1.8	0.034	3000	1
	03/10/2021	0.023	0.3	0.046	1.969	5.8	1.4	0.026	2900	1.8
	12/18/2020	0.0119	0.161	<0.05	1.0579	--	4.55	0.0317	3020	1.03
	09/21/2020	0.033	0.52	0.0063	4.5593	9.8	2.1	0.061	1000	0.22
	02/25/2020	0.01	0.57	0.048	1.408	7.9	1.8	0.0091	1300	0.34
	11/19/2019	<0.005	0.046	<0.0075	0.406	2.4	0.65	0.025	--	--
	08/23/2019	<0.02	0.078	<0.03	1.068	3.9	3.1	0.051	2000	2.4
	05/06/2019	<0.02	0.043	0.11	1.103	5.3	3.5	0.049	1600	3
	03/28/2019	<0.02	<0.01	0.13	0.75	4.1	3.8	0.047	1400	0.42
	11/28/2018	0.082	0.51	0.17	6.262	18	2.9	0.099	570	0.078
	08/20/2018	0.031	0.14	0.031	2.702	7.8	1.3	0.1	510	0.027
	05/01/2018	0.039	0.24	0.12	3.299	9.1	3.2	0.097	520	0.03
	02/06/2018	0.049	0.25	0.089	2.988	7.7	2.8	0.11	520	0.022
MKTF-04R	3/15/2022	0.0061	0.047	0.088	0.6411	3.7	1.5	0.85	--	--
	12/22/2021	0.0029	0.033	0.052	0.2779	2.1	1.2	0.86	240	0.49
	09/17/2021	0.013	0.2	0.25	1.563	5.2	2.2	1.6	220	1.5
	08/16/2021	0.0073	1.9	14	15.9073	300	130	0.063	--	--
MKTF-04	03/03/2020	0.01	0.47	0.56	1.84	8.2	1.8	2.1	220	1.4
	10/30/2019	0.012	0.71	0.74	2.392	10	0.77	1.8	210	5.4
	08/21/2019	0.012	0.63	0.7	2.162	10	5.9	1.7	230	1.5
	05/13/2019	0.013	0.63	0.75	2.203	9.8	5.6	1.8	260	4.5
	03/26/2019	--	--	--	0	--	--	--	--	--
	11/20/2018	0.011	0.61	0.65	2.371	7.6	4.5	2.2	210	1
	09/04/2018	0.014	0.7	0.86	2.674	12	4.7	1.8	200	3.2
	05/02/2018	0.016	0.74	0.89	2.746	12	4.9	2.3	200	2.4
	02/14/2018	0.014	0.6	0.71	2.224	9.6	5	2.0	220	1.9

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Fe, Total (mg/L)	Mn, Dissolved (mg/L)	Mn, Total (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DO (mg/L)	ORP (mV) ¹	pH (Standard Units) ¹	T (C) ¹
MKTF-02R	3/16/2022	--	--	--	--	--	1.5	25.1	7.25	13.3
	12/16/2021	0.71	0.21	0.23	0.071	660	0.59	215.6	7.46	10.6
	09/17/2021	0.047	0.087	0.095	<0.5	710	5.7	110.1	7.04	14.1
	07/22/2021	22000	--	950	--	--	--	--	--	--
MKTF-02	06/17/2021	2.1	5.4	5.6	<0.5	100	3.98	171.8	7.01	14.9
	03/10/2021	3.1	6.8	6.7	<0.5	190	1.93	273.7	6.95	9.63
	12/18/2020	2.56	6.46	6.14	<0.1	185	7.24	171.7	6.94	11.5
	09/21/2020	0.99	1.9	2	<0.5	64	0.21	285.1	6.72	14.76
	02/25/2020	2	3	3	<0.5	160	5.77	127.3	8.69	8.13
	11/19/2019	5.9	--	2.9	--	--	3.52	145	7.6	14.3
	08/23/2019	9.1	2	2.3	<0.5	150	3.01	-104.1	7.1	13.35
	05/06/2019	3.9	1.8	1.9	<0.5	61	1.74	-92.2	6.9	12.31
	03/28/2019	1.6	1.6	1.5	--	52	1.92	46.1	8.3	11.18
	11/28/2018	0.24	0.75	0.74	<0.5	5.6	--	--	7.7	12.95
	08/20/2018	0.2	0.51	0.52	<0.5	11	--	--	7.2	14.8
	05/01/2018	0.36	0.57	0.62	<0.5	15	--	--	7.5	11.8
	02/06/2018	0.57	0.55	0.61	--	20	--	--	8.4	10.26
MKTF-04R	3/15/2022	--	--	--	--	--	1.7	-62.2	7.1	13.8
	12/22/2021	2.7	2.6	2.6	0.066	93	2.12	125	6.90	13.8
	09/17/2021	9.3	2.4	2.7	<0.5	63	1.96	-25.8	6.84	16.1
	08/16/2021	15000	--	770	--	--	--	--	--	--
MKTF-04	03/03/2020	6	1.8	1.9	<0.5	9.3	2.02	30.1	8.39	12.89
	10/30/2019	7.6	1.5	1.6	<0.5	3.4	--	--	--	--
	08/21/2019	5.9	2	2.2	<0.5	16	--	--	--	--
	05/13/2019	8	1.6	1.6	<0.5	5.6	--	--	--	--
	03/26/2019	--	--	--	--	--	--	--	--	--
	11/20/2018	5.1	1.5	2.3	<0.5	9.6	--	--	--	--
	09/04/2018	5.7	1.5	1.4	<0.5	5.5	--	--	--	--
	05/02/2018	5.3	1.5	1.7	<0.5	9.8	--	--	--	--
	02/14/2018	5.2	1.5	1.5	<0.5	8.6	--	--	--	--

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	PCE (mg/L)	TCE (mg/L)	TBA (mg/L)	cis-1,2-DCE (mg/L)	1,1-DCA (mg/L)	1,2-DCA (mg/L)	1,1-DCE (mg/L)	Vinyl Chloride (mg/L)	Benzene (mg/L)
MKTf-09	09/20/2020	--	--	--	--	--	--	--	--	--
	03/03/2020	0.0012	<0.02	--	0.021	0.019	<0.02	0.035	<0.02	3.3
	11/18/2019	<0.01	<0.01	--	0.011	0.011	<0.01	0.015	<0.01	3.7
	08/28/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3.5
	05/13/2019	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	3.2
	03/26/2019	--	--	--	--	--	--	--	--	--
	11/28/2018	<0.02	<0.02	--	0.02	0.022	<0.02	0.034	<0.02	3.3
	09/04/2018	<0.02	<0.02	--	0.021	<0.02	<0.02	0.028	<0.02	2.7
	05/02/2018	<0.01	<0.01	--	0.023	0.026	<0.01	0.036	<0.01	2.8
	02/14/2018	<0.01	<0.01	--	0.026	0.015	<0.01	0.028	<0.01	2.7
MKTf-10	3/15/2022	<0.01	<0.01	--	0.0062	0.012	0.0041	<0.01	0.008	6.3
	12/16/2021	<0.01	<0.01	--	<0.01	0.017	<0.01	<0.01	0.012	6
	09/15/2021	<0.01	<0.01	--	<0.01	0.024	<0.01	<0.01	<0.01	3.7
	06/23/2021	<0.01	<0.01	--	0.011	0.018	<0.01	<0.01	0.012	5.8
	03/10/2021	<0.005	<0.005	--	0.013	0.027	<0.005	<0.005	0.01	5.1
	12/18/2020	<0.025	<0.025	--	<0.025	0.04	<0.025	<0.025	<0.025	4.67
	03/03/2020	<0.01	<0.01	--	0.041	0.047	<0.01	<0.01	<0.01	4.8
	10/30/2019	<0.01	<0.01	--	0.039	0.031	<0.01	<0.01	0.01	5.5
	08/22/2019	<0.01	<0.01	--	0.034	0.037	<0.01	<0.01	0.01	4.6
	05/13/2019	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.05	5.5
	03/26/2019	--	--	--	--	--	--	--	--	--
	11/20/2018	<0.02	<0.02	--	0.058	<0.02	<0.02	<0.02	<0.02	11
	09/04/2018	<0.05	<0.05	--	0.047	<0.05	<0.05	<0.05	<0.05	10
	05/02/2018	<0.05	<0.05	--	0.06	<0.05	<0.05	<0.05	<0.05	13
	02/14/2018	<0.05	<0.05	--	0.066	<0.05	<0.05	<0.05	<0.05	10
MKTf-13	10/29/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	4.7
	08/20/2019	--	--	--	--	--	--	--	--	--
	05/09/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3.2
	03/26/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3.5
	11/28/2018	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	4.5
	08/30/2018	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3.5
	05/10/2018	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	4.8

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	BTEX (mg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	MTBE (mg/L)	Chloride (mg/L)	Fe, Dissolved (mg/L)
MKTF-09	09/20/2020	--	--	--	--	--	--	--	--	--
	03/03/2020	<0.02	0.2	0.059	3.559	7.9	1	0.53	290	1.4
	11/18/2019	0.014	0.23	0.069	4.013	10	1.0	0.45	220	2.4
	08/28/2019	0.021	0.27	0.098	3.889	12	3.9	0.42	230	3.8
	05/13/2019	0.025	0.28	0.095	3.6	8.4	3.1	0.31	250	3.2
	03/26/2019	--	--	--	0	--	--	--	--	--
	11/28/2018	<0.02	0.19	0.073	3.563	9.1	1.8	0.56	260	0.82
	09/04/2018	<0.02	0.25	0.084	3.034	11	2.4	0.43	260	0.94
	05/02/2018	0.025	0.28	0.098	3.203	8.2	2.6	0.49	250	1.4
	02/14/2018	0.024	0.25	0.084	3.058	8.7	2.2	0.48	220	1.3
MKTF-10	3/15/2022	0.22	1.6	6.7	14.82	41	1.9	0.0096	--	--
	12/16/2021	0.2	1.7	6.7	14.6	37	2.3	<0.01	870	7.7
	09/15/2021	0.25	1.1	4.3	9.35	48	1.8	<0.01	970	8
	06/23/2021	0.59	1.9	8.4	16.69	45	2.1	0.012	1000	9.7
	03/10/2021	0.28	1.5	7	13.88	40	1.4	0.009	930	9.3
	12/18/2020	0.284	1.8	8.6	15.354	--	5.54	<0.025	937	7.25
	03/03/2020	0.65	1.7	8.2	15.35	40	1.3	<0.01	970	7.2
	10/30/2019	0.57	1.7	7.2	14.97	40	<0.40	0.017	1000	14
	08/22/2019	0.66	1.6	7.4	14.26	35	3	0.019	960	7.9
	05/13/2019	0.9	1.7	7.9	16	48	3.5	<0.05	460	8.4
	03/26/2019	--	--	--	0	--	--	--	--	--
	11/20/2018	1.9	1.9	8	22.8	53	2.8	<0.02	320	6.1
	09/04/2018	2.4	1.8	8.1	22.3	57	2.5	<0.05	340	6.8
	05/02/2018	4.9	2.1	9.6	29.6	100	3.7	<0.05	380	9.2
	02/14/2018	3.7	1.8	8.3	23.8	74	2.6	<0.05	390	9.7
MKTF-13	10/29/2019	0.11	0.6	2.6	8.01	23	7.3	0.33	290	15
	08/20/2019	--	--	--	--	--	--	--	--	--
	05/09/2019	0.12	0.32	2.6	6.24	19	63	0.48	400	25
	03/26/2019	0.14	0.6	3.5	7.74	27	8.1	0.44	390	24
	11/28/2018	0.13	0.53	2.8	7.96	24	4.5	1.4	220	10
	08/30/2018	0.12	0.65	3.2	7.47	26	5.5	1.2	210	16
	05/10/2018	0.15	0.87	4	9.82	28	30	2	190	14

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Fe, Total (mg/L)	Mn, Dissolved (mg/L)	Mn, Total (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DO (mg/L)	ORP (mV) ¹	pH (Standard Units) ¹	T (C) ¹
MKTF-09	09/20/2020	--	--	--	--	--	1.7	210.5	7.07	16.89
	03/03/2020	2.7	4.1	4	<0.5	46	1.91	51.2	8.04	11.22
	11/18/2019	3.4	4.2	4.3	<0.5	25	1.46	29.8	7.41	16.1
	08/28/2019	4.5	4.4	4.5	<0.5	12	--	--	6.87	14.84
	05/13/2019	3.8	4.6	4.8	<0.5	8.1	2.41	-74.3	6.52	14.27
	03/26/2019	--	--	--	--	--	1.58	-59.9	7.90	12.1
	11/28/2018	1.9	4.1	3.9	<0.5	24	--	--	7.29	13.85
	09/04/2018	1.8	4.4	4.2	<0.5	17	--	--	--	--
	05/02/2018	2.3	3.9	4.4	<0.5	22	--	--	--	--
	02/14/2018	2.3	4	3.9	<0.5	27	--	--	6.93	11.30
MKTF-10	3/15/2022	--	--	--	--	--	1.3	-39.8	6.93	11.9
	12/16/2021	11	4.6	4.9	<0.5	<2.5	2.82	56.5	6.91	12.9
	09/15/2021	12	5	5.2	<0.5	<2.5	1.08	-2.3	6.68	19.3
	06/23/2021	9.5	5.9	5.7	<0.5	<2.5	1.08	23.1	6.75	15.9
	03/10/2021	12	5.3	5.5	<0.5	<2.5	2.43	274.3	6.90	9.48
	12/18/2020	10.7	4.81	5.07	<0.1	<1	2.87	220.4	6.92	11.2
	03/03/2020	12	5.4	5.5	<0.5	<2.5	1.61	3	7.83	11.84
	10/30/2019	15	6.2	6.3	<0.5	<2.5	1.4	-1.2	7.18	13.6
	08/22/2019	11	5.4	5.6	<0.5	<2.5	--	--	7.04	18.34
	05/13/2019	8.9	3.4	3.6	<0.5	<2.5	1.78	-87.1	6.24	15.95
	03/26/2019	--	--	--	--	--	1.16	-24.4	7.85	11.9
	11/20/2018	8.3	2.9	3	<0.5	<2.5	--	--	7.26	12.68
	09/04/2018	7.7	2.9	2.8	<0.5	<2.5	--	--	--	--
	05/02/2018	11	3.3	3.9	<0.5	<2.5	--	--	--	--
	02/14/2018	12	3.7	3.6	<0.5	<2.5	--	--	--	--
MKTF-13	10/29/2019	20	4.6	4.7	<0.5	0.59	0.85	-8.4	7.24	13.8
	08/20/2019	--	--	--	--	--	--	--	--	--
	05/09/2019	35	5.3	6.1	<0.5	1.1	--	--	--	--
	03/26/2019	25	5.1	4.7	--	0.75	--	--	--	--
	11/28/2018	16	4.4	4.4	<0.5	<2.5	--	--	7.11	14.17
	08/30/2018	19	5.1	4.7	<0.5	<2.5	--	--	--	--
	05/10/2018	17	4.6	4.6	<0.5	1.2	--	--	--	--

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	PCE (mg/L)	TCE (mg/L)	TBA (mg/L)	cis-1,2-DCE (mg/L)	1,1-DCA (mg/L)	1,2-DCA (mg/L)	1,1-DCE (mg/L)	Vinyl Chloride (mg/L)	Benzene (mg/L)
MKTF-16	12/06/2022	<0.005	<0.005	--	<0.005	0.0091	<0.005	<0.005	<0.005	0.45
	9/15/2022	<0.005	<0.005	<.12	<0.005	0.017	<0.005	<0.005	0.002	0.4
	6/21/2022	<0.001	<0.001	--	<0.001	0.0047	<0.001	<0.001	0.00093	0.066
	3/23/2022	<0.001	<0.001	--	<0.001	0.0044	<0.001	<0.001	0.00065	0.16
	12/28/2021	<0.001	<0.001	--	<0.001	0.0026	<0.001	<0.001	<0.001	0.016
	09/24/2021	<0.05	<0.05	--	<0.05	0.06	<0.05	<0.05	<0.05	4.8
	03/11/2021	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	4.5
	12/28/2020	--	--	--	--	--	--	--	--	--
	12/23/2020	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	14.7
	10/30/2019	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	15
	08/30/2019	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	9.8
	05/14/2019	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	14
	02/20/2019	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	21
	11/29/2018	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	17
	08/31/2018	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	17
	05/11/2018	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.05	19
	02/15/2018	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	1.8
MKTF-17R	3/15/2022	<0.01	<0.01	--	<0.01	0.0075	0.0042	<0.01	0.0044	4.5
	12/21/2021	<0.01	<0.01	--	<0.01	0.0059	<0.01	<0.01	<0.01	1.6
	09/17/2021	<0.005	<0.005	--	<0.005	0.0033	<0.005	<0.005	<0.005	1.6
	08/14/2021	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	11
MKTF-17	10/29/2019	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	12
	08/20/2019	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.87
	05/09/2019	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	2.2
	03/26/2019	--	--	--	--	--	--	--	--	--
	11/28/2018	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	08/24/2018	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	05/04/2018	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.047
	02/16/2018	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.22

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	BTEX (mg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	MTBE (mg/L)	Chloride (mg/L)	Fe, Dissolved (mg/L)
MKTF-16	12/06/2022	<0.005	0.076	<0.0075	0.526	2.1	--	0.011	--	--
	9/15/2022	0.0014	0.0091	0.0056	0.4161	0.93	--	0.0033	80	0.33
	6/21/2022	<0.001	0.012	0.0022	0.0802	0.3	--	0.0035	--	--
	3/23/2022	0.0013	0.031	0.0067	0.199	0.8	--	0.0066	--	--
	12/28/2021	<0.001	0.0036	<0.0015	0.0196	0.061	0.35	0.004	83	0.039
	09/24/2021	<0.05	0.43	<0.075	5.23	13	<1.7	0.17	260	3.1
	03/11/2021	<0.1	0.55	0.16	5.21	17	--	0.16	--	--
	12/28/2020	--	--	--	0	--	--	--	--	--
	12/23/2020	0.129	1.32	<1	16.149	--	--	0.279	--	--
	10/30/2019	<0.1	1.5	0.43	16.93	33	<0.4	0.62	1700	15
	08/30/2019	<0.1	0.48	<0.15	10.28	20	3.6	0.55	1800	21
	05/14/2019	0.11	0.71	0.62	15.44	30	3.4	0.62	960	5.8
	02/20/2019	0.19	1.4	1.6	24.19	48	2.2	0.61	590	2
	11/29/2018	0.12	0.89	0.72	18.73	34	2.6	0.69	620	2.7
	08/31/2018	0.13	1.3	1.4	19.83	50	3.3	0.64	650	1.8
	05/11/2018	0.17	1.6	2	22.77	47	2.9	0.64	840	3.4
	02/15/2018	0.024	0.015	0.23	2.069	8.4	2.4	0.04	760	0.095
MKTF-17R	3/15/2022	22	1.4	6.8	34.7	78	7	4.8	--	--
	12/21/2021	5.8	0.49	2.4	10.29	28	1.9	4.4	190	0.21
	09/17/2021	5.4	0.28	2.7	9.98	29	1.8	3.9	170	0.16
	08/14/2021	150	17	92	270	2100	200	0.088	--	--
MKTF-17	10/29/2019	23	1.1	3.1	39.2	78	0.7	2.5	240	0.45
	08/20/2019	<0.005	0.64	0.078	1.588	7.6	3.3	4.3	140	0.37
	05/09/2019	<0.005	0.49	0.15	2.84	9.1	7.6	4.3	100	0.27
	03/26/2019	--	--	--	0	--	--	--	--	--
	11/28/2018	<0.005	0.028	<0.0075	0.028	3	1.6	5.7	110	0.27
	08/24/2018	<0.005	0.12	<0.0075	0.12	4.7	<1.0	5.3	110	0.39
	05/04/2018	<0.005	0.14	<0.0075	0.187	7.1	1.4	7.4	130	0.17
	02/16/2018	<0.005	0.21	<0.0075	0.43	3.7	1.3	4.9	100	0.13

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Fe, Total (mg/L)	Mn, Dissolved (mg/L)	Mn, Total (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DO (mg/L)	ORP (mV) ¹	pH (Standard Units) ¹	T (C) ¹
MKTF-16	12/06/2022	--	--	--	--	--	2.04	-33.4	7.45	13.8
	9/15/2022	49	--	1.7	0.59	28	1.18	12.8	7.4	17.1
	6/21/2022	--	--	--	--	--	1.04	-22.8	7.2	20.3
	3/23/2022	--	--	--	--	--	7.97	362.8	6.83	9
	12/28/2021	2	0.012	0.055	0.86	46	7.93	304.2	6.75	8.5
	09/24/2021	6.5	1.1	1.1	--	12	0.7	-55.9	6.80	18.9
	03/11/2021	--	--	--	--	--	1.11	61.6	6.82	12.2
	12/28/2020	12.4	--	2.68	--	--	--	--	--	--
	12/23/2020	10.7	--	2.54	--	--	0.98	53.8	6.97	14.2
	10/30/2019	17	5.5	4.9	<0.5	<2.5	--	--	--	--
	08/30/2019	24	7.1	6.8	<0.5	<2.5	--	--	6.79	22.88
	05/14/2019	5.8	2.6	3	<0.5	<2.5	0.97	-78	6.16	15.96
	02/20/2019	5.8	1.7	1.7	<0.5	<2.5	2.1	-55.1	7.71	13.47
	11/29/2018	4.1	1.5	1.5	<0.5	<2.5	--	--	--	--
	08/31/2018	3.6	1.8	1.7	--	<2.5	--	--	6.91	23.9
	05/11/2018	4.3	1.9	1.9	<0.5	<2.5	--	--	7.03	18.6
	02/15/2018	18	0.37	0.8	<0.5	57	--	--	6.89	15.24
MKTF-17R	3/15/2022	--	--	--	--	--	1.19	-106.5	7.28	12.9
	12/21/2021	0.99	3.5	3.4	<0.5	4.9	6.7	197.5	7.05	13.6
	09/17/2021	1.4	2.8	3.4	<0.5	10	1.89	132.2	6.96	16.6
	08/14/2021	19000	--	880	--	--	--	--	--	--
MKTF-17	10/29/2019	4.8	3.5	3.4	<0.5	6.2	2.27	169.9	7.49	14.0
	08/20/2019	3	2.8	3	<0.5	14	--	--	6.99	15.03
	05/09/2019	5.4	3	3.1	<0.5	15	1	-93.8	6.36	11.94
	03/26/2019	--	--	--	--	--	3.75	2.7	7.72	10.99
	11/28/2018	2	2.5	2.2	<0.5	120	--	--	7.62	13.56
	08/24/2018	1.7	2.4	2.4	<0.5	160	--	--	7.31	17.3
	05/04/2018	1.8	2.7	2.8	<0.1	68	--	--	7.14	13.8
	02/16/2018	1.7	2.9	2.6	<0.5	52	--	--	7.00	13.00

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	PCE (mg/L)	TCE (mg/L)	TBA (mg/L)	cis-1,2-DCE (mg/L)	1,1-DCA (mg/L)	1,2-DCA (mg/L)	1,1-DCE (mg/L)	Vinyl Chloride (mg/L)	Benzene (mg/L)
MKTF-19	10/29/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	1.6
	08/19/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	1.4
	05/09/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	1.8
	03/26/2019	--	--	--	--	--	--	--	--	--
	11/28/2018	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	1.9
	08/24/2018	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	1.7
	05/04/2018	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	2
	02/16/2018	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	1.9
MKTF-20	02/05/2020	<0.010	<0.010	--	<0.010	<0.010	<0.005	<0.010	<0.010	0.62
	11/05/2009	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	2.4
	08/21/2019	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	4.8
	05/14/2019	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	2.3
	02/20/2019	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	2.1
	11/29/2018	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	3
	08/31/2019	<0.100	<0.100	--	<0.100	<0.100	<0.100	<0.100	<0.100	9.9
	05/11/2018	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050	13
	02/15/2018	<0.100	<0.100	--	<0.100	<0.100	<0.100	<0.100	<0.100	12
MKTF-21	03/11/2021	<0.002	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.002	0.018
	02/05/2020	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.058
	11/05/2019	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	5.6
	08/22/2019	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	5.4
	05/14/2019	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	2.4
	02/20/2019	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	2
	11/29/2018	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	2
	08/31/2018	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	5.9
	05/11/2018	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	4.8
	02/15/2018	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	3.4

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	BTEX (mg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	MTBE (mg/L)	Chloride (mg/L)	Fe, Dissolved (mg/L)
MKTF-19	10/29/2019	0.013	0.61	0.61	2.833	17	1	7.9	130	10
	08/19/2019	<0.02	0.72	0.71	2.83	19	13	8.3	140	11
	05/09/2019	<0.02	0.77	0.61	3.18	19	11	7.8	140	11
	03/26/2019	--	--	--	0	--	--	--	--	--
	11/28/2018	<0.02	0.63	0.57	3.1	15	7.8	10	140	8.3
	08/24/2018	<0.02	0.71	0.74	3.15	22	7.9	9.7	120	10
	05/04/2018	0.0057	0.87	0.82	3.6957	23	9.3	11	130	10
	02/16/2018	<0.02	0.74	0.64	3.28	16	11	10	120	9.6
MKTF-20	02/05/2020	<0.010	0.058	0.53	1.208	4.6	1	<0.010	--	--
	11/05/2009	<0.010	0.26	0.096	2.756	7	1.5	0.17	140	2.2
	08/21/2019	<0.010	1.1	3.7	9.6	28	5.1	0.035	3300	20
	05/14/2019	<0.010	1.0	3.5	6.8	25	5.4	0.032	3400	22
	02/20/2019	<0.010	0.23	0.14	2.47	7.3	9.8	0.22	760	47
	11/29/2018	0.02	0.12	2.5	5.64	17	6.9	0.026	460	2.5
	08/31/2019	<0.100	0.77	9.1	19.77	70	11	<0.100	560	5.3
	05/11/2018	0.14	1.3	13	27.44	76	9.7	0.13	1600	17
	02/15/2018	0.19	0.96	12	25.15	79	5.1	<0.100	3100	53
MKTF-21	03/11/2021	<0.002	0.0063	0.0043	0.0286	1.8	--	0.03	150	--
	02/05/2020	<0.005	<0.005	<0.0075	0.058	0.74	<0.400	0.05	--	--
	11/05/2019	<0.02	1.1	2.8	9.5	27	2.7	0.029	2300	8.3
	08/22/2019	<0.020	0.68	0.5	6.58	17	7.4	0.29	230	16
	05/14/2019	<0.020	0.28	0.22	2.9	8.5	9.4	0.29	540	33
	02/20/2019	<0.020	1.2	7.1	10.3	40	20	<0.020	4600	57
	11/29/2018	<0.020	0.11	0.14	2.25	7.2	3.8	0.22	340	9.3
	08/31/2018	<0.020	0.8	0.99	7.69	22	2.9	0.5	330	16
	05/11/2018	<0.010	0.47	0.67	5.94	17	3.6	0.52	190	31
	02/15/2018	<0.020	0.31	0.39	4.1	12	3.2	0.39	210	9.2

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Fe, Total (mg/L)	Mn, Dissolved (mg/L)	Mn, Total (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DO (mg/L)	ORP (mV) ¹	pH (Standard Units) ¹	T (C) ¹
MKTF-19	10/29/2019	15	2.4	2.4	<0.5	<2.5	1.1	13.9	7.28	14.5
	08/19/2019	21	2.3	2.8	<0.5	<2.5	--	--	6.89	14.10
	05/09/2019	15	2.4	2.7	<0.5	<2.5	--	--	--	--
	03/26/2019	--	--	--	--	--	0.98	-58	7.34	8.91
	11/28/2018	7.5	2.2	2.4	<0.5	<2.5	--	--	7.14	13.7
	08/24/2018	15	2.3	2.4	<0.5	<2.5	--	--	--	--
	05/04/2018	11	2.4	2.4	<0.5	<2.5	--	--	--	--
	02/16/2018	10	2.4	2.3	<0.5	<2.5	--	--	--	--
MKTF-20	02/05/2020	--	--	--	--	--	--	--	--	--
	11/05/2009	4.3	2.1	2	<0.5	<2.5	--	--	--	--
	08/21/2019	19	8.1	7.5	<0.5	2.8	--	--	--	--
	05/14/2019	25	9	8.5	<0.5	36	--	--	--	--
	02/20/2019	58	5.5	5.5	<0.5	11	--	--	--	--
	11/29/2018	8	2.5	2.6	<0.5	4.3	--	--	--	--
	08/31/2019	5.8	2.8	3	<0.5	8.4	--	--	--	--
	05/11/2018	16	5.4	5.5	<0.5	18	--	--	--	--
	02/15/2018	52	17	16	<0.5	15	--	--	--	--
MKTF-21	03/11/2021	170	--	2.1	<0.5	110	1.3	31.5	7.11	11.7
	02/05/2020	--	--	--	--	--	--	--	--	--
	11/05/2019	9	6.2	5.8	<0.5	19	--	--	--	--
	08/22/2019	21	3.4	3.3	<0.5	6.2	--	--	--	--
	05/14/2019	42	5.6	5.7	<0.5	6.9	--	--	--	--
	02/20/2019	63	14	15	<0.5	880	--	--	--	--
	11/29/2018	29	3.6	4.1	<0.5	8.6	--	--	--	--
	08/31/2018	18	3.6	3.7	<0.5	7.1	--	--	--	--
	05/11/2018	43	5.8	5.9	<0.5	4.3	--	--	--	--
	02/15/2018	20	5.2	5	<0.5	23	--	--	--	--

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	PCE (mg/L)	TCE (mg/L)	TBA (mg/L)	cis-1,2-DCE (mg/L)	1,1-DCA (mg/L)	1,2-DCA (mg/L)	1,1-DCE (mg/L)	Vinyl Chloride (mg/L)	Benzene (mg/L)
MKTF-22	10/24/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3.4
	08/20/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3.2
	05/09/2019	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3.5
	03/26/2019	--	--	--	--	--	--	--	--	--
	11/28/2018	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	3
	08/30/2018	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02	<0.02	2.2
	05/10/2018	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	2.5
	02/08/2018	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	2.3
MKTF-24	3/16/2022	<0.01	0.0032	--	<0.01	0.013	0.0059	<0.01	0.025	4.7
	12/16/21	<0.01	<0.01	--	<0.01	0.02	0.0054	<0.01	0.036	5.4
	09/21/21	<0.01	<0.01	--	<0.01	0.03	<0.005	<0.01	0.03	6.4
	06/16/21	<0.01	<0.01	--	<0.01	0.02	<0.01	<0.01	0.035	5.7
	03/09/21	<0.01	<0.01	--	<0.01	0.021	<0.01	<0.01	0.031	4.9
	12/18/20	<0.025	<0.025	--	<0.025	0.0393	0.163	<0.025	0.0332	5.02
	09/19/20	<0.02	<0.02	--	<0.02	0.041	<0.02	<0.02	0.037	6.1
	02/25/20	<0.02	<0.02	--	<0.02	0.038	<0.02	0.02	0.028	2.9
	10/23/2019	<0.02	<0.02	--	<0.02	0.033	<0.02	<0.02	0.037	5
	08/23/2019	<0.02	<0.02	--	<0.02	0.053	<0.02	<0.02	0.038	4.1
	05/06/2019	<0.02	<0.02	--	<0.02	0.047	<0.02	<0.02	0.022	3
	02/25/2019	--	--	--	--	--	--	--	--	--
	11/15/2018	<0.02	<0.02	--	<0.02	0.076	<0.02	<0.02	0.028	4.8
	10/10/2018	<0.001	0.0023	--	0.014	0.08	0.0056	0.029	0.012	2.5
	08/20/2018	<0.02	<0.02	--	<0.02	0.074	<0.02	0.022	0.032	4.8
	05/01/2018	<0.02	<0.02	--	0.022	0.066	<0.02	<0.02	0.031	5.5
	02/06/2018	<0.02	<0.02	--	<0.02	0.082	<0.02	0.027	0.037	6.3

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	BTEX (mg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	MTBE (mg/L)	Chloride (mg/L)	Fe, Dissolved (mg/L)
MKTF-22	10/24/2019	<0.02	0.27	<0.03	3.67	9	<0.4	2.6	190	6.8
	08/20/2019	<0.02	0.26	<0.03	3.46	8.2	2.4	2.7	200	6.8
	05/09/2019	<0.02	0.33	<0.03	3.83	11	2.6	3.3	170	7.3
	03/26/2019	--	--	--	0	--	--	--	--	--
	11/28/2018	<0.02	0.17	<0.03	3.17	11	2	6	130	1.4
	08/30/2018	<0.02	0.12	<0.03	2.32	11	3.1	5.4	110	3
	05/10/2018	<0.01	0.15	<0.015	2.65	11	3.5	5.9	110	1.4
	02/08/2018	<0.01	0.14	0.018	2.458	10	2.9	5.7	110	1
MKTF-24	3/16/2022	0.019	0.25	<0.015	4.969	12	0.87	0.079	--	--
	12/16/21	0.018	0.28	<0.015	5.698	12	0.67	0.081	1300	0.64
	09/21/21	0.027	0.26	<0.015	6.687	18	0.65	0.1	1100	0.39
	06/16/21	0.022	0.17	<0.015	5.892	1.4	0.69	0.097	1000	0.3
	03/09/21	0.02	0.18	<0.015	5.1	15	0.48	0.11	960	0.18
	12/18/20	<0.025	0.223	<0.25	5.243	--	2.47	0.0989	893	0.248
	09/19/20	0.024	0.24	<0.03	6.364	15	0.38	0.12	950	0.26
	02/25/20	<0.02	0.083	<0.03	2.983	7.2	0.71	0.11	940	0.08
	10/23/2019	0.024	0.31	<0.03	5.334	17	<0.4	0.11	660	0.59
	08/23/2019	0.022	0.24	<0.03	4.362	15	<1	0.11	800	1.6
	05/06/2019	<0.02	0.12	<0.03	3.12	8.6	<1	0.11	1000	5.7
	02/25/2019	--	--	--	--	--	--	--	--	--
	11/15/2018	0.021	0.2	<0.03	5.021	16	1.5	0.12	520	0.1
	10/10/2018	0.014	0.038	0.0048	2.5568	--	--	0.12	810	--
	08/20/2018	0.025	0.32	<0.03	5.145	23	1.4	0.12	560	0.33
	05/01/2018	0.029	0.3	<0.03	5.829	23	1.4	0.13	500	0.26
	02/06/2018	0.03	0.41	<0.03	6.74	21	1.1	0.17	430	0.24

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Fe, Total (mg/L)	Mn, Dissolved (mg/L)	Mn, Total (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DO (mg/L)	ORP (mV) ¹	pH (Standard Units) ¹	T (C) ¹
MKTF-22	10/24/2019	12	2.9	2.9	<0.5	2.9	1.88	39.9	7.34	12.6
	08/20/2019	8.5	2.6	2.9	<0.5	4.7	--	--	7.04	12.40
	05/09/2019	11	2.6	3.1	<0.5	13	2.07	-81.4	6.39	12.45
	03/26/2019	--	--	--	--	--	1.89	-32	7.48	11.27
	11/28/2018	12	2.5	2.5	<0.5	5.8	--	--	6.97	12.75
	08/30/2018	7.4	2.4	2.5	1.7	3.8	--	--	7.05	14.4
	05/10/2018	4.4	2.4	2.5	0.15	5.8	--	--	7.19	13.8
	02/08/2018	8.3	2.2	2.5	--	5.2	--	--	5.29	12.62
MKTF-24	3/16/2022	--	--	--	--	--	1	32.4	6.9	16
	12/16/21	0.77	4.4	4.7	0.17	13	0.5	241.6	6.93	11.4
	09/21/21	0.67	3.7	4	<0.5	13	2.09	143.6	6.86	13.8
	06/16/21	3.2	3.3	3.5	<0.5	16	3.67	154.9	7.00	13.9
	03/09/21	1.8	3.4	3.4	<0.5	15	6.5	242.5	7.06	10.5
	12/18/20	7.25	2.39	2.84	<0.1	21.8	6.25	211.5	7.01	10.8
	09/19/20	32	1.9	4.4	--	35	2.65	238.9	7.55	12.35
	02/25/20	1.9	1.9	2.2	<0.5	27	1.52	81	9.45	12.87
	10/23/2019	0.9	2.4	2.3	<0.5	20	2.27	189.4	7.44	13.0
	08/23/2019	5.3	2.2	2.1	<0.5	34	--	--	7.28	14.0
	05/06/2019	8.3	2.3	2.6	<0.5	42	2.12	-81.9	6.67	14.32
	02/25/2019	--	--	--	--	--	--	--	--	--
	11/15/2018	0.7	1.8	2	<0.5	27	--	--	7.30	12.68
	10/10/2018	--	--	--	<0.5	52				
	08/20/2018	1.2	1.8	1.8	<0.5	30	--	--	7.10	12.9
	05/01/2018	1.3	1.9	2.1	0.17	29	--	--	7.09	12.3
	02/06/2018	0.78	2.2	2.2	--	30	--	--	8.30	12.43

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	PCE (mg/L)	TCE (mg/L)	TBA (mg/L)	cis-1,2-DCE (mg/L)	1,1-DCA (mg/L)	1,2-DCA (mg/L)	1,1-DCE (mg/L)	Vinyl Chloride (mg/L)	Benzene (mg/L)
MKTF-25	3/16/2022	<0.01	0.0057	--	0.008	0.051	0.0058	<0.01	0.0071	0.096
	12/17/21	<0.01	0.011	--	0.018	0.095	0.012	0.055	0.014	0.7
	09/21/21	<0.01	0.011	--	0.021	0.11	0.013	0.059	<0.01	0.76
	06/17/21	<0.01	0.01	--	0.016	0.09	0.012	0.068	0.011	0.89
	03/05/21	<0.01	<0.01	--	0.018	0.078	0.011	0.058	<0.01	0.76
	12/18/20	<0.005	0.0097	--	0.0149	0.0918	0.0321	0.0613	<0.005	0.629
	09/19/20	--	--	--	--	--	--	--	--	--
	02/27/20	<0.005	0.012	--	0.027	0.1	0.0088	0.063	<0.005	0.42
	11/18/19	--	--	--	--	--	--	--	--	--
	10/23/2019	<0.005	0.011	--	0.027	0.11	0.0091	0.059	<0.005	0.37
	08/27/2019	<0.005	0.013	--	0.025	0.13	0.01	0.052	<0.005	0.13
	05/06/2019	<0.01	0.012	--	0.035	0.14	<0.01	0.05	<0.01	0.37
	02/14/2019	--	--	--	--	--	--	--	--	--
	11/15/2018	<0.01	<0.01	--	0.029	0.13	<0.01	0.027	<0.01	1.7
	08/17/2018	<0.01	<0.01	--	0.052	0.14	<0.01	0.049	<0.01	4.5
	05/06/2018	<0.05	0.026	--	0.053	0.23	<0.005	0.11	<0.005	3.4
	02/05/2018	<0.05	0.025	--	0.05	0.22	0.01	0.11	<0.005	2

-- - Not sampled/measured
< - Less than
BTEX - Benzene, toluene, ethylbenzene, xylene
C - Centigrade
DCA - Dichloroethane
DCE - Dichloroethene
DO - Dissolved oxygen
Fe - Iron
ID - Identification
mg/L - Milligrams per liter
MKTF - marketing tank farm

Mn - Manganese
MNA - Monitored natural attenuation
MTBE - Methyl tert-butyl ether
mV - Millivolts
ORP - Oxidation reduction potential (measured using a silver/silver chloride reference cell)
PCE - Tetrachloroethene
T - Temperature
TBA - tert-Butyl Alcohol
TCE - Trichloroethene
TPH-DRO - Total petroleum hydrocarbons - diesel range organics
TPH-GRO - Total petroleum hydrocarbons - gasoline range organics

Notes:

¹ pH, ORP, and temperature were measured during well purging prior to the sampling date.

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	BTEX (mg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	MTBE (mg/L)	Chloride (mg/L)	Fe, Dissolved (mg/L)
MKTF-25	3/16/2022	<0.01	<0.01	<0.015	0.096	0.97	0.36	0.18	--	--
	12/17/21	<0.01	<0.01	<0.015	0.7	3.3	0.6	0.5	770	0.033
	09/21/21	<0.01	<0.01	<0.015	0.76	2.9	0.63	0.66	800	0.027
	06/17/21	<0.01	<0.01	<0.015	0.89	4.4	0.54	0.64	760	0.095
	03/05/21	<0.01	<0.01	<0.015	0.76	4.1	0.32	0.98	820	0.14
	12/18/20	<0.005	<0.005	<0.05	0.629	--	1.86	0.795	844	<0.2
	09/19/20	--	--	--	--	--	--	--	--	--
	02/27/20	<0.005	<0.005	<0.0075	0.42	2.5	<0.4	0.62	980	0.13
	11/18/19	--	--	--	--	--	--	--	--	--
	10/23/2019	<0.005	<0.005	<0.0075	0.37	3	<0.4	0.88	1400	0.28
	08/27/2019	<0.005	<0.005	<0.0075	0.13	1.7	<1.0	0.85	1100	0.25
	05/06/2019	<0.01	<0.01	<0.015	0.37	3.6	<1.0	0.29	860	0.21
	02/14/2019	--	--	--	--	--	--	--	--	--
	11/15/2018	<0.01	<0.01	<0.015	1.7	5	<1.0	0.2	630	0.048
	08/17/2018	0.017	0.026	<0.015	4.543	17	1	0.25	540	0.97
	05/06/2018	0.015	0.15	0.009	3.574	12	1.1	0.26	500	0.75
	02/05/2018	0.01	0.11	0.0097	2.1297	16	<1.0	0.25	520	0.7

-- - Not sampled/measured
< - Less than
BTEX - Benzene, toluene, ethylbenzene, xylene
C - Centigrade
DCA - Dichloroethane
DCE - Dichloroethene
DO - Dissolved oxygen
Fe - Iron
ID - Identification
mg/L - Milligrams per liter
MKTF - marketing tank farm

Mn - Manganese
MNA - Monitored natural attenuation
MTBE - Methyl tert-butyl ether
mV - Millivolts
ORP - Oxidation reduction potential (measured using a silver/silver chloride reference cell)
PCE - Tetrachloroethene
T - Temperature
TBA - tert-Butyl Alcohol
TCE - Trichloroethene
TPH-DRO - Total petroleum hydrocarbons - diesel range organics
TPH-GRO - Total petroleum hydrocarbons - gasoline range organics

Notes:
¹ pH, ORP, and temperature were measured during well purging prior to the sampling date.

TABLE 3-1. MONITORED NATURAL ATTENUATION MONITORING WELL CVOC/VOC ANALYTICAL AND FIELD DATA (2018-2022)
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well ID	Date Sampled	Fe, Total (mg/L)	Mn, Dissolved (mg/L)	Mn, Total (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DO (mg/L)	ORP (mV) ¹	pH (Standard Units) ¹	T (C) ¹
MKTF-25	3/16/2022	--	--	--	--	--	1.2	147.2	7	10.6
	12/17/21	1.9	2.7	2.8	--	62	2.96	268.4	7.09	12.3
	09/21/21	0.96	2.7	3	<0.5	67	3.17	196.5	7.05	14.4
	06/17/21	1.8	2.8	2.7	<0.5	64	2.48	185	7.17	15.7
	03/05/21	2.3	2.7	2.8	<0.5	67	2.16	292.4	6.96	10.36
	12/18/20	4.07	2.98	3.2	<0.1	68	4.8	165	7.05	11.9
	09/19/20	--	--	--	--	--	11.68	86.3	5.51	14.01
	02/27/20	5.6	3.2	3.4	--	76	6.28	91.5	8.39	9.86
	11/18/19	--	--	--	<0.1	--	--	--	--	--
	10/23/2019	10	5.4	5.8	<0.5	73	2.66	179.1	7.26	12.8
	08/27/2019	1.8	3.6	3.9	<0.5	68	--	--	6.77	14.93
	05/06/2019	4.7	1.8	2.2	<0.5	52	1.6	50.1	6.59	10.81
	02/14/2019	--	--	--	--	--	--	--	--	--
	11/15/2018	2.9	2.9	3.1	<0.5	50	--	--	7.27	12.28
	08/17/2018	12	2.4	3	<0.5	23	--	--	7.10	14.5
	05/06/2018	2.6	2.4	2.7	--	28	--	--	7.10	10.5
	02/05/2018	4.3	2.6	3.2	--	27	--	--	6.86	10.70

-- - Not sampled/measured
< - Less than
BTEX - Benzene, toluene, ethylbenzene, xylene
C - Centigrade
DCA - Dichloroethane
DCE - Dichloroethene
DO - Dissolved oxygen
Fe - Iron
ID - Identification
mg/L - Milligrams per liter
MKTF - marketing tank farm

Mn - Manganese
MNA - Monitored natural attenuation
MTBE - Methyl tert-butyl ether
mV - Millivolts
ORP - Oxidation reduction potential (measured using a silver/silver chloride reference cell)
PCE - Tetrachloroethene
T - Temperature
TBA - tert-Butyl Alcohol
TCE - Trichloroethene
TPH-DRO - Total petroleum hydrocarbons - diesel range organics
TPH-GRO - Total petroleum hydrocarbons - gasoline range organics

Notes:

¹ pH, ORP, and temperature were measured during well purging prior to the sampling date.

**TABLE 3-2. MONITORED NATURAL ATTENUATION ASSESSMENT USEPA SCORING SYSTEM
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO**

Analysis	Concentration in Most Contaminated Zone	Significance	Applicability to the Existing Data Set	Scoring Value
Oxygen	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	DO data collected in a bucket during well purging. Not as accurate as a flow-through cell	3
Oxygen	>5 mg/L	Not tolerated; however, VC may be oxidized aerobically	DO data collected in a bucket during well purging. Not as accurate as a flow-through cell	-3
Nitrate	<1 mg/L	At higher concentrations may compete with reductive pathway	In data set	2
Iron II	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	Ferrous iron not sampled for; dissolved (field filtered) is used	3
Sulfate	<20 mg/L	At higher concentrations may compete with reductive pathway	In data set	2
Sulfide	>1 mg/L	Reductive pathway possible	Not currently analyzed	3
Methane	<0.5 mg/L	VC oxidizes	Not currently analyzed	0
	>0.5 mg/L	Ultimate reductive daughter product, VC accumulates	Not currently analyzed	3
ORP	<50 mV	Reductive pathway possible	ORP data collected in a bucket during well purging. Not as accurate as a flow-through cell	1
	<-100mV	Reductive pathway likely	ORP data collected in a bucket during well purging. Not as accurate as a flow-through cell	2
pH	5 < pH < 9	Optimal range for reductive pathway	In data set	0
	5 > pH > 9	Outside optimal range for reductive pathway	In data set	-2
TOC	> 20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	Not currently analyzed; inferred from total BTEX and TPH	2
Temperature	> 20 C	At T >20 C biochemical process is accelerated	In data set	1
CO ₂	>2x background	Ultimate oxidative daughter product	Not currently analyzed	1
Alkalinity	>2x background	Results from interaction between CO ₂ and aquifer minerals	Not currently analyzed	1
Chloride	>2x background	Daughter product of organic chlorine	In data set, but very high background in shallow water at the refinery due to other releases	2
Hydrogen	>1 nM/L	Reductive pathway possible, VC may accumulate	Not currently analyzed	3
	<1 nM/L	VC oxidized	Not currently analyzed	0
Volatile Fatty Acids	> 0.1 mg/L	Intermediates resulting from biodegradation of more complex compounds; carbon and energy source	Not currently analyzed	2
BTEX	> 0.1 mg/L	Carbon and energy source; drives dechlorination	In data set	2

**TABLE 3-2. MONITORED NATURAL ATTENUATION ASSESSMENT USEPA SCORING SYSTEM
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO**

Analysis	Concentration in Most Contaminated Zone	Significance	Applicability to the Existing Data Set	Scoring Value
PCE	Present	Material released	Not included in MNA due to low/infrequent concentrations	0
TCE	Present	Material released	In data set	0
	Present	Daughter product of PCE	In data set	2
	Present	Material released	In data set	0
DCE	Present	Daughter product of TCE If cis is > 80% of total DCE it is likely a daughter product 1,1-DCE can be chemical reaction product of TCA	In data set	2
VC	Present	Material released	In data set	0
	Present	Daughter product of DCE	In data set	2
1,1,1-TCA	Present	Material released	Not included in MNA due to low/infrequent concentrations	0
DCA	Present	Daughter product of TCA under reducing conditions	1,1,1-TCA not in MNA analysis (not released)	2
Ethene	>0.01 mg/L	Daughter product of VC/ethene	Not currently analyzed	2
/Ethane	>0.1 mg/L	Daughter product of VC/ethene	Not currently analyzed	3

% - Percent

< - Less than

> - Greater than

BTEX - Benzene, toluene, ethylbenzene, xylene

C - Centigrade

CO₂ - Carbon dioxide

DCA - Dichloroethane

DCE - Dichloroethene

DO - Dissolved oxygen

Fe(III) - Ferric iron

mg/L - Milligram per liter

MNA - Monitored natural attenuation

mV - Millivolts

nM/L - Nanomoles per liter

ORP - Oxidation reduction potential

PCE - Tetrachloroethene

TCA - Trichloroethane

TCE - Trichloroethene

TOC - Total organic carbon

TPH - Total petroleum hydrocarbons

USEPA - United States Environmental Protection Agency

VC - Vinyl chloride

Notes:

Source : United States Environmental Protection Agency. 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, U.S. Environmental Protection Agency, Office Research and Development, EPA/600/R-98-128. September.

TABLE 3-3. MONITORED NATURAL ATTENUATION USEPA SCORING RESULTS
WESTERN REFINING SOUTHWEST LLC, D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Well	DO, mg/L		Nitrate, mg/L		Iron II, mg/L		Sulfate, mg/L		ORP, mV		pH, Standard Units		TOC, mg/L		T, C		BTEX, mg/L		TCE, mg/L		DCE, mg/L		VC, mg/L		Total Score	Evaluation
	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score	Average	Score		
MKTF-02	3.26	0	<1	2	0.86	0	84.47	0	113.82	0	7.45	0	12.05	0	12.30	0	2.27	2	0.002	2	0.02	2	0.021	2	8	Limited
MKTF-02R	2.60	0	<1	2	0.03	0	685.00	0	116.9	0	7.25	0	76.52	2	12.7	0	0.68	2	0.02	2	0.30	2	0.001	2	10	Limited
MKTF-04	2.02	0	<1	2	2.66	3	8.48	2	30.1	1	8.39	0	16.11	0	12.9	0	2.07	2	ND	0	0.02	2	ND	0	12	Limited
MKTF-04R	1.93	0	<1	2	1.00	0	78.00	0	49.6	1	6.95	0	116.07	2	14.6	0	4.60	2	0.0026	2	0.07	2	ND	0	9	Limited
MKTF-09	1.81	0	<1	2	1.91	3	22.64	0	31.46	1	7.25	0	14.76	0	13.82	0	3.10	2	ND	0	0.05	2	ND	0	10	Limited
MKTF-10	1.75	0	<1	2	8.56	3	<1	0	51.37	0	7.04	0	74.90	2	13.75	0	16.25	2	ND	0	0.04	2	0.010	2	13	Limited
MKTF-13	0.85	0	<1	2	17.33	3	0.91	2	-8.40	1	7.18	0	52.11	2	13.99	0	7.87	2	ND	0	ND	0	ND	0	12	Limited
MKTF-16	2.76	0	<1	2	5.02	3	35.75	0	69.94	0	6.95	0	32.20	2	15.92	0	9.30	2	ND	0	ND	0	0.001	2	11	Limited
MKTF-17	2.34	0	<1	2	0.29	0	62.17	0	26.27	1	7.20	0	24.37	2	13.70	0	5.55	2	ND	0	ND	0	ND	0	7	Limited
MKTF-17R	3.26	0	<1	2	0.19	0	7.45	2	164.9	0	7.10	0	692.67	2	14.4	0	81.24	2	ND	0	ND	0	0.004	2	10	Limited
MKTF-19	1.04	0	<1	2	9.99	3	0.00	2	-22.05	1	7.16	0	30.19	2	12.80	0	2.76	2	ND	0	ND	0	ND	0	12	Limited
MKTF-22	1.95	0	<1	2	3.96	3	5.89	2	-24.50	1	6.84	0	15.62	0	12.79	0	2.69	2	ND	0	ND	0	ND	0	10	Limited
MKTF-24	2.86	0	<1	2	0.78	0	26.99	0	145.39	0	7.33	0	20.68	2	12.88	0	5.07	2	0.0028	2	0.04	2	0.031	2	10	Limited
MKTF-25	3.90	0	<1	2	0.30	0	55.77	0	166.15	0	7.01	0	7.90	0	12.38	0	1.22	2	0.01	2	0.09	2	0.011	2	8	Limited

< - Less than
> - Greater than
BTEX - Benzene, toluene, ethylbenzene, and total xylenes
C - Centigrade
DCE - Sum of 1,1-dichloroethene and cis-1,2-dichloroethene
DO - Dissolved oxygen
mg/L - Milligrams per liter
MKTF - marketing tank farm

mV - Millivolts
ND - Not detected; values set at half the detection limit for averaging
ORP - Oxidation reduction potential (measured using a silver/silver chloride reference cell)
T - Temperature
TOC - Total organic carbon
TCE - Trichloroethene
USEPA - United States Environmental Protection Agency
VC - Vinyl chloride

Notes:

Scoring ranges for evidence of anaerobic biodegradation:

Score	Interpretation
0 to 5	Inadequate
6 to 14	Limited
15 to 20	Adequate
>20	Strong

Source: United States Environmental Protection Agency (USEPA). 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, U.S, Environmental Protection Agency, Office of Research and Development, EPA/600/R-98-128. September.

TABLE 4-1. SUMMARY OF MANN-KENDALL CVOCs TREND ANALYSIS (2014 - 2022)
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Location	First Sample Date	Last Sample Date	Descriptive Analysis										Number of Outliers	Mann-Kendall Trend Analysis				
				Sample Size	Number of Detects	% Detects	Sample Mean	Sample Median	Sample Std. Dev.	Minimum Detected	Maximum Detected	Minimum MDL	Maximum MDL		Serial Correlation	Seasonality	p-value	τ	Trend
1,1-Dichloroethane	MKTF-02	4/8/2014	6/17/2021	28	28	100.00%	0.0430	0.0445	0.022	0.0065	0.098	1.10E-04	4.00E-03	0	YES	NO	0.0000	-0.677	Decreasing
1,1-Dichloroethane	MKTF-02R	9/17/2021	3/16/2022	3	3	100.00%	0.0947	0.1000	0.019	0.074	0.11	2.70E-04	2.70E-03	--	--	--	--	--	--
1,1-Dichloroethane	MKTF-09	4/14/2014	3/3/2020	24	24	100.00%	0.0222	0.0230	0.008	0.0068	0.035	1.10E-04	8.00E-03	0	YES	NO	0.0000	-0.493	Decreasing
1,1-Dichloroethane	MKTF-10	4/11/2014	3/15/2022	30	18	60.00%	0.0330	0.0290	0.020	0.012	0.078	1.40E-03	4.00E-02	0	YES	NO	0.3980	-0.115	None
1,1-Dichloroethane	MKTF-16	4/10/2014	12/6/2022	32	19	59.38%	0.0333	0.0330	0.024	0.0026	0.081	2.70E-04	5.00E-02	0	NO	NO	0.1100	0.211	None
1,1-Dichloroethane	MKTF-22	4/10/2014	10/24/2019	21	6	28.57%	0.0060	0.0040	0.004	0.0017	0.015	1.00E-03	8.00E-03	0	NO	NO	0.1010	0.298	None
1,1-Dichloroethane	MKTF-24	4/8/2014	3/16/2022	31	31	100.00%	0.0758	0.0760	0.043	0.013	0.2	4.00E-04	1.25E-02	0	YES	NO	0.0000	-0.858	Decreasing
1,1-Dichloroethane	MKTF-25	4/8/2014	3/16/2022	29	29	100.00%	0.1992	0.1800	0.113	0.051	0.61	5.20E-04	2.00E-02	0	YES	NO	0.0000	-0.722	Decreasing
1,1-Dichloroethene	MKTF-02	4/8/2014	6/17/2021	28	26	92.86%	0.0238	0.0200	0.025	0.0014	0.11	9.90E-05	4.10E-03	0	YES	NO	0.0000	-0.619	Decreasing
1,1-Dichloroethene	MKTF-02R	9/17/2021	3/16/2022	3	3	100.00%	0.2933	0.2900	0.015	0.28	0.31	1.00E-03	2.00E-03	--	--	--	--	--	--
1,1-Dichloroethene	MKTF-09	4/14/2014	3/3/2020	24	24	100.00%	0.0337	0.0310	0.017	0.0063	0.074	9.90E-05	4.10E-03	0	YES	NO	0.0000	-0.547	Decreasing
1,1-Dichloroethene	MKTF-10	4/11/2014	3/15/2022	30	8	26.67%	0.0066	0.0063	0.003	0.0024	0.013	6.50E-04	1.25E-02	0	YES	NO	0.0646	0.184	None
1,1-Dichloroethene	MKTF-16	4/10/2014	12/6/2022	32	0	0.00%	0.0096	0.0081	0.009	--	--	2.00E-04	5.00E-02	--	--	--	--	--	--
1,1-Dichloroethene	MKTF-22	4/10/2014	10/24/2019	21	13	61.90%	0.0065	0.0068	0.005	0.0051	0.017	8.10E-04	4.10E-03	0	YES	YES	0.0425	0.650	Increasing
1,1-Dichloroethene	MKTF-24	4/8/2014	3/16/2022	31	29	93.55%	0.0304	0.0270	0.022	0.0046	0.088	1.20E-04	1.25E-02	0	YES	NO	0.0000	-0.828	Decreasing
1,1-Dichloroethene	MKTF-25	4/8/2014	3/16/2022	29	29	100.00%	0.0895	0.0860	0.047	0.0092	0.24	3.80E-04	2.50E-03	0	YES	NO	0.0000	-0.512	Decreasing
1,2-Dichloroethane	MKTF-02	4/8/2014	6/17/2021	28	23	82.14%	0.0065	0.0048	0.007	0.002	0.034	1.20E-04	4.00E-03	1	NO	NO	0.0569	-0.266	None
1,2-Dichloroethane	MKTF-02R	9/17/2021	3/16/2022	3	3	100.00%	0.0547	0.0570	0.014	0.04	0.067	2.50E-04	1.30E-03	--	--	--	--	--	--
1,2-Dichloroethane	MKTF-09	4/14/2014	3/3/2020	24	0	0.00%	0.0025	0.0023	0.002	--	--	1.20E-04	8.00E-03	--	--	--	--	--	--
1,2-Dichloroethane	MKTF-10	4/11/2014	3/15/2022	30	2	6.67%	0.0113	0.0088	0.011	0.0039	0.0041	1.10E-03	4.00E-02	0	YES	NO	0.0380	0.131	Increasing
1,2-Dichloroethane	MKTF-16	4/10/2014	12/6/2022	32	0	0.00%	0.0156	0.0130	0.013	--	--	2.50E-04	5.00E-02	--	--	--	--	--	--
1,2-Dichloroethane	MKTF-22	4/10/2014	10/24/2019	21	0	0.00%	0.0033	0.0035	0.002	--	--	1.10E-03	8.00E-03	--	--	--	--	--	--
1,2-Dichloroethane	MKTF-24	4/8/2014	3/16/2022	31	21	67.74%	0.0116	0.0066	0.028	0.0046	0.163	2.60E-04	1.25E-02	1	YES	NO	0.0914	-0.113	None
1,2-Dichloroethane	MKTF-25	4/8/2014	3/16/2022	29	24	82.76%	0.0092	0.0097	0.006	0.0057	0.0321	2.60E-04	4.00E-03	1	NO	NO	0.9682	0.008	None
cis-1,2-Dichloroethene	MKTF-02	4/8/2014	6/17/2021	28	21	75.00%	0.0098	0.0099	0.007	0.0019	0.03	8.10E-05	3.80E-03	0	YES	NO	0.0010	-0.336	Decreasing
cis-1,2-Dichloroethene	MKTF-02R	9/17/2021	3/16/2022	3	3	100.00%	0.0030	0.0031	0.001	0.0023	0.0036	3.90E-04	1.90E-03	--	--	--	--	--	--
cis-1,2-Dichloroethene	MKTF-09	4/14/2014	3/3/2020	24	22	91.67%	0.0205	0.0210	0.009	0.0096	0.036	8.10E-05	7.80E-03	0	YES	NO	0.0008	-0.308	Decreasing
cis-1,2-Dichloroethene	MKTF-10	4/11/2014	3/15/2022	30	22	73.33%	0.0293	0.0290	0.021	0.0062	0.066	1.20E-03	2.00E-02	0	YES	NO	0.8016	0.028	None
cis-1,2-Dichloroethene	MKTF-16	4/10/2014	12/6/2022	32	1	3.13%	0.0144	0.0110	0.013	0.0084	0.0084	3.90E-04	5.00E-02	0	NO	NO	0.5158	-0.105	None
cis-1,2-Dichloroethene	MKTF-22	4/10/2014	10/24/2019	21	13	61.90%	0.0064	0.0078	0.004	0.0061	0.012	1.20E-03	7.50E-03	0	NO	NO	0.1424	0.248	None
cis-1,2-Dichloroethene	MKTF-24	4/8/2014	3/16/2022	31	19	61.29%	0.0195	0.0180	0.015	0.0086	0.057	1.20E-04	1.25E-02	0	YES	NO	0.0000	-0.757	Decreasing
cis-1,2-Dichloroethene	MKTF-25	4/8/2014	3/16/2022	29	29	100.00%	0.0381	0.0440	0.019	0.008	0.1	2.00E-04	3.90E-03	0	YES	NO	0.0000	-0.505	Decreasing
Trichloroethene	MKTF-02	4/8/2014	6/17/2021	28	15	53.57%	0.0028	0.0026	0.002	0.0018	0.0073	1.60E-04	3.30E-03	0	YES	NO	0.0000	-0.537	Decreasing
Trichloroethene	MKTF-02R	9/17/2021	3/16/2022	3	3	100.00%	0.0203	0.0230	0.005	0.015	0.023	2.00E-04	1.00E-03	--	--	--	--	--	--

TABLE 4-1. SUMMARY OF MANN-KENDALL CVOCs TREND ANALYSIS (2014 - 2022)
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Location	First Sample Date	Last Sample Date	Descriptive Analysis										Number of Outliers	Mann-Kendall Trend Analysis				
				Sample Size	Number of Detects	% Detects	Sample Mean	Sample Median	Sample Std. Dev.	Minimum Detected	Maximum Detected	Minimum MDL	Maximum MDL		Serial Correlation	Seasonality	p-value	τ	Trend
Trichloroethene	MKTF-09	4/14/2014	3/3/2020	24	14	58.33%	0.0046	0.0043	0.003	0.0027	0.011	1.60E-04	5.20E-03	0	NO	NO	0.0007	-0.527	Decreasing
<i>Trichloroethene</i>	<i>MKTF-10</i>	<i>4/11/2014</i>	<i>3/15/2022</i>	<i>30</i>	<i>0</i>	<i>0.00%</i>	<i>0.0077</i>	<i>0.0082</i>	<i>0.006</i>	--	--	<i>1.00E-03</i>	<i>1.80E-02</i>	--	--	--	--	--	--
<i>Trichloroethene</i>	<i>MKTF-16</i>	<i>4/10/2014</i>	<i>12/6/2022</i>	<i>32</i>	<i>0</i>	<i>0.00%</i>	<i>0.0125</i>	<i>0.0105</i>	<i>0.010</i>	--	--	<i>2.00E-04</i>	<i>5.00E-02</i>	--	--	--	--	--	--
<i>Trichloroethene</i>	<i>MKTF-22</i>	<i>4/10/2014</i>	<i>10/24/2019</i>	<i>21</i>	<i>0</i>	<i>0.00%</i>	<i>0.0026</i>	<i>0.0033</i>	<i>0.001</i>	--	--	<i>1.10E-03</i>	<i>5.20E-03</i>	--	--	--	--	--	--
<i>Trichloroethene</i>	<i>MKTF-24</i>	<i>4/8/2014</i>	<i>3/16/2022</i>	<i>31</i>	<i>6</i>	<i>19.35%</i>	<i>0.0034</i>	<i>0.0033</i>	<i>0.002</i>	<i>0.0023</i>	<i>0.0052</i>	<i>1.90E-04</i>	<i>1.25E-02</i>	<i>0</i>	<i>YES</i>	<i>NO</i>	<i>0.0996</i>	<i>-0.161</i>	<i>None</i>
Trichloroethene	MKTF-25	4/8/2014	3/16/2022	29	28	96.55%	0.0202	0.0180	0.013	0.0057	0.064	1.10E-04	2.60E-03	0	YES	NO	0.0000	-0.554	Decreasing
Vinyl Chloride	MKTF-02	4/8/2014	6/17/2021	28	21	75.00%	0.0086	0.0051	0.009	0.001	0.028	1.30E-04	3.60E-03	0	YES	NO	0.0000	0.537	Increasing
Vinyl Chloride	MKTF-02R	9/17/2021	3/16/2022	3	3	100.00%	0.0012	0.0010	0.001	0.00075	0.0019	3.20E-04	1.60E-03	--	--	--	--	--	--
Vinyl Chloride	MKTF-09	4/14/2014	3/3/2020	24	0	0.00%	0.0021	0.0018	0.001	--	--	1.30E-04	4.60E-03	--	--	--	--	--	--
Vinyl Chloride	MKTF-10	4/11/2014	3/15/2022	30	11	36.67%	0.0123	0.0100	0.006	0.008	0.023	9.80E-04	2.30E-02	0	YES	NO	0.0298	0.379	Increasing
Vinyl Chloride	MKTF-16	4/10/2014	12/6/2022	32	6	18.75%	0.0136	0.0120	0.011	0.00065	0.04	3.20E-04	5.00E-02	0	NO	NO	0.0055	0.402	Increasing
Vinyl Chloride	MKTF-22	4/10/2014	10/24/2019	21	0	0.00%	0.0024	0.0022	0.001	--	--	1.10E-03	4.60E-03	--	--	--	--	--	--
Vinyl Chloride	MKTF-24	4/8/2014	3/16/2022	31	22	70.97%	0.0200	0.0250	0.014	0.0049	0.038	1.10E-04	1.25E-02	0	YES	NO	0.0000	0.555	Increasing
Vinyl Chloride	MKTF-25	4/8/2014	3/16/2022	29	16	55.17%	0.0052	0.0031	0.009	0.00096	0.046	1.80E-04	4.60E-03	1	YES	NO	0.0000	0.455	Increasing

% - percent
-- - Not applicable
CVOCs - Chlorinated volatile organic compounds
MDL - Method Detection Limit
Std. Dev. - Standard Deviation

Notes:
All results are reported in milligrams per liter.
Trace results (i.e., estimated values between reporting limit and MDL) were reported since 06/08/2016 and were used as detected values.
Outlier analysis was performed for all analyte-well pairs with a sample size of 4 or larger and at least one detected result above the MDL.
Trend analyses was performed for all analyte-well pairs with a sample size of 8 or larger and at least one detected results above the MDL.
Italics : Trend analysis results based on data with less than 25% detection rate should be considered with caution.
MKTF-02R is the replacement well for well MKTF-02; it was installed in 2021.

TABLE 4-2. SUMMARY OF MANN-KENDALL MTBE TREND ANALYSIS (2014 - 2022)
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Location	First Sample Date	Last Sample Date	Descriptive Analysis										Number of Outliers	Mann-Kendall Trend Analysis				
				Sample Size	Number of Detects	% Detects	Sample Mean	Sample Median	Sample Std. Dev.	Minimum Detected	Maximum Detected	Minimum MDL	Maximum MDL		Serial Correlation	Seasonality	p-value	τ	Trend
MTBE	MKTF-04	4/11/2014	3/3/2020	24	24	100.00%	1.8958	1.9000	0.393	1.2	2.5	1.700E-03	2.400E-02	0	YES	NO	0.1071	0.159	None
MTBE	MKTF-04R	9/17/2021	3/15/2022	3	3	100.00%	1.1033	0.8600	0.430	0.85	1.6	2.000E-03	3.900E-02	--	--	--	--	--	--
MTBE	MKTF-09	4/14/2014	3/3/2020	24	24	100.00%	0.6013	0.5300	0.214	0.31	1.2	8.700E-04	1.300E-02	0	YES	NO	0.0000	-0.522	Decreasing
MTBE	MKTF-16	4/10/2014	12/6/2022	32	32	100.00%	0.8421	0.6650	0.694	0.0033	2.1	3.900E-04	7.400E-02	2	YES	NO	0.0000	-0.834	Decreasing
MTBE	MKTF-17	4/9/2014	10/29/2019	23	23	100.00%	1.9800	0.7700	2.153	0.28	7.4	8.700E-04	2.500E-02	0	YES	NO	0.1555	0.257	None
MTBE	MKTF-17R	9/17/2021	3/15/2022	3	3	100.00%	4.3333	4.3000	0.451	3.9	4.8	3.900E-02	3.900E-02	--	--	--	--	--	--
MTBE	MKTF-19	4/9/2014	10/29/2019	22	22	100.00%	9.4773	9.7000	1.131	7.8	12	8.700E-03	1.300E-01	0	YES	NO	0.4721	-0.074	None
MTBE	MKTF-20	4/11/2014	2/5/2020	21	20	95.24%	0.1241	0.1300	0.090	0.0057	0.38	2.100E-03	3.200E-02	0	NO	NO	0.2758	-0.178	None
MTBE	MKTF-21	4/11/2014	3/11/2021	21	21	100.00%	0.4669	0.5200	0.299	0.015	1.2	7.900E-04	1.300E-02	0	YES	NO	0.0000	-0.586	Decreasing
MTBE	MKTF-22	4/10/2014	10/24/2019	21	21	100.00%	5.4333	5.7000	1.593	2.6	8.8	9.100E-03	9.100E-02	0	YES	NO	0.5057	-0.095	None
MTBE	MKTF-23	9/23/2014	10/29/2019	9	9	100.00%	1.0200	1.1000	0.453	0.33	1.6	1.700E-03	4.600E-02	0	NO	NO	0.1138	0.457	None
MTBE	MKTF-24	4/8/2014	3/16/2022	31	31	100.00%	0.1445	0.1300	0.046	0.063	0.23	2.500E-04	1.850E-02	0	YES	NO	0.0000	-0.606	Decreasing
MTBE	MKTF-25	4/8/2014	3/16/2022	29	29	100.00%	0.3688	0.2500	0.255	0.12	0.98	5.000E-04	4.600E-03	0	YES	NO	0.0106	0.320	Increasing

% - percent
-- - Not applicable
MDL - Method Detection Limit
MTBE - Methyl tert-butyl ether
Std. Dev. - Standard Deviation

Notes:
All results are reported in milligrams per liter.
Trace results (i.e., estimated values between reporting limit and MDL) were reported since 06/08/2016 and were used as detected values.
Outlier analysis was performed for all analyte-well pairs with a sample size of 4 or larger and at least one detected result above the MDL.
Trend analyses was performed for all analyte-well pairs with a sample size of 8 or larger and at least one detected result above the MDL.
MKTF-04R and MKTF-07R are replacement wells for wells MKTF-04 and MKTF-07, respectively; they were installed in 2021.



Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Appendices A through D (Please see attached CD)

Appendix A – Laboratory Reports

Appendix B – Data Validation Reports

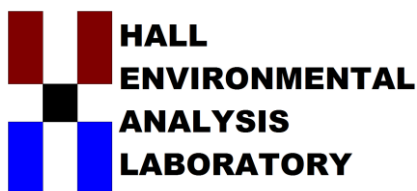
Appendix C – CVOC Time Series Plots

Appendix D – MTBE Time Series Plots



Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Appendix A – Laboratory Reports



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 22, 2022

Lesli Alexander
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 632-3911

RE: 2022 GW Sampling 1st Qtr

OrderNo.: 2203C69

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 12 sample(s) on 3/24/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued April 13, 2022.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

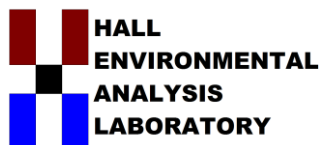
Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: 2203C69
Date: 4/22/2022

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

"S" flagged denote that the surrogate recoveries are outside of the standard limits due to matrix interferences/sample dilution.

Naphthalene was reported by EPA Method 8270 instead of EPA Method 8270SIMs because of its elevated concentration for sample OW-55.

Naphthalene, 1-methylnaphthalene, 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270SIMs because of their elevated concentrations for the following sample: OW-66

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-001A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Toluene	ND	0.20	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Acetone	ND	2.5	10		µg/L	1	3/24/2022 8:04:52 PM	R86734
Bromomethane	ND	0.85	3.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
2-Butanone	5.0	2.0	10	J	µg/L	1	3/24/2022 8:04:52 PM	R86734
Carbon disulfide	ND	0.59	10		µg/L	1	3/24/2022 8:04:52 PM	R86734
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Chloroform	ND	0.13	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Chloromethane	0.70	0.41	3.0	J	µg/L	1	3/24/2022 8:04:52 PM	R86734
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Styrene	ND	0.14	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/24/2022 8:04:52 PM	R86734
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/24/2022 8:04:52 PM	R86734
Surr: 1,2-Dichloroethane-d4	90.4	0	70-130		%Rec	1	3/24/2022 8:04:52 PM	R86734
Surr: 4-Bromofluorobenzene	99.0	0	70-130		%Rec	1	3/24/2022 8:04:52 PM	R86734
Surr: Dibromofluoromethane	96.2	0	70-130		%Rec	1	3/24/2022 8:04:52 PM	R86734
Surr: Toluene-d8	98.8	0	70-130		%Rec	1	3/24/2022 8:04:52 PM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.034	0.028	0.050	J	mg/L	1	3/24/2022 8:04:52 PM	G86734
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	3/24/2022 8:04:52 PM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-001B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/29/2022 3:55:21 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.033	0.016	0.064	J	mg/L	1	3/28/2022 6:02:24 PM	66385
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/28/2022 6:02:24 PM	66385
Surr: DNOP	110	0	42.2-138		%Rec	1	3/28/2022 6:02:24 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	1.1	20		µg/L	1	4/2/2022 8:01:54 PM	66392
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	4/2/2022 8:01:54 PM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/2/2022 8:01:54 PM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/2/2022 8:01:54 PM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/2/2022 8:01:54 PM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/2/2022 8:01:54 PM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/2/2022 8:01:54 PM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/2/2022 8:01:54 PM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/2/2022 8:01:54 PM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/2/2022 8:01:54 PM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/2/2022 8:01:54 PM	66392
Phenol	ND	0.33	5.0		µg/L	1	4/2/2022 8:01:54 PM	66392
Pyridine	ND	10	10		µg/L	1	4/2/2022 8:01:54 PM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/2/2022 8:01:54 PM	66392
Surr: 2-Fluorophenol	52.2	0	29.4-87.7		%Rec	1	4/2/2022 8:01:54 PM	66392
Surr: Phenol-d5	38.6	0	28.5-64.7		%Rec	1	4/2/2022 8:01:54 PM	66392
Surr: 2,4,6-Tribromophenol	73.0	0	18.6-129		%Rec	1	4/2/2022 8:01:54 PM	66392
Surr: Nitrobenzene-d5	61.1	0	36.9-103		%Rec	1	4/2/2022 8:01:54 PM	66392
Surr: 2-Fluorobiphenyl	56.7	0	38.1-99.9		%Rec	1	4/2/2022 8:01:54 PM	66392
Surr: 4-Terphenyl-d14	82.1	0	48-155		%Rec	1	4/2/2022 8:01:54 PM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/30/2022 12:45:00 PM	R86913
Naphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Acenaphthene	ND	0.031	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Fluorene	ND	0.031	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Phenanthrene	ND	0.057	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 12:45:00 PM	R86913
Pyrene	ND	0.16	0.20		µg/L	1	3/30/2022 12:45:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 12:45:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 12:45:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix interference

B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	61.0	0	31.6-100		%Rec	1	3/30/2022 12:45:00 PM	R86913
Surr: 2-Fluorobiphenyl	58.1	0	26.7-90.1		%Rec	1	3/30/2022 12:45:00 PM	R86913
Surr: 4-Terphenyl-d14	95.8	0	72.3-147		%Rec	1	3/30/2022 12:45:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-001D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	ND	0.0016	0.0030		mg/L	1	4/6/2022 2:47:18 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 2:47:18 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 2:47:18 PM	66644
Chromium	ND	0.0021	0.0060		mg/L	1	4/6/2022 2:47:18 PM	66644
Cobalt	ND	0.0024	0.0060		mg/L	1	4/6/2022 2:47:18 PM	66644
Nickel	ND	0.0033	0.010		mg/L	1	4/6/2022 2:47:18 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 2:47:18 PM	66644
Vanadium	ND	0.0024	0.050		mg/L	1	4/6/2022 2:47:18 PM	66644
Zinc	ND	0.0064	0.010		mg/L	1	4/6/2022 2:47:18 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:15:24 PM	66472
Arsenic	ND	0.00013	0.0010		mg/L	1	3/31/2022 1:15:24 PM	66472
Lead	ND	0.000061	0.00050		mg/L	1	3/31/2022 1:15:24 PM	66472
Selenium	ND	0.00037	0.0010		mg/L	1	3/31/2022 1:15:24 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/28/2022 3:22:46 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-001E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	ND	0.0011	0.0020		mg/L	1	3/29/2022 1:56:06 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 1:56:06 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 1:56:06 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 1:56:06 PM	B86825
Cobalt	ND	0.0024	0.0060		mg/L	1	3/29/2022 1:56:06 PM	B86825
Nickel	0.0035	0.0033	0.010	J	mg/L	1	3/29/2022 1:56:06 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 1:56:06 PM	B86825
Vanadium	ND	0.0017	0.050		mg/L	1	3/29/2022 1:56:06 PM	B86825
Zinc	0.0063	0.0032	0.010	J	mg/L	1	3/29/2022 1:56:06 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/24/2022 2:43:40 PM	B86714
Arsenic	ND	0.00012	0.0010		mg/L	1	3/24/2022 2:43:40 PM	B86714
Lead	ND	0.000057	0.00050		mg/L	1	3/24/2022 2:43:40 PM	B86714
Selenium	ND	0.00034	0.0010		mg/L	1	3/24/2022 2:43:40 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:07:27 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-54

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-002A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	12	1.1	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Toluene	ND	1.0	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Ethylbenzene	13	1.1	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Methyl tert-butyl ether (MTBE)	1300	20	50		µg/L	50	3/24/2022 8:33:17 PM	R86734
1,2,4-Trimethylbenzene	4.2	0.61	5.0	J	µg/L	5	3/24/2022 9:01:40 PM	R86734
1,3,5-Trimethylbenzene	ND	0.91	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
1,2-Dichloroethane (EDC)	2.3	1.3	5.0	J	µg/L	5	3/24/2022 9:01:40 PM	R86734
Acetone	ND	13	50		µg/L	5	3/24/2022 9:01:40 PM	R86734
Bromomethane	ND	4.3	15		µg/L	5	3/24/2022 9:01:40 PM	R86734
2-Butanone	ND	10	50		µg/L	5	3/24/2022 9:01:40 PM	R86734
Carbon disulfide	ND	3.0	50		µg/L	5	3/24/2022 9:01:40 PM	R86734
Chlorobenzene	ND	0.78	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Chloroform	1.6	0.67	5.0	J	µg/L	5	3/24/2022 9:01:40 PM	R86734
Chloromethane	3.9	2.1	15	J	µg/L	5	3/24/2022 9:01:40 PM	R86734
cis-1,2-DCE	ND	1.9	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
1,1-Dichloroethane	ND	1.4	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
1,1-Dichloroethene	ND	1.0	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Isopropylbenzene	ND	0.91	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
4-Isopropyltoluene	ND	1.0	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Methylene Chloride	ND	2.5	15		µg/L	5	3/24/2022 9:01:40 PM	R86734
n-Butylbenzene	ND	1.3	15		µg/L	5	3/24/2022 9:01:40 PM	R86734
n-Propylbenzene	1.2	0.91	5.0	J	µg/L	5	3/24/2022 9:01:40 PM	R86734
sec-Butylbenzene	ND	0.72	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Styrene	ND	0.68	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Trichloroethene (TCE)	ND	1.0	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Vinyl chloride	ND	1.6	5.0		µg/L	5	3/24/2022 9:01:40 PM	R86734
Xylenes, Total	2.0	1.9	7.5	J	µg/L	5	3/24/2022 9:01:40 PM	R86734
Surr: 1,2-Dichloroethane-d4	87.5	0	70-130		%Rec	5	3/24/2022 9:01:40 PM	R86734
Surr: 4-Bromofluorobenzene	93.4	0	70-130		%Rec	5	3/24/2022 9:01:40 PM	R86734
Surr: Dibromofluoromethane	94.2	0	70-130		%Rec	5	3/24/2022 9:01:40 PM	R86734
Surr: Toluene-d8	102	0	70-130		%Rec	5	3/24/2022 9:01:40 PM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	2.0	0.14	0.25		mg/L	5	3/24/2022 9:01:40 PM	G86734
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	5	3/24/2022 9:01:40 PM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: OW-54
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/23/2022 8:20:00 AM
Lab ID: 2203C69-002B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/29/2022 4:10:32 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-54

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	2.2	0.016	0.064		mg/L	1	3/28/2022 6:26:12 PM	66385
Motor Oil Range Organics (MRO)	0.13	0.052	0.080		mg/L	1	3/28/2022 6:26:12 PM	66385
Surr: DNOP	113	0	42.2-138		%Rec	1	3/28/2022 6:26:12 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	1.1	20		µg/L	1	4/2/2022 8:44:39 PM	66392
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	4/2/2022 8:44:39 PM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/2/2022 8:44:39 PM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/2/2022 8:44:39 PM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/2/2022 8:44:39 PM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/2/2022 8:44:39 PM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/2/2022 8:44:39 PM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/2/2022 8:44:39 PM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/2/2022 8:44:39 PM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/2/2022 8:44:39 PM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/2/2022 8:44:39 PM	66392
Phenol	ND	0.33	5.0		µg/L	1	4/2/2022 8:44:39 PM	66392
Pyridine	ND	10	10		µg/L	1	4/2/2022 8:44:39 PM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/2/2022 8:44:39 PM	66392
Surr: 2-Fluorophenol	46.9	0	29.4-87.7		%Rec	1	4/2/2022 8:44:39 PM	66392
Surr: Phenol-d5	38.2	0	28.5-64.7		%Rec	1	4/2/2022 8:44:39 PM	66392
Surr: 2,4,6-Tribromophenol	85.9	0	18.6-129		%Rec	1	4/2/2022 8:44:39 PM	66392
Surr: Nitrobenzene-d5	61.7	0	36.9-103		%Rec	1	4/2/2022 8:44:39 PM	66392
Surr: 2-Fluorobiphenyl	57.4	0	38.1-99.9		%Rec	1	4/2/2022 8:44:39 PM	66392
Surr: 4-Terphenyl-d14	84.4	0	48-155		%Rec	1	4/2/2022 8:44:39 PM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/30/2022 1:30:00 PM	R86913
Naphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Acenaphthene	ND	0.031	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Fluorene	ND	0.031	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Phenanthrene	ND	0.057	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 1:30:00 PM	R86913
Pyrene	ND	0.16	0.20		µg/L	1	3/30/2022 1:30:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 1:30:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 1:30:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix interference

B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-54

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	59.1	0	31.6-100		%Rec	1	3/30/2022 1:30:00 PM	R86913
Surr: 2-Fluorobiphenyl	52.8	0	26.7-90.1		%Rec	1	3/30/2022 1:30:00 PM	R86913
Surr: 4-Terphenyl-d14	73.7	0	72.3-147		%Rec	1	3/30/2022 1:30:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-54

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-002D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.39	0.0016	0.0030		mg/L	1	4/6/2022 2:55:26 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 2:55:26 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 2:55:26 PM	66644
Chromium	0.0064	0.0021	0.0060		mg/L	1	4/6/2022 2:55:26 PM	66644
Cobalt	0.078	0.0024	0.0060		mg/L	1	4/6/2022 2:55:26 PM	66644
Nickel	0.24	0.0033	0.010	*	mg/L	1	4/6/2022 2:55:26 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 2:55:26 PM	66644
Vanadium	0.015	0.0024	0.050	J	mg/L	1	4/6/2022 2:55:26 PM	66644
Zinc	0.031	0.0064	0.010		mg/L	1	4/6/2022 2:55:26 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:20:16 PM	66472
Arsenic	0.0098	0.00013	0.0010		mg/L	1	3/31/2022 1:20:16 PM	66472
Lead	0.023	0.000061	0.00050	*	mg/L	1	3/31/2022 1:20:16 PM	66472
Selenium	0.0012	0.00037	0.0010		mg/L	1	3/31/2022 1:20:16 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00014	0.000091	0.00020	J	mg/L	1	3/28/2022 3:33:24 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-54

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:20:00 AM

Lab ID: 2203C69-002E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.20	0.0011	0.0020		mg/L	1	3/29/2022 2:03:04 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:03:04 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:03:04 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 2:03:04 PM	B86825
Cobalt	0.086	0.0024	0.0060		mg/L	1	3/29/2022 2:03:04 PM	B86825
Nickel	0.27	0.0033	0.010	*	mg/L	1	3/29/2022 2:03:04 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:03:04 PM	B86825
Vanadium	ND	0.0017	0.050		mg/L	1	3/29/2022 2:03:04 PM	B86825
Zinc	0.017	0.0032	0.010		mg/L	1	3/29/2022 2:03:04 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00047	0.00044	0.0010	J	mg/L	1	3/24/2022 3:42:54 PM	B86714
Arsenic	0.0081	0.00012	0.0010		mg/L	1	3/24/2022 3:42:54 PM	B86714
Lead	0.0064	0.000057	0.00050		mg/L	1	3/24/2022 3:42:54 PM	B86714
Selenium	ND	0.00034	0.0010		mg/L	1	3/24/2022 3:42:54 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:09:34 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-66

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:50:00 AM

Lab ID: 2203C69-003A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	21000	110	500		µg/L	500	3/24/2022 9:30:11 PM	R86734
Toluene	24000	100	500		µg/L	500	3/24/2022 9:30:11 PM	R86734
Ethylbenzene	1000	11	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Methyl tert-butyl ether (MTBE)	660	20	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
1,2,4-Trimethylbenzene	1400	6.1	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
1,3,5-Trimethylbenzene	410	9.1	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
1,2-Dichloroethane (EDC)	21	13	50	J	µg/L	50	3/24/2022 9:58:47 PM	R86734
Acetone	ND	130	500		µg/L	50	3/24/2022 9:58:47 PM	R86734
Bromomethane	ND	43	150		µg/L	50	3/24/2022 9:58:47 PM	R86734
2-Butanone	ND	100	500		µg/L	50	3/24/2022 9:58:47 PM	R86734
Carbon disulfide	ND	30	500		µg/L	50	3/24/2022 9:58:47 PM	R86734
Chlorobenzene	ND	7.8	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Chloroform	ND	6.7	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Chloromethane	54	21	150	J	µg/L	50	3/24/2022 9:58:47 PM	R86734
cis-1,2-DCE	ND	19	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
1,1-Dichloroethane	27	14	50	J	µg/L	50	3/24/2022 9:58:47 PM	R86734
1,1-Dichloroethene	ND	10	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Isopropylbenzene	17	9.1	50	J	µg/L	50	3/24/2022 9:58:47 PM	R86734
4-Isopropyltoluene	ND	10	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Methylene Chloride	ND	25	150		µg/L	50	3/24/2022 9:58:47 PM	R86734
n-Butylbenzene	13	13	150	J	µg/L	50	3/24/2022 9:58:47 PM	R86734
n-Propylbenzene	71	9.1	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
sec-Butylbenzene	ND	7.2	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Styrene	ND	6.8	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Tetrachloroethene (PCE)	ND	18	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
1,1,1-Trichloroethane	ND	15	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Trichloroethene (TCE)	ND	10	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Vinyl chloride	ND	16	50		µg/L	50	3/24/2022 9:58:47 PM	R86734
Xylenes, Total	11000	19	75		µg/L	50	3/24/2022 9:58:47 PM	R86734
Surr: 1,2-Dichloroethane-d4	87.0	0	70-130		%Rec	50	3/24/2022 9:58:47 PM	R86734
Surr: 4-Bromofluorobenzene	93.5	0	70-130		%Rec	50	3/24/2022 9:58:47 PM	R86734
Surr: Dibromofluoromethane	90.6	0	70-130		%Rec	50	3/24/2022 9:58:47 PM	R86734
Surr: Toluene-d8	101	0	70-130		%Rec	50	3/24/2022 9:58:47 PM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	130	1.4	2.5		mg/L	50	3/24/2022 9:58:47 PM	G86734
Surr: 4-Bromofluorobenzene	97.4	0	70-130		%Rec	50	3/24/2022 9:58:47 PM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: OW-66
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/23/2022 8:50:00 AM
Lab ID: 2203C69-003B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/29/2022 4:25:42 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-66

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:50:00 AM

Lab ID: 2203C69-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	6.6	0.16	0.64		mg/L	10	3/29/2022 4:17:03 PM	66385
Motor Oil Range Organics (MRO)	ND	0.52	0.80	D	mg/L	10	3/29/2022 4:17:03 PM	66385
Surr: DNOP	0	0	42.2-138	S	%Rec	10	3/29/2022 4:17:03 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	11	200	D	µg/L	10	4/2/2022 9:27:06 PM	66392
Bis(2-ethylhexyl)phthalate	ND	45	100	D	µg/L	10	4/2/2022 9:27:06 PM	66392
Di-n-butyl phthalate	ND	65	100	D	µg/L	10	4/2/2022 9:27:06 PM	66392
Di-n-octyl phthalate	ND	31	200	D	µg/L	10	4/2/2022 9:27:06 PM	66392
1,4-Dichlorobenzene	ND	7.0	50	D	µg/L	10	4/2/2022 9:27:06 PM	66392
Diethyl phthalate	ND	39	100	D	µg/L	10	4/2/2022 9:27:06 PM	66392
Dimethyl phthalate	ND	20	100	D	µg/L	10	4/2/2022 9:27:06 PM	66392
2,4-Dimethylphenol	22	9.7	50	JD	µg/L	10	4/2/2022 9:27:06 PM	66392
2,4-Dinitrophenol	ND	5.0	50	D	µg/L	10	4/2/2022 9:27:06 PM	66392
1-Methylnaphthalene	25	6.0	50	JD	µg/L	10	4/2/2022 9:27:06 PM	66392
2-Methylnaphthalene	46	4.1	50	JD	µg/L	10	4/2/2022 9:27:06 PM	66392
2-Methylphenol	25	5.1	50	JD	µg/L	10	4/2/2022 9:27:06 PM	66392
3+4-Methylphenol	40	4.5	50	JD	µg/L	10	4/2/2022 9:27:06 PM	66392
Naphthalene	150	22	50	D	µg/L	10	4/2/2022 9:27:06 PM	66392
Phenol	46	3.3	50	JD	µg/L	10	4/2/2022 9:27:06 PM	66392
Pyridine	ND	100	100	D	µg/L	10	4/2/2022 9:27:06 PM	66392
2,4,6-Trichlorophenol	ND	4.3	50	D	µg/L	10	4/2/2022 9:27:06 PM	66392
Surr: 2-Fluorophenol	0	0	29.4-87.7	SD	%Rec	10	4/2/2022 9:27:06 PM	66392
Surr: Phenol-d5	0	0	28.5-64.7	SD	%Rec	10	4/2/2022 9:27:06 PM	66392
Surr: 2,4,6-Tribromophenol	0	0	18.6-129	SD	%Rec	10	4/2/2022 9:27:06 PM	66392
Surr: Nitrobenzene-d5	0	0	36.9-103	SD	%Rec	10	4/2/2022 9:27:06 PM	66392
Surr: 2-Fluorobiphenyl	0	0	38.1-99.9	SD	%Rec	10	4/2/2022 9:27:06 PM	66392
Surr: 4-Terphenyl-d14	0	0	48-155	SD	%Rec	10	4/2/2022 9:27:06 PM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/30/2022 2:14:00 PM	R86913
Acenaphthene	0.28	0.031	0.10		µg/L	1	3/30/2022 2:14:00 PM	R86913
Fluorene	0.84	0.031	0.10		µg/L	1	3/30/2022 2:14:00 PM	R86913
Phenanthrene	1.2	0.057	0.10		µg/L	1	3/30/2022 2:14:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 2:14:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 2:14:00 PM	R86913
Pyrene	0.24	0.16	0.20		µg/L	1	3/30/2022 2:14:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 2:14:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 2:14:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 2:14:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 2:14:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-66

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:50:00 AM

Lab ID: 2203C69-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	59.3	0	31.6-100		%Rec	1	3/30/2022 2:14:00 PM	R86913
Surr: 2-Fluorobiphenyl	50.0	0	26.7-90.1		%Rec	1	3/30/2022 2:14:00 PM	R86913
Surr: 4-Terphenyl-d14	66.9	0	72.3-147	S	%Rec	1	3/30/2022 2:14:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-66

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:50:00 AM

Lab ID: 2203C69-003D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	2.3	0.0082	0.015	*	mg/L	5	4/6/2022 3:08:07 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 3:03:53 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 3:03:53 PM	66644
Chromium	0.017	0.0021	0.0060		mg/L	1	4/6/2022 3:03:53 PM	66644
Cobalt	0.0095	0.0024	0.0060		mg/L	1	4/6/2022 3:03:53 PM	66644
Nickel	0.33	0.0033	0.010	*	mg/L	1	4/6/2022 3:03:53 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 3:03:53 PM	66644
Vanadium	0.034	0.0024	0.050	J	mg/L	1	4/6/2022 3:03:53 PM	66644
Zinc	0.023	0.0064	0.010		mg/L	1	4/6/2022 3:03:53 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:22:43 PM	66472
Arsenic	0.0098	0.00013	0.0010		mg/L	1	3/31/2022 1:22:43 PM	66472
Lead	0.038	0.00061	0.0050	*	mg/L	10	3/31/2022 3:37:49 PM	66472
Selenium	0.0024	0.00037	0.0010		mg/L	1	3/31/2022 1:22:43 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/28/2022 3:35:32 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-66

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 8:50:00 AM

Lab ID: 2203C69-003E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	1.8	0.0056	0.010		mg/L	5	3/29/2022 2:07:48 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:06:24 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:06:24 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 2:06:24 PM	B86825
Cobalt	0.0053	0.0024	0.0060	J	mg/L	1	3/29/2022 2:06:24 PM	B86825
Nickel	0.37	0.0033	0.010	*	mg/L	1	3/29/2022 2:06:24 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:06:24 PM	B86825
Vanadium	0.0029	0.0017	0.050	J	mg/L	1	3/29/2022 2:06:24 PM	B86825
Zinc	0.0081	0.0032	0.010	J	mg/L	1	3/29/2022 2:06:24 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.0022	0.0050		mg/L	5	3/24/2022 3:48:17 PM	B86714
Arsenic	0.0063	0.00012	0.0010		mg/L	1	3/24/2022 4:12:30 PM	B86714
Lead	0.00069	0.000057	0.00050		mg/L	1	3/24/2022 4:12:30 PM	B86714
Selenium	ND	0.00034	0.0010		mg/L	1	3/24/2022 4:12:30 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:15:57 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-55

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:10:00 AM

Lab ID: 2203C69-004A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	7300	110	500		µg/L	500	3/25/2022 12:21:17 AM	R86734
Toluene	270	10	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Ethylbenzene	550	11	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Methyl tert-butyl ether (MTBE)	970	20	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
1,2,4-Trimethylbenzene	250	6.1	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
1,3,5-Trimethylbenzene	57	9.1	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
1,2-Dichloroethane (EDC)	ND	13	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Acetone	ND	130	500		µg/L	50	3/25/2022 12:49:40 AM	R86734
Bromomethane	ND	43	150		µg/L	50	3/25/2022 12:49:40 AM	R86734
2-Butanone	ND	100	500		µg/L	50	3/25/2022 12:49:40 AM	R86734
Carbon disulfide	ND	30	500		µg/L	50	3/25/2022 12:49:40 AM	R86734
Chlorobenzene	ND	7.8	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Chloroform	11	6.7	50	J	µg/L	50	3/25/2022 12:49:40 AM	R86734
Chloromethane	40	21	150	J	µg/L	50	3/25/2022 12:49:40 AM	R86734
cis-1,2-DCE	ND	19	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
1,1-Dichloroethane	ND	14	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
1,1-Dichloroethene	ND	10	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Isopropylbenzene	23	9.1	50	J	µg/L	50	3/25/2022 12:49:40 AM	R86734
4-Isopropyltoluene	ND	10	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Methylene Chloride	ND	25	150		µg/L	50	3/25/2022 12:49:40 AM	R86734
n-Butylbenzene	ND	13	150		µg/L	50	3/25/2022 12:49:40 AM	R86734
n-Propylbenzene	60	9.1	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
sec-Butylbenzene	ND	7.2	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Styrene	ND	6.8	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Tetrachloroethene (PCE)	ND	18	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
1,1,1-Trichloroethane	ND	15	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Trichloroethene (TCE)	ND	10	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Vinyl chloride	ND	16	50		µg/L	50	3/25/2022 12:49:40 AM	R86734
Xylenes, Total	650	19	75		µg/L	50	3/25/2022 12:49:40 AM	R86734
Surr: 1,2-Dichloroethane-d4	85.8	0	70-130		%Rec	50	3/25/2022 12:49:40 AM	R86734
Surr: 4-Bromofluorobenzene	94.3	0	70-130		%Rec	50	3/25/2022 12:49:40 AM	R86734
Surr: Dibromofluoromethane	88.2	0	70-130		%Rec	50	3/25/2022 12:49:40 AM	R86734
Surr: Toluene-d8	103	0	70-130		%Rec	50	3/25/2022 12:49:40 AM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	25	1.4	2.5		mg/L	50	3/25/2022 12:49:40 AM	G86734
Surr: 4-Bromofluorobenzene	99.4	0	70-130		%Rec	50	3/25/2022 12:49:40 AM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: OW-55
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/23/2022 9:10:00 AM
Lab ID: 2203C69-004B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/29/2022 4:56:01 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-55

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:10:00 AM

Lab ID: 2203C69-004C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	3.6	0.016	0.064		mg/L	1	3/28/2022 7:14:28 PM	66385
Motor Oil Range Organics (MRO)	0.084	0.052	0.080		mg/L	1	3/28/2022 7:14:28 PM	66385
Surr: DNOP	82.4	0	42.2-138		%Rec	1	3/28/2022 7:14:28 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	1.1	20		µg/L	1	4/2/2022 11:01:05 PM	66392
Bis(2-ethylhexyl)phthalate	4.6	4.5	10	J	µg/L	1	4/2/2022 11:01:05 PM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/2/2022 11:01:05 PM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/2/2022 11:01:05 PM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/2/2022 11:01:05 PM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/2/2022 11:01:05 PM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
Naphthalene	29	2.2	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
Phenol	44	0.33	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
Pyridine	ND	10	10		µg/L	1	4/2/2022 11:01:05 PM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/2/2022 11:01:05 PM	66392
Surr: 2-Fluorophenol	58.9	0	29.4-87.7		%Rec	1	4/2/2022 11:01:05 PM	66392
Surr: Phenol-d5	47.3	0	28.5-64.7		%Rec	1	4/2/2022 11:01:05 PM	66392
Surr: 2,4,6-Tribromophenol	91.0	0	18.6-129		%Rec	1	4/2/2022 11:01:05 PM	66392
Surr: Nitrobenzene-d5	76.2	0	36.9-103		%Rec	1	4/2/2022 11:01:05 PM	66392
Surr: 2-Fluorobiphenyl	64.4	0	38.1-99.9		%Rec	1	4/2/2022 11:01:05 PM	66392
Surr: 4-Terphenyl-d14	88.9	0	48-155		%Rec	1	4/2/2022 11:01:05 PM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/30/2022 2:58:00 PM	R86913
1-Methylnaphthalene	20	0.024	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
2-Methylnaphthalene	13	0.034	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Acenaphthene	0.38	0.031	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Fluorene	1.1	0.031	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Phenanthrene	0.84	0.057	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 2:58:00 PM	R86913
Pyrene	ND	0.16	0.20		µg/L	1	3/30/2022 2:58:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 2:58:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 2:58:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix interference

B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-55

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:10:00 AM

Lab ID: 2203C69-004C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	67.8	0	31.6-100		%Rec	1	3/30/2022 2:58:00 PM	R86913
Surr: 2-Fluorobiphenyl	52.9	0	26.7-90.1		%Rec	1	3/30/2022 2:58:00 PM	R86913
Surr: 4-Terphenyl-d14	68.6	0	72.3-147	S	%Rec	1	3/30/2022 2:58:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-55

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:10:00 AM

Lab ID: 2203C69-004D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.70	0.0016	0.0030		mg/L	1	4/6/2022 3:17:19 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 3:17:19 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 3:17:19 PM	66644
Chromium	0.0080	0.0021	0.0060		mg/L	1	4/6/2022 3:17:19 PM	66644
Cobalt	0.041	0.0024	0.0060		mg/L	1	4/6/2022 3:17:19 PM	66644
Nickel	0.24	0.0033	0.010	*	mg/L	1	4/6/2022 3:17:19 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 3:17:19 PM	66644
Vanadium	0.023	0.0024	0.050	J	mg/L	1	4/6/2022 3:17:19 PM	66644
Zinc	0.039	0.0064	0.010		mg/L	1	4/6/2022 3:17:19 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:45:25 PM	66472
Arsenic	0.011	0.0013	0.010	*	mg/L	10	3/31/2022 3:42:42 PM	66472
Lead	0.0082	0.00061	0.0050		mg/L	10	3/31/2022 3:42:42 PM	66472
Selenium	ND	0.0037	0.010		mg/L	10	3/31/2022 3:42:42 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/28/2022 3:37:41 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-55

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:10:00 AM

Lab ID: 2203C69-004E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.64	0.0011	0.0020		mg/L	1	3/29/2022 2:09:14 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:09:14 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:09:14 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 2:09:14 PM	B86825
Cobalt	0.012	0.0024	0.0060		mg/L	1	3/29/2022 2:09:14 PM	B86825
Nickel	0.26	0.0033	0.010	*	mg/L	1	3/29/2022 2:09:14 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:09:14 PM	B86825
Vanadium	0.0039	0.0017	0.050	J	mg/L	1	3/29/2022 2:09:14 PM	B86825
Zinc	0.011	0.0032	0.010		mg/L	1	3/29/2022 2:09:14 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.0022	0.0050		mg/L	5	3/24/2022 3:53:40 PM	B86714
Arsenic	0.0051	0.00012	0.0010		mg/L	1	3/24/2022 4:15:12 PM	B86714
Lead	ND	0.000057	0.00050		mg/L	1	3/24/2022 4:15:12 PM	B86714
Selenium	ND	0.00034	0.0010		mg/L	1	3/24/2022 4:15:12 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:18:03 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-13

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:30:00 AM

Lab ID: 2203C69-005A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	0.29	0.23	1.0	J	µg/L	1	3/25/2022 1:18:12 AM	R86734
Toluene	ND	0.20	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Methyl tert-butyl ether (MTBE)	110	0.39	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
1,2-Dichloroethane (EDC)	0.76	0.25	1.0	J	µg/L	1	3/25/2022 1:18:12 AM	R86734
Acetone	ND	2.5	10		µg/L	1	3/25/2022 1:18:12 AM	R86734
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
2-Butanone	ND	2.0	10		µg/L	1	3/25/2022 1:18:12 AM	R86734
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 1:18:12 AM	R86734
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Chloromethane	ND	0.41	3.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/25/2022 1:18:12 AM	R86734
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/25/2022 1:18:12 AM	R86734
Surr: 1,2-Dichloroethane-d4	88.5	0	70-130		%Rec	1	3/25/2022 1:18:12 AM	R86734
Surr: 4-Bromofluorobenzene	95.0	0	70-130		%Rec	1	3/25/2022 1:18:12 AM	R86734
Surr: Dibromofluoromethane	92.2	0	70-130		%Rec	1	3/25/2022 1:18:12 AM	R86734
Surr: Toluene-d8	102	0	70-130		%Rec	1	3/25/2022 1:18:12 AM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.15	0.028	0.050		mg/L	1	3/25/2022 1:18:12 AM	G86734
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/25/2022 1:18:12 AM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: OW-13
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/23/2022 9:30:00 AM
Lab ID: 2203C69-005B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/29/2022 5:11:10 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-13

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:30:00 AM

Lab ID: 2203C69-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.036	0.016	0.064	J	mg/L	1	3/28/2022 7:38:44 PM	66385
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/28/2022 7:38:44 PM	66385
Surr: DNOP	110	0	42.2-138		%Rec	1	3/28/2022 7:38:44 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	1.1	20		µg/L	1	4/2/2022 11:42:55 PM	66392
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	4/2/2022 11:42:55 PM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/2/2022 11:42:55 PM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/2/2022 11:42:55 PM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/2/2022 11:42:55 PM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/2/2022 11:42:55 PM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/2/2022 11:42:55 PM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/2/2022 11:42:55 PM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/2/2022 11:42:55 PM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/2/2022 11:42:55 PM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/2/2022 11:42:55 PM	66392
Phenol	ND	0.33	5.0		µg/L	1	4/2/2022 11:42:55 PM	66392
Pyridine	ND	10	10		µg/L	1	4/2/2022 11:42:55 PM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/2/2022 11:42:55 PM	66392
Surr: 2-Fluorophenol	30.6	0	29.4-87.7		%Rec	1	4/2/2022 11:42:55 PM	66392
Surr: Phenol-d5	24.0	0	28.5-64.7	S	%Rec	1	4/2/2022 11:42:55 PM	66392
Surr: 2,4,6-Tribromophenol	39.3	0	18.6-129		%Rec	1	4/2/2022 11:42:55 PM	66392
Surr: Nitrobenzene-d5	42.7	0	36.9-103		%Rec	1	4/2/2022 11:42:55 PM	66392
Surr: 2-Fluorobiphenyl	34.9	0	38.1-99.9	S	%Rec	1	4/2/2022 11:42:55 PM	66392
Surr: 4-Terphenyl-d14	71.1	0	48-155		%Rec	1	4/2/2022 11:42:55 PM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/30/2022 3:42:00 PM	R86913
Naphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Acenaphthene	ND	0.031	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Fluorene	ND	0.031	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Phenanthrene	ND	0.057	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 3:42:00 PM	R86913
Pyrene	ND	0.16	0.20		µg/L	1	3/30/2022 3:42:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 3:42:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 3:42:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-13

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:30:00 AM

Lab ID: 2203C69-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	46.8	0	31.6-100		%Rec	1	3/30/2022 3:42:00 PM	R86913
Surr: 2-Fluorobiphenyl	41.7	0	26.7-90.1		%Rec	1	3/30/2022 3:42:00 PM	R86913
Surr: 4-Terphenyl-d14	82.5	0	72.3-147		%Rec	1	3/30/2022 3:42:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-13

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:30:00 AM

Lab ID: 2203C69-005D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.020	0.0016	0.0030		mg/L	1	4/6/2022 3:20:08 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 3:20:08 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 3:20:08 PM	66644
Chromium	ND	0.0021	0.0060		mg/L	1	4/6/2022 3:20:08 PM	66644
Cobalt	ND	0.0024	0.0060		mg/L	1	4/6/2022 3:20:08 PM	66644
Nickel	ND	0.0033	0.010		mg/L	1	4/6/2022 3:20:08 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 3:20:08 PM	66644
Vanadium	0.0025	0.0024	0.050	J	mg/L	1	4/6/2022 3:20:08 PM	66644
Zinc	ND	0.0064	0.010		mg/L	1	4/6/2022 3:20:08 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:47:52 PM	66472
Arsenic	0.00075	0.00013	0.0010	J	mg/L	1	3/31/2022 1:47:52 PM	66472
Lead	0.000067	0.000061	0.00050	J	mg/L	1	3/31/2022 1:47:52 PM	66472
Selenium	ND	0.00037	0.0010		mg/L	1	3/31/2022 1:47:52 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/28/2022 3:39:50 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-13

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:30:00 AM

Lab ID: 2203C69-005E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.025	0.0011	0.0020		mg/L	1	3/29/2022 2:12:02 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:12:02 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:12:02 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 2:12:02 PM	B86825
Cobalt	ND	0.0024	0.0060		mg/L	1	3/29/2022 2:12:02 PM	B86825
Nickel	0.0033	0.0033	0.010	J	mg/L	1	3/29/2022 2:12:02 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:12:02 PM	B86825
Vanadium	ND	0.0017	0.050		mg/L	1	3/29/2022 2:12:02 PM	B86825
Zinc	0.0084	0.0032	0.010	J	mg/L	1	3/29/2022 2:12:02 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/24/2022 2:59:47 PM	B86714
Arsenic	0.00074	0.00012	0.0010	J	mg/L	1	3/24/2022 2:59:47 PM	B86714
Lead	ND	0.000057	0.00050		mg/L	1	3/24/2022 2:59:47 PM	B86714
Selenium	ND	0.00034	0.0010		mg/L	1	3/24/2022 2:59:47 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:20:09 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-56

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:50:00 AM

Lab ID: 2203C69-006A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	0.91	0.23	1.0	J	µg/L	1	3/25/2022 1:46:41 AM	R86734
Toluene	ND	0.20	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Methyl tert-butyl ether (MTBE)	23	0.39	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
1,2,4-Trimethylbenzene	0.22	0.12	1.0	J	µg/L	1	3/25/2022 1:46:41 AM	R86734
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
1,2-Dichloroethane (EDC)	6.6	0.25	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Acetone	17	2.5	10		µg/L	1	3/25/2022 1:46:41 AM	R86734
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
2-Butanone	ND	2.0	10		µg/L	1	3/25/2022 1:46:41 AM	R86734
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 1:46:41 AM	R86734
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Chloromethane	1.6	0.41	3.0	J	µg/L	1	3/25/2022 1:46:41 AM	R86734
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
1,1-Dichloroethane	0.58	0.27	1.0	J	µg/L	1	3/25/2022 1:46:41 AM	R86734
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/25/2022 1:46:41 AM	R86734
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/25/2022 1:46:41 AM	R86734
Surr: 1,2-Dichloroethane-d4	89.5	0	70-130		%Rec	1	3/25/2022 1:46:41 AM	R86734
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/25/2022 1:46:41 AM	R86734
Surr: Dibromofluoromethane	94.6	0	70-130		%Rec	1	3/25/2022 1:46:41 AM	R86734
Surr: Toluene-d8	102	0	70-130		%Rec	1	3/25/2022 1:46:41 AM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.50	0.028	0.050		mg/L	1	3/25/2022 1:46:41 AM	G86734
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	1	3/25/2022 1:46:41 AM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: OW-56
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/23/2022 9:50:00 AM
Lab ID: 2203C69-006B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/29/2022 5:26:24 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-56

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:50:00 AM

Lab ID: 2203C69-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	1.1	0.016	0.064		mg/L	1	3/28/2022 8:03:03 PM	66385
Motor Oil Range Organics (MRO)	0.24	0.052	0.080		mg/L	1	3/28/2022 8:03:03 PM	66385
Surr: DNOP	147	0	42.2-138	S	%Rec	1	3/28/2022 8:03:03 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	1.1	20		µg/L	1	4/3/2022 12:24:45 AM	66392
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	4/3/2022 12:24:45 AM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/3/2022 12:24:45 AM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/3/2022 12:24:45 AM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/3/2022 12:24:45 AM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/3/2022 12:24:45 AM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/3/2022 12:24:45 AM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/3/2022 12:24:45 AM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/3/2022 12:24:45 AM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/3/2022 12:24:45 AM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/3/2022 12:24:45 AM	66392
Phenol	ND	0.33	5.0		µg/L	1	4/3/2022 12:24:45 AM	66392
Pyridine	ND	10	10		µg/L	1	4/3/2022 12:24:45 AM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/3/2022 12:24:45 AM	66392
Surr: 2-Fluorophenol	61.4	0	29.4-87.7		%Rec	1	4/3/2022 12:24:45 AM	66392
Surr: Phenol-d5	44.6	0	28.5-64.7		%Rec	1	4/3/2022 12:24:45 AM	66392
Surr: 2,4,6-Tribromophenol	79.5	0	18.6-129		%Rec	1	4/3/2022 12:24:45 AM	66392
Surr: Nitrobenzene-d5	75.7	0	36.9-103		%Rec	1	4/3/2022 12:24:45 AM	66392
Surr: 2-Fluorobiphenyl	64.4	0	38.1-99.9		%Rec	1	4/3/2022 12:24:45 AM	66392
Surr: 4-Terphenyl-d14	87.0	0	48-155		%Rec	1	4/3/2022 12:24:45 AM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/30/2022 4:26:00 PM	R86913
Naphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Acenaphthene	ND	0.031	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Fluorene	ND	0.031	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Phenanthrene	ND	0.057	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 4:26:00 PM	R86913
Pyrene	ND	0.16	0.20		µg/L	1	3/30/2022 4:26:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 4:26:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 4:26:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-56

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:50:00 AM

Lab ID: 2203C69-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	67.7	0	31.6-100		%Rec	1	3/30/2022 4:26:00 PM	R86913
Surr: 2-Fluorobiphenyl	58.1	0	26.7-90.1		%Rec	1	3/30/2022 4:26:00 PM	R86913
Surr: 4-Terphenyl-d14	74.5	0	72.3-147		%Rec	1	3/30/2022 4:26:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-56

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:50:00 AM

Lab ID: 2203C69-006D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.45	0.0016	0.0030		mg/L	1	4/6/2022 3:23:23 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 3:23:23 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 3:23:23 PM	66644
Chromium	ND	0.0021	0.0060		mg/L	1	4/6/2022 3:23:23 PM	66644
Cobalt	0.0069	0.0024	0.0060		mg/L	1	4/6/2022 3:23:23 PM	66644
Nickel	0.072	0.0033	0.010		mg/L	1	4/6/2022 3:23:23 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 3:23:23 PM	66644
Vanadium	0.0083	0.0024	0.050	J	mg/L	1	4/6/2022 3:23:23 PM	66644
Zinc	0.010	0.0064	0.010		mg/L	1	4/6/2022 3:23:23 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:50:18 PM	66472
Arsenic	0.0055	0.00013	0.0010		mg/L	1	3/31/2022 1:50:18 PM	66472
Lead	0.0015	0.000061	0.00050		mg/L	1	3/31/2022 1:50:18 PM	66472
Selenium	0.00082	0.00037	0.0010	J	mg/L	1	3/31/2022 1:50:18 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/28/2022 3:41:59 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-56

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 9:50:00 AM

Lab ID: 2203C69-006E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.43	0.0011	0.0020		mg/L	1	3/29/2022 2:15:17 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:15:17 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:15:17 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 2:15:17 PM	B86825
Cobalt	0.0074	0.0024	0.0060		mg/L	1	3/29/2022 2:15:17 PM	B86825
Nickel	0.083	0.0033	0.010		mg/L	1	3/29/2022 2:15:17 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:15:17 PM	B86825
Vanadium	0.0033	0.0017	0.050	J	mg/L	1	3/29/2022 2:15:17 PM	B86825
Zinc	0.012	0.0032	0.010		mg/L	1	3/29/2022 2:15:17 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.0089	0.020		mg/L	20	3/24/2022 3:02:29 PM	B86714
Arsenic	0.0037	0.00012	0.0010		mg/L	1	3/24/2022 4:01:45 PM	B86714
Lead	0.00015	0.000057	0.00050	J	mg/L	1	3/24/2022 4:01:45 PM	B86714
Selenium	ND	0.00034	0.0010		mg/L	1	3/24/2022 4:01:45 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:22:17 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-59

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:10:00 AM

Lab ID: 2203C69-007A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Toluene	ND	0.20	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Methyl tert-butyl ether (MTBE)	11	0.39	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Acetone	ND	2.5	10		µg/L	1	3/25/2022 2:15:15 AM	R86734
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
2-Butanone	ND	2.0	10		µg/L	1	3/25/2022 2:15:15 AM	R86734
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 2:15:15 AM	R86734
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Chloromethane	0.66	0.41	3.0	J	µg/L	1	3/25/2022 2:15:15 AM	R86734
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/25/2022 2:15:15 AM	R86734
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/25/2022 2:15:15 AM	R86734
Surr: 1,2-Dichloroethane-d4	87.9	0	70-130		%Rec	1	3/25/2022 2:15:15 AM	R86734
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/25/2022 2:15:15 AM	R86734
Surr: Dibromofluoromethane	91.4	0	70-130		%Rec	1	3/25/2022 2:15:15 AM	R86734
Surr: Toluene-d8	96.9	0	70-130		%Rec	1	3/25/2022 2:15:15 AM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	2.3	0.028	0.050		mg/L	1	3/25/2022 2:15:15 AM	G86734
Surr: 4-Bromofluorobenzene	98.9	0	70-130		%Rec	1	3/25/2022 2:15:15 AM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203C69-007B

Client Sample ID: OW-59

Collection Date: 3/23/2022 10:10:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0093		µg/L	1	3/29/2022 5:41:41 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-59

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:10:00 AM

Lab ID: 2203C69-007C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.49	0.016	0.064		mg/L	1	3/28/2022 8:27:10 PM	66385
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/28/2022 8:27:10 PM	66385
Surr: DNOP	99.5	0	42.2-138		%Rec	1	3/28/2022 8:27:10 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	1.1	20		µg/L	1	4/3/2022 1:06:16 AM	66392
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	4/3/2022 1:06:16 AM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/3/2022 1:06:16 AM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/3/2022 1:06:16 AM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/3/2022 1:06:16 AM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/3/2022 1:06:16 AM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/3/2022 1:06:16 AM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/3/2022 1:06:16 AM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/3/2022 1:06:16 AM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/3/2022 1:06:16 AM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/3/2022 1:06:16 AM	66392
Phenol	ND	0.33	5.0		µg/L	1	4/3/2022 1:06:16 AM	66392
Pyridine	ND	10	10		µg/L	1	4/3/2022 1:06:16 AM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/3/2022 1:06:16 AM	66392
Surr: 2-Fluorophenol	19.4	0	29.4-87.7	S	%Rec	1	4/3/2022 1:06:16 AM	66392
Surr: Phenol-d5	34.9	0	28.5-64.7		%Rec	1	4/3/2022 1:06:16 AM	66392
Surr: 2,4,6-Tribromophenol	6.62	0	18.6-129	S	%Rec	1	4/3/2022 1:06:16 AM	66392
Surr: Nitrobenzene-d5	61.1	0	36.9-103		%Rec	1	4/3/2022 1:06:16 AM	66392
Surr: 2-Fluorobiphenyl	54.1	0	38.1-99.9		%Rec	1	4/3/2022 1:06:16 AM	66392
Surr: 4-Terphenyl-d14	85.7	0	48-155		%Rec	1	4/3/2022 1:06:16 AM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	4.8	0.048	1.0		µg/L	1	3/30/2022 5:11:00 PM	R86913
Naphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Acenaphthene	ND	0.031	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Fluorene	ND	0.031	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Phenanthrene	ND	0.057	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 5:11:00 PM	R86913
Pyrene	ND	0.16	0.20		µg/L	1	3/30/2022 5:11:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 5:11:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 5:11:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix interference

B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203C69-007C

Client Sample ID: OW-59

Collection Date: 3/23/2022 10:10:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	59.0	0	31.6-100		%Rec	1	3/30/2022 5:11:00 PM	R86913
Surr: 2-Fluorobiphenyl	51.9	0	26.7-90.1		%Rec	1	3/30/2022 5:11:00 PM	R86913
Surr: 4-Terphenyl-d14	84.5	0	72.3-147		%Rec	1	3/30/2022 5:11:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-59

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:10:00 AM

Lab ID: 2203C69-007D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.099	0.0016	0.0030		mg/L	1	4/6/2022 3:26:15 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 3:26:15 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 3:26:15 PM	66644
Chromium	0.0028	0.0021	0.0060	J	mg/L	1	4/6/2022 3:26:15 PM	66644
Cobalt	0.0043	0.0024	0.0060	J	mg/L	1	4/6/2022 3:26:15 PM	66644
Nickel	0.037	0.0033	0.010		mg/L	1	4/6/2022 3:26:15 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 3:26:15 PM	66644
Vanadium	0.012	0.0024	0.050	J	mg/L	1	4/6/2022 3:26:15 PM	66644
Zinc	0.0064	0.0064	0.010	J	mg/L	1	4/6/2022 3:26:15 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.0022	0.0050		mg/L	5	3/31/2022 3:50:02 PM	66472
Arsenic	0.0051	0.00063	0.0050		mg/L	5	3/31/2022 3:50:02 PM	66472
Lead	0.0020	0.00031	0.0025	J	mg/L	5	3/31/2022 3:50:02 PM	66472
Selenium	0.0020	0.0019	0.0050	J	mg/L	5	3/31/2022 3:50:02 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00013	0.000091	0.00020	J	mg/L	1	3/28/2022 3:44:07 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-59

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:10:00 AM

Lab ID: 2203C69-007E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.014	0.0011	0.0020		mg/L	1	3/29/2022 2:23:08 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:23:08 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:23:08 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 2:23:08 PM	B86825
Cobalt	0.0050	0.0024	0.0060	J	mg/L	1	3/29/2022 2:23:08 PM	B86825
Nickel	0.042	0.0033	0.010		mg/L	1	3/29/2022 2:23:08 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:23:08 PM	B86825
Vanadium	0.0034	0.0017	0.050	J	mg/L	1	3/29/2022 2:23:08 PM	B86825
Zinc	0.0091	0.0032	0.010	J	mg/L	1	3/29/2022 2:23:08 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.0044	0.010		mg/L	10	3/24/2022 3:05:10 PM	B86714
Arsenic	0.0047	0.0012	0.010	J	mg/L	10	3/24/2022 3:05:10 PM	B86714
Lead	0.00061	0.00057	0.0050	J	mg/L	10	3/24/2022 3:05:10 PM	B86714
Selenium	ND	0.0034	0.010		mg/L	10	3/24/2022 3:05:10 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:24:26 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-60

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:30:00 AM

Lab ID: 2203C69-008A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Toluene	ND	0.20	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Acetone	ND	2.5	10		µg/L	1	3/25/2022 2:43:47 AM	R86734
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
2-Butanone	ND	2.0	10		µg/L	1	3/25/2022 2:43:47 AM	R86734
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 2:43:47 AM	R86734
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Chloromethane	0.70	0.41	3.0	J	µg/L	1	3/25/2022 2:43:47 AM	R86734
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/25/2022 2:43:47 AM	R86734
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/25/2022 2:43:47 AM	R86734
Surr: 1,2-Dichloroethane-d4	88.1	0	70-130		%Rec	1	3/25/2022 2:43:47 AM	R86734
Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	1	3/25/2022 2:43:47 AM	R86734
Surr: Dibromofluoromethane	89.7	0	70-130		%Rec	1	3/25/2022 2:43:47 AM	R86734
Surr: Toluene-d8	100	0	70-130		%Rec	1	3/25/2022 2:43:47 AM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.066	0.028	0.050		mg/L	1	3/25/2022 2:43:47 AM	G86734
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/25/2022 2:43:47 AM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203C69-008B

Client Sample ID: OW-60

Collection Date: 3/23/2022 10:30:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/29/2022 5:56:56 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-60

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:30:00 AM

Lab ID: 2203C69-008C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.092	0.016	0.064		mg/L	1	3/28/2022 9:15:44 PM	66385
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/28/2022 9:15:44 PM	66385
Surr: DNOP	98.4	0	42.2-138		%Rec	1	3/28/2022 9:15:44 PM	66385
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	1.1	20		µg/L	1	4/3/2022 1:47:48 AM	66392
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	4/3/2022 1:47:48 AM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/3/2022 1:47:48 AM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/3/2022 1:47:48 AM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/3/2022 1:47:48 AM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/3/2022 1:47:48 AM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/3/2022 1:47:48 AM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/3/2022 1:47:48 AM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/3/2022 1:47:48 AM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/3/2022 1:47:48 AM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/3/2022 1:47:48 AM	66392
Phenol	ND	0.33	5.0		µg/L	1	4/3/2022 1:47:48 AM	66392
Pyridine	ND	10	10		µg/L	1	4/3/2022 1:47:48 AM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/3/2022 1:47:48 AM	66392
Surr: 2-Fluorophenol	49.5	0	29.4-87.7		%Rec	1	4/3/2022 1:47:48 AM	66392
Surr: Phenol-d5	39.0	0	28.5-64.7		%Rec	1	4/3/2022 1:47:48 AM	66392
Surr: 2,4,6-Tribromophenol	54.6	0	18.6-129		%Rec	1	4/3/2022 1:47:48 AM	66392
Surr: Nitrobenzene-d5	64.7	0	36.9-103		%Rec	1	4/3/2022 1:47:48 AM	66392
Surr: 2-Fluorobiphenyl	58.0	0	38.1-99.9		%Rec	1	4/3/2022 1:47:48 AM	66392
Surr: 4-Terphenyl-d14	75.6	0	48-155		%Rec	1	4/3/2022 1:47:48 AM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	0.24	0.048	1.0	J	µg/L	1	3/30/2022 5:56:00 PM	R86913
Naphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Acenaphthene	ND	0.031	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Fluorene	ND	0.031	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Phenanthrene	ND	0.057	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Anthracene	ND	0.034	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Fluoranthene	ND	0.10	0.20		µg/L	1	3/30/2022 5:56:00 PM	R86913
Pyrene	ND	0.16	0.20		µg/L	1	3/30/2022 5:56:00 PM	R86913
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Chrysene	ND	0.024	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/30/2022 5:56:00 PM	R86913
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/30/2022 5:56:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-60

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:30:00 AM

Lab ID: 2203C69-008C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	65.8	0	31.6-100		%Rec	1	3/30/2022 5:56:00 PM	R86913
Surr: 2-Fluorobiphenyl	58.3	0	26.7-90.1		%Rec	1	3/30/2022 5:56:00 PM	R86913
Surr: 4-Terphenyl-d14	82.5	0	72.3-147		%Rec	1	3/30/2022 5:56:00 PM	R86913

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-60

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:30:00 AM

Lab ID: 2203C69-008D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	1.3	0.0082	0.015		mg/L	5	4/6/2022 3:35:31 PM	66644
Beryllium	0.0026	0.00088	0.0020		mg/L	1	4/6/2022 3:34:06 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 3:34:06 PM	66644
Chromium	0.080	0.0021	0.0060		mg/L	1	4/6/2022 3:34:06 PM	66644
Cobalt	0.019	0.0024	0.0060		mg/L	1	4/6/2022 3:34:06 PM	66644
Nickel	0.084	0.0033	0.010		mg/L	1	4/6/2022 3:34:06 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 3:34:06 PM	66644
Vanadium	0.084	0.0024	0.050		mg/L	1	4/6/2022 3:34:06 PM	66644
Zinc	0.064	0.0064	0.010		mg/L	1	4/6/2022 3:34:06 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:55:11 PM	66472
Arsenic	0.0061	0.00013	0.0010		mg/L	1	3/31/2022 1:55:11 PM	66472
Lead	0.022	0.00031	0.0025	*	mg/L	5	3/31/2022 3:52:28 PM	66472
Selenium	0.023	0.00037	0.0010		mg/L	1	3/31/2022 1:55:11 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/28/2022 3:46:17 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-60

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 10:30:00 AM

Lab ID: 2203C69-008E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.035	0.0011	0.0020		mg/L	1	3/29/2022 2:28:01 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:28:01 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:28:01 PM	B86825
Chromium	0.0044	0.0020	0.0060	J	mg/L	1	3/29/2022 2:28:01 PM	B86825
Cobalt	0.0027	0.0024	0.0060	J	mg/L	1	3/29/2022 2:28:01 PM	B86825
Nickel	0.012	0.0033	0.010		mg/L	1	3/29/2022 2:28:01 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:28:01 PM	B86825
Vanadium	0.011	0.0017	0.050	J	mg/L	1	3/29/2022 2:28:01 PM	B86825
Zinc	0.011	0.0032	0.010		mg/L	1	3/29/2022 2:28:01 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/24/2022 3:07:51 PM	B86714
Arsenic	0.0013	0.00061	0.0050	J	mg/L	5	3/24/2022 4:07:08 PM	B86714
Lead	ND	0.000057	0.00050		mg/L	1	3/24/2022 3:07:51 PM	B86714
Selenium	0.021	0.0017	0.0050		mg/L	5	3/24/2022 4:07:08 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:26:34 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 11:00:00 AM

Lab ID: 2203C69-009A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	160	2.3	10		µg/L	10	3/25/2022 11:59:44 AM	R86760
Toluene	1.3	0.20	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Ethylbenzene	31	0.21	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Methyl tert-butyl ether (MTBE)	3.3	0.39	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
1,2,4-Trimethylbenzene	22	0.12	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
1,3,5-Trimethylbenzene	0.61	0.18	1.0	J	µg/L	1	3/25/2022 3:12:15 AM	R86734
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Acetone	ND	2.5	10		µg/L	1	3/25/2022 3:12:15 AM	R86734
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
2-Butanone	ND	2.0	10		µg/L	1	3/25/2022 3:12:15 AM	R86734
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 3:12:15 AM	R86734
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Chloromethane	0.78	0.41	3.0	J	µg/L	1	3/25/2022 3:12:15 AM	R86734
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
1,1-Dichloroethane	4.4	0.27	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Isopropylbenzene	1.6	0.18	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
4-Isopropyltoluene	0.21	0.20	1.0	J	µg/L	1	3/25/2022 3:12:15 AM	R86734
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
n-Butylbenzene	0.29	0.25	3.0	J	µg/L	1	3/25/2022 3:12:15 AM	R86734
n-Propylbenzene	3.0	0.18	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
1,1,1-Trichloroethane	0.61	0.30	1.0	J	µg/L	1	3/25/2022 3:12:15 AM	R86734
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 3:12:15 AM	R86734
Vinyl chloride	0.65	0.32	1.0	J	µg/L	1	3/25/2022 3:12:15 AM	R86734
Xylenes, Total	6.7	0.37	1.5		µg/L	1	3/25/2022 3:12:15 AM	R86734
Surr: 1,2-Dichloroethane-d4	86.3	0	70-130		%Rec	1	3/25/2022 3:12:15 AM	R86734
Surr: 4-Bromofluorobenzene	90.1	0	70-130		%Rec	1	3/25/2022 3:12:15 AM	R86734
Surr: Dibromofluoromethane	87.2	0	70-130		%Rec	1	3/25/2022 3:12:15 AM	R86734
Surr: Toluene-d8	100	0	70-130		%Rec	1	3/25/2022 3:12:15 AM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.80	0.028	0.050		mg/L	1	3/25/2022 3:12:15 AM	G86734
Surr: 4-Bromofluorobenzene	93.5	0	70-130		%Rec	1	3/25/2022 3:12:15 AM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203C69-009B

Client Sample ID: MKTF-16

Collection Date: 3/23/2022 11:00:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/29/2022 6:12:09 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 11:00:00 AM

Lab ID: 2203C69-009C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	4.8	91		µg/L	1	4/7/2022 12:18:52 PM	66392
Bis(2-ethylhexyl)phthalate	ND	20	45		µg/L	1	4/7/2022 12:18:52 PM	66392
Di-n-butyl phthalate	ND	29	45		µg/L	1	4/7/2022 12:18:52 PM	66392
Di-n-octyl phthalate	ND	14	91		µg/L	1	4/7/2022 12:18:52 PM	66392
1,4-Dichlorobenzene	ND	3.2	23		µg/L	1	4/7/2022 12:18:52 PM	66392
Diethyl phthalate	ND	18	45		µg/L	1	4/7/2022 12:18:52 PM	66392
Dimethyl phthalate	ND	9.1	45		µg/L	1	4/7/2022 12:18:52 PM	66392
2,4-Dimethylphenol	ND	4.4	23		µg/L	1	4/7/2022 12:18:52 PM	66392
2,4-Dinitrophenol	ND	2.3	23		µg/L	1	4/7/2022 12:18:52 PM	66392
2-Methylphenol	ND	2.3	23		µg/L	1	4/7/2022 12:18:52 PM	66392
3+4-Methylphenol	ND	2.1	23		µg/L	1	4/7/2022 12:18:52 PM	66392
Phenol	ND	1.5	23		µg/L	1	4/7/2022 12:18:52 PM	66392
Pyridine	ND	45	45		µg/L	1	4/7/2022 12:18:52 PM	66392
2,4,6-Trichlorophenol	ND	2.0	23		µg/L	1	4/7/2022 12:18:52 PM	66392
Surr: 2-Fluorophenol	40.3	0	29.4-87.7		%Rec	1	4/7/2022 12:18:52 PM	66392
Surr: Phenol-d5	30.8	0	28.5-64.7		%Rec	1	4/7/2022 12:18:52 PM	66392
Surr: 2,4,6-Tribromophenol	63.3	0	18.6-129		%Rec	1	4/7/2022 12:18:52 PM	66392
Surr: Nitrobenzene-d5	48.6	0	36.9-103		%Rec	1	4/7/2022 12:18:52 PM	66392
Surr: 2-Fluorobiphenyl	48.0	0	38.1-99.9		%Rec	1	4/7/2022 12:18:52 PM	66392
Surr: 4-Terphenyl-d14	86.4	0	48-155		%Rec	1	4/7/2022 12:18:52 PM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	4/6/2022 11:52:00 AM	R87058
Naphthalene	0.080	0.034	0.10	J	µg/L	1	4/6/2022 11:52:00 AM	R87058
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Acenaphthene	ND	0.031	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Fluorene	ND	0.031	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Phenanthrene	ND	0.057	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Anthracene	ND	0.034	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Fluoranthene	ND	0.10	0.20		µg/L	1	4/6/2022 11:52:00 AM	R87058
Pyrene	ND	0.16	0.20		µg/L	1	4/6/2022 11:52:00 AM	R87058
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Chrysene	ND	0.024	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	4/6/2022 11:52:00 AM	R87058
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	4/6/2022 11:52:00 AM	R87058
Surr: Nitrobenzene-d5	51.1	0	31.6-100		%Rec	1	4/6/2022 11:52:00 AM	R87058
Surr: 2-Fluorobiphenyl	51.1	0	26.7-90.1		%Rec	1	4/6/2022 11:52:00 AM	R87058
Surr: 4-Terphenyl-d14	93.3	0	72.3-147		%Rec	1	4/6/2022 11:52:00 AM	R87058

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022

Lab ID: 2203C69-010A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	12	0.23	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Toluene	0.36	0.20	1.0	J	µg/L	1	3/25/2022 3:40:42 AM	R86734
Ethylbenzene	13	0.21	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Methyl tert-butyl ether (MTBE)	1200	3.9	10		µg/L	10	3/25/2022 12:28:47 PM	R86760
1,2,4-Trimethylbenzene	4.5	0.12	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
1,2-Dichloroethane (EDC)	0.68	0.25	1.0	J	µg/L	1	3/25/2022 3:40:42 AM	R86734
Acetone	ND	2.5	10		µg/L	1	3/25/2022 3:40:42 AM	R86734
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
2-Butanone	ND	2.0	10		µg/L	1	3/25/2022 3:40:42 AM	R86734
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 3:40:42 AM	R86734
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Chloromethane	1.8	0.41	3.0	J	µg/L	1	3/25/2022 3:40:42 AM	R86734
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
1,1-Dichloroethane	0.63	0.27	1.0	J	µg/L	1	3/25/2022 3:40:42 AM	R86734
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Isopropylbenzene	0.46	0.18	1.0	J	µg/L	1	3/25/2022 3:40:42 AM	R86734
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
n-Propylbenzene	1.2	0.18	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
sec-Butylbenzene	0.58	0.14	1.0	J	µg/L	1	3/25/2022 3:40:42 AM	R86734
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 3:40:42 AM	R86734
Vinyl chloride	0.46	0.32	1.0	J	µg/L	1	3/25/2022 3:40:42 AM	R86734
Xylenes, Total	2.4	0.37	1.5		µg/L	1	3/25/2022 3:40:42 AM	R86734
Surr: 1,2-Dichloroethane-d4	87.2	0	70-130		%Rec	1	3/25/2022 3:40:42 AM	R86734
Surr: 4-Bromofluorobenzene	107	0	70-130		%Rec	1	3/25/2022 3:40:42 AM	R86734
Surr: Dibromofluoromethane	87.7	0	70-130		%Rec	1	3/25/2022 3:40:42 AM	R86734
Surr: Toluene-d8	102	0	70-130		%Rec	1	3/25/2022 3:40:42 AM	R86734
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	1.9	0.028	0.050		mg/L	1	3/25/2022 3:40:42 AM	G86734
Surr: 4-Bromofluorobenzene	109	0	70-130		%Rec	1	3/25/2022 3:40:42 AM	G86734

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E Estimated value
H	Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL	Practical Quantitative Limit	RL Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference	

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022

Lab ID: 2203C69-010B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/29/2022 6:27:22 PM	66393

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022

Lab ID: 2203C69-010C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	2.3	0.016	0.064		mg/L	1	3/29/2022 12:05:25 AM	66409
Motor Oil Range Organics (MRO)	0.16	0.052	0.080	B	mg/L	1	3/29/2022 12:05:25 AM	66409
Surr: DNOP	96.6	0	42.2-138		%Rec	1	3/29/2022 12:05:25 AM	66409
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	4/7/2022 1:00:17 PM	66392
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	4/7/2022 1:00:17 PM	66392
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	4/7/2022 1:00:17 PM	66392
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	4/7/2022 1:00:17 PM	66392
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	4/7/2022 1:00:17 PM	66392
Diethyl phthalate	ND	3.9	10		µg/L	1	4/7/2022 1:00:17 PM	66392
Dimethyl phthalate	ND	2.0	10		µg/L	1	4/7/2022 1:00:17 PM	66392
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	4/7/2022 1:00:17 PM	66392
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	4/7/2022 1:00:17 PM	66392
2-Methylphenol	ND	0.51	5.0		µg/L	1	4/7/2022 1:00:17 PM	66392
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	4/7/2022 1:00:17 PM	66392
Phenol	ND	0.33	5.0		µg/L	1	4/7/2022 1:00:17 PM	66392
Pyridine	ND	10	10		µg/L	1	4/7/2022 1:00:17 PM	66392
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	4/7/2022 1:00:17 PM	66392
Surr: 2-Fluorophenol	42.4	0	29.4-87.7		%Rec	1	4/7/2022 1:00:17 PM	66392
Surr: Phenol-d5	32.1	0	28.5-64.7		%Rec	1	4/7/2022 1:00:17 PM	66392
Surr: 2,4,6-Tribromophenol	65.6	0	18.6-129		%Rec	1	4/7/2022 1:00:17 PM	66392
Surr: Nitrobenzene-d5	53.7	0	36.9-103		%Rec	1	4/7/2022 1:00:17 PM	66392
Surr: 2-Fluorobiphenyl	52.0	0	38.1-99.9		%Rec	1	4/7/2022 1:00:17 PM	66392
Surr: 4-Terphenyl-d14	83.7	0	48-155		%Rec	1	4/7/2022 1:00:17 PM	66392
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	4/6/2022 12:35:00 PM	R87058
Naphthalene	ND	0.034	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Acenaphthene	ND	0.031	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Fluorene	ND	0.031	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Phenanthrene	ND	0.057	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Anthracene	ND	0.034	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Fluoranthene	ND	0.10	0.20		µg/L	1	4/6/2022 12:35:00 PM	R87058
Pyrene	ND	0.16	0.20		µg/L	1	4/6/2022 12:35:00 PM	R87058
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Chrysene	ND	0.024	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	4/6/2022 12:35:00 PM	R87058
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	4/6/2022 12:35:00 PM	R87058

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix interference

B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022

Lab ID: 2203C69-010C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	57.3	0	31.6-100		%Rec	1	4/6/2022 12:35:00 PM	R87058
Surr: 2-Fluorobiphenyl	56.7	0	26.7-90.1		%Rec	1	4/6/2022 12:35:00 PM	R87058
Surr: 4-Terphenyl-d14	107	0	72.3-147	E	%Rec	1	4/6/2022 12:35:00 PM	R87058

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022

Lab ID: 2203C69-010D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.41	0.0016	0.0030		mg/L	1	4/6/2022 4:57:56 PM	66644
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 4:57:56 PM	66644
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 4:57:56 PM	66644
Chromium	0.0053	0.0021	0.0060	J	mg/L	1	4/6/2022 4:57:56 PM	66644
Cobalt	0.081	0.0024	0.0060		mg/L	1	4/6/2022 4:57:56 PM	66644
Nickel	0.26	0.0033	0.010	*	mg/L	1	4/6/2022 4:57:56 PM	66644
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 4:57:56 PM	66644
Vanadium	0.015	0.0024	0.050	J	mg/L	1	4/6/2022 4:57:56 PM	66644
Zinc	0.026	0.0064	0.010		mg/L	1	4/6/2022 4:57:56 PM	66644
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/31/2022 1:57:38 PM	66472
Arsenic	0.0091	0.00013	0.0010		mg/L	1	3/31/2022 1:57:38 PM	66472
Lead	0.020	0.000061	0.00050	*	mg/L	1	3/31/2022 1:57:38 PM	66472
Selenium	0.00086	0.00037	0.0010	J	mg/L	1	3/31/2022 1:57:38 PM	66472
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/28/2022 3:48:25 PM	66425

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022

Lab ID: 2203C69-010E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.20	0.0011	0.0020		mg/L	1	3/29/2022 2:34:33 PM	B86825
Beryllium	ND	0.00088	0.0020		mg/L	1	3/29/2022 2:34:33 PM	B86825
Cadmium	ND	0.00098	0.0020		mg/L	1	3/29/2022 2:34:33 PM	B86825
Chromium	ND	0.0020	0.0060		mg/L	1	3/29/2022 2:34:33 PM	B86825
Cobalt	0.085	0.0024	0.0060		mg/L	1	3/29/2022 2:34:33 PM	B86825
Nickel	0.27	0.0033	0.010	*	mg/L	1	3/29/2022 2:34:33 PM	B86825
Silver	ND	0.0013	0.0050		mg/L	1	3/29/2022 2:34:33 PM	B86825
Vanadium	ND	0.0017	0.050		mg/L	1	3/29/2022 2:34:33 PM	B86825
Zinc	0.018	0.0032	0.010		mg/L	1	3/29/2022 2:34:33 PM	B86825
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00051	0.00044	0.0010	J	mg/L	1	3/24/2022 3:10:32 PM	B86714
Arsenic	0.0091	0.00012	0.0010		mg/L	1	3/24/2022 3:10:32 PM	B86714
Lead	0.0076	0.000057	0.00050		mg/L	1	3/24/2022 3:10:32 PM	B86714
Selenium	ND	0.00034	0.0010		mg/L	1	3/24/2022 3:10:32 PM	B86714
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/29/2022 2:28:43 PM	66456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: FB-3-23-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/23/2022 11:00:00 AM

Lab ID: 2203C69-011A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Toluene	ND	0.20	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Acetone	ND	2.5	10		µg/L	1	3/25/2022 12:57:16 PM	R86760
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
2-Butanone	5.2	2.0	10	J	µg/L	1	3/25/2022 12:57:16 PM	R86760
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 12:57:16 PM	R86760
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Chloromethane	0.80	0.41	3.0	J	µg/L	1	3/25/2022 12:57:16 PM	R86760
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/25/2022 12:57:16 PM	R86760
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/25/2022 12:57:16 PM	R86760
Surr: 1,2-Dichloroethane-d4	90.7	0	70-130		%Rec	1	3/25/2022 12:57:16 PM	R86760
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/25/2022 12:57:16 PM	R86760
Surr: Dibromofluoromethane	97.1	0	70-130		%Rec	1	3/25/2022 12:57:16 PM	R86760
Surr: Toluene-d8	106	0	70-130		%Rec	1	3/25/2022 12:57:16 PM	R86760

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 1st Qtr

Collection Date:

Lab ID: 2203C69-012A

Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Toluene	ND	0.20	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Acetone	ND	2.5	10		µg/L	1	3/25/2022 1:25:53 PM	R86760
Bromomethane	ND	0.85	3.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
2-Butanone	ND	2.0	10		µg/L	1	3/25/2022 1:25:53 PM	R86760
Carbon disulfide	ND	0.59	10		µg/L	1	3/25/2022 1:25:53 PM	R86760
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Chloroform	ND	0.13	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Chloromethane	0.69	0.41	3.0	J	µg/L	1	3/25/2022 1:25:53 PM	R86760
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Styrene	ND	0.14	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/25/2022 1:25:53 PM	R86760
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/25/2022 1:25:53 PM	R86760
Surr: 1,2-Dichloroethane-d4	83.4	0	70-130		%Rec	1	3/25/2022 1:25:53 PM	R86760
Surr: 4-Bromofluorobenzene	97.2	0	70-130		%Rec	1	3/25/2022 1:25:53 PM	R86760
Surr: Dibromofluoromethane	92.2	0	70-130		%Rec	1	3/25/2022 1:25:53 PM	R86760
Surr: Toluene-d8	102	0	70-130		%Rec	1	3/25/2022 1:25:53 PM	R86760

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203C69

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 1st Qtr

Collection Date:

Lab ID: 2203C69-012B

Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/29/2022 6:42:39 PM	66394

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		



ANALYTICAL REPORT

April 04, 2022

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1475080

Samples Received: 03/25/2022

Project Number:

Description:

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Entire Report Reviewed By:

A handwritten signature in blue ink that reads "John V. Hawkins".

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

2203C69-001F EB-3-23-22 L1475080-01 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:21	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

2203C69-002F OW-54 L1475080-02 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:26	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203C69-003F OW-66 L1475080-03 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:27	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203C69-004F OW-55 L1475080-04 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:28	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203C69-005F OW-13 L1475080-05 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:29	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203C69-006F OW-56 L1475080-06 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:32	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203C69-007F OW-59 L1475080-07 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:35	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203C69-008F OW-60 L1475080-08 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:36	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

SAMPLE SUMMARY

2203C69-010F DUP-3-23-22 L1475080-09 WW

Collected by
Collected date/time
Received date/time

03/23/22 00:00 03/25/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1839312	1	03/28/22 15:55	04/01/22 13:39	LDT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



John Hawkins
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J3 J6	0.00500	1	04/01/2022 13:21	WG1839312

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	0.00527		0.00500	1	04/01/2022 13:26	WG1839312

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	0.00756		0.00500	1	04/01/2022 13:27	WG1839312

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	04/01/2022 13:28	WG1839312

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	04/01/2022 13:29	WG1839312

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J3 J6	0.00500	1	04/01/2022 13:32	WG1839312

- 1Cp
- 2Tc
- 3Ss
- 4Cn
- 5Sr
- 6Qc
- 7Gl
- 8Al
- 9Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	0.0191		0.00500	1	04/01/2022 13:35	WG1839312

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	0.00928		0.00500	1	04/01/2022 13:36	WG1839312

- 1Cp
- 2Tc
- 3Ss
- 4Cn
- 5Sr
- 6Qc
- 7Gl
- 8Al
- 9Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	04/01/2022 13:39	WG1839312

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3776612-1 04/01/22 13:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1474926-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1474926-08 04/01/22 13:18 • (DUP) R3776612-3 04/01/22 13:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP RPD Limits %
Cyanide	ND	ND	1	0.000	20

L1475080-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1475080-05 04/01/22 13:29 • (DUP) R3776612-6 04/01/22 13:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP RPD Limits %
Cyanide	ND	ND	1	0.000	20

Laboratory Control Sample (LCS)

(LCS) R3776612-2 04/01/22 13:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.101	101	87.1-120	

L1475080-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1475080-01 04/01/22 13:21 • (MS) R3776612-4 04/01/22 13:22 • (MSD) R3776612-5 04/01/22 13:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0973	0.0284	97.3	28.4	1	90.0-110		J3 J6	110	20

L1475080-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1475080-06 04/01/22 13:32 • (MS) R3776612-7 04/01/22 13:33 • (MSD) R3776612-8 04/01/22 13:34

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.104	0.0773	99.8	73.1	1	90.0-110		J3 J6	29.5	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

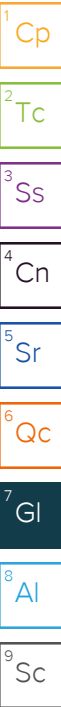
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.



Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

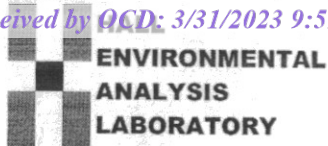
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: clients.hallenvironmental.com

1084

SUB CONTRACTOR: Pace TN		COMPANY: PACE TN		PHONE: (800) 767-5859		FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd				ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122							
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2203C69-001F	EB-3-23-22	500AMBHDP	Groundw	3/23/2022 8:20:00 AM	1	Total Cyanide
2	2203C69-002F	OW-54	500AMBHDP	Groundw	3/23/2022 8:20:00 AM	1	Total Cyanide
3	2203C69-003F	OW-66	500AMBHDP	Groundw	3/23/2022 8:50:00 AM	1	Total Cyanide
4	2203C69-004F	OW-55	500AMBHDP	Groundw	3/23/2022 9:10:00 AM	1	Total Cyanide
5	2203C69-005F	OW-13	500AMBHDP	Groundw	3/23/2022 9:30:00 AM	1	Total Cyanide
6	2203C69-006F	OW-56	500AMBHDP	Groundw	3/23/2022 9:50:00 AM	1	Total Cyanide
7	2203C69-007F	OW-59	500AMBHDP	Groundw	3/23/2022 10:10:00 AM	1	Total Cyanide
8	2203C69-008F	OW-60	500AMBHDP	Groundw	3/23/2022 10:30:00 AM	1	Total Cyanide
9	2203C69-010F	DUP-3-23-22	500AMBHDP	Groundw	3/23/2022	1	Total Cyanide

Sample Receipt Checklist
 COC Seal Present/Intact: ☒ Y ☐ N If Applicable
 COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
 Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
 Correct bottles used: ☒ Y ☐ N
 Sufficient volume sent: ☒ Y ☐ N
 RAD Screen <0.5 mR/hr: ☒ Y ☐ N

Feix: 5528 5947 9180
 Temp: 2.7 ± 0.2

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: CMC	Date: 3/24/2022	Time: 11:44 AM	Received By: [Signature]	Date: 3/24/22	Time: 09:01	REPORT TRANSMITTAL DESIRED:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	FOR LAB USE ONLY	
TAT: Standard ☒ RUSH ☐ Next BD ☐ 2nd BD ☐ 3rd BD ☐						Temp of samples _____ °C Attempt to Cool? _____	
						Comments: _____	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: B86825	RunNo: 86825								
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066297 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LL LCS	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: B86825	RunNo: 86825								
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066299 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0023	0.0030	0.002000	0	116	50	150			J
Beryllium	0.0018	0.0020	0.002000	0	92.4	50	150			J
Cadmium	0.0025	0.0020	0.002000	0	126	50	150			
Chromium	0.0060	0.0060	0.006000	0	99.3	50	150			J
Cobalt	0.0058	0.0060	0.006000	0	97.1	50	150			J
Nickel	0.0057	0.010	0.005000	0	114	50	150			J
Silver	0.0055	0.0050	0.005000	0	110	50	150			
Vanadium	0.011	0.050	0.01000	0	107	50	150			J
Zinc	0.012	0.010	0.01000	0	120	50	150			

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: B86825	RunNo: 86825								
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066301 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0030	0.5000	0	107	85	115			
Beryllium	0.52	0.0020	0.5000	0	104	85	115			
Cadmium	0.52	0.0020	0.5000	0	103	85	115			
Chromium	0.51	0.0060	0.5000	0	103	85	115			
Cobalt	0.50	0.0060	0.5000	0	100	85	115			
Nickel	0.49	0.010	0.5000	0	98.7	85	115			
Silver	0.11	0.0050	0.1000	0	107	85	115			
Vanadium	0.53	0.050	0.5000	0	107	85	115			
Zinc	0.50	0.010	0.5000	0	100	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66644	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: 66644	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075590 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LLCS-66644	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: 66644	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075594 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0019	0.0030	0.002000	0	95.8	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	101	50	150			
Cadmium	0.0019	0.0020	0.002000	0	94.6	50	150			J
Chromium	0.0059	0.0060	0.006000	0	99.1	50	150			J
Cobalt	0.0066	0.0060	0.006000	0	110	50	150			
Nickel	0.0034	0.010	0.005000	0	67.0	50	150			J
Silver	0.0043	0.0050	0.005000	0	86.3	50	150			J
Vanadium	0.010	0.050	0.01000	0	104	50	150			J
Zinc	0.011	0.010	0.01000	0	105	50	150			

Sample ID: LCS-66644	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: 66644	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075595 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0030	0.5000	0	96.8	85	115			
Beryllium	0.53	0.0020	0.5000	0	105	85	115			
Cadmium	0.48	0.0020	0.5000	0	95.3	85	115			
Chromium	0.49	0.0060	0.5000	0	98.1	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.5	85	115			
Nickel	0.47	0.010	0.5000	0	94.5	85	115			
Silver	0.097	0.0050	0.1000	0	96.7	85	115			
Vanadium	0.50	0.050	0.5000	0	99.3	85	115			
Zinc	0.49	0.010	0.5000	0	97.5	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: 2203C69-002DMS		SampType: MS		TestCode: EPA Method 200.7: Metals						
Client ID: OW-54		Batch ID: 66644		RunNo: 87030						
Prep Date: 4/5/2022		Analysis Date: 4/6/2022		SeqNo: 3076461		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.89	0.0030	0.5000	0.3878	99.5	70	130			
Beryllium	0.54	0.0020	0.5000	0	107	70	130			
Cadmium	0.48	0.0020	0.5000	0	95.4	70	130			
Chromium	0.49	0.0060	0.5000	0.006400	96.9	70	130			
Cobalt	0.54	0.0060	0.5000	0.07790	93.1	70	130			
Nickel	0.71	0.010	0.5000	0.2417	93.4	70	130			
Silver	0.10	0.0050	0.1000	0	101	70	130			
Vanadium	0.53	0.050	0.5000	0.01525	104	70	130			
Zinc	0.51	0.010	0.5000	0.03055	96.4	70	130			

Sample ID: 2203C69-002DMSD		SampType: MSD		TestCode: EPA Method 200.7: Metals						
Client ID: OW-54		Batch ID: 66644		RunNo: 87030						
Prep Date: 4/5/2022		Analysis Date: 4/6/2022		SeqNo: 3076462		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.90	0.0030	0.5000	0.3878	103	70	130	1.98	20	
Beryllium	0.53	0.0020	0.5000	0	107	70	130	0.543	20	
Cadmium	0.48	0.0020	0.5000	0	96.6	70	130	1.26	20	
Chromium	0.49	0.0060	0.5000	0.006400	96.5	70	130	0.413	20	
Cobalt	0.54	0.0060	0.5000	0.07790	93.3	70	130	0.237	20	
Nickel	0.71	0.010	0.5000	0.2417	94.0	70	130	0.397	20	
Silver	0.10	0.0050	0.1000	0	104	70	130	3.08	20	
Vanadium	0.54	0.050	0.5000	0.01525	104	70	130	0.651	20	
Zinc	0.51	0.010	0.5000	0.03055	95.9	70	130	0.514	20	

Sample ID: 2203C69-003DMS		SampType: MS		TestCode: EPA Method 200.7: Metals						
Client ID: OW-66		Batch ID: 66644		RunNo: 87030						
Prep Date: 4/5/2022		Analysis Date: 4/6/2022		SeqNo: 3076467		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.52	0.0020	0.5000	0	104	70	130			
Cadmium	0.45	0.0020	0.5000	0	91.0	70	130			
Chromium	0.48	0.0060	0.5000	0.01693	92.7	70	130			
Cobalt	0.45	0.0060	0.5000	0.009463	88.9	70	130			
Nickel	0.76	0.010	0.5000	0.3258	86.5	70	130			
Silver	0.10	0.0050	0.1000	0	101	70	130			
Vanadium	0.53	0.050	0.5000	0.03359	99.8	70	130			
Zinc	0.48	0.010	0.5000	0.02264	91.8	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 2203C69-003DMSD		SampType: MSD		TestCode: EPA Method 200.7: Metals						
Client ID: OW-66		Batch ID: 66644		RunNo: 87030						
Prep Date: 4/5/2022		Analysis Date: 4/6/2022		SeqNo: 3076468		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.52	0.0020	0.5000	0	104	70	130	0.319	20	
Cadmium	0.46	0.0020	0.5000	0	91.1	70	130	0.196	20	
Chromium	0.48	0.0060	0.5000	0.01693	93.1	70	130	0.377	20	
Cobalt	0.45	0.0060	0.5000	0.009463	88.6	70	130	0.366	20	
Nickel	0.76	0.010	0.5000	0.3258	86.2	70	130	0.210	20	
Silver	0.10	0.0050	0.1000	0	99.8	70	130	0.912	20	
Vanadium	0.54	0.050	0.5000	0.03359	100	70	130	0.596	20	
Zinc	0.48	0.010	0.5000	0.02264	91.7	70	130	0.0940	20	

Sample ID: 2203C69-003DMS		SampType: MS		TestCode: EPA Method 200.7: Metals						
Client ID: OW-66		Batch ID: 66644		RunNo: 87030						
Prep Date: 4/5/2022		Analysis Date: 4/6/2022		SeqNo: 3076473		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	2.7	0.015	0.5000	2.257	96.2	70	130			

Sample ID: 2203C69-003DMSD		SampType: MSD		TestCode: EPA Method 200.7: Metals						
Client ID: OW-66		Batch ID: 66644		RunNo: 87030						
Prep Date: 4/5/2022		Analysis Date: 4/6/2022		SeqNo: 3076474		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	2.8	0.015	0.5000	2.257	99.8	70	130	0.652	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: B86825	RunNo: 86825								
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066298 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LL LCS	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: BatchQC	Batch ID: B86825	RunNo: 86825								
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066300 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0023	0.0020	0.002000	0	116	50	150			
Beryllium	0.0018	0.0020	0.002000	0	92.4	50	150			J
Cadmium	0.0025	0.0020	0.002000	0	126	50	150			
Chromium	0.0060	0.0060	0.006000	0	99.3	50	150			J
Cobalt	0.0058	0.0060	0.006000	0	97.1	50	150			J
Nickel	0.0057	0.010	0.005000	0	114	50	150			J
Silver	0.0055	0.0050	0.005000	0	110	50	150			
Vanadium	0.011	0.050	0.01000	0	107	50	150			J
Zinc	0.012	0.010	0.01000	0	120	50	150			

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: LCSW	Batch ID: B86825	RunNo: 86825								
Prep Date:	Analysis Date: 3/29/2022	SeqNo: 3066302 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0020	0.5000	0	107	85	115			
Beryllium	0.52	0.0020	0.5000	0	104	85	115			
Cadmium	0.52	0.0020	0.5000	0	103	85	115			
Chromium	0.51	0.0060	0.5000	0	103	85	115			
Cobalt	0.50	0.0060	0.5000	0	100	85	115			
Nickel	0.49	0.010	0.5000	0	98.7	85	115			
Silver	0.11	0.0050	0.1000	0	107	85	115			
Vanadium	0.53	0.050	0.5000	0	107	85	115			
Zinc	0.50	0.010	0.5000	0	100	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66472		SampType: MBLK		TestCode: EPA 200.8: Metals						
Client ID: PBW		Batch ID: 66472		RunNo: 86921						
Prep Date: 3/29/2022		Analysis Date: 3/31/2022		SeqNo: 3071013			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: MSLLCS-66472		SampType: LCSLL		TestCode: EPA 200.8: Metals						
Client ID: BatchQC		Batch ID: 66472		RunNo: 86921						
Prep Date: 3/29/2022		Analysis Date: 3/31/2022		SeqNo: 3071014			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	102	50	150			
Arsenic	0.00095	0.0010	0.001000	0	95.5	50	150			J
Lead	0.00048	0.00050	0.0005000	0	96.9	50	150			J
Selenium	0.00085	0.0010	0.001000	0	84.6	50	150			J

Sample ID: MSLCS-66472		SampType: LCS		TestCode: EPA 200.8: Metals						
Client ID: LCSW		Batch ID: 66472			RunNo: 86921					
Prep Date: 3/29/2022		Analysis Date: 3/31/2022			SeqNo: 3071015		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	101	85	115			
Arsenic	0.025	0.0010	0.02500	0	99.4	85	115			
Lead	0.012	0.00050	0.01250	0	99.0	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			

Sample ID: 2203C69-001DMSLL				SampType: MS		TestCode: EPA 200.8: Metals				
Client ID: EB-3-23-22		Batch ID: 66472			RunNo: 86921					
Prep Date: 3/29/2022		Analysis Date: 3/31/2022			SeqNo: 3071068		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	103	70	130			
Arsenic	0.025	0.0010	0.02500	0	102	70	130			
Lead	0.012	0.00050	0.01250	0	99.9	70	130			
Selenium	0.024	0.0010	0.02500	0	97.8	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: B86714	RunNo: 86714								
Prep Date:	Analysis Date: 3/24/2022	SeqNo: 3062323 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: B86714	RunNo: 86714								
Prep Date:	Analysis Date: 3/24/2022	SeqNo: 3062324 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	102	50	150			
Arsenic	0.0011	0.0010	0.001000	0	107	50	150			
Lead	0.00052	0.00050	0.0005000	0	103	50	150			
Selenium	0.00080	0.0010	0.001000	0	80.5	50	150			J

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: B86714	RunNo: 86714								
Prep Date:	Analysis Date: 3/24/2022	SeqNo: 3062325 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	103	85	115			
Arsenic	0.026	0.0010	0.02500	0	102	85	115			
Lead	0.013	0.00050	0.01250	0	102	85	115			
Selenium	0.026	0.0010	0.02500	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66425	SampType: MBLK	TestCode: EPA Method 245.1: Mercury
Client ID: PBW	Batch ID: 66425	RunNo: 86790
Prep Date: 3/28/2022	Analysis Date: 3/28/2022	SeqNo: 3064662 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	ND	0.00020

Sample ID: LCSLL-66425	SampType: LCSLL	TestCode: EPA Method 245.1: Mercury
Client ID: BatchQC	Batch ID: 66425	RunNo: 86790
Prep Date: 3/28/2022	Analysis Date: 3/28/2022	SeqNo: 3064663 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	0.00016	0.00020 0.0001500 0 107 50 150 J

Sample ID: LCS-66425	SampType: LCS	TestCode: EPA Method 245.1: Mercury
Client ID: LCSW	Batch ID: 66425	RunNo: 86790
Prep Date: 3/28/2022	Analysis Date: 3/28/2022	SeqNo: 3064664 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	0.0049	0.00020 0.005000 0 98.0 85 115

Sample ID: 2203C69-001DMS	SampType: MS	TestCode: EPA Method 245.1: Mercury
Client ID: EB-3-23-22	Batch ID: 66425	RunNo: 86790
Prep Date: 3/28/2022	Analysis Date: 3/28/2022	SeqNo: 3064670 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	0.0048	0.00020 0.005000 0 95.6 75 125

Sample ID: 2203C69-001DMSD	SampType: MSD	TestCode: EPA Method 245.1: Mercury
Client ID: EB-3-23-22	Batch ID: 66425	RunNo: 86790
Prep Date: 3/28/2022	Analysis Date: 3/28/2022	SeqNo: 3064671 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	0.0049	0.00020 0.005000 0 98.4 75 125 2.89 20

Sample ID: MB-66456	SampType: MBLK	TestCode: EPA Method 245.1: Mercury
Client ID: PBW	Batch ID: 66456	RunNo: 86816
Prep Date: 3/29/2022	Analysis Date: 3/29/2022	SeqNo: 3065977 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	ND	0.00020

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203C69

22-Apr-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: LCSLL-66456		SampType: LCSLL			TestCode: EPA Method 245.1: Mercury					
Client ID:	BatchQC	Batch ID: 66456			RunNo: 86816					
Prep Date:	3/29/2022	Analysis Date: 3/29/2022			SeqNo: 3065978		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00015	0.00020	0.0001500	0	101	50	150			J

Sample ID: LCS-66456		SampType: LCS			TestCode: EPA Method 245.1: Mercury					
Client ID:	LCSW	Batch ID: 66456			RunNo: 86816					
Prep Date:	3/29/2022	Analysis Date: 3/29/2022			SeqNo: 3065979		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.1	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66393	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66393	RunNo: 86828								
Prep Date: 3/29/2022	Analysis Date: 3/29/2022	SeqNo: 3066617 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: MB-66394	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66394	RunNo: 86828								
Prep Date: 3/29/2022	Analysis Date: 3/29/2022	SeqNo: 3066618 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: MB-66394	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66394	RunNo: 86828								
Prep Date: 3/29/2022	Analysis Date: 3/29/2022	SeqNo: 3066619 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: MB-66393	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66393	RunNo: 86828								
Prep Date: 3/29/2022	Analysis Date: 3/29/2022	SeqNo: 3066620 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: LCS-66393	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 66393	RunNo: 86828								
Prep Date: 3/29/2022	Analysis Date: 3/29/2022	SeqNo: 3066625 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.11	0.010	0.1000	0	112	70	130			

Sample ID: LCS-66394	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 66394	RunNo: 86828								
Prep Date: 3/29/2022	Analysis Date: 3/29/2022	SeqNo: 3066626 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.12	0.010	0.1000	0	116	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2203C69
22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: LCSD-66394		SampType: LCSD			TestCode: EPA Method 8011/504.1: EDB					
Client ID: LCSS02		Batch ID: 66394			RunNo: 86828					
Prep Date: 3/29/2022		Analysis Date: 3/29/2022			SeqNo: 3066627		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.12	0.010	0.1000	0	117	70	130	0.511	20	

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix interference
- B

Analyte detected in the associated Method Blank
- E

Estimated value
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66385	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 66385	RunNo: 86806								
Prep Date: 3/24/2022	Analysis Date: 3/28/2022	SeqNo: 3065860 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.044	0.064								J
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.041		0.03750		110	42.2	138			

Sample ID: LCS-66385	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 66385	RunNo: 86806								
Prep Date: 3/24/2022	Analysis Date: 3/28/2022	SeqNo: 3065861 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.20	0.064	0.1875	0	107	31.7	75.4			S
Surr: DNOP	0.028		0.01875		148	42.2	138			S

Sample ID: LCSD-66385	SampType: LCSD	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSS02	Batch ID: 66385	RunNo: 86806								
Prep Date: 3/24/2022	Analysis Date: 3/28/2022	SeqNo: 3065862 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.11	0.064	0.1875	0	59.4	31.7	75.4	56.8	20	R
Surr: DNOP	0.019		0.01875		104	42.2	138	0	0	

Sample ID: MB-66409	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 66409	RunNo: 86806								
Prep Date: 3/25/2022	Analysis Date: 3/28/2022	SeqNo: 3065883 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.040	0.064								J
Motor Oil Range Organics (MRO)	0.099	0.080								
Surr: DNOP	0.035		0.03750		94.4	42.2	138			

Sample ID: LCS-66409	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 66409	RunNo: 86806								
Prep Date: 3/25/2022	Analysis Date: 3/28/2022	SeqNo: 3065884 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.098	0.064	0.1875	0	52.3	31.7	75.4			
Surr: DNOP	0.020		0.01875		105	42.2	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2203C69
22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: LCSD-66409		SampType: LCSD		TestCode: EPA Method 8015D Mod: Diesel Range						
Client ID: LCSS02		Batch ID: 66409		RunNo: 86806						
Prep Date: 3/25/2022		Analysis Date: 3/28/2022		SeqNo: 3065885		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.10	0.064	0.1875	0	56.0	31.7	75.4	6.85	20	
Surr: DNOP	0.020		0.01875		106	42.2	138	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R86734			RunNo: 86734						
Prep Date:	Analysis Date: 3/24/2022			SeqNo: 3062248		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.5	70	130			
Toluene	22	1.0	20.00	0	110	70	130			
Chlorobenzene	23	1.0	20.00	0	113	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	97.0	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	88.5	70	130			
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.3	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.4	70	130			
Surr: Toluene-d8	9.9		10.00		98.8	70	130			

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R86734			RunNo: 86734						
Prep Date:	Analysis Date: 3/24/2022			SeqNo: 3062277		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	0.66	3.0								J
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203C69

22-Apr-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: mb	SampType: MBLK				TestCode: EPA Method 8260B: VOLATILES					
Client ID: PBW	Batch ID: R86734				RunNo: 86734					
Prep Date:	Analysis Date: 3/24/2022				SeqNo: 3062277	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.7		10.00		87.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.5	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.8	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

Sample ID: 100ng lcs	SampType: LCS				TestCode: EPA Method 8260B: VOLATILES					
Client ID: LCSW	Batch ID: R86760				RunNo: 86760					
Prep Date:	Analysis Date: 3/25/2022				SeqNo: 3063673	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	85.1	70	130			
Toluene	19	1.0	20.00	0	96.3	70	130			
Chlorobenzene	20	1.0	20.00	0	100	70	130			
1,1-Dichloroethene	16	1.0	20.00	0	81.4	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	77.7	70	130			
Surr: 1,2-Dichloroethane-d4	8.3		10.00		83.4	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	8.9		10.00		89.4	70	130			
Surr: Toluene-d8	10		10.00		99.9	70	130			

Sample ID: mb	SampType: MBLK				TestCode: EPA Method 8260B: VOLATILES					
Client ID: PBW	Batch ID: R86760				RunNo: 86760					
Prep Date:	Analysis Date: 3/25/2022				SeqNo: 3063681	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Acetone	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: mb		SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW		Batch ID: R86760		RunNo: 86760						
Prep Date:		Analysis Date: 3/25/2022		SeqNo: 3063681		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	0.87	10								J
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	0.69	3.0								J
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	0.34	1.0								J
Vinyl chloride	0.47	1.0								J
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.7		10.00		86.7	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.1	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.4	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66392	SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: PBW	Batch ID: 66392	RunNo: 86931								
Prep Date: 3/25/2022	Analysis Date: 4/2/2022	SeqNo: 3071648			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzoic acid	ND	20								
Bis(2-ethylhexyl)phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
1,4-Dichlorobenzene	ND	5.0								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	20								
1-Methylnaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
3+4-Methylphenol	ND	5.0								
Naphthalene	ND	5.0								
Phenol	ND	5.0								
Pyridine	ND	10								
2,4,6-Trichlorophenol	ND	5.0								
Surr: 2-Fluorophenol	120		200.0		58.9	29.4	87.7			
Surr: Phenol-d5	89		200.0		44.3	28.5	64.7			
Surr: 2,4,6-Tribromophenol	150		200.0		74.4	18.6	129			
Surr: Nitrobenzene-d5	70		100.0		69.7	36.9	103			
Surr: 2-Fluorobiphenyl	61		100.0		61.1	38.1	99.9			
Surr: 4-Terphenyl-d14	81		100.0		80.6	48	155			

Sample ID: LCS-66392	SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: LCSW	Batch ID: 66392	RunNo: 86931								
Prep Date: 3/25/2022	Analysis Date: 4/2/2022	SeqNo: 3071649			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	48	5.0	100.0	0	48.2	15	87.6			
Phenol	70	5.0	200.0	0	35.1	16.8	70.5			
Surr: 2-Fluorophenol	91		200.0		45.3	29.4	87.7			
Surr: Phenol-d5	71		200.0		35.6	28.5	64.7			
Surr: 2,4,6-Tribromophenol	150		200.0		75.3	18.6	129			
Surr: Nitrobenzene-d5	62		100.0		61.8	36.9	103			
Surr: 2-Fluorobiphenyl	54		100.0		53.8	38.1	99.9			
Surr: 4-Terphenyl-d14	94		100.0		94.1	48	155			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203C69

22-Apr-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: LCSD-66392	SampType: LCSD			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSS02	Batch ID: 66392			RunNo: 86931						
Prep Date: 3/25/2022	Analysis Date: 4/2/2022			SeqNo: 3071650		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	58	5.0	100.0	0	58.2	15	87.6	18.9	30.4	
Phenol	82	5.0	200.0	0	41.0	16.8	70.5	15.4	37.2	
Surr: 2-Fluorophenol	110		200.0		55.0	29.4	87.7	0	0	
Surr: Phenol-d5	83		200.0		41.4	28.5	64.7	0	0	
Surr: 2,4,6-Tribromophenol	160		200.0		81.7	18.6	129	0	0	
Surr: Nitrobenzene-d5	67		100.0		67.2	36.9	103	0	0	
Surr: 2-Fluorobiphenyl	61		100.0		61.4	38.1	99.9	0	0	
Surr: 4-Terphenyl-d14	99		100.0		98.6	48	155	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203C69

22-Apr-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: mb-66392	SampType: MBLK	TestCode: EPA Method 8270SIM								
Client ID: PBW	Batch ID: R86913	RunNo: 86913								
Prep Date:	Analysis Date: 3/30/2022	SeqNo: 3070657			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.10								
2-Methylnaphthalene	ND	0.10								
Acenaphthene	ND	0.10								
Fluorene	ND	0.10								
Phenanthrene	ND	0.10								
Anthracene	ND	0.10								
Fluoranthene	ND	0.20								
Pyrene	ND	0.20								
Benz(a)anthracene	ND	0.10								
Chrysene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	68		100.0		67.5	31.6	100			
Surr: 2,4,6-Tribromophenol	87		200.0		43.7	22	101			
Surr: 2-Fluorobiphenyl	61		100.0		61.0	26.7	90.1			
Surr: 4-Terphenyl-d14	92		100.0		92.2	72.3	147			

Sample ID: lcs-66392-lf	SampType: LCS	TestCode: EPA Method 8270SIM								
Client ID: LCSW	Batch ID: R86913	RunNo: 86913								
Prep Date:	Analysis Date: 3/30/2022	SeqNo: 3070659			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.70	0.10	2.000	0	35.0	20.2	48.4			
Naphthalene	1.2	0.10	2.000	0	58.0	21.3	79.9			
1-Methylnaphthalene	1.2	0.10	2.000	0	60.0	22.2	80.3			
2-Methylnaphthalene	1.2	0.10	2.000	0	59.0	20.6	80.1			
Acenaphthene	1.3	0.10	2.000	0	67.0	29.8	82.7			
Fluorene	1.5	0.10	2.000	0	74.0	33.3	86			
Phenanthrene	1.6	0.10	2.000	0	78.0	38.2	93.9			
Anthracene	1.7	0.10	2.000	0	86.0	41.1	95.6			
Fluoranthene	2.0	0.20	2.000	0	99.0	52.9	123			
Pyrene	1.9	0.20	2.000	0	93.0	51	113			
Benz(a)anthracene	2.4	0.10	2.000	0	121	51	147			
Chrysene	1.8	0.10	2.000	0	91.0	55.3	115			
Benzo(b)fluoranthene	2.3	0.10	2.000	0	114	44.4	136			
Indeno(1,2,3-cd)pyrene	3.0	0.30	2.000	0	150	31.4	165			
Surr: Nitrobenzene-d5	67		100.0		66.8	31.6	100			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: Ics-66392-If	SampType: LCS			TestCode: EPA Method 8270SIM						
Client ID: LCSW	Batch ID: R86913			RunNo: 86913						
Prep Date:	Analysis Date: 3/30/2022			SeqNo: 3070659		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	92		200.0		45.9	22	101			
Surr: 2-Fluorobiphenyl	62		100.0		62.0	26.7	90.1			
Surr: 4-Terphenyl-d14	86		100.0		85.7	72.3	147			

Sample ID: Icsd-66392-If	SampType: LCSD			TestCode: EPA Method 8270SIM						
Client ID: LCSS02	Batch ID: R86913			RunNo: 86913						
Prep Date:	Analysis Date: 3/30/2022			SeqNo: 3070662		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.74	0.10	2.000	0	37.0	20.2	48.4	5.56	30.1	
Naphthalene	1.2	0.10	2.000	0	62.0	21.3	79.9	6.67	25.6	
1-Methylnaphthalene	1.3	0.10	2.000	0	64.0	22.2	80.3	6.45	25	
2-Methylnaphthalene	1.3	0.10	2.000	0	64.0	20.6	80.1	8.13	25	
Acenaphthene	1.5	0.10	2.000	0	73.0	29.8	82.7	8.57	27.8	
Fluorene	1.6	0.10	2.000	0	80.0	33.3	86	7.79	26.4	
Phenanthrene	1.7	0.10	2.000	0	83.0	38.2	93.9	6.21	27.9	
Anthracene	1.8	0.10	2.000	0	92.0	41.1	95.6	6.74	25.6	
Fluoranthene	2.1	0.20	2.000	0	106	52.9	123	6.83	22.8	
Pyrene	1.9	0.20	2.000	0	96.0	51	113	3.17	20	
Benz(a)anthracene	2.5	0.10	2.000	0	125	51	147	3.25	24.1	
Chrysene	1.9	0.10	2.000	0	95.0	55.3	115	4.30	20	
Benzo(b)fluoranthene	2.4	0.10	2.000	0	120	44.4	136	5.13	24.5	
Indeno(1,2,3-cd)pyrene	3.1	0.30	2.000	0	155	31.4	165	3.28	21.1	
Surr: Nitrobenzene-d5	70		100.0		70.4	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	93		200.0		46.7	22	101	0	0	
Surr: 2-Fluorobiphenyl	65		100.0		65.5	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	86		100.0		86.4	72.3	147	0	0	

Sample ID: mb-66423	SampType: MBLK			TestCode: EPA Method 8270SIM						
Client ID: PBW	Batch ID: R87058			RunNo: 87058						
Prep Date:	Analysis Date: 4/6/2022			SeqNo: 3076829		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.10								
2-Methylnaphthalene	ND	0.10								
Acenaphthene	ND	0.10								
Fluorene	ND	0.10								
Phenanthrene	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: mb-66423		SampType: MBLK		TestCode: EPA Method 8270SIM						
Client ID: PBW		Batch ID: R87058		RunNo: 87058						
Prep Date:		Analysis Date: 4/6/2022		SeqNo: 3076829		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Anthracene	ND	0.10								
Fluoranthene	ND	0.20								
Pyrene	0.16	0.20								J
Benz(a)anthracene	ND	0.10								
Chrysene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	62		100.0		61.8	31.6	100			
Surr: 2,4,6-Tribromophenol	86		200.0		43.0	22	101			
Surr: 2-Fluorobiphenyl	59		100.0		58.9	26.7	90.1			
Surr: 4-Terphenyl-d14	110		100.0		113	72.3	147			E

Sample ID: lcs-66423-lf		SampType: LCS		TestCode: EPA Method 8270SIM						
Client ID: LCSW		Batch ID: R87058		RunNo: 87058						
Prep Date:		Analysis Date: 4/6/2022		SeqNo: 3076830		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.68	0.10	2.000	0	34.0	20.2	48.4			
Naphthalene	1.1	0.10	2.000	0	55.0	21.3	79.9			
1-Methylnaphthalene	1.1	0.10	2.000	0	56.0	22.2	80.3			
2-Methylnaphthalene	1.1	0.10	2.000	0	57.0	20.6	80.1			
Acenaphthene	1.3	0.10	2.000	0	64.0	29.8	82.7			
Fluorene	1.5	0.10	2.000	0	73.0	33.3	86			
Phenanthrene	1.8	0.10	2.000	0	91.0	38.2	93.9			
Anthracene	1.9	0.10	2.000	0	93.0	41.1	95.6			
Fluoranthene	2.3	0.20	2.000	0	113	52.9	123			
Pyrene	2.0	0.20	2.000	0	101	51	113			
Benz(a)anthracene	2.4	0.10	2.000	0	121	51	147			
Chrysene	2.1	0.10	2.000	0	106	55.3	115			
Benzo(b)fluoranthene	2.4	0.10	2.000	0	119	44.4	136			
Indeno(1,2,3-cd)pyrene	2.5	0.30	2.000	0	127	31.4	165			
Surr: Nitrobenzene-d5	60		102.0		58.6	31.6	100			
Surr: 2,4,6-Tribromophenol	91		202.0		45.1	22	101			
Surr: 2-Fluorobiphenyl	60		102.0		58.9	26.7	90.1			
Surr: 4-Terphenyl-d14	110		102.0		106	72.3	147			E

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203C69

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: lcsd-66423-lf		SampType: LCSD		TestCode: EPA Method 8270SIM						
Client ID: LCSS02		Batch ID: R87058		RunNo: 87058						
Prep Date:		Analysis Date: 4/6/2022		SeqNo: 3076831		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.58	0.10	2.000	0	29.0	20.2	48.4	15.9	30.1	
Naphthalene	0.90	0.10	2.000	0	45.0	21.3	79.9	20.0	25.6	
1-Methylnaphthalene	0.94	0.10	2.000	0	47.0	22.2	80.3	17.5	25	
2-Methylnaphthalene	0.96	0.10	2.000	0	48.0	20.6	80.1	17.1	25	
Acenaphthene	1.1	0.10	2.000	0	53.0	29.8	82.7	18.8	27.8	
Fluorene	1.2	0.10	2.000	0	60.0	33.3	86	19.5	26.4	
Phenanthrene	1.3	0.10	2.000	0	67.0	38.2	93.9	30.4	27.9	R
Anthracene	1.5	0.10	2.000	0	74.0	41.1	95.6	22.8	25.6	
Fluoranthene	1.9	0.20	2.000	0	94.0	52.9	123	18.4	22.8	
Pyrene	1.5	0.20	2.000	0	75.0	51	113	29.5	20	R
Benz(a)anthracene	1.9	0.10	2.000	0	93.0	51	147	26.2	24.1	R
Chrysene	1.5	0.10	2.000	0	76.0	55.3	115	33.0	20	R
Benzo(b)fluoranthene	1.7	0.10	2.000	0	84.0	44.4	136	34.5	24.5	R
Indeno(1,2,3-cd)pyrene	1.8	0.30	2.000	0	89.0	31.4	165	35.2	21.1	R
Surr: Nitrobenzene-d5	58		102.0		57.3	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	80		102.0		78.9	22	101	0	0	
Surr: 2-Fluorobiphenyl	56		202.0		27.7	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	91		102.0		89.6	72.3	147	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203C69

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 2.5ug lcs gro	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSW	Batch ID: G86734			RunNo: 86734						
Prep Date:	Analysis Date: 3/24/2022			SeqNo: 3062281		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	97.9	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130			

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBW	Batch ID: G86734			RunNo: 86734						
Prep Date:	Analysis Date: 3/24/2022			SeqNo: 3062303		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.041	0.050								J
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

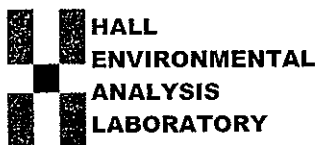
E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

Page 84 of 84



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Marathon

Work Order Number: 2203C69

RcptNo: 1

Received By: Cheyenne Cason 3/24/2022 7:30:00 AM

Chen

Completed By: Cheyenne Cason 3/24/2022 8:10:21 AM

*Chen*Reviewed By: *SC 3/24/22*Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☒ No ☒ *3/24/22* NA ☐
9. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? Yes ☒ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved bottles checked for pH: *10 - 9*
(<2 or >12 unless noted)

Adjusted? *yes*Checked by: *TMC 3/24/22*Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

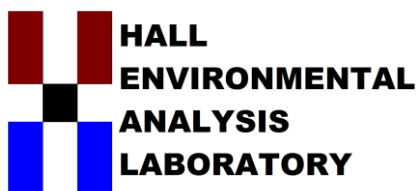
Regarding:

Client Instructions:

16. Additional remarks: *Added 400ml of HNO₃ to sample 0030 for proper pH - see mtr/22*

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			
2	0.7	Good	Yes			
3	0.3	Good	Yes			
4	1.1	Good	Yes			



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 15, 2022

Lesli Alexander
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 632-3911

RE: 2022 GW Sampling 2nd Quarter

OrderNo.: 2206B30

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 10 sample(s) on 6/22/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 12, 2022.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

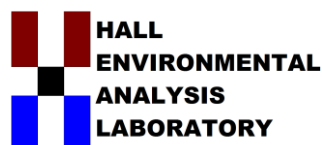
Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: 2206B30
Date: 8/15/2022

CLIENT: Marathon

Project: 2022 GW Sampling 2nd Quarter

Analytical Notes Regarding EPA Method 8270:

Naphthalene, 1-methylnaphthalene and 2-methylnaphthalene may be reported by either EPA Method 8270 or EPA Method 8270SIMS, depending which method needs the least dilution. In this report Naphthalene, 1-methylnaphthalene and 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270SIMS for sample MKTF-18R. Naphthalene and 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270SIMS for sample MKTF-35.

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:00:00 AM

Lab ID: 2206B30-001A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.0090	0.050		mg/L	1	6/24/2022 12:56:52 PM	A89029
Surr: BFB	102	0	70-130		%Rec	1	6/24/2022 12:56:52 PM	A89029
EPA METHOD 8260B: VOLATILES							Analyst: CCM	
Benzene	ND	0.23	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Toluene	ND	0.20	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Ethylbenzene	ND	0.21	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Acetone	3.2	2.5	10	J	µg/L	1	6/27/2022 4:56:00 PM	W89041
Bromomethane	ND	0.85	3.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
2-Butanone	ND	2.0	10		µg/L	1	6/27/2022 4:56:00 PM	W89041
Carbon disulfide	ND	0.59	10		µg/L	1	6/27/2022 4:56:00 PM	W89041
Chlorobenzene	ND	0.16	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Chloroform	ND	0.13	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Chloromethane	ND	0.41	3.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Isopropylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Methylene Chloride	0.80	0.50	3.0	J	µg/L	1	6/27/2022 4:56:00 PM	W89041
n-Butylbenzene	ND	0.25	3.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
n-Propylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Styrene	ND	0.14	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Vinyl chloride	ND	0.32	1.0		µg/L	1	6/27/2022 4:56:00 PM	W89041
Xylenes, Total	ND	0.37	1.5		µg/L	1	6/27/2022 4:56:00 PM	W89041
Surr: 1,2-Dichloroethane-d4	97.7	0	70-130		%Rec	1	6/27/2022 4:56:00 PM	W89041
Surr: 4-Bromofluorobenzene	79.7	0	70-130		%Rec	1	6/27/2022 4:56:00 PM	W89041
Surr: Dibromofluoromethane	104	0	70-130		%Rec	1	6/27/2022 4:56:00 PM	W89041
Surr: Toluene-d8	112	0	70-130		%Rec	1	6/27/2022 4:56:00 PM	W89041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:00:00 AM

Lab ID: 2206B30-001B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	6/24/2022 4:49:26 AM	68319

NOTES:

No trip blank was included with work order

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:00:00 AM

Lab ID: 2206B30-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.041	0.016	0.064	J	mg/L	1	7/5/2022 4:20:59 PM	68348
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	7/5/2022 4:20:59 PM	68348
Surr: DNOP	94.4	0	42.2-138		%Rec	1	7/5/2022 4:20:59 PM	68348
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 12:44:36 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 12:44:36 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 12:44:36 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 12:44:36 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 12:44:36 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 12:44:36 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 12:44:36 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 12:44:36 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 12:44:36 PM	68332
2-Methylphenol	ND	5.0	10		µg/L	1	7/7/2022 12:44:36 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 12:44:36 PM	68332
Phenol	ND	18	20		µg/L	1	7/7/2022 12:44:36 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 12:44:36 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 12:44:36 PM	68332
Surr: 2-Fluorophenol	45.1	0	29.4-87.7		%Rec	1	7/7/2022 12:44:36 PM	68332
Surr: Phenol-d5	33.9	0	28.5-64.7		%Rec	1	7/7/2022 12:44:36 PM	68332
Surr: 2,4,6-Tribromophenol	56.6	0	18.6-129		%Rec	1	7/7/2022 12:44:36 PM	68332
Surr: Nitrobenzene-d5	59.0	0	36.9-103		%Rec	1	7/7/2022 12:44:36 PM	68332
Surr: 2-Fluorobiphenyl	56.4	0	38.1-99.9		%Rec	1	7/7/2022 12:44:36 PM	68332
Surr: 4-Terphenyl-d14	82.5	0	48-155		%Rec	1	7/7/2022 12:44:36 PM	68332
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.11	1.0		µg/L	1	7/6/2022 12:45:00 PM	68332
Naphthalene	ND	0.20	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Acenaphthene	ND	0.14	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Fluorene	ND	0.095	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Phenanthrene	ND	0.16	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Anthracene	ND	0.14	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 12:45:00 PM	68332
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 12:45:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:00:00 AM

Lab ID: 2206B30-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	62.2	0	31.6-100		%Rec	1	7/6/2022 12:45:00 PM	68332
Surr: 2-Fluorobiphenyl	59.9	0	26.7-90.1		%Rec	1	7/6/2022 12:45:00 PM	68332
Surr: 4-Terphenyl-d14	102	0	72.3-147		%Rec	1	7/6/2022 12:45:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:00:00 AM

Lab ID: 2206B30-001D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	ND	0.0016	0.0030		mg/L	1	6/27/2022 9:24:57 AM	68353
Beryllium	ND	0.00088	0.0020		mg/L	1	6/27/2022 9:24:57 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:24:57 AM	68353
Chromium	ND	0.0020	0.0060		mg/L	1	6/27/2022 9:24:57 AM	68353
Cobalt	ND	0.0035	0.0060		mg/L	1	6/27/2022 9:24:57 AM	68353
Nickel	ND	0.0053	0.010		mg/L	1	6/27/2022 9:24:57 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:24:57 AM	68353
Vanadium	ND	0.0035	0.050		mg/L	1	6/27/2022 9:24:57 AM	68353
Zinc	ND	0.0039	0.010		mg/L	1	6/27/2022 9:24:57 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/27/2022 10:48:01 AM	68353
Arsenic	ND	0.00013	0.0010		mg/L	1	6/27/2022 10:48:01 AM	68353
Lead	ND	0.000061	0.00050		mg/L	1	6/27/2022 10:48:01 AM	68353
Selenium	ND	0.00037	0.0010		mg/L	1	6/27/2022 10:48:01 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 11:54:32 AM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:00:00 AM

Lab ID: 2206B30-001E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	ND	0.0011	0.0020		mg/L	1	6/23/2022 11:26:23 AM	A88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 11:26:23 AM	A88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 11:26:23 AM	A88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 11:26:23 AM	A88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 11:26:23 AM	A88979
Nickel	ND	0.0033	0.010		mg/L	1	6/23/2022 11:26:23 AM	A88979
Silver	ND	0.0013	0.0050		mg/L	1	6/23/2022 11:26:23 AM	A88979
Vanadium	ND	0.0017	0.050		mg/L	1	6/23/2022 11:26:23 AM	A88979
Zinc	0.0075	0.0032	0.010	J	mg/L	1	6/23/2022 11:26:23 AM	A88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/23/2022 11:32:57 AM	A88981
Arsenic	ND	0.00012	0.0010		mg/L	1	6/23/2022 11:32:57 AM	A88981
Lead	ND	0.000057	0.00050		mg/L	1	6/23/2022 11:32:57 AM	A88981
Selenium	ND	0.00034	0.0010		mg/L	1	6/23/2022 11:32:57 AM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 11:56:40 AM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	EB-6-21-22
Project:	2022 GW Sampling 2nd Quarter	Collection Date:	6/21/2022 8:00:00 AM
Lab ID:	2206B30-001F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:18:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:20:00 AM

Lab ID: 2206B30-002A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	0.016	0.0090	0.050	J	mg/L	1	6/24/2022 1:20:35 PM	A89029
Surr: BFB	98.8	0	70-130		%Rec	1	6/24/2022 1:20:35 PM	A89029
EPA METHOD 8260B: VOLATILES							Analyst: CCM	
Benzene	ND	0.23	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Toluene	ND	0.20	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Ethylbenzene	ND	0.21	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Acetone	ND	2.5	10		µg/L	1	6/27/2022 5:19:00 PM	W89041
Bromomethane	ND	0.85	3.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
2-Butanone	ND	2.0	10		µg/L	1	6/27/2022 5:19:00 PM	W89041
Carbon disulfide	ND	0.59	10		µg/L	1	6/27/2022 5:19:00 PM	W89041
Chlorobenzene	ND	0.16	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Chloroform	ND	0.13	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Chloromethane	ND	0.41	3.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Isopropylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Methylene Chloride	ND	0.50	3.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
n-Butylbenzene	ND	0.25	3.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
n-Propylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Styrene	ND	0.14	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Vinyl chloride	ND	0.32	1.0		µg/L	1	6/27/2022 5:19:00 PM	W89041
Xylenes, Total	ND	0.37	1.5		µg/L	1	6/27/2022 5:19:00 PM	W89041
Surr: 1,2-Dichloroethane-d4	90.9	0	70-130		%Rec	1	6/27/2022 5:19:00 PM	W89041
Surr: 4-Bromofluorobenzene	88.5	0	70-130		%Rec	1	6/27/2022 5:19:00 PM	W89041
Surr: Dibromofluoromethane	104	0	70-130		%Rec	1	6/27/2022 5:19:00 PM	W89041
Surr: Toluene-d8	106	0	70-130		%Rec	1	6/27/2022 5:19:00 PM	W89041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: MKTF-46
Project: 2022 GW Sampling 2nd Quarter Collection Date: 6/21/2022 8:20:00 AM
Lab ID: 2206B30-002B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0093		µg/L	1	6/24/2022 5:19:35 AM	68319
NOTES:								
No trip blank was included with work order								

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:20:00 AM

Lab ID: 2206B30-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.070	0.016	0.064		mg/L	1	7/5/2022 4:44:46 PM	68348
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	7/5/2022 4:44:46 PM	68348
Surr: DNOP	97.2	0	42.2-138		%Rec	1	7/5/2022 4:44:46 PM	68348
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 1:27:55 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 1:27:55 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 1:27:55 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 1:27:55 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 1:27:55 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 1:27:55 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 1:27:55 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 1:27:55 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 1:27:55 PM	68332
2-Methylphenol	ND	5.0	10		µg/L	1	7/7/2022 1:27:55 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 1:27:55 PM	68332
Phenol	ND	18	20		µg/L	1	7/7/2022 1:27:55 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 1:27:55 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 1:27:55 PM	68332
Surr: 2-Fluorophenol	35.0	0	29.4-87.7		%Rec	1	7/7/2022 1:27:55 PM	68332
Surr: Phenol-d5	26.3	0	28.5-64.7	S	%Rec	1	7/7/2022 1:27:55 PM	68332
Surr: 2,4,6-Tribromophenol	46.9	0	18.6-129		%Rec	1	7/7/2022 1:27:55 PM	68332
Surr: Nitrobenzene-d5	47.2	0	36.9-103		%Rec	1	7/7/2022 1:27:55 PM	68332
Surr: 2-Fluorobiphenyl	42.9	0	38.1-99.9		%Rec	1	7/7/2022 1:27:55 PM	68332
Surr: 4-Terphenyl-d14	70.4	0	48-155		%Rec	1	7/7/2022 1:27:55 PM	68332
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	1.5	0.11	1.0		µg/L	1	7/6/2022 1:29:00 PM	68332
Naphthalene	ND	0.20	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Acenaphthene	ND	0.14	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Fluorene	ND	0.095	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Phenanthrene	0.22	0.16	0.30	J	µg/L	1	7/6/2022 1:29:00 PM	68332
Anthracene	ND	0.14	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 1:29:00 PM	68332
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 1:29:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:20:00 AM

Lab ID: 2206B30-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	56.2	0	31.6-100		%Rec	1	7/6/2022 1:29:00 PM	68332
Surr: 2-Fluorobiphenyl	52.7	0	26.7-90.1		%Rec	1	7/6/2022 1:29:00 PM	68332
Surr: 4-Terphenyl-d14	90.8	0	72.3-147		%Rec	1	7/6/2022 1:29:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:20:00 AM

Lab ID: 2206B30-002D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	0.080	0.0016	0.0030		mg/L	1	6/27/2022 9:26:35 AM	68353
Beryllium	ND	0.00088	0.0020		mg/L	1	6/27/2022 9:26:35 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:26:35 AM	68353
Chromium	0.0021	0.0020	0.0060	J	mg/L	1	6/27/2022 9:26:35 AM	68353
Cobalt	ND	0.0035	0.0060		mg/L	1	6/27/2022 9:26:35 AM	68353
Nickel	ND	0.0053	0.010		mg/L	1	6/27/2022 9:26:35 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:26:35 AM	68353
Vanadium	0.0040	0.0035	0.050	J	mg/L	1	6/27/2022 9:26:35 AM	68353
Zinc	0.0048	0.0039	0.010	J	mg/L	1	6/27/2022 9:26:35 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/27/2022 10:50:28 AM	68353
Arsenic	0.00086	0.00013	0.0010	J	mg/L	1	6/27/2022 10:50:28 AM	68353
Lead	0.0014	0.000061	0.00050		mg/L	1	6/27/2022 10:50:28 AM	68353
Selenium	0.00045	0.00037	0.0010	J	mg/L	1	6/27/2022 10:50:28 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00013	0.000091	0.00020	J	mg/L	1	6/24/2022 11:58:49 AM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:20:00 AM

Lab ID: 2206B30-002E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	0.037	0.0011	0.0020		mg/L	1	6/23/2022 11:30:48 AM	A88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 11:30:48 AM	A88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 11:30:48 AM	A88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 11:30:48 AM	A88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 11:30:48 AM	A88979
Nickel	ND	0.0033	0.010		mg/L	1	6/23/2022 11:30:48 AM	A88979
Silver	0.0032	0.0013	0.0050	J	mg/L	1	6/23/2022 11:30:48 AM	A88979
Vanadium	0.0040	0.0017	0.050	J	mg/L	1	6/23/2022 11:30:48 AM	A88979
Zinc	0.0084	0.0032	0.010	J	mg/L	1	6/23/2022 11:30:48 AM	A88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/23/2022 11:35:38 AM	A88981
Arsenic	0.00066	0.00012	0.0010	J	mg/L	1	6/23/2022 11:35:38 AM	A88981
Lead	ND	0.000057	0.00050		mg/L	1	6/23/2022 11:35:38 AM	A88981
Selenium	ND	0.00034	0.0010		mg/L	1	6/23/2022 11:35:38 AM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:00:58 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	MKTF-46
Project:	2022 GW Sampling 2nd Quarter	Collection Date:	6/21/2022 8:20:00 AM
Lab ID:	2206B30-002F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:19:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:45:00 AM

Lab ID: 2206B30-003A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	10	0.090	0.50	P	mg/L	10	6/24/2022 1:44:19 PM	A89029
Surr: BFB	107	0	70-130	P	%Rec	10	6/24/2022 1:44:19 PM	A89029
EPA METHOD 8260B: VOLATILES							Analyst: CCM	
Benzene	2100	23	100		µg/L	100	6/27/2022 6:27:00 PM	W89041
Toluene	770	2.0	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Ethylbenzene	51	2.1	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Methyl tert-butyl ether (MTBE)	130	3.9	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
1,2,4-Trimethylbenzene	43	1.2	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
1,3,5-Trimethylbenzene	16	1.8	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
1,2-Dichloroethane (EDC)	ND	2.5	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Acetone	ND	25	100		µg/L	10	6/27/2022 6:50:00 PM	W89041
Bromomethane	ND	8.5	30		µg/L	10	6/27/2022 6:50:00 PM	W89041
2-Butanone	ND	20	100		µg/L	10	6/27/2022 6:50:00 PM	W89041
Carbon disulfide	ND	5.9	100		µg/L	10	6/27/2022 6:50:00 PM	W89041
Chlorobenzene	ND	1.6	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Chloroform	ND	1.3	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Chloromethane	ND	4.1	30		µg/L	10	6/27/2022 6:50:00 PM	W89041
cis-1,2-DCE	5.7	3.9	10	J	µg/L	10	6/27/2022 6:50:00 PM	W89041
1,1-Dichloroethane	ND	2.7	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
1,1-Dichloroethene	ND	2.0	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Isopropylbenzene	5.0	1.8	10	J	µg/L	10	6/27/2022 6:50:00 PM	W89041
4-Isopropyltoluene	2.7	2.0	10	J	µg/L	10	6/27/2022 6:50:00 PM	W89041
Methylene Chloride	ND	5.0	30		µg/L	10	6/27/2022 6:50:00 PM	W89041
n-Butylbenzene	3.7	2.5	30	J	µg/L	10	6/27/2022 6:50:00 PM	W89041
n-Propylbenzene	5.6	1.8	10	J	µg/L	10	6/27/2022 6:50:00 PM	W89041
sec-Butylbenzene	2.6	1.4	10	J	µg/L	10	6/27/2022 6:50:00 PM	W89041
Styrene	ND	1.4	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Vinyl chloride	ND	3.2	10		µg/L	10	6/27/2022 6:50:00 PM	W89041
Xylenes, Total	440	3.7	15		µg/L	10	6/27/2022 6:50:00 PM	W89041
Surr: 1,2-Dichloroethane-d4	94.7	0	70-130		%Rec	10	6/27/2022 6:50:00 PM	W89041
Surr: 4-Bromofluorobenzene	97.8	0	70-130		%Rec	10	6/27/2022 6:50:00 PM	W89041
Surr: Dibromofluoromethane	98.2	0	70-130		%Rec	10	6/27/2022 6:50:00 PM	W89041
Surr: Toluene-d8	102	0	70-130		%Rec	10	6/27/2022 6:50:00 PM	W89041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:45:00 AM

Lab ID: 2206B30-003B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	6/24/2022 5:49:52 AM	68319

NOTES:

No trip blank was included with work order

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:45:00 AM

Lab ID: 2206B30-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	3.5	0.016	0.064		mg/L	1	7/5/2022 5:08:40 PM	68348
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	7/5/2022 5:08:40 PM	68348
Surr: DNOP	96.9	0	42.2-138		%Rec	1	7/5/2022 5:08:40 PM	68348
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 2:11:24 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 2:11:24 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 2:11:24 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 2:11:24 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 2:11:24 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 2:11:24 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 2:11:24 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 2:11:24 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 2:11:24 PM	68332
1-Methylnaphthalene	84	4.3	5.0		µg/L	1	7/7/2022 2:11:24 PM	68332
2-Methylnaphthalene	93	4.2	5.0		µg/L	1	7/7/2022 2:11:24 PM	68332
2-Methylphenol	7.3	5.0	10	J	µg/L	1	7/7/2022 2:11:24 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 2:11:24 PM	68332
Naphthalene	55	3.2	5.0		µg/L	1	7/7/2022 2:11:24 PM	68332
Phenol	ND	18	20		µg/L	1	7/7/2022 2:11:24 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 2:11:24 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 2:11:24 PM	68332
Surr: 2-Fluorophenol	44.7	0	29.4-87.7		%Rec	1	7/7/2022 2:11:24 PM	68332
Surr: Phenol-d5	33.3	0	28.5-64.7		%Rec	1	7/7/2022 2:11:24 PM	68332
Surr: 2,4,6-Tribromophenol	58.7	0	18.6-129		%Rec	1	7/7/2022 2:11:24 PM	68332
Surr: Nitrobenzene-d5	55.7	0	36.9-103		%Rec	1	7/7/2022 2:11:24 PM	68332
Surr: 2-Fluorobiphenyl	50.6	0	38.1-99.9		%Rec	1	7/7/2022 2:11:24 PM	68332
Surr: 4-Terphenyl-d14	71.9	0	48-155		%Rec	1	7/7/2022 2:11:24 PM	68332
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	13	0.11	1.0		µg/L	1	7/6/2022 2:13:00 PM	68332
Acenaphthene	6.3	0.14	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332
Fluorene	8.0	0.095	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332
Phenanthrene	6.7	0.16	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332
Anthracene	0.42	0.14	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 2:13:00 PM	68332
Benz(a)anthracene	0.16	0.15	0.30	J	µg/L	1	7/6/2022 2:13:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 2:13:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:45:00 AM

Lab ID: 2206B30-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	61.4	0	31.6-100		%Rec	1	7/6/2022 2:13:00 PM	68332
Surr: 2-Fluorobiphenyl	53.9	0	26.7-90.1		%Rec	1	7/6/2022 2:13:00 PM	68332
Surr: 4-Terphenyl-d14	74.9	0	72.3-147		%Rec	1	7/6/2022 2:13:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 2nd Quarter

Lab ID: 2206B30-003D

Client Sample ID: MKTF-18R

Collection Date: 6/21/2022 8:45:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	2.0	0.0079	0.015		mg/L	5	6/28/2022 6:55:35 PM	68353
Beryllium	ND	0.00088	0.0020		mg/L	1	6/27/2022 9:28:01 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:28:01 AM	68353
Chromium	0.0028	0.0020	0.0060	J	mg/L	1	6/27/2022 9:28:01 AM	68353
Cobalt	0.0051	0.0035	0.0060	J	mg/L	1	6/27/2022 9:28:01 AM	68353
Nickel	0.0079	0.0053	0.010	J	mg/L	1	6/27/2022 9:28:01 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:28:01 AM	68353
Vanadium	0.011	0.0035	0.050	J	mg/L	1	6/27/2022 9:28:01 AM	68353
Zinc	0.0044	0.0039	0.010	J	mg/L	1	6/27/2022 9:28:01 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/27/2022 10:52:54 AM	68353
Arsenic	0.0065	0.00013	0.0010		mg/L	1	6/27/2022 10:52:54 AM	68353
Lead	0.0052	0.000061	0.00050		mg/L	1	6/27/2022 10:52:54 AM	68353
Selenium	0.00075	0.00037	0.0010	J	mg/L	1	6/27/2022 10:52:54 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:03:08 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 8:45:00 AM

Lab ID: 2206B30-003E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	1.6	0.0056	0.010		mg/L	5	6/23/2022 11:37:10 AM	A88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 11:35:12 AM	A88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 11:35:12 AM	A88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 11:35:12 AM	A88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 11:35:12 AM	A88979
Nickel	0.0062	0.0033	0.010	J	mg/L	1	6/23/2022 11:35:12 AM	A88979
Silver	0.0016	0.0013	0.0050	J	mg/L	1	6/23/2022 11:35:12 AM	A88979
Vanadium	0.0024	0.0017	0.050	J	mg/L	1	6/23/2022 11:35:12 AM	A88979
Zinc	0.0099	0.0032	0.010	J	mg/L	1	6/23/2022 11:35:12 AM	A88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/23/2022 11:38:19 AM	A88981
Arsenic	0.0085	0.00012	0.0010		mg/L	1	6/23/2022 11:38:19 AM	A88981
Lead	ND	0.000057	0.00050		mg/L	1	6/23/2022 11:38:19 AM	A88981
Selenium	ND	0.00034	0.0010		mg/L	1	6/23/2022 11:38:19 AM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:05:17 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	MKTF-18R
Project:	2022 GW Sampling 2nd Quarter	Collection Date:	6/21/2022 8:45:00 AM
Lab ID:	2206B30-003F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:20:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-35

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:05:00 AM

Lab ID: 2206B30-004A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	64	0.090	0.50		mg/L	10	6/24/2022 2:08:03 PM	A89029
Surr: BFB	151	0	70-130	S	%Rec	10	6/24/2022 2:08:03 PM	A89029
EPA METHOD 8260B: VOLATILES							Analyst: CCM	
Benzene	14000	45	200		µg/L	200	6/27/2022 7:13:00 PM	W89041
Toluene	3300	40	200		µg/L	200	6/27/2022 7:13:00 PM	W89041
Ethylbenzene	1700	4.3	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Methyl tert-butyl ether (MTBE)	770	7.9	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
1,2,4-Trimethylbenzene	640	2.4	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
1,3,5-Trimethylbenzene	110	3.6	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
1,2-Dichloroethane (EDC)	ND	5.1	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Acetone	ND	50	200		µg/L	20	6/27/2022 7:36:00 PM	W89041
Bromomethane	ND	17	60		µg/L	20	6/27/2022 7:36:00 PM	W89041
2-Butanone	ND	41	200		µg/L	20	6/27/2022 7:36:00 PM	W89041
Carbon disulfide	ND	12	200		µg/L	20	6/27/2022 7:36:00 PM	W89041
Chlorobenzene	ND	3.1	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Chloroform	ND	2.7	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Chloromethane	ND	8.2	60		µg/L	20	6/27/2022 7:36:00 PM	W89041
cis-1,2-DCE	ND	7.8	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
1,1-Dichloroethane	ND	5.5	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
1,1-Dichloroethene	ND	4.0	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Isopropylbenzene	40	3.7	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
4-Isopropyltoluene	6.1	4.0	20	J	µg/L	20	6/27/2022 7:36:00 PM	W89041
Methylene Chloride	ND	10	60		µg/L	20	6/27/2022 7:36:00 PM	W89041
n-Butylbenzene	8.0	5.1	60	J	µg/L	20	6/27/2022 7:36:00 PM	W89041
n-Propylbenzene	100	3.6	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
sec-Butylbenzene	5.4	2.9	20	J	µg/L	20	6/27/2022 7:36:00 PM	W89041
Styrene	ND	2.7	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Tetrachloroethene (PCE)	ND	7.1	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
1,1,1-Trichloroethane	ND	6.0	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Trichloroethene (TCE)	ND	4.1	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Vinyl chloride	ND	6.4	20		µg/L	20	6/27/2022 7:36:00 PM	W89041
Xylenes, Total	4200	7.4	30		µg/L	20	6/27/2022 7:36:00 PM	W89041
Surr: 1,2-Dichloroethane-d4	91.0	0	70-130		%Rec	20	6/27/2022 7:36:00 PM	W89041
Surr: 4-Bromofluorobenzene	97.7	0	70-130		%Rec	20	6/27/2022 7:36:00 PM	W89041
Surr: Dibromofluoromethane	92.7	0	70-130		%Rec	20	6/27/2022 7:36:00 PM	W89041
Surr: Toluene-d8	102	0	70-130		%Rec	20	6/27/2022 7:36:00 PM	W89041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: MKTF-35
Project: 2022 GW Sampling 2nd Quarter Collection Date: 6/21/2022 9:05:00 AM
Lab ID: 2206B30-004B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	6/24/2022 6:20:04 AM	68319

NOTES:
No trip blank was included with work order

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-35

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:05:00 AM

Lab ID: 2206B30-004C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	3.2	0.016	0.064		mg/L	1	7/5/2022 5:32:29 PM	68348
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	7/5/2022 5:32:29 PM	68348
Surr: DNOP	101	0	42.2-138		%Rec	1	7/5/2022 5:32:29 PM	68348
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 2:54:20 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 2:54:20 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 2:54:20 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 2:54:20 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 2:54:20 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 2:54:20 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 2:54:20 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 2:54:20 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 2:54:20 PM	68332
2-Methylnaphthalene	21	4.2	5.0		µg/L	1	7/7/2022 2:54:20 PM	68332
2-Methylphenol	ND	5.0	10		µg/L	1	7/7/2022 2:54:20 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 2:54:20 PM	68332
Naphthalene	110	3.2	5.0		µg/L	1	7/7/2022 2:54:20 PM	68332
Phenol	38	18	20		µg/L	1	7/7/2022 2:54:20 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 2:54:20 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 2:54:20 PM	68332
Surr: 2-Fluorophenol	0	0	29.4-87.7	S	%Rec	1	7/7/2022 2:54:20 PM	68332
Surr: Phenol-d5	32.2	0	28.5-64.7		%Rec	1	7/7/2022 2:54:20 PM	68332
Surr: 2,4,6-Tribromophenol	48.2	0	18.6-129		%Rec	1	7/7/2022 2:54:20 PM	68332
Surr: Nitrobenzene-d5	56.1	0	36.9-103		%Rec	1	7/7/2022 2:54:20 PM	68332
Surr: 2-Fluorobiphenyl	50.4	0	38.1-99.9		%Rec	1	7/7/2022 2:54:20 PM	68332
Surr: 4-Terphenyl-d14	71.2	0	48-155		%Rec	1	7/7/2022 2:54:20 PM	68332
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	2.0	0.11	1.0		µg/L	1	7/6/2022 2:57:00 PM	68332
1-Methylnaphthalene	16	0.15	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Acenaphthene	1.6	0.14	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Fluorene	0.88	0.095	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Phenanthrene	0.38	0.16	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Anthracene	0.30	0.14	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 2:57:00 PM	68332
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 2:57:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-35

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:05:00 AM

Lab ID: 2206B30-004C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	63.7	0	31.6-100		%Rec	1	7/6/2022 2:57:00 PM	68332
Surr: 2-Fluorobiphenyl	54.5	0	26.7-90.1		%Rec	1	7/6/2022 2:57:00 PM	68332
Surr: 4-Terphenyl-d14	75.8	0	72.3-147		%Rec	1	7/6/2022 2:57:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-35

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:05:00 AM

Lab ID: 2206B30-004D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	21	0.16	0.30	*	mg/L	100	6/28/2022 7:30:13 PM	68353
Beryllium	0.0061	0.00088	0.0020	*	mg/L	1	6/27/2022 9:29:28 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:29:28 AM	68353
Chromium	0.057	0.0020	0.0060		mg/L	1	6/27/2022 9:29:28 AM	68353
Cobalt	0.053	0.0035	0.0060		mg/L	1	6/27/2022 9:29:28 AM	68353
Nickel	0.066	0.0053	0.010		mg/L	1	6/27/2022 9:29:28 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:29:28 AM	68353
Vanadium	0.16	0.0035	0.050		mg/L	1	6/27/2022 9:29:28 AM	68353
Zinc	0.15	0.0039	0.010		mg/L	1	6/27/2022 9:29:28 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.0022	0.0050		mg/L	5	6/27/2022 10:55:21 AM	68353
Arsenic	0.029	0.00063	0.0050	*	mg/L	5	6/27/2022 10:55:21 AM	68353
Lead	0.12	0.00031	0.0025	*	mg/L	5	6/27/2022 10:55:21 AM	68353
Selenium	0.018	0.0019	0.0050		mg/L	5	6/27/2022 10:55:21 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00031	0.000091	0.00020		mg/L	1	6/24/2022 12:07:28 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-35

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:05:00 AM

Lab ID: 2206B30-004E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	3.9	0.0056	0.010	*	mg/L	5	6/23/2022 11:41:18 AM	A88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 11:39:21 AM	A88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 11:39:21 AM	A88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 11:39:21 AM	A88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 11:39:21 AM	A88979
Nickel	ND	0.0033	0.010		mg/L	1	6/23/2022 11:39:21 AM	A88979
Silver	0.0028	0.0013	0.0050	J	mg/L	1	6/23/2022 11:39:21 AM	A88979
Vanadium	0.0029	0.0017	0.050	J	mg/L	1	6/23/2022 11:39:21 AM	A88979
Zinc	0.016	0.0032	0.010		mg/L	1	6/23/2022 11:39:21 AM	A88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00076	0.00044	0.0010	J	mg/L	1	6/23/2022 11:41:00 AM	A88981
Arsenic	0.0013	0.00012	0.0010		mg/L	1	6/23/2022 11:41:00 AM	A88981
Lead	0.00021	0.000057	0.00050	J	mg/L	1	6/23/2022 11:41:00 AM	A88981
Selenium	ND	0.00034	0.0010		mg/L	1	6/23/2022 11:41:00 AM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:09:36 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	MKTF-35
Project:	2022 GW Sampling 2nd Quarter	Collection Date:	6/21/2022 9:05:00 AM
Lab ID:	2206B30-004F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:21:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:35:00 AM

Lab ID: 2206B30-005A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	0.034	0.0090	0.050	J	mg/L	1	6/24/2022 2:31:46 PM	A89029
Surr: BFB	96.8	0	70-130		%Rec	1	6/24/2022 2:31:46 PM	A89029
EPA METHOD 8260B: VOLATILES							Analyst: CCM	
Benzene	2.1	0.23	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Toluene	ND	0.20	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Ethylbenzene	ND	0.21	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Methyl tert-butyl ether (MTBE)	1.8	0.39	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Acetone	5.4	2.5	10	J	µg/L	1	6/27/2022 7:59:00 PM	W89041
Bromomethane	ND	0.85	3.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
2-Butanone	ND	2.0	10		µg/L	1	6/27/2022 7:59:00 PM	W89041
Carbon disulfide	ND	0.59	10		µg/L	1	6/27/2022 7:59:00 PM	W89041
Chlorobenzene	ND	0.16	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Chloroform	ND	0.13	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Chloromethane	ND	0.41	3.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
1,1-Dichloroethene	0.31	0.20	1.0	J	µg/L	1	6/27/2022 7:59:00 PM	W89041
Isopropylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Methylene Chloride	ND	0.50	3.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
n-Butylbenzene	ND	0.25	3.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
n-Propylbenzene	ND	0.18	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Styrene	ND	0.14	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Trichloroethene (TCE)	0.47	0.20	1.0	J	µg/L	1	6/27/2022 7:59:00 PM	W89041
Vinyl chloride	ND	0.32	1.0		µg/L	1	6/27/2022 7:59:00 PM	W89041
Xylenes, Total	ND	0.37	1.5		µg/L	1	6/27/2022 7:59:00 PM	W89041
Surr: 1,2-Dichloroethane-d4	95.8	0	70-130		%Rec	1	6/27/2022 7:59:00 PM	W89041
Surr: 4-Bromofluorobenzene	96.6	0	70-130		%Rec	1	6/27/2022 7:59:00 PM	W89041
Surr: Dibromofluoromethane	99.7	0	70-130		%Rec	1	6/27/2022 7:59:00 PM	W89041
Surr: Toluene-d8	107	0	70-130		%Rec	1	6/27/2022 7:59:00 PM	W89041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 2nd Quarter

Lab ID: 2206B30-005B

Client Sample ID: MKTF-38

Collection Date: 6/21/2022 9:35:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0095		µg/L	1	6/24/2022 6:50:25 AM	68319

NOTES:

No trip blank was included with work order

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:35:00 AM

Lab ID: 2206B30-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.22	0.016	0.064		mg/L	1	7/5/2022 5:56:23 PM	68348
Motor Oil Range Organics (MRO)	0.24	0.052	0.080		mg/L	1	7/5/2022 5:56:23 PM	68348
Surr: DNOP	91.2	0	42.2-138		%Rec	1	7/5/2022 5:56:23 PM	68348
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 3:36:50 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 3:36:50 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 3:36:50 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 3:36:50 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 3:36:50 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 3:36:50 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 3:36:50 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 3:36:50 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 3:36:50 PM	68332
2-Methylphenol	ND	5.0	10		µg/L	1	7/7/2022 3:36:50 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 3:36:50 PM	68332
Phenol	ND	18	20		µg/L	1	7/7/2022 3:36:50 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 3:36:50 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 3:36:50 PM	68332
Surr: 2-Fluorophenol	40.5	0	29.4-87.7		%Rec	1	7/7/2022 3:36:50 PM	68332
Surr: Phenol-d5	30.0	0	28.5-64.7		%Rec	1	7/7/2022 3:36:50 PM	68332
Surr: 2,4,6-Tribromophenol	61.8	0	18.6-129		%Rec	1	7/7/2022 3:36:50 PM	68332
Surr: Nitrobenzene-d5	63.9	0	36.9-103		%Rec	1	7/7/2022 3:36:50 PM	68332
Surr: 2-Fluorobiphenyl	58.3	0	38.1-99.9		%Rec	1	7/7/2022 3:36:50 PM	68332
Surr: 4-Terphenyl-d14	86.6	0	48-155		%Rec	1	7/7/2022 3:36:50 PM	68332
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	3.6	0.11	1.0		µg/L	1	7/6/2022 3:41:00 PM	68332
Naphthalene	ND	0.20	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Acenaphthene	ND	0.14	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Fluorene	ND	0.095	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Phenanthrene	ND	0.16	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Anthracene	ND	0.14	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 3:41:00 PM	68332
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 3:41:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:35:00 AM

Lab ID: 2206B30-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	67.3	0	31.6-100		%Rec	1	7/6/2022 3:41:00 PM	68332
Surr: 2-Fluorobiphenyl	59.4	0	26.7-90.1		%Rec	1	7/6/2022 3:41:00 PM	68332
Surr: 4-Terphenyl-d14	89.6	0	72.3-147		%Rec	1	7/6/2022 3:41:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:35:00 AM

Lab ID: 2206B30-005D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	0.66	0.0016	0.0030		mg/L	1	6/27/2022 9:35:56 AM	68353
Beryllium	ND	0.00088	0.0020		mg/L	1	6/27/2022 9:35:56 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:35:56 AM	68353
Chromium	0.011	0.0020	0.0060		mg/L	1	6/27/2022 9:35:56 AM	68353
Cobalt	0.0097	0.0035	0.0060		mg/L	1	6/27/2022 9:35:56 AM	68353
Nickel	0.011	0.0053	0.010		mg/L	1	6/27/2022 9:35:56 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:35:56 AM	68353
Vanadium	0.026	0.0035	0.050	J	mg/L	1	6/27/2022 9:35:56 AM	68353
Zinc	0.074	0.0039	0.010		mg/L	1	6/27/2022 9:35:56 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/27/2022 11:02:41 AM	68353
Arsenic	0.0070	0.00013	0.0010		mg/L	1	6/27/2022 11:02:41 AM	68353
Lead	0.014	0.000061	0.00050		mg/L	1	6/27/2022 11:02:41 AM	68353
Selenium	0.0035	0.00037	0.0010		mg/L	1	6/27/2022 11:02:41 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:11:43 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 9:35:00 AM

Lab ID: 2206B30-005E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	0.044	0.0011	0.0020		mg/L	1	6/23/2022 11:50:14 AM	A88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 11:50:14 AM	A88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 11:50:14 AM	A88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 11:50:14 AM	A88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 11:50:14 AM	A88979
Nickel	0.0059	0.0033	0.010	J	mg/L	1	6/23/2022 11:50:14 AM	A88979
Silver	0.0027	0.0013	0.0050	J	mg/L	1	6/23/2022 11:50:14 AM	A88979
Vanadium	0.0039	0.0017	0.050	J	mg/L	1	6/23/2022 11:50:14 AM	A88979
Zinc	0.012	0.0032	0.010		mg/L	1	6/23/2022 11:50:14 AM	A88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/23/2022 11:49:05 AM	A88981
Arsenic	0.0054	0.00012	0.0010		mg/L	1	6/23/2022 11:49:05 AM	A88981
Lead	0.00010	0.000057	0.00050	J	mg/L	1	6/23/2022 11:49:05 AM	A88981
Selenium	0.0018	0.00034	0.0010		mg/L	1	6/23/2022 11:49:05 AM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:13:51 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	MKTF-38
Project:	2022 GW Sampling 2nd Quarter	Collection Date:	6/21/2022 9:35:00 AM
Lab ID:	2206B30-005F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:26:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:00:00 AM

Lab ID: 2206B30-006A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB		
Gasoline Range Organics (GRO)	14	0.090	0.50		mg/L	10	6/24/2022 2:55:37 PM	A89029
Surr: BFB	121	0	70-130		%Rec	10	6/24/2022 2:55:37 PM	A89029
EPA METHOD 8260B: VOLATILES						Analyst: BRM		
Benzene	3500	23	100		µg/L	100	6/29/2022 4:32:44 PM	A89138
Toluene	96	2.0	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Ethylbenzene	300	2.1	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Methyl tert-butyl ether (MTBE)	19	3.9	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
1,2,4-Trimethylbenzene	120	1.2	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
1,3,5-Trimethylbenzene	25	1.8	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
1,2-Dichloroethane (EDC)	ND	2.5	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Acetone	ND	25	100		µg/L	10	6/28/2022 11:59:57 AM	R89107
Bromomethane	ND	8.5	30		µg/L	10	6/28/2022 11:59:57 AM	R89107
2-Butanone	ND	20	100		µg/L	10	6/28/2022 11:59:57 AM	R89107
Carbon disulfide	ND	5.9	100		µg/L	10	6/28/2022 11:59:57 AM	R89107
Chlorobenzene	ND	1.6	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Chloroform	ND	1.3	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Chloromethane	ND	4.1	30		µg/L	10	6/28/2022 11:59:57 AM	R89107
cis-1,2-DCE	ND	3.9	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
1,1-Dichloroethane	ND	2.7	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
1,1-Dichloroethene	ND	2.0	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Isopropylbenzene	15	1.8	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
4-Isopropyltoluene	ND	2.0	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Methylene Chloride	ND	5.0	30		µg/L	10	6/28/2022 11:59:57 AM	R89107
n-Butylbenzene	ND	2.5	30		µg/L	10	6/28/2022 11:59:57 AM	R89107
n-Propylbenzene	29	1.8	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
sec-Butylbenzene	5.7	1.4	10	J	µg/L	10	6/28/2022 11:59:57 AM	R89107
Styrene	ND	1.4	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Vinyl chloride	21	3.2	10		µg/L	10	6/28/2022 11:59:57 AM	R89107
Xylenes, Total	580	3.7	15		µg/L	10	6/28/2022 11:59:57 AM	R89107
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	10	6/28/2022 11:59:57 AM	R89107
Surr: 4-Bromofluorobenzene	99.4	0	70-130		%Rec	10	6/28/2022 11:59:57 AM	R89107
Surr: Dibromofluoromethane	103	0	70-130		%Rec	10	6/28/2022 11:59:57 AM	R89107
Surr: Toluene-d8	102	0	70-130		%Rec	10	6/28/2022 11:59:57 AM	R89107

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:00:00 AM

Lab ID: 2206B30-006B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	6/24/2022 7:35:38 AM	68319

NOTES:

No trip blank was included with work order

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:00:00 AM

Lab ID: 2206B30-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	1.3	0.016	0.064		mg/L	1	7/5/2022 6:20:16 PM	68348
Motor Oil Range Organics (MRO)	0.82	0.052	0.080		mg/L	1	7/5/2022 6:20:16 PM	68348
Surr: DNOP	99.2	0	42.2-138		%Rec	1	7/5/2022 6:20:16 PM	68348
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 4:20:00 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 4:20:00 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 4:20:00 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 4:20:00 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 4:20:00 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 4:20:00 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 4:20:00 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 4:20:00 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 4:20:00 PM	68332
2-Methylphenol	ND	5.0	10		µg/L	1	7/7/2022 4:20:00 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 4:20:00 PM	68332
Phenol	28	18	20		µg/L	1	7/7/2022 4:20:00 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 4:20:00 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 4:20:00 PM	68332
Surr: 2-Fluorophenol	43.9	0	29.4-87.7		%Rec	1	7/7/2022 4:20:00 PM	68332
Surr: Phenol-d5	33.5	0	28.5-64.7		%Rec	1	7/7/2022 4:20:00 PM	68332
Surr: 2,4,6-Tribromophenol	53.2	0	18.6-129		%Rec	1	7/7/2022 4:20:00 PM	68332
Surr: Nitrobenzene-d5	56.5	0	36.9-103		%Rec	1	7/7/2022 4:20:00 PM	68332
Surr: 2-Fluorobiphenyl	50.2	0	38.1-99.9		%Rec	1	7/7/2022 4:20:00 PM	68332
Surr: 4-Terphenyl-d14	75.2	0	48-155		%Rec	1	7/7/2022 4:20:00 PM	68332
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	6.6	0.11	1.0		µg/L	1	7/6/2022 4:25:00 PM	68332
Naphthalene	14	0.20	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
1-Methylnaphthalene	5.4	0.15	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
2-Methylnaphthalene	5.1	0.14	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Acenaphthene	0.44	0.14	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Fluorene	1.1	0.095	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Phenanthrene	0.38	0.16	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Anthracene	ND	0.14	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 4:25:00 PM	68332
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 4:25:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:00:00 AM

Lab ID: 2206B30-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	58.8	0	31.6-100		%Rec	1	7/6/2022 4:25:00 PM	68332
Surr: 2-Fluorobiphenyl	52.0	0	26.7-90.1		%Rec	1	7/6/2022 4:25:00 PM	68332
Surr: 4-Terphenyl-d14	77.5	0	72.3-147		%Rec	1	7/6/2022 4:25:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:00:00 AM

Lab ID: 2206B30-006D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	3.9	0.0079	0.015	*	mg/L	5	6/28/2022 6:59:51 PM	68353
Beryllium	ND	0.00088	0.0020		mg/L	1	6/27/2022 9:37:22 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:37:22 AM	68353
Chromium	ND	0.0020	0.0060		mg/L	1	6/27/2022 9:37:22 AM	68353
Cobalt	0.0049	0.0035	0.0060	J	mg/L	1	6/27/2022 9:37:22 AM	68353
Nickel	0.022	0.0053	0.010		mg/L	1	6/27/2022 9:37:22 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:37:22 AM	68353
Vanadium	ND	0.0035	0.050		mg/L	1	6/27/2022 9:37:22 AM	68353
Zinc	0.020	0.0039	0.010		mg/L	1	6/27/2022 9:37:22 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/27/2022 11:05:08 AM	68353
Arsenic	0.013	0.00013	0.0010	*	mg/L	1	6/27/2022 11:05:08 AM	68353
Lead	0.0012	0.000061	0.00050		mg/L	1	6/27/2022 11:05:08 AM	68353
Selenium	0.00047	0.00037	0.0010	J	mg/L	1	6/27/2022 11:05:08 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:20:15 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:00:00 AM

Lab ID: 2206B30-006E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	3.5	0.0056	0.010	*	mg/L	5	6/23/2022 11:56:43 AM	A88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 11:54:44 AM	A88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 11:54:44 AM	A88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 11:54:44 AM	A88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 11:54:44 AM	A88979
Nickel	0.025	0.0033	0.010		mg/L	1	6/23/2022 11:54:44 AM	A88979
Silver	0.0029	0.0013	0.0050	J	mg/L	1	6/23/2022 11:54:44 AM	A88979
Vanadium	0.0030	0.0017	0.050	J	mg/L	1	6/23/2022 11:54:44 AM	A88979
Zinc	0.018	0.0032	0.010		mg/L	1	6/23/2022 11:54:44 AM	A88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/23/2022 11:51:46 AM	A88981
Arsenic	0.011	0.00061	0.0050	*	mg/L	5	6/23/2022 12:02:32 PM	A88981
Lead	ND	0.00028	0.0025		mg/L	5	6/23/2022 12:02:32 PM	A88981
Selenium	ND	0.0017	0.0050		mg/L	5	6/23/2022 12:02:32 PM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:22:22 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: MKTF-11
Project: 2022 GW Sampling 2nd Quarter Collection Date: 6/21/2022 10:00:00 AM
Lab ID: 2206B30-006F Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:27:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:20:00 AM

Lab ID: 2206B30-007A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	0.30	0.0090	0.050		mg/L	1	6/24/2022 3:19:21 PM	A89029
Surr: BFB	111	0	70-130		%Rec	1	6/24/2022 3:19:21 PM	A89029
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	66	0.23	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Toluene	ND	0.20	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Ethylbenzene	12	0.21	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Methyl tert-butyl ether (MTBE)	3.5	0.39	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
1,2,4-Trimethylbenzene	6.5	0.12	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Acetone	4.0	2.5	10	J	µg/L	1	6/28/2022 12:28:28 PM	R89107
Bromomethane	ND	0.85	3.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
2-Butanone	ND	2.0	10		µg/L	1	6/28/2022 12:28:28 PM	R89107
Carbon disulfide	ND	0.59	10		µg/L	1	6/28/2022 12:28:28 PM	R89107
Chlorobenzene	ND	0.16	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Chloroform	ND	0.13	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Chloromethane	ND	0.41	3.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
1,1-Dichloroethane	4.7	0.27	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Isopropylbenzene	0.48	0.18	1.0	J	µg/L	1	6/28/2022 12:28:28 PM	R89107
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Methylene Chloride	ND	0.50	3.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
n-Butylbenzene	ND	0.25	3.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
n-Propylbenzene	1.1	0.18	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Styrene	ND	0.14	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
1,1,1-Trichloroethane	0.95	0.30	1.0	J	µg/L	1	6/28/2022 12:28:28 PM	R89107
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	6/28/2022 12:28:28 PM	R89107
Vinyl chloride	0.93	0.32	1.0	J	µg/L	1	6/28/2022 12:28:28 PM	R89107
Xylenes, Total	2.2	0.37	1.5		µg/L	1	6/28/2022 12:28:28 PM	R89107
Surr: 1,2-Dichloroethane-d4	105	0	70-130		%Rec	1	6/28/2022 12:28:28 PM	R89107
Surr: 4-Bromofluorobenzene	99.8	0	70-130		%Rec	1	6/28/2022 12:28:28 PM	R89107
Surr: Dibromofluoromethane	104	0	70-130		%Rec	1	6/28/2022 12:28:28 PM	R89107
Surr: Toluene-d8	104	0	70-130		%Rec	1	6/28/2022 12:28:28 PM	R89107

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:20:00 AM

Lab ID: 2206B30-007B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0095		µg/L	1	6/24/2022 8:05:49 AM	68319

NOTES:

No trip blank was included with work order

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:20:00 AM

Lab ID: 2206B30-007C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES						Analyst: JME		
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 5:03:05 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 5:03:05 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 5:03:05 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 5:03:05 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 5:03:05 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 5:03:05 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 5:03:05 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 5:03:05 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 5:03:05 PM	68332
2-Methylphenol	ND	5.0	10		µg/L	1	7/7/2022 5:03:05 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 5:03:05 PM	68332
Phenol	ND	18	20		µg/L	1	7/7/2022 5:03:05 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 5:03:05 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 5:03:05 PM	68332
Surr: 2-Fluorophenol	48.9	0	29.4-87.7		%Rec	1	7/7/2022 5:03:05 PM	68332
Surr: Phenol-d5	36.5	0	28.5-64.7		%Rec	1	7/7/2022 5:03:05 PM	68332
Surr: 2,4,6-Tribromophenol	60.4	0	18.6-129		%Rec	1	7/7/2022 5:03:05 PM	68332
Surr: Nitrobenzene-d5	62.1	0	36.9-103		%Rec	1	7/7/2022 5:03:05 PM	68332
Surr: 2-Fluorobiphenyl	61.0	0	38.1-99.9		%Rec	1	7/7/2022 5:03:05 PM	68332
Surr: 4-Terphenyl-d14	74.7	0	48-155		%Rec	1	7/7/2022 5:03:05 PM	68332
EPA METHOD 8270SIM						Analyst: DAM		
1,4-Dioxane	1.4	0.11	1.0		µg/L	1	7/6/2022 5:08:00 PM	68332
Naphthalene	ND	0.20	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
1-Methylnaphthalene	0.16	0.15	0.30	J	µg/L	1	7/6/2022 5:08:00 PM	68332
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Acenaphthene	ND	0.14	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Fluorene	ND	0.095	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Phenanthrene	ND	0.16	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Anthracene	ND	0.14	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 5:08:00 PM	68332
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 5:08:00 PM	68332
Surr: Nitrobenzene-d5	73.4	0	31.6-100		%Rec	1	7/6/2022 5:08:00 PM	68332
Surr: 2-Fluorobiphenyl	65.0	0	26.7-90.1		%Rec	1	7/6/2022 5:08:00 PM	68332
Surr: 4-Terphenyl-d14	80.9	0	72.3-147		%Rec	1	7/6/2022 5:08:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:20:00 AM

Lab ID: 2206B30-007D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	3.6	0.0079	0.015	*	mg/L	5	6/28/2022 7:01:59 PM	68353
Beryllium	0.0025	0.00088	0.0020		mg/L	1	6/27/2022 9:38:46 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:38:46 AM	68353
Chromium	0.031	0.0020	0.0060		mg/L	1	6/27/2022 9:38:46 AM	68353
Cobalt	0.019	0.0035	0.0060		mg/L	1	6/27/2022 9:38:46 AM	68353
Nickel	0.032	0.0053	0.010		mg/L	1	6/27/2022 9:38:46 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:38:46 AM	68353
Vanadium	0.053	0.0035	0.050		mg/L	1	6/27/2022 9:38:46 AM	68353
Zinc	0.37	0.0039	0.010		mg/L	1	6/27/2022 9:38:46 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/27/2022 11:07:34 AM	68353
Arsenic	0.0070	0.00013	0.0010		mg/L	1	6/27/2022 11:07:34 AM	68353
Lead	0.040	0.00031	0.0025	*	mg/L	5	6/27/2022 11:41:48 AM	68353
Selenium	0.0058	0.00037	0.0010		mg/L	1	6/27/2022 11:07:34 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00098	0.000091	0.00020		mg/L	1	6/24/2022 12:24:30 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:20:00 AM

Lab ID: 2206B30-007E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	0.21	0.0011	0.0020		mg/L	1	6/23/2022 11:58:53 AM	A88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 11:58:53 AM	A88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 11:58:53 AM	A88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 11:58:53 AM	A88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 11:58:53 AM	A88979
Nickel	0.0054	0.0033	0.010	J	mg/L	1	6/23/2022 11:58:53 AM	A88979
Silver	ND	0.0013	0.0050		mg/L	1	6/23/2022 11:58:53 AM	A88979
Vanadium	0.0038	0.0017	0.050	J	mg/L	1	6/23/2022 11:58:53 AM	A88979
Zinc	0.034	0.0032	0.010		mg/L	1	6/23/2022 11:58:53 AM	A88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00070	0.00044	0.0010	J	mg/L	1	6/23/2022 11:54:27 AM	A88981
Arsenic	0.0014	0.00012	0.0010		mg/L	1	6/23/2022 11:54:27 AM	A88981
Lead	0.00017	0.000057	0.00050	J	mg/L	1	6/23/2022 11:54:27 AM	A88981
Selenium	0.00049	0.00034	0.0010	J	mg/L	1	6/23/2022 11:54:27 AM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:26:38 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 2nd Quarter

Lab ID: 2206B30-007F

Client Sample ID: MKTF-16

Collection Date: 6/21/2022 10:20:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:28:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: FB-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022 10:20:00 AM

Lab ID: 2206B30-008A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Toluene	ND	0.20	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Ethylbenzene	ND	0.21	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Acetone	3.6	2.5	10	J	µg/L	1	6/28/2022 12:57:01 PM	R89107
Bromomethane	ND	0.85	3.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
2-Butanone	ND	2.0	10		µg/L	1	6/28/2022 12:57:01 PM	R89107
Carbon disulfide	ND	0.59	10		µg/L	1	6/28/2022 12:57:01 PM	R89107
Chlorobenzene	ND	0.16	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Chloroform	ND	0.13	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Chloromethane	ND	0.41	3.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Isopropylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Methylene Chloride	ND	0.50	3.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
n-Butylbenzene	ND	0.25	3.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
n-Propylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Styrene	ND	0.14	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Vinyl chloride	ND	0.32	1.0		µg/L	1	6/28/2022 12:57:01 PM	R89107
Xylenes, Total	ND	0.37	1.5		µg/L	1	6/28/2022 12:57:01 PM	R89107
Surr: 1,2-Dichloroethane-d4	115	0	70-130		%Rec	1	6/28/2022 12:57:01 PM	R89107
Surr: 4-Bromofluorobenzene	106	0	70-130		%Rec	1	6/28/2022 12:57:01 PM	R89107
Surr: Dibromofluoromethane	115	0	70-130		%Rec	1	6/28/2022 12:57:01 PM	R89107
Surr: Toluene-d8	102	0	70-130		%Rec	1	6/28/2022 12:57:01 PM	R89107

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022

Lab ID: 2206B30-009A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.0090	0.050		mg/L	1	6/24/2022 3:43:06 PM	A89029
Surr: BFB	99.2	0	70-130		%Rec	1	6/24/2022 3:43:06 PM	A89029
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Toluene	ND	0.20	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Ethylbenzene	ND	0.21	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Acetone	ND	2.5	10		µg/L	1	6/28/2022 1:25:35 PM	R89107
Bromomethane	ND	0.85	3.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
2-Butanone	ND	2.0	10		µg/L	1	6/28/2022 1:25:35 PM	R89107
Carbon disulfide	ND	0.59	10		µg/L	1	6/28/2022 1:25:35 PM	R89107
Chlorobenzene	ND	0.16	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Chloroform	ND	0.13	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Chloromethane	ND	0.41	3.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Isopropylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Methylene Chloride	ND	0.50	3.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
n-Butylbenzene	ND	0.25	3.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
n-Propylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Styrene	ND	0.14	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Vinyl chloride	ND	0.32	1.0		µg/L	1	6/28/2022 1:25:35 PM	R89107
Xylenes, Total	ND	0.37	1.5		µg/L	1	6/28/2022 1:25:35 PM	R89107
Surr: 1,2-Dichloroethane-d4	114	0	70-130		%Rec	1	6/28/2022 1:25:35 PM	R89107
Surr: 4-Bromofluorobenzene	107	0	70-130		%Rec	1	6/28/2022 1:25:35 PM	R89107
Surr: Dibromofluoromethane	114	0	70-130		%Rec	1	6/28/2022 1:25:35 PM	R89107
Surr: Toluene-d8	106	0	70-130		%Rec	1	6/28/2022 1:25:35 PM	R89107

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	DUP-6-21-22
Project:	2022 GW Sampling 2nd Quarter	Collection Date:	6/21/2022
Lab ID:	2206B30-009B	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	6/24/2022 8:36:00 AM	68319
NOTES:								
No trip blank was included with work order								

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022

Lab ID: 2206B30-009C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.20	0.016	0.064		mg/L	1	7/5/2022 6:44:12 PM	68348
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	7/5/2022 6:44:12 PM	68348
Surr: DNOP	104	0	42.2-138		%Rec	1	7/5/2022 6:44:12 PM	68348
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	7/7/2022 5:47:20 PM	68332
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	7/7/2022 5:47:20 PM	68332
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	7/7/2022 5:47:20 PM	68332
Di-n-octyl phthalate	ND	12	20		µg/L	1	7/7/2022 5:47:20 PM	68332
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	7/7/2022 5:47:20 PM	68332
Diethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 5:47:20 PM	68332
Dimethyl phthalate	ND	6.0	10		µg/L	1	7/7/2022 5:47:20 PM	68332
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	7/7/2022 5:47:20 PM	68332
2,4-Dinitrophenol	ND	16	20		µg/L	1	7/7/2022 5:47:20 PM	68332
2-Methylphenol	ND	5.0	10		µg/L	1	7/7/2022 5:47:20 PM	68332
3+4-Methylphenol	ND	5.1	10		µg/L	1	7/7/2022 5:47:20 PM	68332
Phenol	ND	18	20		µg/L	1	7/7/2022 5:47:20 PM	68332
Pyridine	ND	14	40		µg/L	1	7/7/2022 5:47:20 PM	68332
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	7/7/2022 5:47:20 PM	68332
Surr: 2-Fluorophenol	40.7	0	29.4-87.7		%Rec	1	7/7/2022 5:47:20 PM	68332
Surr: Phenol-d5	30.9	0	28.5-64.7		%Rec	1	7/7/2022 5:47:20 PM	68332
Surr: 2,4,6-Tribromophenol	49.1	0	18.6-129		%Rec	1	7/7/2022 5:47:20 PM	68332
Surr: Nitrobenzene-d5	53.3	0	36.9-103		%Rec	1	7/7/2022 5:47:20 PM	68332
Surr: 2-Fluorobiphenyl	48.3	0	38.1-99.9		%Rec	1	7/7/2022 5:47:20 PM	68332
Surr: 4-Terphenyl-d14	72.3	0	48-155		%Rec	1	7/7/2022 5:47:20 PM	68332
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	1.7	0.11	1.0		µg/L	1	7/6/2022 5:53:00 PM	68332
Naphthalene	ND	0.20	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Acenaphthene	ND	0.14	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Fluorene	ND	0.095	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Phenanthrene	ND	0.16	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Anthracene	ND	0.14	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Pyrene	ND	0.32	1.0		µg/L	1	7/6/2022 5:53:00 PM	68332
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Chrysene	ND	0.25	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	7/6/2022 5:53:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022

Lab ID: 2206B30-009C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	62.0	0	31.6-100		%Rec	1	7/6/2022 5:53:00 PM	68332
Surr: 2-Fluorobiphenyl	54.6	0	26.7-90.1		%Rec	1	7/6/2022 5:53:00 PM	68332
Surr: 4-Terphenyl-d14	84.7	0	72.3-147		%Rec	1	7/6/2022 5:53:00 PM	68332

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022

Lab ID: 2206B30-009D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: JLF	
Barium	0.080	0.0016	0.0030		mg/L	1	6/27/2022 9:40:11 AM	68353
Beryllium	ND	0.00088	0.0020		mg/L	1	6/27/2022 9:40:11 AM	68353
Cadmium	ND	0.0018	0.0020		mg/L	1	6/27/2022 9:40:11 AM	68353
Chromium	0.0023	0.0020	0.0060	J	mg/L	1	6/27/2022 9:40:11 AM	68353
Cobalt	ND	0.0035	0.0060		mg/L	1	6/27/2022 9:40:11 AM	68353
Nickel	ND	0.0053	0.010		mg/L	1	6/27/2022 9:40:11 AM	68353
Silver	ND	0.0018	0.0050		mg/L	1	6/27/2022 9:40:11 AM	68353
Vanadium	0.0044	0.0035	0.050	J	mg/L	1	6/27/2022 9:40:11 AM	68353
Zinc	0.0040	0.0039	0.010	J	mg/L	1	6/27/2022 9:40:11 AM	68353
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/27/2022 11:10:01 AM	68353
Arsenic	0.00078	0.00013	0.0010	J	mg/L	1	6/27/2022 11:10:01 AM	68353
Lead	0.0014	0.000061	0.00050		mg/L	1	6/27/2022 11:10:01 AM	68353
Selenium	0.00051	0.00037	0.0010	J	mg/L	1	6/27/2022 11:10:01 AM	68353
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00013	0.000091	0.00020	J	mg/L	1	6/24/2022 12:28:47 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-6-21-22

Project: 2022 GW Sampling 2nd Quarter

Collection Date: 6/21/2022

Lab ID: 2206B30-009E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JLF	
Barium	0.037	0.0011	0.0020		mg/L	1	6/23/2022 12:11:03 PM	B88979
Beryllium	ND	0.00088	0.0020		mg/L	1	6/23/2022 12:11:03 PM	B88979
Cadmium	ND	0.00098	0.0020		mg/L	1	6/23/2022 12:11:03 PM	B88979
Chromium	ND	0.0020	0.0060		mg/L	1	6/23/2022 12:11:03 PM	B88979
Cobalt	ND	0.0024	0.0060		mg/L	1	6/23/2022 12:11:03 PM	B88979
Nickel	ND	0.0033	0.010		mg/L	1	6/23/2022 12:11:03 PM	B88979
Silver	0.0034	0.0013	0.0050	J	mg/L	1	6/23/2022 12:11:03 PM	B88979
Vanadium	0.0042	0.0017	0.050	J	mg/L	1	6/23/2022 12:11:03 PM	B88979
Zinc	0.0071	0.0032	0.010	J	mg/L	1	6/23/2022 12:11:03 PM	B88979
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	6/23/2022 11:57:09 AM	A88981
Arsenic	0.00062	0.00012	0.0010	J	mg/L	1	6/23/2022 11:57:09 AM	A88981
Lead	ND	0.000057	0.00050		mg/L	1	6/23/2022 11:57:09 AM	A88981
Selenium	ND	0.00034	0.0010		mg/L	1	6/23/2022 11:57:09 AM	A88981
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	6/24/2022 12:30:56 PM	68333

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	DUP-6-21-22
Project:	2022 GW Sampling 2nd Quarter	Collection Date:	6/21/2022
Lab ID:	2206B30-009F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	7/1/2022 1:29:00 PM	R89481

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 2nd Quarter

Collection Date:

Lab ID: 2206B30-010A

Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Toluene	ND	0.20	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Ethylbenzene	ND	0.21	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Naphthalene	ND	0.50	2.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Acetone	ND	2.5	10		µg/L	1	6/28/2022 1:54:10 PM	R89107
Bromobenzene	ND	0.28	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Bromodichloromethane	ND	0.20	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Bromoform	ND	0.31	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Bromomethane	ND	0.85	3.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
2-Butanone	ND	2.0	10		µg/L	1	6/28/2022 1:54:10 PM	R89107
Carbon disulfide	ND	0.59	10		µg/L	1	6/28/2022 1:54:10 PM	R89107
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Chlorobenzene	ND	0.16	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Chloroethane	ND	0.38	2.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Chloroform	ND	0.13	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Chloromethane	ND	0.41	3.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Dibromochloromethane	ND	0.28	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Dibromomethane	ND	0.31	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2206B30

Date Reported: 8/15/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 2nd Quarter

Collection Date:

Lab ID: 2206B30-010A

Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
2-Hexanone	ND	1.8	10		µg/L	1	6/28/2022 1:54:10 PM	R89107
Isopropylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	6/28/2022 1:54:10 PM	R89107
Methylene Chloride	ND	0.50	3.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
n-Butylbenzene	ND	0.25	3.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
n-Propylbenzene	ND	0.18	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Styrene	ND	0.14	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Vinyl chloride	ND	0.32	1.0		µg/L	1	6/28/2022 1:54:10 PM	R89107
Xylenes, Total	ND	0.37	1.5		µg/L	1	6/28/2022 1:54:10 PM	R89107
Surr: 1,2-Dichloroethane-d4	114	0	70-130		%Rec	1	6/28/2022 1:54:10 PM	R89107
Surr: 4-Bromofluorobenzene	99.1	0	70-130		%Rec	1	6/28/2022 1:54:10 PM	R89107
Surr: Dibromofluoromethane	111	0	70-130		%Rec	1	6/28/2022 1:54:10 PM	R89107
Surr: Toluene-d8	102	0	70-130		%Rec	1	6/28/2022 1:54:10 PM	R89107

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		



ANALYTICAL REPORT

July 05, 2022

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1508211

Samples Received: 06/23/2022

Project Number:

Description:

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

Entire Report Reviewed By:

A handwritten signature in blue ink that reads "John V. Hawkins".

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
2206B30-001F EB-6-21-22 L1508211-01	5	
2206B30-002F MKTF-46 L1508211-02	6	⁴ Cn
2206B30-003F MKTF-18R L1508211-03	7	⁵ Sr
2206B30-004F MKTF-35 L1508211-04	8	
2206B30-005F MKTF-38 L1508211-05	9	⁶ Qc
2206B30-006F MKTF-11 L1508211-06	10	
2206B30-007F MKTF-16 L1508211-07	11	⁷ Gl
2206B30-009F DUP-6-21-22 L1508211-08	12	⁸ Al
Qc: Quality Control Summary	13	
Wet Chemistry by Method 4500CN E-2016	13	⁹ Sc
Gl: Glossary of Terms	14	
Al: Accreditations & Locations	15	
Sc: Sample Chain of Custody	16	

2206B30-001F EB-6-21-22 L1508211-01 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:18	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

2206B30-002F MKTF-46 L1508211-02 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:19	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2206B30-003F MKTF-18R L1508211-03 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:20	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2206B30-004F MKTF-35 L1508211-04 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:21	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2206B30-005F MKTF-38 L1508211-05 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:26	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2206B30-006F MKTF-11 L1508211-06 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:27	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2206B30-007F MKTF-16 L1508211-07 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:28	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2206B30-009F DUP-6-21-22 L1508211-08 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1886404	1	06/30/22 03:47	07/01/22 13:29	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

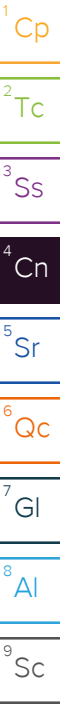


John Hawkins
Project Manager

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1508211-03	2206B30-003F MKTF-18R	4500CN E-2016
L1508211-05	2206B30-005F MKTF-38	4500CN E-2016
L1508211-07	2206B30-007F MKTF-16	4500CN E-2016



Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:18	WG1886404

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Collected date/time: 06/21/22 08:20

L1508211

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:19	WG1886404

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:20	WG1886404

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:21	WG1886404

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:26	WG1886404

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:27	WG1886404

- ¹Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Qc
- ⁷Gl
- ⁸Al
- ⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:28	WG1886404

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	07/01/2022 13:29	WG1886404

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

L1508211-01,02,03,04,05,06,07,08

Method Blank (MB)

(MB) R3810093-1 07/01/22 13:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1507725-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1507725-03 07/01/22 13:07 • (DUP) R3810093-3 07/01/22 13:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	25.1	P1	20

L1507860-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1507860-04 07/01/22 13:16 • (DUP) R3810093-6 07/01/22 13:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3810093-2 07/01/22 13:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.104	104	87.1-120	

L1508211-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1508211-04 07/01/22 13:21 • (MS) R3810093-7 07/01/22 13:22 • (MSD) R3810093-8 07/01/22 13:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0992	0.0942	99.2	94.2	1	90.0-110			5.17	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

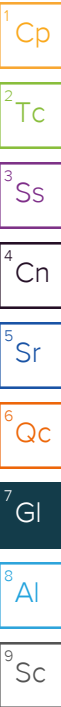
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
----	---



Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

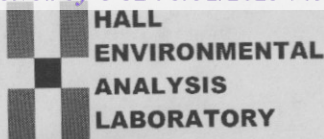
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

 Hall Environmental Analysis Laboratory
 4901 Hawkins NE
 Albuquerque, NM 87109
 TEL: 505-345-3975
 FAX: 505-345-4107
 Website: www.hallenvironmental.com

G036

SUB CONTRACTOR: Pace TN		COMPANY: PACE TN		PHONE: (800) 767-5859		FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd				ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122							

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2206B30-001F	EB-6-21-22	500AMBHDP F.NAOH	Groundw star	6/21/2022 8:00:00 AM	1	Total Cyanide J and MDL 21
2	2206B30-002F	MKTF-46	500AMBHDP F.NAOH	Groundw star	6/21/2022 8:20:00 AM	1	Total Cyanide J and MDL 22
3	2206B30-003F	MKTF-18R	500AMBHDP F.NAOH	Groundw star	6/21/2022 8:45:00 AM	1	Total Cyanide J and MDL 23
4	2206B30-004F	MKTF-35	500AMBHDP F.NAOH	Groundw star	6/21/2022 9:05:00 AM	1	Total Cyanide J and MDL 24
5	2206B30-005F	MKTF-38	500AMBHDP F.NAOH	Groundw star	6/21/2022 9:35:00 AM	1	Total Cyanide J and MDL 25
6	2206B30-006F	MKTF-11	500AMBHDP F.NAOH	Groundw star	6/21/2022 10:00:00 AM	1	Total Cyanide J and MDL 26
7	2206B30-007F	MKTF-16	500AMBHDP F.NAOH	Groundw star	6/21/2022 10:20:00 AM	1	Total Cyanide J and MDL 27
8	2206B30-009F	DUP-6-21-22	500AMBHDP F.NAOH	Groundw star	6/21/2022	1	Total Cyanide J and MDL 28

Sample Receipt Checklist

COC Seal Present/Intact: ☒ N If Applicable

COC Signed/Accurate: ☒ N VOA Zero Headspace: ☐ Y ☒ N

Bottles arrive intact: ☒ N Pres. Correct/Check: ☒ Y ☐ N

Correct bottles used: ☒ N

Sufficient volume sent: ☒ N

RAP Screen <0.5 mR/hr: ☒ Y ☐ N

5755 8089 3860

1.1+0=1.1 JAWTB

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>CNC</i>	Date: 6/22/2022	Time: 8:32 AM	Received By: <i>M. Smith</i>	Date: 6/22/22	Time: 0900	REPORT TRANSMITTAL DESIRED:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	FOR LAB USE ONLY	
TAT: Standard ☒ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐						Temp of samples _____ °C Attempt to Cool ? _____	
						Comments: _____	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: MB-68353	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: 68353	RunNo: 89052								
Prep Date: 6/24/2022	Analysis Date: 6/27/2022	SeqNo: 3162931	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LCSLL-68353	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: 68353	RunNo: 89052								
Prep Date: 6/24/2022	Analysis Date: 6/27/2022	SeqNo: 3162932	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0016	0.0030	0.002000	0	80.1	50	150			J
Beryllium	0.0021	0.0020	0.002000	0	106	50	150			
Cadmium	0.0020	0.0020	0.002000	0	101	50	150			
Chromium	0.0059	0.0060	0.006000	0	97.9	50	150			J
Cobalt	0.0062	0.0060	0.006000	0	104	50	150			
Nickel	0.0027	0.010	0.005000	0	53.6	50	150			J
Silver	0.0050	0.0050	0.005000	0	100	50	150			
Vanadium	0.0098	0.050	0.01000	0	97.9	50	150			J
Zinc	0.011	0.010	0.01000	0	115	50	150			

Sample ID: LCS-68353	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: 68353	RunNo: 89052								
Prep Date: 6/24/2022	Analysis Date: 6/27/2022	SeqNo: 3162933	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0030	0.5000	0	93.7	85	115			
Beryllium	0.50	0.0020	0.5000	0	100	85	115			
Cadmium	0.47	0.0020	0.5000	0	93.5	85	115			
Chromium	0.46	0.0060	0.5000	0	93.0	85	115			
Cobalt	0.46	0.0060	0.5000	0	92.0	85	115			
Nickel	0.45	0.010	0.5000	0	90.9	85	115			
Silver	0.096	0.0050	0.1000	0	96.1	85	115			
Vanadium	0.48	0.050	0.5000	0	95.3	85	115			
Zinc	0.47	0.010	0.5000	0	94.2	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon
Project: 2022 GW Sampling 2nd Quarter

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: B88979	RunNo: 88979								
Prep Date:	Analysis Date: 6/23/2022	SeqNo: 3159952 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: A88979	RunNo: 88979								
Prep Date:	Analysis Date: 6/23/2022	SeqNo: 3159959 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LLLCS	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: BatchQC	Batch ID: A88979	RunNo: 88979								
Prep Date:	Analysis Date: 6/23/2022	SeqNo: 3159960 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0018	0.0020	0.002000	0	91.5	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	99.3	50	150			J
Cadmium	0.0025	0.0020	0.002000	0	124	50	150			
Chromium	0.0064	0.0060	0.006000	0	106	50	150			
Cobalt	0.0058	0.0060	0.006000	0	97.3	50	150			J
Nickel	0.0062	0.010	0.005000	0	123	50	150			J
Silver	0.0045	0.0050	0.005000	0	89.2	50	150			J
Vanadium	0.0099	0.050	0.01000	0	99.1	50	150			J
Zinc	0.012	0.010	0.01000	0	117	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: LCS	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: A88979		RunNo: 88979							
Prep Date:	Analysis Date: 6/23/2022		SeqNo: 3159961		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	99.6	85	115			
Beryllium	0.51	0.0020	0.5000	0	102	85	115			
Cadmium	0.51	0.0020	0.5000	0	103	85	115			
Chromium	0.50	0.0060	0.5000	0	101	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.4	85	115			
Nickel	0.50	0.010	0.5000	0	99.3	85	115			
Silver	0.10	0.0050	0.1000	0	102	85	115			
Vanadium	0.51	0.050	0.5000	0	101	85	115			
Zinc	0.49	0.010	0.5000	0	98.6	85	115			

Sample ID: LLCS	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: B88979		RunNo: 88979							
Prep Date:	Analysis Date: 6/23/2022		SeqNo: 3160008		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0017	0.0020	0.002000	0	87.2	50	150			J
Beryllium	0.0022	0.0020	0.002000	0	111	50	150			
Cadmium	0.0017	0.0020	0.002000	0	84.9	50	150			J
Chromium	0.0064	0.0060	0.006000	0	107	50	150			
Cobalt	0.0065	0.0060	0.006000	0	108	50	150			
Nickel	0.0046	0.010	0.005000	0	92.8	50	150			J
Silver	0.0046	0.0050	0.005000	0	91.7	50	150			J
Vanadium	0.012	0.050	0.01000	0	118	50	150			J
Zinc	0.011	0.010	0.01000	0	109	50	150			

Sample ID: LCS	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: B88979		RunNo: 88979							
Prep Date:	Analysis Date: 6/23/2022		SeqNo: 3160009		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	97.9	85	115			
Beryllium	0.51	0.0020	0.5000	0	103	85	115			
Cadmium	0.52	0.0020	0.5000	0	104	85	115			
Chromium	0.50	0.0060	0.5000	0	100	85	115			
Cobalt	0.50	0.0060	0.5000	0	100	85	115			
Nickel	0.50	0.010	0.5000	0	99.3	85	115			
Silver	0.096	0.0050	0.1000	0	95.5	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.50	0.010	0.5000	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon
Project: 2022 GW Sampling 2nd Quarter

Sample ID: 2206B30-009EMS		SampType: MS		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: DUP-6-21-22		Batch ID: B88979		RunNo: 88979						
Prep Date:		Analysis Date: 6/23/2022		SeqNo: 3160014		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0020	0.5000	0.03745	96.6	70	130			
Beryllium	0.53	0.0020	0.5000	0	105	70	130			
Cadmium	0.53	0.0020	0.5000	0	105	70	130			
Chromium	0.50	0.0060	0.5000	0	99.2	70	130			
Cobalt	0.49	0.0060	0.5000	0	98.9	70	130			
Nickel	0.49	0.010	0.5000	0	97.5	70	130			
Silver	0.096	0.0050	0.1000	0.003414	93.0	70	130			
Vanadium	0.51	0.050	0.5000	0.004179	101	70	130			
Zinc	0.50	0.010	0.5000	0.007073	99.4	70	130			

Sample ID: 2206B30-009EMSD		SampType: MSD		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: DUP-6-21-22		Batch ID: B88979		RunNo: 88979						
Prep Date:		Analysis Date: 6/23/2022		SeqNo: 3160015		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0020	0.5000	0.03745	96.2	70	130	0.371	20	
Beryllium	0.52	0.0020	0.5000	0	104	70	130	1.37	20	
Cadmium	0.52	0.0020	0.5000	0	104	70	130	0.859	20	
Chromium	0.49	0.0060	0.5000	0	99.0	70	130	0.209	20	
Cobalt	0.49	0.0060	0.5000	0	98.2	70	130	0.696	20	
Nickel	0.49	0.010	0.5000	0	97.2	70	130	0.352	20	
Silver	0.097	0.0050	0.1000	0.003414	93.5	70	130	0.483	20	
Vanadium	0.50	0.050	0.5000	0.004179	99.4	70	130	1.34	20	
Zinc	0.50	0.010	0.5000	0.007073	99.4	70	130	0.0642	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: MB-68353		SampType: MBLK		TestCode: EPA 200.8: Metals						
Client ID: PBW		Batch ID: 68353		RunNo: 89049						
Prep Date: 6/24/2022		Analysis Date: 6/27/2022		SeqNo: 3162820			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: MSLCSLL-68353		SampType: LCSLL		TestCode: EPA 200.8: Metals						
Client ID: BatchQC		Batch ID: 68353		RunNo: 89049						
Prep Date: 6/24/2022		Analysis Date: 6/27/2022		SeqNo: 3162821			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00091	0.0010	0.001000	0	91.1	50	150			J
Arsenic	0.00098	0.0010	0.001000	0	98.1	50	150			J
Lead	0.00045	0.00050	0.0005000	0	89.3	50	150			J
Selenium	0.0013	0.0010	0.001000	0	131	50	150			

Sample ID: MSLCS-68353		SampType: LCS		TestCode: EPA 200.8: Metals						
Client ID: LCSW		Batch ID: 68353		RunNo: 89049						
Prep Date: 6/24/2022		Analysis Date: 6/27/2022		SeqNo: 3162822			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	99.1	85	115			
Arsenic	0.025	0.0010	0.02500	0	98.1	85	115			
Lead	0.012	0.00050	0.01250	0	98.1	85	115			
Selenium	0.026	0.0010	0.02500	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon
Project: 2022 GW Sampling 2nd Quarter

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: A88981	RunNo: 88981								
Prep Date:	Analysis Date: 6/23/2022	SeqNo: 3160067 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: A88981	RunNo: 88981								
Prep Date:	Analysis Date: 6/23/2022	SeqNo: 3160068 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0011	0.0010	0.001000	0	107	50	150			
Arsenic	0.0011	0.0010	0.001000	0	108	50	150			
Lead	0.00051	0.00050	0.0005000	0	102	50	150			
Selenium	0.00099	0.0010	0.001000	0	98.6	50	150			J

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: A88981	RunNo: 88981								
Prep Date:	Analysis Date: 6/23/2022	SeqNo: 3160069 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	94.3	85	115			
Arsenic	0.024	0.0010	0.02500	0	97.4	85	115			
Lead	0.012	0.00050	0.01250	0	98.6	85	115			
Selenium	0.024	0.0010	0.02500	0	96.5	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2206B30

15-Aug-22

Client: Marathon
Project: 2022 GW Sampling 2nd Quarter

Sample ID: MB-68333	SampType: MBLK	TestCode: EPA Method 245.1: Mercury
Client ID: PBW	Batch ID: 68333	RunNo: 89015
Prep Date: 6/24/2022	Analysis Date: 6/24/2022	SeqNo: 3161261 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	ND 0.00020	

Sample ID: LCSLL-68333	SampType: LCSLL	TestCode: EPA Method 245.1: Mercury
Client ID: BatchQC	Batch ID: 68333	RunNo: 89015
Prep Date: 6/24/2022	Analysis Date: 6/24/2022	SeqNo: 3161262 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	0.00017 0.00020 0.0001500	0 112 50 150 J

Sample ID: LCS-68333	SampType: LCS	TestCode: EPA Method 245.1: Mercury
Client ID: LCSW	Batch ID: 68333	RunNo: 89015
Prep Date: 6/24/2022	Analysis Date: 6/24/2022	SeqNo: 3161263 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Mercury	0.0051 0.00020 0.005000	0 102 85 115

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon
Project: 2022 GW Sampling 2nd Quarter

Sample ID: MB-68319	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 68319	RunNo: 89001								
Prep Date: 6/23/2022	Analysis Date: 6/23/2022	SeqNo: 3163530 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: MB-68319	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 68319	RunNo: 89001								
Prep Date: 6/23/2022	Analysis Date: 6/23/2022	SeqNo: 3163531 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: LCS-68319	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 68319	RunNo: 89001								
Prep Date: 6/23/2022	Analysis Date: 6/23/2022	SeqNo: 3163532 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.088	0.010	0.1000	0	87.8	70	130			

Sample ID: LCSD-68319	SampType: LCSD	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSS02	Batch ID: 68319	RunNo: 89001								
Prep Date: 6/23/2022	Analysis Date: 6/23/2022	SeqNo: 3163533 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.11	0.010	0.1000	0	109	70	130	21.9	20	R

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: MB-68348	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 68348	RunNo: 89239								
Prep Date: 6/24/2022	Analysis Date: 7/5/2022	SeqNo: 3173275 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.021	0.064								J
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.036		0.03750		95.6	42.2	138			

Sample ID: LCS-68348	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 68348	RunNo: 89239								
Prep Date: 6/24/2022	Analysis Date: 7/5/2022	SeqNo: 3173276 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.15	0.064	0.1875	0	81.2	31.7	75.4			S
Surr: DNOP	0.020		0.01875		108	42.2	138			

Sample ID: LCSD-68348	SampType: LCSD	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSS02	Batch ID: 68348	RunNo: 89239								
Prep Date: 6/24/2022	Analysis Date: 7/5/2022	SeqNo: 3173277 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.17	0.064	0.1875	0	89.2	31.7	75.4	9.38	20	S
Surr: DNOP	0.021		0.01875		112	42.2	138	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2206B30

15-Aug-22

Client: Marathon

Project: 2022 GW Sampling 2nd Quarter

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBW	Batch ID: A89029	RunNo: 89029								
Prep Date:	Analysis Date: 6/24/2022	SeqNo: 3161785	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		98.6	70	130			

Sample ID: 2.5ug gro lcs	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSW	Batch ID: A89029	RunNo: 89029								
Prep Date:	Analysis Date: 6/24/2022	SeqNo: 3161786	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.54	0.050	0.5000	0	107	80	120			
Surr: BFB	42		20.00		211	70	130			S

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: W89041			RunNo: 89041						
Prep Date:	Analysis Date: 6/27/2022			SeqNo: 3163698		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	91.2	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Chlorobenzene	22	1.0	20.00	0	109	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	83.9	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.2	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.1	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: W89041			RunNo: 89041						
Prep Date:	Analysis Date: 6/27/2022			SeqNo: 3163699		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: W89041	RunNo: 89041								
Prep Date:	Analysis Date: 6/27/2022	SeqNo: 3163699 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.4	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.5	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: 2206b30-002ams	SampType: MS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: MKTF-46	Batch ID: W89041	RunNo: 89041								
Prep Date:	Analysis Date: 6/27/2022	SeqNo: 3164049 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	91.9	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Chlorobenzene	22	1.0	20.00	0	108	70	130			
1,1-Dichloroethene	15	1.0	20.00	0	77.5	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	87.2	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.8	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.4	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: 2206b30-002amsd	SampType: MSD	TestCode: EPA Method 8260B: VOLATILES								
Client ID: MKTF-46	Batch ID: W89041	RunNo: 89041								
Prep Date:	Analysis Date: 6/27/2022	SeqNo: 3164052 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.4	70	130	5.75	20	
Toluene	20	1.0	20.00	0	101	70	130	0.862	20	
Chlorobenzene	21	1.0	20.00	0	103	70	130	4.43	20	
1,1-Dichloroethene	15	1.0	20.00	0	76.5	70	130	1.30	20	
Trichloroethene (TCE)	19	1.0	20.00	0	96.7	70	130	10.3	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		110	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.2		10.00		92.4	70	130	0	0	
Surr: Dibromofluoromethane	9.8		10.00		98.0	70	130	0	0	
Surr: Toluene-d8	10		10.00		105	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: R89107		RunNo: 89107							
Prep Date:	Analysis Date: 6/28/2022		SeqNo: 3166436		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	20	1.0	20.00	0	98.8	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	100	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	98.3	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	11		10.00		113	70	130			
Surr: Toluene-d8	9.9		10.00		98.7	70	130			

Sample ID: 100ng lcs2	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: R89107		RunNo: 89107							
Prep Date:	Analysis Date: 6/28/2022		SeqNo: 3166437		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	20	1.0	20.00	0	98.3	70	130			
Chlorobenzene	20	1.0	20.00	0	101	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	98.8	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	11		10.00		111	70	130			
Surr: Toluene-d8	10		10.00		99.8	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: R89107		RunNo: 89107							
Prep Date:	Analysis Date: 6/28/2022		SeqNo: 3166470		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2206B30

15-Aug-22

Client: Marathon

Project: 2022 GW Sampling 2nd Quarter

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R89107	RunNo: 89107								
Prep Date:	Analysis Date: 6/28/2022	SeqNo: 3166470	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon
Project: 2022 GW Sampling 2nd Quarter

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R89107			RunNo: 89107						
Prep Date:	Analysis Date: 6/28/2022			SeqNo: 3166470		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		114	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		110	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: mb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R89107			RunNo: 89107						
Prep Date:	Analysis Date: 6/29/2022			SeqNo: 3166471		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2206B30

15-Aug-22

Client: Marathon

Project: 2022 GW Sampling 2nd Quarter

Sample ID: mb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R89107			RunNo: 89107						
Prep Date:	Analysis Date: 6/29/2022			SeqNo: 3166471		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2206B30

15-Aug-22

Client: Marathon
Project: 2022 GW Sampling 2nd Quarter

Sample ID: mb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R89107			RunNo: 89107						
Prep Date:	Analysis Date: 6/29/2022			SeqNo: 3166471		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		115	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		111	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: A89138			RunNo: 89138						
Prep Date:	Analysis Date: 6/29/2022			SeqNo: 3167495		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.5	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130			
Surr: Dibromofluoromethane	9.2		10.00		92.0	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: A89138			RunNo: 89138						
Prep Date:	Analysis Date: 6/29/2022			SeqNo: 3167508		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	9.4		10.00		93.6	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	8.8		10.00		87.7	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2206B30

15-Aug-22

Client: Marathon

Project: 2022 GW Sampling 2nd Quarter

Sample ID: mb-68332	SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: PBW	Batch ID: 68332	RunNo: 89327								
Prep Date: 6/24/2022	Analysis Date: 7/7/2022	SeqNo: 3177340 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Anthracene	ND	10								
Benz(a)anthracene	ND	5.0								
Benzo(b)fluoranthene	ND	10								
Benzoic acid	ND	20								
Bis(2-ethylhexyl)phthalate	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
1,4-Dichlorobenzene	ND	5.0								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	20								
Fluoranthene	ND	10								
Fluorene	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
1-Methylnaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
Naphthalene	ND	5.0								
Phenanthrene	ND	10								
Phenol	ND	20								
Pyrene	ND	10								
Pyridine	ND	40								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	70		200.0		35.2	29.4	87.7			
Surr: Phenol-d5	54		200.0		26.9	28.5	64.7			S
Surr: 2,4,6-Tribromophenol	71		200.0		35.7	18.6	129			
Surr: Nitrobenzene-d5	46		100.0		46.4	36.9	103			
Surr: 2-Fluorobiphenyl	40		100.0		40.2	38.1	99.9			
Surr: 4-Terphenyl-d14	62		100.0		61.9	48	155			

Sample ID: lcs-68332	SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: LCSW	Batch ID: 68332	RunNo: 89327								
Prep Date: 6/24/2022	Analysis Date: 7/7/2022	SeqNo: 3177341 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Page 77 of 80

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: lcs-68332	SampType: LCS				TestCode: EPA Method 8270C: Semivolatiles					
Client ID: LCSW	Batch ID: 68332				RunNo: 89327					
Prep Date: 6/24/2022	Analysis Date: 7/7/2022				SeqNo: 3177341	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	67	10	100.0	0	67.4	21.3	104			
1,4-Dichlorobenzene	61	5.0	100.0	0	60.8	15	89.8			
Phenol	92	20	200.0	0	45.8	17	61.1			
Pyrene	85	10	100.0	0	85.4	61	123			
Surr: 2-Fluorophenol	110		200.0		55.7	29.4	87.7			
Surr: Phenol-d5	85		200.0		42.3	28.5	64.7			
Surr: 2,4,6-Tribromophenol	130		200.0		63.2	18.6	129			
Surr: Nitrobenzene-d5	73		100.0		73.4	36.9	103			
Surr: 2-Fluorobiphenyl	68		100.0		68.5	38.1	99.9			
Surr: 4-Terphenyl-d14	94		100.0		94.0	48	155			

Sample ID: lcsd-68332	SampType: LCSD				TestCode: EPA Method 8270C: Semivolatiles					
Client ID: LCSS02	Batch ID: 68332				RunNo: 89327					
Prep Date: 6/24/2022	Analysis Date: 7/7/2022				SeqNo: 3177342	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	55	10	100.0	0	54.9	21.3	104	20.4	45.3	
1,4-Dichlorobenzene	50	5.0	100.0	0	50.0	15	89.8	19.5	39.6	
Phenol	75	20	200.0	0	37.4	17	61.1	20.2	42.5	
Pyrene	78	10	100.0	0	77.9	61	123	9.22	11.8	
Surr: 2-Fluorophenol	91		200.0		45.3	29.4	87.7	0	0	
Surr: Phenol-d5	70		200.0		35.0	28.5	64.7	0	0	
Surr: 2,4,6-Tribromophenol	120		200.0		62.3	18.6	129	0	0	
Surr: Nitrobenzene-d5	57		100.0		57.5	36.9	103	0	0	
Surr: 2-Fluorobiphenyl	52		100.0		52.3	38.1	99.9	0	0	
Surr: 4-Terphenyl-d14	86		100.0		86.1	48	155	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2206B30

15-Aug-22

Client: Marathon

Project: 2022 GW Sampling 2nd Quarter

Sample ID: mb-68332	SampType: MBLK	TestCode: EPA Method 8270SIM								
Client ID: PBW	Batch ID: 68332	RunNo: 89275								
Prep Date: 6/24/2022	Analysis Date: 7/6/2022	SeqNo: 3174738			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.30								
1-Methylnaphthalene	ND	0.30								
2-Methylnaphthalene	ND	0.30								
Acenaphthene	ND	0.30								
Fluorene	ND	0.30								
Phenanthrene	ND	0.30								
Anthracene	ND	0.30								
Fluoranthene	ND	0.30								
Pyrene	ND	1.0								
Benz(a)anthracene	ND	0.30								
Chrysene	ND	0.30								
Benzo(b)fluoranthene	ND	0.30								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	50		100.0		50.4	31.6	100			
Surr: 2,4,6-Tribromophenol	73		200.0		36.5	22	101			
Surr: 2-Fluorobiphenyl	49		100.0		49.4	26.7	90.1			
Surr: 4-Terphenyl-d14	85		100.0		84.8	72.3	147			

Sample ID: lcs-68332 lf	SampType: LCS	TestCode: EPA Method 8270SIM								
Client ID: LCSW	Batch ID: 68332	RunNo: 89275								
Prep Date: 6/24/2022	Analysis Date: 7/6/2022	SeqNo: 3174739			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	1.1	0.10	2.000	0	53.0	20.2	48.4			S
Naphthalene	1.5	0.30	2.000	0	77.0	21.3	79.9			
1-Methylnaphthalene	1.5	0.30	2.000	0	75.0	22.2	80.3			
2-Methylnaphthalene	1.5	0.30	2.000	0	74.0	20.6	80.1			
Acenaphthene	1.6	0.30	2.000	0	82.0	29.8	82.7			
Fluorene	1.7	0.30	2.000	0	84.0	33.3	86			
Phenanthrene	1.8	0.30	2.000	0	91.0	38.2	93.9			
Anthracene	1.8	0.30	2.000	0	89.0	41.1	95.6			
Fluoranthene	2.0	0.30	2.000	0	99.0	52.9	123			
Pyrene	1.7	1.0	2.000	0	85.0	51	113			
Benz(a)anthracene	1.9	0.30	2.000	0	97.0	51	147			
Chrysene	1.8	0.30	2.000	0	88.0	55.3	115			
Benzo(b)fluoranthene	1.8	0.30	2.000	0	88.0	44.4	136			
Indeno(1,2,3-cd)pyrene	1.8	0.30	2.000	0	90.0	31.4	165			
Surr: Nitrobenzene-d5	81		100.0		81.2	31.6	100			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2206B30

15-Aug-22

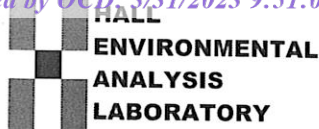
Client: Marathon**Project:** 2022 GW Sampling 2nd Quarter

Sample ID: Ics-68332 If		SampType: LCS		TestCode: EPA Method 8270SIM						
Client ID: LCSW		Batch ID: 68332		RunNo: 89275						
Prep Date: 6/24/2022		Analysis Date: 7/6/2022		SeqNo: 3174739			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	92		200.0		45.8	22	101			
Surr: 2-Fluorobiphenyl	75		100.0		75.4	26.7	90.1			
Surr: 4-Terphenyl-d14	95		100.0		95.0	72.3	147			

Sample ID: Icsd-68332 If		SampType: LCSD			TestCode: EPA Method 8270SIM					
Client ID: LCSS02		Batch ID: 68332			RunNo: 89275					
Prep Date: 6/24/2022		Analysis Date: 7/6/2022			SeqNo: 3174740		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	1.1	1.0	2.000	0	55.0	20.2	48.4	3.70	30.1	S
Naphthalene	1.5	0.30	2.000	0	74.0	21.3	79.9	3.97	25.6	
1-Methylnaphthalene	1.4	0.30	2.000	0	72.0	22.2	80.3	4.08	25	
2-Methylnaphthalene	1.4	0.30	2.000	0	70.0	20.6	80.1	5.56	25	
Acenaphthene	1.7	0.30	2.000	0	83.0	29.8	82.7	1.21	27.8	S
Fluorene	1.7	0.30	2.000	0	86.0	33.3	86	2.35	26.4	
Phenanthrene	1.9	0.30	2.000	0	94.0	38.2	93.9	3.24	27.9	S
Anthracene	1.8	0.30	2.000	0	90.0	41.1	95.6	1.12	25.6	
Fluoranthene	2.0	0.30	2.000	0	98.0	52.9	123	1.02	22.8	
Pyrene	1.8	1.0	2.000	0	89.0	51	113	4.60	20	
Benz(a)anthracene	2.0	0.30	2.000	0	101	51	147	4.04	24.1	
Chrysene	1.9	0.30	2.000	0	94.0	55.3	115	6.59	20	
Benzo(b)fluoranthene	1.8	0.30	2.000	0	91.0	44.4	136	3.35	24.5	
Indeno(1,2,3-cd)pyrene	1.8	0.30	2.000	0	91.0	31.4	165	1.10	21.1	
Surr: Nitrobenzene-d5	84		100.0		83.6	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	98		200.0		49.2	22	101	0	0	
Surr: 2-Fluorobiphenyl	79		100.0		79.1	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	100		100.0		103	72.3	147	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon**Work Order Number: **2206B30**

RcptNo: 1

Received By: **Juan Rojas** 6/22/2022 7:20:00 AMCompleted By: **Cheyenne Cason** 6/22/2022 8:27:46 AMReviewed By: **KVG** 6.22.22Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☒ No ☒ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH: 168
<2 or >12 unless noted

Adjusted? yesChecked by: ju 6/22/22Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks: 0.5ml of H2O3 was added to sample 004D, 006D for pH 2. ju 6/22/22.

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.7	Good	Yes			
2	2.2	Good	Yes			
3	0.4	Good	Yes			
4	5.3	Good	Yes			

Client: Marathon Gallup Refinery			☒ Standard ☐ Rush			
Mailing Address: 92 Giant Crossing Road Jamestown, NM, 87347			Project Name:			
Phone #: 808-640-1823			2022 GW Sampling 2nd Quarter			
email or Fax#:			Project #: 697-080-001			
QA/QC Package: ☒ Level 4 (Full Validation)			Project Manager: Lesli Alexander/Mackensie Swift			
Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other			Sampler: On Ice: ☒ Yes ☐ No			
X EDD (Type)			# of Coolers: 4			
			Cooler Temp (including CF): See Remarks			
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
6/21	8:00		EB-6-21-22	14		001
6/21	8:20		MAK7E-46	14		002
6/21	8:45		MAK7E-18R	14		003
6/21	9:05		MAK7E-35	14		004
6/21	9:35		MAK7E-38	14		005
6/21	10:00		MAK7E-11	14		006
6/21	10:20		MAK7E-16	12		007
6/21	10:20		EB-6-21-22	3		008
6/21	—		DUP-6-21-22	14		009
6/21	—		Trip Blank			010
Relinquished by: Hilario Trigo			Received by: [Signature]			
Time: 12:00			Via: courier			
Relinquished by:			Received by: [Signature]			
Time:			Date Time			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

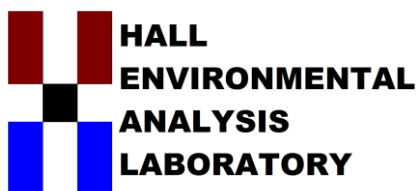
Analysis Request

See Analyte List											
8260B: VOC											
8270C: SVOC											
8270C SIM: PAH, 1,4 Dioxane											
8015: TPH GRO/DRO/MRO											
E200.7: Metals											
E200.7: Dissolved Metals											
E245.1 Mercury											
E504.1: EDB											
E335.4: Cyanide Subbed											
537.1: PFAS											
SM 5201B: BOD											
410.4: COD											
SM9223B E. Coli											

6.8-0.1 = 0.7
2.3-0.1 = 2.2
0.5-0.1 = 0.4
5.4-0.1 = 5.3

GOT Run 8270 only for Volume

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

March 28, 2022

Lesli Alexander
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 632-3911

RE: 2022 GW Sampling 1st Qtr

OrderNo.: 2203825

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 11 sample(s) on 3/16/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

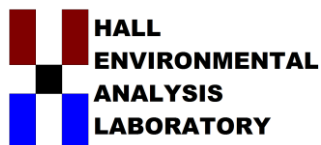
Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Case Narrative

WO#: 2203825
Date: 3/28/2022

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Analytical Notes Regarding EPA Method 8270:

"S" flagged surrogates denote low surrogate recoveries due to matrix interferences/sample dilution.

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 8:30:00 AM

Lab ID: 2203825-001A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	0.23	0.23	1.0	J	µg/L	1	3/19/2022 1:00:49 AM	R86601
Toluene	ND	0.20	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Acetone	ND	2.5	10		µg/L	1	3/19/2022 1:00:49 AM	R86601
Bromomethane	ND	0.85	3.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
2-Butanone	7.3	2.0	10	J	µg/L	1	3/19/2022 1:00:49 AM	R86601
Carbon disulfide	ND	0.59	10		µg/L	1	3/19/2022 1:00:49 AM	R86601
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Chloroform	ND	0.13	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Chloromethane	0.91	0.41	3.0	J	µg/L	1	3/19/2022 1:00:49 AM	R86601
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Styrene	ND	0.14	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/19/2022 1:00:49 AM	R86601
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/19/2022 1:00:49 AM	R86601
Surr: 1,2-Dichloroethane-d4	90.6	0	70-130		%Rec	1	3/19/2022 1:00:49 AM	R86601
Surr: 4-Bromofluorobenzene	96.6	0	70-130		%Rec	1	3/19/2022 1:00:49 AM	R86601
Surr: Dibromofluoromethane	94.9	0	70-130		%Rec	1	3/19/2022 1:00:49 AM	R86601
Surr: Toluene-d8	102	0	70-130		%Rec	1	3/19/2022 1:00:49 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.037	0.012	0.050	J	mg/L	1	3/19/2022 1:00:49 AM	R86601
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/19/2022 1:00:49 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: EB 3-15-22
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/15/2022 8:30:00 AM
Lab ID: 2203825-001B Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 4:05:39 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 8:30:00 AM

Lab ID: 2203825-001C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.026	0.016	0.064	J	mg/L	1	3/18/2022 4:29:41 PM	66219
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/18/2022 4:29:41 PM	66219
Surr: DNOP	101	0	42.2-138		%Rec	1	3/18/2022 4:29:41 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/22/2022 12:03:15 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/22/2022 12:03:15 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/22/2022 12:03:15 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/22/2022 12:03:15 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/22/2022 12:03:15 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/22/2022 12:03:15 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/22/2022 12:03:15 PM	66226
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/22/2022 12:03:15 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/22/2022 12:03:15 PM	66226
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/22/2022 12:03:15 PM	66226
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/22/2022 12:03:15 PM	66226
Phenol	ND	0.33	5.0		µg/L	1	3/22/2022 12:03:15 PM	66226
Pyridine	ND	10	10		µg/L	1	3/22/2022 12:03:15 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/22/2022 12:03:15 PM	66226
Surr: 2-Fluorophenol	42.7	0	29.4-87.7		%Rec	1	3/22/2022 12:03:15 PM	66226
Surr: Phenol-d5	32.0	0	28.5-64.7		%Rec	1	3/22/2022 12:03:15 PM	66226
Surr: 2,4,6-Tribromophenol	50.8	0	18.6-129		%Rec	1	3/22/2022 12:03:15 PM	66226
Surr: Nitrobenzene-d5	53.8	0	36.9-103		%Rec	1	3/22/2022 12:03:15 PM	66226
Surr: 2-Fluorobiphenyl	54.8	0	38.1-99.9		%Rec	1	3/22/2022 12:03:15 PM	66226
Surr: 4-Terphenyl-d14	91.6	0	48-155		%Rec	1	3/22/2022 12:03:15 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/21/2022 12:57:00 PM	R86628
Naphthalene	ND	0.034	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Acenaphthene	ND	0.031	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Fluorene	ND	0.031	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Phenanthrene	ND	0.057	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Anthracene	ND	0.034	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 12:57:00 PM	R86628
Pyrene	ND	0.16	0.40		µg/L	1	3/21/2022 12:57:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 12:57:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 12:57:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 8:30:00 AM

Lab ID: 2203825-001C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	56.6	0	31.6-100		%Rec	1	3/21/2022 12:57:00 PM	R86628
Surr: 2-Fluorobiphenyl	54.6	0	26.7-90.1		%Rec	1	3/21/2022 12:57:00 PM	R86628
Surr: 4-Terphenyl-d14	101	0	72.3-147		%Rec	1	3/21/2022 12:57:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 8:30:00 AM

Lab ID: 2203825-001D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	ND	0.00017	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Vanadium	ND	0.00058	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Arsenic	ND	0.00013	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Barium	ND	0.00046	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Beryllium	ND	0.00025	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:26:19 PM	66254
Chromium	ND	0.00056	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Lead	ND	0.000061	0.00050		mg/L	1	3/21/2022 1:26:19 PM	66254
Nickel	ND	0.00048	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Selenium	ND	0.00037	0.0010		mg/L	1	3/21/2022 1:26:19 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:26:19 PM	66254
Zinc	ND	0.0038	0.010		mg/L	1	3/21/2022 1:26:19 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:18:40 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 8:30:00 AM

Lab ID: 2203825-001E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	ND	0.0024	0.0060		mg/L	1	3/17/2022 9:16:12 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:16:12 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 9:16:12 AM	A86535
Zinc	0.0063	0.0032	0.010	J	mg/L	1	3/17/2022 9:16:12 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:05:46 PM	A86624
Arsenic	ND	0.00012	0.0010		mg/L	1	3/18/2022 2:46:16 PM	B86600
Barium	0.00082	0.00046	0.0010	J	mg/L	1	3/18/2022 2:46:16 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 2:46:16 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 2:46:16 PM	B86600
Chromium	ND	0.00014	0.0010		mg/L	1	3/18/2022 2:46:16 PM	B86600
Lead	ND	0.000057	0.00050		mg/L	1	3/18/2022 2:46:16 PM	B86600
Nickel	ND	0.00048	0.0010		mg/L	1	3/18/2022 2:46:16 PM	B86600
Selenium	ND	0.00034	0.0010		mg/L	1	3/18/2022 2:46:16 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:20:49 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-1

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 9:00:00 AM

Lab ID: 2203825-002A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Toluene	ND	0.20	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Methyl tert-butyl ether (MTBE)	2.3	0.39	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
1,2-Dichloroethane (EDC)	0.42	0.25	1.0	J	µg/L	1	3/19/2022 1:29:19 AM	R86601
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Acetone	ND	2.5	10		µg/L	1	3/19/2022 1:29:19 AM	R86601
Bromomethane	ND	0.85	3.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
2-Butanone	ND	2.0	10		µg/L	1	3/19/2022 1:29:19 AM	R86601
Carbon disulfide	ND	0.59	10		µg/L	1	3/19/2022 1:29:19 AM	R86601
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Chloroform	ND	0.13	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Chloromethane	0.77	0.41	3.0	J	µg/L	1	3/19/2022 1:29:19 AM	R86601
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Styrene	ND	0.14	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/19/2022 1:29:19 AM	R86601
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/19/2022 1:29:19 AM	R86601
Surr: 1,2-Dichloroethane-d4	91.5	0	70-130		%Rec	1	3/19/2022 1:29:19 AM	R86601
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/19/2022 1:29:19 AM	R86601
Surr: Dibromofluoromethane	93.2	0	70-130		%Rec	1	3/19/2022 1:29:19 AM	R86601
Surr: Toluene-d8	104	0	70-130		%Rec	1	3/19/2022 1:29:19 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.041	0.012	0.050	J	mg/L	1	3/19/2022 1:29:19 AM	R86601
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	3/19/2022 1:29:19 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: OW-1
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/15/2022 9:00:00 AM
Lab ID: 2203825-002B Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/21/2022 4:20:47 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-1

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 9:00:00 AM

Lab ID: 2203825-002C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.022	0.016	0.064	J	mg/L	1	3/18/2022 4:53:22 PM	66219
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/18/2022 4:53:22 PM	66219
Surr: DNOP	94.8	0	42.2-138		%Rec	1	3/18/2022 4:53:22 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/22/2022 12:44:40 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/22/2022 12:44:40 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/22/2022 12:44:40 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/22/2022 12:44:40 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/22/2022 12:44:40 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/22/2022 12:44:40 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/22/2022 12:44:40 PM	66226
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/22/2022 12:44:40 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/22/2022 12:44:40 PM	66226
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/22/2022 12:44:40 PM	66226
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/22/2022 12:44:40 PM	66226
Phenol	ND	0.33	5.0		µg/L	1	3/22/2022 12:44:40 PM	66226
Pyridine	ND	10	10		µg/L	1	3/22/2022 12:44:40 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/22/2022 12:44:40 PM	66226
Surr: 2-Fluorophenol	38.4	0	29.4-87.7		%Rec	1	3/22/2022 12:44:40 PM	66226
Surr: Phenol-d5	29.2	0	28.5-64.7		%Rec	1	3/22/2022 12:44:40 PM	66226
Surr: 2,4,6-Tribromophenol	53.8	0	18.6-129		%Rec	1	3/22/2022 12:44:40 PM	66226
Surr: Nitrobenzene-d5	50.4	0	36.9-103		%Rec	1	3/22/2022 12:44:40 PM	66226
Surr: 2-Fluorobiphenyl	49.0	0	38.1-99.9		%Rec	1	3/22/2022 12:44:40 PM	66226
Surr: 4-Terphenyl-d14	95.2	0	48-155		%Rec	1	3/22/2022 12:44:40 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	0.20	0.048	1.0	J	µg/L	1	3/21/2022 1:42:00 PM	R86628
Naphthalene	0.14	0.034	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
1-Methylnaphthalene	0.28	0.024	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
2-Methylnaphthalene	0.40	0.034	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
Acenaphthene	ND	0.031	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
Fluorene	ND	0.031	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
Phenanthrene	0.080	0.057	0.10	J	µg/L	1	3/21/2022 1:42:00 PM	R86628
Anthracene	ND	0.034	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 1:42:00 PM	R86628
Pyrene	0.24	0.16	0.40	J	µg/L	1	3/21/2022 1:42:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 1:42:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 1:42:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-1

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 9:00:00 AM

Lab ID: 2203825-002C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	54.0	0	31.6-100		%Rec	1	3/21/2022 1:42:00 PM	R86628
Surr: 2-Fluorobiphenyl	50.9	0	26.7-90.1		%Rec	1	3/21/2022 1:42:00 PM	R86628
Surr: 4-Terphenyl-d14	100	0	72.3-147		%Rec	1	3/21/2022 1:42:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-1

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 9:00:00 AM

Lab ID: 2203825-002D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	ND	0.00017	0.0010		mg/L	1	3/21/2022 1:33:38 PM	66254
Vanadium	0.044	0.0029	0.0050		mg/L	5	3/21/2022 2:27:23 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:33:38 PM	66254
Arsenic	0.00069	0.00013	0.0010	J	mg/L	1	3/21/2022 1:33:38 PM	66254
Barium	0.044	0.0023	0.0050		mg/L	5	3/21/2022 2:27:23 PM	66254
Beryllium	ND	0.00025	0.0010		mg/L	1	3/21/2022 1:33:38 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:33:38 PM	66254
Chromium	0.0031	0.00056	0.0010		mg/L	1	3/21/2022 1:33:38 PM	66254
Lead	0.00020	0.000061	0.00050	J	mg/L	1	3/21/2022 1:33:38 PM	66254
Nickel	0.0021	0.00048	0.0010		mg/L	1	3/21/2022 1:33:38 PM	66254
Selenium	0.0027	0.00037	0.0010		mg/L	1	3/21/2022 1:33:38 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:33:38 PM	66254
Zinc	ND	0.0038	0.010		mg/L	1	3/21/2022 1:33:38 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:22:59 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-1

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 9:00:00 AM

Lab ID: 2203825-002E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	ND	0.0024	0.0060		mg/L	1	3/17/2022 9:25:52 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:25:52 AM	A86535
Vanadium	0.041	0.0017	0.050	J	mg/L	1	3/17/2022 9:25:52 AM	A86535
Zinc	0.0094	0.0032	0.010	J	mg/L	1	3/17/2022 9:25:52 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:08:27 PM	A86624
Arsenic	0.00052	0.00012	0.0010	J	mg/L	1	3/18/2022 2:48:57 PM	B86600
Barium	0.046	0.00046	0.0010		mg/L	1	3/18/2022 2:48:57 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 2:48:57 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 2:48:57 PM	B86600
Chromium	0.00052	0.00014	0.0010	J	mg/L	1	3/18/2022 2:48:57 PM	B86600
Lead	0.000077	0.000057	0.00050	J	mg/L	1	3/18/2022 2:48:57 PM	B86600
Nickel	0.00052	0.00048	0.0010	J	mg/L	1	3/18/2022 2:48:57 PM	B86600
Selenium	0.0027	0.00034	0.0010		mg/L	1	3/18/2022 2:48:57 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00036	0.000091	0.00020		mg/L	1	3/21/2022 4:25:09 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-17R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:00:00 AM

Lab ID: 2203825-003A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	4500	23	100		µg/L	100	3/19/2022 3:51:42 AM	R86601
Toluene	22000	200	1000		µg/L	1E+	3/21/2022 1:20:31 PM	R86626
Ethylbenzene	1400	21	100		µg/L	100	3/19/2022 3:51:42 AM	R86601
Methyl tert-butyl ether (MTBE)	4800	39	100		µg/L	100	3/19/2022 3:51:42 AM	R86601
1,2,4-Trimethylbenzene	830	1.2	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
1,3,5-Trimethylbenzene	210	1.8	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
1,2-Dichloroethane (EDC)	4.2	2.5	10	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
1,2-Dibromoethane (EDB)	ND	3.0	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
Acetone	ND	25	100		µg/L	10	3/19/2022 4:20:08 AM	R86601
Bromomethane	ND	8.5	30		µg/L	10	3/19/2022 4:20:08 AM	R86601
2-Butanone	ND	20	100		µg/L	10	3/19/2022 4:20:08 AM	R86601
Carbon disulfide	ND	5.9	100		µg/L	10	3/19/2022 4:20:08 AM	R86601
Chlorobenzene	ND	1.6	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
Chloroform	7.2	1.3	10	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
Chloromethane	ND	4.1	30		µg/L	10	3/19/2022 4:20:08 AM	R86601
cis-1,2-DCE	ND	3.9	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
1,1-Dichloroethane	7.5	2.7	10	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
1,1-Dichloroethene	ND	2.0	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
Isopropylbenzene	55	1.8	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
4-Isopropyltoluene	5.0	2.0	10	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
Methylene Chloride	ND	5.0	30		µg/L	10	3/19/2022 4:20:08 AM	R86601
n-Butylbenzene	16	2.5	30	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
n-Propylbenzene	140	1.8	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
sec-Butylbenzene	5.5	1.4	10	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
Styrene	2.6	1.4	10	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	3/19/2022 4:20:08 AM	R86601
Vinyl chloride	4.4	3.2	10	J	µg/L	10	3/19/2022 4:20:08 AM	R86601
Xylenes, Total	6800	37	150		µg/L	100	3/19/2022 3:51:42 AM	R86601
Surr: 1,2-Dichloroethane-d4	90.9	0	70-130		%Rec	10	3/19/2022 4:20:08 AM	R86601
Surr: 4-Bromofluorobenzene	93.1	0	70-130		%Rec	10	3/19/2022 4:20:08 AM	R86601
Surr: Dibromofluoromethane	87.3	0	70-130		%Rec	10	3/19/2022 4:20:08 AM	R86601
Surr: Toluene-d8	102	0	70-130		%Rec	10	3/19/2022 4:20:08 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	78	0.12	0.50		mg/L	10	3/19/2022 4:20:08 AM	R86601
Surr: 4-Bromofluorobenzene	96.2	0	70-130		%Rec	10	3/19/2022 4:20:08 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203825-003B

Client Sample ID: MKTF-17R

Collection Date: 3/15/2022 10:00:00 AM

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 4:35:55 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-17R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:00:00 AM

Lab ID: 2203825-003C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	7.0	0.16	0.64		mg/L	10	3/21/2022 2:17:33 PM	66219
Motor Oil Range Organics (MRO)	ND	0.52	0.80	D	mg/L	10	3/21/2022 2:17:33 PM	66219
Surr: DNOP	0	0	42.2-138	S	%Rec	10	3/21/2022 2:17:33 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/22/2022 1:25:55 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/22/2022 1:25:55 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/22/2022 1:25:55 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/22/2022 1:25:55 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/22/2022 1:25:55 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/22/2022 1:25:55 PM	66226
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
1-Methylnaphthalene	28	0.60	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
2-Methylnaphthalene	38	0.41	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
2-Methylphenol	20	0.51	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
3+4-Methylphenol	11	0.45	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
Naphthalene	ND	2.2	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
Phenol	7.5	0.33	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
Pyridine	ND	10	10		µg/L	1	3/22/2022 1:25:55 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/22/2022 1:25:55 PM	66226
Surr: 2-Fluorophenol	0	0	29.4-87.7	S	%Rec	1	3/22/2022 1:25:55 PM	66226
Surr: Phenol-d5	27.3	0	28.5-64.7	S	%Rec	1	3/22/2022 1:25:55 PM	66226
Surr: 2,4,6-Tribromophenol	66.0	0	18.6-129		%Rec	1	3/22/2022 1:25:55 PM	66226
Surr: Nitrobenzene-d5	47.0	0	36.9-103		%Rec	1	3/22/2022 1:25:55 PM	66226
Surr: 2-Fluorobiphenyl	44.1	0	38.1-99.9		%Rec	1	3/22/2022 1:25:55 PM	66226
Surr: 4-Terphenyl-d14	75.0	0	48-155		%Rec	1	3/22/2022 1:25:55 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	4.0	0.048	1.0		µg/L	1	3/21/2022 2:27:00 PM	R86628
Acenaphthene	1.4	0.031	0.10		µg/L	1	3/21/2022 2:27:00 PM	R86628
Fluorene	3.3	0.031	0.10		µg/L	1	3/21/2022 2:27:00 PM	R86628
Phenanthrene	3.3	0.057	0.10		µg/L	1	3/21/2022 2:27:00 PM	R86628
Anthracene	0.52	0.034	0.10		µg/L	1	3/21/2022 2:27:00 PM	R86628
Fluoranthene	0.24	0.10	0.20		µg/L	1	3/21/2022 2:27:00 PM	R86628
Pyrene	0.42	0.16	0.40		µg/L	1	3/21/2022 2:27:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 2:27:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 2:27:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 2:27:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 2:27:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix interference

B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-17R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:00:00 AM

Lab ID: 2203825-003C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	51.0	0	31.6-100		%Rec	1	3/21/2022 2:27:00 PM	R86628
Surr: 2-Fluorobiphenyl	47.0	0	26.7-90.1		%Rec	1	3/21/2022 2:27:00 PM	R86628
Surr: 4-Terphenyl-d14	76.2	0	72.3-147		%Rec	1	3/21/2022 2:27:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-17R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:00:00 AM

Lab ID: 2203825-003D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	0.0023	0.00017	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Vanadium	0.0062	0.00058	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Arsenic	0.0045	0.00013	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Barium	0.45	0.0092	0.020		mg/L	20	3/21/2022 2:32:15 PM	66254
Beryllium	ND	0.00025	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:38:31 PM	66254
Chromium	0.0031	0.00056	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Lead	0.0021	0.000061	0.00050		mg/L	1	3/21/2022 1:38:31 PM	66254
Nickel	0.0076	0.00048	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Selenium	ND	0.00037	0.0010		mg/L	1	3/21/2022 1:38:31 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:38:31 PM	66254
Zinc	0.049	0.0038	0.010		mg/L	1	3/21/2022 1:38:31 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:27:19 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-17R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:00:00 AM

Lab ID: 2203825-003E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	0.0033	0.0024	0.0060	J	mg/L	1	3/17/2022 9:29:12 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:29:12 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 9:29:12 AM	A86535
Zinc	0.033	0.0032	0.010		mg/L	1	3/17/2022 9:29:12 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:11:09 PM	A86624
Arsenic	0.0037	0.00012	0.0010		mg/L	1	3/18/2022 2:57:02 PM	B86600
Barium	0.45	0.0046	0.010		mg/L	10	3/18/2022 3:47:45 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 2:57:02 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 2:57:02 PM	B86600
Chromium	0.00023	0.00014	0.0010	J	mg/L	1	3/18/2022 2:57:02 PM	B86600
Lead	0.00024	0.000057	0.00050	J	mg/L	1	3/18/2022 2:57:02 PM	B86600
Nickel	0.0057	0.00048	0.0010		mg/L	1	3/18/2022 2:57:02 PM	B86600
Selenium	ND	0.00034	0.0010		mg/L	1	3/18/2022 2:57:02 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:29:27 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:20:00 AM

Lab ID: 2203825-004A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	1800	23	100		µg/L	100	3/19/2022 4:48:32 AM	R86601
Toluene	630	2.0	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Ethylbenzene	42	2.1	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Methyl tert-butyl ether (MTBE)	110	3.9	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
1,2,4-Trimethylbenzene	38	1.2	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
1,3,5-Trimethylbenzene	12	1.8	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
1,2-Dichloroethane (EDC)	ND	2.5	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
1,2-Dibromoethane (EDB)	ND	3.0	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Acetone	ND	25	100		µg/L	10	3/19/2022 5:16:54 AM	R86601
Bromomethane	ND	8.5	30		µg/L	10	3/19/2022 5:16:54 AM	R86601
2-Butanone	ND	20	100		µg/L	10	3/19/2022 5:16:54 AM	R86601
Carbon disulfide	ND	5.9	100		µg/L	10	3/19/2022 5:16:54 AM	R86601
Chlorobenzene	ND	1.6	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Chloroform	1.9	1.3	10	J	µg/L	10	3/19/2022 5:16:54 AM	R86601
Chloromethane	ND	4.1	30		µg/L	10	3/19/2022 5:16:54 AM	R86601
cis-1,2-DCE	4.6	3.9	10	J	µg/L	10	3/19/2022 5:16:54 AM	R86601
1,1-Dichloroethane	ND	2.7	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
1,1-Dichloroethene	ND	2.0	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Isopropylbenzene	4.4	1.8	10	J	µg/L	10	3/19/2022 5:16:54 AM	R86601
4-Isopropyltoluene	2.2	2.0	10	J	µg/L	10	3/19/2022 5:16:54 AM	R86601
Methylene Chloride	ND	5.0	30		µg/L	10	3/19/2022 5:16:54 AM	R86601
n-Butylbenzene	3.5	2.5	30	J	µg/L	10	3/19/2022 5:16:54 AM	R86601
n-Propylbenzene	6.6	1.8	10	J	µg/L	10	3/19/2022 5:16:54 AM	R86601
sec-Butylbenzene	1.7	1.4	10	J	µg/L	10	3/19/2022 5:16:54 AM	R86601
Styrene	ND	1.4	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Vinyl chloride	ND	3.2	10		µg/L	10	3/19/2022 5:16:54 AM	R86601
Xylenes, Total	300	3.7	15		µg/L	10	3/19/2022 5:16:54 AM	R86601
Surr: 1,2-Dichloroethane-d4	91.7	0	70-130		%Rec	10	3/19/2022 5:16:54 AM	R86601
Surr: 4-Bromofluorobenzene	94.3	0	70-130		%Rec	10	3/19/2022 5:16:54 AM	R86601
Surr: Dibromofluoromethane	91.4	0	70-130		%Rec	10	3/19/2022 5:16:54 AM	R86601
Surr: Toluene-d8	101	0	70-130		%Rec	10	3/19/2022 5:16:54 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	7.2	0.12	0.50		mg/L	10	3/19/2022 5:16:54 AM	R86601
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	10	3/19/2022 5:16:54 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:20:00 AM

Lab ID: 2203825-004B

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 4:51:05 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:20:00 AM

Lab ID: 2203825-004C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	4.0	0.16	0.64		mg/L	10	3/21/2022 2:41:08 PM	66219
Motor Oil Range Organics (MRO)	ND	0.52	0.80	D	mg/L	10	3/21/2022 2:41:08 PM	66219
Surr: DNOP	0	0	42.2-138	S	%Rec	10	3/21/2022 2:41:08 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/22/2022 2:07:23 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/22/2022 2:07:23 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/22/2022 2:07:23 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/22/2022 2:07:23 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/22/2022 2:07:23 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/22/2022 2:07:23 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/22/2022 2:07:23 PM	66226
2,4-Dimethylphenol	2.7	0.97	5.0	J	µg/L	1	3/22/2022 2:07:23 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/22/2022 2:07:23 PM	66226
1-Methylnaphthalene	110	0.60	5.0		µg/L	1	3/22/2022 2:07:23 PM	66226
2-Methylnaphthalene	140	0.41	5.0		µg/L	1	3/22/2022 2:07:23 PM	66226
2-Methylphenol	4.4	0.51	5.0	J	µg/L	1	3/22/2022 2:07:23 PM	66226
3+4-Methylphenol	3.5	0.45	5.0	J	µg/L	1	3/22/2022 2:07:23 PM	66226
Naphthalene	ND	2.2	5.0		µg/L	1	3/22/2022 2:07:23 PM	66226
Phenol	12	0.33	5.0		µg/L	1	3/22/2022 2:07:23 PM	66226
Pyridine	ND	10	10		µg/L	1	3/22/2022 2:07:23 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/22/2022 2:07:23 PM	66226
Surr: 2-Fluorophenol	53.9	0	29.4-87.7		%Rec	1	3/22/2022 2:07:23 PM	66226
Surr: Phenol-d5	39.3	0	28.5-64.7		%Rec	1	3/22/2022 2:07:23 PM	66226
Surr: 2,4,6-Tribromophenol	72.1	0	18.6-129		%Rec	1	3/22/2022 2:07:23 PM	66226
Surr: Nitrobenzene-d5	62.7	0	36.9-103		%Rec	1	3/22/2022 2:07:23 PM	66226
Surr: 2-Fluorobiphenyl	61.2	0	38.1-99.9		%Rec	1	3/22/2022 2:07:23 PM	66226
Surr: 4-Terphenyl-d14	88.5	0	48-155		%Rec	1	3/22/2022 2:07:23 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	9.6	0.048	1.0		µg/L	1	3/21/2022 3:11:00 PM	R86628
Acenaphthene	7.1	0.031	0.10		µg/L	1	3/21/2022 3:11:00 PM	R86628
Fluorene	8.5	0.031	0.10		µg/L	1	3/21/2022 3:11:00 PM	R86628
Phenanthrene	6.7	0.057	0.10		µg/L	1	3/21/2022 3:11:00 PM	R86628
Anthracene	0.40	0.034	0.10		µg/L	1	3/21/2022 3:11:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 3:11:00 PM	R86628
Pyrene	ND	0.16	0.40		µg/L	1	3/21/2022 3:11:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 3:11:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 3:11:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 3:11:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 3:11:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:20:00 AM

Lab ID: 2203825-004C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	69.1	0	31.6-100		%Rec	1	3/21/2022 3:11:00 PM	R86628
Surr: 2-Fluorobiphenyl	63.0	0	26.7-90.1		%Rec	1	3/21/2022 3:11:00 PM	R86628
Surr: 4-Terphenyl-d14	80.9	0	72.3-147		%Rec	1	3/21/2022 3:11:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:20:00 AM

Lab ID: 2203825-004D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	0.0048	0.00017	0.0010		mg/L	1	3/21/2022 1:40:58 PM	66254
Vanadium	0.010	0.00058	0.0010		mg/L	1	3/21/2022 1:40:58 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:40:58 PM	66254
Arsenic	0.0070	0.00013	0.0010		mg/L	1	3/21/2022 1:40:58 PM	66254
Barium	1.7	0.023	0.050		mg/L	50	3/21/2022 2:34:42 PM	66254
Beryllium	0.00042	0.00025	0.0010	J	mg/L	1	3/21/2022 1:40:58 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:40:58 PM	66254
Chromium	0.0068	0.00056	0.0010		mg/L	1	3/21/2022 1:40:58 PM	66254
Lead	0.0043	0.000061	0.00050		mg/L	1	3/21/2022 1:40:58 PM	66254
Nickel	0.010	0.00048	0.0010		mg/L	1	3/21/2022 1:40:58 PM	66254
Selenium	0.00087	0.00037	0.0010	J	mg/L	1	3/21/2022 1:40:58 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:40:58 PM	66254
Zinc	0.0093	0.0038	0.010	J	mg/L	1	3/21/2022 1:40:58 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:35:51 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:20:00 AM

Lab ID: 2203825-004E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	0.0032	0.0024	0.0060	J	mg/L	1	3/17/2022 9:32:31 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:32:31 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 9:32:31 AM	A86535
Zinc	0.010	0.0032	0.010		mg/L	1	3/17/2022 9:32:31 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:19:15 PM	A86624
Arsenic	0.0056	0.00012	0.0010		mg/L	1	3/18/2022 2:59:43 PM	B86600
Barium	1.7	0.023	0.050		mg/L	50	3/18/2022 3:50:26 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 2:59:43 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 2:59:43 PM	B86600
Chromium	0.00025	0.00014	0.0010	J	mg/L	1	3/18/2022 2:59:43 PM	B86600
Lead	ND	0.000057	0.00050		mg/L	1	3/18/2022 2:59:43 PM	B86600
Nickel	0.0059	0.00048	0.0010		mg/L	1	3/18/2022 2:59:43 PM	B86600
Selenium	ND	0.00034	0.0010		mg/L	1	3/18/2022 2:59:43 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:38:00 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:45:00 AM

Lab ID: 2203825-005A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	0.49	0.23	1.0	J	µg/L	1	3/19/2022 5:45:16 AM	R86601
Toluene	0.80	0.20	1.0	J	µg/L	1	3/19/2022 5:45:16 AM	R86601
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Methyl tert-butyl ether (MTBE)	1.4	0.39	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
1,2-Dichloroethane (EDC)	0.41	0.25	1.0	J	µg/L	1	3/19/2022 5:45:16 AM	R86601
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Acetone	ND	2.5	10		µg/L	1	3/19/2022 5:45:16 AM	R86601
Bromomethane	ND	0.85	3.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
2-Butanone	ND	2.0	10		µg/L	1	3/19/2022 5:45:16 AM	R86601
Carbon disulfide	ND	0.59	10		µg/L	1	3/19/2022 5:45:16 AM	R86601
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Chloroform	ND	0.13	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Chloromethane	0.78	0.41	3.0	J	µg/L	1	3/19/2022 5:45:16 AM	R86601
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
1,1-Dichloroethene	0.61	0.20	1.0	J	µg/L	1	3/19/2022 5:45:16 AM	R86601
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Styrene	ND	0.14	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Trichloroethene (TCE)	0.57	0.20	1.0	J	µg/L	1	3/19/2022 5:45:16 AM	R86601
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/19/2022 5:45:16 AM	R86601
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/19/2022 5:45:16 AM	R86601
Surr: 1,2-Dichloroethane-d4	89.2	0	70-130		%Rec	1	3/19/2022 5:45:16 AM	R86601
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/19/2022 5:45:16 AM	R86601
Surr: Dibromofluoromethane	88.4	0	70-130		%Rec	1	3/19/2022 5:45:16 AM	R86601
Surr: Toluene-d8	103	0	70-130		%Rec	1	3/19/2022 5:45:16 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.047	0.012	0.050	J	mg/L	1	3/19/2022 5:45:16 AM	R86601
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	1	3/19/2022 5:45:16 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203825-005B

Client Sample ID: MKTF-38

Collection Date: 3/15/2022 10:45:00 AM

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 5:06:09 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:45:00 AM

Lab ID: 2203825-005C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.11	0.016	0.064		mg/L	1	3/18/2022 6:04:37 PM	66219
Motor Oil Range Organics (MRO)	0.066	0.052	0.080	J	mg/L	1	3/18/2022 6:04:37 PM	66219
Surr: DNOP	99.3	0	42.2-138		%Rec	1	3/18/2022 6:04:37 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/22/2022 2:48:37 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/22/2022 2:48:37 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/22/2022 2:48:37 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/22/2022 2:48:37 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/22/2022 2:48:37 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/22/2022 2:48:37 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/22/2022 2:48:37 PM	66226
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/22/2022 2:48:37 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/22/2022 2:48:37 PM	66226
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/22/2022 2:48:37 PM	66226
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/22/2022 2:48:37 PM	66226
Phenol	ND	0.33	5.0		µg/L	1	3/22/2022 2:48:37 PM	66226
Pyridine	ND	10	10		µg/L	1	3/22/2022 2:48:37 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/22/2022 2:48:37 PM	66226
Surr: 2-Fluorophenol	41.5	0	29.4-87.7		%Rec	1	3/22/2022 2:48:37 PM	66226
Surr: Phenol-d5	31.8	0	28.5-64.7		%Rec	1	3/22/2022 2:48:37 PM	66226
Surr: 2,4,6-Tribromophenol	33.8	0	18.6-129		%Rec	1	3/22/2022 2:48:37 PM	66226
Surr: Nitrobenzene-d5	54.8	0	36.9-103		%Rec	1	3/22/2022 2:48:37 PM	66226
Surr: 2-Fluorobiphenyl	54.2	0	38.1-99.9		%Rec	1	3/22/2022 2:48:37 PM	66226
Surr: 4-Terphenyl-d14	73.6	0	48-155		%Rec	1	3/22/2022 2:48:37 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	2.6	0.048	1.0		µg/L	1	3/21/2022 3:56:00 PM	R86628
Naphthalene	0.10	0.034	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Acenaphthene	ND	0.031	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Fluorene	ND	0.031	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Phenanthrene	ND	0.057	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Anthracene	ND	0.034	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 3:56:00 PM	R86628
Pyrene	0.16	0.16	0.40	J	µg/L	1	3/21/2022 3:56:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 3:56:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 3:56:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:45:00 AM

Lab ID: 2203825-005C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	61.7	0	31.6-100		%Rec	1	3/21/2022 3:56:00 PM	R86628
Surr: 2-Fluorobiphenyl	56.3	0	26.7-90.1		%Rec	1	3/21/2022 3:56:00 PM	R86628
Surr: 4-Terphenyl-d14	87.1	0	72.3-147		%Rec	1	3/21/2022 3:56:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:45:00 AM

Lab ID: 2203825-005D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	0.010	0.00017	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Vanadium	0.030	0.00058	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Arsenic	0.0047	0.00013	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Barium	0.71	0.0092	0.020		mg/L	20	3/21/2022 2:37:08 PM	66254
Beryllium	0.0011	0.00025	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Cadmium	0.00010	0.000080	0.00050	J	mg/L	1	3/21/2022 1:43:24 PM	66254
Chromium	0.014	0.00056	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Lead	0.011	0.000061	0.00050		mg/L	1	3/21/2022 1:43:24 PM	66254
Nickel	0.016	0.00048	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Selenium	0.0037	0.00037	0.0010		mg/L	1	3/21/2022 1:43:24 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:43:24 PM	66254
Zinc	0.029	0.0038	0.010		mg/L	1	3/21/2022 1:43:24 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:40:08 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 10:45:00 AM

Lab ID: 2203825-005E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	0.0038	0.0024	0.0060	J	mg/L	1	3/17/2022 9:35:19 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:35:19 AM	A86535
Vanadium	0.0041	0.0017	0.050	J	mg/L	1	3/17/2022 9:35:19 AM	A86535
Zinc	0.0055	0.0032	0.010	J	mg/L	1	3/17/2022 9:35:19 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:21:56 PM	A86624
Arsenic	0.0028	0.00012	0.0010		mg/L	1	3/18/2022 3:02:25 PM	B86600
Barium	0.061	0.0023	0.0050		mg/L	5	3/18/2022 3:53:07 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 3:02:25 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 3:02:25 PM	B86600
Chromium	0.0047	0.00014	0.0010		mg/L	1	3/18/2022 3:02:25 PM	B86600
Lead	0.000068	0.000057	0.00050	J	mg/L	1	3/18/2022 3:02:25 PM	B86600
Nickel	0.0081	0.00048	0.0010		mg/L	1	3/18/2022 3:02:25 PM	B86600
Selenium	0.0021	0.00034	0.0010		mg/L	1	3/18/2022 3:02:25 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:42:17 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-04R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:10:00 AM

Lab ID: 2203825-006A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	500	11	50		µg/L	50	3/21/2022 1:49:08 PM	R86626
Toluene	6.1	1.0	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Ethylbenzene	47	1.1	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Methyl tert-butyl ether (MTBE)	850	2.0	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
1,2,4-Trimethylbenzene	70	0.61	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
1,3,5-Trimethylbenzene	8.3	0.91	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
1,2-Dichloroethane (EDC)	2.8	1.3	5.0	J	µg/L	5	3/19/2022 6:13:40 AM	R86601
1,2-Dibromoethane (EDB)	ND	1.5	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Acetone	ND	13	50		µg/L	5	3/19/2022 6:13:40 AM	R86601
Bromomethane	ND	4.3	15		µg/L	5	3/19/2022 6:13:40 AM	R86601
2-Butanone	ND	10	50		µg/L	5	3/19/2022 6:13:40 AM	R86601
Carbon disulfide	ND	3.0	50		µg/L	5	3/19/2022 6:13:40 AM	R86601
Chlorobenzene	ND	0.78	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Chloroform	2.1	0.67	5.0	J	µg/L	5	3/19/2022 6:13:40 AM	R86601
Chloromethane	3.9	2.1	15	J	µg/L	5	3/19/2022 6:13:40 AM	R86601
cis-1,2-DCE	20	1.9	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
1,1-Dichloroethane	41	1.4	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
1,1-Dichloroethene	64	1.0	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Isopropylbenzene	2.3	0.91	5.0	J	µg/L	5	3/19/2022 6:13:40 AM	R86601
4-Isopropyltoluene	1.3	1.0	5.0	J	µg/L	5	3/19/2022 6:13:40 AM	R86601
Methylene Chloride	ND	2.5	15		µg/L	5	3/19/2022 6:13:40 AM	R86601
n-Butylbenzene	ND	1.3	15		µg/L	5	3/19/2022 6:13:40 AM	R86601
n-Propylbenzene	3.1	0.91	5.0	J	µg/L	5	3/19/2022 6:13:40 AM	R86601
sec-Butylbenzene	ND	0.72	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Styrene	ND	0.68	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Trichloroethene (TCE)	2.5	1.0	5.0	J	µg/L	5	3/19/2022 6:13:40 AM	R86601
Vinyl chloride	ND	1.6	5.0		µg/L	5	3/19/2022 6:13:40 AM	R86601
Xylenes, Total	88	1.9	7.5		µg/L	5	3/19/2022 6:13:40 AM	R86601
Surr: 1,2-Dichloroethane-d4	87.6	0	70-130		%Rec	5	3/19/2022 6:13:40 AM	R86601
Surr: 4-Bromofluorobenzene	99.7	0	70-130		%Rec	5	3/19/2022 6:13:40 AM	R86601
Surr: Dibromofluoromethane	86.9	0	70-130		%Rec	5	3/19/2022 6:13:40 AM	R86601
Surr: Toluene-d8	105	0	70-130		%Rec	5	3/19/2022 6:13:40 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	3.7	0.061	0.25		mg/L	5	3/19/2022 6:13:40 AM	R86601
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	5	3/19/2022 6:13:40 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: MKTF-04R
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/15/2022 11:10:00 AM
Lab ID: 2203825-006B Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 5:21:18 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-04R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:10:00 AM

Lab ID: 2203825-006C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	1.5	0.016	0.064		mg/L	1	3/18/2022 6:28:19 PM	66219
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/18/2022 6:28:19 PM	66219
Surr: DNOP	102	0	42.2-138		%Rec	1	3/18/2022 6:28:19 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/22/2022 3:29:59 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/22/2022 3:29:59 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/22/2022 3:29:59 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/22/2022 3:29:59 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/22/2022 3:29:59 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/22/2022 3:29:59 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/22/2022 3:29:59 PM	66226
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/22/2022 3:29:59 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/22/2022 3:29:59 PM	66226
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/22/2022 3:29:59 PM	66226
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/22/2022 3:29:59 PM	66226
Phenol	5.5	0.33	5.0		µg/L	1	3/22/2022 3:29:59 PM	66226
Pyridine	ND	10	10		µg/L	1	3/22/2022 3:29:59 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/22/2022 3:29:59 PM	66226
Surr: 2-Fluorophenol	51.8	0	29.4-87.7		%Rec	1	3/22/2022 3:29:59 PM	66226
Surr: Phenol-d5	38.1	0	28.5-64.7		%Rec	1	3/22/2022 3:29:59 PM	66226
Surr: 2,4,6-Tribromophenol	65.1	0	18.6-129		%Rec	1	3/22/2022 3:29:59 PM	66226
Surr: Nitrobenzene-d5	62.6	0	36.9-103		%Rec	1	3/22/2022 3:29:59 PM	66226
Surr: 2-Fluorobiphenyl	62.2	0	38.1-99.9		%Rec	1	3/22/2022 3:29:59 PM	66226
Surr: 4-Terphenyl-d14	82.7	0	48-155		%Rec	1	3/22/2022 3:29:59 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	31	0.48	10		µg/L	10	3/22/2022 6:15:00 PM	R86665
Naphthalene	11	0.034	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
1-Methylnaphthalene	8.7	0.024	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
2-Methylnaphthalene	2.4	0.034	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Acenaphthene	0.86	0.031	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Fluorene	1.1	0.031	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Phenanthrene	0.54	0.057	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Anthracene	0.26	0.034	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 4:41:00 PM	R86628
Pyrene	0.22	0.16	0.40	J	µg/L	1	3/21/2022 4:41:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 4:41:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 4:41:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-04R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:10:00 AM

Lab ID: 2203825-006C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	67.2	0	31.6-100		%Rec	1	3/21/2022 4:41:00 PM	R86628
Surr: 2-Fluorobiphenyl	61.5	0	26.7-90.1		%Rec	1	3/21/2022 4:41:00 PM	R86628
Surr: 4-Terphenyl-d14	82.3	0	72.3-147		%Rec	1	3/21/2022 4:41:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-04R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:10:00 AM

Lab ID: 2203825-006D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	0.010	0.00017	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Vanadium	0.024	0.00058	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Arsenic	0.0045	0.00013	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Barium	0.99	0.023	0.050		mg/L	50	3/21/2022 2:39:35 PM	66254
Beryllium	0.0016	0.00025	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:50:45 PM	66254
Chromium	0.015	0.00056	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Lead	0.0075	0.000061	0.00050		mg/L	1	3/21/2022 1:50:45 PM	66254
Nickel	0.020	0.00048	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Selenium	0.0016	0.00037	0.0010		mg/L	1	3/21/2022 1:50:45 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:50:45 PM	66254
Zinc	0.025	0.0038	0.010		mg/L	1	3/21/2022 1:50:45 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:44:26 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-04R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:10:00 AM

Lab ID: 2203825-006E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	0.0056	0.0024	0.0060	J	mg/L	1	3/17/2022 9:43:35 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:43:35 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 9:43:35 AM	A86535
Zinc	0.012	0.0032	0.010		mg/L	1	3/17/2022 9:43:35 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:24:37 PM	A86624
Arsenic	0.0026	0.00012	0.0010		mg/L	1	3/18/2022 3:05:06 PM	B86600
Barium	0.69	0.0092	0.020		mg/L	20	3/18/2022 3:55:48 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 3:05:06 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 3:05:06 PM	B86600
Chromium	0.00026	0.00014	0.0010	J	mg/L	1	3/18/2022 3:05:06 PM	B86600
Lead	ND	0.000057	0.00050		mg/L	1	3/18/2022 3:05:06 PM	B86600
Nickel	0.0089	0.00048	0.0010		mg/L	1	3/18/2022 3:05:06 PM	B86600
Selenium	ND	0.00034	0.0010		mg/L	1	3/18/2022 3:05:06 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:46:34 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:30:00 AM

Lab ID: 2203825-007A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	5300	23	100		µg/L	100	3/19/2022 6:42:01 AM	R86601
Toluene	320	2.0	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Ethylbenzene	450	2.1	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Methyl tert-butyl ether (MTBE)	24	3.9	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
1,2,4-Trimethylbenzene	220	1.2	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
1,3,5-Trimethylbenzene	46	1.8	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
1,2-Dichloroethane (EDC)	4.3	2.5	10	J	µg/L	10	3/19/2022 7:10:20 AM	R86601
1,2-Dibromoethane (EDB)	ND	3.0	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Acetone	ND	25	100		µg/L	10	3/19/2022 7:10:20 AM	R86601
Bromomethane	ND	8.5	30		µg/L	10	3/19/2022 7:10:20 AM	R86601
2-Butanone	ND	20	100		µg/L	10	3/19/2022 7:10:20 AM	R86601
Carbon disulfide	ND	5.9	100		µg/L	10	3/19/2022 7:10:20 AM	R86601
Chlorobenzene	ND	1.6	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Chloroform	3.5	1.3	10	J	µg/L	10	3/19/2022 7:10:20 AM	R86601
Chloromethane	ND	4.1	30		µg/L	10	3/19/2022 7:10:20 AM	R86601
cis-1,2-DCE	ND	3.9	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
1,1-Dichloroethane	14	2.7	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
1,1-Dichloroethene	ND	2.0	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Isopropylbenzene	16	1.8	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
4-Isopropyltoluene	ND	2.0	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Methylene Chloride	ND	5.0	30		µg/L	10	3/19/2022 7:10:20 AM	R86601
n-Butylbenzene	5.3	2.5	30	J	µg/L	10	3/19/2022 7:10:20 AM	R86601
n-Propylbenzene	29	1.8	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
sec-Butylbenzene	4.4	1.4	10	J	µg/L	10	3/19/2022 7:10:20 AM	R86601
Styrene	ND	1.4	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Vinyl chloride	16	3.2	10		µg/L	10	3/19/2022 7:10:20 AM	R86601
Xylenes, Total	1300	3.7	15		µg/L	10	3/19/2022 7:10:20 AM	R86601
Surr: 1,2-Dichloroethane-d4	88.6	0	70-130		%Rec	10	3/19/2022 7:10:20 AM	R86601
Surr: 4-Bromofluorobenzene	97.9	0	70-130		%Rec	10	3/19/2022 7:10:20 AM	R86601
Surr: Dibromofluoromethane	85.5	0	70-130		%Rec	10	3/19/2022 7:10:20 AM	R86601
Surr: Toluene-d8	100	0	70-130		%Rec	10	3/19/2022 7:10:20 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	19	0.12	0.50		mg/L	10	3/19/2022 7:10:20 AM	R86601
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	10	3/19/2022 7:10:20 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203825-007B

Client Sample ID: MKTF-11

Collection Date: 3/15/2022 11:30:00 AM

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 5:36:28 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:30:00 AM

Lab ID: 2203825-007C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.92	0.016	0.064		mg/L	1	3/18/2022 6:51:54 PM	66219
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/18/2022 6:51:54 PM	66219
Surr: DNOP	106	0	42.2-138		%Rec	1	3/18/2022 6:51:54 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 12:28:27 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 12:28:27 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 12:28:27 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 12:28:27 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 12:28:27 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 12:28:27 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 12:28:27 PM	66226
2,4-Dimethylphenol	4.3	0.97	5.0	J	µg/L	1	3/23/2022 12:28:27 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 12:28:27 PM	66226
2-Methylphenol	6.4	0.51	5.0		µg/L	1	3/23/2022 12:28:27 PM	66226
3+4-Methylphenol	3.8	0.45	5.0	J	µg/L	1	3/23/2022 12:28:27 PM	66226
Phenol	30	0.33	5.0		µg/L	1	3/23/2022 12:28:27 PM	66226
Pyridine	ND	10	10		µg/L	1	3/23/2022 12:28:27 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 12:28:27 PM	66226
Surr: 2-Fluorophenol	32.6	0	29.4-87.7		%Rec	1	3/23/2022 12:28:27 PM	66226
Surr: Phenol-d5	26.9	0	28.5-64.7	S	%Rec	1	3/23/2022 12:28:27 PM	66226
Surr: 2,4,6-Tribromophenol	12.6	0	18.6-129	S	%Rec	1	3/23/2022 12:28:27 PM	66226
Surr: Nitrobenzene-d5	44.3	0	36.9-103		%Rec	1	3/23/2022 12:28:27 PM	66226
Surr: 2-Fluorobiphenyl	40.1	0	38.1-99.9		%Rec	1	3/23/2022 12:28:27 PM	66226
Surr: 4-Terphenyl-d14	84.9	0	48-155		%Rec	1	3/23/2022 12:28:27 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	5.7	0.048	1.0		µg/L	1	3/21/2022 5:26:00 PM	R86628
Naphthalene	16	0.034	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
1-Methylnaphthalene	4.4	0.024	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
2-Methylnaphthalene	4.7	0.034	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Acenaphthene	0.30	0.031	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Fluorene	0.78	0.031	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Phenanthrene	0.26	0.057	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Anthracene	ND	0.034	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 5:26:00 PM	R86628
Pyrene	0.20	0.16	0.40	J	µg/L	1	3/21/2022 5:26:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 5:26:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 5:26:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:30:00 AM

Lab ID: 2203825-007C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	46.6	0	31.6-100		%Rec	1	3/21/2022 5:26:00 PM	R86628
Surr: 2-Fluorobiphenyl	43.5	0	26.7-90.1		%Rec	1	3/21/2022 5:26:00 PM	R86628
Surr: 4-Terphenyl-d14	84.6	0	72.3-147		%Rec	1	3/21/2022 5:26:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:30:00 AM

Lab ID: 2203825-007D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	0.0039	0.00084	0.0050	J	mg/L	5	3/21/2022 2:42:00 PM	66254
Vanadium	0.0049	0.0029	0.0050	J	mg/L	5	3/21/2022 2:42:00 PM	66254
Antimony	ND	0.0022	0.0050		mg/L	5	3/21/2022 2:42:00 PM	66254
Arsenic	0.015	0.00063	0.0050	*	mg/L	5	3/21/2022 2:42:00 PM	66254
Barium	4.6	0.092	0.20		mg/L	200	3/21/2022 2:49:22 PM	66254
Beryllium	ND	0.0012	0.0050		mg/L	5	3/21/2022 2:42:00 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:53:11 PM	66254
Chromium	0.0038	0.0028	0.0050	J	mg/L	5	3/21/2022 2:42:00 PM	66254
Lead	0.0020	0.00031	0.0025	J	mg/L	5	3/21/2022 2:42:00 PM	66254
Nickel	0.028	0.0024	0.0050		mg/L	5	3/21/2022 2:42:00 PM	66254
Selenium	ND	0.0019	0.0050		mg/L	5	3/21/2022 2:42:00 PM	66254
Silver	ND	0.0011	0.0025		mg/L	5	3/21/2022 2:42:00 PM	66254
Zinc	0.069	0.019	0.050		mg/L	5	3/21/2022 2:42:00 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:48:43 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-11

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:30:00 AM

Lab ID: 2203825-007E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	0.0058	0.0024	0.0060	J	mg/L	1	3/17/2022 9:48:14 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:48:14 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 9:48:14 AM	A86535
Zinc	0.010	0.0032	0.010		mg/L	1	3/17/2022 9:48:14 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:27:18 PM	A86624
Arsenic	0.013	0.00012	0.0010	*	mg/L	1	3/18/2022 3:07:47 PM	B86600
Barium	4.5	0.092	0.20		mg/L	200	3/18/2022 3:58:29 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 3:07:47 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 3:07:47 PM	B86600
Chromium	0.00045	0.00014	0.0010	J	mg/L	1	3/18/2022 3:07:47 PM	B86600
Lead	ND	0.000057	0.00050		mg/L	1	3/18/2022 3:07:47 PM	B86600
Nickel	0.026	0.00048	0.0010		mg/L	1	3/18/2022 3:07:47 PM	B86600
Selenium	0.00046	0.00034	0.0010	J	mg/L	1	3/18/2022 3:07:47 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:50:52 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-10

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:50:00 AM

Lab ID: 2203825-008A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	6300	23	100		µg/L	100	3/19/2022 7:38:39 AM	R86601
Toluene	220	2.0	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
Ethylbenzene	1600	21	100		µg/L	100	3/19/2022 7:38:39 AM	R86601
Methyl tert-butyl ether (MTBE)	9.6	3.9	10	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
1,2,4-Trimethylbenzene	930	1.2	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
1,3,5-Trimethylbenzene	220	1.8	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
1,2-Dichloroethane (EDC)	4.1	2.5	10	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
1,2-Dibromoethane (EDB)	ND	3.0	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
Acetone	ND	25	100		µg/L	10	3/19/2022 8:06:58 AM	R86601
Bromomethane	ND	8.5	30		µg/L	10	3/19/2022 8:06:58 AM	R86601
2-Butanone	21	20	100	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
Carbon disulfide	ND	5.9	100		µg/L	10	3/19/2022 8:06:58 AM	R86601
Chlorobenzene	ND	1.6	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
Chloroform	4.0	1.3	10	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
Chloromethane	27	4.1	30	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
cis-1,2-DCE	6.2	3.9	10	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
1,1-Dichloroethane	12	2.7	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
1,1-Dichloroethene	ND	2.0	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
Isopropylbenzene	58	1.8	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
4-Isopropyltoluene	7.7	2.0	10	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
Methylene Chloride	5.6	5.0	30	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
n-Butylbenzene	11	2.5	30	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
n-Propylbenzene	100	1.8	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
sec-Butylbenzene	5.7	1.4	10	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
Styrene	ND	1.4	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	3/19/2022 8:06:58 AM	R86601
Vinyl chloride	8.0	3.2	10	J	µg/L	10	3/19/2022 8:06:58 AM	R86601
Xylenes, Total	6700	37	150		µg/L	100	3/19/2022 7:38:39 AM	R86601
Surr: 1,2-Dichloroethane-d4	85.8	0	70-130		%Rec	10	3/19/2022 8:06:58 AM	R86601
Surr: 4-Bromofluorobenzene	91.1	0	70-130		%Rec	10	3/19/2022 8:06:58 AM	R86601
Surr: Dibromofluoromethane	84.1	0	70-130		%Rec	10	3/19/2022 8:06:58 AM	R86601
Surr: Toluene-d8	100	0	70-130		%Rec	10	3/19/2022 8:06:58 AM	R86601
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	41	0.12	0.50		mg/L	10	3/19/2022 8:06:58 AM	R86601
Surr: 4-Bromofluorobenzene	92.2	0	70-130		%Rec	10	3/19/2022 8:06:58 AM	R86601

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: MKTF-10
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/15/2022 11:50:00 AM
Lab ID: 2203825-008B Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 5:51:32 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-10

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:50:00 AM

Lab ID: 2203825-008C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	1.9	0.016	0.064		mg/L	1	3/18/2022 7:15:36 PM	66219
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/18/2022 7:15:36 PM	66219
Surr: DNOP	95.4	0	42.2-138		%Rec	1	3/18/2022 7:15:36 PM	66219
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 1:09:39 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 1:09:39 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 1:09:39 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 1:09:39 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 1:09:39 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 1:09:39 PM	66226
2,4-Dimethylphenol	16	0.97	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
1-Methylnaphthalene	43	0.60	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
2-Methylnaphthalene	73	0.41	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
2-Methylphenol	6.1	0.51	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
Naphthalene	120	2.2	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
Phenol	22	0.33	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
Pyridine	ND	10	10		µg/L	1	3/23/2022 1:09:39 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 1:09:39 PM	66226
Surr: 2-Fluorophenol	0	0	29.4-87.7	S	%Rec	1	3/23/2022 1:09:39 PM	66226
Surr: Phenol-d5	24.7	0	28.5-64.7	S	%Rec	1	3/23/2022 1:09:39 PM	66226
Surr: 2,4,6-Tribromophenol	1.82	0	18.6-129	S	%Rec	1	3/23/2022 1:09:39 PM	66226
Surr: Nitrobenzene-d5	65.4	0	36.9-103		%Rec	1	3/23/2022 1:09:39 PM	66226
Surr: 2-Fluorobiphenyl	63.3	0	38.1-99.9		%Rec	1	3/23/2022 1:09:39 PM	66226
Surr: 4-Terphenyl-d14	88.9	0	48-155		%Rec	1	3/23/2022 1:09:39 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	3.6	0.048	1.0		µg/L	1	3/21/2022 6:11:00 PM	R86628
Acenaphthene	0.88	0.031	0.10		µg/L	1	3/21/2022 6:11:00 PM	R86628
Fluorene	1.8	0.031	0.10		µg/L	1	3/21/2022 6:11:00 PM	R86628
Phenanthrene	1.4	0.057	0.10		µg/L	1	3/21/2022 6:11:00 PM	R86628
Anthracene	ND	0.034	0.10		µg/L	1	3/21/2022 6:11:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 6:11:00 PM	R86628
Pyrene	0.18	0.16	0.40	J	µg/L	1	3/21/2022 6:11:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 6:11:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 6:11:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 6:11:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 6:11:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-10

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:50:00 AM

Lab ID: 2203825-008C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	66.8	0	31.6-100		%Rec	1	3/21/2022 6:11:00 PM	R86628
Surr: 2-Fluorobiphenyl	60.2	0	26.7-90.1		%Rec	1	3/21/2022 6:11:00 PM	R86628
Surr: 4-Terphenyl-d14	88.1	0	72.3-147		%Rec	1	3/21/2022 6:11:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-10

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:50:00 AM

Lab ID: 2203825-008D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	0.0050	0.00084	0.0050	J	mg/L	5	3/21/2022 2:51:49 PM	66254
Vanadium	0.020	0.0029	0.0050		mg/L	5	3/21/2022 2:51:49 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:55:37 PM	66254
Arsenic	0.0061	0.00063	0.0050		mg/L	5	3/21/2022 2:51:49 PM	66254
Barium	7.9	0.23	0.50		mg/L	500	3/21/2022 2:54:15 PM	66254
Beryllium	ND	0.0012	0.0050		mg/L	5	3/21/2022 2:51:49 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:55:37 PM	66254
Chromium	0.012	0.0028	0.0050		mg/L	5	3/21/2022 2:51:49 PM	66254
Lead	0.0082	0.00031	0.0025		mg/L	5	3/21/2022 2:51:49 PM	66254
Nickel	0.024	0.0024	0.0050		mg/L	5	3/21/2022 2:51:49 PM	66254
Selenium	ND	0.0019	0.0050		mg/L	5	3/21/2022 2:51:49 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:55:37 PM	66254
Zinc	0.025	0.019	0.050	J	mg/L	5	3/21/2022 2:51:49 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:53:02 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-10

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:50:00 AM

Lab ID: 2203825-008E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	ND	0.0024	0.0060		mg/L	1	3/17/2022 9:52:44 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:52:44 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 9:52:44 AM	A86535
Zinc	0.0080	0.0032	0.010	J	mg/L	1	3/17/2022 9:52:44 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:35:22 PM	A86624
Arsenic	0.0038	0.00012	0.0010		mg/L	1	3/18/2022 3:10:29 PM	B86600
Barium	8.7	0.23	0.50		mg/L	500	3/18/2022 4:01:10 PM	B86600
Beryllium	ND	0.00020	0.0010		mg/L	1	3/18/2022 3:10:29 PM	B86600
Cadmium	ND	0.000066	0.00050		mg/L	1	3/18/2022 3:10:29 PM	B86600
Chromium	0.00035	0.00014	0.0010	J	mg/L	1	3/18/2022 3:10:29 PM	B86600
Lead	ND	0.000057	0.00050		mg/L	1	3/18/2022 3:10:29 PM	B86600
Nickel	0.015	0.00048	0.0010		mg/L	1	3/18/2022 3:10:29 PM	B86600
Selenium	ND	0.00034	0.0010		mg/L	1	3/18/2022 3:10:29 PM	B86600
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 4:55:12 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: FB 3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022 11:50:00 AM

Lab ID: 2203825-009A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Toluene	ND	0.20	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Acetone	ND	2.5	10		µg/L	1	3/21/2022 9:54:49 PM	R86626
Bromomethane	ND	0.85	3.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
2-Butanone	7.9	2.0	10	J	µg/L	1	3/21/2022 9:54:49 PM	R86626
Carbon disulfide	ND	0.59	10		µg/L	1	3/21/2022 9:54:49 PM	R86626
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Chloroform	ND	0.13	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Chloromethane	0.89	0.41	3.0	J	µg/L	1	3/21/2022 9:54:49 PM	R86626
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
1,1-Dichloroethene	0.57	0.20	1.0	J	µg/L	1	3/21/2022 9:54:49 PM	R86626
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Styrene	ND	0.14	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/21/2022 9:54:49 PM	R86626
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/21/2022 9:54:49 PM	R86626
Surr: 1,2-Dichloroethane-d4	93.5	0	70-130		%Rec	1	3/21/2022 9:54:49 PM	R86626
Surr: 4-Bromofluorobenzene	106	0	70-130		%Rec	1	3/21/2022 9:54:49 PM	R86626
Surr: Dibromofluoromethane	97.7	0	70-130		%Rec	1	3/21/2022 9:54:49 PM	R86626
Surr: Toluene-d8	102	0	70-130		%Rec	1	3/21/2022 9:54:49 PM	R86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022

Lab ID: 2203825-010A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Toluene	ND	0.20	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Methyl tert-butyl ether (MTBE)	2.3	0.39	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
1,2-Dichloroethane (EDC)	0.41	0.25	1.0	J	µg/L	1	3/21/2022 2:17:46 PM	R86626
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Acetone	ND	2.5	10		µg/L	1	3/21/2022 2:17:46 PM	R86626
Bromomethane	ND	0.85	3.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
2-Butanone	ND	2.0	10		µg/L	1	3/21/2022 2:17:46 PM	R86626
Carbon disulfide	ND	0.59	10		µg/L	1	3/21/2022 2:17:46 PM	R86626
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Chloroform	ND	0.13	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Chloromethane	0.75	0.41	3.0	J	µg/L	1	3/21/2022 2:17:46 PM	R86626
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Styrene	ND	0.14	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/21/2022 2:17:46 PM	R86626
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/21/2022 2:17:46 PM	R86626
Surr: 1,2-Dichloroethane-d4	93.1	0	70-130		%Rec	1	3/21/2022 2:17:46 PM	R86626
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	3/21/2022 2:17:46 PM	R86626
Surr: Dibromofluoromethane	96.8	0	70-130		%Rec	1	3/21/2022 2:17:46 PM	R86626
Surr: Toluene-d8	99.5	0	70-130		%Rec	1	3/21/2022 2:17:46 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.036	0.012	0.050	J	mg/L	1	3/21/2022 2:17:46 PM	G86626
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	1	3/21/2022 2:17:46 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: DUP-3-15-22
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/15/2022
Lab ID: 2203825-010B Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 6:06:41 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022

Lab ID: 2203825-010C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.026	0.016	0.064	J	mg/L	1	3/22/2022 3:51:22 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 3:51:22 PM	66236
Surr: DNOP	104	0	42.2-138		%Rec	1	3/22/2022 3:51:22 PM	66236
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/22/2022 5:33:56 PM	66226
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/22/2022 5:33:56 PM	66226
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/22/2022 5:33:56 PM	66226
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/22/2022 5:33:56 PM	66226
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/22/2022 5:33:56 PM	66226
Diethyl phthalate	ND	3.9	10		µg/L	1	3/22/2022 5:33:56 PM	66226
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/22/2022 5:33:56 PM	66226
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/22/2022 5:33:56 PM	66226
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/22/2022 5:33:56 PM	66226
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/22/2022 5:33:56 PM	66226
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/22/2022 5:33:56 PM	66226
Phenol	ND	0.33	5.0		µg/L	1	3/22/2022 5:33:56 PM	66226
Pyridine	ND	10	10		µg/L	1	3/22/2022 5:33:56 PM	66226
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/22/2022 5:33:56 PM	66226
Surr: 2-Fluorophenol	32.2	0	29.4-87.7		%Rec	1	3/22/2022 5:33:56 PM	66226
Surr: Phenol-d5	24.0	0	28.5-64.7	S	%Rec	1	3/22/2022 5:33:56 PM	66226
Surr: 2,4,6-Tribromophenol	41.9	0	18.6-129		%Rec	1	3/22/2022 5:33:56 PM	66226
Surr: Nitrobenzene-d5	41.5	0	36.9-103		%Rec	1	3/22/2022 5:33:56 PM	66226
Surr: 2-Fluorobiphenyl	39.6	0	38.1-99.9		%Rec	1	3/22/2022 5:33:56 PM	66226
Surr: 4-Terphenyl-d14	84.7	0	48-155		%Rec	1	3/22/2022 5:33:56 PM	66226
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/21/2022 6:56:00 PM	R86628
Naphthalene	ND	0.034	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Acenaphthene	ND	0.031	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Fluorene	ND	0.031	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Phenanthrene	ND	0.057	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Anthracene	ND	0.034	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Fluoranthene	ND	0.10	0.20		µg/L	1	3/21/2022 6:56:00 PM	R86628
Pyrene	ND	0.16	0.40		µg/L	1	3/21/2022 6:56:00 PM	R86628
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Chrysene	ND	0.024	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/21/2022 6:56:00 PM	R86628
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/21/2022 6:56:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022

Lab ID: 2203825-010C

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	46.9	0	31.6-100		%Rec	1	3/21/2022 6:56:00 PM	R86628
Surr: 2-Fluorobiphenyl	44.6	0	26.7-90.1		%Rec	1	3/21/2022 6:56:00 PM	R86628
Surr: 4-Terphenyl-d14	95.6	0	72.3-147		%Rec	1	3/21/2022 6:56:00 PM	R86628

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022

Lab ID: 2203825-010D

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: METALS							Analyst: bcv	
Cobalt	ND	0.00017	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Vanadium	0.045	0.00058	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Arsenic	0.00080	0.00013	0.0010	J	mg/L	1	3/21/2022 1:58:04 PM	66254
Barium	0.041	0.00046	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Beryllium	ND	0.00025	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Cadmium	ND	0.000080	0.00050		mg/L	1	3/21/2022 1:58:04 PM	66254
Chromium	0.0032	0.00056	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Lead	0.00018	0.000061	0.00050	J	mg/L	1	3/21/2022 1:58:04 PM	66254
Nickel	0.0022	0.00048	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Selenium	0.0022	0.00037	0.0010		mg/L	1	3/21/2022 1:58:04 PM	66254
Silver	ND	0.00022	0.00050		mg/L	1	3/21/2022 1:58:04 PM	66254
Zinc	ND	0.0038	0.010		mg/L	1	3/21/2022 1:58:04 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 5:01:38 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-15-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/15/2022

Lab ID: 2203825-010E

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Cobalt	ND	0.0024	0.0060		mg/L	1	3/17/2022 9:55:35 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 9:55:35 AM	A86535
Vanadium	0.044	0.0017	0.050	J	mg/L	1	3/17/2022 9:55:35 AM	A86535
Zinc	0.0077	0.0032	0.010	J	mg/L	1	3/17/2022 9:55:35 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:40:44 PM	A86624
Arsenic	0.00068	0.00012	0.0010	J	mg/L	1	3/21/2022 5:40:44 PM	A86624
Barium	0.044	0.00046	0.0010		mg/L	1	3/21/2022 5:40:44 PM	A86624
Beryllium	ND	0.00020	0.0010		mg/L	1	3/21/2022 5:40:44 PM	A86624
Cadmium	ND	0.000066	0.00050		mg/L	1	3/21/2022 5:40:44 PM	A86624
Chromium	0.00051	0.00014	0.0010	J	mg/L	1	3/21/2022 5:40:44 PM	A86624
Lead	ND	0.000057	0.00050		mg/L	1	3/21/2022 5:40:44 PM	A86624
Nickel	0.00062	0.00048	0.0010	J	mg/L	1	3/21/2022 5:40:44 PM	A86624
Selenium	0.0028	0.00034	0.0010		mg/L	1	3/21/2022 5:40:44 PM	A86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/21/2022 5:08:04 PM	66284

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 1st Qtr

Collection Date:

Lab ID: 2203825-011A

Matrix: Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Toluene	ND	0.20	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Acetone	ND	2.5	10		µg/L	1	3/21/2022 2:46:21 PM	R86626
Bromomethane	ND	0.85	3.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
2-Butanone	ND	2.0	10		µg/L	1	3/21/2022 2:46:21 PM	R86626
Carbon disulfide	ND	0.59	10		µg/L	1	3/21/2022 2:46:21 PM	R86626
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Chloroform	ND	0.13	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Chloromethane	0.66	0.41	3.0	J	µg/L	1	3/21/2022 2:46:21 PM	R86626
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Styrene	ND	0.14	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/21/2022 2:46:21 PM	R86626
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/21/2022 2:46:21 PM	R86626
Surr: 1,2-Dichloroethane-d4	92.6	0	70-130		%Rec	1	3/21/2022 2:46:21 PM	R86626
Surr: 4-Bromofluorobenzene	99.3	0	70-130		%Rec	1	3/21/2022 2:46:21 PM	R86626
Surr: Dibromofluoromethane	95.8	0	70-130		%Rec	1	3/21/2022 2:46:21 PM	R86626
Surr: Toluene-d8	104	0	70-130		%Rec	1	3/21/2022 2:46:21 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.035	0.012	0.050	J	mg/L	1	3/21/2022 2:46:21 PM	G86626
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	1	3/21/2022 2:46:21 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203825

Date Reported: 3/28/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	Trip Blank
Project:	2022 GW Sampling 1st Qtr	Collection Date:	
Lab ID:	2203825-011B	Matrix:	Groundwater

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/21/2022 6:21:47 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		



ANALYTICAL REPORT

March 22, 2022

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1472568

Samples Received: 03/17/2022

Project Number:

Description:

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Entire Report Reviewed By:

A handwritten signature in blue ink that reads "John V. Hawkins".

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page	1	1 Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	2 Tc
Cn: Case Narrative	5	
Sr: Sample Results	6	3 Ss
2203825-001F EB 3-15-22 L1472568-01	6	
2203825-002F OW-1 L1472568-02	7	4 Cn
2203825-003F MKTF-17R L1472568-03	8	
2203825-004F MKTF-18R L1472568-04	9	5 Sr
2203825-005F MKTF-38 L1472568-05	10	
2203825-006F MKTF-04R L1472568-06	11	6 Qc
2203825-007F MKTF-11 L1472568-07	12	
2203825-008F MKTF-10 L1472568-08	13	7 Gl
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Qc: Quality Control Summary	15	8 Al
Wet Chemistry by Method 4500CN E-2016	15	
Gl: Glossary of Terms	16	9 Sc
Al: Accreditations & Locations	17	
Sc: Sample Chain of Custody	18	

2203825-001F EB 3-15-22 L1472568-01 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:31	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

2203825-002F OW-1 L1472568-02 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:33	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203825-003F MKTF-17R L1472568-03 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:34	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203825-004F MKTF-18R L1472568-04 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:35	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203825-005F MKTF-38 L1472568-05 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:38	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203825-006F MKTF-04R L1472568-06 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:39	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203825-007F MKTF-11 L1472568-07 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:42	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203825-008F MKTF-10 L1472568-08 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:43	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2203825-009F DUP-3-15-22 L1472568-09 WW

Collected by
Collected date/time
Received date/time

03/15/22 00:00
03/17/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1835677	1	03/21/22 18:09	03/22/22 12:44	LDT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



John Hawkins
Project Manager

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/22/2022 12:31	WG1835677

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/22/2022 12:33	WG1835677

- 1Cp
- 2Tc
- 3Ss
- 4Cn
- 5Sr
- 6Qc
- 7Gl
- 8Al
- 9Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/22/2022 12:34	WG1835677

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	03/22/2022 12:35	WG1835677

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/22/2022 12:38	WG1835677

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Cyanide	0.00801	J6	0.00500	1	03/22/2022 12:39	WG1835677

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/22/2022 12:42	WG1835677

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/22/2022 12:43	WG1835677

- 1Cp
- 2Tc
- 3Ss
- 4Cn
- 5Sr
- 6Qc
- 7Gl
- 8Al
- 9Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/22/2022 12:44	WG1835677

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3772598-1 03/22/22 12:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1472100-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1472100-06 03/22/22 12:18 • (DUP) R3772598-3 03/22/22 12:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

L1472568-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1472568-01 03/22/22 12:31 • (DUP) R3772598-6 03/22/22 12:32

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3772598-2 03/22/22 12:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.101	101	87.1-120	

L1472100-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1472100-13 03/22/22 12:20 • (MS) R3772598-4 03/22/22 12:21 • (MSD) R3772598-5 03/22/22 12:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0903	0.0851	90.3	85.1	1	90.0-110		J6	5.93	20

L1472568-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1472568-06 03/22/22 12:39 • (MS) R3772598-7 03/22/22 12:40 • (MSD) R3772598-8 03/22/22 12:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	0.00801	0.0912	0.0828	83.2	74.8	1	90.0-110	J6	J6	9.66	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
----	---

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

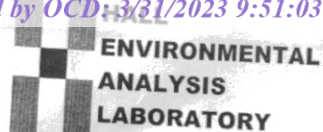
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: clients.hallenvironmental.com

SUB CONTRACTOR: Pace TN		COMPANY: PACE TN		PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122					

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2203825-001F	EB 3-15-22	500AMBHDP	Groundw	3/15/2022 8:30:00 AM	1	Total Cyanide -01
2	2203825-002F	OW-1	500AMBHDP	Groundw	3/15/2022 9:00:00 AM	1	Total Cyanide -02
3	2203825-003F	MKTF-17R	500AMBHDP	Groundw	3/15/2022 10:00:00 AM	1	Total Cyanide -03
4	2203825-004F	MKTF-18R	500AMBHDP	Groundw	3/15/2022 10:20:00 AM	1	Total Cyanide -04
5	2203825-005F	MKTF-38	500AMBHDP	Groundw	3/15/2022 10:45:00 AM	1	Total Cyanide -05
6	2203825-006F	MKTF-04R	500AMBHDP	Groundw	3/15/2022 11:10:00 AM	1	Total Cyanide -06
7	2203825-007F	MKTF-11	500AMBHDP	Groundw	3/15/2022 11:30:00 AM	1	Total Cyanide -07
8	2203825-008F	MKTF-10	500AMBHDP	Groundw	3/15/2022 11:50:00 AM	1	Total Cyanide -08
9	2203825-010F	DUP-3-15-22	500AMBHDP	Groundw	3/15/2022	1	Total Cyanide -09

L472568

5528 5947 8329

B039

Sample Receipt Checklist
 COC Seal Present/Intact: ☒ Y ☐ N If Applicable
 COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
 Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
 Correct bottles used: ☒ Y ☐ N
 Sufficient volume sent: ☒ Y ☐ N
 RAD Screen <0.5 mR/hr: ☒ Y ☐ N

3.0 to = 3.0

3.3 to 3.3 DRA2 Cnt = 9 TB = 0

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: CHE	Date: 3/16/2022	Time: 8:46 AM	Received By: T. Robertson	Date: 3/15/22	Time: 10:00
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: ☒ Standard ☐ RUSH	Next BD ☐ 2nd BD ☐ 3rd BD ☐
---	--

REPORT TRANSMITTAL DESIRED: ☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE	
FOR LAB USE ONLY	
Temp of samples: ☐ °C	Attempt to Cool? ☐
Comments:	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053829 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	ND	0.0060								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LL LCS	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: BatchQC	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053831 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.0059	0.0060	0.006000	0	98.3	50	150			J
Silver	0.0053	0.0050	0.005000	0	105	50	150			
Vanadium	0.010	0.050	0.01000	0	103	50	150			J
Zinc	0.012	0.010	0.01000	0	117	50	150			

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: LCSW	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053835 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.49	0.0060	0.5000	0	97.2	85	115			
Silver	0.099	0.0050	0.1000	0	99.1	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.50	0.010	0.5000	0	99.2	85	115			

Sample ID: 2203825-001EMS	SampType: MS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: EB 3-15-22	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053845 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.50	0.0060	0.5000	0	99.1	70	130			
Silver	0.10	0.0050	0.1000	0	102	70	130			
Vanadium	0.52	0.050	0.5000	0	103	70	130			
Zinc	0.52	0.010	0.5000	0.006303	102	70	130			

Sample ID: 2203825-001EMSD	SampType: MSD	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: EB 3-15-22	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053846 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203825

28-Mar-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: 2203825-001EMSD		SampType: MSD		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: EB 3-15-22		Batch ID: A86535		RunNo: 86535						
Prep Date:		Analysis Date: 3/17/2022		SeqNo: 3053846		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.50	0.0060	0.5000	0	99.1	70	130	0.0498	20	
Silver	0.10	0.0050	0.1000	0	103	70	130	0.505	20	
Vanadium	0.52	0.050	0.5000	0	104	70	130	0.869	20	
Zinc	0.52	0.010	0.5000	0.006303	102	70	130	0.103	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66254	SampType: MBLK	TestCode: EPA 200.8: Metals
Client ID: PBW	Batch ID: 66254	RunNo: 86616
Prep Date: 3/17/2022	Analysis Date: 3/21/2022	SeqNo: 3057671 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Barium	ND	0.0010								
Beryllium	ND	0.0010								
Cadmium	ND	0.00050								
Chromium	ND	0.0010								
Lead	ND	0.00050								
Nickel	ND	0.0010								
Selenium	ND	0.0010								
Silver	ND	0.00050								
Zinc	ND	0.010								

Sample ID: MSLLCS-66254	SampType: LCSLL	TestCode: EPA 200.8: Metals
Client ID: BatchQC	Batch ID: 66254	RunNo: 86616
Prep Date: 3/17/2022	Analysis Date: 3/21/2022	SeqNo: 3057672 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0012	0.0010	0.001000	0	116	50	150			
Arsenic	0.00095	0.0010	0.001000	0	95.3	50	150			J
Barium	0.0010	0.0010	0.001000	0	100	50	150			
Beryllium	0.0012	0.0010	0.001000	0	115	50	150			
Cadmium	0.00057	0.00050	0.0005001	0	113	50	150			
Chromium	0.0011	0.0010	0.001000	0	106	50	150			
Lead	0.00049	0.00050	0.0005001	0	98.9	50	150			J
Nickel	0.00086	0.0010	0.001000	0	86.5	50	150			J
Selenium	0.00089	0.0010	0.001000	0	89.2	50	150			J
Silver	0.00052	0.00050	0.0005001	0	104	50	150			
Zinc	0.0095	0.010	0.01000	0	94.7	50	150			J

Sample ID: MSLCS-66254	SampType: LCS	TestCode: EPA 200.8: Metals
Client ID: LCSW	Batch ID: 66254	RunNo: 86616
Prep Date: 3/17/2022	Analysis Date: 3/21/2022	SeqNo: 3057673 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	99.3	85	115			
Arsenic	0.025	0.0010	0.02500	0	101	85	115			
Barium	0.026	0.0010	0.02500	0	102	85	115			
Beryllium	0.027	0.0010	0.02500	0	109	85	115			
Cadmium	0.013	0.00050	0.01250	0	101	85	115			
Chromium	0.026	0.0010	0.02500	0	104	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Page 61 of 80

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MSLCS-66254	SampType: LCS		TestCode: EPA 200.8: Metals							
Client ID: LCSW	Batch ID: 66254		RunNo: 86616							
Prep Date: 3/17/2022	Analysis Date: 3/21/2022		SeqNo: 3057673		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.013	0.00050	0.01250	0	102	85	115			
Nickel	0.025	0.0010	0.02500	0	102	85	115			
Selenium	0.026	0.0010	0.02500	0	105	85	115			
Silver	0.013	0.00050	0.01250	0	103	85	115			
Zinc	0.25	0.010	0.2500	0	99.9	85	115			

Sample ID: 2203825-001DMSLL	SampType: MS		TestCode: EPA 200.8: Metals							
Client ID: EB 3-15-22	Batch ID: 66254		RunNo: 86616							
Prep Date: 3/17/2022	Analysis Date: 3/21/2022		SeqNo: 3057706		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.024	0.0010	0.02500	0	96.1	70	130			
Vanadium	0.025	0.0010	0.02500	0	98.1	70	130			
Antimony	0.026	0.0010	0.02500	0	105	70	130			
Arsenic	0.024	0.0010	0.02500	0	96.2	70	130			
Barium	0.024	0.0010	0.02500	0	94.0	70	130			
Beryllium	0.026	0.0010	0.02500	0	103	70	130			
Cadmium	0.012	0.00050	0.01250	0	99.9	70	130			
Chromium	0.025	0.0010	0.02500	0	99.6	70	130			
Lead	0.012	0.00050	0.01250	0	94.4	70	130			
Nickel	0.024	0.0010	0.02500	0	95.3	70	130			
Selenium	0.021	0.0010	0.02500	0	83.1	70	130			
Silver	0.012	0.00050	0.01250	0	97.5	70	130			
Zinc	0.25	0.010	0.2500	0	98.5	70	130			

Sample ID: 2203825-001DMSDL	SampType: MSD		TestCode: EPA 200.8: Metals							
Client ID: EB 3-15-22	Batch ID: 66254		RunNo: 86616							
Prep Date: 3/17/2022	Analysis Date: 3/21/2022		SeqNo: 3057707		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.025	0.0010	0.02500	0	100	70	130	3.93	20	
Vanadium	0.025	0.0010	0.02500	0	102	70	130	3.54	20	
Antimony	0.027	0.0010	0.02500	0	107	70	130	1.59	20	
Arsenic	0.025	0.0010	0.02500	0	102	70	130	5.79	20	
Barium	0.024	0.0010	0.02500	0	97.4	70	130	3.51	20	
Beryllium	0.027	0.0010	0.02500	0	108	70	130	4.80	22	
Cadmium	0.013	0.00050	0.01250	0	105	70	130	4.72	20	
Chromium	0.026	0.0010	0.02500	0	102	70	130	2.70	20	
Lead	0.012	0.00050	0.01250	0	98.9	70	130	4.69	20	
Nickel	0.026	0.0010	0.02500	0	102	70	130	7.20	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: 2203825-001DMSDL		SampType: MSD		TestCode: EPA 200.8: Metals						
Client ID: EB 3-15-22		Batch ID: 66254		RunNo: 86616						
Prep Date: 3/17/2022		Analysis Date: 3/21/2022		SeqNo: 3057707		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.024	0.0010	0.02500	0	95.6	70	130	14.1	20	
Silver	0.013	0.00050	0.01250	0	102	70	130	4.11	20	
Zinc	0.26	0.010	0.2500	0	102	70	130	3.55	20	

Sample ID: 2203825-002DMSLL		SampType: MS		TestCode: EPA 200.8: Metals						
Client ID: OW-1		Batch ID: 66254		RunNo: 86616						
Prep Date: 3/17/2022		Analysis Date: 3/21/2022		SeqNo: 3057721		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	0.070	0.0050	0.02500	0.04439	102	70	130			
Barium	0.067	0.0050	0.02500	0.04437	91.2	70	130			

Sample ID: 2203825-002DMSLL		SampType: MS		TestCode: EPA 200.8: Metals						
Client ID: OW-1		Batch ID: 66254		RunNo: 86616						
Prep Date: 3/17/2022		Analysis Date: 3/21/2022		SeqNo: 3057747		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.025	0.0010	0.02500	0	98.8	70	130			
Antimony	0.026	0.0010	0.02500	0	104	70	130			
Arsenic	0.027	0.0010	0.02500	0.0006876	107	70	130			
Beryllium	0.027	0.0010	0.02500	0	107	70	130			
Cadmium	0.011	0.00050	0.01250	0	84.6	70	130			
Chromium	0.030	0.0010	0.02500	0.003087	107	70	130			
Lead	0.011	0.00050	0.01250	0.0001951	85.0	70	130			
Nickel	0.026	0.0010	0.02500	0.002052	95.5	70	130			
Selenium	0.027	0.0010	0.02500	0.002696	97.6	70	130			
Silver	0.0099	0.00050	0.01250	0	79.2	70	130			
Zinc	0.24	0.010	0.2500	0	94.7	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: B86600	RunNo: 86600								
Prep Date:	Analysis Date: 3/18/2022	SeqNo: 3056942	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	0.0010								
Barium	ND	0.0010								
Beryllium	ND	0.0010								
Cadmium	ND	0.00050								
Chromium	ND	0.0010								
Lead	ND	0.00050								
Nickel	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: B86600	RunNo: 86600								
Prep Date:	Analysis Date: 3/18/2022	SeqNo: 3056943	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	0.0011	0.0010	0.001000	0	110	50	150			
Barium	0.0012	0.0010	0.001000	0	120	50	150			
Beryllium	0.0011	0.0010	0.001000	0	107	50	150			
Cadmium	0.00054	0.00050	0.0005001	0	108	50	150			
Chromium	0.0011	0.0010	0.001000	0	107	50	150			
Lead	0.00054	0.00050	0.0005001	0	109	50	150			
Nickel	0.0011	0.0010	0.001000	0	106	50	150			
Selenium	0.0012	0.0010	0.001000	0	116	50	150			

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: B86600	RunNo: 86600								
Prep Date:	Analysis Date: 3/18/2022	SeqNo: 3056944	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	0.026	0.0010	0.02500	0	103	85	115			
Barium	0.025	0.0010	0.02500	0	102	85	115			
Beryllium	0.026	0.0010	0.02500	0	105	85	115			
Cadmium	0.014	0.00050	0.01250	0	108	85	115			
Chromium	0.026	0.0010	0.02500	0	103	85	115			
Lead	0.013	0.00050	0.01250	0	106	85	115			
Nickel	0.026	0.0010	0.02500	0	105	85	115			
Selenium	0.028	0.0010	0.02500	0	113	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: A86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058028 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Barium	ND	0.0010								
Beryllium	ND	0.0010								
Cadmium	ND	0.00050								
Chromium	ND	0.0010								
Lead	ND	0.00050								
Nickel	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: A86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058029 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0011	0.0010	0.001000	0	115	50	150			
Arsenic	0.0010	0.0010	0.001000	0	101	50	150			
Barium	0.00091	0.0010	0.001000	0	91.1	50	150			J
Beryllium	0.0011	0.0010	0.001000	0	106	50	150			
Cadmium	0.00051	0.00050	0.0005001	0	103	50	150			
Chromium	0.0010	0.0010	0.001000	0	102	50	150			
Lead	0.00054	0.00050	0.0005001	0	108	50	150			
Nickel	0.00098	0.0010	0.001000	0	98.4	50	150			J
Selenium	0.00097	0.0010	0.001000	0	96.6	50	150			J

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: A86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058030 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	102	85	115			
Arsenic	0.026	0.0010	0.02500	0	103	85	115			
Barium	0.026	0.0010	0.02500	0	103	85	115			
Beryllium	0.027	0.0010	0.02500	0	107	85	115			
Cadmium	0.013	0.00050	0.01250	0	105	85	115			
Chromium	0.027	0.0010	0.02500	0	107	85	115			
Lead	0.013	0.00050	0.01250	0	105	85	115			
Nickel	0.026	0.0010	0.02500	0	105	85	115			
Selenium	0.025	0.0010	0.02500	0	99.8	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203825

28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 2203825-007EMSL	SampType: MS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: MKTF-11	Batch ID: A86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058056 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.027	0.0010	0.02500	0	107	70	130			

Sample ID: 2203825-007EMSDL	SampType: MSD	TestCode: EPA 200.8: Dissolved Metals								
Client ID: MKTF-11	Batch ID: A86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058057 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.023	0.0010	0.02500	0	92.5	70	130	14.9	20	

Sample ID: 2203825-008EMSL	SampType: MS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: MKTF-10	Batch ID: A86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058059 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	105	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB-66284	SampType: MBLK	TestCode: EPA Method 245.1: Mercury								
Client ID: PBW	Batch ID: 66284	RunNo: 86625								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3058104 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: LCSLL-66284	SampType: LCSLL	TestCode: EPA Method 245.1: Mercury								
Client ID: BatchQC	Batch ID: 66284	RunNo: 86625								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3058105 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00016	0.00020	0.0001501	0	109	50	150			J

Sample ID: LCS-66284	SampType: LCS	TestCode: EPA Method 245.1: Mercury								
Client ID: LCSW	Batch ID: 66284	RunNo: 86625								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3058106 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.6	85	115			

Sample ID: 2203825-010DMS	SampType: MS	TestCode: EPA Method 245.1: Mercury								
Client ID: DUP-3-15-22	Batch ID: 66284	RunNo: 86625								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3058154 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	75	125			

Sample ID: 2203825-010DMSD	SampType: MSD	TestCode: EPA Method 245.1: Mercury								
Client ID: DUP-3-15-22	Batch ID: 66284	RunNo: 86625								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3058155 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	105	75	125	2.36	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB-66256	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057941 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: MB-66256	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057948 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: LCS-66256	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057949 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.098	0.010	0.1000	0	98.4	70	130			

Sample ID: LCSD-66256	SampType: LCSD	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSS02	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057951 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.098	0.010	0.1000	0	98.3	70	130	0.0963	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66219	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 66219	RunNo: 86571								
Prep Date: 3/16/2022	Analysis Date: 3/18/2022	SeqNo: 3057145			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.018	0.064								J
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.037		0.03750		98.4	42.2	138			

Sample ID: LCS-66219	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 66219	RunNo: 86571								
Prep Date: 3/16/2022	Analysis Date: 3/18/2022	SeqNo: 3057146			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.15	0.064	0.1875	0	77.8	31.7	75.4			S
Surr: DNOP	0.022		0.01875		116	42.2	138			

Sample ID: LCSD-66219	SampType: LCSD	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSS02	Batch ID: 66219	RunNo: 86571								
Prep Date: 3/16/2022	Analysis Date: 3/18/2022	SeqNo: 3057152			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.13	0.064	0.1875	0	70.5	31.7	75.4	9.82	20	
Surr: DNOP	0.019		0.01875		99.4	42.2	138	0	0	

Sample ID: MB-66236	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 66236	RunNo: 86643								
Prep Date: 3/17/2022	Analysis Date: 3/22/2022	SeqNo: 3059913			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.030	0.064								J
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.039		0.03750		105	42.2	138			

Sample ID: LCSD-66236	SampType: LCSD	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSS02	Batch ID: 66236	RunNo: 86643								
Prep Date: 3/17/2022	Analysis Date: 3/22/2022	SeqNo: 3059915			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.11	0.064	0.1875	0	58.7	31.7	75.4	5.39	20	
Surr: DNOP	0.020		0.01875		105	42.2	138	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203825

28-Mar-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: LCS-66236	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 66236	RunNo: 86643								
Prep Date: 3/17/2022	Analysis Date: 3/22/2022	SeqNo: 3059918	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.12	0.064	0.1875	0	62.0	31.7	75.4			
Surr: DNOP	0.020		0.01875		107	42.2	138			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R86601			RunNo: 86601						
Prep Date:	Analysis Date: 3/18/2022			SeqNo: 3056870		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.9	70	130			
Toluene	21	1.0	20.00	0	107	70	130			
Chlorobenzene	22	1.0	20.00	0	108	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	86.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	86.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		93.3	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130			
Surr: Dibromofluoromethane	9.1		10.00		91.2	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R86601			RunNo: 86601						
Prep Date:	Analysis Date: 3/18/2022			SeqNo: 3056908		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	0.66	3.0								J
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R86601	RunNo: 86601								
Prep Date:	Analysis Date: 3/18/2022	SeqNo: 3056908			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	9.1		10.00		90.8	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R86626	RunNo: 86626								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058196			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.9	70	130			
Toluene	22	1.0	20.00	0	111	70	130			
Chlorobenzene	23	1.0	20.00	0	113	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	93.6	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	86.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.0		10.00		89.7	70	130			
Surr: Toluene-d8	9.9		10.00		98.8	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R86626	RunNo: 86626								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058226			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Acetone	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203825

28-Mar-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R86626			RunNo: 86626						
Prep Date:	Analysis Date: 3/21/2022			SeqNo: 3058226		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	0.68	3.0								J
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.0	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.7	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: mb-66226		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles						
Client ID: PBW		Batch ID: 66226		RunNo: 86667						
Prep Date: 3/17/2022		Analysis Date: 3/22/2022		SeqNo: 3059885		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzoic acid	ND	20								
Bis(2-ethylhexyl)phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
1,4-Dichlorobenzene	ND	5.0								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
3+4-Methylphenol	ND	5.0								
Naphthalene	ND	5.0								
Phenol	ND	5.0								
Pyridine	ND	10								
2,4,6-Trichlorophenol	ND	5.0								
Surr: 2-Fluorophenol	89		200.0		44.3	29.4	87.7			
Surr: Phenol-d5	68		200.0		33.9	28.5	64.7			
Surr: 2,4,6-Tribromophenol	110		200.0		53.7	18.6	129			
Surr: Nitrobenzene-d5	57		100.0		56.7	36.9	103			
Surr: 2-Fluorobiphenyl	54		100.0		54.0	38.1	99.9			
Surr: 4-Terphenyl-d14	94		100.0		94.3	48	155			

Sample ID: lcs-66226		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSW		Batch ID: 66226		RunNo: 86693						
Prep Date: 3/17/2022		Analysis Date: 3/23/2022		SeqNo: 3061232		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	43	5.0	100.0	0	42.9	15	87.6			
Phenol	63	5.0	200.0	0	31.4	16.8	70.5			
Surr: 2-Fluorophenol	82		200.0		41.1	29.4	87.7			
Surr: Phenol-d5	64		200.0		31.8	28.5	64.7			
Surr: 2,4,6-Tribromophenol	120		200.0		60.6	18.6	129			
Surr: Nitrobenzene-d5	56		100.0		55.7	36.9	103			
Surr: 2-Fluorobiphenyl	51		100.0		51.0	38.1	99.9			
Surr: 4-Terphenyl-d14	86		100.0		85.7	48	155			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203825

28-Mar-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: lcsd-66226	SampType: LCSD			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSS02	Batch ID: 66226			RunNo: 86693						
Prep Date: 3/17/2022	Analysis Date: 3/23/2022			SeqNo: 3061233		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	52	5.0	100.0	0	52.0	15	87.6	19.2	30.4	
Phenol	69	5.0	200.0	0	34.4	16.8	70.5	8.98	37.2	
Surr: 2-Fluorophenol	90		200.0		45.2	29.4	87.7	0	0	
Surr: Phenol-d5	69		200.0		34.6	28.5	64.7	0	0	
Surr: 2,4,6-Tribromophenol	120		200.0		59.9	18.6	129	0	0	
Surr: Nitrobenzene-d5	61		100.0		60.8	36.9	103	0	0	
Surr: 2-Fluorobiphenyl	54		100.0		54.2	38.1	99.9	0	0	
Surr: 4-Terphenyl-d14	88		100.0		88.0	48	155	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203825

28-Mar-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: mb-66226	SampType: MBLK	TestCode: EPA Method 8270SIM								
Client ID: PBW	Batch ID: R86628	RunNo: 86628								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058293 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.10								
2-Methylnaphthalene	ND	0.10								
Acenaphthene	ND	0.10								
Fluorene	ND	0.10								
Phenanthrene	ND	0.10								
Anthracene	ND	0.10								
Fluoranthene	ND	0.20								
Pyrene	0.22	0.40								J
Benz(a)anthracene	ND	0.10								
Chrysene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	63		100.0		63.4	31.6	100			
Surr: 2,4,6-Tribromophenol	84		200.0		42.2	22	101			
Surr: 2-Fluorobiphenyl	62		100.0		61.6	26.7	90.1			
Surr: 4-Terphenyl-d14	110		100.0		112	72.3	147			

Sample ID: lcs-66226	SampType: LCS	TestCode: EPA Method 8270SIM								
Client ID: LCSW	Batch ID: R86628	RunNo: 86628								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058294 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.68	0.10	2.000	0	34.0	20.2	48.4			
Naphthalene	1.0	0.10	2.000	0	52.0	21.3	79.9			
1-Methylnaphthalene	1.0	0.10	2.000	0	52.0	22.2	80.3			
2-Methylnaphthalene	1.0	0.10	2.000	0	51.0	20.6	80.1			
Acenaphthene	1.2	0.10	2.000	0	58.0	29.8	82.7			
Fluorene	1.2	0.10	2.000	0	59.0	33.3	86			
Phenanthrene	1.3	0.10	2.000	0	64.0	38.2	93.9			
Anthracene	1.3	0.10	2.000	0	64.0	41.1	95.6			
Fluoranthene	1.7	0.20	2.000	0	87.0	52.9	123			
Pyrene	1.7	0.40	2.000	0	84.0	51	113			
Benz(a)anthracene	2.1	0.10	2.000	0	105	51	147			
Chrysene	1.7	0.10	2.000	0	87.0	55.3	115			
Benzo(b)fluoranthene	1.9	0.10	2.000	0	96.0	44.4	136			
Indeno(1,2,3-cd)pyrene	2.3	0.30	2.000	0	115	31.4	165			
Surr: Nitrobenzene-d5	3.5		5.000		69.2	31.6	100			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Page 76 of 80

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: lcs-66226	SampType: LCS			TestCode: EPA Method 8270SIM						
Client ID: LCSW	Batch ID: R86628			RunNo: 86628						
Prep Date:	Analysis Date: 3/21/2022			SeqNo: 3058294		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	6.5		10.00		65.4	22	101			
Surr: 2-Fluorobiphenyl	3.1		5.000		62.0	26.7	90.1			
Surr: 4-Terphenyl-d14	6.3		5.000		126	72.3	147			

Sample ID: lcsd-66226	SampType: LCSD			TestCode: EPA Method 8270SIM						
Client ID: LCSS02	Batch ID: R86628			RunNo: 86628						
Prep Date:	Analysis Date: 3/21/2022			SeqNo: 3058295		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.70	0.10	2.000	0	35.0	20.2	48.4	2.90	30.1	
Naphthalene	1.0	0.10	2.000	0	52.0	21.3	79.9	0	25.6	
1-Methylnaphthalene	1.1	0.10	2.000	0	53.0	22.2	80.3	1.90	25	
2-Methylnaphthalene	1.0	0.10	2.000	0	52.0	20.6	80.1	1.94	25	
Acenaphthene	1.2	0.10	2.000	0	58.0	29.8	82.7	0	27.8	
Fluorene	1.2	0.10	2.000	0	61.0	33.3	86	3.33	26.4	
Phenanthrene	1.3	0.10	2.000	0	64.0	38.2	93.9	0	27.9	
Anthracene	1.3	0.10	2.000	0	66.0	41.1	95.6	3.08	25.6	
Fluoranthene	1.8	0.20	2.000	0	88.0	52.9	123	1.14	22.8	
Pyrene	1.7	0.40	2.000	0	86.0	51	113	2.35	20	
Benz(a)anthracene	2.0	0.10	2.000	0	100	51	147	4.88	24.1	
Chrysene	1.7	0.10	2.000	0	86.0	55.3	115	1.16	20	
Benzo(b)fluoranthene	1.9	0.10	2.000	0	95.0	44.4	136	1.05	24.5	
Indeno(1,2,3-cd)pyrene	2.2	0.30	2.000	0	112	31.4	165	2.64	21.1	
Surr: Nitrobenzene-d5	3.2		5.000		63.2	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	6.0		10.00		60.0	22	101	0	0	
Surr: 2-Fluorobiphenyl	2.7		5.000		54.4	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	6.1		5.000		122	72.3	147	0	0	

Sample ID: mb-66244	SampType: MBLK			TestCode: EPA Method 8270SIM						
Client ID: PBW	Batch ID: R86665			RunNo: 86665						
Prep Date:	Analysis Date: 3/22/2022			SeqNo: 3059830		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.10								
2-Methylnaphthalene	ND	0.10								
Acenaphthene	ND	0.10								
Fluorene	ND	0.10								
Phenanthrene	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: mb-66244	SampType: MBLK	TestCode: EPA Method 8270SIM								
Client ID: PBW	Batch ID: R86665	RunNo: 86665								
Prep Date:	Analysis Date: 3/22/2022	SeqNo: 3059830 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Anthracene	ND	0.10								
Fluoranthene	ND	0.20								
Pyrene	ND	0.20								
Benz(a)anthracene	ND	0.10								
Chrysene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	59		100.0		58.9	31.6	100			
Surr: 2,4,6-Tribromophenol	82		200.0		41.0	22	101			
Surr: 2-Fluorobiphenyl	55		100.0		55.2	26.7	90.1			
Surr: 4-Terphenyl-d14	98		100.0		98.0	72.3	147			

Sample ID: lcs-66244-lf	SampType: LCS	TestCode: EPA Method 8270SIM								
Client ID: LCSW	Batch ID: R86665	RunNo: 86665								
Prep Date:	Analysis Date: 3/22/2022	SeqNo: 3059831 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.72	0.10	2.000	0	36.0	20.2	48.4			
Naphthalene	1.1	0.10	2.000	0	57.0	21.3	79.9			
1-Methylnaphthalene	1.2	0.10	2.000	0	58.0	22.2	80.3			
2-Methylnaphthalene	1.1	0.10	2.000	0	56.0	20.6	80.1			
Acenaphthene	1.3	0.10	2.000	0	66.0	29.8	82.7			
Fluorene	1.4	0.10	2.000	0	70.0	33.3	86			
Phenanthrene	1.5	0.10	2.000	0	73.0	38.2	93.9			
Anthracene	1.5	0.10	2.000	0	77.0	41.1	95.6			
Fluoranthene	1.8	0.20	2.000	0	88.0	52.9	123			
Pyrene	1.7	0.20	2.000	0	83.0	51	113			
Benz(a)anthracene	2.0	0.10	2.000	0	100	51	147			
Chrysene	1.7	0.10	2.000	0	85.0	55.3	115			
Benzo(b)fluoranthene	1.9	0.10	2.000	0	95.0	44.4	136			
Indeno(1,2,3-cd)pyrene	2.2	0.30	2.000	0	110	31.4	165			
Surr: Nitrobenzene-d5	71		100.0		70.8	31.6	100			
Surr: 2,4,6-Tribromophenol	93		200.0		46.4	22	101			
Surr: 2-Fluorobiphenyl	66		100.0		66.3	26.7	90.1			
Surr: 4-Terphenyl-d14	91		100.0		90.6	72.3	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2203825
28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: lcsd-66244-lf		SampType: LCSD		TestCode: EPA Method 8270SIM						
Client ID: LCSS02		Batch ID: R86665		RunNo: 86665						
Prep Date:		Analysis Date: 3/22/2022		SeqNo: 3059832		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.74	0.10	2.000	0	37.0	20.2	48.4	2.74	30.1	
Surr: Nitrobenzene-d5	70		100.0		70.2	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	90		200.0		45.2	22	101	0	0	
Surr: 2-Fluorobiphenyl	65		100.0		65.3	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	91		100.0		91.3	72.3	147	0	0	

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix interference
- B

Analyte detected in the associated Method Blank
- E

Estimated value
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203825

28-Mar-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 2.5ug lcs gro	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: R86601		RunNo: 86601							
Prep Date:	Analysis Date: 3/18/2022		SeqNo: 3057007		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.51	0.050	0.5000	0	103	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.0	70	130			

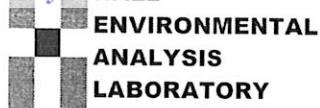
Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: R86601		RunNo: 86601							
Prep Date:	Analysis Date: 3/18/2022		SeqNo: 3057029		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.044	0.050								J
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			

Sample ID: 2.5ug lcs gro	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: G86626		RunNo: 86626							
Prep Date:	Analysis Date: 3/21/2022		SeqNo: 3058229		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: G86626		RunNo: 86626							
Prep Date:	Analysis Date: 3/21/2022		SeqNo: 3058249		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.034	0.050								J
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		



4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon**Work Order Number: **2203825**

RcptNo: 1

Received By: **Cheyenne Cason** 3/16/2022 8:00:00 AMCompleted By: **Cheyenne Cason** 3/16/2022 8:25:20 AMReviewed By: **JW 3/16/22***Cmc**Cmc*Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☒ No ☒ NA ☐
Cmc 3/16/22
9. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? Yes ☒ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved bottles checked for pH:

*18 9**(2 or > 12 unless noted)*Adjusted? *YES*Checked by: *Cmc 3/16/22*Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks: *added 20.5mL HNO3 to CORD for Ph C2 cmc 3/16/22*

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			
2	-0.1	Good	Yes			
3	0.8	Good	Yes			
4	0.5	Good	Yes			

**ENVIRONMENTAL
ANALYSIS
LABORATORY**

4901 Hawkins NE

Albuquerque, NM 87109

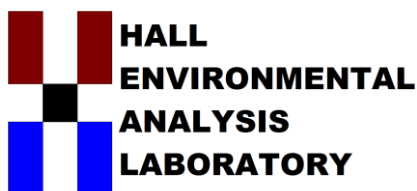
TEL: 505-345-3975 FAX: 505-345-4107

Website: clients.hallenvironmental.com

Sample Log-In Check ListClient Name: **Marathon**Work Order Number: **2203825**

RcptNo: 1

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
5	0.6	Good	Yes			



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 22, 2022

Lesli Alexander
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 632-3911

RE: 2022 GW Sampling 1st Qtr

OrderNo.: 2203920

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 9 sample(s) on 3/17/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued April 12, 2022.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

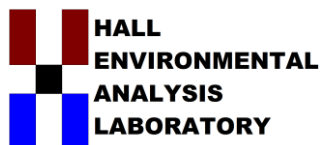
Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", with a stylized flourish at the end.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: 2203920
Date: 4/22/2022

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Analytical Notes Regarding EPA Method 8270:

"S" flagged surrogates denote low surrogate recoveries due to matrix interferences/sample dilution.

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:00:00 AM

Lab ID: 2203920-001A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Toluene	ND	0.20	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Acetone	ND	2.5	10		µg/L	1	3/21/2022 3:14:50 PM	R86626
Bromomethane	ND	0.85	3.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
2-Butanone	8.5	2.0	10	J	µg/L	1	3/21/2022 3:14:50 PM	R86626
Carbon disulfide	ND	0.59	10		µg/L	1	3/21/2022 3:14:50 PM	R86626
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Chloroform	ND	0.13	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Chloromethane	1.1	0.41	3.0	J	µg/L	1	3/21/2022 3:14:50 PM	R86626
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Styrene	ND	0.14	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/21/2022 3:14:50 PM	R86626
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/21/2022 3:14:50 PM	R86626
Surr: 1,2-Dichloroethane-d4	92.3	0	70-130		%Rec	1	3/21/2022 3:14:50 PM	R86626
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	3/21/2022 3:14:50 PM	R86626
Surr: Dibromofluoromethane	98.4	0	70-130		%Rec	1	3/21/2022 3:14:50 PM	R86626
Surr: Toluene-d8	99.6	0	70-130		%Rec	1	3/21/2022 3:14:50 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.036	0.012	0.050	J	mg/L	1	3/21/2022 3:14:50 PM	G86626
Surr: 4-Bromofluorobenzene	104	0	70-130		%Rec	1	3/21/2022 3:14:50 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:00:00 AM

Lab ID: 2203920-001B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0093		µg/L	1	3/21/2022 6:37:00 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:00:00 AM

Lab ID: 2203920-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	ND	0.016	0.064		mg/L	1	3/22/2022 4:15:00 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 4:15:00 PM	66236
Surr: DNOP	106	0	42.2-138		%Rec	1	3/22/2022 4:15:00 PM	66236
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 3:55:03 PM	66244
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 3:55:03 PM	66244
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 3:55:03 PM	66244
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 3:55:03 PM	66244
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 3:55:03 PM	66244
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 3:55:03 PM	66244
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 3:55:03 PM	66244
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/23/2022 3:55:03 PM	66244
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 3:55:03 PM	66244
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/23/2022 3:55:03 PM	66244
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 3:55:03 PM	66244
Phenol	ND	0.33	5.0		µg/L	1	3/23/2022 3:55:03 PM	66244
Pyridine	ND	10	10		µg/L	1	3/23/2022 3:55:03 PM	66244
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 3:55:03 PM	66244
Surr: 2-Fluorophenol	45.6	0	29.4-87.7		%Rec	1	3/23/2022 3:55:03 PM	66244
Surr: Phenol-d5	36.0	0	28.5-64.7		%Rec	1	3/23/2022 3:55:03 PM	66244
Surr: 2,4,6-Tribromophenol	64.6	0	18.6-129		%Rec	1	3/23/2022 3:55:03 PM	66244
Surr: Nitrobenzene-d5	56.8	0	36.9-103		%Rec	1	3/23/2022 3:55:03 PM	66244
Surr: 2-Fluorobiphenyl	54.4	0	38.1-99.9		%Rec	1	3/23/2022 3:55:03 PM	66244
Surr: 4-Terphenyl-d14	83.8	0	48-155		%Rec	1	3/23/2022 3:55:03 PM	66244
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.048	1.0		µg/L	1	3/22/2022 1:01:00 PM	R86665
Naphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Acenaphthene	ND	0.031	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Fluorene	ND	0.031	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Phenanthrene	ND	0.057	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Anthracene	ND	0.034	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Fluoranthene	ND	0.10	0.20		µg/L	1	3/22/2022 1:01:00 PM	R86665
Pyrene	ND	0.16	0.20		µg/L	1	3/22/2022 1:01:00 PM	R86665
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Chrysene	ND	0.024	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/22/2022 1:01:00 PM	R86665
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/22/2022 1:01:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:00:00 AM

Lab ID: 2203920-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	67.3	0	31.6-100		%Rec	1	3/22/2022 1:01:00 PM	R86665
Surr: 2-Fluorobiphenyl	64.6	0	26.7-90.1		%Rec	1	3/22/2022 1:01:00 PM	R86665
Surr: 4-Terphenyl-d14	105	0	72.3-147		%Rec	1	3/22/2022 1:01:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:00:00 AM

Lab ID: 2203920-001D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	ND	0.0016	0.0030		mg/L	1	4/6/2022 12:36:41 PM	66642
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 12:36:41 PM	66642
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 12:36:41 PM	66642
Chromium	ND	0.0021	0.0060		mg/L	1	4/6/2022 12:36:41 PM	66642
Cobalt	ND	0.0024	0.0060		mg/L	1	4/6/2022 12:36:41 PM	66642
Nickel	ND	0.0033	0.010		mg/L	1	4/6/2022 12:36:41 PM	66642
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 12:36:41 PM	66642
Vanadium	ND	0.0024	0.050		mg/L	1	4/6/2022 12:36:41 PM	66642
Zinc	ND	0.0064	0.010		mg/L	1	4/6/2022 12:36:41 PM	66642
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 2:00:30 PM	66254
Arsenic	ND	0.00013	0.0010		mg/L	1	3/21/2022 2:00:30 PM	66254
Lead	ND	0.000061	0.00050		mg/L	1	3/21/2022 2:00:30 PM	66254
Selenium	ND	0.00037	0.0010		mg/L	1	3/21/2022 2:00:30 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 12:30:58 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB 3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:00:00 AM

Lab ID: 2203920-001E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	ND	0.0011	0.0020		mg/L	1	3/17/2022 10:09:34 AM	A86535
Beryllium	ND	0.00088	0.0020		mg/L	1	3/17/2022 10:09:34 AM	A86535
Cadmium	ND	0.00098	0.0020		mg/L	1	3/17/2022 10:09:34 AM	A86535
Chromium	ND	0.0020	0.0060		mg/L	1	3/17/2022 10:09:34 AM	A86535
Cobalt	ND	0.0024	0.0060		mg/L	1	3/17/2022 10:09:34 AM	A86535
Nickel	ND	0.0033	0.010		mg/L	1	3/17/2022 10:09:34 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 10:09:34 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 10:09:34 AM	A86535
Zinc	0.0067	0.0032	0.010	J	mg/L	1	3/17/2022 10:09:34 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:43:26 PM	B86624
Arsenic	ND	0.00012	0.0010		mg/L	1	3/21/2022 5:43:26 PM	B86624
Lead	ND	0.000057	0.00050		mg/L	1	3/21/2022 5:43:26 PM	B86624
Selenium	ND	0.00034	0.0010		mg/L	1	3/21/2022 5:43:26 PM	B86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 12:33:05 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-40

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:30:00 AM

Lab ID: 2203920-002A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Toluene	ND	0.20	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Methyl tert-butyl ether (MTBE)	1.0	0.39	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
1,2-Dichloroethane (EDC)	0.45	0.25	1.0	J	µg/L	1	3/21/2022 3:43:27 PM	R86626
Acetone	ND	2.5	10		µg/L	1	3/21/2022 3:43:27 PM	R86626
Bromomethane	ND	0.85	3.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
2-Butanone	ND	2.0	10		µg/L	1	3/21/2022 3:43:27 PM	R86626
Carbon disulfide	ND	0.59	10		µg/L	1	3/21/2022 3:43:27 PM	R86626
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Chloroform	ND	0.13	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Chloromethane	0.75	0.41	3.0	J	µg/L	1	3/21/2022 3:43:27 PM	R86626
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
1,1-Dichloroethane	0.85	0.27	1.0	J	µg/L	1	3/21/2022 3:43:27 PM	R86626
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Styrene	ND	0.14	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/21/2022 3:43:27 PM	R86626
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/21/2022 3:43:27 PM	R86626
Surr: 1,2-Dichloroethane-d4	96.9	0	70-130		%Rec	1	3/21/2022 3:43:27 PM	R86626
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	1	3/21/2022 3:43:27 PM	R86626
Surr: Dibromofluoromethane	99.3	0	70-130		%Rec	1	3/21/2022 3:43:27 PM	R86626
Surr: Toluene-d8	104	0	70-130		%Rec	1	3/21/2022 3:43:27 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.038	0.012	0.050	J	mg/L	1	3/21/2022 3:43:27 PM	G86626
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	3/21/2022 3:43:27 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-40

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:30:00 AM

Lab ID: 2203920-002B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0093		µg/L	1	3/21/2022 6:52:06 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-40

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:30:00 AM

Lab ID: 2203920-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.058	0.016	0.064	J	mg/L	1	3/22/2022 4:38:39 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 4:38:39 PM	66236
Surr: DNOP	100	0	42.2-138		%Rec	1	3/22/2022 4:38:39 PM	66236
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 4:36:18 PM	66244
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 4:36:18 PM	66244
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 4:36:18 PM	66244
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 4:36:18 PM	66244
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 4:36:18 PM	66244
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 4:36:18 PM	66244
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 4:36:18 PM	66244
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/23/2022 4:36:18 PM	66244
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 4:36:18 PM	66244
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/23/2022 4:36:18 PM	66244
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 4:36:18 PM	66244
Phenol	ND	0.33	5.0		µg/L	1	3/23/2022 4:36:18 PM	66244
Pyridine	ND	10	10		µg/L	1	3/23/2022 4:36:18 PM	66244
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 4:36:18 PM	66244
Surr: 2-Fluorophenol	45.7	0	29.4-87.7		%Rec	1	3/23/2022 4:36:18 PM	66244
Surr: Phenol-d5	36.3	0	28.5-64.7		%Rec	1	3/23/2022 4:36:18 PM	66244
Surr: 2,4,6-Tribromophenol	52.1	0	18.6-129		%Rec	1	3/23/2022 4:36:18 PM	66244
Surr: Nitrobenzene-d5	58.4	0	36.9-103		%Rec	1	3/23/2022 4:36:18 PM	66244
Surr: 2-Fluorobiphenyl	54.8	0	38.1-99.9		%Rec	1	3/23/2022 4:36:18 PM	66244
Surr: 4-Terphenyl-d14	78.5	0	48-155		%Rec	1	3/23/2022 4:36:18 PM	66244
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	11	0.048	1.0		µg/L	1	3/22/2022 1:46:00 PM	R86665
Naphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Acenaphthene	ND	0.031	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Fluorene	ND	0.031	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Phenanthrene	ND	0.057	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Anthracene	ND	0.034	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Fluoranthene	ND	0.10	0.20		µg/L	1	3/22/2022 1:46:00 PM	R86665
Pyrene	ND	0.16	0.20		µg/L	1	3/22/2022 1:46:00 PM	R86665
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Chrysene	ND	0.024	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/22/2022 1:46:00 PM	R86665
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/22/2022 1:46:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-40

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:30:00 AM

Lab ID: 2203920-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	69.2	0	31.6-100		%Rec	1	3/22/2022 1:46:00 PM	R86665
Surr: 2-Fluorobiphenyl	66.2	0	26.7-90.1		%Rec	1	3/22/2022 1:46:00 PM	R86665
Surr: 4-Terphenyl-d14	94.4	0	72.3-147		%Rec	1	3/22/2022 1:46:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-40

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:30:00 AM

Lab ID: 2203920-002D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.12	0.0016	0.0030		mg/L	1	4/6/2022 12:39:55 PM	66642
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 12:39:55 PM	66642
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 12:39:55 PM	66642
Chromium	ND	0.0021	0.0060		mg/L	1	4/6/2022 12:39:55 PM	66642
Cobalt	0.0039	0.0024	0.0060	J	mg/L	1	4/6/2022 12:39:55 PM	66642
Nickel	0.0094	0.0033	0.010	J	mg/L	1	4/6/2022 12:39:55 PM	66642
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 12:39:55 PM	66642
Vanadium	0.016	0.0024	0.050	J	mg/L	1	4/6/2022 12:39:55 PM	66642
Zinc	0.0079	0.0064	0.010	J	mg/L	1	4/6/2022 12:39:55 PM	66642
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.0022	0.0050		mg/L	5	3/21/2022 2:56:42 PM	66254
Arsenic	0.0013	0.00063	0.0050	J	mg/L	5	3/21/2022 2:56:42 PM	66254
Lead	0.0024	0.00031	0.0025	J	mg/L	5	3/21/2022 2:56:42 PM	66254
Selenium	ND	0.0019	0.0050		mg/L	5	3/21/2022 2:56:42 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.000099	0.000091	0.00020	J	mg/L	1	3/24/2022 12:35:13 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-40

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 8:30:00 AM

Lab ID: 2203920-002E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.060	0.0011	0.0020		mg/L	1	3/17/2022 10:11:09 AM	A86535
Beryllium	ND	0.00088	0.0020		mg/L	1	3/17/2022 10:11:09 AM	A86535
Cadmium	ND	0.00098	0.0020		mg/L	1	3/17/2022 10:11:09 AM	A86535
Chromium	ND	0.0020	0.0060		mg/L	1	3/17/2022 10:11:09 AM	A86535
Cobalt	0.0051	0.0024	0.0060	J	mg/L	1	3/17/2022 10:11:09 AM	A86535
Nickel	0.010	0.0033	0.010		mg/L	1	3/17/2022 10:11:09 AM	A86535
Silver	0.0016	0.0013	0.0050	J	mg/L	1	3/17/2022 10:11:09 AM	A86535
Vanadium	0.0084	0.0017	0.050	J	mg/L	1	3/17/2022 10:11:09 AM	A86535
Zinc	0.010	0.0032	0.010		mg/L	1	3/17/2022 10:11:09 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.0022	0.0050		mg/L	5	3/21/2022 6:26:28 PM	B86624
Arsenic	ND	0.00061	0.0050		mg/L	5	3/21/2022 6:26:28 PM	B86624
Lead	ND	0.00028	0.0025		mg/L	5	3/21/2022 6:26:28 PM	B86624
Selenium	ND	0.0017	0.0050		mg/L	5	3/21/2022 6:26:28 PM	B86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 12:37:20 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-31

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:10:00 AM

Lab ID: 2203920-003A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	1.1	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Toluene	ND	1.0	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Ethylbenzene	ND	1.1	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Methyl tert-butyl ether (MTBE)	350	2.0	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
1,2,4-Trimethylbenzene	ND	0.61	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
1,3,5-Trimethylbenzene	ND	0.91	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
1,2-Dichloroethane (EDC)	12	1.3	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Acetone	ND	13	50		µg/L	5	3/21/2022 5:09:01 PM	R86626
Bromomethane	ND	4.3	15		µg/L	5	3/21/2022 5:09:01 PM	R86626
2-Butanone	ND	10	50		µg/L	5	3/21/2022 5:09:01 PM	R86626
Carbon disulfide	ND	3.0	50		µg/L	5	3/21/2022 5:09:01 PM	R86626
Chlorobenzene	ND	0.78	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Chloroform	ND	0.67	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Chloromethane	3.5	2.1	15	J	µg/L	5	3/21/2022 5:09:01 PM	R86626
cis-1,2-DCE	3.2	1.9	5.0	J	µg/L	5	3/21/2022 5:09:01 PM	R86626
1,1-Dichloroethane	27	1.4	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
1,1-Dichloroethene	34	1.0	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Isopropylbenzene	ND	0.91	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
4-Isopropyltoluene	ND	1.0	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Methylene Chloride	ND	2.5	15		µg/L	5	3/21/2022 5:09:01 PM	R86626
n-Butylbenzene	ND	1.3	15		µg/L	5	3/21/2022 5:09:01 PM	R86626
n-Propylbenzene	ND	0.91	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
sec-Butylbenzene	ND	0.72	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Styrene	ND	0.68	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
1,1,1-Trichloroethane	2.3	1.5	5.0	J	µg/L	5	3/21/2022 5:09:01 PM	R86626
Trichloroethene (TCE)	5.2	1.0	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Vinyl chloride	ND	1.6	5.0		µg/L	5	3/21/2022 5:09:01 PM	R86626
Xylenes, Total	ND	1.9	7.5		µg/L	5	3/21/2022 5:09:01 PM	R86626
Surr: 1,2-Dichloroethane-d4	98.8	0	70-130		%Rec	5	3/21/2022 5:09:01 PM	R86626
Surr: 4-Bromofluorobenzene	99.0	0	70-130		%Rec	5	3/21/2022 5:09:01 PM	R86626
Surr: Dibromofluoromethane	98.6	0	70-130		%Rec	5	3/21/2022 5:09:01 PM	R86626
Surr: Toluene-d8	103	0	70-130		%Rec	5	3/21/2022 5:09:01 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.55	0.061	0.25		mg/L	5	3/21/2022 5:09:01 PM	G86626
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	5	3/21/2022 5:09:01 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-31

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:10:00 AM

Lab ID: 2203920-003B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0093		µg/L	1	3/21/2022 7:07:12 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-31

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:10:00 AM

Lab ID: 2203920-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.29	0.016	0.064		mg/L	1	3/22/2022 5:25:58 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 5:25:58 PM	66236
Surr: DNOP	103	0	42.2-138		%Rec	1	3/22/2022 5:25:58 PM	66236
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 5:17:56 PM	66244
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 5:17:56 PM	66244
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 5:17:56 PM	66244
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 5:17:56 PM	66244
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 5:17:56 PM	66244
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 5:17:56 PM	66244
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 5:17:56 PM	66244
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/23/2022 5:17:56 PM	66244
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 5:17:56 PM	66244
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/23/2022 5:17:56 PM	66244
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 5:17:56 PM	66244
Phenol	ND	0.33	5.0		µg/L	1	3/23/2022 5:17:56 PM	66244
Pyridine	ND	10	10		µg/L	1	3/23/2022 5:17:56 PM	66244
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 5:17:56 PM	66244
Surr: 2-Fluorophenol	40.9	0	29.4-87.7		%Rec	1	3/23/2022 5:17:56 PM	66244
Surr: Phenol-d5	33.4	0	28.5-64.7		%Rec	1	3/23/2022 5:17:56 PM	66244
Surr: 2,4,6-Tribromophenol	52.8	0	18.6-129		%Rec	1	3/23/2022 5:17:56 PM	66244
Surr: Nitrobenzene-d5	49.4	0	36.9-103		%Rec	1	3/23/2022 5:17:56 PM	66244
Surr: 2-Fluorobiphenyl	49.5	0	38.1-99.9		%Rec	1	3/23/2022 5:17:56 PM	66244
Surr: 4-Terphenyl-d14	71.7	0	48-155		%Rec	1	3/23/2022 5:17:56 PM	66244
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	81	0.48	10		µg/L	10	3/23/2022 10:54:00 PM	R86694
Naphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Acenaphthene	ND	0.031	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Fluorene	ND	0.031	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Phenanthrene	ND	0.057	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Anthracene	ND	0.034	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Fluoranthene	ND	0.10	0.20		µg/L	1	3/22/2022 2:31:00 PM	R86665
Pyrene	ND	0.16	0.20		µg/L	1	3/22/2022 2:31:00 PM	R86665
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Chrysene	ND	0.024	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/22/2022 2:31:00 PM	R86665
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/22/2022 2:31:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-31

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:10:00 AM

Lab ID: 2203920-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	65.1	0	31.6-100		%Rec	1	3/22/2022 2:31:00 PM	R86665
Surr: 2-Fluorobiphenyl	59.8	0	26.7-90.1		%Rec	1	3/22/2022 2:31:00 PM	R86665
Surr: 4-Terphenyl-d14	87.9	0	72.3-147		%Rec	1	3/22/2022 2:31:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-31

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:10:00 AM

Lab ID: 2203920-003D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.30	0.0016	0.0030		mg/L	1	4/6/2022 12:42:48 PM	66642
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 12:42:48 PM	66642
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 12:42:48 PM	66642
Chromium	0.010	0.0021	0.0060		mg/L	1	4/6/2022 12:42:48 PM	66642
Cobalt	0.0085	0.0024	0.0060		mg/L	1	4/6/2022 12:42:48 PM	66642
Nickel	0.012	0.0033	0.010		mg/L	1	4/6/2022 12:42:48 PM	66642
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 12:42:48 PM	66642
Vanadium	0.025	0.0024	0.050	J	mg/L	1	4/6/2022 12:42:48 PM	66642
Zinc	0.020	0.0064	0.010		mg/L	1	4/6/2022 12:42:48 PM	66642
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 2:05:23 PM	66254
Arsenic	0.0021	0.00013	0.0010		mg/L	1	3/21/2022 2:05:23 PM	66254
Lead	0.0084	0.000061	0.00050		mg/L	1	3/21/2022 2:05:23 PM	66254
Selenium	0.0018	0.00037	0.0010		mg/L	1	3/21/2022 2:05:23 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00013	0.000091	0.00020	J	mg/L	1	3/24/2022 12:43:43 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-31

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:10:00 AM

Lab ID: 2203920-003E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.12	0.0011	0.0020		mg/L	1	3/17/2022 10:14:28 AM	A86535
Beryllium	ND	0.00088	0.0020		mg/L	1	3/17/2022 10:14:28 AM	A86535
Cadmium	ND	0.00098	0.0020		mg/L	1	3/17/2022 10:14:28 AM	A86535
Chromium	ND	0.0020	0.0060		mg/L	1	3/17/2022 10:14:28 AM	A86535
Cobalt	ND	0.0024	0.0060		mg/L	1	3/17/2022 10:14:28 AM	A86535
Nickel	0.0066	0.0033	0.010	J	mg/L	1	3/17/2022 10:14:28 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 10:14:28 AM	A86535
Vanadium	0.0024	0.0017	0.050	J	mg/L	1	3/17/2022 10:14:28 AM	A86535
Zinc	0.0082	0.0032	0.010	J	mg/L	1	3/17/2022 10:14:28 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:54:13 PM	B86624
Arsenic	0.00059	0.00012	0.0010	J	mg/L	1	3/21/2022 5:54:13 PM	B86624
Lead	0.00012	0.000057	0.00050	J	mg/L	1	3/21/2022 5:54:13 PM	B86624
Selenium	ND	0.00034	0.0010		mg/L	1	3/21/2022 5:54:13 PM	B86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 12:45:51 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-25

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:50:00 AM

Lab ID: 2203920-004A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	96	2.3	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Toluene	ND	2.0	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Ethylbenzene	ND	2.1	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Methyl tert-butyl ether (MTBE)	180	3.9	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
1,2,4-Trimethylbenzene	ND	1.2	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
1,3,5-Trimethylbenzene	ND	1.8	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
1,2-Dichloroethane (EDC)	5.8	2.5	5.0		µg/L	10	3/21/2022 6:34:54 PM	R86626
Acetone	ND	25	100		µg/L	10	3/21/2022 6:34:54 PM	R86626
Bromomethane	ND	8.5	30		µg/L	10	3/21/2022 6:34:54 PM	R86626
2-Butanone	ND	20	100		µg/L	10	3/21/2022 6:34:54 PM	R86626
Carbon disulfide	ND	5.9	100		µg/L	10	3/21/2022 6:34:54 PM	R86626
Chlorobenzene	ND	1.6	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Chloroform	ND	1.3	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Chloromethane	9.9	4.1	30	J	µg/L	10	3/21/2022 6:34:54 PM	R86626
cis-1,2-DCE	8.0	3.9	10	J	µg/L	10	3/21/2022 6:34:54 PM	R86626
1,1-Dichloroethane	51	2.7	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
1,1-Dichloroethene	9.2	2.0	10	J	µg/L	10	3/21/2022 6:34:54 PM	R86626
Isopropylbenzene	ND	1.8	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
4-Isopropyltoluene	ND	2.0	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Methylene Chloride	ND	5.0	30		µg/L	10	3/21/2022 6:34:54 PM	R86626
n-Butylbenzene	ND	2.5	30		µg/L	10	3/21/2022 6:34:54 PM	R86626
n-Propylbenzene	ND	1.8	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
sec-Butylbenzene	ND	1.4	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Styrene	ND	1.4	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	3/21/2022 6:34:54 PM	R86626
Trichloroethene (TCE)	5.7	2.0	10	J	µg/L	10	3/21/2022 6:34:54 PM	R86626
Vinyl chloride	7.1	3.2	10	J	µg/L	10	3/21/2022 6:34:54 PM	R86626
Xylenes, Total	ND	3.7	15		µg/L	10	3/21/2022 6:34:54 PM	R86626
Surr: 1,2-Dichloroethane-d4	95.9	0	70-130		%Rec	10	3/21/2022 6:34:54 PM	R86626
Surr: 4-Bromofluorobenzene	98.1	0	70-130		%Rec	10	3/21/2022 6:34:54 PM	R86626
Surr: Dibromofluoromethane	99.5	0	70-130		%Rec	10	3/21/2022 6:34:54 PM	R86626
Surr: Toluene-d8	99.0	0	70-130		%Rec	10	3/21/2022 6:34:54 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.97	0.12	0.50		mg/L	10	3/21/2022 6:34:54 PM	G86626
Surr: 4-Bromofluorobenzene	99.8	0	70-130		%Rec	10	3/21/2022 6:34:54 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: MKTF-25
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/16/2022 9:50:00 AM
Lab ID: 2203920-004B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/21/2022 7:22:16 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-25

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:50:00 AM

Lab ID: 2203920-004C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE					Analyst: SB			
Diesel Range Organics (DRO)	0.36	0.016	0.064		mg/L	1	3/22/2022 5:49:38 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 5:49:38 PM	66236
Surr: DNOP	98.5	0	42.2-138		%Rec	1	3/22/2022 5:49:38 PM	66236
EPA METHOD 8270C: SEMIVOLATILES					Analyst: DAM			
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 5:59:21 PM	66244
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 5:59:21 PM	66244
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 5:59:21 PM	66244
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 5:59:21 PM	66244
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 5:59:21 PM	66244
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 5:59:21 PM	66244
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 5:59:21 PM	66244
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/23/2022 5:59:21 PM	66244
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 5:59:21 PM	66244
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/23/2022 5:59:21 PM	66244
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 5:59:21 PM	66244
Phenol	4.1	0.33	5.0	J	µg/L	1	3/23/2022 5:59:21 PM	66244
Pyridine	ND	10	10		µg/L	1	3/23/2022 5:59:21 PM	66244
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 5:59:21 PM	66244
Surr: 2-Fluorophenol	36.7	0	29.4-87.7		%Rec	1	3/23/2022 5:59:21 PM	66244
Surr: Phenol-d5	29.3	0	28.5-64.7		%Rec	1	3/23/2022 5:59:21 PM	66244
Surr: 2,4,6-Tribromophenol	60.0	0	18.6-129		%Rec	1	3/23/2022 5:59:21 PM	66244
Surr: Nitrobenzene-d5	50.2	0	36.9-103		%Rec	1	3/23/2022 5:59:21 PM	66244
Surr: 2-Fluorobiphenyl	51.1	0	38.1-99.9		%Rec	1	3/23/2022 5:59:21 PM	66244
Surr: 4-Terphenyl-d14	70.0	0	48-155		%Rec	1	3/23/2022 5:59:21 PM	66244
EPA METHOD 8270SIM					Analyst: DAM			
1,4-Dioxane	28	0.48	10		µg/L	10	3/23/2022 11:38:00 PM	R86694
Naphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Acenaphthene	ND	0.031	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Fluorene	ND	0.031	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Phenanthrene	ND	0.057	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Anthracene	ND	0.034	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Fluoranthene	ND	0.10	0.20		µg/L	1	3/22/2022 3:16:00 PM	R86665
Pyrene	ND	0.16	0.20		µg/L	1	3/22/2022 3:16:00 PM	R86665
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Chrysene	ND	0.024	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/22/2022 3:16:00 PM	R86665
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/22/2022 3:16:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-25

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:50:00 AM

Lab ID: 2203920-004C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	59.1	0	31.6-100		%Rec	1	3/22/2022 3:16:00 PM	R86665
Surr: 2-Fluorobiphenyl	55.6	0	26.7-90.1		%Rec	1	3/22/2022 3:16:00 PM	R86665
Surr: 4-Terphenyl-d14	79.8	0	72.3-147		%Rec	1	3/22/2022 3:16:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-25

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:50:00 AM

Lab ID: 2203920-004D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.33	0.0016	0.0030		mg/L	1	4/6/2022 12:45:34 PM	66642
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 12:45:34 PM	66642
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 12:45:34 PM	66642
Chromium	0.0037	0.0021	0.0060	J	mg/L	1	4/6/2022 12:45:34 PM	66642
Cobalt	0.0080	0.0024	0.0060		mg/L	1	4/6/2022 12:45:34 PM	66642
Nickel	0.029	0.0033	0.010		mg/L	1	4/6/2022 12:45:34 PM	66642
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 12:45:34 PM	66642
Vanadium	0.016	0.0024	0.050	J	mg/L	1	4/6/2022 12:45:34 PM	66642
Zinc	0.010	0.0064	0.010		mg/L	1	4/6/2022 12:45:34 PM	66642
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 2:07:49 PM	66254
Arsenic	0.0031	0.00063	0.0050	J	mg/L	5	3/21/2022 3:01:35 PM	66254
Lead	0.0055	0.00031	0.0025		mg/L	5	3/21/2022 3:01:35 PM	66254
Selenium	0.0023	0.0019	0.0050	J	mg/L	5	3/21/2022 3:01:35 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 12:48:00 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-25

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 9:50:00 AM

Lab ID: 2203920-004E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.19	0.0011	0.0020		mg/L	1	3/17/2022 10:38:20 AM	A86535
Beryllium	ND	0.00088	0.0020		mg/L	1	3/17/2022 10:38:20 AM	A86535
Cadmium	ND	0.00098	0.0020		mg/L	1	3/17/2022 10:38:20 AM	A86535
Chromium	ND	0.0020	0.0060		mg/L	1	3/17/2022 10:38:20 AM	A86535
Cobalt	0.0058	0.0024	0.0060	J	mg/L	1	3/17/2022 10:38:20 AM	A86535
Nickel	0.029	0.0033	0.010		mg/L	1	3/17/2022 10:38:20 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 10:38:20 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 10:38:20 AM	A86535
Zinc	0.0054	0.0032	0.010	J	mg/L	1	3/17/2022 10:38:20 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:56:54 PM	B86624
Arsenic	0.00079	0.00012	0.0010	J	mg/L	1	3/21/2022 5:56:54 PM	B86624
Lead	0.00023	0.000057	0.00050	J	mg/L	1	3/21/2022 5:56:54 PM	B86624
Selenium	0.00041	0.00034	0.0010	J	mg/L	1	3/21/2022 5:56:54 PM	B86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 12:50:09 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-24

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:15:00 AM

Lab ID: 2203920-005A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	4700	23	100		µg/L	100	3/21/2022 7:03:30 PM	R86626
Toluene	19	2.0	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Ethylbenzene	250	2.1	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Methyl tert-butyl ether (MTBE)	79	3.9	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
1,2,4-Trimethylbenzene	ND	1.2	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
1,3,5-Trimethylbenzene	ND	1.8	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
1,2-Dichloroethane (EDC)	5.9	2.5	10	J	µg/L	10	3/21/2022 7:32:04 PM	R86626
Acetone	ND	25	100		µg/L	10	3/21/2022 7:32:04 PM	R86626
Bromomethane	ND	8.5	30		µg/L	10	3/21/2022 7:32:04 PM	R86626
2-Butanone	ND	20	100		µg/L	10	3/21/2022 7:32:04 PM	R86626
Carbon disulfide	ND	5.9	100		µg/L	10	3/21/2022 7:32:04 PM	R86626
Chlorobenzene	ND	1.6	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Chloroform	ND	1.3	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Chloromethane	ND	4.1	30		µg/L	10	3/21/2022 7:32:04 PM	R86626
cis-1,2-DCE	ND	3.9	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
1,1-Dichloroethane	13	2.7	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
1,1-Dichloroethene	6.1	2.0	10	J	µg/L	10	3/21/2022 7:32:04 PM	R86626
Isopropylbenzene	19	1.8	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
4-Isopropyltoluene	ND	2.0	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Methylene Chloride	ND	5.0	30		µg/L	10	3/21/2022 7:32:04 PM	R86626
n-Butylbenzene	7.7	2.5	30	J	µg/L	10	3/21/2022 7:32:04 PM	R86626
n-Propylbenzene	34	1.8	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
sec-Butylbenzene	4.6	1.4	10	J	µg/L	10	3/21/2022 7:32:04 PM	R86626
Styrene	ND	1.4	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Trichloroethene (TCE)	3.2	2.0	10	J	µg/L	10	3/21/2022 7:32:04 PM	R86626
Vinyl chloride	25	3.2	10		µg/L	10	3/21/2022 7:32:04 PM	R86626
Xylenes, Total	ND	3.7	15		µg/L	10	3/21/2022 7:32:04 PM	R86626
Surr: 1,2-Dichloroethane-d4	95.2	0	70-130		%Rec	10	3/21/2022 7:32:04 PM	R86626
Surr: 4-Bromofluorobenzene	97.1	0	70-130		%Rec	10	3/21/2022 7:32:04 PM	R86626
Surr: Dibromofluoromethane	103	0	70-130		%Rec	10	3/21/2022 7:32:04 PM	R86626
Surr: Toluene-d8	101	0	70-130		%Rec	10	3/21/2022 7:32:04 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	12	0.12	0.50		mg/L	10	3/21/2022 7:32:04 PM	G86626
Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	10	3/21/2022 7:32:04 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203920-005B

Client Sample ID: MKTF-24

Collection Date: 3/16/2022 10:15:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0094		µg/L	1	3/21/2022 7:37:25 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-24

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:15:00 AM

Lab ID: 2203920-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.87	0.016	0.064		mg/L	1	3/22/2022 6:13:15 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 6:13:15 PM	66236
Surr: DNOP	105	0	42.2-138		%Rec	1	3/22/2022 6:13:15 PM	66236
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 6:40:50 PM	66244
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 6:40:50 PM	66244
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 6:40:50 PM	66244
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 6:40:50 PM	66244
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 6:40:50 PM	66244
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 6:40:50 PM	66244
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 6:40:50 PM	66244
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/23/2022 6:40:50 PM	66244
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 6:40:50 PM	66244
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/23/2022 6:40:50 PM	66244
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 6:40:50 PM	66244
Phenol	20	0.33	5.0		µg/L	1	3/23/2022 6:40:50 PM	66244
Pyridine	ND	10	10		µg/L	1	3/23/2022 6:40:50 PM	66244
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 6:40:50 PM	66244
Surr: 2-Fluorophenol	34.5	0	29.4-87.7		%Rec	1	3/23/2022 6:40:50 PM	66244
Surr: Phenol-d5	30.3	0	28.5-64.7		%Rec	1	3/23/2022 6:40:50 PM	66244
Surr: 2,4,6-Tribromophenol	52.9	0	18.6-129		%Rec	1	3/23/2022 6:40:50 PM	66244
Surr: Nitrobenzene-d5	46.0	0	36.9-103		%Rec	1	3/23/2022 6:40:50 PM	66244
Surr: 2-Fluorobiphenyl	47.8	0	38.1-99.9		%Rec	1	3/23/2022 6:40:50 PM	66244
Surr: 4-Terphenyl-d14	70.1	0	48-155		%Rec	1	3/23/2022 6:40:50 PM	66244
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	18	0.48	10		µg/L	10	3/24/2022 12:21:00 AM	R86694
Naphthalene	1.0	0.034	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
1-Methylnaphthalene	4.7	0.024	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Acenaphthene	0.46	0.031	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Fluorene	ND	0.031	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Phenanthrene	ND	0.057	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Anthracene	ND	0.034	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Fluoranthene	ND	0.10	0.20		µg/L	1	3/22/2022 4:01:00 PM	R86665
Pyrene	ND	0.16	0.20		µg/L	1	3/22/2022 4:01:00 PM	R86665
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Chrysene	ND	0.024	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/22/2022 4:01:00 PM	R86665
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/22/2022 4:01:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-24

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:15:00 AM

Lab ID: 2203920-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	71.1	0	31.6-100		%Rec	1	3/22/2022 4:01:00 PM	R86665
Surr: 2-Fluorobiphenyl	64.0	0	26.7-90.1		%Rec	1	3/22/2022 4:01:00 PM	R86665
Surr: 4-Terphenyl-d14	92.2	0	72.3-147		%Rec	1	3/22/2022 4:01:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-24

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:15:00 AM

Lab ID: 2203920-005D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.76	0.0016	0.0030		mg/L	1	4/6/2022 12:48:22 PM	66642
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 12:48:22 PM	66642
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 12:48:22 PM	66642
Chromium	ND	0.0021	0.0060		mg/L	1	4/6/2022 12:48:22 PM	66642
Cobalt	0.012	0.0024	0.0060		mg/L	1	4/6/2022 12:48:22 PM	66642
Nickel	0.031	0.0033	0.010		mg/L	1	4/6/2022 12:48:22 PM	66642
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 12:48:22 PM	66642
Vanadium	0.0067	0.0024	0.050	J	mg/L	1	4/6/2022 12:48:22 PM	66642
Zinc	0.0076	0.0064	0.010	J	mg/L	1	4/6/2022 12:48:22 PM	66642
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 2:10:16 PM	66254
Arsenic	0.0030	0.00063	0.0050	J	mg/L	5	3/21/2022 3:06:29 PM	66254
Lead	0.0047	0.00031	0.0025		mg/L	5	3/21/2022 3:06:29 PM	66254
Selenium	0.0019	0.0019	0.0050	J	mg/L	5	3/21/2022 3:06:29 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.00045	0.0010		mg/L	5	3/24/2022 2:50:47 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-24

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:15:00 AM

Lab ID: 2203920-005E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.81	0.0011	0.0020		mg/L	1	3/17/2022 10:41:39 AM	A86535
Beryllium	ND	0.00088	0.0020		mg/L	1	3/17/2022 10:41:39 AM	A86535
Cadmium	ND	0.00098	0.0020		mg/L	1	3/17/2022 10:41:39 AM	A86535
Chromium	ND	0.0020	0.0060		mg/L	1	3/17/2022 10:41:39 AM	A86535
Cobalt	0.011	0.0024	0.0060		mg/L	1	3/17/2022 10:41:39 AM	A86535
Nickel	0.033	0.0033	0.010		mg/L	1	3/17/2022 10:41:39 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 10:41:39 AM	A86535
Vanadium	ND	0.0017	0.050		mg/L	1	3/17/2022 10:41:39 AM	A86535
Zinc	0.0088	0.0032	0.010	J	mg/L	1	3/17/2022 10:41:39 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 5:59:35 PM	B86624
Arsenic	0.0031	0.00012	0.0010		mg/L	1	3/21/2022 5:59:35 PM	B86624
Lead	0.00069	0.000057	0.00050		mg/L	1	3/21/2022 5:59:35 PM	B86624
Selenium	0.00039	0.00034	0.0010	J	mg/L	1	3/21/2022 5:59:35 PM	B86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 12:58:45 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-02R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:40:00 AM

Lab ID: 2203920-006A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	78	0.23	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Toluene	ND	0.20	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Methyl tert-butyl ether (MTBE)	53	0.39	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
1,2-Dichloroethane (EDC)	57	0.25	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Acetone	ND	2.5	10		µg/L	1	3/21/2022 8:00:44 PM	R86626
Bromomethane	ND	0.85	3.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
2-Butanone	ND	2.0	10		µg/L	1	3/21/2022 8:00:44 PM	R86626
Carbon disulfide	ND	0.59	10		µg/L	1	3/21/2022 8:00:44 PM	R86626
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Chloroform	1.4	0.13	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Chloromethane	1.9	0.41	3.0	J	µg/L	1	3/21/2022 8:00:44 PM	R86626
cis-1,2-DCE	3.6	0.39	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
1,1-Dichloroethane	100	2.7	10		µg/L	10	3/22/2022 12:49:42 PM	R86666
1,1-Dichloroethene	290	2.0	10		µg/L	10	3/22/2022 12:49:42 PM	R86666
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Methylene Chloride	1.1	0.50	3.0	J	µg/L	1	3/21/2022 8:00:44 PM	R86626
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Styrene	ND	0.14	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Tetrachloroethene (PCE)	0.36	0.36	1.0	J	µg/L	1	3/21/2022 8:00:44 PM	R86626
1,1,1-Trichloroethane	1.1	0.30	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Trichloroethene (TCE)	23	0.20	1.0		µg/L	1	3/21/2022 8:00:44 PM	R86626
Vinyl chloride	0.75	0.32	1.0	J	µg/L	1	3/21/2022 8:00:44 PM	R86626
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/21/2022 8:00:44 PM	R86626
Surr: 1,2-Dichloroethane-d4	93.5	0	70-130		%Rec	1	3/21/2022 8:00:44 PM	R86626
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	3/21/2022 8:00:44 PM	R86626
Surr: Dibromofluoromethane	96.2	0	70-130		%Rec	1	3/21/2022 8:00:44 PM	R86626
Surr: Toluene-d8	99.6	0	70-130		%Rec	1	3/21/2022 8:00:44 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.63	0.012	0.050		mg/L	1	3/21/2022 8:00:44 PM	G86626
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	3/21/2022 8:00:44 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 1st Qtr

Lab ID: 2203920-006B

Client Sample ID: MKTF-02R

Collection Date: 3/16/2022 10:40:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	0.39	0.069	0.19		µg/L	20	3/22/2022 7:34:00 AM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-02R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:40:00 AM

Lab ID: 2203920-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.24	0.016	0.064		mg/L	1	3/22/2022 6:36:53 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 6:36:53 PM	66236
Surr: DNOP	105	0	42.2-138		%Rec	1	3/22/2022 6:36:53 PM	66236
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 7:22:07 PM	66244
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 7:22:07 PM	66244
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 7:22:07 PM	66244
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 7:22:07 PM	66244
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 7:22:07 PM	66244
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 7:22:07 PM	66244
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 7:22:07 PM	66244
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/23/2022 7:22:07 PM	66244
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 7:22:07 PM	66244
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/23/2022 7:22:07 PM	66244
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 7:22:07 PM	66244
Phenol	ND	0.33	5.0		µg/L	1	3/23/2022 7:22:07 PM	66244
Pyridine	ND	10	10		µg/L	1	3/23/2022 7:22:07 PM	66244
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 7:22:07 PM	66244
Surr: 2-Fluorophenol	6.13	0	29.4-87.7	S	%Rec	1	3/23/2022 7:22:07 PM	66244
Surr: Phenol-d5	19.0	0	28.5-64.7	S	%Rec	1	3/23/2022 7:22:07 PM	66244
Surr: 2,4,6-Tribromophenol	2.36	0	18.6-129	S	%Rec	1	3/23/2022 7:22:07 PM	66244
Surr: Nitrobenzene-d5	48.7	0	36.9-103		%Rec	1	3/23/2022 7:22:07 PM	66244
Surr: 2-Fluorobiphenyl	46.4	0	38.1-99.9		%Rec	1	3/23/2022 7:22:07 PM	66244
Surr: 4-Terphenyl-d14	80.2	0	48-155		%Rec	1	3/23/2022 7:22:07 PM	66244
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	110	0.48	10		µg/L	10	3/24/2022 1:05:00 AM	R86694
Naphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Acenaphthene	ND	0.031	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Fluorene	ND	0.031	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Phenanthrene	ND	0.057	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Anthracene	ND	0.034	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Fluoranthene	ND	0.10	0.20		µg/L	1	3/22/2022 4:46:00 PM	R86665
Pyrene	ND	0.16	0.20		µg/L	1	3/22/2022 4:46:00 PM	R86665
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Chrysene	ND	0.024	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/22/2022 4:46:00 PM	R86665
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/22/2022 4:46:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-02R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:40:00 AM

Lab ID: 2203920-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	55.0	0	31.6-100		%Rec	1	3/22/2022 4:46:00 PM	R86665
Surr: 2-Fluorobiphenyl	53.4	0	26.7-90.1		%Rec	1	3/22/2022 4:46:00 PM	R86665
Surr: 4-Terphenyl-d14	86.9	0	72.3-147		%Rec	1	3/22/2022 4:46:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-02R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:40:00 AM

Lab ID: 2203920-006D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.086	0.0016	0.0030		mg/L	1	4/6/2022 12:58:58 PM	66642
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 12:58:58 PM	66642
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 12:58:58 PM	66642
Chromium	ND	0.0021	0.0060		mg/L	1	4/6/2022 12:58:58 PM	66642
Cobalt	0.0060	0.0024	0.0060	J	mg/L	1	4/6/2022 12:58:58 PM	66642
Nickel	0.013	0.0033	0.010		mg/L	1	4/6/2022 12:58:58 PM	66642
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 12:58:58 PM	66642
Vanadium	0.0075	0.0024	0.050	J	mg/L	1	4/6/2022 12:58:58 PM	66642
Zinc	0.011	0.0064	0.010		mg/L	1	4/6/2022 12:58:58 PM	66642
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.0022	0.0050		mg/L	5	3/21/2022 3:11:22 PM	66254
Arsenic	0.0021	0.00063	0.0050	J	mg/L	5	3/21/2022 3:11:22 PM	66254
Lead	0.0012	0.00031	0.0025	J	mg/L	5	3/21/2022 3:11:22 PM	66254
Selenium	ND	0.0019	0.0050		mg/L	5	3/21/2022 3:11:22 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 1:00:52 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-02R

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:40:00 AM

Lab ID: 2203920-006E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.048	0.0011	0.0020		mg/L	1	3/17/2022 10:44:49 AM	A86535
Beryllium	ND	0.00088	0.0020		mg/L	1	3/17/2022 10:44:49 AM	A86535
Cadmium	ND	0.00098	0.0020		mg/L	1	3/17/2022 10:44:49 AM	A86535
Chromium	ND	0.0020	0.0060		mg/L	1	3/17/2022 10:44:49 AM	A86535
Cobalt	0.0041	0.0024	0.0060	J	mg/L	1	3/17/2022 10:44:49 AM	A86535
Nickel	0.014	0.0033	0.010		mg/L	1	3/17/2022 10:44:49 AM	A86535
Silver	0.0016	0.0013	0.0050	J	mg/L	1	3/17/2022 10:44:49 AM	A86535
Vanadium	0.0032	0.0017	0.050	J	mg/L	1	3/17/2022 10:44:49 AM	A86535
Zinc	0.013	0.0032	0.010		mg/L	1	3/17/2022 10:44:49 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 6:02:16 PM	B86624
Arsenic	0.0018	0.00061	0.0050	J	mg/L	5	3/21/2022 6:37:13 PM	B86624
Lead	ND	0.00028	0.0025		mg/L	5	3/21/2022 6:37:13 PM	B86624
Selenium	ND	0.0017	0.0050		mg/L	5	3/21/2022 6:37:13 PM	B86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 1:03:00 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: FB 3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022 10:40:00 AM

Lab ID: 2203920-007A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Toluene	ND	0.20	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Acetone	ND	2.5	10		µg/L	1	3/22/2022 1:18:14 PM	R86666
Bromomethane	ND	0.85	3.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
2-Butanone	5.7	2.0	10	J	µg/L	1	3/22/2022 1:18:14 PM	R86666
Carbon disulfide	ND	0.59	10		µg/L	1	3/22/2022 1:18:14 PM	R86666
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Chloroform	ND	0.13	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Chloromethane	0.84	0.41	3.0	J	µg/L	1	3/22/2022 1:18:14 PM	R86666
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
1,1-Dichloroethene	0.57	0.20	1.0	J	µg/L	1	3/22/2022 1:18:14 PM	R86666
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Styrene	ND	0.14	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/22/2022 1:18:14 PM	R86666
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/22/2022 1:18:14 PM	R86666
Surr: 1,2-Dichloroethane-d4	87.3	0	70-130		%Rec	1	3/22/2022 1:18:14 PM	R86666
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	1	3/22/2022 1:18:14 PM	R86666
Surr: Dibromofluoromethane	96.8	0	70-130		%Rec	1	3/22/2022 1:18:14 PM	R86666
Surr: Toluene-d8	98.6	0	70-130		%Rec	1	3/22/2022 1:18:14 PM	R86666

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022

Lab ID: 2203920-008A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	1.2	1.1	5.0	J	µg/L	5	3/21/2022 8:57:49 PM	R86626
Toluene	ND	1.0	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Ethylbenzene	ND	1.1	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Methyl tert-butyl ether (MTBE)	340	2.0	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
1,2,4-Trimethylbenzene	ND	0.61	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
1,3,5-Trimethylbenzene	ND	0.91	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
1,2-Dichloroethane (EDC)	12	1.3	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Acetone	ND	13	50		µg/L	5	3/21/2022 8:57:49 PM	R86626
Bromomethane	ND	4.3	15		µg/L	5	3/21/2022 8:57:49 PM	R86626
2-Butanone	ND	10	50		µg/L	5	3/21/2022 8:57:49 PM	R86626
Carbon disulfide	ND	3.0	50		µg/L	5	3/21/2022 8:57:49 PM	R86626
Chlorobenzene	ND	0.78	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Chloroform	ND	0.67	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Chloromethane	3.4	2.1	15	J	µg/L	5	3/21/2022 8:57:49 PM	R86626
cis-1,2-DCE	3.1	1.9	5.0	J	µg/L	5	3/21/2022 8:57:49 PM	R86626
1,1-Dichloroethane	30	1.4	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
1,1-Dichloroethene	41	1.0	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Isopropylbenzene	ND	0.91	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
4-Isopropyltoluene	ND	1.0	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Methylene Chloride	ND	2.5	15		µg/L	5	3/21/2022 8:57:49 PM	R86626
n-Butylbenzene	ND	1.3	15		µg/L	5	3/21/2022 8:57:49 PM	R86626
n-Propylbenzene	ND	0.91	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
sec-Butylbenzene	ND	0.72	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Styrene	ND	0.68	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
1,1,1-Trichloroethane	2.3	1.5	5.0	J	µg/L	5	3/21/2022 8:57:49 PM	R86626
Trichloroethene (TCE)	5.1	1.0	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Vinyl chloride	ND	1.6	5.0		µg/L	5	3/21/2022 8:57:49 PM	R86626
Xylenes, Total	ND	1.9	7.5		µg/L	5	3/21/2022 8:57:49 PM	R86626
Surr: 1,2-Dichloroethane-d4	98.7	0	70-130		%Rec	5	3/21/2022 8:57:49 PM	R86626
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	5	3/21/2022 8:57:49 PM	R86626
Surr: Dibromofluoromethane	103	0	70-130		%Rec	5	3/21/2022 8:57:49 PM	R86626
Surr: Toluene-d8	104	0	70-130		%Rec	5	3/21/2022 8:57:49 PM	R86626
EPA METHOD 8015D: GASOLINE RANGE							Analyst: JR	
Gasoline Range Organics (GRO)	0.55	0.061	0.25		mg/L	5	3/21/2022 8:57:49 PM	G86626
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	5	3/21/2022 8:57:49 PM	G86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: DUP-3-16-22
Project: 2022 GW Sampling 1st Qtr Collection Date: 3/16/2022
Lab ID: 2203920-008B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0034	0.0094		µg/L	1	3/21/2022 8:07:34 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022

Lab ID: 2203920-008C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: SB	
Diesel Range Organics (DRO)	0.27	0.016	0.064		mg/L	1	3/22/2022 7:00:26 PM	66236
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	3/22/2022 7:00:26 PM	66236
Surr: DNOP	95.6	0	42.2-138		%Rec	1	3/22/2022 7:00:26 PM	66236
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	1.1	20		µg/L	1	3/23/2022 8:54:17 PM	66244
Bis(2-ethylhexyl)phthalate	ND	4.5	10		µg/L	1	3/23/2022 8:54:17 PM	66244
Di-n-butyl phthalate	ND	6.5	10		µg/L	1	3/23/2022 8:54:17 PM	66244
Di-n-octyl phthalate	ND	3.1	20		µg/L	1	3/23/2022 8:54:17 PM	66244
1,4-Dichlorobenzene	ND	0.70	5.0		µg/L	1	3/23/2022 8:54:17 PM	66244
Diethyl phthalate	ND	3.9	10		µg/L	1	3/23/2022 8:54:17 PM	66244
Dimethyl phthalate	ND	2.0	10		µg/L	1	3/23/2022 8:54:17 PM	66244
2,4-Dimethylphenol	ND	0.97	5.0		µg/L	1	3/23/2022 8:54:17 PM	66244
2,4-Dinitrophenol	ND	0.50	5.0		µg/L	1	3/23/2022 8:54:17 PM	66244
2-Methylphenol	ND	0.51	5.0		µg/L	1	3/23/2022 8:54:17 PM	66244
3+4-Methylphenol	ND	0.45	5.0		µg/L	1	3/23/2022 8:54:17 PM	66244
Phenol	ND	0.33	5.0		µg/L	1	3/23/2022 8:54:17 PM	66244
Pyridine	ND	10	10		µg/L	1	3/23/2022 8:54:17 PM	66244
2,4,6-Trichlorophenol	ND	0.43	5.0		µg/L	1	3/23/2022 8:54:17 PM	66244
Surr: 2-Fluorophenol	40.0	0	29.4-87.7		%Rec	1	3/23/2022 8:54:17 PM	66244
Surr: Phenol-d5	31.9	0	28.5-64.7		%Rec	1	3/23/2022 8:54:17 PM	66244
Surr: 2,4,6-Tribromophenol	56.7	0	18.6-129		%Rec	1	3/23/2022 8:54:17 PM	66244
Surr: Nitrobenzene-d5	49.1	0	36.9-103		%Rec	1	3/23/2022 8:54:17 PM	66244
Surr: 2-Fluorobiphenyl	52.5	0	38.1-99.9		%Rec	1	3/23/2022 8:54:17 PM	66244
Surr: 4-Terphenyl-d14	70.6	0	48-155		%Rec	1	3/23/2022 8:54:17 PM	66244
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	63	0.48	10		µg/L	10	3/24/2022 1:48:00 AM	R86694
Naphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
1-Methylnaphthalene	ND	0.024	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
2-Methylnaphthalene	ND	0.034	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Acenaphthene	ND	0.031	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Fluorene	ND	0.031	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Phenanthrene	ND	0.057	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Anthracene	ND	0.034	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Fluoranthene	ND	0.10	0.20		µg/L	1	3/22/2022 5:31:00 PM	R86665
Pyrene	ND	0.16	0.20		µg/L	1	3/22/2022 5:31:00 PM	R86665
Benz(a)anthracene	ND	0.036	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Chrysene	ND	0.024	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Benzo(b)fluoranthene	ND	0.057	0.10		µg/L	1	3/22/2022 5:31:00 PM	R86665
Indeno(1,2,3-cd)pyrene	ND	0.043	0.30		µg/L	1	3/22/2022 5:31:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022

Lab ID: 2203920-008C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	59.6	0	31.6-100		%Rec	1	3/22/2022 5:31:00 PM	R86665
Surr: 2-Fluorobiphenyl	62.7	0	26.7-90.1		%Rec	1	3/22/2022 5:31:00 PM	R86665
Surr: 4-Terphenyl-d14	85.6	0	72.3-147		%Rec	1	3/22/2022 5:31:00 PM	R86665

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022

Lab ID: 2203920-008D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: ELS	
Barium	0.34	0.0016	0.0030		mg/L	1	4/6/2022 1:01:46 PM	66643
Beryllium	ND	0.00088	0.0020		mg/L	1	4/6/2022 1:01:46 PM	66643
Cadmium	ND	0.0015	0.0020		mg/L	1	4/6/2022 1:01:46 PM	66643
Chromium	0.0091	0.0021	0.0060		mg/L	1	4/6/2022 1:01:46 PM	66643
Cobalt	0.0075	0.0024	0.0060		mg/L	1	4/6/2022 1:01:46 PM	66643
Nickel	0.012	0.0033	0.010		mg/L	1	4/6/2022 1:01:46 PM	66643
Silver	ND	0.0013	0.0050		mg/L	1	4/6/2022 1:01:46 PM	66643
Vanadium	0.026	0.0024	0.050	J	mg/L	1	4/6/2022 1:01:46 PM	66643
Zinc	0.022	0.0064	0.010		mg/L	1	4/6/2022 1:01:46 PM	66643
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 2:20:03 PM	66254
Arsenic	0.0023	0.00013	0.0010		mg/L	1	3/21/2022 2:20:03 PM	66254
Lead	0.0095	0.00031	0.0025		mg/L	5	3/21/2022 3:18:43 PM	66254
Selenium	0.0019	0.00037	0.0010		mg/L	1	3/21/2022 2:20:03 PM	66254
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 1:09:23 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-3-16-22

Project: 2022 GW Sampling 1st Qtr

Collection Date: 3/16/2022

Lab ID: 2203920-008E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS	
Barium	0.12	0.0011	0.0020		mg/L	1	3/17/2022 10:48:08 AM	A86535
Beryllium	ND	0.00088	0.0020		mg/L	1	3/17/2022 10:48:08 AM	A86535
Cadmium	ND	0.00098	0.0020		mg/L	1	3/17/2022 10:48:08 AM	A86535
Chromium	ND	0.0020	0.0060		mg/L	1	3/17/2022 10:48:08 AM	A86535
Cobalt	ND	0.0024	0.0060		mg/L	1	3/17/2022 10:48:08 AM	A86535
Nickel	0.0051	0.0033	0.010	J	mg/L	1	3/17/2022 10:48:08 AM	A86535
Silver	ND	0.0013	0.0050		mg/L	1	3/17/2022 10:48:08 AM	A86535
Vanadium	0.0022	0.0017	0.050	J	mg/L	1	3/17/2022 10:48:08 AM	A86535
Zinc	0.0096	0.0032	0.010	J	mg/L	1	3/17/2022 10:48:08 AM	A86535
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	3/21/2022 6:04:58 PM	B86624
Arsenic	0.00049	0.00012	0.0010	J	mg/L	1	3/21/2022 6:04:58 PM	B86624
Lead	0.00015	0.000057	0.00050	J	mg/L	1	3/21/2022 6:04:58 PM	B86624
Selenium	ND	0.00034	0.0010		mg/L	1	3/21/2022 6:04:58 PM	B86624
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	3/24/2022 1:11:31 PM	66370

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 1st Qtr

Collection Date:

Lab ID: 2203920-009A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Toluene	ND	0.20	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Ethylbenzene	ND	0.21	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Acetone	ND	2.5	10		µg/L	1	3/21/2022 9:26:16 PM	R86626
Bromomethane	ND	0.85	3.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
2-Butanone	ND	2.0	10		µg/L	1	3/21/2022 9:26:16 PM	R86626
Carbon disulfide	ND	0.59	10		µg/L	1	3/21/2022 9:26:16 PM	R86626
Chlorobenzene	ND	0.16	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Chloroform	ND	0.13	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Chloromethane	0.69	0.41	3.0	J	µg/L	1	3/21/2022 9:26:16 PM	R86626
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
1,1-Dichloroethene	0.68	0.20	1.0	J	µg/L	1	3/21/2022 9:26:16 PM	R86626
Isopropylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Methylene Chloride	ND	0.50	3.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
n-Butylbenzene	ND	0.25	3.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
n-Propylbenzene	ND	0.18	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Styrene	ND	0.14	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Vinyl chloride	ND	0.32	1.0		µg/L	1	3/21/2022 9:26:16 PM	R86626
Xylenes, Total	ND	0.37	1.5		µg/L	1	3/21/2022 9:26:16 PM	R86626
Surr: 1,2-Dichloroethane-d4	96.8	0	70-130		%Rec	1	3/21/2022 9:26:16 PM	R86626
Surr: 4-Bromofluorobenzene	98.0	0	70-130		%Rec	1	3/21/2022 9:26:16 PM	R86626
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	3/21/2022 9:26:16 PM	R86626
Surr: Toluene-d8	103	0	70-130		%Rec	1	3/21/2022 9:26:16 PM	R86626

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2203920

Date Reported: 4/22/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: Trip Blank
Project: 2022 GW Sampling 1st Qtr Collection Date:
Lab ID: 2203920-009B Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: JME	
1,2-Dibromoethane	ND	0.0035	0.0095		µg/L	1	3/21/2022 8:22:40 PM	66256

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		



ANALYTICAL REPORT

April 01, 2022

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1473076

Samples Received: 03/18/2022

Project Number:

Description:

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

Entire Report Reviewed By:

A handwritten signature in blue ink that reads "John V. Hawkins".

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
22039020-001F EB 3-16-22 L1473076-01	5	
2203920-002F MKTF-40 L1473076-02	6	⁴ Cn
2203920-003F MKTF-31 L1473076-03	7	⁵ Sr
2203920-004F MKTF-25 L1473076-04	8	
2203920-005F MKTF-24 L1473076-05	9	⁶ Qc
2203920-006F MKTF-02R L1473076-06	10	
2203920-008F DUP-3-16-22 L1473076-07	11	⁷ Gl
Qc: Quality Control Summary	12	⁸ Al
Wet Chemistry by Method 4500CN E-2016	12	
Gl: Glossary of Terms	15	⁹ Sc
Al: Accreditations & Locations	16	
Sc: Sample Chain of Custody	17	

22039020-001F EB 3-16-22 L1473076-01 WW

				Collected by	Collected date/time	Received date/time
					03/16/22 08:00	03/18/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1838528	1	03/27/22 12:37	03/31/22 17:03	LDT	Mt. Juliet, TN

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

2203920-002F MKTF-40 L1473076-02 WW

				Collected by	Collected date/time	Received date/time
					03/16/22 08:30	03/18/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1838528	1	03/27/22 12:37	03/31/22 17:04	LDT	Mt. Juliet, TN

2203920-003F MKTF-31 L1473076-03 WW

				Collected by	Collected date/time	Received date/time
					03/16/22 09:10	03/18/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1838528	1	03/27/22 12:37	03/31/22 17:06	LDT	Mt. Juliet, TN

2203920-004F MKTF-25 L1473076-04 WW

				Collected by	Collected date/time	Received date/time
					03/16/22 09:50	03/18/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1837590	1	03/27/22 23:48	03/31/22 17:35	LDT	Mt. Juliet, TN

2203920-005F MKTF-24 L1473076-05 WW

				Collected by	Collected date/time	Received date/time
					03/16/22 10:15	03/18/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1836404	1	03/22/22 19:57	03/25/22 15:09	LDT	Mt. Juliet, TN

2203920-006F MKTF-02R L1473076-06 WW

				Collected by	Collected date/time	Received date/time
					03/16/22 10:40	03/18/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1836404	1	03/22/22 19:57	03/25/22 15:11	LDT	Mt. Juliet, TN

2203920-008F DUP-3-16-22 L1473076-07 WW

				Collected by	Collected date/time	Received date/time
					03/16/22 00:00	03/18/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1836404	1	03/22/22 19:57	03/25/22 15:14	LDT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



John Hawkins
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/31/2022 17:03	WG1838528

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	0.00839		0.00500	1	03/31/2022 17:04	WG1838528

- ¹Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Qc
- ⁷Gl
- ⁸Al
- ⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	0.00964	P1	0.00500	1	03/31/2022 17:06	WG1838528

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	0.00896		0.00500	1	03/31/2022 17:35	WG1837590

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND	P1	0.00500	1	03/25/2022 15:09	WG1836404

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Cyanide	0.0129	J3 J6	0.00500	1	03/25/2022 15:11	WG1836404

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	03/25/2022 15:14	WG1836404

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3774273-1 03/25/22 14:53

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1472882-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1472882-02 03/25/22 15:06 • (DUP) R3774273-5 03/25/22 15:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

L1473076-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1473076-05 03/25/22 15:09 • (DUP) R3774273-6 03/25/22 15:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	200	P1	20

Laboratory Control Sample (LCS)

(LCS) R3774273-2 03/25/22 14:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.101	101	87.1-120	

L1472837-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1472837-02 03/25/22 15:01 • (MS) R3774273-3 03/25/22 15:02 • (MSD) R3774273-4 03/25/22 15:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0902	0.0642	90.2	64.2	1	90.0-110		J3 J6	33.7	20

L1473076-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1473076-06 03/25/22 15:11 • (MS) R3774273-7 03/25/22 15:12 • (MSD) R3774273-8 03/25/22 15:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	0.0129	0.0921	0.116	79.2	103	1	90.0-110	J6	J3	23.0	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3776429-1 03/31/22 17:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1473076-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1473076-04 03/31/22 17:35 • (DUP) R3776429-3 03/31/22 17:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.00896	0.00951	1	5.96		20

L1474198-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1474198-07 03/31/22 17:43 • (DUP) R3776429-6 03/31/22 17:44

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3776429-2 03/31/22 17:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.0998	99.8	87.1-120	

L1473759-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1473759-02 03/31/22 17:37 • (MS) R3776429-4 03/31/22 17:38 • (MSD) R3776429-5 03/31/22 17:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0978	0.0991	95.4	96.7	1	90.0-110			1.32	20

L1474337-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1474337-01 03/31/22 17:48 • (MS) R3776429-7 03/31/22 17:49 • (MSD) R3776429-8 03/31/22 17:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0493	0.0546	49.3	54.6	1	90.0-110	J6	J6	10.2	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

[L1473076-01,02,03](#)

Method Blank (MB)

(MB) R3776292-1 03/31/22 16:33

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1472759-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1472759-02 03/31/22 16:45 • (DUP) R3776292-5 03/31/22 16:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

L1473076-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1473076-03 03/31/22 17:06 • (DUP) R3776292-8 03/31/22 17:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Cyanide	0.00964	0.00693	1	32.7	<u>P1</u>	20

Laboratory Control Sample (LCS)

(LCS) R3776292-2 03/31/22 16:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Cyanide	0.100	0.0991	99.1	87.1-120	

L1472743-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1472743-04 03/31/22 16:38 • (MS) R3776292-3 03/31/22 16:39 • (MSD) R3776292-4 03/31/22 16:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0652	0.0977	65.2	97.7	1	90.0-110	<u>J6</u>	<u>J3</u>	39.9	20

L1472879-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1472879-02 03/31/22 16:53 • (MS) R3776292-6 03/31/22 16:54 • (MSD) R3776292-7 03/31/22 16:57

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0878	0.0826	87.8	82.6	1	90.0-110	<u>J6</u>	<u>J6</u>	6.10	20

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

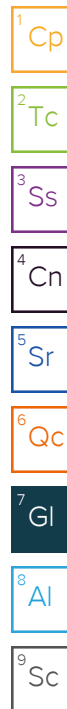
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

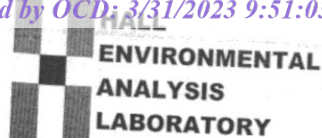
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory

E069

01 Hawkins NE

que, NM 87109

TEL: 505-345-3975

FAX: 505-345-4107

Website: clients.hallenvironmental.com

SUB CONTRACTOR		Pace TN		COMPANY:		PACE TN		PHONE:		(800) 767-5859		FAX:		(615) 758-5859	
ADDRESS:		12065 Lebanon Rd		ACCOUNT #:				EMAIL:							
CITY, STATE, ZIP:		Mt. Juliet, TN 37122													

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2203920-001F	EB 3-16-22	500AMBHDP	Groundw	3/16/2022 8:00:00 AM	1	Total Cyanide -01
2	2203920-002F	MKTF-40	500AMBHDP	Groundw	3/16/2022 8:30:00 AM	1	Total Cyanide -02
3	2203920-003F	MKTF-31	500AMBHDP	Groundw	3/16/2022 9:10:00 AM	1	Total Cyanide -03
4	2203920-004F	MKTF-25	500AMBHDP	Groundw	3/16/2022 9:50:00 AM	1	Total Cyanide -04
5	2203920-005F	MKTF-24	500AMBHDP	Groundw	3/16/2022 10:15:00 AM	1	Total Cyanide -05
6	2203920-006F	MKTF-02R	500AMBHDP	Groundw	3/16/2022 10:40:00 AM	1	Total Cyanide -06
7	2203920-008F	DUP-3-16-22	500AMBHDP	Groundw	3/16/2022	1	Total Cyanide -07

L1473076

DRA2.6+0=.6

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N IF Applicable

COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N

Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N

Correct bottles used: ☒ Y ☐ N

Sufficient volume sent: ☒ Y ☐ N

RAD Screen <0.5 mR/hr: ☒ Y ☐ N

SPECIAL INSTRUCTIONS / COMMENTS:

Fed ex 5528 5947 9444

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: CMC	Date: 3/17/2022	Time: 8:05 AM	Received By: Veronica Sistrunk	Date: 3/18/22	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

REPORT TRANSMITTAL DESIRED:	
☐ HARDCOPY (extra cost)	☐ FAX ☐ EMAIL ☐ ONLINE
FOR LAB USE ONLY	
Temp of samples	C Attempt to Cool ?
Comments:	

TAT:	Standard ☒	RUSH	Next BD	2nd BD	3rd BD
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053828 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LL LCS	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053830 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0017	0.0030	0.002000	0	82.9	50	150			J
Beryllium	0.0022	0.0020	0.002000	0	108	50	150			
Cadmium	0.0019	0.0020	0.002000	0	97.4	50	150			J
Chromium	0.0068	0.0060	0.006000	0	114	50	150			
Cobalt	0.0059	0.0060	0.006000	0	98.3	50	150			J
Nickel	0.0046	0.010	0.005000	0	92.0	50	150			J
Silver	0.0053	0.0050	0.005000	0	105	50	150			
Vanadium	0.010	0.050	0.01000	0	103	50	150			J
Zinc	0.012	0.010	0.01000	0	117	50	150			

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053834 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0030	0.5000	0	100	85	115			
Beryllium	0.51	0.0020	0.5000	0	102	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.2	85	115			
Chromium	0.50	0.0060	0.5000	0	99.2	85	115			
Cobalt	0.49	0.0060	0.5000	0	97.2	85	115			
Nickel	0.48	0.010	0.5000	0	95.8	85	115			
Silver	0.099	0.0050	0.1000	0	99.1	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.50	0.010	0.5000	0	99.2	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66642	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: 66642	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075584 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LLCS-66642	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: 66642	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075585 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0018	0.0030	0.002000	0	88.4	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	99.0	50	150			J
Cadmium	0.0016	0.0020	0.002000	0	78.0	50	150			J
Chromium	0.0063	0.0060	0.006000	0	105	50	150			
Cobalt	0.0061	0.0060	0.006000	0	102	50	150			
Nickel	0.0034	0.010	0.005000	0	67.7	50	150			J
Silver	0.0044	0.0050	0.005000	0	88.7	50	150			J
Vanadium	0.010	0.050	0.01000	0	101	50	150			J
Zinc	0.011	0.010	0.01000	0	107	50	150			

Sample ID: LCS-66642	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: 66642	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075586 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0030	0.5000	0	97.1	85	115			
Beryllium	0.52	0.0020	0.5000	0	104	85	115			
Cadmium	0.47	0.0020	0.5000	0	94.7	85	115			
Chromium	0.49	0.0060	0.5000	0	97.6	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.7	85	115			
Nickel	0.47	0.010	0.5000	0	93.3	85	115			
Silver	0.098	0.0050	0.1000	0	98.3	85	115			
Vanadium	0.49	0.050	0.5000	0	99.0	85	115			
Zinc	0.48	0.010	0.5000	0	95.7	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66643	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: 66643	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075587 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LLCS-66643	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: 66643	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075588 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0021	0.0030	0.002000	0	105	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	102	50	150			
Cadmium	0.0017	0.0020	0.002000	0	86.8	50	150			J
Chromium	0.0056	0.0060	0.006000	0	92.5	50	150			J
Cobalt	0.0068	0.0060	0.006000	0	114	50	150			
Nickel	0.0034	0.010	0.005000	0	69.0	50	150			J
Silver	0.0043	0.0050	0.005000	0	86.5	50	150			J
Vanadium	0.010	0.050	0.01000	0	101	50	150			J
Zinc	0.010	0.010	0.01000	0	99.8	50	150			J

Sample ID: LCS-66643	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: 66643	RunNo: 87030								
Prep Date: 4/5/2022	Analysis Date: 4/6/2022	SeqNo: 3075589 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0030	0.5000	0	95.8	85	115			
Beryllium	0.52	0.0020	0.5000	0	103	85	115			
Cadmium	0.47	0.0020	0.5000	0	94.4	85	115			
Chromium	0.48	0.0060	0.5000	0	96.1	85	115			
Cobalt	0.46	0.0060	0.5000	0	92.4	85	115			
Nickel	0.46	0.010	0.5000	0	92.5	85	115			
Silver	0.099	0.0050	0.1000	0	98.6	85	115			
Vanadium	0.50	0.050	0.5000	0	99.5	85	115			
Zinc	0.47	0.010	0.5000	0	94.4	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053829 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LL LCS	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: BatchQC	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053831 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0017	0.0020	0.002000	0	82.9	50	150			J
Beryllium	0.0022	0.0020	0.002000	0	108	50	150			
Cadmium	0.0019	0.0020	0.002000	0	97.4	50	150			J
Chromium	0.0068	0.0060	0.006000	0	114	50	150			
Cobalt	0.0059	0.0060	0.006000	0	98.3	50	150			J
Nickel	0.0046	0.010	0.005000	0	92.0	50	150			J
Silver	0.0053	0.0050	0.005000	0	105	50	150			
Vanadium	0.010	0.050	0.01000	0	103	50	150			J
Zinc	0.012	0.010	0.01000	0	117	50	150			

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: LCSW	Batch ID: A86535	RunNo: 86535								
Prep Date:	Analysis Date: 3/17/2022	SeqNo: 3053835 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	100	85	115			
Beryllium	0.51	0.0020	0.5000	0	102	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.2	85	115			
Chromium	0.50	0.0060	0.5000	0	99.2	85	115			
Cobalt	0.49	0.0060	0.5000	0	97.2	85	115			
Nickel	0.48	0.010	0.5000	0	95.8	85	115			
Silver	0.099	0.0050	0.1000	0	99.1	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.50	0.010	0.5000	0	99.2	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66254		SampType: MBLK			TestCode: EPA 200.8: Metals					
Client ID: PBW		Batch ID: 66254			RunNo: 86616					
Prep Date: 3/17/2022		Analysis Date: 3/21/2022			SeqNo: 3057671		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: MSLLCS-66254		SampType: LCSLL		TestCode: EPA 200.8: Metals						
Client ID: BatchQC		Batch ID: 66254		RunNo: 86616						
Prep Date: 3/17/2022		Analysis Date: 3/21/2022		SeqNo: 3057672		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0012	0.0010	0.001000	0	116	50	150			
Arsenic	0.00095	0.0010	0.001000	0	95.3	50	150			J
Lead	0.00049	0.00050	0.0005000	0	98.9	50	150			J
Selenium	0.00089	0.0010	0.001000	0	89.2	50	150			J

Sample ID: MSLCS-66254		SampType: LCS		TestCode: EPA 200.8: Metals						
Client ID: LCSW		Batch ID: 66254		RunNo: 86616						
Prep Date: 3/17/2022		Analysis Date: 3/21/2022		SeqNo: 3057673			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	99.3	85	115			
Arsenic	0.025	0.0010	0.02500	0	101	85	115			
Lead	0.013	0.00050	0.01250	0	102	85	115			
Selenium	0.026	0.0010	0.02500	0	105	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: B86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058031 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: B86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058032 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	104	50	150			
Arsenic	0.0011	0.0010	0.001000	0	110	50	150			
Lead	0.00054	0.00050	0.0005000	0	108	50	150			
Selenium	0.0012	0.0010	0.001000	0	117	50	150			

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: B86624	RunNo: 86624								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058033 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	102	85	115			
Arsenic	0.027	0.0010	0.02500	0	108	85	115			
Lead	0.014	0.00050	0.01250	0	108	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB-66370	SampType: MBLK	TestCode: EPA Method 245.1: Mercury								
Client ID: PBW	Batch ID: 66370	RunNo: 86726								
Prep Date: 3/24/2022	Analysis Date: 3/24/2022	SeqNo: 3061890 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: LCSLL-66370	SampType: LCSLL	TestCode: EPA Method 245.1: Mercury								
Client ID: BatchQC	Batch ID: 66370	RunNo: 86726								
Prep Date: 3/24/2022	Analysis Date: 3/24/2022	SeqNo: 3061891 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00017	0.00020	0.0001500	0	114	50	150			J

Sample ID: LCS-66370	SampType: LCS	TestCode: EPA Method 245.1: Mercury								
Client ID: LCSW	Batch ID: 66370	RunNo: 86726								
Prep Date: 3/24/2022	Analysis Date: 3/24/2022	SeqNo: 3061892 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.6	85	115			

Sample ID: 2203920-005DMS	SampType: MS	TestCode: EPA Method 245.1: Mercury								
Client ID: MKTF-24	Batch ID: 66370	RunNo: 86726								
Prep Date: 3/24/2022	Analysis Date: 3/24/2022	SeqNo: 3061940 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.0010	0.005000	0	99.0	75	125			

Sample ID: 2203920-005DMSD	SampType: MSD	TestCode: EPA Method 245.1: Mercury								
Client ID: MKTF-24	Batch ID: 66370	RunNo: 86726								
Prep Date: 3/24/2022	Analysis Date: 3/24/2022	SeqNo: 3061941 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0055	0.0010	0.005000	0	110	75	125	10.2	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: MB-66256	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057941 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: MB-66256	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057948 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: LCS-66256	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057949 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.098	0.010	0.1000	0	98.4	70	130			

Sample ID: LCSD-66256	SampType: LCSD	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSS02	Batch ID: 66256	RunNo: 86618								
Prep Date: 3/21/2022	Analysis Date: 3/21/2022	SeqNo: 3057951 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.098	0.010	0.1000	0	98.3	70	130	0.0963	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: MB-66236	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 66236	RunNo: 86643								
Prep Date: 3/17/2022	Analysis Date: 3/22/2022	SeqNo: 3059913			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.030	0.064								J
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.039		0.03750		105	42.2	138			

Sample ID: LCSD-66236	SampType: LCSD	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSS02	Batch ID: 66236	RunNo: 86643								
Prep Date: 3/17/2022	Analysis Date: 3/22/2022	SeqNo: 3059915			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.11	0.064	0.1875	0	58.7	31.7	75.4	5.39	20	
Surr: DNOP	0.020		0.01875		105	42.2	138	0	0	

Sample ID: LCS-66236	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 66236	RunNo: 86643								
Prep Date: 3/17/2022	Analysis Date: 3/22/2022	SeqNo: 3059918			Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.12	0.064	0.1875	0	62.0	31.7	75.4			
Surr: DNOP	0.020		0.01875		107	42.2	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: R86626		RunNo: 86626							
Prep Date:	Analysis Date: 3/21/2022		SeqNo: 3058196		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.9	70	130			
Toluene	22	1.0	20.00	0	111	70	130			
Chlorobenzene	23	1.0	20.00	0	113	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	93.6	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	86.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.0		10.00		89.7	70	130			
Surr: Toluene-d8	9.9		10.00		98.8	70	130			

Sample ID: 2203920-002ams	SampType: MS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: MKTF-40	Batch ID: R86626		RunNo: 86626							
Prep Date:	Analysis Date: 3/21/2022		SeqNo: 3058206		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	22	1.0	20.00	0	109	70	130			
Chlorobenzene	22	1.0	20.00	0	109	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	94.7	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.3	70	130			

Sample ID: 2203920-002amsd	SampType: MSD		TestCode: EPA Method 8260B: VOLATILES							
Client ID: MKTF-40	Batch ID: R86626		RunNo: 86626							
Prep Date:	Analysis Date: 3/21/2022		SeqNo: 3058207		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130	2.81	20	
Toluene	22	1.0	20.00	0	108	70	130	0.522	20	
Chlorobenzene	22	1.0	20.00	0	110	70	130	0.815	20	
1,1-Dichloroethene	20	1.0	20.00	0	99.5	70	130	2.52	20	
Trichloroethene (TCE)	18	1.0	20.00	0	91.4	70	130	3.52	20	
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.8		10.00		97.6	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		100	70	130	0	0	
Surr: Toluene-d8	10		10.00		99.8	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203920

22-Apr-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R86626	RunNo: 86626								
Prep Date:	Analysis Date: 3/21/2022	SeqNo: 3058226	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	0.68	3.0								J
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.0	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.7	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R86666	RunNo: 86666								
Prep Date:	Analysis Date: 3/22/2022	SeqNo: 3059842 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	92.9	70	130			
Toluene	21	1.0	20.00	0	106	70	130			
Chlorobenzene	22	1.0	20.00	0	109	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	91.0	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	86.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		95.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	10		10.00		99.6	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R86666	RunNo: 86666								
Prep Date:	Analysis Date: 3/22/2022	SeqNo: 3059870 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	0.66	3.0								J
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2203920
22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: mb		SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW		Batch ID: R86666		RunNo: 86666						
Prep Date:		Analysis Date: 3/22/2022		SeqNo: 3059870		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.6	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix interference
- B

Analyte detected in the associated Method Blank
- E

Estimated value
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: lcs-66244	SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSW	Batch ID: 66244			RunNo: 86693						
Prep Date: 3/18/2022	Analysis Date: 3/23/2022			SeqNo: 3061236		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	48	5.0	100.0	0	48.0	15	87.6			
Phenol	65	5.0	200.0	0	32.4	16.8	70.5			
Surr: 2-Fluorophenol	85		200.0		42.3	29.4	87.7			
Surr: Phenol-d5	65		200.0		32.7	28.5	64.7			
Surr: 2,4,6-Tribromophenol	120		200.0		59.9	18.6	129			
Surr: Nitrobenzene-d5	57		100.0		56.9	36.9	103			
Surr: 2-Fluorobiphenyl	50		100.0		50.1	38.1	99.9			
Surr: 4-Terphenyl-d14	92		100.0		92.4	48	155			

Sample ID: lcsd-66244	SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSS02	Batch ID: 66244			RunNo: 86693						
Prep Date: 3/18/2022	Analysis Date: 3/23/2022			SeqNo: 3061237		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	40	5.0	100.0	0	40.1	15	87.6	17.9	30.4	
Phenol	56	5.0	200.0	0	27.9	16.8	70.5	14.7	37.2	
Surr: 2-Fluorophenol	73		200.0		36.7	29.4	87.7	0	0	
Surr: Phenol-d5	58		200.0		29.1	28.5	64.7	0	0	
Surr: 2,4,6-Tribromophenol	110		200.0		54.9	18.6	129	0	0	
Surr: Nitrobenzene-d5	48		100.0		47.6	36.9	103	0	0	
Surr: 2-Fluorobiphenyl	47		100.0		46.6	38.1	99.9	0	0	
Surr: 4-Terphenyl-d14	95		100.0		94.7	48	155	0	0	

Sample ID: mb-66244	SampType: MBLK			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: PBW	Batch ID: 66244			RunNo: 86693						
Prep Date: 3/18/2022	Analysis Date: 3/23/2022			SeqNo: 3061238		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzoic acid	ND	20								
Bis(2-ethylhexyl)phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
1,4-Dichlorobenzene	ND	5.0								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								
2-Methylphenol	ND	5.0								
3+4-Methylphenol	ND	5.0								
Phenol	ND	5.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2203920

22-Apr-22

Client: Marathon

Project: 2022 GW Sampling 1st Qtr

Sample ID: mb-66244	SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: PBW	Batch ID: 66244	RunNo: 86693								
Prep Date: 3/18/2022	Analysis Date: 3/23/2022	SeqNo: 3061238			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pyridine	ND	10								
2,4,6-Trichlorophenol	ND	5.0								
Surr: 2-Fluorophenol	81		200.0		40.5	29.4	87.7			
Surr: Phenol-d5	63		200.0		31.7	28.5	64.7			
Surr: 2,4,6-Tribromophenol	97		200.0		48.5	18.6	129			
Surr: Nitrobenzene-d5	50		100.0		50.0	36.9	103			
Surr: 2-Fluorobiphenyl	50		100.0		49.5	38.1	99.9			
Surr: 4-Terphenyl-d14	82		100.0		81.8	48	155			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: mb-66244	SampType: MBLK	TestCode: EPA Method 8270SIM								
Client ID: PBW	Batch ID: R86665	RunNo: 86665								
Prep Date:	Analysis Date: 3/22/2022	SeqNo: 3059830 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.10								
2-Methylnaphthalene	ND	0.10								
Acenaphthene	ND	0.10								
Fluorene	ND	0.10								
Phenanthrene	ND	0.10								
Anthracene	ND	0.10								
Fluoranthene	ND	0.20								
Pyrene	ND	0.20								
Benz(a)anthracene	ND	0.10								
Chrysene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	59		100.0		58.9	31.6	100			
Surr: 2,4,6-Tribromophenol	82		200.0		41.0	22	101			
Surr: 2-Fluorobiphenyl	55		100.0		55.2	26.7	90.1			
Surr: 4-Terphenyl-d14	98		100.0		98.0	72.3	147			

Sample ID: lcs-66244-lf	SampType: LCS	TestCode: EPA Method 8270SIM								
Client ID: LCSW	Batch ID: R86665	RunNo: 86665								
Prep Date:	Analysis Date: 3/22/2022	SeqNo: 3059831 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.72	0.10	2.000	0	36.0	20.2	48.4			
Naphthalene	1.1	0.10	2.000	0	57.0	21.3	79.9			
1-Methylnaphthalene	1.2	0.10	2.000	0	58.0	22.2	80.3			
2-Methylnaphthalene	1.1	0.10	2.000	0	56.0	20.6	80.1			
Acenaphthene	1.3	0.10	2.000	0	66.0	29.8	82.7			
Fluorene	1.4	0.10	2.000	0	70.0	33.3	86			
Phenanthrene	1.5	0.10	2.000	0	73.0	38.2	93.9			
Anthracene	1.5	0.10	2.000	0	77.0	41.1	95.6			
Fluoranthene	1.8	0.20	2.000	0	88.0	52.9	123			
Pyrene	1.7	0.20	2.000	0	83.0	51	113			
Benz(a)anthracene	2.0	0.10	2.000	0	100	51	147			
Chrysene	1.7	0.10	2.000	0	85.0	55.3	115			
Benzo(b)fluoranthene	1.9	0.10	2.000	0	95.0	44.4	136			
Indeno(1,2,3-cd)pyrene	2.2	0.30	2.000	0	110	31.4	165			
Surr: Nitrobenzene-d5	71		100.0		70.8	31.6	100			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon**Project:** 2022 GW Sampling 1st Qtr

Sample ID: Ics-66244-If	SampType: LCS			TestCode: EPA Method 8270SIM						
Client ID: LCSW	Batch ID: R86665			RunNo: 86665						
Prep Date:	Analysis Date: 3/22/2022			SeqNo: 3059831			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	93		200.0		46.4	22	101			
Surr: 2-Fluorobiphenyl	66		100.0		66.3	26.7	90.1			
Surr: 4-Terphenyl-d14	91		100.0		90.6	72.3	147			

Sample ID: Icsd-66244-If	SampType: LCSD			TestCode: EPA Method 8270SIM						
Client ID: LCSS02	Batch ID: R86665			RunNo: 86665						
Prep Date:	Analysis Date: 3/22/2022			SeqNo: 3059832			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.74	0.10	2.000	0	37.0	20.2	48.4	2.74	30.1	
Naphthalene	1.3	0.10	2.000	0	64.0	21.3	79.9	11.6	25.6	
1-Methylnaphthalene	1.3	0.10	2.000	0	64.0	22.2	80.3	9.84	25	
2-Methylnaphthalene	1.3	0.10	2.000	0	63.0	20.6	80.1	11.8	25	
Acenaphthene	1.4	0.10	2.000	0	69.0	29.8	82.7	4.44	27.8	
Fluorene	1.4	0.10	2.000	0	70.0	33.3	86	0	26.4	
Phenanthrene	1.5	0.10	2.000	0	73.0	38.2	93.9	0	27.9	
Anthracene	1.5	0.10	2.000	0	74.0	41.1	95.6	3.97	25.6	
Fluoranthene	1.6	0.20	2.000	0	81.0	52.9	123	8.28	22.8	
Pyrene	1.6	0.20	2.000	0	79.0	51	113	4.94	20	
Benz(a)anthracene	1.9	0.10	2.000	0	94.0	51	147	6.19	24.1	
Chrysene	1.7	0.10	2.000	0	84.0	55.3	115	1.18	20	
Benzo(b)fluoranthene	1.8	0.10	2.000	0	90.0	44.4	136	5.41	24.5	
Indeno(1,2,3-cd)pyrene	2.2	0.30	2.000	0	108	31.4	165	1.83	21.1	
Surr: Nitrobenzene-d5	70		100.0		70.2	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	90		200.0		45.2	22	101	0	0	
Surr: 2-Fluorobiphenyl	65		100.0		65.3	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	91		100.0		91.3	72.3	147	0	0	

Sample ID: mb-66282	SampType: MBLK			TestCode: EPA Method 8270SIM						
Client ID: PBW	Batch ID: R86694			RunNo: 86694						
Prep Date:	Analysis Date: 3/23/2022			SeqNo: 3061263			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Surr: Nitrobenzene-d5	61		100.0		61.1	31.6	100			
Surr: 2,4,6-Tribromophenol	85		200.0		42.7	22	101			
Surr: 2-Fluorobiphenyl	57		100.0		57.5	26.7	90.1			
Surr: 4-Terphenyl-d14	98		100.0		98.4	72.3	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: lcs-66282-lf	SampType: LCS		TestCode: EPA Method 8270SIM							
Client ID: LCSW	Batch ID: R86694		RunNo: 86694							
Prep Date:	Analysis Date: 3/23/2022		SeqNo: 3061264		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.72	0.10	2.000	0	36.0	20.2	48.4			
Surr: Nitrobenzene-d5	67		100.0		67.2	31.6	100			
Surr: 2,4,6-Tribromophenol	91		200.0		45.6	22	101			
Surr: 2-Fluorobiphenyl	65		100.0		65.1	26.7	90.1			
Surr: 4-Terphenyl-d14	92		100.0		92.0	72.3	147			

Sample ID: lcsd-66282-lf	SampType: LCSD		TestCode: EPA Method 8270SIM							
Client ID: LCSS02	Batch ID: R86694		RunNo: 86694							
Prep Date:	Analysis Date: 3/23/2022		SeqNo: 3061265		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.70	0.10	2.000	0	35.0	20.2	48.4	2.82	30.1	
Surr: Nitrobenzene-d5	66		100.0		66.5	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	90		200.0		44.8	22	101	0	0	
Surr: 2-Fluorobiphenyl	64		100.0		63.6	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	93		100.0		92.6	72.3	147	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2203920

22-Apr-22

Client: Marathon
Project: 2022 GW Sampling 1st Qtr

Sample ID: 2.5ug lcs gro	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSW	Batch ID: G86626			RunNo: 86626						
Prep Date:	Analysis Date: 3/21/2022			SeqNo: 3058229		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			

Sample ID: 2203920-003ams	SampType: MS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: MKTF-31	Batch ID: G86626			RunNo: 86626						
Prep Date:	Analysis Date: 3/21/2022			SeqNo: 3058236		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	2.7	0.25	2.500	0.5520	87.4	70	130			
Surr: 4-Bromofluorobenzene	53		50.00		106	70	130			

Sample ID: 2203920-003amsd	SampType: MSD			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: MKTF-31	Batch ID: G86626			RunNo: 86626						
Prep Date:	Analysis Date: 3/21/2022			SeqNo: 3058237		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	3.6	0.25	2.500	0.5520	121	70	130	26.9	20	R
Surr: 4-Bromofluorobenzene	51		50.00		103	70	130	0	0	

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBW	Batch ID: G86626			RunNo: 86626						
Prep Date:	Analysis Date: 3/21/2022			SeqNo: 3058249		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.034	0.050								J
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon**Work Order Number: **2203920**

RcptNo: 1

Received By: **Cheyenne Cason**

3/17/2022 7:00:00 AM

*Chaul*Completed By: **Cheyenne Cason**

3/17/2022 7:53:15 AM

*Chaul*Reviewed By: *SC 3/17/22*

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐5. Sample(s) in proper container(s)? Yes ☒ No ☐6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐9. Received at least 1 vial with headspace $<1/4$ " for AQ VOA? Yes ☒ No ☐ NA ☐10. Were any sample containers received broken? Yes ☐ No ☒11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐13. Is it clear what analyses were requested? Yes ☒ No ☐14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH: *14*
2 or *>12* unless noted

Adjusted? *1/0*Checked by: *SC 3/17/22*Labeled by: *Chaul 3/17/22*

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.9	Good	Yes			
2	3.9	Good	Yes			
3	0.2	Good	Yes			
4	1.3	Good	Yes			

Chain-of-Custody Record



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

4901 Hawkins NE - Albuquerque, NM 87109

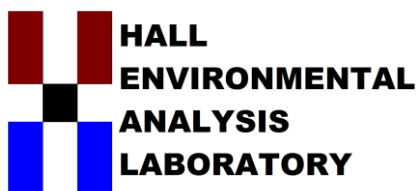
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Turn-Around Time:		X Standard Rush	
Project Name:		2022 GW Sampling 1st Quarter	
Project #:		697-080-001	
Project Manager:		Lesli Alexander/Mackensie Swift	
Sampler: <i>Hilarie Trujillo</i>		On Ice: ☒ Yes ☐ No	
# of Coolers: 4		Cooler Temp (including CF): <i>See Remarks</i>	
Container Type and #	Preservative Type	HEAL No.	
13		2203920	
13		001	
13		002	
13		003	
13		004	
13		005	
13		006	
2		007	
13		008	
		009	
Relinquished by: <i>Hilarie Trujillo</i>		Received by: <i>Chr Carr</i>	
Time: 3/16 1:00	Date: 3/17/22	Time: 0700	
Time: 3/16 1:00	Date: 3/17/22	Time: 0700	

Released to Imaging: 3/31/2023 10:28:42 AM

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 04, 2022

Lesli Alexander
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 632-3911

RE: 2022 GW Sampling 3rd Quarter

OrderNo.: 2209816

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 8 sample(s) on 9/16/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

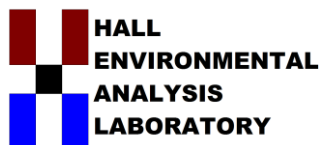
Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: 2209816
Date: 10/4/2022

CLIENT: Marathon
Project: 2022 GW Sampling 3rd Quarter

Analytical Notes Regarding this Workorder are listed below:

"S" flagged surrogates/spikes denote that the analyte recovery was outside of the standard limits.

Analytical Notes Regarding EPA Method 8270 and 8270 SIMS:

Naphthalene, 1-Methylnaphthalene, and 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270SIMs because of their elevated concentrations for sample OW-57

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-09-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:15:00 AM

Lab ID: 2209816-001A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: BRM	
Gasoline Range Organics (GRO)	ND	0.0090	0.050		mg/L	1	9/16/2022 6:49:00 PM	B91113
Surr: BFB	103	0	70-130		%Rec	1	9/16/2022 6:49:00 PM	B91113
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	ND	0.23	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Toluene	ND	0.20	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Acetone	4.3	2.5	10	J	µg/L	1	9/16/2022 3:27:10 PM	A91114
Bromomethane	ND	0.85	3.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
2-Butanone	ND	2.0	10		µg/L	1	9/16/2022 3:27:10 PM	A91114
Carbon disulfide	ND	0.59	10		µg/L	1	9/16/2022 3:27:10 PM	A91114
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Chloroform	ND	0.13	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Chloromethane	ND	0.41	3.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Styrene	ND	0.14	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/16/2022 3:27:10 PM	A91114
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/16/2022 3:27:10 PM	A91114
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%Rec	1	9/16/2022 3:27:10 PM	A91114
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	9/16/2022 3:27:10 PM	A91114
Surr: Dibromofluoromethane	104	0	70-130		%Rec	1	9/16/2022 3:27:10 PM	A91114
Surr: Toluene-d8	99.3	0	70-130		%Rec	1	9/16/2022 3:27:10 PM	A91114

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-09-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:15:00 AM

Lab ID: 2209816-001B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	9/22/2022 3:30:20 PM	70321

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-09-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:15:00 AM

Lab ID: 2209816-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.021	0.016	0.064	J	mg/L	1	9/26/2022 4:06:24 PM	70323
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	9/26/2022 4:06:24 PM	70323
Surr: DNOP	87.0	0	42.2-138		%Rec	1	9/26/2022 4:06:24 PM	70323
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	9/28/2022 7:06:21 PM	70290
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	9/28/2022 7:06:21 PM	70290
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	9/28/2022 7:06:21 PM	70290
Di-n-octyl phthalate	ND	12	20		µg/L	1	9/28/2022 7:06:21 PM	70290
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	9/28/2022 7:06:21 PM	70290
Diethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 7:06:21 PM	70290
Dimethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 7:06:21 PM	70290
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	9/28/2022 7:06:21 PM	70290
2,4-Dinitrophenol	ND	16	20		µg/L	1	9/28/2022 7:06:21 PM	70290
2-Methylphenol	ND	5.0	10		µg/L	1	9/28/2022 7:06:21 PM	70290
3+4-Methylphenol	ND	5.1	10		µg/L	1	9/28/2022 7:06:21 PM	70290
Phenol	ND	18	20		µg/L	1	9/28/2022 7:06:21 PM	70290
Pyridine	ND	14	40		µg/L	1	9/28/2022 7:06:21 PM	70290
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	9/28/2022 7:06:21 PM	70290
Surr: 2-Fluorophenol	55.3	0	15-84.5		%Rec	1	9/28/2022 7:06:21 PM	70290
Surr: Phenol-d5	41.8	0	15-67		%Rec	1	9/28/2022 7:06:21 PM	70290
Surr: 2,4,6-Tribromophenol	65.5	0	15-108		%Rec	1	9/28/2022 7:06:21 PM	70290
Surr: Nitrobenzene-d5	67.0	0	16.8-112		%Rec	1	9/28/2022 7:06:21 PM	70290
Surr: 2-Fluorobiphenyl	66.1	0	15-101		%Rec	1	9/28/2022 7:06:21 PM	70290
Surr: 4-Terphenyl-d14	82.1	0	34.4-134		%Rec	1	9/28/2022 7:06:21 PM	70290
EPA METHOD 8270SIM							Analyst: TOM	
1,4-Dioxane	ND	0.11	1.0		µg/L	1	9/26/2022 11:03:00 PM	70290
Naphthalene	ND	0.20	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Acenaphthene	ND	0.14	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Fluorene	ND	0.095	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Phenanthrene	ND	0.16	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Anthracene	ND	0.14	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Fluoranthene	ND	0.14	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Pyrene	ND	0.32	1.0		µg/L	1	9/26/2022 11:03:00 PM	70290
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Chrysene	ND	0.25	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	9/26/2022 11:03:00 PM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-09-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:15:00 AM

Lab ID: 2209816-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: TOM	
Surr: Nitrobenzene-d5	63.7	0	31.6-100		%Rec	1	9/26/2022 11:03:00 PM	70290
Surr: 2-Fluorobiphenyl	60.5	0	26.7-90.1		%Rec	1	9/26/2022 11:03:00 PM	70290
Surr: 4-Terphenyl-d14	70.0	0	72.3-147	S	%Rec	1	9/26/2022 11:03:00 PM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-09-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:15:00 AM

Lab ID: 2209816-001D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	ND	0.0016	0.0030		mg/L	1	9/21/2022 11:52:09 AM	70299
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2022 11:52:09 AM	70299
Cadmium	ND	0.0018	0.0020		mg/L	1	9/21/2022 11:52:09 AM	70299
Chromium	ND	0.0020	0.0060		mg/L	1	9/21/2022 11:52:09 AM	70299
Cobalt	ND	0.0035	0.0060		mg/L	1	9/21/2022 11:52:09 AM	70299
Nickel	ND	0.0053	0.010		mg/L	1	9/21/2022 11:52:09 AM	70299
Silver	ND	0.0018	0.0050		mg/L	1	9/21/2022 3:20:35 PM	70299
Vanadium	ND	0.0035	0.050		mg/L	1	9/21/2022 11:52:09 AM	70299
Zinc	ND	0.0039	0.010		mg/L	1	9/21/2022 11:52:09 AM	70299
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/21/2022 11:13:56 AM	70299
Arsenic	ND	0.00013	0.0010		mg/L	1	9/21/2022 11:13:56 AM	70299
Lead	ND	0.000061	0.00050		mg/L	1	9/21/2022 11:13:56 AM	70299
Selenium	ND	0.00037	0.0010		mg/L	1	9/21/2022 11:13:56 AM	70299
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 2:48:47 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-09-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:15:00 AM

Lab ID: 2209816-001E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JRR	
Barium	ND	0.0011	0.0020		mg/L	1	9/27/2022 4:28:39 PM	C91347
Beryllium	ND	0.00088	0.0020		mg/L	1	9/27/2022 4:28:39 PM	C91347
Cadmium	ND	0.00098	0.0020		mg/L	1	9/27/2022 4:28:39 PM	C91347
Chromium	ND	0.0020	0.0060		mg/L	1	9/27/2022 4:28:39 PM	C91347
Cobalt	ND	0.0024	0.0060		mg/L	1	9/27/2022 4:28:39 PM	C91347
Nickel	ND	0.0033	0.010		mg/L	1	9/27/2022 4:28:39 PM	C91347
Silver	ND	0.0013	0.0050		mg/L	1	9/28/2022 1:46:23 PM	A91392
Vanadium	ND	0.0017	0.050		mg/L	1	9/27/2022 4:28:39 PM	C91347
Zinc	0.0066	0.0032	0.010	J	mg/L	1	9/27/2022 4:28:39 PM	C91347
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/19/2022 11:58:51 AM	A91132
Arsenic	ND	0.00012	0.0010		mg/L	1	9/19/2022 11:58:51 AM	A91132
Lead	ND	0.000057	0.00050		mg/L	1	9/19/2022 11:58:51 AM	A91132
Selenium	ND	0.00034	0.0010		mg/L	1	9/19/2022 11:58:51 AM	A91132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 2:50:54 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:45:00 AM

Lab ID: 2209816-002A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: BRM	
Gasoline Range Organics (GRO)	0.93	0.045	0.25		mg/L	5	9/19/2022 11:51:00 AM	C91131
Surr: BFB	110	0	70-130		%Rec	5	9/19/2022 11:51:00 AM	C91131
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	400	1.1	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Toluene	1.4	1.0	5.0	J	µg/L	5	9/19/2022 3:45:57 PM	R91137
Ethylbenzene	9.1	1.1	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Methyl tert-butyl ether (MTBE)	6.6	2.0	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
1,2,4-Trimethylbenzene	12	0.61	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
1,3,5-Trimethylbenzene	ND	0.91	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
1,2-Dichloroethane (EDC)	ND	1.3	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Acetone	ND	13	50		µg/L	5	9/19/2022 3:45:57 PM	R91137
Bromomethane	ND	4.3	15		µg/L	5	9/19/2022 3:45:57 PM	R91137
2-Butanone	ND	10	50		µg/L	5	9/19/2022 3:45:57 PM	R91137
Carbon disulfide	ND	3.0	50		µg/L	5	9/19/2022 3:45:57 PM	R91137
Chlorobenzene	ND	0.78	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Chloroform	ND	0.67	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Chloromethane	ND	2.1	15		µg/L	5	9/19/2022 3:45:57 PM	R91137
cis-1,2-DCE	ND	1.9	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
1,1-Dichloroethane	17	1.4	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
1,1-Dichloroethene	ND	1.0	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Isopropylbenzene	1.7	0.91	5.0	J	µg/L	5	9/19/2022 3:45:57 PM	R91137
4-Isopropyltoluene	ND	1.0	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Methylene Chloride	ND	2.5	15		µg/L	5	9/19/2022 3:45:57 PM	R91137
n-Butylbenzene	ND	1.3	15		µg/L	5	9/19/2022 3:45:57 PM	R91137
n-Propylbenzene	1.4	0.91	5.0	J	µg/L	5	9/19/2022 3:45:57 PM	R91137
sec-Butylbenzene	ND	0.72	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Styrene	ND	0.68	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Trichloroethene (TCE)	ND	1.0	5.0		µg/L	5	9/19/2022 3:45:57 PM	R91137
Vinyl chloride	2.0	1.6	5.0	J	µg/L	5	9/19/2022 3:45:57 PM	R91137
Xylenes, Total	5.6	1.9	7.5	J	µg/L	5	9/19/2022 3:45:57 PM	R91137
tert-Butyl alcohol	ND	78	120		µg/L	5	9/19/2022 3:45:57 PM	R91137
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	5	9/19/2022 3:45:57 PM	R91137
Surr: 4-Bromofluorobenzene	96.6	0	70-130		%Rec	5	9/19/2022 3:45:57 PM	R91137
Surr: Dibromofluoromethane	110	0	70-130		%Rec	5	9/19/2022 3:45:57 PM	R91137
Surr: Toluene-d8	96.6	0	70-130		%Rec	5	9/19/2022 3:45:57 PM	R91137

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:45:00 AM

Lab ID: 2209816-002B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0096		µg/L	1	9/22/2022 3:45:24 PM	70321

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:45:00 AM

Lab ID: 2209816-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	9/28/2022 7:48:40 PM	70290
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	9/28/2022 7:48:40 PM	70290
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	9/28/2022 7:48:40 PM	70290
Di-n-octyl phthalate	ND	12	20		µg/L	1	9/28/2022 7:48:40 PM	70290
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	9/28/2022 7:48:40 PM	70290
Diethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 7:48:40 PM	70290
Dimethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 7:48:40 PM	70290
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	9/28/2022 7:48:40 PM	70290
2,4-Dinitrophenol	ND	16	20		µg/L	1	9/28/2022 7:48:40 PM	70290
2-Methylphenol	ND	5.0	10		µg/L	1	9/28/2022 7:48:40 PM	70290
3+4-Methylphenol	ND	5.1	10		µg/L	1	9/28/2022 7:48:40 PM	70290
Phenol	ND	18	20		µg/L	1	9/28/2022 7:48:40 PM	70290
Pyridine	ND	14	40		µg/L	1	9/28/2022 7:48:40 PM	70290
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	9/28/2022 7:48:40 PM	70290
Surr: 2-Fluorophenol	45.9	0	15-84.5		%Rec	1	9/28/2022 7:48:40 PM	70290
Surr: Phenol-d5	34.9	0	15-67		%Rec	1	9/28/2022 7:48:40 PM	70290
Surr: 2,4,6-Tribromophenol	58.4	0	15-108		%Rec	1	9/28/2022 7:48:40 PM	70290
Surr: Nitrobenzene-d5	62.8	0	16.8-112		%Rec	1	9/28/2022 7:48:40 PM	70290
Surr: 2-Fluorobiphenyl	63.3	0	15-101		%Rec	1	9/28/2022 7:48:40 PM	70290
Surr: 4-Terphenyl-d14	71.9	0	34.4-134		%Rec	1	9/28/2022 7:48:40 PM	70290
EPA METHOD 8270SIM							Analyst: TOM	
1,4-Dioxane	1.4	0.11	1.0		µg/L	1	9/26/2022 11:52:00 PM	70290
Naphthalene	1.3	0.20	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
1-Methylnaphthalene	0.86	0.15	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
2-Methylnaphthalene	0.16	0.14	0.30	J	µg/L	1	9/26/2022 11:52:00 PM	70290
Acenaphthene	ND	0.14	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Fluorene	ND	0.095	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Phenanthrene	ND	0.16	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Anthracene	ND	0.14	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Fluoranthene	ND	0.14	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Pyrene	ND	0.32	1.0		µg/L	1	9/26/2022 11:52:00 PM	70290
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Chrysene	ND	0.25	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	9/26/2022 11:52:00 PM	70290
Surr: Nitrobenzene-d5	57.1	0	31.6-100		%Rec	1	9/26/2022 11:52:00 PM	70290
Surr: 2-Fluorobiphenyl	53.7	0	26.7-90.1		%Rec	1	9/26/2022 11:52:00 PM	70290
Surr: 4-Terphenyl-d14	53.5	0	72.3-147	S	%Rec	1	9/26/2022 11:52:00 PM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:45:00 AM

Lab ID: 2209816-002D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	6.3	0.016	0.030	*	mg/L	10	9/23/2022 11:08:58 AM	70299
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2022 12:00:19 PM	70299
Cadmium	ND	0.0018	0.0020		mg/L	1	9/21/2022 12:00:19 PM	70299
Chromium	0.062	0.0020	0.0060		mg/L	1	9/21/2022 12:00:19 PM	70299
Cobalt	0.012	0.0035	0.0060		mg/L	1	9/21/2022 12:00:19 PM	70299
Iron	49	1.9	5.0	*	mg/L	100	9/27/2022 12:05:16 PM	70299
Manganese	1.7	0.0029	0.010	*	mg/L	5	9/21/2022 12:01:34 PM	70299
Nickel	0.039	0.0053	0.010		mg/L	1	9/21/2022 12:00:19 PM	70299
Silver	ND	0.0018	0.0050		mg/L	1	9/21/2022 3:22:15 PM	70299
Vanadium	0.10	0.0035	0.050		mg/L	1	9/21/2022 12:00:19 PM	70299
Zinc	0.33	0.0039	0.010		mg/L	1	9/21/2022 12:00:19 PM	70299
EPA 200.8: METALS							Analyst: bcv	
Antimony	0.00049	0.00044	0.0010	J	mg/L	1	9/21/2022 11:16:23 AM	70299
Arsenic	0.0093	0.00013	0.0010		mg/L	1	9/21/2022 11:16:23 AM	70299
Lead	0.052	0.00031	0.0025	*	mg/L	5	9/21/2022 12:30:14 PM	70299
Selenium	0.0092	0.00037	0.0010		mg/L	1	9/21/2022 11:16:23 AM	70299
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00092	0.000091	0.00020		mg/L	1	9/21/2022 2:53:00 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 8:45:00 AM

Lab ID: 2209816-002E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JRR	
Barium	0.28	0.0011	0.0020		mg/L	1	9/27/2022 4:33:03 PM	C91347
Beryllium	ND	0.00088	0.0020		mg/L	1	9/27/2022 4:33:03 PM	C91347
Cadmium	ND	0.00098	0.0020		mg/L	1	9/27/2022 4:33:03 PM	C91347
Chromium	ND	0.0020	0.0060		mg/L	1	9/27/2022 4:33:03 PM	C91347
Cobalt	ND	0.0024	0.0060		mg/L	1	9/27/2022 4:33:03 PM	C91347
Iron	0.33	0.010	0.020	*	mg/L	1	9/27/2022 4:33:03 PM	C91347
Nickel	0.0075	0.0033	0.010	J	mg/L	1	9/27/2022 4:33:03 PM	C91347
Silver	ND	0.0013	0.0050		mg/L	1	9/28/2022 1:52:49 PM	A91392
Vanadium	0.0042	0.0017	0.050	J	mg/L	1	9/27/2022 4:33:03 PM	C91347
Zinc	0.017	0.0032	0.010		mg/L	1	9/27/2022 4:33:03 PM	C91347
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00060	0.00044	0.0010	J	mg/L	1	9/19/2022 12:01:32 PM	A91132
Arsenic	0.0011	0.00012	0.0010		mg/L	1	9/19/2022 12:01:32 PM	A91132
Lead	0.00068	0.000057	0.00050		mg/L	1	9/19/2022 12:01:32 PM	A91132
Selenium	ND	0.00034	0.0010		mg/L	1	9/19/2022 12:01:32 PM	A91132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 2:55:05 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	MKTF-16
Project:	2022 GW Sampling 3rd Quarter	Collection Date:	9/15/2022 8:45:00 AM
Lab ID:	2209816-002G	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: JTT	
Chloride	80	1.2	2.5		mg/L	5	9/16/2022 3:36:15 PM	R91119
Nitrogen, Nitrite (As N)	ND	0.057	0.50		mg/L	5	9/16/2022 3:36:15 PM	R91119
Nitrogen, Nitrate (As N)	0.59	0.10	0.50		mg/L	5	9/16/2022 3:36:15 PM	R91119
Sulfate	28	1.2	2.5		mg/L	5	9/16/2022 3:36:15 PM	R91119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-12A

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:30:00 AM

Lab ID: 2209816-003A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: BRM	
Gasoline Range Organics (GRO)	3.6	0.045	0.25		mg/L	5	9/16/2022 7:28:00 PM	B91113
Surr: BFB	158	0	70-130	S	%Rec	5	9/16/2022 7:28:00 PM	B91113
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	1100	11	50		µg/L	50	9/19/2022 4:13:02 PM	R91137
Toluene	2.6	0.20	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Ethylbenzene	99	0.21	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
1,2,4-Trimethylbenzene	26	0.12	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
1,3,5-Trimethylbenzene	0.44	0.18	1.0	J	µg/L	1	9/16/2022 4:21:18 PM	A91114
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Acetone	ND	2.5	10		µg/L	1	9/16/2022 4:21:18 PM	A91114
Bromomethane	ND	0.85	3.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
2-Butanone	ND	2.0	10		µg/L	1	9/16/2022 4:21:18 PM	A91114
Carbon disulfide	ND	0.59	10		µg/L	1	9/16/2022 4:21:18 PM	A91114
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Chloroform	ND	0.13	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Chloromethane	ND	0.41	3.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
1,1-Dichloroethene	0.34	0.20	1.0	J	µg/L	1	9/16/2022 4:21:18 PM	A91114
Isopropylbenzene	20	0.18	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
4-Isopropyltoluene	2.8	0.20	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
n-Butylbenzene	0.89	0.25	3.0	J	µg/L	1	9/16/2022 4:21:18 PM	A91114
n-Propylbenzene	7.9	0.18	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
sec-Butylbenzene	1.8	0.14	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Styrene	ND	0.14	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/16/2022 4:21:18 PM	A91114
Xylenes, Total	110	0.37	1.5		µg/L	1	9/16/2022 4:21:18 PM	A91114
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	1	9/16/2022 4:21:18 PM	A91114
Surr: 4-Bromofluorobenzene	108	0	70-130		%Rec	1	9/16/2022 4:21:18 PM	A91114
Surr: Dibromofluoromethane	100	0	70-130		%Rec	1	9/16/2022 4:21:18 PM	A91114
Surr: Toluene-d8	101	0	70-130		%Rec	1	9/16/2022 4:21:18 PM	A91114

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 3rd Quarter

Lab ID: 2209816-003B

Client Sample ID: OW-12A

Collection Date: 9/15/2022 9:30:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0026	0.0093		µg/L	1	9/22/2022 4:00:32 PM	70321

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-12A

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:30:00 AM

Lab ID: 2209816-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	1.9	0.016	0.064		mg/L	1	9/26/2022 4:30:07 PM	70323
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	9/26/2022 4:30:07 PM	70323
Surr: DNOP	82.4	0	42.2-138		%Rec	1	9/26/2022 4:30:07 PM	70323
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	9/28/2022 8:31:01 PM	70290
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	9/28/2022 8:31:01 PM	70290
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	9/28/2022 8:31:01 PM	70290
Di-n-octyl phthalate	ND	12	20		µg/L	1	9/28/2022 8:31:01 PM	70290
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	9/28/2022 8:31:01 PM	70290
Diethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 8:31:01 PM	70290
Dimethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 8:31:01 PM	70290
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	9/28/2022 8:31:01 PM	70290
2,4-Dinitrophenol	ND	16	20		µg/L	1	9/28/2022 8:31:01 PM	70290
2-Methylphenol	ND	5.0	10		µg/L	1	9/28/2022 8:31:01 PM	70290
3+4-Methylphenol	ND	5.1	10		µg/L	1	9/28/2022 8:31:01 PM	70290
Phenol	ND	18	20		µg/L	1	9/28/2022 8:31:01 PM	70290
Pyridine	ND	14	40		µg/L	1	9/28/2022 8:31:01 PM	70290
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	9/28/2022 8:31:01 PM	70290
Surr: 2-Fluorophenol	47.9	0	15-84.5		%Rec	1	9/28/2022 8:31:01 PM	70290
Surr: Phenol-d5	35.0	0	15-67		%Rec	1	9/28/2022 8:31:01 PM	70290
Surr: 2,4,6-Tribromophenol	67.5	0	15-108		%Rec	1	9/28/2022 8:31:01 PM	70290
Surr: Nitrobenzene-d5	65.3	0	16.8-112		%Rec	1	9/28/2022 8:31:01 PM	70290
Surr: 2-Fluorobiphenyl	65.7	0	15-101		%Rec	1	9/28/2022 8:31:01 PM	70290
Surr: 4-Terphenyl-d14	72.4	0	34.4-134		%Rec	1	9/28/2022 8:31:01 PM	70290
EPA METHOD 8270SIM							Analyst: TOM	
1,4-Dioxane	11	0.11	1.0		µg/L	1	9/27/2022 12:41:00 AM	70290
Naphthalene	3.4	0.20	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
1-Methylnaphthalene	0.78	0.15	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
2-Methylnaphthalene	0.16	0.14	0.30	J	µg/L	1	9/27/2022 12:41:00 AM	70290
Acenaphthene	ND	0.14	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Fluorene	ND	0.095	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Phenanthrene	ND	0.16	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Anthracene	ND	0.14	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Fluoranthene	ND	0.14	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Pyrene	ND	0.32	1.0		µg/L	1	9/27/2022 12:41:00 AM	70290
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Chrysene	ND	0.25	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	9/27/2022 12:41:00 AM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-12A

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:30:00 AM

Lab ID: 2209816-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: TOM	
Surr: Nitrobenzene-d5	57.4	0	31.6-100		%Rec	1	9/27/2022 12:41:00 AM	70290
Surr: 2-Fluorobiphenyl	49.4	0	26.7-90.1		%Rec	1	9/27/2022 12:41:00 AM	70290
Surr: 4-Terphenyl-d14	53.9	0	72.3-147	S	%Rec	1	9/27/2022 12:41:00 AM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-12A

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:30:00 AM

Lab ID: 2209816-003D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	1.3	0.0079	0.015		mg/L	5	9/21/2022 12:04:15 PM	70299
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2022 12:02:50 PM	70299
Cadmium	ND	0.0018	0.0020		mg/L	1	9/21/2022 12:02:50 PM	70299
Chromium	0.010	0.0020	0.0060		mg/L	1	9/21/2022 12:02:50 PM	70299
Cobalt	0.011	0.0035	0.0060		mg/L	1	9/21/2022 12:02:50 PM	70299
Nickel	0.012	0.0053	0.010		mg/L	1	9/21/2022 12:02:50 PM	70299
Silver	ND	0.0018	0.0050		mg/L	1	9/21/2022 3:23:35 PM	70299
Vanadium	0.027	0.0035	0.050	J	mg/L	1	9/21/2022 12:02:50 PM	70299
Zinc	0.0083	0.0039	0.010	J	mg/L	1	9/21/2022 12:02:50 PM	70299
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/21/2022 11:23:43 AM	70299
Arsenic	0.0097	0.00013	0.0010		mg/L	1	9/21/2022 11:23:43 AM	70299
Lead	0.012	0.000061	0.00050		mg/L	1	9/21/2022 11:23:43 AM	70299
Selenium	0.0018	0.00037	0.0010		mg/L	1	9/21/2022 11:23:43 AM	70299
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 3:01:26 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-12A

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:30:00 AM

Lab ID: 2209816-003E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JRR	
Barium	0.13	0.0011	0.0020		mg/L	1	9/27/2022 4:45:40 PM	C91347
Beryllium	ND	0.00088	0.0020		mg/L	1	9/27/2022 4:45:40 PM	C91347
Cadmium	ND	0.00098	0.0020		mg/L	1	9/27/2022 4:45:40 PM	C91347
Chromium	ND	0.0020	0.0060		mg/L	1	9/27/2022 4:45:40 PM	C91347
Cobalt	ND	0.0024	0.0060		mg/L	1	9/27/2022 4:45:40 PM	C91347
Nickel	0.0076	0.0033	0.010	J	mg/L	1	9/27/2022 4:45:40 PM	C91347
Silver	0.0020	0.0013	0.0050	J	mg/L	1	9/28/2022 1:54:59 PM	A91392
Vanadium	0.0044	0.0017	0.050	J	mg/L	1	9/27/2022 4:45:40 PM	C91347
Zinc	0.013	0.0032	0.010		mg/L	1	9/27/2022 4:45:40 PM	C91347
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/19/2022 12:04:13 PM	A91132
Arsenic	0.0064	0.00012	0.0010		mg/L	1	9/19/2022 12:04:13 PM	A91132
Lead	0.0010	0.000057	0.00050		mg/L	1	9/19/2022 12:04:13 PM	A91132
Selenium	ND	0.00034	0.0010		mg/L	1	9/19/2022 12:04:13 PM	A91132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 3:03:33 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-70

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:55:00 AM

Lab ID: 2209816-004A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: BRM	
Gasoline Range Organics (GRO)	0.39	0.0090	0.050		mg/L	1	9/16/2022 7:48:00 PM	B91113
Surr: BFB	517	0	70-130	S	%Rec	1	9/16/2022 7:48:00 PM	B91113
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	1.0	0.23	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Toluene	ND	0.20	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Methyl tert-butyl ether (MTBE)	60	0.39	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
1,2,4-Trimethylbenzene	0.13	0.12	1.0	J	µg/L	1	9/19/2022 3:18:51 PM	R91137
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
1,2-Dichloroethane (EDC)	6.8	0.25	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Acetone	ND	2.5	10		µg/L	1	9/19/2022 3:18:51 PM	R91137
Bromomethane	ND	0.85	3.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
2-Butanone	ND	2.0	10		µg/L	1	9/19/2022 3:18:51 PM	R91137
Carbon disulfide	ND	0.59	10		µg/L	1	9/19/2022 3:18:51 PM	R91137
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Chloroform	ND	0.13	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Chloromethane	ND	0.41	3.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
1,1-Dichloroethane	0.49	0.27	1.0	J	µg/L	1	9/19/2022 3:18:51 PM	R91137
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Isopropylbenzene	30	0.18	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
n-Butylbenzene	1.5	0.25	3.0	J	µg/L	1	9/19/2022 3:18:51 PM	R91137
n-Propylbenzene	1.1	0.18	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
sec-Butylbenzene	6.5	0.14	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Styrene	ND	0.14	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/19/2022 3:18:51 PM	R91137
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/19/2022 3:18:51 PM	R91137
Surr: 1,2-Dichloroethane-d4	117	0	70-130		%Rec	1	9/19/2022 3:18:51 PM	R91137
Surr: 4-Bromofluorobenzene	95.7	0	70-130		%Rec	1	9/19/2022 3:18:51 PM	R91137
Surr: Dibromofluoromethane	121	0	70-130		%Rec	1	9/19/2022 3:18:51 PM	R91137
Surr: Toluene-d8	99.9	0	70-130		%Rec	1	9/19/2022 3:18:51 PM	R91137

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-70

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:55:00 AM

Lab ID: 2209816-004B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0026	0.0093		µg/L	1	9/22/2022 4:15:38 PM	70321

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-70

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:55:00 AM

Lab ID: 2209816-004C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.94	0.016	0.064		mg/L	1	9/26/2022 4:53:51 PM	70323
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	9/26/2022 4:53:51 PM	70323
Surr: DNOP	94.2	0	42.2-138		%Rec	1	9/26/2022 4:53:51 PM	70323
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	9/28/2022 9:13:15 PM	70290
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	9/28/2022 9:13:15 PM	70290
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	9/28/2022 9:13:15 PM	70290
Di-n-octyl phthalate	ND	12	20		µg/L	1	9/28/2022 9:13:15 PM	70290
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	9/28/2022 9:13:15 PM	70290
Diethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 9:13:15 PM	70290
Dimethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 9:13:15 PM	70290
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	9/28/2022 9:13:15 PM	70290
2,4-Dinitrophenol	ND	16	20		µg/L	1	9/28/2022 9:13:15 PM	70290
2-Methylphenol	ND	5.0	10		µg/L	1	9/28/2022 9:13:15 PM	70290
3+4-Methylphenol	ND	5.1	10		µg/L	1	9/28/2022 9:13:15 PM	70290
Phenol	29	18	20		µg/L	1	9/28/2022 9:13:15 PM	70290
Pyridine	ND	14	40		µg/L	1	9/28/2022 9:13:15 PM	70290
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	9/28/2022 9:13:15 PM	70290
Surr: 2-Fluorophenol	56.0	0	15-84.5		%Rec	1	9/28/2022 9:13:15 PM	70290
Surr: Phenol-d5	42.6	0	15-67		%Rec	1	9/28/2022 9:13:15 PM	70290
Surr: 2,4,6-Tribromophenol	69.1	0	15-108		%Rec	1	9/28/2022 9:13:15 PM	70290
Surr: Nitrobenzene-d5	67.1	0	16.8-112		%Rec	1	9/28/2022 9:13:15 PM	70290
Surr: 2-Fluorobiphenyl	67.0	0	15-101		%Rec	1	9/28/2022 9:13:15 PM	70290
Surr: 4-Terphenyl-d14	83.5	0	34.4-134		%Rec	1	9/28/2022 9:13:15 PM	70290
EPA METHOD 8270SIM							Analyst: TOM	
1,4-Dioxane	0.70	0.11	1.0	J	µg/L	1	9/27/2022 1:29:00 AM	70290
Naphthalene	1.3	0.20	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
1-Methylnaphthalene	1.0	0.15	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
2-Methylnaphthalene	0.74	0.14	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
Acenaphthene	0.18	0.14	0.30	J	µg/L	1	9/27/2022 1:29:00 AM	70290
Fluorene	ND	0.095	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
Phenanthrene	0.40	0.16	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
Anthracene	0.18	0.14	0.30	J	µg/L	1	9/27/2022 1:29:00 AM	70290
Fluoranthene	ND	0.14	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
Pyrene	ND	0.32	1.0		µg/L	1	9/27/2022 1:29:00 AM	70290
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
Chrysene	ND	0.25	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	9/27/2022 1:29:00 AM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Client Sample ID: OW-70
Project: 2022 GW Sampling 3rd Quarter Collection Date: 9/15/2022 9:55:00 AM
Lab ID: 2209816-004C Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: TOM	
Surr: Nitrobenzene-d5	63.3	0	31.6-100		%Rec	1	9/27/2022 1:29:00 AM	70290
Surr: 2-Fluorobiphenyl	53.5	0	26.7-90.1		%Rec	1	9/27/2022 1:29:00 AM	70290
Surr: 4-Terphenyl-d14	54.7	0	72.3-147	S	%Rec	1	9/27/2022 1:29:00 AM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-70

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:55:00 AM

Lab ID: 2209816-004D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.79	0.0016	0.0030		mg/L	1	9/21/2022 12:05:44 PM	70299
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2022 12:05:44 PM	70299
Cadmium	ND	0.0018	0.0020		mg/L	1	9/21/2022 12:05:44 PM	70299
Chromium	0.0070	0.0020	0.0060		mg/L	1	9/21/2022 12:05:44 PM	70299
Cobalt	0.0094	0.0035	0.0060		mg/L	1	9/21/2022 12:05:44 PM	70299
Nickel	0.046	0.0053	0.010		mg/L	1	9/21/2022 12:05:44 PM	70299
Silver	ND	0.0018	0.0050		mg/L	1	9/21/2022 3:25:00 PM	70299
Vanadium	0.014	0.0035	0.050	J	mg/L	1	9/21/2022 12:05:44 PM	70299
Zinc	0.0047	0.0039	0.010	J	mg/L	1	9/21/2022 12:05:44 PM	70299
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/21/2022 11:28:36 AM	70299
Arsenic	0.0028	0.00013	0.0010		mg/L	1	9/21/2022 11:28:36 AM	70299
Lead	0.0023	0.000061	0.00050		mg/L	1	9/21/2022 11:28:36 AM	70299
Selenium	0.00069	0.00037	0.0010	J	mg/L	1	9/21/2022 11:28:36 AM	70299
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 3:05:40 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-70

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 9:55:00 AM

Lab ID: 2209816-004E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JRR	
Barium	0.53	0.0011	0.0020		mg/L	1	9/27/2022 4:49:47 PM	C91347
Beryllium	ND	0.00088	0.0020		mg/L	1	9/27/2022 4:49:47 PM	C91347
Cadmium	0.0010	0.00098	0.0020	J	mg/L	1	9/27/2022 4:49:47 PM	C91347
Chromium	ND	0.0020	0.0060		mg/L	1	9/27/2022 4:49:47 PM	C91347
Cobalt	0.0042	0.0024	0.0060	J	mg/L	1	9/27/2022 4:49:47 PM	C91347
Nickel	0.044	0.0033	0.010		mg/L	1	9/27/2022 4:49:47 PM	C91347
Silver	ND	0.0013	0.0050		mg/L	1	9/28/2022 1:57:00 PM	A91392
Vanadium	0.0031	0.0017	0.050	J	mg/L	1	9/27/2022 4:49:47 PM	C91347
Zinc	0.011	0.0032	0.010		mg/L	1	9/27/2022 4:49:47 PM	C91347
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/19/2022 12:12:19 PM	A91132
Arsenic	0.0012	0.00012	0.0010		mg/L	1	9/19/2022 12:12:19 PM	A91132
Lead	0.00012	0.000057	0.00050	J	mg/L	1	9/19/2022 12:12:19 PM	A91132
Selenium	ND	0.00034	0.0010		mg/L	1	9/19/2022 12:12:19 PM	A91132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 3:07:48 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-57

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 10:25:00 AM

Lab ID: 2209816-005A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: BRM	
Gasoline Range Organics (GRO)	30	0.45	2.5		mg/L	50	9/16/2022 8:07:00 PM	B91113
Surr: BFB	109	0	70-130		%Rec	50	9/16/2022 8:07:00 PM	B91113
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	14000	110	500		µg/L	500	9/19/2022 4:40:05 PM	R91137
Toluene	27	10	50	J	µg/L	50	9/16/2022 5:15:28 PM	A91114
Ethylbenzene	580	11	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Methyl tert-butyl ether (MTBE)	41	20	50	J	µg/L	50	9/16/2022 5:15:28 PM	A91114
1,2,4-Trimethylbenzene	ND	6.1	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
1,3,5-Trimethylbenzene	ND	9.1	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
1,2-Dichloroethane (EDC)	ND	13	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Acetone	ND	130	500		µg/L	50	9/16/2022 5:15:28 PM	A91114
Bromomethane	ND	43	150		µg/L	50	9/16/2022 5:15:28 PM	A91114
2-Butanone	ND	100	500		µg/L	50	9/16/2022 5:15:28 PM	A91114
Carbon disulfide	ND	30	500		µg/L	50	9/16/2022 5:15:28 PM	A91114
Chlorobenzene	ND	7.8	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Chloroform	ND	6.7	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Chloromethane	ND	21	150		µg/L	50	9/16/2022 5:15:28 PM	A91114
cis-1,2-DCE	ND	19	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
1,1-Dichloroethane	ND	14	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
1,1-Dichloroethene	ND	10	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Isopropylbenzene	16	9.1	50	J	µg/L	50	9/16/2022 5:15:28 PM	A91114
4-Isopropyltoluene	ND	10	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Methylene Chloride	ND	25	150		µg/L	50	9/16/2022 5:15:28 PM	A91114
n-Butylbenzene	ND	13	150		µg/L	50	9/16/2022 5:15:28 PM	A91114
n-Propylbenzene	42	9.1	50	J	µg/L	50	9/16/2022 5:15:28 PM	A91114
sec-Butylbenzene	ND	7.2	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Styrene	ND	6.8	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Tetrachloroethene (PCE)	ND	18	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
1,1,1-Trichloroethane	ND	15	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Trichloroethene (TCE)	ND	10	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Vinyl chloride	ND	16	50		µg/L	50	9/16/2022 5:15:28 PM	A91114
Xylenes, Total	100	19	75		µg/L	50	9/16/2022 5:15:28 PM	A91114
Surr: 1,2-Dichloroethane-d4	112	0	70-130		%Rec	50	9/16/2022 5:15:28 PM	A91114
Surr: 4-Bromofluorobenzene	97.2	0	70-130		%Rec	50	9/16/2022 5:15:28 PM	A91114
Surr: Dibromofluoromethane	111	0	70-130		%Rec	50	9/16/2022 5:15:28 PM	A91114
Surr: Toluene-d8	98.0	0	70-130		%Rec	50	9/16/2022 5:15:28 PM	A91114

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 3rd Quarter

Lab ID: 2209816-005B

Client Sample ID: OW-57

Collection Date: 9/15/2022 10:25:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0095		µg/L	1	9/22/2022 4:30:42 PM	70321

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-57

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 10:25:00 AM

Lab ID: 2209816-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	6.2	0.032	0.13		mg/L	2	9/27/2022 11:35:48 AM	70323
Motor Oil Range Organics (MRO)	ND	0.10	0.16	D	mg/L	2	9/27/2022 11:35:48 AM	70323
Surr: DNOP	100	0	42.2-138		%Rec	2	9/27/2022 11:35:48 AM	70323
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	9/28/2022 9:55:38 PM	70290
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	9/28/2022 9:55:38 PM	70290
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	9/28/2022 9:55:38 PM	70290
Di-n-octyl phthalate	ND	12	20		µg/L	1	9/28/2022 9:55:38 PM	70290
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	9/28/2022 9:55:38 PM	70290
Diethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 9:55:38 PM	70290
Dimethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 9:55:38 PM	70290
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	9/28/2022 9:55:38 PM	70290
2,4-Dinitrophenol	ND	16	20		µg/L	1	9/28/2022 9:55:38 PM	70290
1-Methylnaphthalene	77	4.3	5.0		µg/L	1	9/28/2022 9:55:38 PM	70290
2-Methylnaphthalene	55	4.2	5.0		µg/L	1	9/28/2022 9:55:38 PM	70290
2-Methylphenol	ND	5.0	10		µg/L	1	9/28/2022 9:55:38 PM	70290
3+4-Methylphenol	ND	5.1	10		µg/L	1	9/28/2022 9:55:38 PM	70290
Naphthalene	100	3.2	5.0		µg/L	1	9/28/2022 9:55:38 PM	70290
Phenol	70	18	20		µg/L	1	9/28/2022 9:55:38 PM	70290
Pyridine	ND	14	40		µg/L	1	9/28/2022 9:55:38 PM	70290
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	9/28/2022 9:55:38 PM	70290
Surr: 2-Fluorophenol	46.9	0	15-84.5		%Rec	1	9/28/2022 9:55:38 PM	70290
Surr: Phenol-d5	37.1	0	15-67		%Rec	1	9/28/2022 9:55:38 PM	70290
Surr: 2,4,6-Tribromophenol	64.8	0	15-108		%Rec	1	9/28/2022 9:55:38 PM	70290
Surr: Nitrobenzene-d5	63.7	0	16.8-112		%Rec	1	9/28/2022 9:55:38 PM	70290
Surr: 2-Fluorobiphenyl	58.4	0	15-101		%Rec	1	9/28/2022 9:55:38 PM	70290
Surr: 4-Terphenyl-d14	73.7	0	34.4-134		%Rec	1	9/28/2022 9:55:38 PM	70290
EPA METHOD 8270SIM							Analyst: TOM	
1,4-Dioxane	0.80	0.11	1.0	J	µg/L	1	9/27/2022 2:18:00 AM	70290
Acenaphthene	2.4	0.14	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290
Fluorene	3.9	0.095	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290
Phenanthrene	5.1	0.16	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290
Anthracene	0.20	0.14	0.30	J	µg/L	1	9/27/2022 2:18:00 AM	70290
Fluoranthene	ND	0.14	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290
Pyrene	ND	0.32	1.0		µg/L	1	9/27/2022 2:18:00 AM	70290
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290
Chrysene	ND	0.25	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	9/27/2022 2:18:00 AM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-57

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 10:25:00 AM

Lab ID: 2209816-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: TOM	
Surr: Nitrobenzene-d5	59.4	0	31.6-100		%Rec	1	9/27/2022 2:18:00 AM	70290
Surr: 2-Fluorobiphenyl	43.1	0	26.7-90.1		%Rec	1	9/27/2022 2:18:00 AM	70290
Surr: 4-Terphenyl-d14	51.1	0	72.3-147	S	%Rec	1	9/27/2022 2:18:00 AM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-57

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 10:25:00 AM

Lab ID: 2209816-005D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	24	0.079	0.15	*	mg/L	50	9/27/2022 12:06:54 PM	70359
Beryllium	0.027	0.0044	0.010	*	mg/L	5	9/23/2022 12:55:14 PM	70359
Cadmium	ND	0.0088	0.010		mg/L	5	9/23/2022 12:55:14 PM	70359
Chromium	0.21	0.0098	0.030	*	mg/L	5	9/23/2022 12:55:14 PM	70359
Cobalt	0.12	0.018	0.030		mg/L	5	9/23/2022 12:55:14 PM	70359
Nickel	0.26	0.027	0.050	*	mg/L	5	9/23/2022 12:55:14 PM	70359
Silver	ND	0.0092	0.025		mg/L	5	9/23/2022 12:55:14 PM	70359
Vanadium	0.42	0.018	0.25		mg/L	5	9/23/2022 12:55:14 PM	70359
Zinc	0.33	0.019	0.050		mg/L	5	9/23/2022 12:55:14 PM	70359
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/26/2022 11:47:28 AM	70359
Arsenic	0.036	0.00013	0.0010	*	mg/L	1	9/26/2022 11:47:28 AM	70359
Lead	0.28	0.0012	0.010	*	mg/L	20	9/26/2022 12:51:01 PM	70359
Selenium	0.062	0.0074	0.020	*	mg/L	20	9/26/2022 12:51:01 PM	70359
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00029	0.000091	0.00020		mg/L	1	9/26/2022 1:46:23 PM	70391

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: OW-57

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 10:25:00 AM

Lab ID: 2209816-005E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JRR	
Barium	3.1	0.0056	0.010	*	mg/L	5	9/27/2022 4:56:05 PM	C91347
Beryllium	ND	0.00088	0.0020		mg/L	1	9/27/2022 4:54:06 PM	C91347
Cadmium	ND	0.00098	0.0020		mg/L	1	9/27/2022 4:54:06 PM	C91347
Chromium	ND	0.0020	0.0060		mg/L	1	9/27/2022 4:54:06 PM	C91347
Cobalt	ND	0.0024	0.0060		mg/L	1	9/27/2022 4:54:06 PM	C91347
Nickel	0.056	0.0033	0.010		mg/L	1	9/27/2022 4:54:06 PM	C91347
Silver	0.0019	0.0013	0.0050	J	mg/L	1	9/28/2022 1:59:06 PM	A91392
Vanadium	0.0039	0.0017	0.050	J	mg/L	1	9/27/2022 4:54:06 PM	C91347
Zinc	0.0098	0.0032	0.010	J	mg/L	1	9/27/2022 4:54:06 PM	C91347
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/19/2022 12:15:00 PM	A91132
Arsenic	0.0025	0.00012	0.0010		mg/L	1	9/19/2022 12:15:00 PM	A91132
Lead	ND	0.000057	0.00050		mg/L	1	9/19/2022 12:15:00 PM	A91132
Selenium	ND	0.00034	0.0010		mg/L	1	9/19/2022 12:15:00 PM	A91132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 3:09:57 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: FB 9-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022 10:25:00 AM

Lab ID: 2209816-006A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	ND	0.23	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Toluene	ND	0.20	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Acetone	11	2.5	10		µg/L	1	9/19/2022 2:51:45 PM	R91137
Bromomethane	ND	0.85	3.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
2-Butanone	17	2.0	10		µg/L	1	9/19/2022 2:51:45 PM	R91137
Carbon disulfide	ND	0.59	10		µg/L	1	9/19/2022 2:51:45 PM	R91137
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Chloroform	ND	0.13	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Chloromethane	ND	0.41	3.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Styrene	ND	0.14	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/19/2022 2:51:45 PM	R91137
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/19/2022 2:51:45 PM	R91137
tert-Butyl alcohol	ND	16	25		µg/L	1	9/19/2022 2:51:45 PM	R91137
Surr: 1,2-Dichloroethane-d4	118	0	70-130		%Rec	1	9/19/2022 2:51:45 PM	R91137
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	1	9/19/2022 2:51:45 PM	R91137
Surr: Dibromofluoromethane	115	0	70-130		%Rec	1	9/19/2022 2:51:45 PM	R91137
Surr: Toluene-d8	100	0	70-130		%Rec	1	9/19/2022 2:51:45 PM	R91137

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP 9-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022

Lab ID: 2209816-007A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: BRM	
Gasoline Range Organics (GRO)	0.35	0.0090	0.050		mg/L	1	9/16/2022 8:27:00 PM	B91113
Surr: BFB	493	0	70-130	S	%Rec	1	9/16/2022 8:27:00 PM	B91113
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	0.99	0.23	1.0	J	µg/L	1	9/16/2022 6:09:36 PM	A91114
Toluene	ND	0.20	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Methyl tert-butyl ether (MTBE)	55	0.39	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
1,2,4-Trimethylbenzene	0.15	0.12	1.0	J	µg/L	1	9/16/2022 6:09:36 PM	A91114
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
1,2-Dichloroethane (EDC)	5.9	0.25	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Acetone	ND	2.5	10		µg/L	1	9/16/2022 6:09:36 PM	A91114
Bromomethane	ND	0.85	3.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
2-Butanone	ND	2.0	10		µg/L	1	9/16/2022 6:09:36 PM	A91114
Carbon disulfide	ND	0.59	10		µg/L	1	9/16/2022 6:09:36 PM	A91114
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Chloroform	ND	0.13	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Chloromethane	ND	0.41	3.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
1,1-Dichloroethane	0.47	0.27	1.0	J	µg/L	1	9/16/2022 6:09:36 PM	A91114
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Isopropylbenzene	28	0.18	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
n-Butylbenzene	1.4	0.25	3.0	J	µg/L	1	9/16/2022 6:09:36 PM	A91114
n-Propylbenzene	1.0	0.18	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
sec-Butylbenzene	6.4	0.14	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Styrene	ND	0.14	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/16/2022 6:09:36 PM	A91114
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/16/2022 6:09:36 PM	A91114
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	1	9/16/2022 6:09:36 PM	A91114
Surr: 4-Bromofluorobenzene	94.1	0	70-130		%Rec	1	9/16/2022 6:09:36 PM	A91114
Surr: Dibromofluoromethane	112	0	70-130		%Rec	1	9/16/2022 6:09:36 PM	A91114
Surr: Toluene-d8	97.9	0	70-130		%Rec	1	9/16/2022 6:09:36 PM	A91114

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP 9-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022

Lab ID: 2209816-007B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	9/22/2022 4:45:43 PM	70321

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP 9-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022

Lab ID: 2209816-007C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.96	0.016	0.064		mg/L	1	9/26/2022 6:05:04 PM	70323
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	9/26/2022 6:05:04 PM	70323
Surr: DNOP	92.2	0	42.2-138		%Rec	1	9/26/2022 6:05:04 PM	70323
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JME	
Benzoic acid	ND	18	20		µg/L	1	9/28/2022 10:37:55 PM	70290
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	9/28/2022 10:37:55 PM	70290
Di-n-butyl phthalate	20	7.7	10		µg/L	1	9/28/2022 10:37:55 PM	70290
Di-n-octyl phthalate	ND	12	20		µg/L	1	9/28/2022 10:37:55 PM	70290
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	9/28/2022 10:37:55 PM	70290
Diethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 10:37:55 PM	70290
Dimethyl phthalate	ND	6.0	10		µg/L	1	9/28/2022 10:37:55 PM	70290
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	9/28/2022 10:37:55 PM	70290
2,4-Dinitrophenol	ND	16	20		µg/L	1	9/28/2022 10:37:55 PM	70290
2-Methylphenol	ND	5.0	10		µg/L	1	9/28/2022 10:37:55 PM	70290
3+4-Methylphenol	ND	5.1	10		µg/L	1	9/28/2022 10:37:55 PM	70290
Phenol	ND	18	20		µg/L	1	9/28/2022 10:37:55 PM	70290
Pyridine	ND	14	40		µg/L	1	9/28/2022 10:37:55 PM	70290
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	9/28/2022 10:37:55 PM	70290
Surr: 2-Fluorophenol	50.2	0	15-84.5		%Rec	1	9/28/2022 10:37:55 PM	70290
Surr: Phenol-d5	38.8	0	15-67		%Rec	1	9/28/2022 10:37:55 PM	70290
Surr: 2,4,6-Tribromophenol	63.8	0	15-108		%Rec	1	9/28/2022 10:37:55 PM	70290
Surr: Nitrobenzene-d5	64.5	0	16.8-112		%Rec	1	9/28/2022 10:37:55 PM	70290
Surr: 2-Fluorobiphenyl	64.1	0	15-101		%Rec	1	9/28/2022 10:37:55 PM	70290
Surr: 4-Terphenyl-d14	68.9	0	34.4-134		%Rec	1	9/28/2022 10:37:55 PM	70290
EPA METHOD 8270SIM							Analyst: TOM	
1,4-Dioxane	0.66	0.11	1.0	J	µg/L	1	9/27/2022 3:06:00 AM	70290
Naphthalene	ND	0.20	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
Acenaphthene	0.14	0.14	0.30	J	µg/L	1	9/27/2022 3:06:00 AM	70290
Fluorene	ND	0.095	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
Phenanthrene	0.34	0.16	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
Anthracene	0.20	0.14	0.30	J	µg/L	1	9/27/2022 3:06:00 AM	70290
Fluoranthene	0.20	0.14	0.30	J	µg/L	1	9/27/2022 3:06:00 AM	70290
Pyrene	0.44	0.32	1.0	J	µg/L	1	9/27/2022 3:06:00 AM	70290
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
Chrysene	ND	0.25	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
Benzo(b)fluoranthene	ND	0.14	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	9/27/2022 3:06:00 AM	70290

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP 9-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022

Lab ID: 2209816-007C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: TOM	
Surr: Nitrobenzene-d5	60.7	0	31.6-100		%Rec	1	9/27/2022 3:06:00 AM	70290
Surr: 2-Fluorobiphenyl	53.2	0	26.7-90.1		%Rec	1	9/27/2022 3:06:00 AM	70290
Surr: 4-Terphenyl-d14	48.5	0	72.3-147	S	%Rec	1	9/27/2022 3:06:00 AM	70290

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP 9-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022

Lab ID: 2209816-007D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.70	0.0016	0.0030		mg/L	1	9/21/2022 12:08:54 PM	70299
Beryllium	ND	0.00088	0.0020		mg/L	1	9/21/2022 12:08:54 PM	70299
Cadmium	ND	0.0018	0.0020		mg/L	1	9/21/2022 12:08:54 PM	70299
Chromium	0.0031	0.0020	0.0060	J	mg/L	1	9/21/2022 12:08:54 PM	70299
Cobalt	0.012	0.0035	0.0060		mg/L	1	9/21/2022 12:08:54 PM	70299
Nickel	0.044	0.0053	0.010		mg/L	1	9/21/2022 12:08:54 PM	70299
Silver	ND	0.0018	0.0050		mg/L	1	9/21/2022 3:33:53 PM	70299
Vanadium	0.0083	0.0035	0.050	J	mg/L	1	9/21/2022 12:08:54 PM	70299
Zinc	ND	0.0039	0.010		mg/L	1	9/21/2022 12:08:54 PM	70299
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/21/2022 11:35:57 AM	70299
Arsenic	0.0025	0.00013	0.0010		mg/L	1	9/21/2022 11:35:57 AM	70299
Lead	0.0016	0.000061	0.00050		mg/L	1	9/21/2022 11:35:57 AM	70299
Selenium	ND	0.00037	0.0010		mg/L	1	9/21/2022 11:35:57 AM	70299
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 3:12:07 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP 9-15-22

Project: 2022 GW Sampling 3rd Quarter

Collection Date: 9/15/2022

Lab ID: 2209816-007E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: JRR	
Barium	0.55	0.0011	0.0020		mg/L	1	9/27/2022 4:58:14 PM	C91347
Beryllium	ND	0.00088	0.0020		mg/L	1	9/27/2022 4:58:14 PM	C91347
Cadmium	ND	0.00098	0.0020		mg/L	1	9/27/2022 4:58:14 PM	C91347
Chromium	ND	0.0020	0.0060		mg/L	1	9/27/2022 4:58:14 PM	C91347
Cobalt	0.0046	0.0024	0.0060	J	mg/L	1	9/27/2022 4:58:14 PM	C91347
Nickel	0.043	0.0033	0.010		mg/L	1	9/27/2022 4:58:14 PM	C91347
Silver	ND	0.0013	0.0050		mg/L	1	9/28/2022 2:07:40 PM	A91392
Vanadium	0.0025	0.0017	0.050	J	mg/L	1	9/27/2022 4:58:14 PM	C91347
Zinc	0.013	0.0032	0.010		mg/L	1	9/27/2022 4:58:14 PM	C91347
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	9/19/2022 12:17:42 PM	A91132
Arsenic	0.0012	0.00012	0.0010		mg/L	1	9/19/2022 12:17:42 PM	A91132
Lead	0.00013	0.000057	0.00050	J	mg/L	1	9/19/2022 12:17:42 PM	A91132
Selenium	ND	0.00034	0.0010		mg/L	1	9/19/2022 12:17:42 PM	A91132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	9/21/2022 3:14:17 PM	70307

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 3rd Quarter

Collection Date:

Lab ID: 2209816-008A

Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: BRM	
Benzene	ND	0.23	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Toluene	ND	0.20	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Acetone	2.7	2.5	10	J	µg/L	1	9/16/2022 6:36:39 PM	A91114
Bromomethane	ND	0.85	3.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
2-Butanone	ND	2.0	10		µg/L	1	9/16/2022 6:36:39 PM	A91114
Carbon disulfide	ND	0.59	10		µg/L	1	9/16/2022 6:36:39 PM	A91114
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Chloroform	ND	0.13	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Chloromethane	ND	0.41	3.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Styrene	ND	0.14	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/16/2022 6:36:39 PM	A91114
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/16/2022 6:36:39 PM	A91114
tert-Butyl alcohol	ND	16	25		µg/L	1	9/16/2022 6:36:39 PM	A91114
Surr: 1,2-Dichloroethane-d4	111	0	70-130		%Rec	1	9/16/2022 6:36:39 PM	A91114
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	9/16/2022 6:36:39 PM	A91114
Surr: Dibromofluoromethane	109	0	70-130		%Rec	1	9/16/2022 6:36:39 PM	A91114
Surr: Toluene-d8	95.7	0	70-130		%Rec	1	9/16/2022 6:36:39 PM	A91114

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Estimated value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report

Lab Order: 2209816

Date Reported: 10/4/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	Trip Blank
Project:	2022 GW Sampling 3rd Quarter	Collection Date:	
Lab ID:	2209816-008B	Matrix:	Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: SB	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	9/22/2022 5:00:44 PM	70321

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Estimated value
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	



ANALYTICAL REPORT

September 28, 2022

Revised Report

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1537669

Samples Received: 09/20/2022

Project Number:

Description:

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

Entire Report Reviewed By:

A handwritten signature in blue ink that reads "John V. Hawkins".

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
2209816-001F EB-09-15-22 L1537669-01	5	
2209816-002F MKTF-16 L1537669-02	6	⁴ Cn
2209816-003F OW-12A L1537669-03	7	⁵ Sr
2209816-004F OW-70 L1537669-04	8	
2209816-005F OW-57 L1537669-05	9	⁶ Qc
2209816-007F DUP 9-15-22 L1537669-06	10	
Qc: Quality Control Summary	11	⁷ Gl
Wet Chemistry by Method 4500CN E-2016	11	⁸ Al
Gl: Glossary of Terms	12	
Al: Accreditations & Locations	13	⁹ Sc
Sc: Sample Chain of Custody	14	

2209816-001F EB-09-15-22 L1537669-01 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1929558	1	09/23/22 11:57	09/23/22 21:07	LDT	Mt. Juliet, TN

Collected by

Collected date/time
09/15/22 08:15

Received date/time
09/20/22 09:15

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

2209816-002F MKTF-16 L1537669-02 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1929558	1	09/23/22 11:57	09/23/22 21:11	LDT	Mt. Juliet, TN

Collected by

Collected date/time
09/15/22 08:45

Received date/time
09/20/22 09:15

2209816-003F OW-12A L1537669-03 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1929558	1	09/23/22 11:57	09/23/22 21:12	LDT	Mt. Juliet, TN

Collected by

Collected date/time
09/15/22 09:30

Received date/time
09/20/22 09:15

2209816-004F OW-70 L1537669-04 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1929558	1	09/23/22 11:57	09/23/22 21:13	LDT	Mt. Juliet, TN

Collected by

Collected date/time
09/15/22 09:55

Received date/time
09/20/22 09:15

2209816-005F OW-57 L1537669-05 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1929558	1	09/23/22 11:57	09/23/22 21:14	LDT	Mt. Juliet, TN

Collected by

Collected date/time
09/15/22 10:25

Received date/time
09/20/22 09:15

2209816-007F DUP 9-15-22 L1537669-06 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1929558	1	09/23/22 11:57	09/23/22 21:15	LDT	Mt. Juliet, TN

Collected by

Collected date/time
09/15/22 00:00

Received date/time
09/20/22 09:15

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



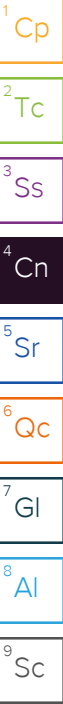
John Hawkins
Project Manager

Report Revision History

Level II Report - Version 1: 09/26/22 15:48

Project Narrative

Reprint to correct sample ID



Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	09/23/2022 21:07	WG1929558

- 1Cp
- 2Tc
- 3Ss
- 4Cn
- 5Sr
- 6Qc
- 7Gl
- 8Al
- 9Sc

Collected date/time: 09/15/22 08:45

L1537669

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	09/23/2022 21:11	WG1929558

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Collected date/time: 09/15/22 09:30

L1537669

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	09/23/2022 21:12	WG1929558

- ¹Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Qc
- ⁷Gl
- ⁸Al
- ⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	09/23/2022 21:13	WG1929558

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	09/23/2022 21:14	WG1929558

- ¹Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Qc
- ⁷Gl
- ⁸Al
- ⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.00500	1	09/23/2022 21:15	WG1929558

- ¹Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Qc
- ⁷Gl
- ⁸Al
- ⁹Sc

Method Blank (MB)

(MB) R3840867-1 09/23/22 20:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1537669-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1537669-01 09/23/22 21:07 • (DUP) R3840867-5 09/23/22 21:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

L1537686-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1537686-01 09/23/22 21:16 • (DUP) R3840867-6 09/23/22 21:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3840867-2 09/23/22 20:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.0923	92.3	87.1-120	

L1537432-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1537432-01 09/23/22 20:51 • (MS) R3840867-3 09/23/22 20:52 • (MSD) R3840867-4 09/23/22 20:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	0.100	ND	0.0917	0.0900	91.7	90.0	1	90.0-110			1.87	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
-----------	-------------

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

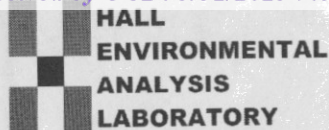
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



J190

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107

Website: www.hallenvironmental.com

SUB CONTRACTOR: Pace TN		COMPANY: PACE TN		PHONE: (800) 767-5859		FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd				ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122							

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2209816-001F	EB-09-15-22	500AMBHDP F.NA.OH	Groundw star	9/15/2022 8:15:00 AM	1	Total Cyanide J and MDL -91
2	2209816-002F	MKTF-16	500AMBHDP F.NA.OH	Groundw star	9/15/2022 8:45:00 AM	1	Total Cyanide J and MDL -02
3	2209816-003F	OW-12A	500AMBHDP F.NA.OH	Groundw star	9/15/2022 9:30:00 AM	1	Total Cyanide J and MDL -03
4	2209816-004F	OW-70	500AMBHDP F.NA.OH	Groundw star	9/15/2022 9:55:00 AM	1	Total Cyanide J and MDL -04
5	2209816-005F	OW-57	500AMBHDP F.NA.OH	Groundw star	9/15/2022 10:25:00 AM	1	Total Cyanide J and MDL -05
6	2209816-007F	DUP 9-15-22	500AMBHDP F.NA.OH	Groundw star	9/15/2022	1	Total Cyanide J and MDL -06

Sample Receipt Checklist

COC Seal Present/Intact: Y X N If Applicable
 COC Signed/Accurate: Y X N VOA Zero Headspace: Y N
 Bottles arrive intact: Y X N Pres. Correct/Check: Y N
 Correct bottles used: Y X N
 Sufficient volume sent: Y X N
 RAD Screen <0.5 mR/hr: Y X N

SPECIAL INSTRUCTIONS / COMMENTS:

temp: 8.7+0.5.7 Hrk #: 5755 8089 3973

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <u>Com</u>	Date: <u>9/16/2022</u>	Time: <u>8:38 AM</u>	Received By: <u>Cathy</u>	Date: <u>09/20</u>	Time: <u>0915</u>	REPORT TRANSMITTAL DESIRED: ☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	FOR LAB USE ONLY	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Temp of samples _____ °C Attempt to Cool? _____	
TAT: Standard ☒ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐						Comments: _____	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: MB-70299		SampType: MBLK		TestCode: EPA Method 200.7: Metals						
Client ID: PBW		Batch ID: 70299		RunNo: 91216						
Prep Date: 9/20/2022		Analysis Date: 9/21/2022		SeqNo: 3263482		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.050								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LCSLL-70299		SampType: LCSLL		TestCode: EPA Method 200.7: Metals						
Client ID: BatchQC		Batch ID: 70299		RunNo: 91216						
Prep Date: 9/20/2022		Analysis Date: 9/21/2022		SeqNo: 3263483		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	0.0026	0.0030	0.002000	0	129	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	100	50	150			
Cadmium	0.0024	0.0020	0.002000	0	121	50	150			
Chromium	0.0074	0.0060	0.006000	0	124	50	150			
Cobalt	0.0084	0.0060	0.006000	0	141	50	150			
Iron	0.023	0.050	0.02000	0	116	50	150			J
Manganese	0.0021	0.0020	0.002000	0	104	50	150			
Nickel	0.0059	0.010	0.005000	0	117	50	150			J
Silver	0.0050	0.0050	0.005000	0	101	50	150			
Vanadium	0.011	0.050	0.01000	0	107	50	150			J
Zinc	0.011	0.010	0.01000	0	109	50	150			

Sample ID: LCS-70299		SampType: LCS		TestCode: EPA Method 200.7: Metals						
Client ID: LCSW	Batch ID: 70299			RunNo: 91216						
Prep Date: 9/20/2022	Analysis Date: 9/21/2022			SeqNo: 3263484		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Barium	0.51	0.0030	0.5000	0	103	85	115			
Beryllium	0.52	0.0020	0.5000	0	105	85	115			
Cadmium	0.51	0.0020	0.5000	0	101	85	115			
Chromium	0.50	0.0060	0.5000	0	101	85	115			
Cobalt	0.50	0.0060	0.5000	0	99.4	85	115			
Iron	0.50	0.050	0.5000	0	100	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: LCS-70299	SampType: LCS				TestCode: EPA Method 200.7: Metals					
Client ID: LCSW	Batch ID: 70299				RunNo: 91216					
Prep Date: 9/20/2022	Analysis Date: 9/21/2022				SeqNo: 3263484	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.51	0.0020	0.5000	0	102	85	115			
Nickel	0.49	0.010	0.5000	0	97.2	85	115			
Silver	0.098	0.0050	0.1000	0	98.2	85	115			
Vanadium	0.52	0.050	0.5000	0	104	85	115			
Zinc	0.51	0.010	0.5000	0	101	85	115			

Sample ID: MB-70299	SampType: MBLK				TestCode: EPA Method 200.7: Metals					
Client ID: PBW	Batch ID: 70299				RunNo: 91216					
Prep Date: 9/20/2022	Analysis Date: 9/21/2022				SeqNo: 3263608	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.0050								

Sample ID: LCSLL-70299	SampType: LCSLL				TestCode: EPA Method 200.7: Metals					
Client ID: BatchQC	Batch ID: 70299				RunNo: 91216					
Prep Date: 9/20/2022	Analysis Date: 9/21/2022				SeqNo: 3263610	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.0055	0.0050	0.005000	0	110	50	150			

Sample ID: LCS-70299	SampType: LCS				TestCode: EPA Method 200.7: Metals					
Client ID: LCSW	Batch ID: 70299				RunNo: 91216					
Prep Date: 9/20/2022	Analysis Date: 9/21/2022				SeqNo: 3263612	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.10	0.0050	0.1000	0	101	85	115			

Sample ID: MB-70359	SampType: MBLK				TestCode: EPA Method 200.7: Metals					
Client ID: PBW	Batch ID: 70359				RunNo: 91277					
Prep Date: 9/22/2022	Analysis Date: 9/23/2022				SeqNo: 3266355	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: LCSLL-70359	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: 70359	RunNo: 91277								
Prep Date: 9/22/2022	Analysis Date: 9/23/2022	SeqNo: 3266356	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0021	0.0030	0.002000	0	106	50	150			J
Beryllium	0.0019	0.0020	0.002000	0	93.0	50	150			J
Cadmium	0.0019	0.0020	0.002000	0	95.5	50	150			J
Chromium	0.0055	0.0060	0.006000	0	91.6	50	150			J
Cobalt	0.0063	0.0060	0.006000	0	105	50	150			J
Silver	0.0050	0.0050	0.005000	0	99.8	50	150			J
Vanadium	0.0093	0.050	0.01000	0	92.6	50	150			J
Zinc	0.0097	0.010	0.01000	0	97.0	50	150			J

Sample ID: LCS-70359	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: 70359	RunNo: 91277								
Prep Date: 9/22/2022	Analysis Date: 9/23/2022	SeqNo: 3266357	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0030	0.5000	0	96.3	85	115			
Beryllium	0.49	0.0020	0.5000	0	98.5	85	115			
Cadmium	0.48	0.0020	0.5000	0	95.4	85	115			
Chromium	0.48	0.0060	0.5000	0	97.0	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.2	85	115			
Silver	0.10	0.0050	0.1000	0	101	85	115			
Vanadium	0.49	0.050	0.5000	0	97.4	85	115			
Zinc	0.47	0.010	0.5000	0	93.4	85	115			

Sample ID: MB-70359	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: 70359	RunNo: 91312								
Prep Date: 9/22/2022	Analysis Date: 9/26/2022	SeqNo: 3268088	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	ND	0.010								

Sample ID: LCSLL-70359	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: 70359	RunNo: 91312								
Prep Date: 9/22/2022	Analysis Date: 9/26/2022	SeqNo: 3268089	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.0044	0.010	0.005000	0	87.9	50	150			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 220981604-Oct-22

Client: Marathon

Project: 2022 GW Sampling 3rd Quarter

Sample ID: LCS-70359		SampType: LCS		TestCode: EPA Method 200.7: Metals						
Client ID: LCSW		Batch ID: 70359		RunNo: 91312						
Prep Date: 9/22/2022		Analysis Date: 9/26/2022		SeqNo: 3268090		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.48	0.010	0.5000	0	95.7	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: MB-C	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: C91347	RunNo: 91347								
Prep Date:	Analysis Date: 9/27/2022	SeqNo: 3269825 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Nickel	ND	0.010								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LLCS-C	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: BatchQC	Batch ID: C91347	RunNo: 91347								
Prep Date:	Analysis Date: 9/27/2022	SeqNo: 3269826 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0014	0.0020	0.002000	0	70.7	50	150			J
Beryllium	0.0018	0.0020	0.002000	0	90.4	50	150			J
Cadmium	0.0025	0.0020	0.002000	0	124	50	150			
Chromium	0.0060	0.0060	0.006000	0	100	50	150			
Cobalt	0.0053	0.0060	0.006000	0	88.2	50	150			J
Iron	0.021	0.020	0.02000	0	104	50	150			
Nickel	0.0057	0.010	0.005000	0	114	50	150			J
Vanadium	0.010	0.050	0.01000	0	103	50	150			J
Zinc	0.010	0.010	0.01000	0	102	50	150			

Sample ID: LCS-C	SampType: LCS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: LCSW	Batch ID: C91347	RunNo: 91347								
Prep Date:	Analysis Date: 9/27/2022	SeqNo: 3269827 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	98.4	85	115			
Beryllium	0.50	0.0020	0.5000	0	100	85	115			
Cadmium	0.50	0.0020	0.5000	0	100	85	115			
Chromium	0.50	0.0060	0.5000	0	99.8	85	115			
Cobalt	0.48	0.0060	0.5000	0	96.8	85	115			
Iron	0.49	0.020	0.5000	0	97.8	85	115			
Nickel	0.49	0.010	0.5000	0	97.8	85	115			
Vanadium	0.50	0.050	0.5000	0	101	85	115			
Zinc	0.50	0.010	0.5000	0	99.4	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Estimated value
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon
Project: 2022 GW Sampling 3rd Quarter

Sample ID: MB-A	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: A91392	RunNo: 91392								
Prep Date:	Analysis Date: 9/28/2022	SeqNo: 3271799 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.0050								

Sample ID: LLCS-A	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: BatchQC	Batch ID: A91392	RunNo: 91392								
Prep Date:	Analysis Date: 9/28/2022	SeqNo: 3271800 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.0048	0.0050	0.005000	0	96.1	50	150			J

Sample ID: LCS-A	SampType: LCS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: LCSW	Batch ID: A91392	RunNo: 91392								
Prep Date:	Analysis Date: 9/28/2022	SeqNo: 3271801 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.10	0.0050	0.1000	0	99.8	85	115			

Sample ID: 2209816-001EMS	SampType: MS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: EB-09-15-22	Batch ID: A91392	RunNo: 91392								
Prep Date:	Analysis Date: 9/28/2022	SeqNo: 3271827 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.094	0.0050	0.1000	0	94.5	70	130			

Sample ID: 2209816-001EMSD	SampType: MSD	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: EB-09-15-22	Batch ID: A91392	RunNo: 91392								
Prep Date:	Analysis Date: 9/28/2022	SeqNo: 3271828 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.093	0.0050	0.1000	0	92.6	70	130	2.03	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon
Project: 2022 GW Sampling 3rd Quarter

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Metals								
Client ID: PBW	Batch ID: A91132	RunNo: 91132								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260243 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Metals								
Client ID: BatchQC	Batch ID: A91132	RunNo: 91132								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260244 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	101	50	150			
Arsenic	0.0011	0.0010	0.001000	0	105	50	150			
Lead	0.00046	0.00050	0.0005000	0	92.3	50	150			J
Selenium	0.00086	0.0010	0.001000	0	85.7	50	150			J

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Metals								
Client ID: LCSW	Batch ID: A91132	RunNo: 91132								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260245 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.023	0.0010	0.02500	0	90.5	85	115			
Arsenic	0.023	0.0010	0.02500	0	92.1	85	115			
Lead	0.011	0.00050	0.01250	0	89.9	85	115			
Selenium	0.022	0.0010	0.02500	0	87.9	85	115			

Sample ID: MB-70299	SampType: MBLK	TestCode: EPA 200.8: Metals								
Client ID: PBW	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262810 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: MSLCSLL-70299	SampType: LCSLL	TestCode: EPA 200.8: Metals								
Client ID: BatchQC	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262811 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: MSLCSLL-70299	SampType: LCSLL	TestCode: EPA 200.8: Metals								
Client ID: BatchQC	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262811 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0011	0.0010	0.001000	0	113	50	150			
Arsenic	0.0010	0.0010	0.001000	0	103	50	150			
Lead	0.00053	0.00050	0.0005000	0	107	50	150			
Selenium	0.0010	0.0010	0.001000	0	101	50	150			

Sample ID: MSLCS-70299	SampType: LCS	TestCode: EPA 200.8: Metals								
Client ID: LCSW	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262812 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	103	85	115			
Arsenic	0.025	0.0010	0.02500	0	99.7	85	115			
Lead	0.013	0.00050	0.01250	0	105	85	115			
Selenium	0.026	0.0010	0.02500	0	102	85	115			

Sample ID: 2209816-002DMSLL	SampType: MS	TestCode: EPA 200.8: Metals								
Client ID: MKTF-16	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262834 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.032	0.0010	0.02500	0.009342	92.0	70	130			
Selenium	0.032	0.0010	0.02500	0.009173	91.9	70	130			

Sample ID: 2209816-002DMSDL	SampType: MSD	TestCode: EPA 200.8: Metals								
Client ID: MKTF-16	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262835 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.033	0.0010	0.02500	0.009342	94.8	70	130	2.13	20	
Selenium	0.031	0.0010	0.02500	0.009173	85.9	70	130	4.82	20	

Sample ID: 2209816-003DMSLL	SampType: MS	TestCode: EPA 200.8: Metals								
Client ID: OW-12A	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262837 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.021	0.0010	0.02500	0	82.5	70	130			
Arsenic	0.035	0.0010	0.02500	0.009711	101	70	130			
Lead	0.023	0.00050	0.01250	0.01171	93.2	70	130			
Selenium	0.030	0.0010	0.02500	0.001795	111	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: 2209816-002DMSLL	SampType: MS	TestCode: EPA 200.8: Metals								
Client ID: MKTF-16	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262849 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.064	0.0025	0.01250	0.05204	96.6	70	130			

Sample ID: 2209816-002DMSDL	SampType: MSD	TestCode: EPA 200.8: Metals								
Client ID: MKTF-16	Batch ID: 70299	RunNo: 91194								
Prep Date: 9/20/2022	Analysis Date: 9/21/2022	SeqNo: 3262850 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.062	0.0025	0.01250	0.05204	77.9	70	130	3.72	20	

Sample ID: MB-70359	SampType: MBLK	TestCode: EPA 200.8: Metals								
Client ID: PBW	Batch ID: 70359	RunNo: 91299								
Prep Date: 9/22/2022	Analysis Date: 9/26/2022	SeqNo: 3267421 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: MSLCSLL-70359	SampType: LCSLL	TestCode: EPA 200.8: Metals								
Client ID: BatchQC	Batch ID: 70359	RunNo: 91299								
Prep Date: 9/22/2022	Analysis Date: 9/26/2022	SeqNo: 3267422 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0012	0.0010	0.001000	0	118	50	150			
Arsenic	0.00093	0.0010	0.001000	0	92.8	50	150			J
Lead	0.00055	0.00050	0.0005000	0	109	50	150			
Selenium	0.00098	0.0010	0.001000	0	97.6	50	150			J

Sample ID: MSLCS-70359	SampType: LCS	TestCode: EPA 200.8: Metals								
Client ID: LCSW	Batch ID: 70359	RunNo: 91299								
Prep Date: 9/22/2022	Analysis Date: 9/26/2022	SeqNo: 3267423 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.025	0.0010	0.02500	0	101	85	115			
Arsenic	0.024	0.0010	0.02500	0	97.7	85	115			
Lead	0.013	0.00050	0.01250	0	104	85	115			
Selenium	0.026	0.0010	0.02500	0	103	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: A91132	RunNo: 91132								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260247 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: A91132	RunNo: 91132								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260248 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	101	50	150			
Arsenic	0.0011	0.0010	0.001000	0	105	50	150			
Lead	0.00046	0.00050	0.0005000	0	92.3	50	150			J
Selenium	0.00086	0.0010	0.001000	0	85.7	50	150			J

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: A91132	RunNo: 91132								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260249 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.023	0.0010	0.02500	0	90.5	85	115			
Arsenic	0.023	0.0010	0.02500	0	92.1	85	115			
Lead	0.011	0.00050	0.01250	0	89.9	85	115			
Selenium	0.022	0.0010	0.02500	0	87.9	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon
Project: 2022 GW Sampling 3rd Quarter

Sample ID: MB-70307	SampType: MBLK	TestCode: EPA Method 245.1: Mercury								
Client ID: PBW	Batch ID: 70307	RunNo: 91203								
Prep Date: 9/21/2022	Analysis Date: 9/21/2022	SeqNo: 3262985 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: LCSLL-70307	SampType: LCSLL	TestCode: EPA Method 245.1: Mercury								
Client ID: BatchQC	Batch ID: 70307	RunNo: 91203								
Prep Date: 9/21/2022	Analysis Date: 9/21/2022	SeqNo: 3262986 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00014	0.00020	0.0001500	0	94.4	50	150			J

Sample ID: LCS-70307	SampType: LCS	TestCode: EPA Method 245.1: Mercury								
Client ID: LCSW	Batch ID: 70307	RunNo: 91203								
Prep Date: 9/21/2022	Analysis Date: 9/21/2022	SeqNo: 3263004 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	106	85	115			

Sample ID: MB-70391	SampType: MBLK	TestCode: EPA Method 245.1: Mercury								
Client ID: PBW	Batch ID: 70391	RunNo: 91309								
Prep Date: 9/26/2022	Analysis Date: 9/26/2022	SeqNo: 3267755 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: LCSLL-70391	SampType: LCSLL	TestCode: EPA Method 245.1: Mercury								
Client ID: BatchQC	Batch ID: 70391	RunNo: 91309								
Prep Date: 9/26/2022	Analysis Date: 9/26/2022	SeqNo: 3267756 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00013	0.00020	0.0001500	0	83.7	50	150			J

Sample ID: LCS-70391	SampType: LCS	TestCode: EPA Method 245.1: Mercury								
Client ID: LCSW	Batch ID: 70391	RunNo: 91309								
Prep Date: 9/26/2022	Analysis Date: 9/26/2022	SeqNo: 3267757 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	103	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix interference

B Analyte detected in the associated Method Blank
E Estimated value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 220981604-Oct-22

Client: Marathon

Project: 2022 GW Sampling 3rd Quarter

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 300.0: Anions
Client ID: PBW	Batch ID: R91119	RunNo: 91119
Prep Date:	Analysis Date: 9/16/2022	SeqNo: 3259698Units: mg/L
Analyte	Result	PQLSPK valueSPK Ref Val%RECLowLimitHighLimit%RPDRPDLimitQual

Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID: LCS	SampType: LCS	TestCode: EPA Method 300.0: Anions
Client ID: LCSW	Batch ID: R91119	RunNo: 91119
Prep Date:	Analysis Date: 9/16/2022	SeqNo: 3259706Units: mg/L
Analyte	Result	PQLSPK valueSPK Ref Val%RECLowLimitHighLimit%RPDRPDLimitQual

Chloride	4.8	0.50	5.000	0	95.6	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	99.3	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	103	90	110			
Sulfate	9.9	0.50	10.00	0	99.1	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix interference
- B Analyte detected in the associated Method Blank

E Estimated value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon
Project: 2022 GW Sampling 3rd Quarter

Sample ID: mb-70321	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 70321	RunNo: 91221								
Prep Date: 9/22/2022	Analysis Date: 9/22/2022	SeqNo: 3265488	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: mb-70321	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 70321	RunNo: 91221								
Prep Date: 9/22/2022	Analysis Date: 9/22/2022	SeqNo: 3265489	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: lcs-70321	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 70321	RunNo: 91221								
Prep Date: 9/22/2022	Analysis Date: 9/22/2022	SeqNo: 3265491	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.097	0.010	0.1000	0	96.8	70	130			

Sample ID: lcsd-70321	SampType: LCSD	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSS02	Batch ID: 70321	RunNo: 91221								
Prep Date: 9/22/2022	Analysis Date: 9/22/2022	SeqNo: 3265492	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.094	0.010	0.1000	0	94.2	70	130	2.71	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: MB-70323	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 70323	RunNo: 91330								
Prep Date: 9/21/2022	Analysis Date: 9/26/2022	SeqNo: 3269062 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.021	0.064								J
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.042		0.03750		112	42.2	138			

Sample ID: LCS-70323	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 70323	RunNo: 91330								
Prep Date: 9/21/2022	Analysis Date: 9/26/2022	SeqNo: 3269063 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.12	0.064	0.1875	0	64.3	31.7	75.4			
Surr: DNOP	0.020		0.01875		105	42.2	138			

Sample ID: LCSD-70323	SampType: LCSD	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSS02	Batch ID: 70323	RunNo: 91330								
Prep Date: 9/21/2022	Analysis Date: 9/26/2022	SeqNo: 3269064 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.11	0.064	0.1875	0	57.3	31.7	75.4	11.4	20	
Surr: DNOP	0.018		0.01875		93.7	42.2	138	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon
Project: 2022 GW Sampling 3rd Quarter

Sample ID: mb2	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: B91113		RunNo: 91113							
Prep Date:	Analysis Date: 9/16/2022		SeqNo: 3259475		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		100	70	130			

Sample ID: 2.5ug gro lcs	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: C91131		RunNo: 91131							
Prep Date:	Analysis Date: 9/19/2022		SeqNo: 3260221		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	97.0	80	120			
Surr: BFB	44		20.00		221	70	130			S

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: C91131		RunNo: 91131							
Prep Date:	Analysis Date: 9/19/2022		SeqNo: 3260222		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	21		20.00		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon
Project: 2022 GW Sampling 3rd Quarter

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: A91114			RunNo: 91114						
Prep Date:	Analysis Date: 9/16/2022			SeqNo: 3259529		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	104	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.5		10.00		94.7	70	130			

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: A91114			RunNo: 91114						
Prep Date:	Analysis Date: 9/16/2022			SeqNo: 3259538		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2209816

04-Oct-22

Client: Marathon

Project: 2022 GW Sampling 3rd Quarter

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: A91114	RunNo: 91114								
Prep Date:	Analysis Date: 9/16/2022	SeqNo: 3259538 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.6	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R91137	RunNo: 91137								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260411 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	110	70	130			
Toluene	20	1.0	20.00	0	97.6	70	130			
Chlorobenzene	19	1.0	20.00	0	96.4	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		109	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	9.2		10.00		92.4	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R91137	RunNo: 91137								
Prep Date:	Analysis Date: 9/19/2022	SeqNo: 3260431 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2209816
04-Oct-22

Client: Marathon
Project: 2022 GW Sampling 3rd Quarter

Sample ID: mb		SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW		Batch ID: R91137		RunNo: 91137						
Prep Date:		Analysis Date: 9/19/2022		SeqNo: 3260431		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.7	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	9.9		10.00		99.4	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: MB-70290	SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: PBW	Batch ID: 70290	RunNo: 91381								
Prep Date: 9/20/2022	Analysis Date: 9/28/2022	SeqNo: 3271742 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Anthracene	ND	10								
Benz(a)anthracene	ND	5.0								
Benzo(b)fluoranthene	ND	10								
Benzoic acid	ND	20								
Bis(2-ethylhexyl)phthalate	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
1,4-Dichlorobenzene	ND	5.0								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	20								
Fluoranthene	ND	10								
Fluorene	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
1-Methylnaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
Naphthalene	ND	5.0								
Phenanthrene	ND	10								
Phenol	ND	20								
Pyrene	ND	10								
Pyridine	ND	40								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	130		200.0		64.1	15	84.5			
Surr: Phenol-d5	99		200.0		49.6	15	67			
Surr: 2,4,6-Tribromophenol	140		200.0		70.4	15	108			
Surr: Nitrobenzene-d5	76		100.0		76.4	16.8	112			
Surr: 2-Fluorobiphenyl	71		100.0		71.4	15	101			
Surr: 4-Terphenyl-d14	88		100.0		88.0	34.4	134			

Sample ID: LCS-70290	SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: LCSW	Batch ID: 70290	RunNo: 91381								
Prep Date: 9/20/2022	Analysis Date: 9/28/2022	SeqNo: 3271743 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: LCS-70290		SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles					
Client ID: LCSW	Batch ID: 70290			RunNo: 91381						
Prep Date: 9/20/2022	Analysis Date: 9/28/2022			SeqNo: 3271743			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	72	10	100.0	0	72.4	21.3	104			
1,4-Dichlorobenzene	64	5.0	100.0	0	64.4	15	89.8			
Phenol	98	20	200.0	0	49.1	17	61.1			
Pyrene	81	10	100.0	0	81.1	61	123			
Surr: 2-Fluorophenol	110		200.0		54.2	15	84.5			
Surr: Phenol-d5	87		200.0		43.3	15	67			
Surr: 2,4,6-Tribromophenol	130		200.0		67.2	15	108			
Surr: Nitrobenzene-d5	71		100.0		70.6	16.8	112			
Surr: 2-Fluorobiphenyl	70		100.0		69.7	15	101			
Surr: 4-Terphenyl-d14	89		100.0		88.6	34.4	134			

Sample ID: LCSD-70290		SampType: LCSD			TestCode: EPA Method 8270C: Semivolatiles					
Client ID: LCSS02		Batch ID: 70290			RunNo: 91381					
Prep Date: 9/20/2022		Analysis Date: 9/28/2022			SeqNo: 3271744		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	62	10	100.0	0	61.5	21.3	104	16.3	45.3	
1,4-Dichlorobenzene	58	5.0	100.0	0	58.3	15	89.8	9.89	39.6	
Phenol	77	20	200.0	0	38.3	17	61.1	24.6	42.5	
Pyrene	81	10	100.0	0	80.7	61	123	0.468	11.8	
Surr: 2-Fluorophenol	50		200.0		24.8	15	84.5	0	0	
Surr: Phenol-d5	71		200.0		35.6	15	67	0	0	
Surr: 2,4,6-Tribromophenol	63		200.0		31.5	15	108	0	0	
Surr: Nitrobenzene-d5	67		100.0		66.9	16.8	112	0	0	
Surr: 2-Fluorobiphenyl	61		100.0		60.7	15	101	0	0	
Surr: 4-Terphenyl-d14	89		100.0		88.6	34.4	134	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: mb-70290	SampType: MBLK	TestCode: EPA Method 8270SIM								
Client ID: PBW	Batch ID: 70290	RunNo: 91314								
Prep Date: 9/20/2022	Analysis Date: 9/26/2022	SeqNo: 3268188 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.30								
1-Methylnaphthalene	ND	0.30								
2-Methylnaphthalene	ND	0.30								
Acenaphthene	ND	0.30								
Fluorene	ND	0.30								
Phenanthrene	ND	0.30								
Anthracene	ND	0.30								
Fluoranthene	ND	0.30								
Pyrene	ND	1.0								
Benz(a)anthracene	ND	0.30								
Chrysene	ND	0.30								
Benzo(b)fluoranthene	ND	0.30								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	67		100.0		66.7	31.6	100			
Surr: 2,4,6-Tribromophenol	80		200.0		40.0	22	101			
Surr: 2-Fluorobiphenyl	62		100.0		61.7	26.7	90.1			
Surr: 4-Terphenyl-d14	68		100.0		67.6	72.3	147			S

Sample ID: lcs-70290 lf	SampType: LCS	TestCode: EPA Method 8270SIM								
Client ID: LCSW	Batch ID: 70290	RunNo: 91314								
Prep Date: 9/20/2022	Analysis Date: 9/26/2022	SeqNo: 3268189 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.62	0.10	2.000	0	31.0	15	60.5			
Naphthalene	1.0	0.30	2.000	0	50.0	15	78.3			
1-Methylnaphthalene	0.98	0.30	2.000	0	49.0	15	79.6			
2-Methylnaphthalene	0.98	0.30	2.000	0	49.0	15	78.6			
Acenaphthene	1.1	0.30	2.000	0	53.0	15	92			
Fluorene	1.1	0.30	2.000	0	54.0	15	96			
Phenanthrene	1.1	0.30	2.000	0	55.0	21	103			
Anthracene	1.2	0.30	2.000	0	58.0	21.1	106			
Fluoranthene	1.2	0.30	2.000	0	60.0	32.8	119			
Pyrene	1.2	1.0	2.000	0	59.0	34.1	110			
Benz(a)anthracene	1.3	0.30	2.000	0	67.0	32	132			
Chrysene	1.2	0.30	2.000	0	62.0	31.3	112			
Benzo(b)fluoranthene	1.4	0.30	2.000	0	69.0	34.1	119			
Indeno(1,2,3-cd)pyrene	1.7	0.30	2.000	0	85.0	24.7	152			
Surr: Nitrobenzene-d5	62		100.0		62.4	31.6	100			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2209816

04-Oct-22

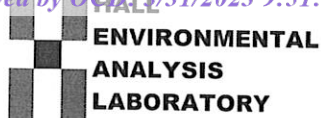
Client: Marathon**Project:** 2022 GW Sampling 3rd Quarter

Sample ID: Ics-70290 If	SampType: LCS			TestCode: EPA Method 8270SIM						
Client ID: LCSW	Batch ID: 70290			RunNo: 91314						
Prep Date: 9/20/2022	Analysis Date: 9/26/2022			SeqNo: 3268189		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	77		200.0		38.6	22	101			
Surr: 2-Fluorobiphenyl	59		100.0		58.8	26.7	90.1			
Surr: 4-Terphenyl-d14	64		100.0		64.2	72.3	147			S

Sample ID: Icsd-70290 If	SampType: LCSD			TestCode: EPA Method 8270SIM						
Client ID: LCSS02	Batch ID: 70290			RunNo: 91314						
Prep Date: 9/20/2022	Analysis Date: 9/26/2022			SeqNo: 3268190		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.68	0.10	2.000	0	34.0	15	60.5	9.23	29.7	
Naphthalene	1.1	0.30	2.000	0	53.0	15	78.3	5.83	31.7	
1-Methylnaphthalene	1.0	0.30	2.000	0	52.0	15	79.6	5.94	31.4	
2-Methylnaphthalene	1.0	0.30	2.000	0	52.0	15	78.6	5.94	30.5	
Acenaphthene	1.1	0.30	2.000	0	55.0	15	92	3.70	30.5	
Fluorene	1.1	0.30	2.000	0	57.0	15	96	5.41	25.1	
Phenanthrene	1.1	0.30	2.000	0	57.0	21	103	3.57	26.4	
Anthracene	1.2	0.30	2.000	0	59.0	21.1	106	1.71	14.4	
Fluoranthene	1.2	0.30	2.000	0	60.0	32.8	119	0	14.8	
Pyrene	1.2	1.0	2.000	0	59.0	34.1	110	0	19.2	
Benz(a)anthracene	1.3	0.30	2.000	0	64.0	32	132	4.58	29.3	
Chrysene	1.2	0.30	2.000	0	60.0	31.3	112	3.28	19	
Benzo(b)fluoranthene	1.3	0.30	2.000	0	65.0	34.1	119	5.97	31.6	
Indeno(1,2,3-cd)pyrene	1.6	0.30	2.000	0	81.0	24.7	152	4.82	21.3	
Surr: Nitrobenzene-d5	66		100.0		65.8	31.6	100	0	0	
Surr: 2,4,6-Tribromophenol	79		200.0		39.3	22	101	0	0	
Surr: 2-Fluorobiphenyl	61		100.0		61.4	26.7	90.1	0	0	
Surr: 4-Terphenyl-d14	60		100.0		60.1	72.3	147	0	0	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon**Work Order Number: **2209816**

RcptNo: 1

Received By: **Joseph Alderette**

9/16/2022 7:45:00 AM

Completed By: **Cheyenne Cason**

9/16/2022 8:14:18 AM

Reviewed By: *9-16-22*Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☒ No ☒ NA ☐
9. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? Yes ☒ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels? Yes ☒ No ☐
(Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met? Yes ☒ No ☐
(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

135
(<2 or >12 unless noted)

Adjusted? yesChecked by: yn 9/16/22Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

0.5ml of HNO₃ was added to sample 003D for pH <2 .

17. Cooler Information

1.0ml of HNO₃ was added to sample 005D for pH <2 .

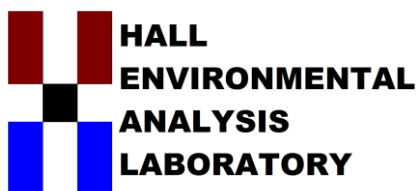
Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			
2	1.3	Good	Yes			
3	0.4	Good	Yes			

yn 9/16/22

MKT-16 - No bottle for DRD

JC 9/16/22

MKTF-02R	<u>VOCs:</u>		
MKTF-04R	TBA	19	8260B
MKTF-09			
MKTF-10	<u>General Chemistry:</u>		
MKTF-13	Chloride	19	300.0
MKTF-16	Nitrate	19	300.0
MKTF-17R	Nitrite	19	300.0
MKTF-19	Sulfate	19	300.0
MKTF-20	Sulfide	19	SM4500S2 D
MKTF-21			
MKTF-22	<u>Metals:</u>		
MKTF-24	Ferrous Iron (dissolved)	19	200.7
MKTF-25	Ferric Iron (total)	19	200.7
DUP-1	Total Manganese	19	200.7
DUP-2			
EB-1			
EB-2			
FB-1			
FB-2			
MKTF-02R	<u>VOCs:</u>		
MKTF-10	Ethene	4	RSK175
MKTF-24	Ethane	4	RSK175
MKTF-25	Methane	4	RSK175



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2023

Lesli Alexander
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 632-3911

RE: 2022 GW Sampling 4th Quarter

OrderNo.: 2212303

Dear Lesli Alexander:

Hall Environmental Analysis Laboratory received 11 sample(s) on 12/7/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 06, 2023.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

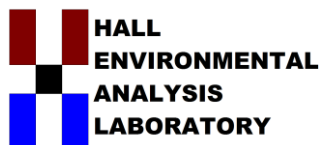
Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: 2212303
Date: 1/9/2023

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Analytical Notes Regarding EPA Method 8015D DRO/MRO:

The method blank had a low level detection for DRO. Samples with detections are flagged with a "B".

"S" flagged surrogates/spikes denote that the analyte recovery was outside of the standard limits.

Analytical Notes Regarding EPA Method 8270 and 8270 SIMS:

1-Methylnaphthalene, 2-Methylnaphthalene and Naphthalene were reported by EPA Method 8270 instead of EPA Method 8270SIMs because of their elevated concentrations for sample MKTF-18R.

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:10:00 AM

Lab ID: 2212303-001A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	ND	0.0090	0.050		mg/L	1	12/13/2022 3:30:00 PM	R93213
Surr: BFB	104	0	70-130		%Rec	1	12/13/2022 3:30:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Toluene	ND	0.20	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Ethylbenzene	ND	0.21	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Acetone	ND	2.5	10		µg/L	1	12/9/2022 5:47:03 PM	R93183
Bromomethane	ND	0.85	3.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
2-Butanone	ND	2.0	10		µg/L	1	12/9/2022 5:47:03 PM	R93183
Carbon disulfide	ND	0.59	10		µg/L	1	12/9/2022 5:47:03 PM	R93183
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Chloroform	ND	0.13	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Chloromethane	ND	0.41	3.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Isopropylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Methylene Chloride	ND	0.50	3.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
n-Propylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Styrene	ND	0.14	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/9/2022 5:47:03 PM	R93183
Xylenes, Total	ND	0.37	1.5		µg/L	1	12/9/2022 5:47:03 PM	R93183
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	1	12/9/2022 5:47:03 PM	R93183
Surr: 4-Bromofluorobenzene	91.8	0	70-130		%Rec	1	12/9/2022 5:47:03 PM	R93183
Surr: Dibromofluoromethane	108	0	70-130		%Rec	1	12/9/2022 5:47:03 PM	R93183
Surr: Toluene-d8	104	0	70-130		%Rec	1	12/9/2022 5:47:03 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:10:00 AM

Lab ID: 2212303-001B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	12/8/2022 5:58:46 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:10:00 AM

Lab ID: 2212303-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.037	0.016	0.064	JB	mg/L	1	12/14/2022 2:41:15 PM	71994
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	12/14/2022 2:41:15 PM	71994
Surr: DNOP	98.2	0	15.9-177		%Rec	1	12/14/2022 2:41:15 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 2:05:39 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 2:05:39 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 2:05:39 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 2:05:39 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 2:05:39 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 2:05:39 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 2:05:39 PM	71974
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	12/13/2022 2:05:39 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 2:05:39 PM	71974
2-Methylphenol	ND	5.0	10		µg/L	1	12/13/2022 2:05:39 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 2:05:39 PM	71974
Phenol	ND	18	20		µg/L	1	12/13/2022 2:05:39 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 2:05:39 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 2:05:39 PM	71974
Surr: 2-Fluorophenol	44.2	0	15-84.5		%Rec	1	12/13/2022 2:05:39 PM	71974
Surr: Phenol-d5	32.8	0	15-67		%Rec	1	12/13/2022 2:05:39 PM	71974
Surr: 2,4,6-Tribromophenol	62.9	0	15-108		%Rec	1	12/13/2022 2:05:39 PM	71974
Surr: Nitrobenzene-d5	59.8	0	16.8-112		%Rec	1	12/13/2022 2:05:39 PM	71974
Surr: 2-Fluorobiphenyl	54.4	0	15-101		%Rec	1	12/13/2022 2:05:39 PM	71974
Surr: 4-Terphenyl-d14	89.5	0	34.4-134		%Rec	1	12/13/2022 2:05:39 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.11	1.0		µg/L	1	12/12/2022 6:10:00 PM	71974
Naphthalene	ND	0.20	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Acenaphthene	ND	0.14	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Fluorene	ND	0.095	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Phenanthrene	ND	0.16	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Anthracene	ND	0.14	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Fluoranthene	ND	0.14	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/12/2022 6:10:00 PM	71974
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/12/2022 6:10:00 PM	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/12/2022 6:10:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:10:00 AM

Lab ID: 2212303-001C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	56.0	0	15-108		%Rec	1	12/12/2022 6:10:00 PM	71974
Surr: 2-Fluorobiphenyl	52.3	0	15-107		%Rec	1	12/12/2022 6:10:00 PM	71974
Surr: 4-Terphenyl-d14	114	0	15-166		%Rec	1	12/12/2022 6:10:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:10:00 AM

Lab ID: 2212303-001D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	ND	0.0016	0.0030		mg/L	1	12/12/2022 5:22:34 PM	71965
Beryllium	ND	0.00060	0.0020		mg/L	1	12/12/2022 5:22:34 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 5:22:34 PM	71965
Chromium	0.0027	0.0020	0.0060	J	mg/L	1	12/12/2022 5:22:34 PM	71965
Cobalt	0.0050	0.0035	0.0060	J	mg/L	1	12/12/2022 5:22:34 PM	71965
Nickel	ND	0.0053	0.010		mg/L	1	12/12/2022 5:22:34 PM	71965
Silver	ND	0.0018	0.0050		mg/L	1	12/12/2022 5:22:34 PM	71965
Vanadium	ND	0.0035	0.050		mg/L	1	12/12/2022 5:22:34 PM	71965
Zinc	ND	0.0039	0.010		mg/L	1	12/12/2022 5:22:34 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/13/2022 12:39:00 P	71965
Arsenic	ND	0.00022	0.0010		mg/L	1	12/12/2022 3:19:37 PM	71965
Lead	ND	0.00019	0.00050		mg/L	1	12/12/2022 3:19:37 PM	71965
Selenium	ND	0.00089	0.0010		mg/L	1	12/12/2022 3:19:37 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	12/16/2022 2:04:00 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:10:00 AM

Lab ID: 2212303-001E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	0.0016	0.0011	0.0020	J	mg/L	1	12/22/2022 3:58:12 PM	B93514
Beryllium	0.0010	0.00059	0.0020	J	mg/L	1	12/22/2022 3:58:12 PM	B93514
Cadmium	ND	0.00098	0.0020		mg/L	1	12/22/2022 3:58:12 PM	B93514
Chromium	ND	0.0020	0.0060		mg/L	1	12/22/2022 3:58:12 PM	B93514
Cobalt	ND	0.0024	0.0060		mg/L	1	12/22/2022 3:58:12 PM	B93514
Nickel	ND	0.0033	0.010		mg/L	1	12/22/2022 3:58:12 PM	B93514
Silver	ND	0.0013	0.0050		mg/L	1	12/22/2022 3:58:12 PM	B93514
Vanadium	ND	0.0017	0.050		mg/L	1	12/22/2022 3:58:12 PM	B93514
Zinc	0.0072	0.0032	0.010	J	mg/L	1	12/22/2022 3:58:12 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/8/2022 5:27:50 PM	A93132
Arsenic	ND	0.00012	0.0010		mg/L	1	12/8/2022 5:27:50 PM	A93132
Lead	ND	0.000057	0.00050		mg/L	1	12/14/2022 3:35:58 PM	A93305
Selenium	ND	0.00034	0.0010		mg/L	1	12/8/2022 5:27:50 PM	A93132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	12/16/2022 2:06:10 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: EB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:10:00 AM

Lab ID: 2212303-001F

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:34:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:20:00 AM

Lab ID: 2212303-002A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	0.033	0.0090	0.050	J	mg/L	1	12/13/2022 3:49:00 PM	R93213
Surr: BFB	101	0	70-130		%Rec	1	12/13/2022 3:49:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Toluene	ND	0.20	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Ethylbenzene	ND	0.21	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Acetone	ND	2.5	10		µg/L	1	12/9/2022 6:15:29 PM	R93183
Bromomethane	ND	0.85	3.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
2-Butanone	ND	2.0	10		µg/L	1	12/9/2022 6:15:29 PM	R93183
Carbon disulfide	ND	0.59	10		µg/L	1	12/9/2022 6:15:29 PM	R93183
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Chloroform	ND	0.13	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Chloromethane	ND	0.41	3.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Isopropylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Methylene Chloride	3.9	0.50	3.0		µg/L	1	12/12/2022 11:14:12 A	R93209
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
n-Propylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Styrene	ND	0.14	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/9/2022 6:15:29 PM	R93183
Xylenes, Total	ND	0.37	1.5		µg/L	1	12/9/2022 6:15:29 PM	R93183
Surr: 1,2-Dichloroethane-d4	116	0	70-130		%Rec	1	12/9/2022 6:15:29 PM	R93183
Surr: 4-Bromofluorobenzene	92.5	0	70-130		%Rec	1	12/9/2022 6:15:29 PM	R93183
Surr: Dibromofluoromethane	115	0	70-130		%Rec	1	12/9/2022 6:15:29 PM	R93183
Surr: Toluene-d8	104	0	70-130		%Rec	1	12/9/2022 6:15:29 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:20:00 AM

Lab ID: 2212303-002B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	12/8/2022 6:28:41 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:20:00 AM

Lab ID: 2212303-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.051	0.016	0.064	JB	mg/L	1	12/14/2022 3:05:06 PM	71994
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	12/14/2022 3:05:06 PM	71994
Surr: DNOP	101	0	15.9-177		%Rec	1	12/14/2022 3:05:06 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 2:46:44 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 2:46:44 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 2:46:44 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 2:46:44 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 2:46:44 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 2:46:44 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 2:46:44 PM	71974
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	12/13/2022 2:46:44 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 2:46:44 PM	71974
2-Methylphenol	ND	5.0	10		µg/L	1	12/13/2022 2:46:44 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 2:46:44 PM	71974
Phenol	ND	18	20		µg/L	1	12/13/2022 2:46:44 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 2:46:44 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 2:46:44 PM	71974
Surr: 2-Fluorophenol	26.5	0	15-84.5		%Rec	1	12/13/2022 2:46:44 PM	71974
Surr: Phenol-d5	21.6	0	15-67		%Rec	1	12/13/2022 2:46:44 PM	71974
Surr: 2,4,6-Tribromophenol	31.4	0	15-108		%Rec	1	12/13/2022 2:46:44 PM	71974
Surr: Nitrobenzene-d5	37.8	0	16.8-112		%Rec	1	12/13/2022 2:46:44 PM	71974
Surr: 2-Fluorobiphenyl	33.2	0	15-101		%Rec	1	12/13/2022 2:46:44 PM	71974
Surr: 4-Terphenyl-d14	79.9	0	34.4-134		%Rec	1	12/13/2022 2:46:44 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	0.84	0.11	1.0	J	µg/L	1	12/12/2022 6:54:00 PM	71974
Naphthalene	ND	0.20	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Acenaphthene	ND	0.14	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Fluorene	ND	0.095	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Phenanthrene	ND	0.16	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Anthracene	ND	0.14	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Fluoranthene	ND	0.14	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/12/2022 6:54:00 PM	71974
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/12/2022 6:54:00 PM	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/12/2022 6:54:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:20:00 AM

Lab ID: 2212303-002C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	34.0	0	15-108		%Rec	1	12/12/2022 6:54:00 PM	71974
Surr: 2-Fluorobiphenyl	32.8	0	15-107		%Rec	1	12/12/2022 6:54:00 PM	71974
Surr: 4-Terphenyl-d14	90.6	0	15-166		%Rec	1	12/12/2022 6:54:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:20:00 AM

Lab ID: 2212303-002D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.081	0.0016	0.0030		mg/L	1	12/12/2022 5:27:19 PM	71965
Beryllium	ND	0.00060	0.0020		mg/L	1	12/12/2022 5:27:19 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 5:27:19 PM	71965
Chromium	ND	0.0020	0.0060		mg/L	1	12/12/2022 5:27:19 PM	71965
Cobalt	0.016	0.0035	0.0060		mg/L	1	12/12/2022 5:27:19 PM	71965
Nickel	ND	0.0053	0.010		mg/L	1	12/12/2022 5:27:19 PM	71965
Silver	0.0019	0.0018	0.0050	J	mg/L	1	12/12/2022 5:27:19 PM	71965
Vanadium	0.0040	0.0035	0.050	J	mg/L	1	12/12/2022 5:27:19 PM	71965
Zinc	ND	0.0039	0.010		mg/L	1	12/12/2022 5:27:19 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/13/2022 12:41:27 P	71965
Arsenic	0.0011	0.00022	0.0010		mg/L	1	12/12/2022 3:22:03 PM	71965
Lead	0.0011	0.00019	0.00050		mg/L	1	12/12/2022 3:22:03 PM	71965
Selenium	ND	0.00089	0.0010		mg/L	1	12/12/2022 3:22:03 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00017	0.000091	0.00020	J	mg/L	1	12/16/2022 4:16:40 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-46

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:20:00 AM

Lab ID: 2212303-002E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	0.042	0.0011	0.0020		mg/L	1	12/22/2022 4:01:13 PM	B93514
Beryllium	ND	0.00059	0.0020		mg/L	1	12/22/2022 4:01:13 PM	B93514
Cadmium	ND	0.00098	0.0020		mg/L	1	12/22/2022 4:01:13 PM	B93514
Chromium	ND	0.0020	0.0060		mg/L	1	12/22/2022 4:01:13 PM	B93514
Cobalt	ND	0.0024	0.0060		mg/L	1	12/22/2022 4:01:13 PM	B93514
Nickel	ND	0.0033	0.010		mg/L	1	12/22/2022 4:01:13 PM	B93514
Silver	0.0032	0.0013	0.0050	J	mg/L	1	12/22/2022 4:01:13 PM	B93514
Vanadium	0.0037	0.0017	0.050	J	mg/L	1	12/22/2022 4:01:13 PM	B93514
Zinc	0.0080	0.0032	0.010	J	mg/L	1	12/22/2022 4:01:13 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00057	0.00044	0.0010	J	mg/L	1	12/8/2022 5:43:12 PM	A93132
Arsenic	0.00081	0.00012	0.0010	J	mg/L	1	12/8/2022 5:43:12 PM	A93132
Lead	ND	0.000057	0.00050		mg/L	1	12/15/2022 1:19:11 PM	A93335
Selenium	0.00069	0.00034	0.0010	J	mg/L	1	12/8/2022 5:43:12 PM	A93132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00013	0.000091	0.00020	J	mg/L	1	12/16/2022 2:17:37 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	MKTF-46
Project:	2022 GW Sampling 4th Quarter	Collection Date:	12/6/2022 9:20:00 AM
Lab ID:	2212303-002F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:36:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:50:00 AM

Lab ID: 2212303-003A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM		
Gasoline Range Organics (GRO)	8.4	0.090	0.50		mg/L	10	12/13/2022 4:09:00 PM	R93213
Surr: BFB	112	0	70-130		%Rec	10	12/13/2022 4:09:00 PM	R93213
EPA METHOD 8260B: VOLATILES						Analyst: JR		
Benzene	2600	23	100		µg/L	100	12/9/2022 6:44:03 PM	R93183
Toluene	410	2.0	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Ethylbenzene	47	2.1	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Methyl tert-butyl ether (MTBE)	170	3.9	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
1,2,4-Trimethylbenzene	39	1.2	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
1,3,5-Trimethylbenzene	15	1.8	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
1,2-Dichloroethane (EDC)	ND	2.5	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Acetone	ND	25	100		µg/L	10	12/9/2022 7:12:41 PM	R93183
Bromomethane	ND	8.5	30		µg/L	10	12/9/2022 7:12:41 PM	R93183
2-Butanone	ND	20	100		µg/L	10	12/9/2022 7:12:41 PM	R93183
Carbon disulfide	ND	5.9	100		µg/L	10	12/9/2022 7:12:41 PM	R93183
Chlorobenzene	ND	1.6	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Chloroform	ND	1.3	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Chloromethane	ND	4.1	30		µg/L	10	12/9/2022 7:12:41 PM	R93183
cis-1,2-DCE	ND	3.9	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
1,1-Dichloroethane	ND	2.7	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
1,1-Dichloroethene	ND	2.0	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Isopropylbenzene	ND	1.8	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
4-Isopropyltoluene	ND	2.0	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Methylene Chloride	ND	5.0	30		µg/L	10	12/9/2022 7:12:41 PM	R93183
n-Butylbenzene	ND	2.5	30		µg/L	10	12/9/2022 7:12:41 PM	R93183
n-Propylbenzene	5.6	1.8	10	J	µg/L	10	12/9/2022 7:12:41 PM	R93183
sec-Butylbenzene	ND	1.4	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Styrene	ND	1.4	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Tetrachloroethene (PCE)	ND	3.6	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
1,1,1-Trichloroethane	ND	3.0	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Trichloroethene (TCE)	ND	2.0	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Vinyl chloride	ND	3.2	10		µg/L	10	12/9/2022 7:12:41 PM	R93183
Xylenes, Total	340	3.7	15		µg/L	10	12/9/2022 7:12:41 PM	R93183
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	10	12/9/2022 7:12:41 PM	R93183
Surr: 4-Bromofluorobenzene	85.5	0	70-130		%Rec	10	12/9/2022 7:12:41 PM	R93183
Surr: Dibromofluoromethane	103	0	70-130		%Rec	10	12/9/2022 7:12:41 PM	R93183
Surr: Toluene-d8	104	0	70-130		%Rec	10	12/9/2022 7:12:41 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:50:00 AM

Lab ID: 2212303-003B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0095		µg/L	1	12/8/2022 6:43:36 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:50:00 AM

Lab ID: 2212303-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	2.5	0.016	0.064	B	mg/L	1	12/14/2022 3:28:55 PM	71994
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	12/14/2022 3:28:55 PM	71994
Surr: DNOP	96.9	0	15.9-177		%Rec	1	12/14/2022 3:28:55 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 3:27:57 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 3:27:57 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 3:27:57 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 3:27:57 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 3:27:57 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 3:27:57 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 3:27:57 PM	71974
2,4-Dimethylphenol	10	5.8	10	J	µg/L	1	12/13/2022 3:27:57 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 3:27:57 PM	71974
1-Methylnaphthalene	89	4.3	5.0		µg/L	1	12/13/2022 3:27:57 PM	71974
2-Methylnaphthalene	87	4.2	5.0		µg/L	1	12/13/2022 3:27:57 PM	71974
2-Methylphenol	25	5.0	10		µg/L	1	12/13/2022 3:27:57 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 3:27:57 PM	71974
Naphthalene	52	3.2	5.0		µg/L	1	12/13/2022 3:27:57 PM	71974
Phenol	19	18	20	J	µg/L	1	12/13/2022 3:27:57 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 3:27:57 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 3:27:57 PM	71974
Surr: 2-Fluorophenol	37.7	0	15-84.5		%Rec	1	12/13/2022 3:27:57 PM	71974
Surr: Phenol-d5	31.7	0	15-67		%Rec	1	12/13/2022 3:27:57 PM	71974
Surr: 2,4,6-Tribromophenol	70.8	0	15-108		%Rec	1	12/13/2022 3:27:57 PM	71974
Surr: Nitrobenzene-d5	54.6	0	16.8-112		%Rec	1	12/13/2022 3:27:57 PM	71974
Surr: 2-Fluorobiphenyl	51.6	0	15-101		%Rec	1	12/13/2022 3:27:57 PM	71974
Surr: 4-Terphenyl-d14	80.3	0	34.4-134		%Rec	1	12/13/2022 3:27:57 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	10	0.11	1.0		µg/L	1	12/12/2022 7:38:00 PM	71974
Acenaphthene	5.5	0.14	0.30		µg/L	1	12/12/2022 7:38:00 PM	71974
Fluorene	6.7	0.095	0.30		µg/L	1	12/12/2022 7:38:00 PM	71974
Phenanthrene	5.6	0.16	0.30		µg/L	1	12/12/2022 7:38:00 PM	71974
Anthracene	0.38	0.14	0.30		µg/L	1	12/12/2022 7:38:00 PM	71974
Fluoranthene	0.14	0.14	0.30	J	µg/L	1	12/12/2022 7:38:00 PM	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/12/2022 7:38:00 PM	71974
Benz(a)anthracene	0.16	0.15	0.30	J	µg/L	1	12/12/2022 7:38:00 PM	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/12/2022 7:38:00 PM	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/12/2022 7:38:00 PM	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/12/2022 7:38:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:50:00 AM

Lab ID: 2212303-003C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	50.1	0	15-108		%Rec	1	12/12/2022 7:38:00 PM	71974
Surr: 2-Fluorobiphenyl	44.6	0	15-107		%Rec	1	12/12/2022 7:38:00 PM	71974
Surr: 4-Terphenyl-d14	75.4	0	15-166		%Rec	1	12/12/2022 7:38:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:50:00 AM

Lab ID: 2212303-003D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	2.7	0.0079	0.015	*	mg/L	5	12/12/2022 5:38:23 PM	71965
Beryllium	ND	0.00060	0.0020		mg/L	1	12/12/2022 5:37:00 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 5:37:00 PM	71965
Chromium	ND	0.0020	0.0060		mg/L	1	12/12/2022 5:37:00 PM	71965
Cobalt	0.0097	0.0035	0.0060		mg/L	1	12/12/2022 5:37:00 PM	71965
Nickel	0.0084	0.0053	0.010	J	mg/L	1	12/12/2022 5:37:00 PM	71965
Silver	ND	0.0018	0.0050		mg/L	1	12/12/2022 5:37:00 PM	71965
Vanadium	0.0037	0.0035	0.050	J	mg/L	1	12/12/2022 5:37:00 PM	71965
Zinc	0.0066	0.0039	0.010	J	mg/L	1	12/12/2022 5:37:00 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/13/2022 12:43:53 P	71965
Arsenic	0.0042	0.00022	0.0010		mg/L	1	12/12/2022 3:24:30 PM	71965
Lead	0.0018	0.00019	0.00050		mg/L	1	12/12/2022 3:24:30 PM	71965
Selenium	0.0011	0.00089	0.0010		mg/L	1	12/12/2022 3:24:30 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	12/16/2022 2:19:46 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-18R

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 9:50:00 AM

Lab ID: 2212303-003E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	1.9	0.0056	0.010		mg/L	5	12/22/2022 4:10:18 PM	B93514
Beryllium	ND	0.00059	0.0020		mg/L	1	12/22/2022 4:08:35 PM	B93514
Cadmium	ND	0.00098	0.0020		mg/L	1	12/22/2022 4:08:35 PM	B93514
Chromium	ND	0.0020	0.0060		mg/L	1	12/22/2022 4:08:35 PM	B93514
Cobalt	ND	0.0024	0.0060		mg/L	1	12/22/2022 4:08:35 PM	B93514
Nickel	0.0075	0.0033	0.010	J	mg/L	1	12/22/2022 4:08:35 PM	B93514
Silver	0.0014	0.0013	0.0050	J	mg/L	1	12/22/2022 4:08:35 PM	B93514
Vanadium	ND	0.0017	0.050		mg/L	1	12/22/2022 4:08:35 PM	B93514
Zinc	0.19	0.0032	0.010		mg/L	1	12/22/2022 4:08:35 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00061	0.00044	0.0010	J	mg/L	1	12/8/2022 5:53:26 PM	A93132
Arsenic	0.0080	0.00012	0.0010		mg/L	1	12/14/2022 3:46:12 PM	A93305
Lead	ND	0.000057	0.00050		mg/L	1	12/14/2022 3:46:12 PM	A93305
Selenium	ND	0.00034	0.0010		mg/L	1	12/14/2022 3:46:12 PM	A93305
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00013	0.000091	0.00020	J	mg/L	1	12/16/2022 2:21:54 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	MKTF-18R
Project:	2022 GW Sampling 4th Quarter	Collection Date:	12/6/2022 9:50:00 AM
Lab ID:	2212303-003F	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:37:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-16

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:10:00 AM

Lab ID: 2212303-004A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	2.1	0.0090	0.050		mg/L	1	12/13/2022 4:29:00 PM	R93213
Surr: BFB	152	0	70-130	S	%Rec	1	12/13/2022 4:29:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	450	1.1	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Toluene	ND	1.0	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Ethylbenzene	76	1.1	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Methyl tert-butyl ether (MTBE)	11	2.0	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
1,2,4-Trimethylbenzene	27	0.61	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
1,3,5-Trimethylbenzene	ND	0.91	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
1,2-Dichloroethane (EDC)	ND	1.3	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Acetone	ND	13	50		µg/L	5	12/9/2022 7:41:17 PM	R93183
Bromomethane	ND	4.3	15		µg/L	5	12/9/2022 7:41:17 PM	R93183
2-Butanone	ND	10	50		µg/L	5	12/9/2022 7:41:17 PM	R93183
Carbon disulfide	ND	3.0	50		µg/L	5	12/9/2022 7:41:17 PM	R93183
Chlorobenzene	ND	0.78	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Chloroform	ND	0.67	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Chloromethane	ND	2.1	15		µg/L	5	12/9/2022 7:41:17 PM	R93183
cis-1,2-DCE	ND	1.9	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
1,1-Dichloroethane	9.1	1.4	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
1,1-Dichloroethene	ND	1.0	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Isopropylbenzene	3.2	0.91	5.0	J	µg/L	5	12/9/2022 7:41:17 PM	R93183
4-Isopropyltoluene	ND	1.0	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Methylene Chloride	ND	2.5	15		µg/L	5	12/9/2022 7:41:17 PM	R93183
n-Butylbenzene	ND	1.3	15		µg/L	5	12/9/2022 7:41:17 PM	R93183
n-Propylbenzene	6.5	0.91	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
sec-Butylbenzene	ND	0.72	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Styrene	ND	0.68	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Tetrachloroethene (PCE)	ND	1.8	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
1,1,1-Trichloroethane	ND	1.5	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Trichloroethene (TCE)	ND	1.0	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Vinyl chloride	ND	1.6	5.0		µg/L	5	12/9/2022 7:41:17 PM	R93183
Xylenes, Total	ND	1.9	7.5		µg/L	5	12/9/2022 7:41:17 PM	R93183
Surr: 1,2-Dichloroethane-d4	112	0	70-130		%Rec	5	12/9/2022 7:41:17 PM	R93183
Surr: 4-Bromofluorobenzene	83.9	0	70-130		%Rec	5	12/9/2022 7:41:17 PM	R93183
Surr: Dibromofluoromethane	103	0	70-130		%Rec	5	12/9/2022 7:41:17 PM	R93183
Surr: Toluene-d8	104	0	70-130		%Rec	5	12/9/2022 7:41:17 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Lab ID: 2212303-004B

Client Sample ID: MKTF-16

Collection Date: 12/6/2022 10:10:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	12/8/2022 7:13:28 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: PW-3

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:35:00 AM

Lab ID: 2212303-005A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	ND	0.0090	0.050		mg/L	1	12/13/2022 4:48:00 PM	R93213
Surr: BFB	99.0	0	70-130		%Rec	1	12/13/2022 4:48:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Toluene	ND	0.20	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Ethylbenzene	ND	0.21	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Acetone	ND	2.5	10		µg/L	1	12/9/2022 8:09:53 PM	R93183
Bromomethane	ND	0.85	3.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
2-Butanone	ND	2.0	10		µg/L	1	12/9/2022 8:09:53 PM	R93183
Carbon disulfide	ND	0.59	10		µg/L	1	12/9/2022 8:09:53 PM	R93183
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Chloroform	ND	0.13	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Chloromethane	ND	0.41	3.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Isopropylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Methylene Chloride	3.3	0.50	3.0		µg/L	1	12/12/2022 11:42:55 A	R93209
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
n-Propylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Styrene	ND	0.14	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/9/2022 8:09:53 PM	R93183
Xylenes, Total	ND	0.37	1.5		µg/L	1	12/9/2022 8:09:53 PM	R93183
Surr: 1,2-Dichloroethane-d4	117	0	70-130		%Rec	1	12/9/2022 8:09:53 PM	R93183
Surr: 4-Bromofluorobenzene	94.8	0	70-130		%Rec	1	12/9/2022 8:09:53 PM	R93183
Surr: Dibromofluoromethane	116	0	70-130		%Rec	1	12/9/2022 8:09:53 PM	R93183
Surr: Toluene-d8	99.1	0	70-130		%Rec	1	12/9/2022 8:09:53 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Lab ID: 2212303-005B

Client Sample ID: PW-3

Collection Date: 12/6/2022 10:35:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	12/8/2022 7:58:10 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: PW-3

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:35:00 AM

Lab ID: 2212303-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.019	0.016	0.064	JB	mg/L	1	12/14/2022 3:52:38 PM	71994
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	12/14/2022 3:52:38 PM	71994
Surr: DNOP	100	0	15.9-177		%Rec	1	12/14/2022 3:52:38 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 4:09:37 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 4:09:37 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 4:09:37 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 4:09:37 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 4:09:37 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 4:09:37 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 4:09:37 PM	71974
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	12/13/2022 4:09:37 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 4:09:37 PM	71974
2-Methylphenol	ND	5.0	10		µg/L	1	12/13/2022 4:09:37 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 4:09:37 PM	71974
Phenol	ND	18	20		µg/L	1	12/13/2022 4:09:37 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 4:09:37 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 4:09:37 PM	71974
Surr: 2-Fluorophenol	31.9	0	15-84.5		%Rec	1	12/13/2022 4:09:37 PM	71974
Surr: Phenol-d5	32.9	0	15-67		%Rec	1	12/13/2022 4:09:37 PM	71974
Surr: 2,4,6-Tribromophenol	12.3	0	15-108	S	%Rec	1	12/13/2022 4:09:37 PM	71974
Surr: Nitrobenzene-d5	58.4	0	16.8-112		%Rec	1	12/13/2022 4:09:37 PM	71974
Surr: 2-Fluorobiphenyl	50.0	0	15-101		%Rec	1	12/13/2022 4:09:37 PM	71974
Surr: 4-Terphenyl-d14	80.3	0	34.4-134		%Rec	1	12/13/2022 4:09:37 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	ND	0.11	1.0		µg/L	1	12/12/2022 9:17:00 PM	71974
Naphthalene	ND	0.20	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Acenaphthene	ND	0.14	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Fluorene	ND	0.095	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Phenanthrene	ND	0.16	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Anthracene	ND	0.14	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Fluoranthene	ND	0.14	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/12/2022 9:17:00 PM	71974
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/12/2022 9:17:00 PM	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/12/2022 9:17:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: PW-3

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:35:00 AM

Lab ID: 2212303-005C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	57.4	0	15-108		%Rec	1	12/12/2022 9:17:00 PM	71974
Surr: 2-Fluorobiphenyl	52.1	0	15-107		%Rec	1	12/12/2022 9:17:00 PM	71974
Surr: 4-Terphenyl-d14	108	0	15-166		%Rec	1	12/12/2022 9:17:00 PM	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: PW-3

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:35:00 AM

Lab ID: 2212303-005D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.014	0.0016	0.0030		mg/L	1	12/12/2022 5:41:34 PM	71965
Beryllium	ND	0.00060	0.0020		mg/L	1	12/12/2022 5:41:34 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 5:41:34 PM	71965
Chromium	ND	0.0020	0.0060		mg/L	1	12/12/2022 5:41:34 PM	71965
Cobalt	0.013	0.0035	0.0060		mg/L	1	12/12/2022 5:41:34 PM	71965
Nickel	ND	0.0053	0.010		mg/L	1	12/12/2022 5:41:34 PM	71965
Silver	0.0033	0.0018	0.0050	J	mg/L	1	12/12/2022 5:41:34 PM	71965
Vanadium	ND	0.0035	0.050		mg/L	1	12/12/2022 5:41:34 PM	71965
Zinc	0.034	0.0039	0.010		mg/L	1	12/12/2022 5:41:34 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/19/2022 1:43:35 PM	71965
Arsenic	0.0035	0.00022	0.0010		mg/L	1	12/12/2022 3:26:57 PM	71965
Lead	ND	0.00019	0.00050		mg/L	1	12/12/2022 3:26:57 PM	71965
Selenium	0.0014	0.00089	0.0010		mg/L	1	12/12/2022 3:26:57 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00010	0.000091	0.00020	J	mg/L	1	12/16/2022 2:24:02 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: PW-3

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:35:00 AM

Lab ID: 2212303-005E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	0.012	0.0011	0.0020		mg/L	1	12/22/2022 4:12:03 PM	B93514
Beryllium	ND	0.00059	0.0020		mg/L	1	12/22/2022 4:12:03 PM	B93514
Cadmium	ND	0.00098	0.0020		mg/L	1	12/22/2022 4:12:03 PM	B93514
Chromium	ND	0.0020	0.0060		mg/L	1	12/22/2022 4:12:03 PM	B93514
Cobalt	ND	0.0024	0.0060		mg/L	1	12/22/2022 4:12:03 PM	B93514
Nickel	ND	0.0033	0.010		mg/L	1	12/22/2022 4:12:03 PM	B93514
Silver	0.0040	0.0013	0.0050	J	mg/L	1	12/22/2022 4:12:03 PM	B93514
Vanadium	0.0038	0.0017	0.050	J	mg/L	1	12/22/2022 4:12:03 PM	B93514
Zinc	0.065	0.0032	0.010		mg/L	1	12/22/2022 4:12:03 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00066	0.00044	0.0010	J	mg/L	1	12/8/2022 5:58:33 PM	A93132
Arsenic	0.0038	0.00012	0.0010		mg/L	1	12/8/2022 5:58:33 PM	A93132
Lead	ND	0.000057	0.00050		mg/L	1	12/15/2022 1:24:33 PM	A93335
Selenium	0.0011	0.00034	0.0010		mg/L	1	12/8/2022 5:58:33 PM	A93132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00011	0.000091	0.00020	J	mg/L	1	12/16/2022 2:26:11 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Lab ID: 2212303-005F

Client Sample ID: PW-3

Collection Date: 12/6/2022 10:35:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:38:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: East LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:50:00 AM

Lab ID: 2212303-006A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	0.52	0.0090	0.050		mg/L	1	12/13/2022 5:08:00 PM	R93213
Surr: BFB	206	0	70-130	S	%Rec	1	12/13/2022 5:08:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	37	0.23	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Toluene	13	0.20	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Ethylbenzene	17	0.21	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Methyl tert-butyl ether (MTBE)	1.9	0.39	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
1,2,4-Trimethylbenzene	14	0.12	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
1,3,5-Trimethylbenzene	12	0.18	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Acetone	44	2.5	10		µg/L	1	12/9/2022 8:38:31 PM	R93183
Bromomethane	ND	0.85	3.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
2-Butanone	ND	2.0	10		µg/L	1	12/9/2022 8:38:31 PM	R93183
Carbon disulfide	ND	0.59	10		µg/L	1	12/9/2022 8:38:31 PM	R93183
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Chloroform	ND	0.13	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Chloromethane	ND	0.41	3.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Isopropylbenzene	3.4	0.18	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
4-Isopropyltoluene	2.0	0.20	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Methylene Chloride	2.9	0.50	3.0	J	µg/L	1	12/12/2022 12:11:38 P	R93209
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
n-Propylbenzene	4.0	0.18	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Styrene	ND	0.14	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/9/2022 8:38:31 PM	R93183
Xylenes, Total	35	0.37	1.5		µg/L	1	12/9/2022 8:38:31 PM	R93183
Surr: 1,2-Dichloroethane-d4	111	0	70-130		%Rec	1	12/9/2022 8:38:31 PM	R93183
Surr: 4-Bromofluorobenzene	70.2	0	70-130		%Rec	1	12/9/2022 8:38:31 PM	R93183
Surr: Dibromofluoromethane	94.6	0	70-130		%Rec	1	12/9/2022 8:38:31 PM	R93183
Surr: Toluene-d8	107	0	70-130		%Rec	1	12/9/2022 8:38:31 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: East LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:50:00 AM

Lab ID: 2212303-006B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0026	0.0093		µg/L	1	12/8/2022 8:28:03 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: East LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:50:00 AM

Lab ID: 2212303-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	2.8	0.016	0.064	B	mg/L	1	12/14/2022 4:40:05 PM	71994
Motor Oil Range Organics (MRO)	0.13	0.052	0.080		mg/L	1	12/14/2022 4:40:05 PM	71994
Surr: DNOP	107	0	15.9-177		%Rec	1	12/14/2022 4:40:05 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 4:51:09 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 4:51:09 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 4:51:09 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 4:51:09 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 4:51:09 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 4:51:09 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 4:51:09 PM	71974
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	12/13/2022 4:51:09 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 4:51:09 PM	71974
2-Methylphenol	ND	5.0	10		µg/L	1	12/13/2022 4:51:09 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 4:51:09 PM	71974
Phenol	ND	18	20		µg/L	1	12/13/2022 4:51:09 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 4:51:09 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 4:51:09 PM	71974
Surr: 2-Fluorophenol	42.9	0	15-84.5		%Rec	1	12/13/2022 4:51:09 PM	71974
Surr: Phenol-d5	35.1	0	15-67		%Rec	1	12/13/2022 4:51:09 PM	71974
Surr: 2,4,6-Tribromophenol	70.6	0	15-108		%Rec	1	12/13/2022 4:51:09 PM	71974
Surr: Nitrobenzene-d5	58.2	0	16.8-112		%Rec	1	12/13/2022 4:51:09 PM	71974
Surr: 2-Fluorobiphenyl	51.5	0	15-101		%Rec	1	12/13/2022 4:51:09 PM	71974
Surr: 4-Terphenyl-d14	75.7	0	34.4-134		%Rec	1	12/13/2022 4:51:09 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	0.26	0.11	1.0	J	µg/L	1	12/12/2022 10:00:00 P	71974
Naphthalene	1.3	0.20	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
1-Methylnaphthalene	4.0	0.15	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
2-Methylnaphthalene	3.0	0.14	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Acenaphthene	1.1	0.14	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Fluorene	1.2	0.095	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Phenanthrene	1.7	0.16	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Anthracene	0.44	0.14	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Fluoranthene	0.48	0.14	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/12/2022 10:00:00 P	71974
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/12/2022 10:00:00 P	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/12/2022 10:00:00 P	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/12/2022 10:00:00 P	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: East LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:50:00 AM

Lab ID: 2212303-006C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	57.2	0	15-108		%Rec	1	12/12/2022 10:00:00 P	71974
Surr: 2-Fluorobiphenyl	47.7	0	15-107		%Rec	1	12/12/2022 10:00:00 P	71974
Surr: 4-Terphenyl-d14	76.0	0	15-166		%Rec	1	12/12/2022 10:00:00 P	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: East LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:50:00 AM

Lab ID: 2212303-006D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.080	0.0016	0.0030		mg/L	1	12/12/2022 5:46:22 PM	71965
Beryllium	0.0012	0.00060	0.0020	J	mg/L	1	12/12/2022 5:46:22 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 5:46:22 PM	71965
Chromium	1.7	0.0098	0.030	*	mg/L	5	12/12/2022 5:47:43 PM	71965
Cobalt	0.10	0.0035	0.0060		mg/L	1	12/12/2022 5:46:22 PM	71965
Nickel	1.4	0.027	0.050	*	mg/L	5	12/12/2022 5:47:43 PM	71965
Silver	ND	0.0018	0.0050		mg/L	1	12/12/2022 5:46:22 PM	71965
Vanadium	0.055	0.0035	0.050		mg/L	1	12/12/2022 5:46:22 PM	71965
Zinc	0.22	0.0039	0.010		mg/L	1	12/12/2022 5:46:22 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/19/2022 1:46:01 PM	71965
Arsenic	0.00079	0.00022	0.0010	J	mg/L	1	12/12/2022 3:29:25 PM	71965
Lead	ND	0.00019	0.00050		mg/L	1	12/12/2022 3:29:25 PM	71965
Selenium	0.0011	0.00089	0.0010		mg/L	1	12/12/2022 3:29:25 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00013	0.000091	0.00020	J	mg/L	1	12/16/2022 4:18:48 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: East LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:50:00 AM

Lab ID: 2212303-006E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	0.015	0.0011	0.0020		mg/L	1	12/22/2022 4:15:45 PM	B93514
Beryllium	0.0016	0.00059	0.0020	J	mg/L	1	12/22/2022 4:15:45 PM	B93514
Cadmium	ND	0.00098	0.0020		mg/L	1	12/22/2022 4:15:45 PM	B93514
Chromium	1.5	0.0098	0.030	*	mg/L	5	12/22/2022 4:17:30 PM	B93514
Cobalt	0.015	0.0024	0.0060		mg/L	1	12/22/2022 4:15:45 PM	B93514
Nickel	1.4	0.016	0.050	*	mg/L	5	12/22/2022 4:17:30 PM	B93514
Silver	ND	0.0013	0.0050		mg/L	1	12/22/2022 4:15:45 PM	B93514
Vanadium	0.0061	0.0017	0.050	J	mg/L	1	12/22/2022 4:15:45 PM	B93514
Zinc	0.086	0.0032	0.010		mg/L	1	12/22/2022 4:15:45 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/8/2022 6:03:40 PM	A93132
Arsenic	0.00058	0.00012	0.0010	J	mg/L	1	12/8/2022 6:03:40 PM	A93132
Lead	ND	0.000057	0.00050		mg/L	1	12/15/2022 3:43:33 PM	D93335
Selenium	0.00071	0.00034	0.0010	J	mg/L	1	12/8/2022 6:03:40 PM	A93132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00014	0.000091	0.00020	J	mg/L	1	12/16/2022 2:34:46 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Lab ID: 2212303-006F

Client Sample ID: East LDU

Collection Date: 12/6/2022 10:50:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:39:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: West LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 11:00:00 AM

Lab ID: 2212303-007A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	0.31	0.0090	0.050		mg/L	1	12/13/2022 5:28:00 PM	R93213
Surr: BFB	230	0	70-130	S	%Rec	1	12/13/2022 5:28:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	27	0.23	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Toluene	2.4	0.20	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Ethylbenzene	10	0.21	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Methyl tert-butyl ether (MTBE)	9.4	0.39	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
1,2,4-Trimethylbenzene	0.85	0.12	1.0	J	µg/L	1	12/9/2022 9:07:10 PM	R93183
1,3,5-Trimethylbenzene	2.7	0.18	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Acetone	ND	2.5	10		µg/L	1	12/9/2022 9:07:10 PM	R93183
Bromomethane	ND	0.85	3.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
2-Butanone	ND	2.0	10		µg/L	1	12/9/2022 9:07:10 PM	R93183
Carbon disulfide	ND	0.59	10		µg/L	1	12/9/2022 9:07:10 PM	R93183
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Chloroform	ND	0.13	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Chloromethane	ND	0.41	3.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Isopropylbenzene	2.2	0.18	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
4-Isopropyltoluene	0.64	0.20	1.0	J	µg/L	1	12/9/2022 9:07:10 PM	R93183
Methylene Chloride	ND	0.50	3.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
n-Propylbenzene	1.6	0.18	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
sec-Butylbenzene	0.70	0.14	1.0	J	µg/L	1	12/9/2022 9:07:10 PM	R93183
Styrene	ND	0.14	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/9/2022 9:07:10 PM	R93183
Xylenes, Total	0.88	0.37	1.5	J	µg/L	1	12/9/2022 9:07:10 PM	R93183
Surr: 1,2-Dichloroethane-d4	122	0	70-130		%Rec	1	12/9/2022 9:07:10 PM	R93183
Surr: 4-Bromofluorobenzene	72.7	0	70-130		%Rec	1	12/9/2022 9:07:10 PM	R93183
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	12/9/2022 9:07:10 PM	R93183
Surr: Toluene-d8	104	0	70-130		%Rec	1	12/9/2022 9:07:10 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Lab ID: 2212303-007B

Client Sample ID: West LDU

Collection Date: 12/6/2022 11:00:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0026	0.0093		µg/L	1	12/8/2022 8:57:48 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: West LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 11:00:00 AM

Lab ID: 2212303-007C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	2.9	0.016	0.064	B	mg/L	1	12/14/2022 5:03:49 PM	71994
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	12/14/2022 5:03:49 PM	71994
Surr: DNOP	101	0	15.9-177		%Rec	1	12/14/2022 5:03:49 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 5:32:16 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 5:32:16 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 5:32:16 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 5:32:16 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 5:32:16 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 5:32:16 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 5:32:16 PM	71974
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	12/13/2022 5:32:16 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 5:32:16 PM	71974
2-Methylphenol	ND	5.0	10		µg/L	1	12/13/2022 5:32:16 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 5:32:16 PM	71974
Phenol	ND	18	20		µg/L	1	12/13/2022 5:32:16 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 5:32:16 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 5:32:16 PM	71974
Surr: 2-Fluorophenol	51.7	0	15-84.5		%Rec	1	12/13/2022 5:32:16 PM	71974
Surr: Phenol-d5	0	0	15-67	S	%Rec	1	12/13/2022 5:32:16 PM	71974
Surr: 2,4,6-Tribromophenol	79.2	0	15-108		%Rec	1	12/13/2022 5:32:16 PM	71974
Surr: Nitrobenzene-d5	64.7	0	16.8-112		%Rec	1	12/13/2022 5:32:16 PM	71974
Surr: 2-Fluorobiphenyl	54.9	0	15-101		%Rec	1	12/13/2022 5:32:16 PM	71974
Surr: 4-Terphenyl-d14	80.6	0	34.4-134		%Rec	1	12/13/2022 5:32:16 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	4.7	0.11	1.0		µg/L	1	12/12/2022 10:43:00 P	71974
Naphthalene	0.84	0.20	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
1-Methylnaphthalene	1.2	0.15	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
Acenaphthene	0.40	0.14	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
Fluorene	0.54	0.095	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
Phenanthrene	0.40	0.16	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
Anthracene	ND	0.14	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
Fluoranthene	0.14	0.14	0.30	J	µg/L	1	12/12/2022 10:43:00 P	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/12/2022 10:43:00 P	71974
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/12/2022 10:43:00 P	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/12/2022 10:43:00 P	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/12/2022 10:43:00 P	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: West LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 11:00:00 AM

Lab ID: 2212303-007C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	61.1	0	15-108		%Rec	1	12/12/2022 10:43:00 P	71974
Surr: 2-Fluorobiphenyl	47.9	0	15-107		%Rec	1	12/12/2022 10:43:00 P	71974
Surr: 4-Terphenyl-d14	74.0	0	15-166		%Rec	1	12/12/2022 10:43:00 P	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: West LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 11:00:00 AM

Lab ID: 2212303-007D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.098	0.0016	0.0030		mg/L	1	12/12/2022 5:56:49 PM	71965
Beryllium	ND	0.00060	0.0020		mg/L	1	12/12/2022 5:56:49 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 5:56:49 PM	71965
Chromium	0.33	0.0020	0.0060	*	mg/L	1	12/12/2022 5:56:49 PM	71965
Cobalt	0.12	0.0035	0.0060		mg/L	1	12/12/2022 5:56:49 PM	71965
Nickel	1.0	0.027	0.050	*	mg/L	5	12/12/2022 5:58:12 PM	71965
Silver	ND	0.0018	0.0050		mg/L	1	12/12/2022 5:56:49 PM	71965
Vanadium	0.077	0.0035	0.050		mg/L	1	12/12/2022 5:56:49 PM	71965
Zinc	0.026	0.0039	0.010		mg/L	1	12/12/2022 5:56:49 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/19/2022 1:48:27 PM	71965
Arsenic	0.00059	0.00022	0.0010	J	mg/L	1	12/12/2022 3:31:51 PM	71965
Lead	ND	0.00019	0.00050		mg/L	1	12/12/2022 3:31:51 PM	71965
Selenium	ND	0.00089	0.0010		mg/L	1	12/12/2022 3:31:51 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00014	0.000091	0.00020	J	mg/L	1	12/16/2022 2:36:55 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: West LDU

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 11:00:00 AM

Lab ID: 2212303-007E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	0.039	0.0011	0.0020		mg/L	1	12/22/2022 4:21:15 PM	B93514
Beryllium	0.0010	0.00059	0.0020	J	mg/L	1	12/22/2022 4:21:15 PM	B93514
Cadmium	ND	0.00098	0.0020		mg/L	1	12/22/2022 4:21:15 PM	B93514
Chromium	0.12	0.0020	0.0060	*	mg/L	1	12/22/2022 4:21:15 PM	B93514
Cobalt	ND	0.0024	0.0060		mg/L	1	12/22/2022 4:21:15 PM	B93514
Nickel	0.98	0.0033	0.010	*	mg/L	1	12/22/2022 4:21:15 PM	B93514
Silver	ND	0.0013	0.0050		mg/L	1	12/22/2022 4:21:15 PM	B93514
Vanadium	0.0051	0.0017	0.050	J	mg/L	1	12/22/2022 4:21:15 PM	B93514
Zinc	0.13	0.0032	0.010		mg/L	1	12/22/2022 4:21:15 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/8/2022 6:19:03 PM	A93132
Arsenic	0.00062	0.00012	0.0010	J	mg/L	1	12/8/2022 6:19:03 PM	A93132
Lead	ND	0.000057	0.00050		mg/L	1	12/15/2022 3:47:25 PM	D93335
Selenium	0.00048	0.00034	0.0010	J	mg/L	1	12/8/2022 6:19:03 PM	A93132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	12/16/2022 4:25:15 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Lab ID: 2212303-007F

Client Sample ID: West LDU

Collection Date: 12/6/2022 11:00:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:40:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: FB-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 11:00:00 AM

Lab ID: 2212303-008A

Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Toluene	ND	0.20	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Ethylbenzene	ND	0.21	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Acetone	ND	2.5	10		µg/L	1	12/9/2022 9:35:47 PM	R93183
Bromomethane	ND	0.85	3.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
2-Butanone	ND	2.0	10		µg/L	1	12/9/2022 9:35:47 PM	R93183
Carbon disulfide	ND	0.59	10		µg/L	1	12/9/2022 9:35:47 PM	R93183
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Chloroform	ND	0.13	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Chloromethane	ND	0.41	3.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Isopropylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Methylene Chloride	ND	0.50	3.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
n-Propylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Styrene	ND	0.14	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/9/2022 9:35:47 PM	R93183
Xylenes, Total	ND	0.37	1.5		µg/L	1	12/9/2022 9:35:47 PM	R93183
Surr: 1,2-Dichloroethane-d4	117	0	70-130		%Rec	1	12/9/2022 9:35:47 PM	R93183
Surr: 4-Bromofluorobenzene	92.1	0	70-130		%Rec	1	12/9/2022 9:35:47 PM	R93183
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	12/9/2022 9:35:47 PM	R93183
Surr: Toluene-d8	101	0	70-130		%Rec	1	12/9/2022 9:35:47 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022

Lab ID: 2212303-009A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	0.030	0.0090	0.050	J	mg/L	1	12/13/2022 5:47:00 PM	R93213
Surr: BFB	104	0	70-130		%Rec	1	12/13/2022 5:47:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Toluene	ND	0.20	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Ethylbenzene	ND	0.21	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Acetone	ND	2.5	10		µg/L	1	12/9/2022 10:04:24 PM	R93183
Bromomethane	ND	0.85	3.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
2-Butanone	ND	2.0	10		µg/L	1	12/9/2022 10:04:24 PM	R93183
Carbon disulfide	ND	0.59	10		µg/L	1	12/9/2022 10:04:24 PM	R93183
Chlorobenzene	0.67	0.16	1.0	J	µg/L	1	12/9/2022 10:04:24 PM	R93183
Chloroform	ND	0.13	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Chloromethane	ND	0.41	3.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Isopropylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Methylene Chloride	ND	0.50	3.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
n-Propylbenzene	ND	0.18	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Styrene	ND	0.14	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/9/2022 10:04:24 PM	R93183
Xylenes, Total	ND	0.37	1.5		µg/L	1	12/9/2022 10:04:24 PM	R93183
Surr: 1,2-Dichloroethane-d4	107	0	70-130		%Rec	1	12/9/2022 10:04:24 PM	R93183
Surr: 4-Bromofluorobenzene	95.3	0	70-130		%Rec	1	12/9/2022 10:04:24 PM	R93183
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	12/9/2022 10:04:24 PM	R93183
Surr: Toluene-d8	103	0	70-130		%Rec	1	12/9/2022 10:04:24 PM	R93183

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	DUP-12-6-22
Project:	2022 GW Sampling 4th Quarter	Collection Date:	12/6/2022
Lab ID:	2212303-009B	Matrix:	Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0093		µg/L	1	12/8/2022 9:27:28 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022

Lab ID: 2212303-009C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.077	0.016	0.064	B	mg/L	1	12/14/2022 5:27:27 PM	71994
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	12/14/2022 5:27:27 PM	71994
Surr: DNOP	99.0	0	15.9-177		%Rec	1	12/14/2022 5:27:27 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 6:13:00 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 6:13:00 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 6:13:00 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 6:13:00 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 6:13:00 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 6:13:00 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 6:13:00 PM	71974
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	12/13/2022 6:13:00 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 6:13:00 PM	71974
2-Methylphenol	ND	5.0	10		µg/L	1	12/13/2022 6:13:00 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 6:13:00 PM	71974
Phenol	ND	18	20		µg/L	1	12/13/2022 6:13:00 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 6:13:00 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 6:13:00 PM	71974
Surr: 2-Fluorophenol	33.0	0	15-84.5		%Rec	1	12/13/2022 6:13:00 PM	71974
Surr: Phenol-d5	25.8	0	15-67		%Rec	1	12/13/2022 6:13:00 PM	71974
Surr: 2,4,6-Tribromophenol	34.4	0	15-108		%Rec	1	12/13/2022 6:13:00 PM	71974
Surr: Nitrobenzene-d5	48.8	0	16.8-112		%Rec	1	12/13/2022 6:13:00 PM	71974
Surr: 2-Fluorobiphenyl	41.4	0	15-101		%Rec	1	12/13/2022 6:13:00 PM	71974
Surr: 4-Terphenyl-d14	81.1	0	34.4-134		%Rec	1	12/13/2022 6:13:00 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	1.1	0.11	1.0		µg/L	1	12/12/2022 11:26:00 P	71974
Naphthalene	ND	0.20	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
1-Methylnaphthalene	ND	0.15	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
2-Methylnaphthalene	ND	0.14	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Acenaphthene	ND	0.14	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Fluorene	ND	0.095	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Phenanthrene	ND	0.16	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Anthracene	ND	0.14	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Fluoranthene	ND	0.14	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/12/2022 11:26:00 P	71974
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/12/2022 11:26:00 P	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/12/2022 11:26:00 P	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/12/2022 11:26:00 P	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022

Lab ID: 2212303-009C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	43.4	0	15-108		%Rec	1	12/12/2022 11:26:00 P	71974
Surr: 2-Fluorobiphenyl	37.3	0	15-107		%Rec	1	12/12/2022 11:26:00 P	71974
Surr: 4-Terphenyl-d14	83.8	0	15-166		%Rec	1	12/12/2022 11:26:00 P	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022

Lab ID: 2212303-009D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.087	0.0016	0.0030		mg/L	1	12/12/2022 6:00:52 PM	71965
Beryllium	ND	0.00060	0.0020		mg/L	1	12/12/2022 6:00:52 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 6:00:52 PM	71965
Chromium	ND	0.0020	0.0060		mg/L	1	12/12/2022 6:00:52 PM	71965
Cobalt	0.016	0.0035	0.0060		mg/L	1	12/12/2022 6:00:52 PM	71965
Nickel	ND	0.0053	0.010		mg/L	1	12/12/2022 6:00:52 PM	71965
Silver	0.0022	0.0018	0.0050	J	mg/L	1	12/12/2022 6:00:52 PM	71965
Vanadium	0.0044	0.0035	0.050	J	mg/L	1	12/12/2022 6:00:52 PM	71965
Zinc	ND	0.0039	0.010		mg/L	1	12/12/2022 6:00:52 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/19/2022 1:50:52 PM	71965
Arsenic	0.0010	0.00022	0.0010		mg/L	1	12/12/2022 3:34:18 PM	71965
Lead	0.0011	0.00019	0.00050		mg/L	1	12/12/2022 3:34:18 PM	71965
Selenium	ND	0.00089	0.0010		mg/L	1	12/12/2022 3:34:18 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00014	0.000091	0.00020	J	mg/L	1	12/16/2022 4:27:23 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022

Lab ID: 2212303-009E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	0.041	0.0011	0.0020		mg/L	1	12/22/2022 4:24:56 PM	B93514
Beryllium	ND	0.00059	0.0020		mg/L	1	12/22/2022 4:24:56 PM	B93514
Cadmium	ND	0.00098	0.0020		mg/L	1	12/22/2022 4:24:56 PM	B93514
Chromium	ND	0.0020	0.0060		mg/L	1	12/22/2022 4:24:56 PM	B93514
Cobalt	ND	0.0024	0.0060		mg/L	1	12/22/2022 4:24:56 PM	B93514
Nickel	ND	0.0033	0.010		mg/L	1	12/22/2022 4:24:56 PM	B93514
Silver	0.0030	0.0013	0.0050	J	mg/L	1	12/22/2022 4:24:56 PM	B93514
Vanadium	0.0034	0.0017	0.050	J	mg/L	1	12/22/2022 4:24:56 PM	B93514
Zinc	0.0044	0.0032	0.010	J	mg/L	1	12/22/2022 4:24:56 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/8/2022 6:24:10 PM	A93132
Arsenic	0.00071	0.00012	0.0010	J	mg/L	1	12/8/2022 6:24:10 PM	A93132
Lead	ND	0.00028	0.0025		mg/L	5	12/15/2022 3:59:05 PM	D93335
Selenium	0.00060	0.00034	0.0010	J	mg/L	1	12/8/2022 6:24:10 PM	A93132
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	ND	0.000091	0.00020		mg/L	1	12/16/2022 4:29:31 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUP-12-6-22

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022

Lab ID: 2212303-009F

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:41:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:00:00 AM

Lab ID: 2212303-010A

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM	
Gasoline Range Organics (GRO)	0.29	0.0090	0.050		mg/L	1	12/13/2022 6:07:00 PM	R93213
Surr: BFB	149	0	70-130	S	%Rec	1	12/13/2022 6:07:00 PM	R93213
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	16	0.23	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Toluene	ND	0.20	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Ethylbenzene	3.8	0.21	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Methyl tert-butyl ether (MTBE)	0.91	0.39	1.0	J	µg/L	1	12/12/2022 12:40:22 P	R93209
1,2,4-Trimethylbenzene	22	0.12	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
1,3,5-Trimethylbenzene	7.7	0.18	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Acetone	16	2.5	10		µg/L	1	12/12/2022 12:40:22 P	R93209
Bromomethane	ND	0.85	3.0		µg/L	1	12/12/2022 12:40:22 P	R93209
2-Butanone	3.7	2.0	10	J	µg/L	1	12/12/2022 12:40:22 P	R93209
Carbon disulfide	ND	0.59	10		µg/L	1	12/12/2022 12:40:22 P	R93209
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Chloroform	ND	0.13	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Chloromethane	ND	0.41	3.0		µg/L	1	12/12/2022 12:40:22 P	R93209
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Isopropylbenzene	3.7	0.18	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
4-Isopropyltoluene	1.3	0.20	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Methylene Chloride	ND	0.50	3.0		µg/L	1	12/12/2022 12:40:22 P	R93209
n-Butylbenzene	0.85	0.25	3.0	J	µg/L	1	12/12/2022 12:40:22 P	R93209
n-Propylbenzene	3.8	0.18	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
sec-Butylbenzene	0.98	0.14	1.0	J	µg/L	1	12/12/2022 12:40:22 P	R93209
Styrene	ND	0.14	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/12/2022 12:40:22 P	R93209
Xylenes, Total	5.3	0.37	1.5		µg/L	1	12/12/2022 12:40:22 P	R93209
Surr: 1,2-Dichloroethane-d4	108	0	70-130		%Rec	1	12/12/2022 12:40:22 P	R93209
Surr: 4-Bromofluorobenzene	79.2	0	70-130		%Rec	1	12/12/2022 12:40:22 P	R93209
Surr: Dibromofluoromethane	97.1	0	70-130		%Rec	1	12/12/2022 12:40:22 P	R93209
Surr: Toluene-d8	106	0	70-130		%Rec	1	12/12/2022 12:40:22 P	R93209

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:00:00 AM

Lab ID: 2212303-010B

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	12/8/2022 9:57:11 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:00:00 AM

Lab ID: 2212303-010C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D MOD: DIESEL RANGE							Analyst: DGH	
Diesel Range Organics (DRO)	0.43	0.016	0.064	B	mg/L	1	12/14/2022 5:50:58 PM	71994
Motor Oil Range Organics (MRO)	ND	0.052	0.080		mg/L	1	12/14/2022 5:50:58 PM	71994
Surr: DNOP	106	0	15.9-177		%Rec	1	12/14/2022 5:50:58 PM	71994
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Benzoic acid	ND	18	20		µg/L	1	12/13/2022 6:54:19 PM	71974
Bis(2-ethylhexyl)phthalate	ND	8.4	10		µg/L	1	12/13/2022 6:54:19 PM	71974
Di-n-butyl phthalate	ND	7.7	10		µg/L	1	12/13/2022 6:54:19 PM	71974
Di-n-octyl phthalate	ND	12	20		µg/L	1	12/13/2022 6:54:19 PM	71974
1,4-Dichlorobenzene	ND	2.4	5.0		µg/L	1	12/13/2022 6:54:19 PM	71974
Diethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 6:54:19 PM	71974
Dimethyl phthalate	ND	6.0	10		µg/L	1	12/13/2022 6:54:19 PM	71974
2,4-Dimethylphenol	ND	5.8	10		µg/L	1	12/13/2022 6:54:19 PM	71974
2,4-Dinitrophenol	ND	16	20		µg/L	1	12/13/2022 6:54:19 PM	71974
2-Methylphenol	ND	5.0	10		µg/L	1	12/13/2022 6:54:19 PM	71974
3+4-Methylphenol	ND	5.1	10		µg/L	1	12/13/2022 6:54:19 PM	71974
Phenol	ND	18	20		µg/L	1	12/13/2022 6:54:19 PM	71974
Pyridine	ND	14	40		µg/L	1	12/13/2022 6:54:19 PM	71974
2,4,6-Trichlorophenol	ND	5.9	10		µg/L	1	12/13/2022 6:54:19 PM	71974
Surr: 2-Fluorophenol	41.4	0	15-84.5		%Rec	1	12/13/2022 6:54:19 PM	71974
Surr: Phenol-d5	32.5	0	15-67		%Rec	1	12/13/2022 6:54:19 PM	71974
Surr: 2,4,6-Tribromophenol	46.3	0	15-108		%Rec	1	12/13/2022 6:54:19 PM	71974
Surr: Nitrobenzene-d5	63.0	0	16.8-112		%Rec	1	12/13/2022 6:54:19 PM	71974
Surr: 2-Fluorobiphenyl	56.5	0	15-101		%Rec	1	12/13/2022 6:54:19 PM	71974
Surr: 4-Terphenyl-d14	82.6	0	34.4-134		%Rec	1	12/13/2022 6:54:19 PM	71974
EPA METHOD 8270SIM							Analyst: DAM	
1,4-Dioxane	1.6	0.11	1.0		µg/L	1	12/13/2022 12:09:00 A	71974
Naphthalene	7.6	0.20	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
1-Methylnaphthalene	8.1	0.15	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
2-Methylnaphthalene	7.3	0.14	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
Acenaphthene	0.24	0.14	0.30	J	µg/L	1	12/13/2022 12:09:00 A	71974
Fluorene	0.50	0.095	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
Phenanthrene	ND	0.16	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
Anthracene	ND	0.14	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
Fluoranthene	ND	0.14	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
Pyrene	ND	0.32	1.0		µg/L	1	12/13/2022 12:09:00 A	71974
Benz(a)anthracene	ND	0.15	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
Chrysene	ND	0.25	0.30		µg/L	1	12/13/2022 12:09:00 A	71974
Benzo(b)fluoranthene	ND	0.14	0.40		µg/L	1	12/13/2022 12:09:00 A	71974
Indeno(1,2,3-cd)pyrene	ND	0.23	0.30		µg/L	1	12/13/2022 12:09:00 A	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:00:00 AM

Lab ID: 2212303-010C

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270SIM							Analyst: DAM	
Surr: Nitrobenzene-d5	60.3	0	15-108		%Rec	1	12/13/2022 12:09:00 A	71974
Surr: 2-Fluorobiphenyl	51.2	0	15-107		%Rec	1	12/13/2022 12:09:00 A	71974
Surr: 4-Terphenyl-d14	86.9	0	15-166		%Rec	1	12/13/2022 12:09:00 A	71974

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:00:00 AM

Lab ID: 2212303-010D

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS							Analyst: VP	
Barium	0.095	0.0016	0.0030		mg/L	1	12/12/2022 6:05:39 PM	71965
Beryllium	ND	0.00060	0.0020		mg/L	1	12/12/2022 6:05:39 PM	71965
Cadmium	ND	0.0018	0.0020		mg/L	1	12/12/2022 6:05:39 PM	71965
Chromium	ND	0.0020	0.0060		mg/L	1	12/12/2022 6:05:39 PM	71965
Cobalt	0.011	0.0035	0.0060		mg/L	1	12/12/2022 6:05:39 PM	71965
Nickel	ND	0.0053	0.010		mg/L	1	12/12/2022 6:05:39 PM	71965
Silver	0.0021	0.0018	0.0050	J	mg/L	1	12/12/2022 6:05:39 PM	71965
Vanadium	ND	0.0035	0.050		mg/L	1	12/12/2022 6:05:39 PM	71965
Zinc	ND	0.0039	0.010		mg/L	1	12/12/2022 6:05:39 PM	71965
EPA 200.8: METALS							Analyst: bcv	
Antimony	ND	0.00044	0.0010		mg/L	1	12/19/2022 1:58:12 PM	71965
Arsenic	0.011	0.00022	0.0010	*	mg/L	1	12/12/2022 3:36:44 PM	71965
Lead	0.00098	0.00019	0.00050		mg/L	1	12/12/2022 3:36:44 PM	71965
Selenium	0.0016	0.00089	0.0010		mg/L	1	12/12/2022 3:36:44 PM	71965
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00012	0.000091	0.00020	J	mg/L	1	12/16/2022 2:51:54 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MKTF-38

Project: 2022 GW Sampling 4th Quarter

Collection Date: 12/6/2022 10:00:00 AM

Lab ID: 2212303-010E

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS							Analyst: VP	
Barium	0.084	0.0011	0.0020		mg/L	1	12/22/2022 4:40:07 PM	B93514
Beryllium	0.0019	0.00059	0.0020	J	mg/L	1	12/22/2022 4:40:07 PM	B93514
Cadmium	0.0011	0.00098	0.0020	J	mg/L	1	12/22/2022 4:40:07 PM	B93514
Chromium	ND	0.0020	0.0060		mg/L	1	12/22/2022 4:40:07 PM	B93514
Cobalt	ND	0.0024	0.0060		mg/L	1	12/22/2022 4:40:07 PM	B93514
Nickel	ND	0.0033	0.010		mg/L	1	12/22/2022 4:40:07 PM	B93514
Silver	0.0035	0.0013	0.0050	J	mg/L	1	12/22/2022 4:40:07 PM	B93514
Vanadium	0.0038	0.0017	0.050	J	mg/L	1	12/22/2022 4:40:07 PM	B93514
Zinc	0.016	0.0032	0.010		mg/L	1	12/22/2022 4:40:07 PM	B93514
EPA 200.8: DISSOLVED METALS							Analyst: bcv	
Antimony	0.00085	0.00044	0.0010	J	mg/L	1	12/8/2022 6:29:17 PM	A93132
Arsenic	0.010	0.00061	0.0050	*	mg/L	5	12/15/2022 4:18:35 PM	D93335
Lead	ND	0.00028	0.0025		mg/L	5	12/15/2022 4:18:35 PM	D93335
Selenium	ND	0.0017	0.0050		mg/L	5	12/15/2022 4:18:35 PM	D93335
EPA METHOD 245.1: MERCURY							Analyst: VP	
Mercury	0.00010	0.000091	0.00020	J	mg/L	1	12/16/2022 2:54:03 PM	72127

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Project: 2022 GW Sampling 4th Quarter

Lab ID: 2212303-010F

Client Sample ID: MKTF-38

Collection Date: 12/6/2022 10:00:00 AM

Matrix: Groundwater

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: PAC	
Cyanide	ND	0.00500	0.00500		mg/L	1	12/14/2022 2:42:00 PM	R93762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2022 GW Sampling 4th Quarter

Collection Date:

Lab ID: 2212303-011A

Matrix: Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: JR	
Benzene	ND	0.23	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Toluene	ND	0.20	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Ethylbenzene	ND	0.21	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
1,2,4-Trimethylbenzene	ND	0.12	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Acetone	ND	2.5	10		µg/L	1	12/12/2022 2:06:30 PM	R93209
Bromomethane	ND	0.85	3.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
2-Butanone	ND	2.0	10		µg/L	1	12/12/2022 2:06:30 PM	R93209
Carbon disulfide	ND	0.59	10		µg/L	1	12/12/2022 2:06:30 PM	R93209
Chlorobenzene	ND	0.16	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Chloroform	ND	0.13	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Chloromethane	ND	0.41	3.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Isopropylbenzene	ND	0.18	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Methylene Chloride	ND	0.50	3.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
n-Propylbenzene	ND	0.18	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Styrene	ND	0.14	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Vinyl chloride	ND	0.32	1.0		µg/L	1	12/12/2022 2:06:30 PM	R93209
Xylenes, Total	ND	0.37	1.5		µg/L	1	12/12/2022 2:06:30 PM	R93209
Surr: 1,2-Dichloroethane-d4	116	0	70-130		%Rec	1	12/12/2022 2:06:30 PM	R93209
Surr: 4-Bromofluorobenzene	98.0	0	70-130		%Rec	1	12/12/2022 2:06:30 PM	R93209
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	12/12/2022 2:06:30 PM	R93209
Surr: Toluene-d8	104	0	70-130		%Rec	1	12/12/2022 2:06:30 PM	R93209

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order: 2212303

Date Reported: 1/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Marathon	Client Sample ID:	Trip Blank
Project:	2022 GW Sampling 4th Quarter	Collection Date:	
Lab ID:	2212303-011B	Matrix:	Trip Blank

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB							Analyst: mb	
1,2-Dibromoethane	ND	0.0027	0.0094		µg/L	1	12/8/2022 10:26:49 PM	71922

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		



ANALYTICAL REPORT

December 14, 2022

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1565219

Samples Received: 12/08/2022

Project Number:

Description:

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Entire Report Reviewed By:

A handwritten signature in blue ink that reads "John V. Hawkins".

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
2212303-001F EB-12-6-22 L1565219-01	5	
2212303-002F MKTF-46 L1565219-02	6	⁴ Cn
2212303-003F MKTF-18R L1565219-03	7	⁵ Sr
2212303-005F PW-3 L1565219-04	8	
2212303-006F EAST LDU L1565219-05	9	⁶ Qc
2212303-007F WEST LDU L1565219-06	10	
2212303-009F DUP-12-6-22 L1565219-07	11	⁷ Gl
2212303-010F MKTF-38 L1565219-08	12	⁸ Al
Qc: Quality Control Summary	13	
Wet Chemistry by Method 4500CN E-2016	13	⁹ Sc
Gl: Glossary of Terms	14	
Al: Accreditations & Locations	15	
Sc: Sample Chain of Custody	16	

2212303-001F EB-12-6-22 L1565219-01 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:34	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

2212303-002F MKTF-46 L1565219-02 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:36	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2212303-003F MKTF-18R L1565219-03 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:37	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2212303-005F PW-3 L1565219-04 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:38	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2212303-006F EAST LDU L1565219-05 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:39	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2212303-007F WEST LDU L1565219-06 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:40	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2212303-009F DUP-12-6-22 L1565219-07 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:41	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

2212303-010F MKTF-38 L1565219-08 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2016	WG1971426	1	12/13/22 02:21	12/14/22 14:42	LDT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



John Hawkins
Project Manager

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:34	WG1971426

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:36	WG1971426

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:37	WG1971426

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:38	WG1971426

- 1Cp
- 2Tc
- 3Ss
- 4Cn
- 5Sr
- 6Qc
- 7Gl
- 8Al
- 9Sc

Collected date/time: 12/06/22 10:50

L1565219

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:39	WG1971426

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:40	WG1971426

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:41	WG1971426

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 12/06/22 10:00

L1565219

Wet Chemistry by Method 4500CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J4	0.00500	1	12/14/2022 14:42	WG1971426

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3871820-19 12/14/22 14:21

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Cyanide	U		0.00180	0.00500

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1564687-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1564687-02 12/14/22 14:25 • (DUP) R3871820-26 12/14/22 14:26

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Cyanide	ND	ND	1	0.000		20

L1565219-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1565219-01 12/14/22 14:34 • (DUP) R3871820-30 12/14/22 14:35

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Cyanide	ND	ND	1	0.000		20

L1564687-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1564687-03 12/14/22 14:27 • (MS) R3871820-27 12/14/22 14:28 • (MSD) R3871820-28 12/14/22 14:29

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Cyanide	0.100	ND	0.0989	0.0985	98.9	98.5	1	90.0-110			0.405	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J4	The associated batch QC was outside the established quality control range for accuracy.
----	---

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

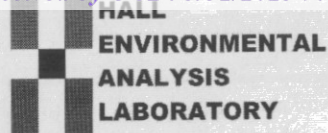
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

4901 Hawkins NE

Albuquerque, NM 87109

TEL: 505-345-3975

FAX: 505-345-4107

Website: www.hallenvironmental.com

E179

SUB CONTRACTOR: Pace TN		COMPANY: PACE TN		PHONE: (800) 767-5859		FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd				ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122							
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2212303-001F	EB-12-6-22	500AMBHDP E.NAOH	Groundw ater	12/6/2022 9:10:00 AM	1	Total Cyanide J and MDL -01
2	2212303-002F	MKTF-46	500AMBHDP E.NAOH	Groundw ater	12/6/2022 9:20:00 AM	1	Total Cyanide J and MDL -02
3	2212303-003F	MKTF-18R	500AMBHDP E.NAOH	Groundw ater	12/6/2022 9:50:00 AM	1	Total Cyanide J and MDL -03
4	2212303-005F	PW-3	500AMBHDP E.NAOH	Groundw ater	12/6/2022 10:35:00 AM	1	Total Cyanide J and MDL -04
5	2212303-006F	East LDU	500AMBHDP E.NAOH	Groundw ater	12/6/2022 10:50:00 AM	1	Total Cyanide J and MDL -05
6	2212303-007F	West LDU	500AMBHDP E.NAOH	Groundw ater	12/6/2022 11:00:00 AM	1	Total Cyanide J and MDL -06
7	2212303-009F	DUP-12-6-22	500AMBHDP E.NAOH	Groundw ater	12/6/2022	1	Total Cyanide J and MDL -07
8	2212303-010F	MKTF-38	500AMBHDP E.NAOH	Groundw ater	12/6/2022 10:00:00 AM	1	Total Cyanide J and MDL -08

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N If Applicable
 COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
 Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
 Correct bottles used: ☒ Y ☐ N
 Sufficient volume sent: ☒ Y ☐ N
 RAD Screen <0.5 mR/hr: ☒ Y ☐ N

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>SW</i>	Date: 12/7/2022	Time: 12:34 PM	Received By: <i>Jeffie J. J. J.</i>	Date: 12-8-22	Time: 9:00	REPORT TRANSMITTAL DESIRED:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	FOR LAB USE ONLY	
TAT: Standard ☒ RUSH ☐ Next BD ☐ 2nd BD ☐ 3rd BD ☐						Temp of samples _____ °C Attempt to Cool? _____	
						Comments: _____	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: MB-71965	SampType: MBLK	TestCode: EPA Method 200.7: Metals								
Client ID: PBW	Batch ID: 71965	RunNo: 93212								
Prep Date: 12/8/2022	Analysis Date: 12/12/2022	SeqNo: 3358950 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0030								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LCSLL-71965	SampType: LCSLL	TestCode: EPA Method 200.7: Metals								
Client ID: BatchQC	Batch ID: 71965	RunNo: 93212								
Prep Date: 12/8/2022	Analysis Date: 12/12/2022	SeqNo: 3358951 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0019	0.0030	0.002000	0	93.5	50	150			J
Beryllium	0.0019	0.0020	0.002000	0	93.8	50	150			J
Cadmium	0.0016	0.0020	0.002000	0	80.8	50	150			J
Chromium	0.0050	0.0060	0.006000	0	83.1	50	150			J
Cobalt	0.0070	0.0060	0.006000	0	116	50	150			
Nickel	0.0043	0.010	0.005000	0	86.2	50	150			J
Silver	0.0039	0.0050	0.005000	0	78.3	50	150			J
Vanadium	0.0095	0.050	0.01000	0	95.2	50	150			J
Zinc	0.012	0.010	0.01000	0	118	50	150			

Sample ID: LCS-71965	SampType: LCS	TestCode: EPA Method 200.7: Metals								
Client ID: LCSW	Batch ID: 71965	RunNo: 93212								
Prep Date: 12/8/2022	Analysis Date: 12/12/2022	SeqNo: 3358955 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0030	0.5000	0	103	85	115			
Beryllium	0.53	0.0020	0.5000	0	106	85	115			
Cadmium	0.50	0.0020	0.5000	0	99.9	85	115			
Chromium	0.50	0.0060	0.5000	0	99.8	85	115			
Cobalt	0.51	0.0060	0.5000	0	103	85	115			
Nickel	0.49	0.010	0.5000	0	98.2	85	115			
Silver	0.095	0.0050	0.1000	0	94.7	85	115			
Vanadium	0.52	0.050	0.5000	0	104	85	115			
Zinc	0.53	0.010	0.5000	0	106	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon
Project: 2022 GW Sampling 4th Quarter

Sample ID: MB-B	SampType: MBLK	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: PBW	Batch ID: B93514	RunNo: 93514								
Prep Date:	Analysis Date: 12/22/2022	SeqNo: 3373357 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0013	0.0020								J
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	ND	0.010								

Sample ID: LCSLL-B	SampType: LCSLL	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: BatchQC	Batch ID: B93514	RunNo: 93514								
Prep Date:	Analysis Date: 12/22/2022	SeqNo: 3373358 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0019	0.0020	0.002000	0	95.0	50	150			J
Beryllium	0.0020	0.0020	0.002000	0	97.8	50	150			J
Cadmium	0.0017	0.0020	0.002000	0	83.5	50	150			J
Chromium	0.0057	0.0060	0.006000	0	95.6	50	150			J
Cobalt	0.0067	0.0060	0.006000	0	112	50	150			
Nickel	0.0040	0.010	0.005000	0	80.5	50	150			J
Silver	0.0047	0.0050	0.005000	0	93.9	50	150			J
Vanadium	0.0094	0.050	0.01000	0	94.4	50	150			J
Zinc	0.0094	0.010	0.01000	0	93.5	50	150			J

Sample ID: LCS-B	SampType: LCS	TestCode: EPA Method 200.7: Dissolved Metals								
Client ID: LCSW	Batch ID: B93514	RunNo: 93514								
Prep Date:	Analysis Date: 12/22/2022	SeqNo: 3373359 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0020	0.5000	0	105	85	115			
Beryllium	0.51	0.0020	0.5000	0	101	85	115			
Cadmium	0.50	0.0020	0.5000	0	101	85	115			
Chromium	0.51	0.0060	0.5000	0	102	85	115			
Cobalt	0.50	0.0060	0.5000	0	99.9	85	115			
Nickel	0.51	0.010	0.5000	0	103	85	115			
Silver	0.10	0.0050	0.1000	0	102	85	115			
Vanadium	0.51	0.050	0.5000	0	102	85	115			
Zinc	0.51	0.010	0.5000	0	102	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: 2212303-009EMS		SampType: MS		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: DUP-12-6-22		Batch ID: B93514		RunNo: 93514						
Prep Date:		Analysis Date: 12/22/2022		SeqNo: 3373375		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.54	0.0020	0.5000	0.04092	99.1	70	130			
Beryllium	0.52	0.0020	0.5000	0	103	70	130			
Cadmium	0.50	0.0020	0.5000	0	99.0	70	130			
Chromium	0.48	0.0060	0.5000	0	95.2	70	130			
Cobalt	0.45	0.0060	0.5000	0	90.6	70	130			
Nickel	0.47	0.010	0.5000	0	94.8	70	130			
Silver	0.10	0.0050	0.1000	0.002964	99.2	70	130			
Vanadium	0.50	0.050	0.5000	0.003351	99.1	70	130			
Zinc	0.49	0.010	0.5000	0.004425	96.9	70	130			

Sample ID: 2212303-009EMSD		SampType: MSD		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: DUP-12-6-22		Batch ID: B93514		RunNo: 93514						
Prep Date:		Analysis Date: 12/22/2022		SeqNo: 3373378		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0020	0.5000	0.04092	96.3	70	130	2.65	20	
Beryllium	0.52	0.0020	0.5000	0	103	70	130	0.316	20	
Cadmium	0.48	0.0020	0.5000	0	95.1	70	130	4.09	20	
Chromium	0.46	0.0060	0.5000	0	92.2	70	130	3.15	20	
Cobalt	0.44	0.0060	0.5000	0	87.6	70	130	3.37	20	
Nickel	0.46	0.010	0.5000	0	92.0	70	130	2.96	20	
Silver	0.097	0.0050	0.1000	0.002964	94.5	70	130	4.66	20	
Vanadium	0.50	0.050	0.5000	0.003351	99.7	70	130	0.562	20	
Zinc	0.47	0.010	0.5000	0.004425	93.9	70	130	3.18	20	

Sample ID: 2212303-010EMS		SampType: MS		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: MKTF-38		Batch ID: B93514		RunNo: 93514						
Prep Date:		Analysis Date: 12/22/2022		SeqNo: 3373383		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.57	0.0020	0.5000	0.08376	97.7	70	130			
Beryllium	0.51	0.0020	0.5000	0.001916	102	70	130			
Cadmium	0.50	0.0020	0.5000	0.001105	99.6	70	130			
Chromium	0.48	0.0060	0.5000	0	95.0	70	130			
Cobalt	0.45	0.0060	0.5000	0	90.2	70	130			
Nickel	0.47	0.010	0.5000	0	93.7	70	130			
Silver	0.10	0.0050	0.1000	0.003473	98.5	70	130			
Vanadium	0.51	0.050	0.5000	0.003763	101	70	130			
Zinc	0.48	0.010	0.5000	0.01630	92.9	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2212303

09-Jan-23

Client: Marathon

Project: 2022 GW Sampling 4th Quarter

Sample ID: 2212303-010EMSD		SampType: MSD		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: MKTF-38		Batch ID: B93514		RunNo: 93514						
Prep Date:		Analysis Date: 12/22/2022		SeqNo: 3373384		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.55	0.0020	0.5000	0.08376	92.3	70	130	4.85	20	
Beryllium	0.49	0.0020	0.5000	0.001916	98.4	70	130	3.84	20	
Cadmium	0.47	0.0020	0.5000	0.001105	94.3	70	130	5.51	20	
Chromium	0.45	0.0060	0.5000	0	90.0	70	130	5.44	20	
Cobalt	0.43	0.0060	0.5000	0	85.3	70	130	5.61	20	
Nickel	0.45	0.010	0.5000	0	89.6	70	130	4.43	20	
Silver	0.097	0.0050	0.1000	0.003473	93.1	70	130	5.47	20	
Vanadium	0.48	0.050	0.5000	0.003763	96.0	70	130	4.94	20	
Zinc	0.46	0.010	0.5000	0.01630	88.0	70	130	5.19	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank

E Above Quantitation Range/Estimated Value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: MB-71965		SampType: MBLK		TestCode: EPA 200.8: Metals						
Client ID: PBW		Batch ID: 71965		RunNo: 93211						
Prep Date: 12/8/2022		Analysis Date: 12/12/2022		SeqNo: 3359459		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: MSLCSLL-71965		SampType: LCSLL		TestCode: EPA 200.8: Metals						
Client ID: BatchQC		Batch ID: 71965			RunNo: 93211					
Prep Date: 12/8/2022		Analysis Date: 12/12/2022			SeqNo: 3359460		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0010	0.0010	0.001000	0	105	50	150			
Arsenic	0.0010	0.0010	0.001000	0	103	50	150			
Lead	0.00051	0.00050	0.0005000	0	102	50	150			
Selenium	0.0011	0.0010	0.001000	0	110	50	150			

Sample ID: MSLCS-71965		SampType: LCS			TestCode: EPA 200.8: Metals					
Client ID: LCSW		Batch ID: 71965			RunNo: 93211					
Prep Date: 12/8/2022		Analysis Date: 12/12/2022			SeqNo: 3359461		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	102	85	115			
Arsenic	0.025	0.0010	0.02500	0	99.1	85	115			
Lead	0.012	0.00050	0.01250	0	98.7	85	115			

Sample ID: MSLCS-71965		SampType: LCS		TestCode: EPA 200.8: Metals						
Client ID: LCSW		Batch ID: 71965			RunNo: 93211					
Prep Date: 12/8/2022		Analysis Date: 12/12/2022			SeqNo: 3359502		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.025	0.0010	0.02500	0	101	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: A93132	RunNo: 93132								
Prep Date:	Analysis Date: 12/8/2022	SeqNo: 3354932 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0012	0.0010								
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: A93132	RunNo: 93132								
Prep Date:	Analysis Date: 12/8/2022	SeqNo: 3354933 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0012	0.0010	0.001000	0	120	50	150			B
Arsenic	0.00094	0.0010	0.001000	0	94.1	50	150			J
Selenium	0.00092	0.0010	0.001000	0	91.7	50	150			J

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: A93132	RunNo: 93132								
Prep Date:	Analysis Date: 12/8/2022	SeqNo: 3354934 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.024	0.0010	0.02500	0	96.2	85	115			B
Arsenic	0.024	0.0010	0.02500	0	97.2	85	115			
Selenium	0.024	0.0010	0.02500	0	97.4	85	115			

Sample ID: 2212303-001EMSL	SampType: MS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: EB-12-6-22	Batch ID: A93132	RunNo: 93132								
Prep Date:	Analysis Date: 12/8/2022	SeqNo: 3354949 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.027	0.0010	0.02500	0	107	70	130			
Selenium	0.029	0.0010	0.02500	0	116	70	130			

Sample ID: 2212303-001EMSDL	SampType: MSD	TestCode: EPA 200.8: Dissolved Metals								
Client ID: EB-12-6-22	Batch ID: A93132	RunNo: 93132								
Prep Date:	Analysis Date: 12/8/2022	SeqNo: 3354950 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.026	0.0010	0.02500	0	103	70	130	3.29	20	
Selenium	0.029	0.0010	0.02500	0	114	70	130	1.17	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon
Project: 2022 GW Sampling 4th Quarter

Sample ID: 2212303-002EMSL	SampType: MS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: MKTF-46	Batch ID: A93132	RunNo: 93132								
Prep Date:	Analysis Date: 12/8/2022	SeqNo: 3354952 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.029	0.0010	0.02500	0.0008063	111	70	130			
Selenium	0.030	0.0010	0.02500	0.0006863	117	70	130			

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: A93305	RunNo: 93305								
Prep Date:	Analysis Date: 12/14/2022	SeqNo: 3363137 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL	TestCode: EPA 200.8: Dissolved Metals								
Client ID: BatchQC	Batch ID: A93305	RunNo: 93305								
Prep Date:	Analysis Date: 12/14/2022	SeqNo: 3363138 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00098	0.0010	0.001000	0	97.5	50	150			J
Lead	0.00050	0.00050	0.0005000	0	100	50	150			
Selenium	0.00096	0.0010	0.001000	0	95.5	50	150			J

Sample ID: LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Metals								
Client ID: LCSW	Batch ID: A93305	RunNo: 93305								
Prep Date:	Analysis Date: 12/14/2022	SeqNo: 3363139 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.024	0.0010	0.02500	0	94.4	85	115			
Lead	0.012	0.00050	0.01250	0	98.4	85	115			
Selenium	0.025	0.0010	0.02500	0	101	85	115			

Sample ID: MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Metals								
Client ID: PBW	Batch ID: A93335	RunNo: 93335								
Prep Date:	Analysis Date: 12/15/2022	SeqNo: 3364955 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
 D Sample Diluted Due to Matrix
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 PQL Practical Quantitative Limit
 S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
 E Above Quantitation Range/Estimated Value
 J Analyte detected below quantitation limits
 P Sample pH Not In Range
 RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: LCSLL	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: A93335		RunNo: 93335							
Prep Date:	Analysis Date: 12/15/2022		SeqNo: 3364956		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00051	0.00050	0.0005000	0	102	50	150			

Sample ID: LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: A93335		RunNo: 93335							
Prep Date:	Analysis Date: 12/15/2022		SeqNo: 3364957		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	95.7	85	115			

Sample ID: 2212303-002EMSL	SampType: MS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: MKTF-46	Batch ID: A93335		RunNo: 93335							
Prep Date:	Analysis Date: 12/15/2022		SeqNo: 3364991		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.011	0.00050	0.01250	0	90.8	70	130			

Sample ID: MB	SampType: MBLK		TestCode: EPA 200.8: Dissolved Metals							
Client ID: PBW	Batch ID: D93335		RunNo: 93335							
Prep Date:	Analysis Date: 12/15/2022		SeqNo: 3367248		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								

Sample ID: LCSLL	SampType: LCSLL		TestCode: EPA 200.8: Dissolved Metals							
Client ID: BatchQC	Batch ID: D93335		RunNo: 93335							
Prep Date:	Analysis Date: 12/15/2022		SeqNo: 3367249		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0011	0.0010	0.001000	0	105	50	150			
Lead	0.00058	0.00050	0.0005000	0	117	50	150			

Sample ID: LCS	SampType: LCS		TestCode: EPA 200.8: Dissolved Metals							
Client ID: LCSW	Batch ID: D93335		RunNo: 93335							
Prep Date:	Analysis Date: 12/15/2022		SeqNo: 3367250		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.024	0.0010	0.02500	0	97.9	85	115			
Lead	0.013	0.00050	0.01250	0	101	85	115			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2212303

09-Jan-23

Client: Marathon

Project: 2022 GW Sampling 4th Quarter

Sample ID: LCS	SampType: LCS			TestCode: EPA 200.8: Dissolved Metals						
Client ID: LCSW	Batch ID: D93335			RunNo: 93335						
Prep Date:	Analysis Date: 12/15/2022			SeqNo: 3367250		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.026	0.0010	0.02500	0	104	85	115			

Sample ID: LCSLL	SampType: LCSLL			TestCode: EPA 200.8: Dissolved Metals						
Client ID: BatchQC	Batch ID: D93335			RunNo: 93335						
Prep Date:	Analysis Date: 12/15/2022			SeqNo: 3367251		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.0011	0.0010	0.001000	0	108	50	150			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: MB-72127	SampType: MBLK	TestCode: EPA Method 245.1: Mercury								
Client ID: PBW	Batch ID: 72127	RunNo: 93362								
Prep Date: 12/15/2022	Analysis Date: 12/16/2022	SeqNo: 3366414 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: LCSLL-72127	SampType: LCSLL	TestCode: EPA Method 245.1: Mercury								
Client ID: BatchQC	Batch ID: 72127	RunNo: 93362								
Prep Date: 12/15/2022	Analysis Date: 12/16/2022	SeqNo: 3366415 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00020	0.00020	0.0001500	0	134	50	150			

Sample ID: LCS-72127	SampType: LCS	TestCode: EPA Method 245.1: Mercury								
Client ID: LCSW	Batch ID: 72127	RunNo: 93362								
Prep Date: 12/15/2022	Analysis Date: 12/16/2022	SeqNo: 3366416 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.5	85	115			

Sample ID: 2212303-006DMS	SampType: MS	TestCode: EPA Method 245.1: Mercury								
Client ID: East LDU	Batch ID: 72127	RunNo: 93362								
Prep Date: 12/15/2022	Analysis Date: 12/16/2022	SeqNo: 3367156 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0.0001347	101	75	125			

Sample ID: 2212303-006DMSD	SampType: MSD	TestCode: EPA Method 245.1: Mercury								
Client ID: East LDU	Batch ID: 72127	RunNo: 93362								
Prep Date: 12/15/2022	Analysis Date: 12/16/2022	SeqNo: 3367157 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0.0001347	99.0	75	125	2.02	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon
Project: 2022 GW Sampling 4th Quarter

Sample ID: MB-71922	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 71922	RunNo: 93151								
Prep Date: 12/8/2022	Analysis Date: 12/8/2022	SeqNo: 3355987 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: LCS-71922	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSW	Batch ID: 71922	RunNo: 93151								
Prep Date: 12/8/2022	Analysis Date: 12/8/2022	SeqNo: 3355989 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.10	0.010	0.1000	0	104	70	130			

Sample ID: LCSD-71922	SampType: LCSD	TestCode: EPA Method 8011/504.1: EDB								
Client ID: LCSS02	Batch ID: 71922	RunNo: 93151								
Prep Date: 12/8/2022	Analysis Date: 12/8/2022	SeqNo: 3355990 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.11	0.010	0.1000	0	111	70	130	6.20	20	

Sample ID: MB-71922	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 71922	RunNo: 93151								
Prep Date: 12/8/2022	Analysis Date: 12/8/2022	SeqNo: 3356024 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: MB-71994	SampType: MBLK	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: PBW	Batch ID: 71994	RunNo: 93268								
Prep Date: 12/9/2022	Analysis Date: 12/14/2022	SeqNo: 3365633 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.15	0.064								
Motor Oil Range Organics (MRO)	ND	0.080								
Surr: DNOP	0.033		0.03750		86.7	15.9	177			

Sample ID: LCS-71994	SampType: LCS	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSW	Batch ID: 71994	RunNo: 93268								
Prep Date: 12/9/2022	Analysis Date: 12/14/2022	SeqNo: 3365634 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.21	0.064	0.1875	0	112	31.2	125			B
Surr: DNOP	0.018		0.01875		97.7	15.9	177			

Sample ID: LCSD-71994	SampType: LCSD	TestCode: EPA Method 8015D Mod: Diesel Range								
Client ID: LCSS02	Batch ID: 71994	RunNo: 93268								
Prep Date: 12/9/2022	Analysis Date: 12/14/2022	SeqNo: 3365635 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.21	0.064	0.1875	0	114	31.2	125	1.68	20	B
Surr: DNOP	0.017		0.01875		91.3	15.9	177	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2212303

09-Jan-23

Client: Marathon

Project: 2022 GW Sampling 4th Quarter

Sample ID: 2.5ug gro lcs		SampType: LCS				TestCode: EPA Method 8015D: Gasoline Range				
Client ID: LCSW		Batch ID: R93213				RunNo: 93213				
Prep Date:		Analysis Date: 12/13/2022				SeqNo: 3368698		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	94.6	80	120			
Surr: BFB	46		20.00		228	70	130			S

Sample ID: mb		SampType: MBLK				TestCode: EPA Method 8015D: Gasoline Range				
Client ID: PBW		Batch ID: R93213				RunNo: 93213				
Prep Date:		Analysis Date: 12/13/2022				SeqNo: 3368699		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	21		20.00		105	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank

E Above Quantitation Range/Estimated Value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon
Project: 2022 GW Sampling 4th Quarter

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R93183			RunNo: 93183						
Prep Date:	Analysis Date: 12/9/2022			SeqNo: 3357436		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	0	119	70	130			
Toluene	22	1.0	20.00	0	108	70	130			
Chlorobenzene	21	1.0	20.00	0	103	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	108	70	130			
Trichloroethene (TCE)	21	1.0	20.00	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.9	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R93183			RunNo: 93183						
Prep Date:	Analysis Date: 12/9/2022			SeqNo: 3357463		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2212303

09-Jan-23

Client: Marathon

Project: 2022 GW Sampling 4th Quarter

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R93183	RunNo: 93183								
Prep Date:	Analysis Date: 12/9/2022	SeqNo: 3357463 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		122	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.0	70	130			
Surr: Dibromofluoromethane	12		10.00		115	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R93209	RunNo: 93209								
Prep Date:	Analysis Date: 12/12/2022	SeqNo: 3359106 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	111	70	130			
Toluene	21	1.0	20.00	0	107	70	130			
Chlorobenzene	21	1.0	20.00	0	104	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	112	70	130			
Trichloroethene (TCE)	22	1.0	20.00	0	112	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: 2212303-010ams	SampType: MS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: MKTF-38	Batch ID: R93209	RunNo: 93209								
Prep Date:	Analysis Date: 12/12/2022	SeqNo: 3359112 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	38	1.0	20.00	16.24	107	70	130			
Toluene	22	1.0	20.00	0	111	70	130			
Chlorobenzene	21	1.0	20.00	0	107	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	95.4	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		99.6	70	130			
Surr: 4-Bromofluorobenzene	8.0		10.00		80.0	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.1	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon
Project: 2022 GW Sampling 4th Quarter

Sample ID: 2212303-010amsd	SampType: MSD	TestCode: EPA Method 8260B: VOLATILES								
Client ID: MKTF-38	Batch ID: R93209	RunNo: 93209								
Prep Date:	Analysis Date: 12/12/2022	SeqNo: 3359113	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	36	1.0	20.00	16.24	98.3	70	130	4.48	20	
Toluene	21	1.0	20.00	0	103	70	130	8.00	20	
Chlorobenzene	20	1.0	20.00	0	99.0	70	130	7.82	20	
1,1-Dichloroethene	18	1.0	20.00	0	88.2	70	130	7.84	20	
Trichloroethene (TCE)	19	1.0	20.00	0	97.3	70	130	5.12	20	
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.1	70	130	0	0	
Surr: 4-Bromofluorobenzene	8.0		10.00		79.6	70	130	0	0	
Surr: Dibromofluoromethane	9.5		10.00		95.5	70	130	0	0	
Surr: Toluene-d8	9.8		10.00		98.3	70	130	0	0	

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R93209	RunNo: 93209								
Prep Date:	Analysis Date: 12/12/2022	SeqNo: 3359144	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
Acetone	ND	10								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
cis-1,2-DCE	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2212303

09-Jan-23

Client: Marathon

Project: 2022 GW Sampling 4th Quarter

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R93209			RunNo: 93209						
Prep Date:	Analysis Date: 12/12/2022			SeqNo: 3359144		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	11		10.00		106	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: mb-71974	SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: PBW	Batch ID: 71974	RunNo: 93247								
Prep Date: 12/9/2022	Analysis Date: 12/13/2022	SeqNo: 3360800 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Anthracene	ND	10								
Benz(a)anthracene	ND	5.0								
Benzo(b)fluoranthene	ND	10								
Benzoic acid	ND	20								
Bis(2-ethylhexyl)phthalate	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	20								
1,4-Dichlorobenzene	ND	5.0								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	20								
Fluoranthene	ND	10								
Fluorene	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
1-Methylnaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
Naphthalene	ND	5.0								
Phenanthrene	ND	10								
Phenol	ND	20								
Pyrene	ND	10								
Pyridine	ND	40								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	79		200.0		39.6	15	84.5			
Surr: Phenol-d5	62		200.0		30.9	15	67			
Surr: 2,4,6-Tribromophenol	110		200.0		52.7	15	108			
Surr: Nitrobenzene-d5	51		100.0		51.1	16.8	112			
Surr: 2-Fluorobiphenyl	44		100.0		44.2	15	101			
Surr: 4-Terphenyl-d14	84		100.0		84.4	34.4	134			

Sample ID: lcs-71974	SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles								
Client ID: LCSW	Batch ID: 71974	RunNo: 93247								
Prep Date: 12/9/2022	Analysis Date: 12/13/2022	SeqNo: 3360801 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon
Project: 2022 GW Sampling 4th Quarter

Sample ID: Ics-71974	SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSW	Batch ID: 71974			RunNo: 93247						
Prep Date: 12/9/2022	Analysis Date: 12/13/2022			SeqNo: 3360801		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	63	10	100.0	0	62.7	21.3	104			
1,4-Dichlorobenzene	45	5.0	100.0	0	44.6	15	89.8			
Phenol	90	20	200.0	0	44.9	17	61.1			
Pyrene	89	10	100.0	0	89.1	61	123			
Surr: 2-Fluorophenol	100		200.0		50.6	15	84.5			
Surr: Phenol-d5	78		200.0		39.1	15	67			
Surr: 2,4,6-Tribromophenol	170		200.0		83.5	15	108			
Surr: Nitrobenzene-d5	70		100.0		70.4	16.8	112			
Surr: 2-Fluorobiphenyl	60		100.0		60.2	15	101			
Surr: 4-Terphenyl-d14	98		100.0		97.9	34.4	134			

Sample ID: IcsD-71974	SampType: LCSD			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSS02	Batch ID: 71974			RunNo: 93247						
Prep Date: 12/9/2022	Analysis Date: 12/13/2022			SeqNo: 3360802		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	57	10	100.0	0	57.2	21.3	104	9.14	45.3	
1,4-Dichlorobenzene	39	5.0	100.0	0	39.0	15	89.8	13.5	39.6	
Phenol	75	20	200.0	0	37.7	17	61.1	17.4	42.5	
Pyrene	79	10	100.0	0	78.8	61	123	12.3	11.8	R
Surr: 2-Fluorophenol	69		200.0		34.6	15	84.5	0	0	
Surr: Phenol-d5	69		200.0		34.3	15	67	0	0	
Surr: 2,4,6-Tribromophenol	94		200.0		47.2	15	108	0	0	
Surr: Nitrobenzene-d5	62		100.0		61.6	16.8	112	0	0	
Surr: 2-Fluorobiphenyl	56		100.0		55.7	15	101	0	0	
Surr: 4-Terphenyl-d14	94		100.0		94.1	34.4	134	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: mb-71974	SampType: MBLK	TestCode: EPA Method 8270SIM								
Client ID: PBW	Batch ID: 71974	RunNo: 93217								
Prep Date: 12/9/2022	Analysis Date: 12/12/2022	SeqNo: 3359415 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	ND	1.0								
Naphthalene	ND	0.30								
1-Methylnaphthalene	ND	0.30								
2-Methylnaphthalene	ND	0.30								
Acenaphthene	ND	0.30								
Fluorene	ND	0.30								
Phenanthrene	ND	0.30								
Anthracene	ND	0.30								
Fluoranthene	ND	0.30								
Pyrene	ND	1.0								
Benz(a)anthracene	ND	0.30								
Chrysene	ND	0.30								
Benzo(b)fluoranthene	ND	0.40								
Indeno(1,2,3-cd)pyrene	ND	0.30								
Surr: Nitrobenzene-d5	53		100.0		52.6	15	108			
Surr: 2,4,6-Tribromophenol	77		200.0		38.7	15	112			
Surr: 2-Fluorobiphenyl	49		100.0		48.7	15	107			
Surr: 4-Terphenyl-d14	130		100.0		130	15	166			

Sample ID: lcs-71974-lf	SampType: LCS	TestCode: EPA Method 8270SIM								
Client ID: LCSW	Batch ID: 71974	RunNo: 93217								
Prep Date: 12/9/2022	Analysis Date: 12/12/2022	SeqNo: 3359416 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.88	1.0	2.000	0	44.0	15	60.5			J
Naphthalene	1.3	0.30	2.000	0	67.0	15	78.3			
1-Methylnaphthalene	1.3	0.30	2.000	0	65.0	15	79.6			
2-Methylnaphthalene	1.3	0.30	2.000	0	64.0	15	78.6			
Acenaphthene	1.4	0.30	2.000	0	72.0	15	92			
Fluorene	1.5	0.30	2.000	0	76.0	15	96			
Phenanthrene	1.7	0.30	2.000	0	85.0	21	103			
Anthracene	1.7	0.30	2.000	0	84.0	21.1	106			
Fluoranthene	1.8	0.30	2.000	0	88.0	32.8	119			
Pyrene	1.8	1.0	2.000	0	89.0	34.1	110			
Benz(a)anthracene	1.8	0.30	2.000	0	92.0	32	132			
Chrysene	1.9	0.30	2.000	0	93.0	31.3	112			
Benzo(b)fluoranthene	1.8	0.40	2.000	0	89.0	34.1	119			
Indeno(1,2,3-cd)pyrene	1.9	0.30	2.000	0	93.0	24.7	152			
Surr: Nitrobenzene-d5	68		100.0		67.7	15	108			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2212303

09-Jan-23

Client: Marathon**Project:** 2022 GW Sampling 4th Quarter

Sample ID: Ics-71974-If	SampType: LCS		TestCode: EPA Method 8270SIM							
Client ID: LCSW	Batch ID: 71974		RunNo: 93217							
Prep Date: 12/9/2022	Analysis Date: 12/12/2022		SeqNo: 3359416		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	0		200.0		0	15	112			S
Surr: 2-Fluorobiphenyl	56		100.0		56.2	15	107			
Surr: 4-Terphenyl-d14	100		100.0		100	15	166			

Sample ID: lcsd-71974-If	SampType: LCSD		TestCode: EPA Method 8270SIM							
Client ID: LCSS02	Batch ID: 71974		RunNo: 93217							
Prep Date: 12/9/2022	Analysis Date: 12/12/2022		SeqNo: 3359417		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dioxane	0.86	1.0	2.000	0	43.0	15	60.5	2.30	29.7	J
Naphthalene	1.3	0.30	2.000	0	66.0	15	78.3	1.50	31.7	
1-Methylnaphthalene	1.3	0.30	2.000	0	65.0	15	79.6	0	31.4	
2-Methylnaphthalene	1.3	0.30	2.000	0	64.0	15	78.6	0	30.5	
Acenaphthene	1.4	0.30	2.000	0	71.0	15	92	1.40	30.5	
Fluorene	1.5	0.30	2.000	0	75.0	15	96	1.32	25.1	
Phenanthrene	1.7	0.30	2.000	0	84.0	21	103	1.18	26.4	
Anthracene	1.7	0.30	2.000	0	84.0	21.1	106	0	14.4	
Fluoranthene	1.8	0.30	2.000	0	90.0	32.8	119	2.25	14.8	
Pyrene	1.8	1.0	2.000	0	91.0	34.1	110	2.22	19.2	
Benz(a)anthracene	1.9	0.30	2.000	0	95.0	32	132	3.21	29.3	
Chrysene	1.9	0.30	2.000	0	93.0	31.3	112	0	19	
Benzo(b)fluoranthene	1.8	0.40	2.000	0	90.0	34.1	119	1.12	31.6	
Indeno(1,2,3-cd)pyrene	1.9	0.30	2.000	0	97.0	24.7	152	4.21	21.3	
Surr: Nitrobenzene-d5	66		100.0		65.7	15	108	0	0	
Surr: 2,4,6-Tribromophenol	0		200.0		0	15	112	0	0	S
Surr: 2-Fluorobiphenyl	58		100.0		57.8	15	107	0	0	
Surr: 4-Terphenyl-d14	90		100.0		89.9	15	166	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Marathon

Work Order Number: 2212303

RcptNo: 1

Received By: Juan Rojas

12/7/2022 7:30:00 AM

Completed By: Sean Livingston

12/7/2022 7:51:40 AM

Reviewed By:

12-7-22

[Signature]

[Signature]

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐

2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐

4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐

5. Sample(s) in proper container(s)? Yes ☒ No ☐

6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐

7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐

8. Was preservative added to bottles? Yes ☒ No ☒ NA ☐

9. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? Yes ☒ No ☐ NA ☐

10. Were any sample containers received broken? Yes ☐ No ☒

11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐

13. Is it clear what analyses were requested? Yes ☒ No ☐

14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

16 8
(<2 or >12 unless noted)

Adjusted? jos

Checked by: jon 12/7/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

0.4 ml of HNO_3 was added to samples 003E, 005E
for pH < 2 . jon 12/7/22

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.9	Good				
2	0.8	Good				
3	0.2	Good				
4	1.3	Good				



Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Appendix B – Data Validation Reports



Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental Analysis Laboratory
Project Name: Western Refining Southwest, Q1 GW Sampling	Sample Matrix: Groundwater
Project Number: 697-080-002 Task: 0006	Sample Start Date: 03/23/2022
Date Validated: 07/11/2022	Sample End Date: 03/23/2022
Parameters Included: ▪ Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ 1,2-Dibromoethane (EDB) by EPA Method 504.1 ▪ Semivolatile Organic Compounds (SVOCs) by SW-846 Method 8270C and Method 8270C with Selected Ion Monitoring (SIM) ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015D Modified ▪ Total and Dissolved Metals by EPA Method 200.7 and Method 200.8 ▪ Total and Dissolved Mercury by EPA Method 245.1 ▪ Cyanide by Standard Methods for the Examination of Water and Wastewater (SM) Method 4500 CN E	
Laboratory Project ID: 2203C69	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical National of Mount Juliet, Tennessee evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Field blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
EB-3-23-22	2203C69-001
OW-54	2203C69-002
OW-66	2203C69-003
OW-55	2203C69-004
OW-13	2203C69-005
OW-56	2203C69-006
OW-59	2203C69-007
OW-60	2203C69-008
MKTF-16	2203C69-009
DUP-3-23-22	2203C69-010
FB-3-23-22	2203C69-011
Trip Blank	2203C69-012



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ⊗ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ⊗ LCS/LCSD (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates and Internal Standards) (Item 17)
- ⊗ Field, Equipment, and Trip Blanks (Items 18 and 19)
- ✓ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-540-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, April 2022.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit
JB	Estimated concentration due to blank contamination
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 779 data points. The data completeness calculation does not include any submitted blank sample results. One data point was rejected. The data completeness measure for this data package is calculated to be 99.87% and is acceptable.



VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory? Comments: The laboratory noted the following analytical non-conformance related to this data set. Naphthalene was reported by EPA Method 8270 instead of EPA Method 8270 SIM because of its elevated concentration for sample OW-55. Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270 SIM because of their elevated concentrations for the following sample: OW-66. "S" flagged surrogates denote low surrogate recoveries due to matrix interferences/sample dilution.	No
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define. Comments: The laboratory used the following data qualification flags with this data set. B – Analyte detected in the associated method blank. E – Estimated value. <i>This laboratory flag was applied only to QC sample and surrogate results in the laboratory report, and qualification of sample data was not required.</i> J – Analyte detected below quantitation limits J3 – The associated batch QC was outside the established quality control range for precision. J6 – The sample matrix interfered with the ability to make any accurate determination; spike value is low. R – RPD outside of range. S – % Recovery outside of range due to dilution or matrix interference. D – Sample diluted due to matrix. * – Value exceeds maximum contaminant level.	No
3. Were sample CoC forms and custody procedures complete? Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by courier, and custody was maintained at all times.	Yes



VALIDATION CRITERIA CHECKLIST

4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Yes

Comments: The detection limits appeared to be acceptable. The following dilutions were applied.

Method	Sample(s)	Analyte(s)	Dilution Factor
200.7	OW-66	Total and Dissolved Barium	5
200.7	OW-60	Total Barium	5
200.8	Multiple Samples	Select Total and Dissolved Metals	5
8015D	OW-54	GRO	5
8260B	OW-54	Select VOCs	5
200.8	OW-66, OW-55, OW-59	Select Total and Dissolved Metals	10
8015D	OW-66	DRO and MRO	10
8260B	MKTF-16	Benzene	10
8260B	DUP-3-23-22	MTBE	10
8270C	OW-66	SVOCs	10
200.8	OW-56	Dissolved Antimony	20
8015D	OW-66, OW-55	GRO	50
Method	Sample(s)	Analyte(s)	Dilution Factor
8260B	OW-54	MTBE	50
8260B	OW-66, OW-55	Select VOCs	50
8260B	OW-66	Benzene and Toluene	500
8260B	OW-55	Benzene	500

5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC? No

Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions.

The CoC requested total and dissolved metals using Method 200.7; however, the laboratory analyzed the samples using both Method 200.7 and Method 200.8. This substituted analytical method, Method 200.8, met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.

The CoC requested cyanide using Method 335.4; however, the laboratory analyzed the samples using Method 4500 CN E. This substituted analytical method met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.

6. Were samples received in good condition within method-specified requirements? No

Comments: Samples were received on ice, in good condition, and with the cooler temperatures both within and outside the recommended temperature range of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ between 0.3°C and 2.3°C as noted on the CoC and the *Sample Log-in Check List*. Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 2.7°C as noted on the CoC. The cooler temperatures below 2.0°C were judged as acceptable since the laboratory did not report the sample containers as broken or frozen.

7. Were samples extracted/digested and analyzed within method-specified or technical holding times? Yes

Comments: The samples were extracted/digested and analyzed within method-specific holding times.



VALIDATION CRITERIA CHECKLIST																																															
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes																																														
Comments: The results were reported in concentration units of micrograms per liter (µg/L) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.																																															
9. Did the laboratory provide any specific initial and/or continuing calibration results?	No																																														
Comments: Initial and continuing calibration data were not included as part of this data set.																																															
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?	N/A																																														
Comments: Initial and continuing calibration data were not included as part of this data set.																																															
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes																																														
Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.																																															
12. Were target analytes reported as not detected in the laboratory blanks?	No																																														
Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exceptions.																																															
<table border="1"> <thead> <tr> <th>Method</th> <th>Analyte</th> <th>Batch</th> <th>Concentration</th> </tr> </thead> <tbody> <tr> <td>8015D</td> <td>DRO</td> <td>66385</td> <td>0.044 mg/L</td> </tr> <tr> <td>8015D</td> <td>DRO</td> <td>66409</td> <td>0.040 mg/L</td> </tr> <tr> <td>8015D</td> <td>MRO</td> <td>66409</td> <td>0.099 mg/L</td> </tr> <tr> <td>8260B</td> <td>Chloromethane</td> <td>R86734</td> <td>0.66 µg/L</td> </tr> <tr> <td>8260B</td> <td>Carbon disulfide</td> <td>R86760</td> <td>0.87 µg/L</td> </tr> <tr> <td>8260B</td> <td>Chloromethane</td> <td>R86760</td> <td>0.69 µg/L</td> </tr> <tr> <td>8260B</td> <td>Trichloroethene</td> <td>R86760</td> <td>0.34 µg/L</td> </tr> <tr> <td>8260B</td> <td>Vinyl Chloride</td> <td>R86760</td> <td>0.47 µg/L</td> </tr> <tr> <td>8270 SIM</td> <td>Pyrene</td> <td>R87058</td> <td>0.16 µg/L</td> </tr> <tr> <td>8015D</td> <td>GRO</td> <td>G86734</td> <td>0.041 mg/L</td> </tr> </tbody> </table>				Method	Analyte	Batch	Concentration	8015D	DRO	66385	0.044 mg/L	8015D	DRO	66409	0.040 mg/L	8015D	MRO	66409	0.099 mg/L	8260B	Chloromethane	R86734	0.66 µg/L	8260B	Carbon disulfide	R86760	0.87 µg/L	8260B	Chloromethane	R86760	0.69 µg/L	8260B	Trichloroethene	R86760	0.34 µg/L	8260B	Vinyl Chloride	R86760	0.47 µg/L	8270 SIM	Pyrene	R87058	0.16 µg/L	8015D	GRO	G86734	0.041 mg/L
Method	Analyte	Batch	Concentration																																												
8015D	DRO	66385	0.044 mg/L																																												
8015D	DRO	66409	0.040 mg/L																																												
8015D	MRO	66409	0.099 mg/L																																												
8260B	Chloromethane	R86734	0.66 µg/L																																												
8260B	Carbon disulfide	R86760	0.87 µg/L																																												
8260B	Chloromethane	R86760	0.69 µg/L																																												
8260B	Trichloroethene	R86760	0.34 µg/L																																												
8260B	Vinyl Chloride	R86760	0.47 µg/L																																												
8270 SIM	Pyrene	R87058	0.16 µg/L																																												
8015D	GRO	G86734	0.041 mg/L																																												
Detections of DRO, chloromethane, and GRO in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of DRO, MRO, and GRO in the associated samples that were greater than the reporting limits but less than or equal to 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.																																															

VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared/reported for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>MS Sample Source</u>
200.7	Total Metals	66644	OW-54, OW-66
200.7	Dissolved Metals	B86825	Not Prepared
200.8	Total Metals	66472	EB-3-23-22
200.8	Dissolved Metals	B86714	Not Prepared
245.1	Total Mercury	66425	EB-3-23-22
245.1	Dissolved Mercury	66456	Not Prepared
504.1	EDB	66393	Not Prepared
504.1	EDB	66394	Not Prepared
4500CN E	Cyanide	WG1839312	EB-3-23-22, OW-56
8015D	TPH DRO and MRO	66385	Not Prepared
8015D	TPH DRO and MRO	66409	Not Prepared
8015D	TPH GRO	G86734	Not Prepared
8260B	VOCs	R86734	Not Prepared
8260B	VOCs	R86760	Not Prepared
8270C	SVOCs	66392	Not Prepared
8270C SIM	SVOCs	R86913	Not Prepared
8270C SIM	SVOCs	R87058	Not Prepared

Not Prepared – Matrix spikes were not prepared/reported for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The MS/MSD percent recoveries and RPDs for project samples were within data validation and laboratory QC limits, with the following exceptions.

<u>Method</u>	<u>Analyte</u>	<u>Batch</u>	<u>MS Recovery</u>	<u>MSD Recovery</u>	<u>MS/MSD QC Limits</u>	<u>MS/MSD RPD</u>	<u>RPD QC Limits</u>
4500 CN E	Cyanide	WG1839312	Acceptable	28.4%	75-125%	110%	20%
4500 CN E	Cyanide	WG1839312	Acceptable	73.1%	75-125%	29.5%	20%

Two MS/MSD pairs were analyzed for cyanide in batch WG1839312. The MSD recoveries were below the NFG QC limits for both of the MS/MSD pairs, but the MSD recovery for one of the pairs was less than 30%. The results for all of the associated samples in the batch would typically be qualified based on the MS/MSD results. However, since multiple MS/MSD pairs were analyzed for this batch, the determination of batch sample associations would be arbitrary. Therefore, only the parent sample EB-3-23-22 used for the MS/MSD pair that recovered at 28.4% was qualified as R to indicate rejected (not usable) data based on evidence of extreme low bias. The remaining samples were qualified as J- if detected and UJ if not detected.

In addition, both MS/MSD pairs exhibited MS/MSD RPDs that exceeded the laboratory QC limit indicating poor precision.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.



VALIDATION CRITERIA CHECKLIST

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits?

No

Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within data validation and laboratory QC limits, with the following exceptions.

<u>Method</u>	<u>Analyte</u>	<u>Batch</u>	<u>LCS Recovery</u>	<u>LCSD Recovery</u>	<u>LCS/LCSD QC Limits</u>	<u>LCS/ LCSD RPD</u>	<u>RPD QC Limits</u>
200.7	Total Nickel	66644	67.0%	-----	70-130%	-----	-----
8015D	DRO	66385	107%	Acceptable	31.7-75.4%	56.8%	20%
8270C SIM	Phenanthrene	R87058	Acceptable	Acceptable	38.2-93.9%	30.4%	27.9%
8270C SIM	Pyrene	R87058	Acceptable	Acceptable	51-113%	29.5%	20%
8270C SIM	Benzo(a)anthracene	R87058	Acceptable	Acceptable	51-147%	26.2%	24.1%
8270C SIM	Chrysene	R87058	Acceptable	Acceptable	55.3-115%	33.0%	20%
8270C SIM	Benzo(b)fluoranthene	R87058	Acceptable	Acceptable	44.4-136%	34.5%	24.5%
8270C SIM	Indeno(1,2,3-cd) pyrene	R87058	Acceptable	Acceptable	31.4-165%	35.2%	21.1%

Total nickel results were assigned J- qualifiers in associated samples due to evidence of potential low bias, except the non-detect results for associated samples EB-3-23-22 and OW-13 which were assigned UJ qualifiers.

DRO was in the associated samples, and these results were qualified as J+ due to potential high bias. These associated DRO results were also qualified due to evidence of poor precision.

The Method 8270C SIM analytes with LCS/LCSD RPD values that were above the QC limits were not detected in the associated samples. These results were qualified as UJ due to evidence of poor precision.



VALIDATION CRITERIA CHECKLIST

17. Were surrogate recoveries within laboratory QC limits?

No

Comments: Surrogate recoveries were within laboratory QC limits, with the following exceptions.

<u>Method</u>	<u>Surrogate</u>	<u>Sample</u>	<u>Surrogate Recovery</u>	<u>QC Limits</u>
8015D MOD	DNOP	OW-56	147%	42.2-138%
8270C	2-Fluorophenol	OW-59	19.4%	29.4-87.7%
8270C	2,4,6-Tribromophenol	OW-59	6.62%	18.6-129%

The target analytes DRO and MRO associated with the Method 8015 surrogate DNOP were detected in sample OW-56, and these results were assigned J+ qualifiers due to possible high bias.

The acid fraction target analytes associated with the identified non-compliant Method 8270C surrogate recoveries were not detected in sample OW-59. Normally, if a surrogate recovered below 10%, the associated analytes would be qualified as R, but one of the acid surrogates was acceptable and the recovery for the other acid surrogate was low but not below 10%. The associated acid fraction analytes were not detected in sample OW-59 and the results were assigned UJ qualifiers due to the evidence of low bias.

The SVOC results and the DRO and MRO results for sample OW-66 were not qualified based on the surrogate non-conformances in the Method 8270C and Method 8015D Modified analyses since the applied dilutions of 10 times resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

Since Method 8270C SIM surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the samples OW-66 and OW-55, and qualification of sample data was not required.

Since Method 8270C surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the sample OW-13, and qualification of sample data was not required.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?

Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the number of samples. One trip blank sample, Trip Blank, one field blank sample, FB-3-23-22, and one equipment blank sample, EB-3-23-22, were collected as part of this sample set.



VALIDATION CRITERIA CHECKLIST

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were not detected in the trip blank, field blank, and equipment blank samples with the following exceptions.

<u>Blank Sample ID</u>	<u>Method</u>	<u>Analyte</u>	<u>Concentration</u>
Trip Blank	8260B	Chloromethane	0.69 µg/L
FB-3-23-22	8260B	2-Butanone	5.2 µg/L
FB-3-23-22	8260B	Chloromethane	0.80 µg/L
EB-3-23-22	200.7	Dissolved Nickel	0.0035 mg/L
<u>Blank Sample ID</u>	<u>Method</u>	<u>Analyte</u>	<u>Concentration</u>
EB-3-23-22	200.7	Dissolved Zinc	0.0063 mg/L
EB-3-23-22	8015D	DRO	0.033 mg/L
EB-3-23-22	8015D	GRO	0.034 mg/L
EB-3-23-22	8260B	2-Butanone	5.0 µg/L
EB-3-23-22	8260B	Chloromethane	0.70 µg/L

Detections of 2-butanone, dissolved nickel, and dissolved zinc in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of dissolved nickel and dissolved zinc in the associated samples that were greater than the reporting limits but less than 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.

The DRO, chloromethane, and GRO results were previously qualified due to laboratory blank contamination in batches 66385, R86734, R86760, and G86734; therefore, additional qualification due to the trip, field, and equipment blank contamination was not required.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples. Sample DUP-3-23-22 was collected as a field duplicate of sample OW-54.

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? Yes

Comments: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples.



VALIDATION CRITERIA CHECKLIST

22. For laboratory duplicates prepared from project samples, were RPDs within data validation or laboratory QC limits? N/A

Comments: Laboratory duplicates were prepared for these analyses, and the laboratory duplicate sample sources are summarized in the following table.

<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>Laboratory Duplicate Sample Source</u>
4500CN E	Cyanide	WG1839312	Not Associated
4500CN E	Cyanide	WG1839312	OW-13

Not Associated – The laboratory duplicate sample source was not associated with this project.

The RPD for the laboratory duplicate prepared from a project sample was not applicable since the results for one or both measurements were within 5 times the reporting limit.

The RPD value for the laboratory duplicate sample prepared from a non-project sample was evaluated and considered, but data were not qualified based on this result since matrix similarity to project samples could not be guaranteed.

23. Were the following data relationships realistic?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270)? N/A

Comments: Target analytes were not reported by more than one method in this data set.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? No



VALIDATION CRITERIA CHECKLIST

Comments: The following table contains the exceptions in which the dissolved metals results exceeded the total metals results. The EPA has not provided guidance or requirements for the evaluation, validation, and qualification of dissolved metals results that exceed the corresponding total metals results. Therefore, qualification of results was not performed based on these data.

<u>Sample ID</u>	<u>Analyte</u>	<u>Total Result (mg/L)</u>	<u>Dissolved Result (mg/L)</u>
OW-54	Antimony	ND	0.00047
DUP-3-23-22	Antimony	ND	0.00051
OW-13	Barium	0.020	0.025
OW-54	Cobalt	0.078	0.086
OW-56	Cobalt	0.0069	0.0074
OW-59	Cobalt	0.0043	0.0050
DUP-3-23-22	Cobalt	0.081	0.085
EB-3-23-22	Nickel	ND	0.0035
OW-54	Nickel	0.24	0.27
OW-66	Nickel	0.33	0.37
OW-55	Nickel	0.24	0.26
OW-13	Nickel	ND	0.0033
OW-56	Nickel	0.072	0.083
OW-59	Nickel	0.037	0.042
DUP-3-23-22	Nickel	0.26	0.27
EB-3-23-22	Zinc	ND	0.0063
OW-13	Zinc	ND	0.0084
OW-56	Zinc	0.010	0.012
OW-59	Zinc	0.0064	0.0091

FIELD DUPLICATE SUMMARY

Client Sample ID: OW-54 Field Duplicate Sample ID: DUP-3-23-22				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Barium, Dissolved	E 200.7	0.20 mg/L	0.20 mg/L	0.0%
Barium, Total	E 200.7	0.39 mg/L	0.41 mg/L	5.0%
Chromium, Total	E 200.7	0.0064 mg/L	0.0053 mg/L	18.8% +/-RL
Cobalt, Dissolved	E 200.7	0.086 mg/L	0.085 mg/L	1.2%
Cobalt, Total	E 200.7	0.078 mg/L	0.081 mg/L	3.8%
Nickel, Dissolved	E 200.7	0.27 mg/L	0.27 mg/L	0.0%
Nickel, Total	E 200.7	0.24 mg/L	0.26 mg/L	8.0%
Vanadium, Total	E 200.7	0.015 mg/L	0.015 mg/L	0.0% +/-RL
Zinc, Dissolved	E 200.7	0.017 mg/L	0.018 mg/L	5.7% +/-RL
Zinc, Total	E 200.7	0.031 mg/L	0.026 mg/L	17.5%
Antimony, Dissolved	E200.8	0.00047 mg/L	0.00051 mg/L	8.2% +/-RL
Arsenic, Dissolved	E200.8	0.0081 mg/L	0.0091 mg/L	11.6%
Arsenic, Total	E200.8	0.0098 mg/L	0.0091 mg/L	7.4%
Lead, Dissolved	E200.8	0.0064 mg/L	0.0076 mg/L	17.1%
Lead, Total	E200.8	0.023 mg/L	0.020 mg/L	14.0%
Selenium, Total	E200.8	0.0012 mg/L	0.00086 mg/L	33.0% +/-RL
Mercury, Total	E245.1	0.00014 mg/L	ND (0.00020 mg/L)	DL
Cyanide, Total	E335.4	0.00527 mg/L	ND (0.00500 mg/L)	DL
TPH DRO	SW8015	2.2 mg/L	2.3 mg/L	4.4%
TPH GRO	SW8015	2.0 mg/L	1.9 mg/L	5.1%
TPH ORO	SW8015	0.13 mg/L	0.16 mg/L	20.7% +/-RL
1,1-Dichloroethane	SW8260B	ND (5.0 µg/L)	0.63 µg/L	DL
1,2,4-Trimethylbenzene	SW8260B	4.2 µg/L	4.5 µg/L	6.9%
1,2-Dichloroethane	SW8260B	2.3 µg/L	0.68 µg/L	108.7% +/-RL
Benzene	SW8260B	12 µg/L	12 µg/L	0.0%
Chloroform	SW8260B	1.6 µg/L	ND (1.0 µg/L)	DL
Chloromethane	SW8260B	3.9 µg/L	1.8 µg/L	73.7% +/-RL
Ethylbenzene	SW8260B	13 µg/L	13 µg/L	0.0%
Isopropylbenzene	SW8260B	ND (5.0 µg/L)	0.46 µg/L	DL
MTBE	SW8260B	1,300 µg/L	1,200 µg/L	8.0%
n-Propylbenzene	SW8260B	1.2 µg/L	1.2 µg/L	0.0% +/-RL
sec-Butylbenzene	SW8260B	ND (5.0 µg/L)	0.58 µg/L	DL
Toluene	SW8260B	ND (5.0 µg/L)	0.36 µg/L	DL
Vinyl Chloride	SW8260B	ND (5.0 µg/L)	0.46 µg/L	DL
Xylenes, Total	SW8260B	2.0 µg/L	2.4 µg/L	18.2% +/-RL



Field duplicate RPD control limits are not to exceed 30% for water as established by USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).

+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
EBD	Equipment blank detection
ERPD-LCS	The LCS/LCSD RPD exceeded the upper acceptable limit indicating poor precision.
ERPD-MS	The MS/MSD RPD exceeded the upper acceptable limit indicating poor precision.
FBD	Field blank detection
HR-LCS	The LCS and/or LCSD percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-LCS	The LCS and/or LCSD percent recovery was less than the lower acceptable limit indicating a possible low bias.
LR-MS	The MS and/or MSD percent recovery was less than the lower acceptable limit indicating possible matrix interference.
LR-SUR	The surrogate percent recovery was less than the lower acceptable limit indicating a possible low bias.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
MBD	Method blank detection
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1,1-Trichloroethane	SW8260B	MKTF-16	2203c69-009a	0.61	1.0	µg/L	J	MDLRL
1,1-Dichloroethane	SW8260B	OW-66	2203c69-003a	27	50	µg/L	J	MDLRL
1,1-Dichloroethane	SW8260B	OW-56	2203c69-006a	0.58	1.0	µg/L	J	MDLRL
1,1-Dichloroethane	SW8260B	DUP-3-23-22	2203c69-010a	0.63	1.0	µg/L	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	OW-54	2203c69-002a	4.2	5.0	µg/L	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	OW-56	2203c69-006a	0.22	1.0	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	OW-54	2203c69-002a	2.3	5.0	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	OW-66	2203c69-003a	21	50	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	OW-13	2203c69-005a	0.76	1.0	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	DUP-3-23-22	2203c69-010a	0.68	1.0	µg/L	J	MDLRL
1,3,5-Trimethylbenzene	SW8260B	MKTF-16	2203c69-009a	0.61	1.0	µg/L	J	MDLRL
1,4-Dioxane	SW8270C	OW-60	2203c69-008c	0.24	1.0	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1-Methylnaphthalene	SW8270C	OW-66	2203C69-003C	25	50	µg/L	J	MDLRL
2,4,6-Trichlorophenol	SW8270C	OW-59	2203C69-007C	ND	5.0	µg/L	UJ	LR-SUR
2,4-Dimethylphenol	SW8270C	OW-59	2203C69-007C	ND	5.0	µg/L	UJ	LR-SUR
2,4-Dimethylphenol	SW8270C	OW-66	2203C69-003C	22	50	µg/L	J	MDLRL
2,4-Dinitrophenol	SW8270C	OW-59	2203C69-007C	ND	5.0	µg/L	UJ	LR-SUR
2-Butanone	SW8260B	EB-3-23-22	2203c69-001a	5.0	10	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	FB-3-23-22	2203c69-011a	5.2	10	µg/L	J	MDLRL
2-Methylnaphthalene	SW8270C	OW-66	2203C69-003C	46	50	µg/L	J	MDLRL
2-Methylphenol	SW8270C	OW-59	2203C69-007C	ND	5.0	µg/L	UJ	LR-SUR
2-Methylphenol	SW8270C	OW-66	2203C69-003C	25	50	µg/L	J	MDLRL
3,4-Methylphenol	SW8270C	OW-59	2203C69-007C	ND	5.0	µg/L	UJ	LR-SUR
3,4-Methylphenol	SW8270C	OW-66	2203C69-003C	40	50	µg/L	J	MDLRL
Antimony, Dissolved	E200.8	OW-54	2203C69-002E	0.00047	0.0010	mg/L	J	MDLRL
Antimony, Dissolved	E200.8	DUP-3-23-22	2203C69-010E	0.00051	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	OW-13	2203C69-005E	0.00074	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	OW-59	2203C69-007E	0.0047	0.010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	OW-60	2203C69-008E	0.0013	0.0050	mg/L	J	MDLRL
Arsenic, Total	E200.8	OW-13	2203C69-005D	0.00075	0.0010	mg/L	J	MDLRL
Benzene	SW8260B	OW-13	2203c69-005a	0.29	1.0	µg/L	J	MDLRL
Benzene	SW8260B	OW-56	2203c69-006a	0.91	1.0	µg/L	J	MDLRL
Benzo(a)anthracene	SW8270C	MKTF-16	2203c69-009c	ND	0.10	µg/L	UJ	ERPD-LCS
Benzo(a)anthracene	SW8270C	DUP-3-23-22	2203c69-010c	ND	0.10	µg/L	UJ	ERPD-LCS
Benzo(b)fluoranthene	SW8270C	MKTF-16	2203c69-009c	ND	0.10	µg/L	UJ	ERPD-LCS
Benzo(b)fluoranthene	SW8270C	DUP-3-23-22	2203c69-010c	ND	0.10	µg/L	UJ	ERPD-LCS
Bis(2-ethylhexyl)phthalate	SW8270C	OW-55	2203C69-004C	4.6	10	µg/L	J	MDLRL
Chloroform	SW8260B	OW-54	2203c69-002a	1.6	5.0	µg/L	J	MDLRL
Chloroform	SW8260B	OW-55	2203c69-004a	11	50	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Chloromethane	SW8260B	EB-3-23-22	2203c69-001a	0.70	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	OW-54	2203c69-002a	3.9	15	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	OW-66	2203c69-003a	54	150	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	OW-55	2203c69-004a	40	150	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	OW-56	2203c69-006a	1.6	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	OW-59	2203c69-007a	0.66	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	OW-60	2203c69-008a	0.70	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-16	2203c69-009a	0.78	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	DUP-3-23-22	2203c69-010a	1.8	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	FB-3-23-22	2203c69-011a	0.80	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	Trip Blank	2203c69-012a	0.69	3.0	µg/L	U	MBD, MDLRL
Chromium, Dissolved	E 200.7	OW-60	2203C69-008E	0.0044	0.0060	mg/L	J	MDLRL
Chromium, Total	E 200.7	OW-59	2203C69-007D	0.0028	0.0060	mg/L	J	MDLRL
Chromium, Total	E 200.7	DUP-3-23-22	2203C69-010D	0.0053	0.0060	mg/L	J	MDLRL
Chrysene	SW8270C	MKTF-16	2203c69-009c	ND	0.10	µg/L	UJ	ERPD-LCS
Chrysene	SW8270C	DUP-3-23-22	2203c69-010c	ND	0.10	µg/L	UJ	ERPD-LCS
Cobalt, Dissolved	E 200.7	OW-66	2203C69-003E	0.0053	0.0060	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	OW-59	2203C69-007E	0.0050	0.0060	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	OW-60	2203C69-008E	0.0027	0.0060	mg/L	J	MDLRL
Cobalt, Total	E 200.7	OW-59	2203C69-007D	0.0043	0.0060	mg/L	J	MDLRL
Cyanide, Total	E335.4	OW-54	2203C69-002F	0.00527	0.00500	mg/L	J-	ERPD-MS, LR-MS
Cyanide, Total	E335.4	OW-66	2203C69-003F	0.00756	0.00500	mg/L	J-	ERPD-MS, LR-MS
Cyanide, Total	E335.4	OW-59	2203C69-007F	0.0191	0.00500	mg/L	J-	ERPD-MS, LR-MS
Cyanide, Total	E335.4	OW-60	2203C69-008F	0.00928	0.00500	mg/L	J-	ERPD-MS, LR-MS
Cyanide, Total	E335.4	EB-3-23-22	2203C69-001F	ND	0.00500	mg/L	R	ERPD-MS, LR-MS
Cyanide, Total	E335.4	OW-55	2203C69-004F	ND	0.00500	mg/L	UJ	ERPD-MS, LR-MS
Cyanide, Total	E335.4	OW-13	2203C69-005F	ND	0.00500	mg/L	UJ	ERPD-MS, LR-MS



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Cyanide, Total	E335.4	OW-56	2203C69-006F	ND	0.00500	mg/L	UJ	ERPD-MS, LR-MS
Cyanide, Total	E335.4	DUP-3-23-22	2203C69-010F	ND	0.00500	mg/L	UJ	ERPD-MS, LR-MS
Indeno(1,2,3-cd)pyrene	SW8270C	MKTF-16	2203c69-009c	ND	0.30	µg/L	UJ	ERPD-LCS
Indeno(1,2,3-cd)pyrene	SW8270C	DUP-3-23-22	2203c69-010c	ND	0.30	µg/L	UJ	ERPD-LCS
Isopropylbenzene	SW8260B	OW-66	2203c69-003a	17	50	µg/L	J	MDLRL
Isopropylbenzene	SW8260B	OW-55	2203c69-004a	23	50	µg/L	J	MDLRL
Isopropylbenzene	SW8260B	DUP-3-23-22	2203c69-010a	0.46	1.0	µg/L	J	MDLRL
Lead, Dissolved	E200.8	OW-56	2203C69-006E	0.00015	0.00050	mg/L	J	MDLRL
Lead, Dissolved	E200.8	OW-59	2203C69-007E	0.00061	0.0050	mg/L	J	MDLRL
Lead, Total	E200.8	OW-13	2203C69-005D	0.000067	0.0005	mg/L	J	MDLRL
Lead, Total	E200.8	OW-59	2203C69-007D	0.0020	0.0025	mg/L	J	MDLRL
Mercury, Total	E245.1	OW-54	2203C69-002D	0.00014	0.0002	mg/L	J	MDLRL
Mercury, Total	E245.1	OW-59	2203C69-007D	0.00013	0.0002	mg/L	J	MDLRL
Naphthalene	SW8270C	MKTF-16	2203c69-009c	0.08	0.10	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	OW-66	2203c69-003a	13	150	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-16	2203c69-009a	0.29	3.0	µg/L	J	MDLRL
Nickel, Dissolved	E 200.7	OW-60	2203C69-008E	0.012	0.010	mg/L	JB	EBD
Nickel, Dissolved	E 200.7	OW-13	2203C69-005E	0.0033	0.010	mg/L	U	EBD, MDLRL
Nickel, Dissolved	E 200.7	EB-3-23-22	2203C69-001E	0.0035	0.010	mg/L	J	MDLRL
Nickel, Total	E 200.7	OW-54	2203C69-002D	0.24	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	OW-66	2203C69-003D	0.33	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	OW-55	2203C69-004D	0.24	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	OW-56	2203C69-006D	0.072	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	OW-59	2203C69-007D	0.037	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	OW-60	2203C69-008D	0.084	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	DUP-3-23-22	2203C69-010D	0.26	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	EB-3-23-22	2203C69-001D	ND	0.010	mg/L	UJ	LR-LCS



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Nickel, Total	E 200.7	OW-13	2203C69-005D	ND	0.010	mg/L	UJ	LR-LCS
n-Propylbenzene	SW8260B	OW-54	2203c69-002a	1.2	5.0	µg/L	J	MDLRL
Phenanthrene	SW8270C	MKTF-16	2203c69-009c	ND	0.10	µg/L	UJ	ERPD-LCS
Phenanthrene	SW8270C	DUP-3-23-22	2203c69-010c	ND	0.10	µg/L	UJ	ERPD-LCS
Phenol	SW8270C	OW-59	2203C69-007C	ND	5.0	µg/L	UJ	LR-SUR
Phenol	SW8270C	OW-66	2203C69-003C	46	50	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-16	2203c69-009a	0.21	1.0	µg/L	J	MDLRL
Pyrene	SW8270C	MKTF-16	2203c69-009c	ND	0.20	µg/L	UJ	ERPD-LCS
Pyrene	SW8270C	DUP-3-23-22	2203c69-010c	ND	0.20	µg/L	UJ	ERPD-LCS
sec-Butylbenzene	SW8260B	DUP-3-23-22	2203c69-010a	0.58	1.0	µg/L	J	MDLRL
Selenium, Total	E200.8	OW-56	2203C69-006D	0.00082	0.0010	mg/L	J	MDLRL
Selenium, Total	E200.8	OW-59	2203C69-007D	0.0020	0.0050	mg/L	J	MDLRL
Selenium, Total	E200.8	DUP-3-23-22	2203C69-010D	0.00086	0.001	mg/L	J	MDLRL
Toluene	SW8260B	DUP-3-23-22	2203c69-010a	0.36	1.0	µg/L	J	MDLRL
TPH DRO	SW8015	OW-54	2203C69-002C	2.2	0.064	mg/L	J+	ERPD-LCS, HR-LCS
TPH DRO	SW8015	OW-66	2203C69-003C	6.6	0.64	mg/L	J+	ERPD-LCS, HR-LCS
TPH DRO	SW8015	OW-55	2203C69-004C	3.6	0.064	mg/L	J+	ERPD-LCS, HR-LCS
TPH DRO	SW8015	OW-56	2203C69-006C	1.1	0.064	mg/L	J+	ERPD-LCS, HR-LCS, HR-SUR
TPH DRO	SW8015	OW-59	2203C69-007C	0.49	0.064	mg/L	J+	ERPD-LCS, HR-LCS
TPH DRO	SW8015	OW-60	2203C69-008C	0.092	0.064	mg/L	JB	ERPD-LCS, HR-LCS, MBD
TPH DRO	SW8015	EB-3-23-22	2203C69-001C	0.033	0.064	mg/L	U	ERPD-LCS, HR-LCS, MBD, MDLRL
TPH DRO	SW8015	OW-13	2203C69-005C	0.036	0.064	mg/L	U	ERPD-LCS, HR-LCS, MBD, MDLRL
TPH GRO	SW8015	OW-13	2203c69-005a	0.15	0.050	mg/L	JB	MBD
TPH GRO	SW8015	OW-60	2203c69-008a	0.066	0.050	mg/L	JB	MBD
TPH GRO	SW8015	EB-3-23-22	2203c69-001a	0.034	0.050	mg/L	U	MBD, MDLRL
TPH ORO	SW8015	DUP-3-23-22	2203C69-010C	0.16	0.080	mg/L	JB	MBD



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
TPH ORO	SW8015	OW-56	2203C69-006C	0.24	0.080	mg/L	J+	HR-SUR
Vanadium, Dissolved	E 200.7	OW-66	2203C69-003E	0.0029	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-55	2203C69-004E	0.0039	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-56	2203C69-006E	0.0033	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-59	2203C69-007E	0.0034	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-60	2203C69-008E	0.011	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-54	2203C69-002D	0.015	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-66	2203C69-003D	0.034	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-55	2203C69-004D	0.023	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-13	2203C69-005D	0.0025	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-56	2203C69-006D	0.0083	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-59	2203C69-007D	0.012	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	DUP-3-23-22	2203C69-010D	0.015	0.050	mg/L	J	MDLRL
Vinyl Chloride	SW8260B	MKTF-16	2203c69-009a	0.65	1.0	µg/L	J	MDLRL
Vinyl Chloride	SW8260B	DUP-3-23-22	2203c69-010a	0.46	1.0	µg/L	J	MDLRL
Xylenes, Total	SW8260B	OW-54	2203c69-002a	2.0	7.5	µg/L	J	MDLRL
Zinc, Dissolved	E 200.7	OW-54	2203C69-002E	0.017	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-55	2203C69-004E	0.011	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-56	2203C69-006E	0.012	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-60	2203C69-008E	0.011	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	DUP-3-23-22	2203C69-010E	0.018	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-66	2203C69-003E	0.0081	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	OW-13	2203C69-005E	0.0084	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	OW-59	2203C69-007E	0.0091	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	EB-3-23-22	2203C69-001E	0.0063	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	OW-59	2203C69-007D	0.0064	0.010	mg/L	J	MDLRL





Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental Analysis Laboratory
Project Name: Western Refining Southwest, Q2 GW Sampling	Sample Matrix: Aqueous
Project Number: 697-080-002 Task: 0006	Sample Start Date: 06/21/2022
Date Validated: 09/19/2022	Sample End Date: 06/21/2022
Parameters Included: ▪ Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ 1,2-Dibromoethane (EDB) by EPA Method 504.1 ▪ Semivolatile Organic Compounds (SVOCs) by SW-846 Method 8270C and Method 8270C with Selected Ion Monitoring (SIM) ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015D Modified ▪ Total and Dissolved Metals by EPA Method 200.7 and Method 200.8 ▪ Total and Dissolved Mercury by EPA Method 245.1 ▪ Cyanide by Standard Methods for the Examination of Water and Wastewater (SM) Method 4500 CN E	
Laboratory Project ID: 2206B30	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Charles Ballek, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace National of Mount Juliet, Tennessee, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Field blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
EB-6-21-22	2206B30-001
MKTF-46	2206B30-002
MKTF-18R	2206B30-003
MKTF-35	2206B30-004
MKTF-38	2206B30-005
MKTF-11	2206B30-006
MKTF-16	2206B30-007
FB-6-21-22	2206B30-008
DUP-6-21-22	2206B30-009
Trip Blank	2206B30-010



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ⊗ Laboratory Blanks (Items 11 and 12)
- ✓ MS/MSD (Items 13 and 14)
- ⊗ LCS/LCSD (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ⊗ Field, Equipment, and Trip Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-540-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, April 2022.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit
JB	Estimated concentration due to blank contamination

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 628 data points. The data completeness calculation does not include any submitted blank sample results. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.



VALIDATION CRITERIA CHECKLIST

1. Was the report free of non-conformances identified by the laboratory? No

Comments: The laboratory noted the following analytical non-conformances related to this data set.

Method 8270C: Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene may be reported by either EPA Method 8270 or EPA Method 8270 SIM, depending which method needs the least dilution. In this report naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270 SIM for sample MKTF-18R. Naphthalene and 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270 SIM for sample MKTF-35.

Method 4500CN E: For samples MKTF-18R, MKTF-38, and MKTF-16, analyses were performed from improper containers.

2. Were the data free of data qualification flags and/or notes used by the laboratory? No
If no, define.

Comments: The laboratory used the following data qualification flags with this data set.

J – Analyte detected below quantitation limits.

P – Sample pH not in range.

P1 – RPD value not applicable for sample concentrations less than 5 times the reporting limit.

R – RPD value outside of range.

S – % Recovery outside of range due to dilution or matrix interference.

* – Value exceeds maximum contaminant level.

3. Were sample CoC forms and custody procedures complete? Yes

Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. The laboratory noted that the shipping containers were sealed, and custody seals were present and intact on the shipping containers.

4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Yes

Comments: The detection limits appeared to be acceptable. The following dilutions were applied.

Method	Sample(s)	Analyte(s)	Dilution Factor
200.7	Multiple Samples	Total and/or Dissolved Barium	2
200.8	MKTF-35, MKTF-11, MKTF-16	Select Total and Dissolved Metals	5
8015D	MKTF-18R, MKTF-35, MKTF-11	TPH GRO	10
8260B	MKTF-18R, MKTF-11	Select VOCs	10
8260B	MKTF-35	VOCs	20
8260B	MKTF-18R, MKTF-11	Benzene	100
200.7	MKTF-35	Total Barium	100
8260B	MKTF-35	Benzene and Toluene	200



VALIDATION CRITERIA CHECKLIST	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	No
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions. The CoC requested total and dissolved metals using Method 200.7; however, the laboratory analyzed the samples using both Method 200.7 and Method 200.8. This substituted analytical method, Method 200.8, met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement. The CoC requested cyanide using Method 335.4; however, the laboratory analyzed the samples using Method 4500 CN E. This substituted analytical method met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received on ice, in good condition, and with the cooler temperatures both within and outside the recommended temperature range of 4°C ± 2°C between 0.4°C and 5.3°C as noted on the CoC and the <i>Sample Log-in Check List</i>. Samples transferred to Pace National were received in good condition with the cooler temperature outside the recommended range at 1.1°C as noted on the CoC. The cooler temperatures below 2.0°C were judged as acceptable since the laboratory did not report the sample containers as broken or frozen. A preserved vial was submitted for the Method 8015D GRO analysis for sample MKTF-18R but the pH at the time of analysis was greater than two. Following EPA defined actions, the holding time for this sample was reduced from 14 days to 7 days from sampling to analysis.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were extracted/digested and analyzed within method-specific and reduced holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
Comments: The results were reported in concentration units of micrograms per liter (µg/L) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.	
9. Did the laboratory provide any specific initial and/or continuing calibration results?	No
Comments: Initial and continuing calibration data were not included as part of this data set.	
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?	N/A
Comments: Initial and continuing calibration data were not included as part of this data set.	
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.	
12. Were target analytes reported as not detected in the laboratory blanks?	No
Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exception. TPH DRO was detected in the laboratory blank for Method 8015D batch 68348 at a concentration of 0.021 mg/L. TPH DRO was detected in sample EB-6-21-22 at a concentration less than the laboratory reporting limit and the result was qualified with a U flag. The TPH DRO results for sample DUP-6-21-22 and sample MKTF-46 that were greater than the blank detection and the laboratory reporting limit but less than 10 times the blank concentration were qualified with JB flags. Detections of this analyte in the associated samples greater than ten times the blank concentration did not require qualification.	



VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared/reported for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>MS Sample Source</u>
200.7	Total Metals	68353	Not Prepared
200.7	Dissolved Metals	A88979	Not Prepared
200.7	Dissolved Metals	B88979	DUP-6-21-22
200.8	Total Metals	68353	Not Prepared
200.8	Dissolved Metals	A88981	Not Prepared
245.1	Total and Dissolved Mercury	68333	Not Prepared
504.1	EDB	68319	Not Prepared
4500CN E	Cyanide	WG1886404	MKTF-35
8015D	TPH DRO and MRO	68348	Not Prepared
8015D	TPH GRO	A89029	Not Prepared
8260B	Benzene	A89138	Not Prepared
8260B	VOCs	R89107	Not Prepared
8260B	VOCs	W89041	MKTF-46
8270C and 8270C SIM	SVOCs	68332	Not Prepared

Not Prepared – Matrix spikes were not prepared/reported for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? Yes

Comments: The percent recoveries and RPDs for MS/MSDs prepared from project samples were within data validation and laboratory QC limits.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.



VALIDATION CRITERIA CHECKLIST

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within data validation and laboratory QC limits, with the following exceptions.

Method	Analyte	Batch	LCS Recovery	LCSD Recovery	LCS/LCSD QC Limits	LCS/LCSD RPD	RPD QC Limits
200.7	Total Nickel	68353	53.6%	-----	70-130%	-----	-----
200.8	Total Selenium	68353	131%	-----	70-130%	-----	-----
504.1	EDB	68319	Acceptable	Acceptable	70-130%	21.9%	20%
8015D	TPH DRO	68348	81.2%	89.2%	31.7-75.4%	Acceptable	20%
8270C SIM	1,4-Dioxane	68332	53.0%	55.0%	20.2-48.4%	Acceptable	30.1%
Method	Analyte	Batch	LCS Recovery	LCSD Recovery	LCS/LCSD QC Limits	LCS/LCSD RPD	RPD QC Limits
8270C SIM	Acenaphthene	68332	Acceptable	83.0%	29.8-82.7%	Acceptable	27.8%
8270C SIM	Phenanthrene	68332	Acceptable	94.0%	38.2-93.9%	Acceptable	27.9%

Total nickel results were qualified as J- if detected and UJ if not detected in the associated samples due to evidence of potential low bias.

Analytes with LCS and/or LCSD recoveries greater than the laboratory or data validation QC limits were detected in associated samples and the results were qualified as J+ to indicate estimated concentrations that may be biased high. Non-detections of these analytes in the associated samples did not require qualification.

EDB was not detected in the associated samples and the results were qualified UJ due to evidence of poor precision.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries were within laboratory QC limits, with the following exceptions.

Since Method 8270C and Method 8270C SIM surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the samples MKTF-46 and MKTF-35 Method 8270C analyses.

The Method 8015D surrogate BFB was recovered in sample MKTF-35 outside the acceptance limits of 70-130% at 151%. The target analyte, TPH GRO, associated with this surrogate was detected in sample MKTF-35, and the result was assigned a J+ qualifier due to evidence of potential high bias.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the number of samples. One trip blank sample, Trip Blank, one field blank sample, FB-6-21-22, and one equipment blank sample, EB 6-21-22, were collected as part of this sample set.



VALIDATION CRITERIA CHECKLIST

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were not detected in the trip blank, field blank, and equipment blank samples with the following exceptions.

<u>Blank Sample ID</u>	<u>Method</u>	<u>Analyte</u>	<u>Concentration</u>
FB-6-21-22	8260B	Acetone	3.6 µg/L
EB-6-21-22	8260B	Acetone	3.2 µg/L
EB-6-21-22	8260B	Methylene Chloride	0.80 µg/L
EB-6-21-22	8015D	TPH DRO	0.041 mg/L
EB-6-21-22	200.7	Dissolved Zinc	0.0075 mg/L

Detections of acetone and dissolved zinc in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of dissolved zinc in the associated samples that were greater than the reporting limits but less than 10 times the blank result were assigned JB qualifiers. Non-detections of these analytes in the associated samples did not require qualification.

The TPH DRO results in batch 68348 were previously qualified due to laboratory blank contamination; therefore, additional qualification due to the equipment blank contamination was not required.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples. Sample DUP-6-21-22 was collected as a field duplicate of sample MKTF-46.

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? No

Comments: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples, with the following exception.

The RPD value for TPH DRO exceeded the data validation limit of 30% at 96.3%, which was evidence of poor precision. The TPH DRO results were qualified as J for samples MKTF-46 and DUP-6-21-22.

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? N/A

Comments: Laboratory duplicates were prepared for the analysis of cyanide in batch WG1886404 from samples not associated with this data set.

The RPD values for the laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.



VALIDATION CRITERIA CHECKLIST

23. Were the following data relationships realistic?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270)? N/A

Comments: Target analytes were not reported by more than one method in this data set.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? No

Comments: The following table contains the exceptions in which the dissolved metals results exceeded the total metals results. The EPA has not provided guidance or requirements for the evaluation, validation, and qualification of dissolved metals results that exceed the corresponding total metals results. Therefore, qualification of results was not performed based on these data.

<u>Sample ID</u>	<u>Analyte</u>	<u>Total Result (mg/L)</u>	<u>Dissolved Result (mg/L)</u>
MKTF-35	Antimony	ND	0.00076
MKTF-16	Antimony	ND	0.00070
MKTF-18R	Arsenic	0.0065	0.0085
MKTF-11	Nickel	0.022	0.025
MKTF-46	Silver	ND	0.0032
MKTF-18R	Silver	ND	0.0016
MKTF-35	Silver	ND	0.0028
MKTF-38	Silver	ND	0.0027
MKTF-11	Silver	ND	0.0029
<u>Sample ID</u>	<u>Analyte</u>	<u>Total Result (mg/L)</u>	<u>Dissolved Result (mg/L)</u>
DUP-6-21-22	Silver	ND	0.0034
MKTF-11	Vanadium	ND	0.0030
EB-6-21-22	Zinc	ND	0.0075
MKTF-46	Zinc	0.0048	0.0084
MKTF-18R	Zinc	0.0044	0.0099
DUP-6-21-22	Zinc	0.0040	0.0071



FIELD DUPLICATE SUMMARY

Client Sample ID: MKTF-46 Field Duplicate Sample ID: DUP-6-21-22				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
1,4-Dioxane	SW8270C	1.5 µg/L	1.7 µg/L	12.5% +/-RL
Phenanthrene	SW8270C	0.22 µg/L	ND (0.30 µg/L)	DL
TPH GRO	SW8015	0.016 mg/L	ND (0.050 mg/L)	DL
TPH DRO	SW8015	0.070 mg/L	0.20 mg/L	96.3%
Barium, Dissolved	E 200.7	0.037 mg/L	0.037 mg/L	0.0%
Barium, Total	E 200.7	0.080 mg/L	0.080 mg/L	0.0%
Chromium, Total	E 200.7	0.0021 mg/L	0.0023 mg/L	9.1% +/-RL
Silver, Dissolved	E 200.7	0.0032 mg/L	0.0034 mg/L	6.1% +/-RL
Vanadium, Dissolved	E 200.7	0.0040 mg/L	0.0042 mg/L	4.9% +/-RL
Vanadium, Total	E 200.7	0.0040 mg/L	0.0044 mg/L	9.5% +/-RL
Zinc, Dissolved	E 200.7	0.0084 mg/L	0.0071 mg/L	16.8% +/-RL
Zinc, Total	E 200.7	0.0048 mg/L	0.0040 mg/L	18.2% +/-RL
Arsenic, Dissolved	E200.8	0.00066 mg/L	0.00062 mg/L	6.3% +/-RL
Arsenic, Total	E200.8	0.00086 mg/L	0.00078 mg/L	9.8% +/-RL
Lead, Total	E200.8	0.0014 mg/L	0.0014 mg/L	0.0%
Selenium, Total	E200.8	0.00045 mg/L	0.00051 mg/L	12.5% +/-RL
Mercury, Total	E245.1	0.00013 mg/L	0.00013 mg/L	0.0% +/-RL
Field duplicate RPD control limits are not to exceed 30% for water as established by USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020. DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL). +/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required. The RPD value for TPH DRO exceeded the data validation limit of 30% at 96.3%, which was evidence of poor precision. The TPH DRO results were qualified as J for samples MKTF-46 and DUP-6-21-22.				

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
MBD	Method blank detection
HR-LCS	The LCS and/or LCSD percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-LCS	The LCS and/or LCSD percent recovery was less than the lower acceptable limit indicating a possible low bias.
ERPD-LCS	The LCS/LCSD RPD exceeded the upper acceptable limit indicating poor precision.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
EBD	Equipment blank detection
FBD	Field blank detection
ERPD-FD	High field duplicate RPD.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1,1-Trichloroethane	SW8260B	MKTF-16	2206b30-007a	0.95	1.0	µg/L	J	MDLRL
1,1-Dichloroethene	SW8260B	MKTF-38	2206b30-005a	0.31	1.0	µg/L	J	MDLRL
1,2-Dibromoethane	E504.1	EB-6-21-22	2206B30-001B	ND	0.0094	µg/L	UJ	ERPD-LCS
1,2-Dibromoethane	E504.1	MKTF-46	2206B30-002B	ND	0.0093	µg/L	UJ	ERPD-LCS
1,2-Dibromoethane	E504.1	MKTF-18R	2206B30-003B	ND	0.0094	µg/L	UJ	ERPD-LCS
1,2-Dibromoethane	E504.1	MKTF-35	2206B30-004B	ND	0.0094	µg/L	UJ	ERPD-LCS
1,2-Dibromoethane	E504.1	MKTF-38	2206B30-005B	ND	0.0095	µg/L	UJ	ERPD-LCS
1,2-Dibromoethane	E504.1	MKTF-11	2206B30-006B	ND	0.0094	µg/L	UJ	ERPD-LCS
1,2-Dibromoethane	E504.1	MKTF-16	2206B30-007B	ND	0.0095	µg/L	UJ	ERPD-LCS
1,2-Dibromoethane	E504.1	DUP-6-21-22	2206B30-009B	ND	0.0094	µg/L	UJ	ERPD-LCS
1,4-Dioxane	SW8270C	MKTF-46	2206b30-002c	1.5	1.0	µg/L	J+	HR-LCS
1,4-Dioxane	SW8270C	MKTF-18R	2206B30-003C	13	1.0	µg/L	J+	HR-LCS
1,4-Dioxane	SW8270C	MKTF-35	2206B30-004C	2.0	1.0	µg/L	J+	HR-LCS



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,4-Dioxane	SW8270C	MKTF-38	2206b30-005c	3.6	1.0	µg/L	J+	HR-LCS
1,4-Dioxane	SW8270C	MKTF-11	2206b30-006c	6.6	1.0	µg/L	J+	HR-LCS
1,4-Dioxane	SW8270C	MKTF-16	2206b30-007c	1.4	1.0	µg/L	J+	HR-LCS
1,4-Dioxane	SW8270C	DUP-6-21-22	2206b30-009c	1.7	1.0	µg/L	J+	HR-LCS
1-Methylnaphthalene	SW8270C	MKTF-16	2206b30-007c	0.16	0.3	µg/L	J	MDLRL
2-Methylphenol	SW8270C	MKTF-18R	2206b30-003c	7.3	10	µg/L	J	MDLRL
Acenaphthene	SW8270C	MKTF-18R	2206B30-003C	6.3	0.30	µg/L	J+	HR-LCS
Acenaphthene	SW8270C	MKTF-35	2206B30-004C	1.6	0.30	µg/L	J+	HR-LCS
Acenaphthene	SW8270C	MKTF-11	2206b30-006c	0.44	0.30	µg/L	J+	HR-LCS
Acetone	SW8260B	EB-6-21-22	2206b30-001a	3.2	10	µg/L	U	FBD, MDLRL
Acetone	SW8260B	MKTF-38	2206b30-005a	5.4	10	µg/L	U	FBD, MDLRL
Acetone	SW8260B	MKTF-16	2206b30-007a	4.0	10	µg/L	U	FBD, MDLRL
Acetone	SW8260B	FB-6-21-22	2206b30-008a	3.6	10	µg/L	J	MDLRL
Antimony, Dissolved	E200.8	MKTF-35	2206B30-004E	0.00076	0.0010	mg/L	J	MDLRL
Antimony, Dissolved	E200.8	MKTF-16	2206B30-007E	0.00070	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	MKTF-46	2206B30-002E	0.00066	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	DUP-6-21-22	2206B30-009E	0.00062	0.0010	mg/L	J	MDLRL
Arsenic, Total	E200.8	MKTF-46	2206B30-002D	0.00086	0.0010	mg/L	J	MDLRL
Arsenic, Total	E200.8	DUP-6-21-22	2206B30-009D	0.00078	0.0010	mg/L	J	MDLRL
Benzo(a)anthracene	SW8270C	MKTF-18R	2206B30-003C	0.16	0.30	µg/L	J	MDLRL
Chromium, Total	E 200.7	MKTF-46	2206B30-002D	0.0021	0.0060	mg/L	J	MDLRL
Chromium, Total	E 200.7	MKTF-18R	2206B30-003D	0.0028	0.0060	mg/L	J	MDLRL
Chromium, Total	E 200.7	DUP-6-21-22	2206B30-009D	0.0023	0.0060	mg/L	J	MDLRL
cis-1,2-Dichloroethene	SW8260B	MKTF-18R	2206b30-003a	5.7	10	ug/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-18R	2206B30-003D	0.0051	0.0060	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-11	2206B30-006D	0.0049	0.0060	mg/L	J	MDLRL
Isopropylbenzene	SW8260B	MKTF-18R	2206b30-003a	5.0	10	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Isopropylbenzene	SW8260B	MKTF-16	2206b30-007a	0.48	1.0	µg/L	J	MDLRL
Lead, Dissolved	E200.8	MKTF-35	2206B30-004E	0.00021	0.00050	mg/L	J	MDLRL
Lead, Dissolved	E200.8	MKTF-38	2206B30-005E	0.0001	0.00050	mg/L	J	MDLRL
Lead, Dissolved	E200.8	MKTF-16	2206B30-007E	0.00017	0.00050	mg/L	J	MDLRL
Mercury, Total	E245.1	MKTF-46	2206B30-002D	0.00013	0.00020	mg/L	J	MDLRL
Mercury, Total	E245.1	DUP-6-21-22	2206B30-009D	0.00013	0.00020	mg/L	J	MDLRL
Methylene Chloride	SW8260B	EB-6-21-22	2206b30-001a	0.80	3.0	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-18R	2206b30-003a	3.7	30	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-35	2206b30-004a	8.0	60	µg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-18R	2206B30-003E	0.0062	0.010	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-38	2206B30-005E	0.0059	0.010	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-16	2206B30-007E	0.0054	0.010	mg/L	J	MDLRL
Nickel, Total	E 200.7	MKTF-35	2206B30-004D	0.066	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	MKTF-38	2206B30-005D	0.011	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	MKTF-11	2206B30-006D	0.022	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	MKTF-16	2206B30-007D	0.032	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	EB-6-21-22	2206B30-001D	ND	0.010	mg/L	UJ	LR-LCS
Nickel, Total	E 200.7	MKTF-46	2206B30-002D	ND	0.010	mg/L	UJ	LR-LCS
Nickel, Total	E 200.7	DUP-6-21-22	2206B30-009D	ND	0.010	mg/L	UJ	LR-LCS
Nickel, Total	E 200.7	MKTF-18R	2206B30-003D	0.0079	0.010	mg/L	J-	LR-LCS, MDLRL
n-Propylbenzene	SW8260B	MKTF-18R	2206b30-003a	5.6	10	µg/L	J	MDLRL
Phenanthrene	SW8270C	MKTF-18R	2206B30-003C	6.7	0.30	µg/L	J+	HR-LCS
Phenanthrene	SW8270C	MKTF-35	2206B30-004C	0.38	0.30	µg/L	J+	HR-LCS
Phenanthrene	SW8270C	MKTF-11	2206b30-006c	0.38	0.30	µg/L	J+	HR-LCS
Phenanthrene	SW8270C	MKTF-46	2206b30-002c	0.22	0.30	µg/L	J+	HR-LCS, MDLRL
p-Isopropyltoluene	SW8260B	MKTF-18R	2206b30-003a	2.7	10	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-35	2206b30-004a	6.1	20	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
sec-Butylbenzene	SW8260B	MKTF-18R	2206b30-003a	2.6	10	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-35	2206b30-004a	5.4	20	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-11	2206b30-006a	5.7	10	µg/L	J	MDLRL
Selenium, Dissolved	E200.8	MKTF-16	2206B30-007E	0.00049	0.0010	mg/L	J	MDLRL
Selenium, Total	E200.8	MKTF-35	2206B30-004D	0.018	0.0050	mg/L	J+	HR-LCS
Selenium, Total	E200.8	MKTF-38	2206B30-005D	0.0035	0.0010	mg/L	J+	HR-LCS
Selenium, Total	E200.8	MKTF-16	2206B30-007D	0.0058	0.0010	mg/L	J+	HR-LCS
Selenium, Total	E200.8	MKTF-46	2206B30-002D	0.00045	0.0010	mg/L	J+	HR-LCS, MDLRL
Selenium, Total	E200.8	MKTF-18R	2206B30-003D	0.00075	0.0010	mg/L	J+	HR-LCS, MDLRL
Selenium, Total	E200.8	MKTF-11	2206B30-006D	0.00047	0.0010	mg/L	J+	HR-LCS, MDLRL
Selenium, Total	E200.8	DUP-6-21-22	2206B30-009D	0.00051	0.0010	mg/L	J+	HR-LCS, MDLRL
Silver, Dissolved	E 200.7	MKTF-46	2206B30-002E	0.0032	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-18R	2206B30-003E	0.0016	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-35	2206B30-004E	0.0028	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-38	2206B30-005E	0.0027	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-11	2206B30-006E	0.0029	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	DUP-6-21-22	2206B30-009E	0.0034	0.0050	mg/L	J	MDLRL
TPH DRO	SW8015	MKTF-18R	2206B30-003C	3.5	0.064	mg/L	J+	HR-LCS
TPH DRO	SW8015	MKTF-35	2206B30-004C	3.2	0.064	mg/L	J+	HR-LCS
TPH DRO	SW8015	MKTF-38	2206B30-005C	0.22	0.064	mg/L	J+	HR-LCS
TPH DRO	SW8015	MKTF-11	2206B30-006C	1.3	0.064	mg/L	J+	HR-LCS
TPH DRO	SW8015	EB-6-21-22	2206B30-001C	0.041	0.064	mg/L	U	HR-LCS, MBD, MDLRL
TPH DRO	SW8015	MKTF-46	2206B30-002C	0.07	0.064	mg/L	JB	ERPD-FD, HR-LCS, MBD
TPH DRO	SW8015	DUP-6-21-22	2206B30-009C	0.20	0.064	mg/L	JB	ERPD-FD, HR-LCS, MBD
TPH GRO	SW8015	MKTF-35	2206b30-004a	64	0.50	mg/L	J+	HR-SUR
TPH GRO	SW8015	MKTF-46	2206b30-002a	0.016	0.050	mg/L	J	MDLRL
TPH GRO	SW8015	MKTF-38	2206b30-005a	0.034	0.050	mg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Trichloroethene	SW8260B	MKTF-38	2206b30-005a	0.47	1.0	µg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-46	2206B30-002E	0.0040	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-18R	2206B30-003E	0.0024	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-35	2206B30-004E	0.0029	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-38	2206B30-005E	0.0039	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-11	2206B30-006E	0.0030	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-16	2206B30-007E	0.0038	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	DUP-6-21-22	2206B30-009E	0.0042	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-46	2206B30-002D	0.004	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-18R	2206B30-003D	0.011	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-38	2206B30-005D	0.026	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	DUP-6-21-22	2206B30-009D	0.0044	0.050	mg/L	J	MDLRL
Vinyl Chloride	SW8260B	MKTF-16	2206b30-007a	0.93	1.0	µg/L	J	MDLRL
Zinc, Dissolved	E 200.7	MKTF-35	2206B30-004E	0.016	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-38	2206B30-005E	0.012	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-11	2206B30-006E	0.018	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-16	2206B30-007E	0.034	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-46	2206B30-002E	0.0084	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-18R	2206B30-003E	0.0099	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	DUP-6-21-22	2206B30-009E	0.0071	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	EB-6-21-22	2206B30-001E	0.0075	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	MKTF-46	2206B30-002D	0.0048	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	MKTF-18R	2206B30-003D	0.0044	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	DUP-6-21-22	2206B30-009D	0.0040	0.010	mg/L	J	MDLRL





Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental Analysis Laboratory
Project Name: Western Refining Southwest, Q1 GW Sampling	Sample Matrix: Groundwater
Project Number: 697-080-002 Task: 0006	Sample Start Date: 03/15/2022
Date Validated: 04/04/2022	Sample End Date: 03/15/2022
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ 1,2-Dibromoethane (EDB) by EPA Method 504.1 ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C and Method 8270C with Selected Ion Monitoring (SIM) ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015D Modified ▪ Total and Dissolved Metals by EPA Method 200.7 and Method 200.8 ▪ Total and Dissolved Mercury by EPA Method 245.1 ▪ Cyanide by Standard Methods for the Examination of Water and Wastewater (SM) Method 4500 CN E	
Laboratory Project ID: 2203825	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical National of Mount Juliet, Tennessee evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Field blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
EB 3-15-22	2203825-001
OW-1	2203825-002
MKTF-17R	2203825-003
MKTF-18R	2203825-004
MKTF-38	2203825-005
MKTF-04R	2203825-006
MKTF-11	2203825-007
MKTF-10	2203825-008
FB 3-15-22	2203825-009
DUP-3-15-22	2203825-010
Trip Blank	2203825-011



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ⊗ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ⊗ LCS/LCSD (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ⊗ Field, Equipment, and Trip Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-540-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit
JB	Estimated concentration due to blank contamination
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 720 data points. The data completeness calculation does not include submitted blank sample results. Three data points were rejected. The data completeness measure for this data package is calculated to be 99.58% and is acceptable.



VALIDATION CRITERIA CHECKLIST

1. Was the report free of non-conformances identified by the laboratory? No

Comments: The laboratory noted the following analytical non-conformance related to this data set.

Method 8270: "S" flagged surrogates denote low surrogate recoveries due to matrix interferences/sample dilution.

2. Were the data free of data qualification flags and/or notes used by the laboratory? No
If no, define.

Comments: The laboratory used the following data qualification flags with this data set.

D – Sample diluted due to matrix.

J – Analyte detected below quantitation limits

J6 – The sample matrix interfered with the ability to make any accurate determination; spike value is low.

S – % Recovery outside of range due to dilution or matrix interference.

* – Value exceeds maximum contaminant level.

3. Were sample CoC forms and custody procedures complete? Yes

Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by courier, and custody was maintained at all times.

4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Yes

Comments: The detection limits appeared to be acceptable. The following dilutions were applied.

<u>Method</u>	<u>Sample(s)</u>	<u>Analyte(s)</u>	<u>Dilution Factor</u>
200.8	MKTF-38	Dissolved Barium	5
200.8	MKTF-11, MKTF-10, OW-1	Select Total Metals	5
8015D	MKTF-04R	GRO	5
8260B	MKTF-04R	VOCs	5
200.8	MKTF-17R	Dissolved Barium	10
8015D	Multiple Samples	DRO, MRO, GRO	10
8260B	Multiple Samples	VOCs	10
8270 SIM	MKTF-04R	1,4-Dioxane	10
200.8	MKTF-38, MKTF-17R	Total Barium	20
200.8	MKTF-04R	Dissolved Barium	20
200.8	MKTF-18R, MKTF-04R	Total Barium	50
200.8	MKTF-18R	Dissolved Barium	50
8260B	MKTF-04R	Benzene	50
8260B	Multiple Samples	Select VOCs	100
200.8	MKTF-11	Dissolved and Total Barium	200
200.8	MKTF-10	Dissolved and Total Barium	500
8260B	MKTF-17R	Toluene	1,000

VALIDATION CRITERIA CHECKLIST	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	No
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions. The CoC requested total and dissolved metals using Method 200.7; however, the laboratory analyzed the samples using both Method 200.7 and Method 200.8. This substituted analytical method, Method 200.8, met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement. The CoC requested cyanide using Method 335.4; however, the laboratory analyzed the samples using Method 4500 CN E. This substituted analytical method met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received on ice, in good condition, and with the cooler temperatures outside the recommended temperature range of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ between -0.1°C and 1.0°C as noted on the CoC and the <i>Sample Log-in Check List</i>. The cooler temperatures below 2.0°C were judged as acceptable since the laboratory did not report the sample containers as broken or frozen. Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 3.0°C as noted on the CoC.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were extracted/digested and analyzed within method-specific holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
Comments: The results were reported in concentration units of micrograms per liter ($\mu\text{g/L}$) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.	
9. Did the laboratory provide any specific initial and/or continuing calibration results?	No
Comments: Initial and continuing calibration data were not included as part of this data set.	
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?	N/A
Comments: Initial and continuing calibration data were not included as part of this data set.	
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.	



VALIDATION CRITERIA CHECKLIST

12. Were target analytes reported as not detected in the laboratory blanks? No

Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exceptions.

Method	Analyte	Batch	Concentration
8015D	DRO	66219	0.018 mg/L
8015D	DRO	66236	0.030 mg/L
8260B	Chloromethane	R86601	0.66 µg/L
8260B	Chloromethane	R86626	0.68 µg/L
8270 SIM	Pyrene	R86628	0.22 µg/L
Method	Analyte	Batch	Concentration
8015D	GRO	R86601	0.044 mg/L
8015D	GRO	G86626	0.034 mg/L

Detections of the identified analytes in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of the identified analytes in the associated samples that were greater than the reporting limits but less than or equal to 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared/reported for all analyses and/or batch. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
200.7	Dissolved Metals	A86535	EB 3-15-22
200.8	Total Metals	66254	EB 3-15-22, OW-1
200.8	Dissolved Metals	A86624	MKTF-11, MKTF-10
200.8	Dissolved Metals	B86600	Not Prepared
245.1	Dissolved and Total Mercury	66284	DUP-3-15-22
504.1	EDB	66256	Not Prepared
4500CN E	Cyanide	WG1835677	Not Associated, MKTF-04R
8015D	TPH DRO and MRO	66219	Not Prepared
8015D	TPH DRO and MRO	66236	Not Prepared
8015D	TPH GRO	G86626	Not Prepared
8015D	TPH GRO	R86601	Not Prepared
8260B	VOCs	R86601	Not Prepared
8260B	VOCs	R86626	Not Prepared
8270C	SVOCs	66226	Not Prepared
8270C SIM	SVOCs	R86628	Not Prepared
8270C SIM	1,4-Dioxane	R86665	Not Prepared

Not Associated – The MS sample source was not associated with this project.

Not Prepared – Matrix spikes were not prepared/reported for this batch.

VALIDATION CRITERIA CHECKLIST

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The MS/MSD percent recoveries and RPDs for project samples were within data validation and laboratory QC limits, with the following exception.

The MSD recovery for cyanide in Method 4500CN E batch WG1835677 (R86794) was outside the data validation QC limits of 75-125% at 74.8%. Cyanide results were qualified as J- if detected and UJ if not detected in the associated samples due to evidence of potential low bias.

The percent recoveries and RPD values for MS/MSDs prepared from non-project samples were evaluated and considered but data were not qualified based on those results since matrix similarity to project samples could not be guaranteed.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within data validation and laboratory QC limits, with the following exception.

The LCS recovery for DRO in Method 8015D batch 66219 was outside the acceptance limits of 31.7-75.4% at 77.8%. DRO was detected in the associated samples, and these results were qualified as J+ due to potential high bias.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries were within laboratory QC limits, with the following exceptions.

Method	Surrogate	Sample	Surrogate Recovery	QC Limits
8270C	2-Fluorophenol	MKTF-17R	0.0%	29.4-87.7%
8270C	Phenol-d ₅	MKTF-17R	27.3%	28.5-64.7%
8270C	Phenol-d ₅	MKTF-11	26.9%	28.5-64.7%
8270C	2,4,6-Tribromophenol	MKTF-11	12.6%	18.6-129%
8270C	2-Fluorophenol	MKTF-10	0.0%	29.4-87.7%
8270C	Phenol-d ₅	MKTF-10	24.7%	28.5-64.7%
8270C	2,4,6-Tribromophenol	MKTF-10	1.8%	18.6-129%

Since Method 8270 surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the sample DUP-3-15-22, and qualification of sample data was not required.

For samples MKTF-17R and MKTF-11, two or three of the three acid extractable surrogates reported recoveries above 10%. Therefore, the associated target analytes in these samples with surrogate recoveries that were less than the lower laboratory QC limits were qualified as J- if detected and UJ if not detected due to potential low bias.

For sample MKTF-10, two of the three acid extractable surrogates were recovered below 10%. The target analytes associated with surrogate recoveries that were less than 10% were qualified as R if not detected in the identified samples indicating rejected results, data not usable due to evidence of extreme low bias. The detected results were qualified as J- for sample MKTF-10 due to potential low bias.

The DRO and MRO results for samples MKTF-17R and MKTF-18R were not qualified based on the surrogate non-conformances in the Method 8015D analyses since the applied dilutions of 10 times resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.



VALIDATION CRITERIA CHECKLIST	
18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	Yes
Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the number of samples. One trip blank sample, Trip Blank, one field blank sample, FB 3-15-22, and one equipment blank sample, EB 3-15-22, were collected as part of this sample set.	

VALIDATION CRITERIA CHECKLIST

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were not detected in the trip blank, field blank, and equipment blank samples with the following exceptions.

<u>Blank Sample ID</u>	<u>Method</u>	<u>Analyte</u>	<u>Concentration</u>
Trip Blank	8260B	GRO	0.035 mg/L
Trip Blank	8260B	Chloromethane	0.66 µg/L
FB 3-15-22	8260B	1,1-Dichloroethene	0.57 µg/L
FB 3-15-22	8260B	2-Butanone	7.9 µg/L
FB 3-15-22	8260B	Chloromethane	0.89 µg/L
EB 3-15-22	200.7	Dissolved Zinc	0.0063 mg/L
EB 3-15-22	200.8	Dissolved Barium	0.00082 mg/L
EB 3-15-22	8015D	DRO	0.026 mg/L
EB 3-15-22	8015D	GRO	0.037 mg/L
EB 3-15-22	8260B	2-Butanone	7.30 µg/L
EB 3-15-22	8260B	Benzene	0.23 µg/L
EB 3-15-22	8260B	Chloromethane	0.91 µg/L

Detections of the identified analytes in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of dissolved zinc in the associated samples that were greater than or equal to the reporting limits but less than 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.

The chloromethane, DRO, and GRO results were previously qualified due to laboratory blank contamination; therefore, additional qualification due to the trip, field, and equipment blank contamination was not required.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples. Sample DUP-3-15-22 was collected as a field duplicate of sample OW-1.

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? No

Comments: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples, with the following exceptions.

RPD values could not be calculated for 1-methylnaphthalene and 2-methylnaphthalene for the field duplicate pair OW-1 and DUP-3-15-22 since the analytes were detected in the parent sample and were undetected in the duplicate sample. As the detections in the parent sample were greater than two times the reporting limits, 1-methylnaphthalene and 2-methylnaphthalene were qualified as J and UJ for the parent and duplicate samples, respectively.



VALIDATION CRITERIA CHECKLIST

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? N/A

Comments: Laboratory duplicates were prepared for the analysis of cyanide in batch WG1835677 from sample EB 3-15-22 and from a sample not associated with this data set.

The RPD for the laboratory duplicate prepared from a project sample was not applicable since the results for one or both measurements were within 5 times the reporting limit.

The RPD value for the laboratory duplicate sample prepared from a non-project sample was evaluated and considered, but data were not qualified based on this result since matrix similarity to project samples could not be guaranteed.

23. Were the following data relationships realistic and acceptable?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement? Yes

Comments: Target analytes were not reported by more than one method in this data set, with the following exception.

The target analyte 1,2-dibromoethane (EDB) was reported from analyses by both Method 8260B and Method 504.1. This analyte was reported as not detected by both methods.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? No

Comments: The total metals concentrations were greater than or equal to the dissolved fractions, with the following exceptions.

Sample ID	Analyte	Total Result	Dissolved Result	Reporting Limit	Units	RPD
OW-1	Mercury	ND	0.00036	0.00020	mg/L	----- ♦
MKTF-10	Barium	7.9	8.7	0.50	mg/L	9.6%
DUP-3-15-22	Barium	0.041	0.044	0.0010	mg/L	7.1%
EB 3-15-22	Barium	ND	0.00082	0.0010	mg/L	----- ♦
OW-1	Barium	0.044	0.046	0.0050 / 0.0010	mg/L	4.4%
MKTF-11	Cobalt	0.0039	0.0058	0.0050 / 0.0060	mg/L	♦
MKTF-17R	Cobalt	0.0023	0.0033	0.0010 / 0.0060	mg/L	♦
MKTF-11	Selenium	ND	0.00046	0.0050 / 0.0010	mg/L	----- ♦
DUP-3-15-22	Selenium	0.0022	0.0028	0.0010	mg/L	♦
MKTF-18R	Zinc	0.0093	0.010	0.010	mg/L	♦
DUP-3-15-22	Zinc	ND	0.0077	0.010	mg/L	----- ♦
EB 3-15-22	Zinc	ND	0.0063	0.010	mg/L	----- ♦
OW-1	Zinc	ND	0.0094	0.010	mg/L	----- ♦

----- RPD could not be calculated.

♦ = One or both of the detections were less than 5 times the applicable reporting limits, and qualification of data was not required.

The differences for the corresponding analytical results were within five times the applicable reporting limits and validation action was not required, or the RPDs between the results were less than 30% indicating that the data were within the measurement uncertainty for the methods, and qualification of results was not required based on the analytical inconsistencies.

FIELD DUPLICATE SUMMARY

Client Sample ID: OW-1 Field Duplicate Sample ID: DUP-3-15-22				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Vanadium, Dissolved	E 200.7	0.041 mg/L	0.044 mg/L	7.1% +/-RL
Zinc, Dissolved	E 200.7	0.0094 mg/L	0.0077 mg/L	19.9% +/-RL
Arsenic, Dissolved	E200.8	0.00052 mg/L	0.00068 mg/L	26.7% +/-RL
Arsenic, Total	E200.8	0.00069 mg/L	0.00080 mg/L	14.8% +/-RL
Barium, Dissolved	E200.8	0.046 mg/L	0.044 mg/L	4.4%
Barium, Total	E200.8	0.044 mg/L	0.041 mg/L	7.1%
Chromium, Dissolved	E200.8	0.00052 mg/L	0.00051 mg/L	1.9% +/-RL
Chromium, Total	E200.8	0.0031 mg/L	0.0031 mg/L	0.0%
Lead, Dissolved	E200.8	0.000077 mg/L	ND (0.00050 mg/L)	DL
Lead, Total	E200.8	0.00019 mg/L	0.00018 mg/L	5.4% +/-RL
Nickel, Dissolved	E200.8	0.00052 mg/L	0.00062 mg/L	17.5% +/-RL
Nickel, Total	E200.8	0.0021 mg/L	0.0022 mg/L	4.7%
Selenium, Dissolved	E200.8	0.0027 mg/L	0.0028 mg/L	3.6%
Selenium, Total	E200.8	0.0027 mg/L	0.0022 mg/L	20.4%
Vanadium, Total	E200.8	0.044 mg/L	0.045 mg/L	2.2%
Mercury, Dissolved	E245.1	0.00036 mg/L	ND (0.00020 mg/L)	DL
TPH DRO	SW8015	0.022 mg/L	0.026 mg/L	16.7% +/-RL
TPH GRO	SW8015	0.041 mg/L	0.036 mg/L	13.0% +/-RL
1,2-Dichloroethane	SW8260B	0.42 µg/L	0.41 µg/L	2.4% +/-RL
Chloromethane	SW8260B	0.77 µg/L	0.75 µg/L	2.6% +/-RL
MTBE	SW8260B	2.3 µg/L	2.3 µg/L	0.0%
1,4-Dioxane	SW8270C	0.20 µg/L	ND (1.0 µg/L)	DL
1-Methylnaphthalene	SW8270C	0.28 µg/L	ND (0.10 µg/L)	DL
2-Methylnaphthalene	SW8270C	0.40 µg/L	ND (0.10 µg/L)	DL
Naphthalene	SW8270C	0.14 µg/L	ND (0.10 µg/L)	DL
Phenanthrene	SW8270C	0.080 µg/L	ND (0.10 µg/L)	DL
Pyrene	SW8270C	0.24 µg/L	ND (0.40 µg/L)	DL
Field duplicate RPD control limits are not to exceed 30% for water as established by USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020. DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL). +/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required. RPD values could not be calculated for 1-methylnaphthalene and 2-methylnaphthalene since the analytes were detected in the parent sample and were undetected in the duplicate sample. As the detections in the parent sample were greater than two times the reporting limits, 1-methylnaphthalene and 2-methylnaphthalene were qualified as J and UJ for the parent and duplicate samples, respectively.				



DATA QUALIFICATION SUMMARY

Abbreviation	Reason
HR-LCS	The LCS and/or LCSD percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-MS	The MS and/or MSD percent recovery was less than the lower acceptable limit indicating possible matrix interference.
LR-SUR	The surrogate percent recovery was less than the lower acceptable limit indicating a possible low bias.
EBD	Equipment blank detection
FBD	Field blank detection
ERPD-FD	High field duplicate RPD.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1-Dichloroethane	SW8260B	MKTF-17R	2203825-003a	7.5	10	µg/L	J	MDLRL
1,1-Dichloroethene	SW8260B	MKTF-38	2203825-005a	0.61	1	µg/L	U	FBD, MDLRL
1,1-Dichloroethene	SW8260B	FB 3-15-22	2203825-009a	0.57	1	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	OW-1	2203825-002a	0.42	1	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-17R	2203825-003a	4.2	10	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-38	2203825-005a	0.41	1	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-04R	2203825-006a	2.8	5	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-11	2203825-007a	4.3	10	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-10	2203825-008a	4.1	10	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	DUP-3-15-22	2203825-010a	0.41	1	µg/L	J	MDLRL
1,4-Dioxane	SW8270C	OW-1	2203825-002c	0.2	1	µg/L	J	MDLRL
1-Methylnaphthalene	SW8270C	OW-1	2203825-002c	0.28	0.1	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8270C	DUP-3-15-22	2203825-010c	ND	0.1	µg/L	UJ	ERPD-FD
2,4,6-Trichlorophenol	SW8270C	MKTF-17R	2203825-003c	ND	5	µg/L	UJ	LR-SUR
2,4,6-Trichlorophenol	SW8270C	MKTF-11	2203825-007c	ND	5	µg/L	UJ	LR-SUR
2,4,6-Trichlorophenol	SW8270C	MKTF-10	2203825-008c	ND	5	µg/L	R	LR-SUR



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2,4-Dimethylphenol	SW8270C	MKTF-17R	2203825-003c	ND	5	µg/L	UJ	LR-SUR
2,4-Dimethylphenol	SW8270C	MKTF-18R	2203825-004c	2.7	5	µg/L	J	MDLRL
2,4-Dimethylphenol	SW8270C	MKTF-11	2203825-007c	4.3	5	µg/L	J-	LR-SUR, MDLRL
2,4-Dimethylphenol	SW8270C	MKTF-10	2203825-008c	16	5	µg/L	J-	LR-SUR
2,4-Dinitrophenol	SW8270C	MKTF-17R	2203825-003c	ND	5	µg/L	UJ	LR-SUR
2,4-Dinitrophenol	SW8270C	MKTF-11	2203825-007c	ND	5	µg/L	UJ	LR-SUR
2,4-Dinitrophenol	SW8270C	MKTF-10	2203825-008c	ND	5	µg/L	R	LR-SUR
2-Butanone	SW8260B	EB 3-15-22	2203825-001a	7.3	10	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	MKTF-10	2203825-008a	21	100	µg/L	U	FBD, MDLRL
2-Butanone	SW8260B	FB 3-15-22	2203825-009a	7.9	10	µg/L	J	MDLRL
2-Methylnaphthalene	SW8270C	OW-1	2203825-002c	0.4	0.1	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8270C	DUP-3-15-22	2203825-010c	ND	0.1	µg/L	UJ	ERPD-FD
2-Methylphenol	SW8270C	MKTF-17R	2203825-003c	20	5	µg/L	J-	LR-SUR
2-Methylphenol	SW8270C	MKTF-18R	2203825-004c	4.4	5	µg/L	J	MDLRL
2-Methylphenol	SW8270C	MKTF-11	2203825-007c	6.4	5	µg/L	J-	LR-SUR
2-Methylphenol	SW8270C	MKTF-10	2203825-008c	6.1	5	µg/L	J-	LR-SUR
3,4-Methylphenol	SW8270C	MKTF-17R	2203825-003c	11	5	µg/L	J-	LR-SUR
3,4-Methylphenol	SW8270C	MKTF-18R	2203825-004c	3.5	5	µg/L	J	MDLRL
3,4-Methylphenol	SW8270C	MKTF-11	2203825-007c	3.8	5	µg/L	J-	LR-SUR, MDLRL
3,4-Methylphenol	SW8270C	MKTF-10	2203825-008c	ND	5	µg/L	R	LR-SUR
Arsenic, Dissolved	E200.8	OW-1	2203825-002E	0.00052	0.001	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	DUP-3-15-22	2203825-010E	0.00068	0.001	mg/L	J	MDLRL
Arsenic, Total	E200.8	OW-1	2203825-002D	0.00069	0.001	mg/L	J	MDLRL
Arsenic, Total	E200.8	DUP-3-15-22	2203825-010D	0.0008	0.001	mg/L	J	MDLRL
Benzene	SW8260B	EB 3-15-22	2203825-001a	0.23	1	µg/L	J	MDLRL
Benzene	SW8260B	MKTF-38	2203825-005a	0.49	1	µg/L	U	EBD, MDLRL
Chloroform	SW8260B	MKTF-17R	2203825-003a	7.2	10	µg/L	J	MDLRL
Chloroform	SW8260B	MKTF-18R	2203825-004a	1.9	10	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Chloroform	SW8260B	MKTF-04R	2203825-006a	2.1	5	µg/L	J	MDLRL
Chloroform	SW8260B	MKTF-11	2203825-007a	3.5	10	µg/L	J	MDLRL
Chloroform	SW8260B	MKTF-10	2203825-008a	4	10	µg/L	J	MDLRL
Chloromethane	SW8260B	EB 3-15-22	2203825-001a	0.91	3	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	OW-1	2203825-002a	0.77	3	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-38	2203825-005a	0.78	3	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-04R	2203825-006a	3.9	15	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-10	2203825-008a	27	30	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	FB 3-15-22	2203825-009a	0.89	3	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	DUP-3-15-22	2203825-010a	0.75	3	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	Trip Blank	2203825-011a	0.66	3	µg/L	U	MBD, MDLRL
Chromium, Total	E 200.7	OW-1	2203825-002D	0.0033	0.006	mg/L	J	MDLRL
Chromium, Total	E 200.7	MKTF-17R	2203825-003D	0.0041	0.006	mg/L	J	MDLRL
Chromium, Total	E 200.7	MKTF-18R	2203825-004D	0.0042	0.006	mg/L	J	MDLRL
Chromium, Total	E 200.7	MKTF-10	2203825-008D	0.0059	0.006	mg/L	J	MDLRL
Chromium, Total	E 200.7	DUP-3-15-22	2203825-010D	0.0029	0.006	mg/L	J	MDLRL
cis-1,2-Dichloroethene	SW8260B	MKTF-18R	2203825-004a	4.6	10	µg/L	J	MDLRL
cis-1,2-Dichloroethene	SW8260B	MKTF-10	2203825-008a	6.2	10	µg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-17R	2203825-003E	0.0033	0.006	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-18R	2203825-004E	0.0032	0.006	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-38	2203825-005E	0.0038	0.006	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-04R	2203825-006E	0.0056	0.006	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-11	2203825-007E	0.0058	0.006	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-17R	2203825-003D	0.0037	0.006	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-10	2203825-008D	0.0058	0.006	mg/L	J	MDLRL
Cyanide, Total	E335.4	EB 3-15-22	2203825-001F	ND	0.005	mg/L	UJ	LR-MS
Cyanide, Total	E335.4	OW-1	2203825-002F	ND	0.005	mg/L	UJ	LR-MS
Cyanide, Total	E335.4	MKTF-17R	2203825-003F	ND	0.005	mg/L	UJ	LR-MS



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Cyanide, Total	E335.4	MKTF-18R	2203825-004F	ND	0.005	mg/L	UJ	LR-MS
Cyanide, Total	E335.4	MKTF-38	2203825-005F	ND	0.005	mg/L	UJ	LR-MS
Cyanide, Total	E335.4	MKTF-04R	2203825-006F	0.00801	0.005	mg/L	J-	LR-MS
Cyanide, Total	E335.4	MKTF-11	2203825-007F	ND	0.005	mg/L	UJ	LR-MS
Cyanide, Total	E335.4	MKTF-10	2203825-008F	ND	0.005	mg/L	UJ	LR-MS
Cyanide, Total	E335.4	DUP-3-15-22	2203825-010F	ND	0.005	mg/L	UJ	LR-MS
Isopropylbenzene	SW8260B	MKTF-18R	2203825-004a	4.4	10	µg/L	J	MDLRL
Isopropylbenzene	SW8260B	MKTF-04R	2203825-006a	2.3	5	µg/L	J	MDLRL
Lead, Dissolved	E200.8	OW-1	2203825-002E	0.000077	0.0005	mg/L	J	MDLRL
Lead, Dissolved	E200.8	MKTF-17R	2203825-003E	0.00024	0.0005	mg/L	J	MDLRL
Lead, Dissolved	E200.8	MKTF-38	2203825-005E	0.000068	0.0005	mg/L	J	MDLRL
Lead, Total	E200.8	OW-1	2203825-002D	0.00019	0.0005	mg/L	J	MDLRL
Lead, Total	E200.8	MKTF-11	2203825-007D	0.002	0.0025	mg/L	J	MDLRL
Lead, Total	E200.8	DUP-3-15-22	2203825-010D	0.00018	0.0005	mg/L	J	MDLRL
Methylene Chloride	SW8260B	MKTF-10	2203825-008a	5.6	30	µg/L	J	MDLRL
MTBE	SW8260B	MKTF-10	2203825-008a	9.6	10	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-17R	2203825-003a	16	30	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-18R	2203825-004a	3.5	30	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-11	2203825-007a	5.3	30	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-10	2203825-008a	11	30	µg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-17R	2203825-003E	0.0058	0.01	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-18R	2203825-004E	0.0057	0.01	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-38	2203825-005E	0.0055	0.01	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-04R	2203825-006E	0.0083	0.01	mg/L	J	MDLRL
Nickel, Total	E 200.7	MKTF-17R	2203825-003D	0.0061	0.01	mg/L	J	MDLRL
Nickel, Total	E 200.7	MKTF-18R	2203825-004D	0.0098	0.01	mg/L	J	MDLRL
n-Propylbenzene	SW8260B	MKTF-18R	2203825-004a	6.6	10	µg/L	J	MDLRL
n-Propylbenzene	SW8260B	MKTF-04R	2203825-006a	3.1	5	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Phenanthrene	SW8270C	OW-1	2203825-002c	0.08	0.1	µg/L	J	MDLRL
Phenol	SW8270C	MKTF-17R	2203825-003c	7.5	5	µg/L	J-	LR-SUR
Phenol	SW8270C	MKTF-11	2203825-007c	30	5	µg/L	J-	LR-SUR
Phenol	SW8270C	MKTF-10	2203825-008c	22	5	µg/L	J-	LR-SUR
p-Isopropyltoluene	SW8260B	MKTF-17R	2203825-003a	5	10	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-18R	2203825-004a	2.2	10	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-04R	2203825-006a	1.3	5	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	MKTF-10	2203825-008a	7.7	10	µg/L	J	MDLRL
Pyrene	SW8270C	OW-1	2203825-002c	0.24	0.4	µg/L	U	MBD, MDLRL
Pyrene	SW8270C	MKTF-17R	2203825-003c	0.42	0.4	µg/L	JB	MBD
Pyrene	SW8270C	MKTF-38	2203825-005c	0.16	0.4	µg/L	U	MBD, MDLRL
Pyrene	SW8270C	MKTF-04R	2203825-006c	0.22	0.4	µg/L	U	MBD, MDLRL
Pyrene	SW8270C	MKTF-11	2203825-007c	0.2	0.4	µg/L	U	MBD, MDLRL
Pyrene	SW8270C	MKTF-10	2203825-008c	0.18	0.4	µg/L	U	MBD, MDLRL
sec-Butylbenzene	SW8260B	MKTF-17R	2203825-003a	5.5	10	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-18R	2203825-004a	1.7	10	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-11	2203825-007a	4.4	10	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-10	2203825-008a	5.7	10	µg/L	J	MDLRL
Selenium, Dissolved	E200.8	MKTF-11	2203825-007E	0.00046	0.001	mg/L	J	MDLRL
Selenium, Total	E200.8	MKTF-18R	2203825-004D	0.00087	0.001	mg/L	J	MDLRL
Styrene	SW8260B	MKTF-17R	2203825-003a	2.6	10	µg/L	J	MDLRL
Toluene	SW8260B	MKTF-38	2203825-005a	0.8	1	µg/L	J	MDLRL
TPH DRO	SW8015	EB 3-15-22	2203825-001C	0.026	0.064	mg/L	U	HR-LCS, MBD, MDLRL
TPH DRO	SW8015	OW-1	2203825-002C	0.022	0.064	mg/L	U	HR-LCS, MBD, MDLRL
TPH DRO	SW8015	MKTF-17R	2203825-003C	7	0.64	mg/L	J+	HR-LCS
TPH DRO	SW8015	MKTF-18R	2203825-004C	4	0.64	mg/L	J+	HR-LCS
TPH DRO	SW8015	MKTF-38	2203825-005C	0.11	0.064	mg/L	JB	HR-LCS, MBD
TPH DRO	SW8015	MKTF-04R	2203825-006C	1.5	0.064	mg/L	J+	HR-LCS



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
TPH DRO	SW8015	MKTF-11	2203825-007C	0.92	0.064	mg/L	J+	HR-LCS
TPH DRO	SW8015	MKTF-10	2203825-008C	1.9	0.064	mg/L	J+	HR-LCS
TPH DRO	SW8015	DUP-3-15-22	2203825-010C	0.026	0.064	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	EB 3-15-22	2203825-001a	0.037	0.05	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	OW-1	2203825-002a	0.041	0.05	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	MKTF-38	2203825-005a	0.047	0.05	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	DUP-3-15-22	2203825-010a	0.036	0.05	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	Trip Blank	2203825-011a	0.035	0.05	mg/L	U	MBD, MDLRL
TPH ORO	SW8015	MKTF-38	2203825-005C	0.066	0.08	mg/L	J	MDLRL
Trichloroethene	SW8260B	MKTF-38	2203825-005a	0.57	1	µg/L	J	MDLRL
Trichloroethene	SW8260B	MKTF-04R	2203825-006a	2.5	5	µg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-1	2203825-002E	0.041	0.05	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-38	2203825-005E	0.0041	0.05	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	DUP-3-15-22	2203825-010E	0.044	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-1	2203825-002D	0.043	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-17R	2203825-003D	0.0056	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-18R	2203825-004D	0.011	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-38	2203825-005D	0.027	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-04R	2203825-006D	0.024	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-11	2203825-007D	0.0049	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-10	2203825-008D	0.018	0.05	mg/L	J	MDLRL
Vanadium, Total	E 200.7	DUP-3-15-22	2203825-010D	0.042	0.05	mg/L	J	MDLRL
Vinyl Chloride	SW8260B	MKTF-17R	2203825-003a	4.4	10	µg/L	J	MDLRL
Vinyl Chloride	SW8260B	MKTF-10	2203825-008a	8	10	µg/L	J	MDLRL
Zinc, Dissolved	E 200.7	EB 3-15-22	2203825-001E	0.0063	0.01	mg/L	J	MDLRL
Zinc, Dissolved	E 200.7	OW-1	2203825-002E	0.0094	0.01	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-17R	2203825-003E	0.033	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-18R	2203825-004E	0.01	0.01	mg/L	JB	EBD



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Zinc, Dissolved	E 200.7	MKTF-38	2203825-005E	0.0055	0.01	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-04R	2203825-006E	0.012	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-11	2203825-007E	0.01	0.01	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-10	2203825-008E	0.008	0.01	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	DUP-3-15-22	2203825-010E	0.0077	0.01	mg/L	U	EBD, MDLRL
Zinc, Total	E 200.7	MKTF-18R	2203825-004D	0.0078	0.01	mg/L	J	MDLRL





Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental Analysis Laboratory
Project Name: Western Refining Southwest, Q1 GW Sampling	Sample Matrix: Groundwater
Project Number: 697-080-002 Task: 0006	Sample Start Date: 03/16/2022
Date Validated: 07/26/2022	Sample End Date: 03/16/2022
Parameters Included: ▪ Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ 1,2-Dibromoethane (EDB) by EPA Method 504.1 ▪ Semivolatile Organic Compounds (SVOCs) by SW-846 Method 8270C and Method 8270C with Selected Ion Monitoring (SIM) ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015D Modified ▪ Total and Dissolved Metals by EPA Method 200.7 and Method 200.8 ▪ Total and Dissolved Mercury by EPA Method 245.1 ▪ Cyanide by Standard Methods for the Examination of Water and Wastewater (SM) Method 4500 CN E	
Laboratory Project ID: 2203920	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical National of Mount Juliet, Tennessee evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Field blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
EB 3-16-22	2203920-001
MKTF-40	2203920-002
MKTF-31	2203920-003
MKTF-25	2203920-004
MKTF-24	2203920-005
MKTF-02R	2203920-006
FB 3-16-22	2203920-007
DUP-3-16-22	2203920-008
Trip Blank	2203920-009



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ⊗ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ⊗ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ⊗ LCS/LCSD (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates and Internal Standards) (Item 17)
- ⊗ Field, Equipment, and Trip Blanks (Items 18 and 19)
- ✓ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-540-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, April 2022.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit
JB	Estimated concentration due to blank contamination
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 540 data points. The data completeness calculation does not include any submitted blank sample results. Seven data points were rejected. The data completeness measure for this data package is calculated to be 98.70% and is acceptable.



VALIDATION CRITERIA CHECKLIST

1. Was the report free of non-conformances identified by the laboratory? No

Comments: The laboratory noted the following analytical non-conformance related to this data set.

Method 8270C: "S" flagged surrogates denote low surrogate recoveries due to matrix interferences/sample dilution.

2. Were the data free of data qualification flags and/or notes used by the laboratory? No
If no, define.

Comments: The laboratory used the following data qualification flags with this data set.

J – Analyte detected below quantitation limits

J3 – The associated batch QC was outside the established quality control range for precision.

J6 – The sample matrix interfered with the ability to make any accurate determination; spike value is low.

P1 – RPD value not applicable for sample concentrations less than 5 times the reporting limit.

R – RPD value outside of range.

S – % Recovery outside of range due to dilution or matrix interference.

* – Value exceeds maximum contaminant level.

3. Were sample CoC forms and custody procedures complete? Yes

Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. The laboratory noted that the shipping containers were sealed, and custody seals were present and intact on the shipping containers.

4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Yes

Comments: The detection limits appeared to be acceptable. The following dilutions were applied.

Method	Sample(s)	Analyte(s)	Dilution Factor
200.8	Multiple Samples	Select Total and Dissolved Metals	5
245.1	MKTF-24	Total Mercury	5
8015D	MKTF-31, DUP-3-16-22	GRO	5
8260B	MKTF-31, DUP-3-16-22	VOCs	5
8015D	MKTF-25, MKTF-24	GRO	10
8260B	MKTF-02R, MKTF-25, MKTF-24	VOCs	10
8270C SIM	Multiple Samples	1,4-Dioxane	10
504.1	MKTF-02R	EDB	20
8260B	MKTF-24	Benzene	100

5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC? No

Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions.

The CoC requested total and dissolved metals using Method 200.7; however, the laboratory analyzed the samples using both Method 200.7 and Method 200.8. This substituted analytical method, Method 200.8, met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.

The CoC requested cyanide using Method 335.4; however, the laboratory analyzed the samples using Method 4500 CN E. This substituted analytical method met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.



VALIDATION CRITERIA CHECKLIST

6. Were samples received in good condition within method-specified requirements?

No

Comments: Samples were received on ice, in good condition, and with the cooler temperatures both within and outside the recommended temperature range of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at 0.2°C , 0.9°C , 1.3°C , and 3.9°C as noted on the CoC and the *Sample Log-in Check List*. Samples transferred to Pace National were received in good condition with the cooler temperature outside the recommended range at 0.6°C as noted on the CoC. The cooler temperatures below 2.0°C were judged as acceptable since the laboratory did not report the sample containers as broken or frozen.

7. Were samples extracted/digested and analyzed within method-specified or technical holding times?

No

Comments: The samples were extracted/digested and analyzed within method-specific holding times, with the following exceptions.

Method 4500 CN E: Samples EB 3-16-22, MKTF-40, MKTF-31, and MKTF-25 were analyzed for cyanide outside the defined holding time of 14 days by approximately 1 day. Cyanide was detected in samples MKTF-40, MKTF-31, and MKTF-25 by Method 4500 CN E and the results were assigned J qualifiers based on the holding time exceedances. The non-detect result for sample EB 3-16-22 was assigned an R qualifier to indicate that the result was rejected based on the holding time exceedance.

8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.

Yes

Comments: The results were reported in concentration units of micrograms per liter ($\mu\text{g/L}$) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.

9. Did the laboratory provide any specific initial and/or continuing calibration results?

No

Comments: Initial and continuing calibration data were not included as part of this data set.

10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?

N/A

Comments: Initial and continuing calibration data were not included as part of this data set.

11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?

Yes

Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.

12. Were target analytes reported as not detected in the laboratory blanks?

No

Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exceptions.

Method	Analyte	Batch	Concentration
8015D	DRO	66236	0.030 mg/L
8260B	Chloromethane	R86626	0.68 $\mu\text{g/L}$
8260B	Chloromethane	R86666	0.66 $\mu\text{g/L}$
8015D	GRO	G86626	0.034 $\mu\text{g/L}$

Detections of DRO, chloromethane, and GRO in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of DRO in the associated samples that were greater than the reporting limits but less than or equal to 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.



VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared/reported for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>MS Sample Source</u>
200.7	Total Metals	66642	Not Prepared
200.7	Total Metals	66643	Not Prepared
200.7	Dissolved Metals	A86535	Not Prepared
200.8	Total Metals	66254	Not Prepared
200.8	Dissolved Metals	B86624	Not Prepared
245.1	Total and Dissolved Mercury	66370	MKTF-24
504.1	EDB	66256	Not Prepared
4500CN E	Cyanide	WG1838528	Not Associated
4500CN E	Cyanide	WG1837590	Not Associated
4500CN E	Cyanide	WG1836404	Not Associated, MKTF-02R
8015D	TPH DRO and MRO	66236	Not Prepared
8015D	TPH GRO	G86626	MKTF-31
8260B	VOCs	R86626	MKTF-40
8260B	VOCs	R86666	Not Prepared
8270C	SVOCs	66244	Not Prepared
8270C SIM	SVOCs	R86665	Not Prepared
8270C SIM	1,4-Dioxane	R86694	Not Prepared

Not Associated – The MS sample source was not associated with this project.

Not Prepared – Matrix spikes were not prepared/reported for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The MS/MSD percent recoveries and RPDs for project samples were within data validation and laboratory QC limits, with the following exceptions.

<u>Method</u>	<u>Analyte</u>	<u>Batch</u>	<u>MS/MSD RPD</u>	<u>RPD QC Limits</u>
4500 CN E	Cyanide	WG1836404	23%	20%
8015D	TPH GRO	G86626	26.9%	20%

The identified analytes with MS/MSD RPD values that were above the QC limit were qualified as J for detections and UJ for non-detections for the associated samples due to evidence of poor precision.

The percent recoveries and RPD values for MS/MSDs prepared from non-project samples were evaluated and considered, but data were not qualified based on those results since matrix similarity to project samples could not be guaranteed.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.



VALIDATION CRITERIA CHECKLIST

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within data validation and laboratory QC limits, with the following exceptions.

<u>Method</u>	<u>Analyte</u>	<u>Batch</u>	<u>LCS Recovery</u>	<u>LCS/LCSD QC Limits</u>
200.7	Total Nickel	66642	67.7%	70-130%
200.7	Total Nickel	66643	69.0%	70-130%

Detections of total nickel in the associated samples were assigned J- qualifiers due to potential low bias. Total nickel was not detected in the associated sample EB 3-16-22 and the result was assigned a UJ qualifier.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries were within laboratory QC limits, with the following exceptions.

<u>Method</u>	<u>Surrogate</u>	<u>Sample</u>	<u>Surrogate Recovery</u>	<u>QC Limits</u>
8270C	2-Fluorophenol	MKTF-02R	6.13%	29.4-87.7%
8270C	Phenol-d ₅	MKTF-02R	19.0%	28.5-64.7%
8270C	2,4,6-Tribromophenol	MKTF-02R	2.36%	18.6-129%

Since Method 8270C surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. **Since 2 of the 3 acid fraction surrogates were recovered below 10% in sample MKTF-02R, acid fraction analytes were assigned R qualifiers indicating rejected results.**

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the number of samples. One trip blank sample, Trip Blank, one field blank sample, FB 3-16-22, and one equipment blank sample, EB 3-16-22, were collected as part of this sample set.



VALIDATION CRITERIA CHECKLIST

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were not detected in the trip blank, field blank, and equipment blank samples with the following exceptions.

<u>Blank Sample ID</u>	<u>Method</u>	<u>Analyte</u>	<u>Concentration</u>
Trip Blank	8260B	1,1-Dichloroethene	0.68 µg/L
Trip Blank	8260B	Chloromethane	0.69 µg/L
FB-3-16-22	8260B	1,1-Dichloroethene	0.57 µg/L
FB-3-16-22	8260B	2-Butanone	5.7 µg/L
FB-3-16-22	8260B	Chloromethane	0.84 µg/L
EB 3-16-22	200.7	Dissolved Zinc	0.0067 mg/L
EB 3-16-22	8015D	GRO	0.036 mg/L
EB 3-16-22	8260B	2-Butanone	8.5 µg/L
EB 3-16-22	8260B	Chloromethane	1.1 µg/L

Detections of 1,1-dichloroethene, 2-butanone, and dissolved zinc in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of dissolved zinc in the associated samples that were greater than the reporting limits but less than 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.

The chloromethane (batches R86626 and R86666) and GRO (batch G86626) results were previously qualified due to laboratory blank contamination; therefore, additional qualification due to the trip, field, and equipment blank contamination was not required.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples. Sample DUP-3-16-22 was collected as a field duplicate of sample MKTF-31.

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? Yes

Comments: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples.

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? Yes

Comments: Laboratory duplicates were prepared for these analyses, and the laboratory duplicate sample sources are summarized in the following table.

<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>Laboratory Duplicate Sample Source</u>
4500CN E	Cyanide	WG1836404	Not Associated, MKTF-24
4500CN E	Cyanide	WG1837590	MKTF-25. Not Associated
4500CN E	Cyanide	WG1838528	MKTF-31, Not Associated

Not Associated – The laboratory duplicate sample source was not associated with this project.

The RPDs for laboratory duplicates prepared from project samples were within laboratory acceptance limits or were not applicable since the result for one or both measurements were within 5 times the reporting limit.

The RPD values for the laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.



VALIDATION CRITERIA CHECKLIST

23. Were the following data relationships realistic?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270)? N/A

Comments: Target analytes were not reported by more than one method in this data set.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? No

Comments: The following table contains the exceptions in which the dissolved metals results exceeded the total metals results. The EPA has not provided guidance or requirements for the evaluation, validation, and qualification of dissolved metals results that exceed the corresponding total metals results. Therefore, qualification of results was not performed based on these data.

<u>Sample ID</u>	<u>Analyte</u>	<u>Total Result (mg/L)</u>	<u>Dissolved Result (mg/L)</u>
MKTF-24	Arsenic	0.0030	0.0031
MKTF-24	Barium	0.76	0.81
MKTF-40	Cobalt	0.0039	0.0051
MKTF-40	Nickel	0.0094	0.010
MKTF-24	Nickel	0.031	0.033
MKTF-02R	Nickel	0.013	0.014
MKTF-40	Silver	ND	0.0016
MKTF-02R	Silver	ND	0.0016
EB 3-16-22	Zinc	ND	0.0067
MKTF-40	Zinc	0.0079	0.010
MKTF-24	Zinc	0.0076	0.0088
MKTF-02R	Zinc	0.011	0.013



FIELD DUPLICATE SUMMARY

Client Sample ID: MKTF-31 Field Duplicate Sample ID: DUP-3-16-22				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Barium, Dissolved	E 200.7	0.12 mg/L	0.12 mg/L	0.0%
Barium, Total	E 200.7	0.30 mg/L	0.34 mg/L	12.5%
Chromium, Total	E 200.7	0.010 mg/L	0.0091 mg/L	9.4% +/-RL
Cobalt, Total	E 200.7	0.0085 mg/L	0.0075 mg/L	12.5% +/-RL
Nickel, Dissolved	E 200.7	0.0066 mg/L	0.0051 mg/L	25.6% +/-RL
Nickel, Total	E 200.7	0.012 mg/L	0.012 mg/L	0.0% +/-RL
Vanadium, Dissolved	E 200.7	0.0024 mg/L	0.0022 mg/L	8.7% +/-RL
Vanadium, Total	E 200.7	0.025 mg/L	0.026 mg/L	3.9% +/-RL
Zinc, Dissolved	E 200.7	0.0082 mg/L	0.0096 mg/L	15.7% +/-RL
Zinc, Total	E 200.7	0.020 mg/L	0.022 mg/L	9.5%
Arsenic, Dissolved	E200.8	0.00059 mg/L	0.00049 mg/L	18.5% +/-RL
Arsenic, Total	E200.8	0.0021 mg/L	0.0023 mg/L	9.1%
Lead, Dissolved	E200.8	0.00012 mg/L	0.00015 mg/L	22.2% +/-RL
Lead, Total	E200.8	0.0084 mg/L	0.0095 mg/L	12.3%
Selenium, Total	E200.8	0.0018 mg/L	0.0019 mg/L	5.4% +/-RL
Mercury, Total	E245.1	0.00013 mg/L	ND (0.00020 mg/L)	DL
Cyanide, Total	E335.4	0.00964 mg/L	ND (0.00500 mg/L)	DL
TPH DRO	SW8015	0.29 mg/L	0.27 mg/L	7.1%
TPH GRO	SW8015	0.55 mg/L	0.55 mg/L	0.0%
1,1,1-Trichloroethane	SW8260B	2.3 µg/L	2.3 µg/L	0.0% +/-RL
1,1-Dichloroethane	SW8260B	27 µg/L	30 µg/L	10.5%
1,1-Dichloroethene	SW8260B	34 µg/L	41 µg/L	18.7%
1,2-Dichloroethane	SW8260B	12 µg/L	12 µg/L	0.0%
Benzene	SW8260B	ND (5.0 µg/L)	1.2 µg/L	DL
Chloromethane	SW8260B	3.5 µg/L	3.4 µg/L	2.9% +/-RL
cis-1,2-Dichloroethene	SW8260B	3.2 µg/L	3.1 µg/L	3.2% +/-RL
MTBE	SW8260B	350 µg/L	340 µg/L	2.9%
Trichloroethene	SW8260B	5.2 µg/L	5.1 µg/L	1.9% +/-RL
1,4-Dioxane	SW8270C	81 µg/L	63 µg/L	25.0%
Field duplicate RPD control limits are not to exceed 30% for water as established by USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020. DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL). +/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.				



DATA QUALIFICATION SUMMARY

Abbreviation	Reason
HT-AN	Sample was analyzed outside of the method holding time.
ERP-MS	The MS/MSD RPD exceeded the upper acceptable limit indicating poor precision.
LR-LCS	The LCS and/or LCSD percent recovery was less than the lower acceptable limit indicating a possible low bias.
LR-SUR	The surrogate percent recovery was less than the lower acceptable limit indicating a possible low bias.
MBD	Method blank detection
EBD	Equipment blank detection
FBD	Field blank detection
TBD	Trip blank detection
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1,1-Trichloroethane	SW8260B	MKTF-31	2203920-003a	2.3	5.0	µg/L	J	MDLRL
1,1,1-Trichloroethane	SW8260B	DUP-3-16-22	2203920-008a	2.3	5.0	µg/L	J	MDLRL
1,1-Dichloroethane	SW8260B	MKTF-40	2203920-002a	0.85	1.0	µg/L	J	MDLRL
1,1-Dichloroethene	SW8260B	Trip Blank	2203920-009a	0.68	1.0	µg/L	J	MDLRL
1,1-Dichloroethene	SW8260B	MKTF-25	2203920-004a	9.2	10	µg/L	U	MDLRL, TBD
1,1-Dichloroethene	SW8260B	MKTF-24	2203920-005a	6.1	10	µg/L	U	MDLRL, TBD
1,1-Dichloroethene	SW8260B	FB 3-16-22	2203920-007a	0.57	1.0	µg/L	U	MDLRL, TBD
1,2-Dichloroethane	SW8260B	MKTF-40	2203920-002a	0.45	1.0	µg/L	J	MDLRL
1,2-Dichloroethane	SW8260B	MKTF-24	2203920-005a	5.9	10	µg/L	J	MDLRL
2,4,6-Trichlorophenol	SW8270C	MKTF-02R	2203920-006c	ND	50	µg/L	R	LR-SUR
2,4-Dimethylphenol	SW8270C	MKTF-02R	2203920-006c	ND	50	µg/L	R	LR-SUR
2,4-Dinitrophenol	SW8270C	MKTF-02R	2203920-006c	ND	5.0	µg/L	R	LR-SUR
2-Butanone	SW8260B	EB 3-16-22	2203920-001a	8.5	10	µg/L	U	FBD, MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Butanone	SW8260B	FB 3-16-22	2203920-007a	5.7	10	µg/L	J	MDLRL
2-Methylphenol	SW8270C	MKTF-02R	2203920-006c	ND	5.0	µg/L	R	LR-SUR
3,4-Methylphenol	SW8270C	MKTF-02R	2203920-006c	ND	5.0	µg/L	R	LR-SUR
Arsenic, Dissolved	E200.8	MKTF-31	2203920-003E	0.00059	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	MKTF-25	2203920-004E	0.00079	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	MKTF-02R	2203920-006E	0.0018	0.0050	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	DUP-3-16-22	2203920-008E	0.00049	0.0010	mg/L	J	MDLRL
Arsenic, Total	E200.8	MKTF-40	2203920-002D	0.0013	0.0050	mg/L	J	MDLRL
Arsenic, Total	E200.8	MKTF-25	2203920-004D	0.0031	0.0050	mg/L	J	MDLRL
Arsenic, Total	E200.8	MKTF-24	2203920-005D	0.0030	0.0050	mg/L	J	MDLRL
Arsenic, Total	E200.8	MKTF-02R	2203920-006D	0.0021	0.0050	mg/L	J	MDLRL
Benzene	SW8260B	DUP-3-16-22	2203920-008a	1.2	5.0	µg/L	J	MDLRL
Chloromethane	SW8260B	EB 3-16-22	2203920-001a	1.1	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-40	2203920-002a	0.75	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-31	2203920-003a	3.5	15	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-25	2203920-004a	9.9	30	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	MKTF-02R	2203920-006a	1.9	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	FB 3-16-22	2203920-007a	0.84	3.0	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	DUP-3-16-22	2203920-008a	3.4	15	µg/L	U	MBD, MDLRL
Chloromethane	SW8260B	Trip Blank	2203920-009a	0.69	3.0	µg/L	U	MBD, MDLRL
Chromium, Total	E 200.7	MKTF-25	2203920-004D	0.0037	0.0060	mg/L	J	MDLRL
cis-1,2-Dichloroethene	SW8260B	MKTF-31	2203920-003a	3.2	5.0	µg/L	J	MDLRL
cis-1,2-Dichloroethene	SW8260B	MKTF-25	2203920-004a	8.0	10	µg/L	J	MDLRL
cis-1,2-Dichloroethene	SW8260B	DUP-3-16-22	2203920-008a	3.1	5.0	µg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-40	2203920-002E	0.0051	0.0060	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-25	2203920-004E	0.0058	0.0060	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	MKTF-02R	2203920-006E	0.0041	0.0060	mg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Cobalt, Total	E 200.7	MKTF-40	2203920-002D	0.0039	0.0060	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-02R	2203920-006D	0.0060	0.0060	mg/L	J	MDLRL
Cyanide, Total	E335.4	MKTF-40	2203920-002F	0.00839	0.0050	mg/L	J	HT-AN
Cyanide, Total	E335.4	MKTF-31	2203920-003F	0.00964	0.0050	mg/L	J	HT-AN
Cyanide, Total	E335.4	MKTF-25	2203920-004F	0.00896	0.0050	mg/L	J	HT-AN
Cyanide, Total	E335.4	EB 3-16-22	2203920-001F	ND	0.0050	mg/L	R	HT-AN
Cyanide, Total	E335.4	MKTF-02R	2203920-006F	0.0129	0.0050	mg/L	J	ERPD-MS
Cyanide, Total	E335.4	MKTF-24	2203920-005F	ND	0.0050	mg/L	UJ	ERPD-MS
Cyanide, Total	E335.4	DUP-3-16-22	2203920-008F	ND	0.0050	mg/L	UJ	ERPD-MS
Lead, Dissolved	E200.8	MKTF-31	2203920-003E	0.00012	0.00050	mg/L	J	MDLRL
Lead, Dissolved	E200.8	MKTF-25	2203920-004E	0.00023	0.00050	mg/L	J	MDLRL
Lead, Dissolved	E200.8	DUP-3-16-22	2203920-008E	0.00015	0.00050	mg/L	J	MDLRL
Lead, Total	E200.8	MKTF-40	2203920-002D	0.0024	0.0025	mg/L	J	MDLRL
Lead, Total	E200.8	MKTF-02R	2203920-006D	0.0012	0.0025	mg/L	J	MDLRL
Mercury, Total	E245.1	MKTF-40	2203920-002D	0.000099	0.00020	mg/L	J	MDLRL
Mercury, Total	E245.1	MKTF-31	2203920-003D	0.00013	0.00020	mg/L	J	MDLRL
Methylene Chloride	SW8260B	MKTF-02R	2203920-006a	1.1	3.0	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-24	2203920-005a	7.7	30	µg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-31	2203920-003E	0.0066	0.010	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	DUP-3-16-22	2203920-008E	0.0051	0.010	mg/L	J	MDLRL
Nickel, Total	E 200.7	MKTF-31	2203920-003D	0.012	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	MKTF-25	2203920-004D	0.029	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	MKTF-24	2203920-005D	0.031	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	MKTF-02R	2203920-006D	0.013	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	DUP-3-16-22	2203920-008D	0.012	0.010	mg/L	J-	LR-LCS
Nickel, Total	E 200.7	EB 3-16-22	2203920-001D	ND	0.010	mg/L	UJ	LR-LCS
Nickel, Total	E 200.7	MKTF-40	2203920-002D	0.0094	0.010	mg/L	J-	LR-LCS, MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Phenol	SW8270C	MKTF-02R	2203920-006c	ND	5.0	µg/L	R	LR-SUR
Phenol	SW8270C	MKTF-25	2203920-004c	4.1	5.0	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-24	2203920-005a	4.6	10	µg/L	J	MDLRL
Selenium, Dissolved	E200.8	MKTF-25	2203920-004E	0.00041	0.0010	mg/L	J	MDLRL
Selenium, Dissolved	E200.8	MKTF-24	2203920-005E	0.00039	0.0010	mg/L	J	MDLRL
Selenium, Total	E200.8	MKTF-25	2203920-004D	0.0023	0.0050	mg/L	J	MDLRL
Selenium, Total	E200.8	MKTF-24	2203920-005D	0.0019	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-40	2203920-002E	0.0016	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-02R	2203920-006E	0.0016	0.0050	mg/L	J	MDLRL
Tetrachloroethene	SW8260B	MKTF-02R	2203920-006a	0.36	1.0	µg/L	J	MDLRL
TPH DRO	SW8015	MKTF-31	2203920-003C	0.29	0.064	mg/L	JB	MBD
TPH DRO	SW8015	MKTF-02R	2203920-006C	0.24	0.064	mg/L	JB	MBD
TPH DRO	SW8015	DUP-3-16-22	2203920-008C	0.27	0.064	mg/L	JB	MBD
TPH DRO	SW8015	MKTF-40	2203920-002C	0.058	0.064	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	MKTF-31	2203920-003a	0.55	0.25	mg/L	J	ERPD-MS
TPH GRO	SW8015	MKTF-25	2203920-004a	0.97	0.50	mg/L	J	ERPD-MS
TPH GRO	SW8015	MKTF-24	2203920-005a	12	0.50	mg/L	J	ERPD-MS
TPH GRO	SW8015	MKTF-02R	2203920-006a	0.63	0.050	mg/L	J	ERPD-MS
TPH GRO	SW8015	DUP-3-16-22	2203920-008a	0.55	0.25	mg/L	J	ERPD-MS
TPH GRO	SW8015	EB 3-16-22	2203920-001a	0.036	0.050	mg/L	U	ERPD-MS, MBD, MDLRL
TPH GRO	SW8015	MKTF-40	2203920-002a	0.038	0.050	mg/L	U	ERPD-MS, MBD, MDLRL
Trichloroethene	SW8260B	MKTF-25	2203920-004a	5.7	10	µg/L	J	MDLRL
Trichloroethene	SW8260B	MKTF-24	2203920-005a	3.2	10	µg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-40	2203920-002E	0.0084	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-31	2203920-003E	0.0024	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-02R	2203920-006E	0.0032	0.050	mg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Vanadium, Dissolved	E 200.7	DUP-3-16-22	2203920-008E	0.0022	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-40	2203920-002D	0.016	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-31	2203920-003D	0.025	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-25	2203920-004D	0.016	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-24	2203920-005D	0.0067	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-02R	2203920-006D	0.0075	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	DUP-3-16-22	2203920-008D	0.026	0.050	mg/L	J	MDLRL
Vinyl Chloride	SW8260B	MKTF-25	2203920-004a	7.1	10	µg/L	J	MDLRL
Vinyl Chloride	SW8260B	MKTF-02R	2203920-006a	0.75	1.0	µg/L	J	MDLRL
Zinc, Dissolved	E 200.7	MKTF-40	2203920-002E	0.010	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-02R	2203920-006E	0.013	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-31	2203920-003E	0.0082	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-25	2203920-004E	0.0054	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-24	2203920-005E	0.0088	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	DUP-3-16-22	2203920-008E	0.0096	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	EB 3-16-22	2203920-001E	0.0067	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	MKTF-40	2203920-002D	0.0079	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	MKTF-24	2203920-005D	0.0076	0.010	mg/L	J	MDLRL





Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental Analysis Laboratory
Project Name: Western Refining Southwest, Quarterly GW	Sample Matrix: Groundwater
Project Number: 697-080-002 Task: 0004	Sample Start Date: 09/15/2022
Date Validated: 01/16/2023	Sample End Date: 09/15/2022
Parameters Included: ▪ Volatile Organic Compounds (VOC) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ 1,2-Dibromoethane (EDB) by EPA Method 504.1 ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C and Method 8270C with Selected Ion Monitoring (SIM) ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015D Modified ▪ Total and Dissolved Metals by EPA Method 200.7 and Method 200.8 ▪ Total and Dissolved Mercury by EPA Method 245.1 ▪ Anions by EPA Method 300.0 ▪ Cyanide by Standard Methods for the Examination of Water and Wastewater (SM) Method 4500 CN E	
Laboratory Project ID: 2209816	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Charles Ballek, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical National of Mount Juliet, Tennessee evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Field blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
EB-09-15-22	2209816-001
MKTF-16	2209816-002
OW-12A	2209816-003
OW-70	2209816-004
OW-57	2209816-005
FB 9-15-22	2209816-006
DUP 9-15-22	2209816-007
Trip Blank	2209816-008



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ⊗ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ✓ LCS/LCSD (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ⊗ Field, Equipment, and Trip Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-540-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, April 2022.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit
JB	Estimated concentration due to blank contamination

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 456 data points. The data completeness calculation does not include any submitted blank sample results. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.



VALIDATION CRITERIA CHECKLIST

1. Was the report free of non-conformances identified by the laboratory? No

Comments: The laboratory noted the following analytical non-conformance related to this data set.

Method 8270C: Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were reported by EPA Method 8270 instead of EPA Method 8270 SIM because of their elevated concentrations for sample OW-57.

2. Were the data free of data qualification flags and/or notes used by the laboratory? No

If no, define.

Comments: The laboratory used the following data qualification flags with this data set.

D – Sample diluted due to matrix.

J – Analyte detected below quantitation limits.

S – % Recovery outside of range due to dilution or matrix interference.

* – Value exceeds maximum contaminant level.

3. Were sample CoC forms and custody procedures complete? No

Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. The laboratory noted that the shipping containers were sealed, and custody seals were present and intact on the shipping containers.

The container for sample MKTF-16 Method 8015 DRO/MRO was not received by the laboratory.

4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Yes

Comments: The detection limits appeared to be acceptable. The following dilutions were applied.

Method	Sample(s)	Analyte(s)	Dilution Factor
8015D	OW-57	TPH DRO and MRO	2
200.7	MKTF-16, OW-12A, OW-57	Select Total and Dissolved Metals	5
200.8	MKTF-16	Total Lead	5
300.0	MKTF-16	Anions	5
8015D	MKTF-16, OW-12A	TPH GRO	5
8260B	MKTF-16	VOCs	5
200.7	MKTF-16	Total Barium	10
200.8	OW-57	Total Lead and Selenium	20
200.7	OW-57	Total Barium	50
8015D	OW-57	TPH GRO	50
8260B	OW-12A, OW-57	Select VOCs	50
200.7	MKTF-16	Total Iron	100
8260B	OW-57	Benzene	500



VALIDATION CRITERIA CHECKLIST	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	No
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions. The CoC requested total and dissolved metals using only Method 200.7; however, the laboratory analyzed the samples using both Method 200.7 and Method 200.8. This substituted analytical method, Method 200.8, met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement. The CoC requested cyanide using Method 335.4; however, the laboratory analyzed the samples using Method 4500 CN E. This substituted analytical method met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received on ice, in good condition, and with the cooler temperatures outside the recommended temperature range of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at 0.4°C, 1.3°C, and 1.4°C as noted on the <i>Sample Log-in Check List</i>. Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 5.7°C as noted on the CoC. The cooler temperatures below 2.0°C were judged as acceptable since the laboratory did not report the sample containers as broken or frozen.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The samples were extracted/digested and analyzed within method-specific holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
Comments: The results were reported in concentration units of micrograms per liter ($\mu\text{g/L}$) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.	
9. Did the laboratory provide any specific initial and/or continuing calibration results?	No
Comments: Initial and continuing calibration data were not included as part of this data set.	
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?	N/A
Comments: Initial and continuing calibration data were not included as part of this data set.	
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.	
12. Were target analytes reported as not detected in the laboratory blanks?	No
Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exception. TPH DRO was detected in the laboratory blank for Method 8015D batch 70323 at a concentration of 0.021 mg/L. The sample EB-09-15-22 TPH DRO result that was detected at a concentration equal to the blank concentration and less than the laboratory reporting limit was qualified with a U flag. The TPH DRO results in the remaining associated samples were greater than ten times the blank concentration and did not require qualification.	



VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared/reported for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
200.7	Total Metals	70299	MKTF-16, OW-12A
200.7	Total Metals	70359	Not Prepared
200.7	Dissolved Silver	A91392	EB-09-15-22
200.7	Dissolved Metals	C91347	Not Prepared
200.8	Total Metals	70299	Not Prepared
200.8	Total Metals	70359	Not Prepared
200.8	Dissolved Metals	A91132	Not Prepared
245.1	Total and Dissolved Mercury	70307	Not Prepared
245.1	Total Mercury	70391	Not Prepared
300.0	Anions	R91119	Not Prepared
504.1	EDB	70321	Not Prepared
4500CN E	Cyanide	WG1929558	Not Associated
8015D	TPH DRO and MRO	70323	Not Prepared
8015D	TPH GRO	B91113	Not Prepared
8015D	TPH GRO	C91131	Not Prepared
8260B	VOCs	A91114	Not Prepared
8260B	VOCs	R91137	Not Prepared
8270C SIM	SVOCs	70290	Not Prepared
8270C	SVOCs	70290	Not Prepared

Not Associated – The MS sample source was not associated with this project.

Not Prepared – Matrix spikes were not prepared/reported for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? Yes

Comments: The percent recoveries and RPDs for MS/MSDs prepared from project samples were within data validation and laboratory QC limits.

The percent recoveries and RPD values for MS/MSDs prepared from non-project samples were evaluated and considered, but data were not qualified based on those results since matrix similarity to project samples could not be guaranteed.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.



VALIDATION CRITERIA CHECKLIST

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within data validation and laboratory QC limits, with the following exception.

The LCS recovery for total cobalt in Method 200.7 batch 70299 was outside the acceptance limits of 70-130% at 141%. Total cobalt was detected in associated samples and the results were qualified with J+ flags due to potential high bias. Total cobalt was not detected in the associated sample EB-09-15-22 and the result did not require qualification.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries were within laboratory QC limits, with the following exceptions.

Method	Surrogate	Sample	Surrogate Recovery	QC Limits
8015D (GRO)	Bromofluorobenzene (BFB)	OW-12A	158%	70-130%
8015D (GRO)	BFB	OW-70	517%	70-130%
8015D (GRO)	BFB	DUP 9-15-22	493%	70-130%
8270C-SIM	4-Terphenyl-d ₁₄	EB-09-15-22	70.0%	72.2-147%
8270C-SIM	4-Terphenyl-d ₁₄	MKTF-16	53.5%	72.2-147%
8270C-SIM	4-Terphenyl-d ₁₄	OW-12A	53.9%	72.2-147%
8270C-SIM	4-Terphenyl-d ₁₄	OW-70	54.7%	72.2-147%
8270C-SIM	4-Terphenyl-d ₁₄	OW-57	51.1%	72.2-147%
8270C-SIM	4-Terphenyl-d ₁₄	DUP 9-15-22	48.5%	72.2-147%

The associated analyte TPH GRO was detected in the identified samples. These results were qualified as J+ due to evidence of potential high bias.

Since Method 8270C and 8270C-SIM surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the Method 8270C-SIM analysis for samples EB-09-15-22, MKTF-16, OW-12A, OW-70, OW-57, and DUP 9-15-22 and qualification of sample data was not required.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the number of samples. One trip blank sample, Trip Blank, one field blank sample, FB 9-15-22, and one equipment blank sample, EB-09-15-22, were collected as part of this sample set.



VALIDATION CRITERIA CHECKLIST

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were not detected in the trip blank, field blank, and equipment blank samples with the following exceptions.

<u>Blank Sample ID</u>	<u>Method</u>	<u>Analyte</u>	<u>Concentration</u>
Trip Blank	8260B	Acetone	2.7 µg/L
FB 9-15-22	8260B	2-Butanone	17 µg/L
FB 9-15-22	8260B	Acetone	11 µg/L
EB-09-15-22	8260B	Acetone	4.3 µg/L
EB-09-15-22	8015D	TPH DRO	0.021 mg/L
EB-09-15-22	200.7	Dissolved Zinc	0.0066 mg/L

Detections of acetone in the sample EB-09-15-22 and dissolved zinc in sample OW-57 that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. The detections of acetone and dissolved zinc in the associated samples that were greater than the reporting limits but less than 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples did not require qualification.

The TPH DRO results for the samples in batch 70323 were previously qualified due to a laboratory blank detection; therefore, additional qualification due to the equipment blank contamination was not required.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples.

Sample DUP-9-15-22 was collected as a field duplicate of sample OW-70.

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? No

Comments: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples, with the following exceptions.

The RPD value for total lead exceeded the data validation limit of 30% at 35.9%. The MTBE results for samples OW-70 and DUP-9-15-22 were assigned J qualifiers due to evidence of poor precision.

An RPD value could not be calculated for 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene for the field duplicate pair OW-70 and DUP-9-15-22 since the analyte was detected in the parent sample and was undetected in the duplicate sample. As the detections in the parent sample were greater than two times the reporting limit, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were qualified as J and UJ for the parent and duplicate samples, respectively.



VALIDATION CRITERIA CHECKLIST

22. For laboratory duplicates prepared from project samples, were RPDs within data validation or laboratory QC limits? N/A

Comments: Laboratory duplicates were prepared for the analysis of cyanide in batch WG1929558 from sample EB-09-15-22 and from a sample not associated with this data set.

The sample EB-09-15-22 and the laboratory duplicate were both non-detect for cyanide and a RPD could not be calculated.

The RPD values for the laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

23. Were the following data relationships realistic?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270)? N/A

Comments: Target analytes were not reported by more than one method in this data set.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? No

Comments: The following table contains the exceptions in which the dissolved metals results exceeded the total metals results.

<u>Sample ID</u>	<u>Analyte</u>	<u>Total Result (mg/L)</u>	<u>Dissolved Result (mg/L)</u>
MKTF-16	Antimony	0.00049	0.00060
OW-70	Cadmium	ND	0.0010
OW-12A	Silver	ND	0.0020
OW-57	Silver	ND	0.0019
EB-09-15-22	Zinc	ND	0.0066
OW-12A	Zinc	0.0083	0.013
OW-70	Zinc	0.0047	0.011
DUP 9-15-22	Zinc	ND	0.013

The EPA has not provided guidance or requirements for the evaluation, validation, and qualification of dissolved metals results that exceed the corresponding total metals results. Therefore, qualification of results was not performed based on these data.

FIELD DUPLICATE SUMMARY

Client Sample ID: OW-70 Field Duplicate Sample ID: DUP 9-15-22				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Barium, Dissolved	E 200.7	0.53 mg/L	0.55 mg/L	3.7%
Barium, Total	E 200.7	0.79 mg/L	0.70 mg/L	12.1%
Cadmium, Dissolved	E 200.7	0.0010 mg/L	ND (0.0020 mg/L)	DL
Chromium, Total	E 200.7	0.0070 mg/L	0.0031 mg/L	77.2% +/-RL
Cobalt, Dissolved	E 200.7	0.0042 mg/L	0.0046 mg/L	9.1% +/-RL
Cobalt, Total	E 200.7	0.0094 mg/L	0.012 mg/L	24.3% +/-RL
Nickel, Dissolved	E 200.7	0.044 mg/L	0.043 mg/L	2.3%
Nickel, Total	E 200.7	0.046 mg/L	0.044 mg/L	4.4%
Vanadium, Dissolved	E 200.7	0.0031 mg/L	0.0025 mg/L	21.4% +/-RL
Vanadium, Total	E 200.7	0.014 mg/L	0.0083 mg/L	51.1% +/-RL
Zinc, Dissolved	E 200.7	0.011 mg/L	0.013 mg/L	16.7% +/-RL
Zinc, Total	E 200.7	0.0047 mg/L	ND (0.010 mg/L)	DL
Arsenic, Dissolved	E200.8	0.0012 mg/L	0.0012 mg/L	0.0% +/-RL
Arsenic, Total	E200.8	0.0028 mg/L	0.0025 mg/L	11.3%
Lead, Dissolved	E200.8	0.00012 mg/L	0.00013 mg/L	8.0% +/-RL
Lead, Total	E200.8	0.0023 mg/L	0.0016 mg/L	35.9%
Selenium, Total	E200.8	0.00069 mg/L	ND (0.0010) mg/L	DL
TPH DRO	SW8015	0.94 mg/L	0.96 mg/L	2.1%
TPH GRO	SW8015	0.39 mg/L	0.35 mg/L	10.8%
1,1-Dichloroethane	SW8260B	0.49 µg/L	0.47 µg/L	4.2% +/-RL
1,2,4-Trimethylbenzene	SW8260B	0.13 µg/L	0.15 µg/L	14.3% +/-RL
1,2-Dichloroethane	SW8260B	6.8 µg/L	5.9 µg/L	14.2%
Benzene	SW8260B	1.0 µg/L	0.99 µg/L	1.0% +/-RL
Isopropylbenzene	SW8260B	30 µg/L	28 µg/L	6.9%
MTBE	SW8260B	60 µg/L	55 µg/L	8.7%
n-Butylbenzene	SW8260B	1.5 µg/L	1.4 µg/L	6.9% +/-RL
n-Propylbenzene	SW8260B	1.1 µg/L	1.0 µg/L	9.5% +/-RL
sec-Butylbenzene	SW8260B	6.5 µg/L	6.4 µg/L	1.6%
1,4-Dioxane	SW8270C	0.70 µg/L	0.66 µg/L	5.9% +/-RL
1-Methylnaphthalene	SW8270C	1.0 µg/L	ND (0.30 µg/L)	DL
2-Methylnaphthalene	SW8270C	0.74 µg/L	ND (0.30 µg/L)	DL
Acenaphthene	SW8270C	0.18 µg/L	0.14 µg/L	25.0% +/-RL
Anthracene	SW8270C	0.18 µg/L	0.20 µg/L	10.5% +/-RL
Di-n-butylphthalate	SW8270C	ND (10 µg/L)	20 µg/L	DL
Fluoranthene	SW8270C	ND (0.30 µg/L)	0.20 µg/L	DL



Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Naphthalene	SW8270C	1.3 µg/L	ND (0.30 µg/L)	DL
Phenanthrene	SW8270C	0.40 µg/L	0.34 µg/L	16.2% +/-RL
Phenol	SW8270C	29 µg/L	ND (20 µg/L)	DL
Pyrene	SW8270C	ND (1.0 µg/L)	0.44 µg/L	DL

Field duplicate RPD control limits are not to exceed 30% for water as established by USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).

+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.

The RPD value for total lead exceeded the data validation limit of 30% at 35.9%, which was evidence of poor precision. The MTBE results were qualified as J for samples OW-70 and DUP 9-15-22.

An RPD value could not be calculated for 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene for the field duplicate pair OW-70 and DUP 9-15-22 since the analyte was detected in the parent sample and was undetected in the duplicate sample. As the detections in the parent sample were greater than two times the reporting limit, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were qualified as J and UJ for the parent and duplicate samples, respectively.



DATA QUALIFICATION SUMMARY

Abbreviation	Reason
MBD	Method blank detection
HR-MS	The MS and/or MSD percent recovery was greater than the upper acceptable limit indicating possible matrix interference.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
EBD	Equipment blank detection
TBD	Trip blank detection
ERPD-FD	High field duplicate RPD.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1-Dichloroethane	SW8260B	OW-70	2209816-004a	0.49	1.0	µg/L	J	MDLRL
1,1-Dichloroethane	SW8260B	DUP 9-15-22	2209816-007a	0.47	1.0	µg/L	J	MDLRL
1,1-Dichloroethene	SW8260B	OW-12A	2209816-003a	0.34	1.0	µg/L	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	OW-70	2209816-004a	0.13	1.0	µg/L	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	DUP 9-15-22	2209816-007a	0.15	1.0	µg/L	J	MDLRL
1,3,5-Trimethylbenzene	SW8260B	OW-12A	2209816-003a	0.44	1.0	µg/L	J	MDLRL
1,4-Dioxane	SW8270C	OW-70	2209816-004c	0.70	1.0	µg/L	J	MDLRL
1,4-Dioxane	SW8270C	OW-57	2209816-005c	0.80	1.0	µg/L	J	MDLRL
1,4-Dioxane	SW8270C	DUP 9-15-22	2209816-007c	0.66	1.0	µg/L	J	MDLRL
1-Methylnaphthalene	SW8270C	OW-70	2209816-004c	1.0	0.30	µg/L	J	ERPD-FD
1-Methylnaphthalene	SW8270C	DUP 9-15-22	2209816-007c	ND	0.30	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8270C	OW-70	2209816-004c	0.74	0.30	µg/L	J	ERPD-FD
2-Methylnaphthalene	SW8270C	DUP 9-15-22	2209816-007c	ND	0.30	µg/L	UJ	ERPD-FD
2-Methylnaphthalene	SW8270C	MKTF-16	2209816-002c	0.16	0.30	µg/L	J	MDLRL
2-Methylnaphthalene	SW8270C	OW-12A	2209816-003c	0.16	0.30	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Acenaphthene	SW8270C	OW-70	2209816-004c	0.18	0.30	µg/L	J	MDLRL
Acenaphthene	SW8270C	DUP 9-15-22	2209816-007c	0.14	0.30	µg/L	J	MDLRL
Acetone	SW8260B	FB 9-15-22	2209816-006a	11	10	µg/L	JB	TBD
Acetone	SW8260B	Trip Blank	2209816-008a	2.7	10	µg/L	J	MDLRL
Acetone	SW8260B	EB-09-15-22	2209816-001a	4.3	10	µg/L	U	MDLRL, TBD
Anthracene	SW8270C	OW-70	2209816-004c	0.18	0.30	µg/L	J	MDLRL
Anthracene	SW8270C	OW-57	2209816-005c	0.20	0.30	µg/L	J	MDLRL
Anthracene	SW8270C	DUP 9-15-22	2209816-007c	0.20	0.30	µg/L	J	MDLRL
Antimony, Dissolved	E200.8	MKTF-16	2209816-002E	0.0006	0.0010	mg/L	J	MDLRL
Antimony, Total	E200.8	MKTF-16	2209816-002D	0.00049	0.0010	mg/L	J	MDLRL
Benzene	SW8260B	DUP 9-15-22	2209816-007a	0.99	1.0	µg/L	J	MDLRL
Cadmium, Dissolved	E 200.7	OW-70	2209816-004E	0.0010	0.0020	mg/L	J	MDLRL
Chromium, Total	E 200.7	DUP 9-15-22	2209816-007D	0.0031	0.0060	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	OW-70	2209816-004E	0.0042	0.0060	mg/L	J	MDLRL
Cobalt, Dissolved	E 200.7	DUP 9-15-22	2209816-007E	0.0046	0.0060	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-16	2209816-002D	0.012	0.0060	mg/L	J+	HR-MS
Cobalt, Total	E 200.7	OW-12A	2209816-003D	0.011	0.0060	mg/L	J+	HR-MS
Cobalt, Total	E 200.7	OW-70	2209816-004D	0.0094	0.0060	mg/L	J+	HR-MS
Cobalt, Total	E 200.7	DUP 9-15-22	2209816-007D	0.012	0.0060	mg/L	J+	HR-MS
Fluoranthene	SW8270C	DUP 9-15-22	2209816-007c	0.20	0.30	µg/L	J	MDLRL
Isopropylbenzene	SW8260B	MKTF-16	2209816-002a	1.7	5.0	µg/L	J	MDLRL
Isopropylbenzene	SW8260B	OW-57	2209816-005a	16	50	µg/L	J	MDLRL
Lead, Dissolved	E200.8	OW-70	2209816-004E	0.00012	0.00050	mg/L	J	MDLRL
Lead, Dissolved	E200.8	DUP 9-15-22	2209816-007E	0.00013	0.00050	mg/L	J	MDLRL
Lead, Total	E200.8	OW-70	2209816-004D	0.0023	0.00050	mg/L	J	ERPD-FD
Lead, Total	E200.8	DUP 9-15-22	2209816-007D	0.0016	0.00050	mg/L	J	ERPD-FD
MTBE	SW8260B	OW-57	2209816-005a	41	50	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Naphthalene	SW8270C	OW-70	2209816-004c	1.3	0.30	µg/L	J	ERPD-FD
Naphthalene	SW8270C	DUP 9-15-22	2209816-007c	ND	0.30	µg/L	UJ	ERPD-FD
n-Butylbenzene	SW8260B	OW-12A	2209816-003a	0.89	3.0	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	OW-70	2209816-004a	1.5	3.0	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	DUP 9-15-22	2209816-007a	1.4	3.0	µg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-16	2209816-002E	0.0075	0.010	mg/L	J	MDLRL
Nickel, Dissolved	E 200.7	OW-12A	2209816-003E	0.0076	0.010	mg/L	J	MDLRL
n-Propylbenzene	SW8260B	MKTF-16	2209816-002a	1.4	5.0	µg/L	J	MDLRL
n-Propylbenzene	SW8260B	OW-57	2209816-005a	42	50	µg/L	J	MDLRL
Pyrene	SW8270C	DUP 9-15-22	2209816-007c	0.44	1.0	µg/L	J	MDLRL
Selenium, Total	E200.8	OW-70	2209816-004D	0.00069	0.0010	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	OW-12A	2209816-003E	0.0020	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	OW-57	2209816-005E	0.0019	0.0050	mg/L	J	MDLRL
Toluene	SW8260B	MKTF-16	2209816-002a	1.4	5.0	µg/L	J	MDLRL
Toluene	SW8260B	OW-57	2209816-005a	27	50	µg/L	J	MDLRL
TPH DRO	SW8015	EB-09-15-22	2209816-001C	0.021	0.064	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	OW-12A	2209816-003a	3.6	0.25	mg/L	J+	HR-SUR
TPH GRO	SW8015	OW-70	2209816-004a	0.39	0.050	mg/L	J+	HR-SUR
TPH GRO	SW8015	DUP 9-15-22	2209816-007a	0.35	0.050	mg/L	J+	HR-SUR
Vanadium, Dissolved	E 200.7	MKTF-16	2209816-002E	0.0042	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-12A	2209816-003E	0.0044	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-70	2209816-004E	0.0031	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	OW-57	2209816-005E	0.0039	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	DUP 9-15-22	2209816-007E	0.0025	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-12A	2209816-003D	0.027	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	OW-70	2209816-004D	0.014	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	DUP 9-15-22	2209816-007D	0.0083	0.050	mg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Vinyl Chloride	SW8260B	MKTF-16	2209816-002a	2.0	5.0	µg/L	J	MDLRL
Xylenes, Total	SW8260B	MKTF-16	2209816-002a	5.6	7.5	µg/L	J	MDLRL
Zinc, Dissolved	E 200.7	OW-57	2209816-005E	0.0098	0.010	mg/L	U	MBD, MDLRL
Zinc, Dissolved	E 200.7	MKTF-16	2209816-002E	0.017	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-12A	2209816-003E	0.013	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	OW-70	2209816-004E	0.011	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	DUP 9-15-22	2209816-007E	0.013	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	EB-09-15-22	2209816-001E	0.0066	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	OW-12A	2209816-003D	0.0083	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	OW-70	2209816-004D	0.0047	0.010	mg/L	J	MDLRL





Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental Analysis Laboratory
Project Name: Western Refining Southwest, Quarterly GW	Sample Matrix: Groundwater
Project Number: 697-080-002 Task: 0006	Sample Start Date: 12/06/2022
Date Validated: 02/14/2023	Sample End Date: 12/06/2022
Parameters Included: • Volatile Organic Compounds (VOC) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B • 1,2-Dibromoethane (EDB) by EPA Method 504.1 • Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270C and Method 8270C with Selected Ion Monitoring (SIM) • Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D • TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015D Modified • Total and Dissolved Metals by EPA Method 200.7 and Method 200.8 • Total and Dissolved Mercury by EPA Method 245.1 • Cyanide by Standard Methods for the Examination of Water and Wastewater (SM) Method 4500 CN E	
Laboratory Project ID: 2212303	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Charles Ballek, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace Analytical National of Mount Juliet, Tennessee, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- LCS/LCSD samples
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Field blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
EB-12-6-22	2212303-001
MKTF-46	2212303-002
MKTF-18R	2212303-003
MKTF-16	2212303-004
PW-3	2212303-005
East LDU	2212303-006
West LDU	2212303-007
FB-12-6-22	2212303-008
DUP-12-6-22	2212303-009
MKTF-38	2212303-010
Trip Blank	2212303-011



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ⊗ Laboratory Blanks (Items 11 and 12)
- ✓ MS/MSD (Items 13 and 14)
- ⊗ LCS/LCSD (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ⊗ Field, Equipment, and Trip Blanks (Items 18 and 19)
- ✓ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-540-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, April 2022.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
UJ	Estimated reporting limit
U	Evaluated to be undetected at the reporting limit
JB	Estimated concentration due to blank contamination

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 661 data points. The data completeness calculation does not include any submitted blank sample results. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.



VALIDATION CRITERIA CHECKLIST

1. Was the report free of non-conformances identified by the laboratory? No

Comments: The laboratory noted the following analytical non-conformances related to this data set.

Method 8270C and Method 8270C SIM: 1-Methylnaphthalene, 2-methylnaphthalene, and naphthalene were reported by EPA Method 8270 instead of EPA Method 8270 SIM because of their elevated concentrations for sample MKTF-18R

Method 8015D DRO: The method blank had a low-level detection for DRO. Samples with detections are flagged with a "B".

2. Were the data free of data qualification flags and/or notes used by the laboratory? No

If no, define.

Comments: The laboratory used the following data qualification flags with this data set.

B – Analyte detected in the associated method blank.

J – Analyte detected below quantitation limits.

J4 – The associated batch QC was outside the established quality control range for accuracy.

R – %RPD outside of range.

S – % Recovery outside of range due to dilution or matrix interference.

* – Value exceeds maximum contaminant level.

3. Were sample CoC forms and custody procedures complete? No

Comments: The CoC record from field to laboratory was not complete, but custody was maintained as evidenced by laboratory personnel signatures, dates, times of receipt, and the CoC confirmation letter (Attachment A). Custody seals were not present nor required on the coolers because the samples were transferred to a Hall Environmental Field Service courier for delivery to the laboratory, and custody was maintained at all times.

4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Yes

Comments: The detection limits appeared to be acceptable. The following dilutions were applied.

<u>Method</u>	<u>Sample(s)</u>	<u>Analyte(s)</u>	<u>Dilution Factor</u>
200.7	MKTF-18R, East LDU, West LDU	Select Total and Dissolved Metals	5
200.8	DUP-12-6-22, MKTF-38	Select Dissolved Metals	5
8260B	MKTF-16	VOCs	5
8260B	MKTF-18R	Select VOCs	10
8015D	MKTF-18R	TPH GRO	10
8260B	MKTF-18R	Benzene	100

5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC? No

Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions.

The CoC requested total and dissolved metals using only Method 200.7; however, the laboratory analyzed the samples using both Method 200.7 and Method 200.8. This substituted analytical method, Method 200.8, met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.

The CoC requested cyanide using Method 335.4; however, the laboratory analyzed the samples using Method 4500 CN E. This substituted analytical method met similar sensitivity, accuracy, and precision goals and, therefore, was an acceptable replacement.



VALIDATION CRITERIA CHECKLIST

6. Were samples received in good condition within method-specified requirements? Comments: Samples were received on ice, in good condition, and with the cooler temperatures outside the recommended temperature range of 4°C ± 2°C between 0.2°C and 1.3°C as noted on the Sample Log-in Check List. Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 0.4°C as noted on the CoC. The cooler temperatures below 2.0°C were judged as acceptable since the laboratory did not report the sample containers as broken and/or frozen.	No																
7. Were samples extracted/digested and analyzed within method-specified or technical holding times? Comments: The samples were extracted/digested and analyzed within method-specific holding times.	Yes																
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil. Comments: The results were reported in concentration units of micrograms per liter (µg/L) and milligrams per liter (mg/L), which were acceptable for the sample matrix and the analyses requested.	Yes																
9. Did the laboratory provide any specific initial and/or continuing calibration results? Comments: Detailed calibration information was not provided as part of this laboratory report but limited initial calibration summary data were available for Method 4500CN E.	Yes																
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits? Comments: The available initial calibration summary data were within the acceptance limits.	Yes																
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.	Yes																
12. Were target analytes reported as not detected in the laboratory blanks? Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exceptions. <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="text-align: left;">Method</th> <th style="text-align: left;">Analyte</th> <th style="text-align: left;">Batch</th> <th style="text-align: left;">Concentration</th> </tr> </thead> <tbody> <tr> <td>200.7</td> <td>Dissolved Barium</td> <td>B93514</td> <td>0.0013 mg/L</td> </tr> <tr> <td>200.8</td> <td>Dissolved Antimony</td> <td>A93132</td> <td>0.0012 mg/L</td> </tr> <tr> <td>8015D</td> <td>TPH DRO</td> <td>71994</td> <td>0.15 mg/L</td> </tr> </tbody> </table> Detections of the identified analytes in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifiers. Detections of dissolved barium and TPH DRO in the associated samples that were greater than the reporting limits but less than or equal to 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.	Method	Analyte	Batch	Concentration	200.7	Dissolved Barium	B93514	0.0013 mg/L	200.8	Dissolved Antimony	A93132	0.0012 mg/L	8015D	TPH DRO	71994	0.15 mg/L	No
Method	Analyte	Batch	Concentration														
200.7	Dissolved Barium	B93514	0.0013 mg/L														
200.8	Dissolved Antimony	A93132	0.0012 mg/L														
8015D	TPH DRO	71994	0.15 mg/L														



VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared/reported for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
200.7	Total Metals	71965	Not Prepared
200.7	Dissolved Metals	B93514	DUP-12-6-22, MKTF-38
200.8	Total Metals	71965	Not Prepared
200.8	Dissolved Metals	A93132	EB-12-6-22, MKTF-46
200.8	Dissolved Metals	A93305	Not Prepared
200.8	Dissolved Lead	A93335	MKTF-46
200.8	Dissolved Metals	D93335	Not Prepared
245.1	Total and Dissolved Mercury	72127	East LDU
504.1	EDB	71922	Not Prepared
4500CN E	Cyanide	WG1971426	Not Associated
8015D	TPH DRO and MRO	71994	Not Prepared
8015D	TPH GRO	R93213	Not Prepared
8260B	VOCs	R93183	Not Prepared
8260B	VOCs	R93209	MKTF-38
8270C SIM	SVOCs	71974	Not Prepared
8270C	SVOCs	71974	Not Prepared

Not Associated – The MS sample source was not associated with this project.

Not Prepared – Matrix spikes were not prepared/reported for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? Yes

Comments: The MS/MSD percent recoveries and RPDs for project samples were within data validation and laboratory QC limits.

The percent recoveries and RPD values for MS/MSDs prepared from non-project samples were evaluated and considered, but data were not qualified based on those results since matrix similarity to project samples could not be guaranteed.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? No

Comments: The LCS and LCSD percent recoveries and LCS/LCSD RPDs were within data validation and laboratory QC limits, with the following exceptions.

The LCS recovery for cyanide in Method 4500CN E batch WG1971426 (R93762) was outside the acceptance limits of 87.1-120% at 83.8%. Cyanide was not detected in the associated samples, and these results were qualified as UJ due to evidence of potential low bias.

The reported recovery for mercury in the LCS for Method 245.1 batch 72127 was outside the acceptance limits of 70-130% at 134%. Mercury was detected in associated samples and the results were assigned J+ qualifiers due to



VALIDATION CRITERIA CHECKLIST

evidence of potential high bias. The non-detect results for mercury in associated samples did not require qualification based on this LCS non-conformity.

The RPD value for pyrene in the LCS/LCSD analyses for Method 8270C batch 71974 exceeded the laboratory limit of 11.8% at 12.3%. Pyrene was not detected in the associated samples and the results were assigned UJ qualifiers due to evidence of poor precision.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries were within QC limits, with the following exceptions.

Method	Surrogate/ EIS	Sample	Surrogate Recovery	QC Limits
8015D	BFB	MKTF-16	152%	70-130%
8015D	BFB	East LDU	206%	70-130%
8015D	BFB	West LDU	230%	70-130%
8015D	BFB	MKTF-38	149%	70-130%
8270C	2,4,6-Tribromophenol	PW-3	12.3%	15-108%
8270C	Phenol-d ₅	West LDU	0%	15-67%

TPH GRO was detected in the Method 8015D analyses of samples MKTF-16, East LDU, West LDU, and MKTF-38 and these results were qualified as J+ due to evidence of a potential high bias.

Since Method 8270C and 8270C SIM surrogate associations were not available from the laboratory, qualification was assigned to all of the target analytes in a given fraction (acid or base/neutral) when two or more surrogates from the same fraction (acid or base/neutral) were outside the acceptance range. This condition did not exist for the Method 8270C analyses of samples PW-3 and West LDU and qualification of sample data was not required.

Qualification of sample data was not required based on surrogate non-conformances in QC samples as the environmental samples were evaluated based on their specific surrogate recoveries.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the number of samples. One trip blank sample, Trip Blank, one field blank sample, FB-12-6-22, and one equipment blank sample, EB-12-6-22, were collected as part of this sample set.

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were not detected in the trip blank, field blank, and equipment blank samples with the following exceptions.

Blank Sample ID	Method	Analyte	Concentration
EB-12-6-22	200.7	Total Chromium	0.0027 mg/L
EB-12-6-22	200.7	Total Cobalt	0.0050 mg/L
EB-12-6-22	200.7	Barium Dissolved	0.0016 mg/L
EB-12-6-22	200.7	Beryllium Dissolved	0.0010 mg/L
EB-12-6-22	200.7	Dissolved Zinc	0.0072 mg/L
EB-12-6-22	8015D	TPH DRO	0.037 mg/L

Detections of dissolved beryllium and dissolved zinc in the associated samples that were less than the blank results and/or less than the applicable reporting limits were assigned U qualifier. Detections of total cobalt and dissolved zinc in the associated samples that were greater than the reporting limits but less than or equal to 10 times the blank results were assigned JB qualifiers. Non-detections of the identified analytes in the associated samples



VALIDATION CRITERIA CHECKLIST

and detections that were above the reporting limit and greater than ten times the blank concentration did not require qualification.

The dissolved barium and TPH DRO results for the samples in batches B93514 and 71994, respectively, were previously qualified due to laboratory blank detections; therefore, additional qualification based on the equipment blank detections was not required.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples.

Sample DUP-12-6-22 was collected as a field duplicate of sample MKTF-46.

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? Yes

Comments: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples.

22. For laboratory duplicates prepared from project samples, were RPDs within data validation or laboratory QC limits? N/A

Comments: Laboratory duplicates were prepared for the analysis of cyanide in batch WG1971426 from a sample not associated with this data set and sample EB-12-6-22.

The RPD for the laboratory duplicate prepared from a project sample could not be calculated because both measurements were reported as not detected.

The RPD value for the laboratory duplicate sample prepared from a non-project sample was evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

23. Were the following data relationships realistic?

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270)? N/A

Comments: Target analytes were not reported by more than one method.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? No

Comments: The following table contains the exceptions in which the dissolved metals results exceeded the total metals results.

<u>Sample ID</u>	<u>Analyte</u>	<u>Total Result (mg/L)</u>	<u>Dissolved Result (mg/L)</u>
MKTF-18R	Mercury	ND	0.00013
PW-3	Mercury	0.00010	0.00011
East LDU	Mercury	0.00013	0.00014
MKTF-46	Antimony	ND	0.00057
MKTF-18R	Antimony	ND	0.00061
PW-3	Antimony	ND	0.00066
MKTF-38	Antimony	ND	0.00085
PW-3	Arsenic	0.0035	0.0038



VALIDATION CRITERIA CHECKLIST

<u>Sample ID</u>	<u>Analyte</u>	<u>Total Result (mg/L)</u>	<u>Dissolved Result (mg/L)</u>
West LDU	Arsenic	0.00059	0.00062
EB-12-6-22	Barium	ND	0.0016
EB-12-6-22	Beryllium	ND	0.0010
East LDU	Beryllium	0.0012	0.0016
West LDU	Beryllium	ND	0.0010
MKTF-38	Beryllium	ND	0.0019
MKTF-38	Cadmium	ND	0.0011
MKTF-46	Selenium	ND	0.00069
West LDU	Selenium	ND	0.00048
DUP-12-6-22	Selenium	ND	0.00060
MKTF-46	Silver	0.0019	0.0032
MKTF-18R	Silver	ND	0.0014
PW-3	Silver	0.0033	0.0040
DUP-12-6-22	Silver	0.0022	0.0030
PW-3	Vanadium	ND	0.0038
MKTF-38	Vanadium	ND	0.0038
EB-12-6-22	Zinc	ND	0.0072
MKTF-46	Zinc	ND	0.0080
MKTF-18R	Zinc	0.0066	0.19
PW-3	Zinc	0.034	0.065
East LDU	Zinc	0.22	0.086
West LDU	Zinc	0.026	0.13
DUP-6-22	Zinc	ND	0.0044
MKTF-38	Zinc	ND	0.016

The EPA has not provided guidance or requirements for the evaluation, validation, and qualification of dissolved metals results that exceed the corresponding total metals results. Therefore, qualification of results was not performed based on these data.

FIELD DUPLICATE SUMMARY

Client Sample ID: MKTF-46 Field Duplicate Sample ID: DUP-12-6-22				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Chlorobenzene	SW8260B	ND (1.0 µg/L)	0.67 µg/L	DL
Methylene Chloride	SW8260B	3.9 µg/L	ND (3.0 µg/L)	DL
1,4-Dioxane	SW8270C	0.84 µg/L	1.1 µg/L	26.8% +/-RL
TPH GRO	SW8015	0.033 mg/L	0.030 mg/L	9.5% +/-RL
TPH DRO	SW8015	0.051 mg/L	0.077 mg/L	40.6% +/-RL
Barium, Dissolved	E 200.7	0.042 mg/L	0.041 mg/L	2.4%
Barium, Total	E 200.7	0.081 mg/L	0.087 mg/L	7.1%
Cobalt, Total	E 200.7	0.016 mg/L	0.016 mg/L	0.0%
Silver, Dissolved	E 200.7	0.0032 mg/L	0.0030 mg/L	6.5% +/-RL
Silver, Total	E 200.7	0.0019 mg/L	0.0022 mg/L	14.6% +/-RL
Vanadium, Dissolved	E 200.7	0.0037 mg/L	0.0034 mg/L	8.5% +/-RL
Vanadium, Total	E 200.7	0.0040 mg/L	0.0044 mg/L	9.5% +/-RL
Zinc, Dissolved	E 200.7	0.0080 mg/L	0.0044 mg/L	58.1% +/-RL
Antimony, Dissolved	E200.8	0.00057 mg/L	ND (0.0010 mg/L)	DL
Arsenic, Dissolved	E200.8	0.00081 mg/L	0.00071 mg/L	13.2% +/-RL
Arsenic, Total	E200.8	0.0011 mg/L	0.0010 mg/L	9.5% +/-RL
Lead, Total	E200.8	0.0011 mg/L	0.0011 mg/L	0.0%
Selenium, Dissolved	E200.8	0.00069 mg/L	0.00060 mg/L	14.0% +/-RL
Mercury, Dissolved	E245.1	0.00013 mg/L	ND (0.00020 mg/L)	DL
Mercury, Total	E245.1	0.00017 mg/L	0.00014 mg/L	19.4% +/-RL
Field duplicate RPD control limits are not to exceed 30% for water as established by USEPA Region I - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020. DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL). +/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.				

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
EBD	Equipment blank detection
ERPD-LCS	The LCS/LCSD RPD exceeded the upper acceptable limit indicating poor precision.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
HR-LCS	The LCS and/or LCSD percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-LCS	The LCS and/or LCSD percent recovery was less than the lower acceptable limit indicating a possible low bias.
MBD	Method blank detection
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2,4-Trimethylbenzene	SW8260B	West LDU	2212303-007a	0.85	1.0	µg/L	J	MDLRL
1,4-Dioxane	SW8270C	MKTF-46	2212303-002c	0.84	1.0	µg/L	J	MDLRL
1,4-Dioxane	SW8270C	East LDU	2212303-006c	0.26	1.0	µg/L	J	MDLRL
2,4-Dimethylphenol	SW8270C	MKTF-18R	2212303-003c	10	10	µg/L	J	MDLRL
2-Butanone	SW8260B	MKTF-38	2212303-010a	3.7	10	µg/L	J	MDLRL
Acenaphthene	SW8270C	MKTF-38	2212303-010c	0.24	0.30	µg/L	J	MDLRL
Antimony, Dissolved	E200.8	MKTF-46	2212303-002E	0.00057	0.0010	mg/L	U	MBD, MDLRL
Antimony, Dissolved	E200.8	MKTF-18R	2212303-003E	0.00061	0.0010	mg/L	U	MBD, MDLRL
Antimony, Dissolved	E200.8	PW-3	2212303-005E	0.00066	0.0010	mg/L	U	MBD, MDLRL
Antimony, Dissolved	E200.8	MKTF-38	2212303-010E	0.00085	0.0010	mg/L	U	MBD, MDLRL
Arsenic, Dissolved	E200.8	MKTF-46	2212303-002E	0.00081	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	East LDU	2212303-006E	0.00058	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	West LDU	2212303-007E	0.00062	0.0010	mg/L	J	MDLRL
Arsenic, Dissolved	E200.8	DUP-12-6-22	2212303-009E	0.00071	0.0010	mg/L	J	MDLRL
Arsenic, Total	E200.8	East LDU	2212303-006D	0.00079	0.0010	mg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Arsenic, Total	E200.8	West LDU	2212303-007D	0.00059	0.0010	mg/L	J	MDLRL
Barium, Dissolved	E 200.7	PW-3	2212303-005E	0.012	0.0020	mg/L	JB	MBD
Barium, Dissolved	E 200.7	EB-12-6-22	2212303-001E	0.0016	0.0020	mg/L	U	MBD, MDLRL
Benzo(a)anthracene	SW8270C	MKTF-18R	2212303-003c	0.16	0.30	µg/L	J	MDLRL
Beryllium, Dissolved	E 200.7	East LDU	2212303-006E	0.0016	0.0020	mg/L	U	EBD, MDLRL
Beryllium, Dissolved	E 200.7	West LDU	2212303-007E	0.0010	0.0020	mg/L	U	EBD, MDLRL
Beryllium, Dissolved	E 200.7	MKTF-38	2212303-010E	0.0019	0.0020	mg/L	U	EBD, MDLRL
Beryllium, Dissolved	E 200.7	EB-12-6-22	2212303-001E	0.0010	0.0020	mg/L	J	MDLRL
Beryllium, Total	E 200.7	East LDU	2212303-006D	0.0012	0.0020	mg/L	J	MDLRL
Cadmium, Dissolved	E 200.7	MKTF-38	2212303-010E	0.0011	0.0020	mg/L	J	MDLRL
Chlorobenzene	SW8260B	DUP-12-6-22	2212303-009a	0.67	1.0	µg/L	J	MDLRL
Chromium, Total	E 200.7	EB-12-6-22	2212303-001D	0.0027	0.0060	mg/L	J	MDLRL
Cobalt, Total	E 200.7	MKTF-46	2212303-002D	0.016	0.0060	mg/L	JB	EBD
Cobalt, Total	E 200.7	MKTF-18R	2212303-003D	0.0097	0.0060	mg/L	JB	EBD
Cobalt, Total	E 200.7	PW-3	2212303-005D	0.013	0.0060	mg/L	JB	EBD
Cobalt, Total	E 200.7	DUP-12-6-22	2212303-009D	0.016	0.0060	mg/L	JB	EBD
Cobalt, Total	E 200.7	MKTF-38	2212303-010D	0.011	0.0060	mg/L	JB	EBD
Cobalt, Total	E 200.7	EB-12-6-22	2212303-001D	0.0050	0.0060	mg/L	J	MDLRL
Cyanide, Total	E335.4	EB-12-6-22	2212303-001F	ND	0.0050	mg/L	UJ	LR-LCS
Cyanide, Total	E335.4	MKTF-46	2212303-002F	ND	0.0050	mg/L	UJ	LR-LCS
Cyanide, Total	E335.4	MKTF-18R	2212303-003F	ND	0.0050	mg/L	UJ	LR-LCS
Cyanide, Total	E335.4	PW-3	2212303-005F	ND	0.0050	mg/L	UJ	LR-LCS
Cyanide, Total	E335.4	East LDU	2212303-006F	ND	0.0050	mg/L	UJ	LR-LCS
Cyanide, Total	E335.4	West LDU	2212303-007F	ND	0.0050	mg/L	UJ	LR-LCS
Cyanide, Total	E335.4	DUP-12-6-22	2212303-009F	ND	0.0050	mg/L	UJ	LR-LCS
Cyanide, Total	E335.4	MKTF-38	2212303-010F	ND	0.0050	mg/L	UJ	LR-LCS
Fluoranthene	SW8270C	MKTF-18R	2212303-003c	0.14	0.30	µg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Fluoranthene	SW8270C	West LDU	2212303-007c	0.14	0.30	µg/L	J	MDLRL
Isopropylbenzene	SW8260B	MKTF-16	2212303-004a	3.2	5.0	µg/L	J	MDLRL
Mercury, Dissolved	E245.1	MKTF-46	2212303-002E	0.00013	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Dissolved	E245.1	MKTF-18R	2212303-003E	0.00013	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Dissolved	E245.1	PW-3	2212303-005E	0.00011	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Dissolved	E245.1	East LDU	2212303-006E	0.00014	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Dissolved	E245.1	MKTF-38	2212303-010E	0.00010	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Total	E245.1	MKTF-46	2212303-002D	0.00017	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Total	E245.1	PW-3	2212303-005D	0.00010	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Total	E245.1	East LDU	2212303-006D	0.00013	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Total	E245.1	West LDU	2212303-007D	0.00014	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Total	E245.1	DUP-12-6-22	2212303-009D	0.00014	0.00020	mg/L	J	HR-LCS, MDLRL
Mercury, Total	E245.1	MKTF-38	2212303-010D	0.00012	0.00020	mg/L	J	HR-LCS, MDLRL
Methylene Chloride	SW8260B	East LDU	2212303-006a	2.9	3.0	µg/L	J	MDLRL
MTBE	SW8260B	MKTF-38	2212303-010a	0.91	1.0	µg/L	J	MDLRL
n-Butylbenzene	SW8260B	MKTF-38	2212303-010a	0.85	3.0	µg/L	J	MDLRL
Nickel, Dissolved	E 200.7	MKTF-18R	2212303-003E	0.0075	0.010	mg/L	J	MDLRL
Nickel, Total	E 200.7	MKTF-18R	2212303-003D	0.0084	0.010	mg/L	J	MDLRL
n-Propylbenzene	SW8260B	MKTF-18R	2212303-003a	5.6	10	µg/L	J	MDLRL
Phenol	SW8270C	MKTF-18R	2212303-003c	19	20	µg/L	J	MDLRL
p-Isopropyltoluene	SW8260B	West LDU	2212303-007a	0.64	1.0	µg/L	J	MDLRL
Pyrene	SW8270C	EB-12-6-22	2212303-001c	ND	1.0	µg/L	UJ	ERPD-LCS
Pyrene	SW8270C	MKTF-46	2212303-002c	ND	1.0	µg/L	UJ	ERPD-LCS
Pyrene	SW8270C	MKTF-18R	2212303-003c	ND	1.0	µg/L	UJ	ERPD-LCS
Pyrene	SW8270C	PW-3	2212303-005c	ND	1.0	µg/L	UJ	ERPD-LCS
Pyrene	SW8270C	East LDU	2212303-006c	ND	1.0	µg/L	UJ	ERPD-LCS
Pyrene	SW8270C	West LDU	2212303-007c	ND	1.0	µg/L	UJ	ERPD-LCS



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Pyrene	SW8270C	DUP-12-6-22	2212303-009c	ND	1.0	µg/L	UJ	ERPD-LCS
Pyrene	SW8270C	MKTF-38	2212303-010c	ND	1.0	µg/L	UJ	ERPD-LCS
sec-Butylbenzene	SW8260B	West LDU	2212303-007a	0.70	1.0	µg/L	J	MDLRL
sec-Butylbenzene	SW8260B	MKTF-38	2212303-010a	0.98	1.0	µg/L	J	MDLRL
Selenium, Dissolved	E200.8	MKTF-46	2212303-002E	0.00069	0.0010	mg/L	J	MDLRL
Selenium, Dissolved	E200.8	East LDU	2212303-006E	0.00071	0.0010	mg/L	J	MDLRL
Selenium, Dissolved	E200.8	West LDU	2212303-007E	0.00048	0.0010	mg/L	J	MDLRL
Selenium, Dissolved	E200.8	DUP-12-6-22	2212303-009E	0.00060	0.0010	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-46	2212303-002E	0.0032	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-18R	2212303-003E	0.0014	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	PW-3	2212303-005E	0.0040	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	DUP-12-6-22	2212303-009E	0.0030	0.0050	mg/L	J	MDLRL
Silver, Dissolved	E 200.7	MKTF-38	2212303-010E	0.0035	0.0050	mg/L	J	MDLRL
Silver, Total	E 200.7	MKTF-46	2212303-002D	0.0019	0.0050	mg/L	J	MDLRL
Silver, Total	E 200.7	PW-3	2212303-005D	0.0033	0.0050	mg/L	J	MDLRL
Silver, Total	E 200.7	DUP-12-6-22	2212303-009D	0.0022	0.0050	mg/L	J	MDLRL
Silver, Total	E 200.7	MKTF-38	2212303-010D	0.0021	0.0050	mg/L	J	MDLRL
TPH DRO	SW8015	MKTF-38	2212303-010C	0.43	0.064	mg/L	JB	MBD
TPH DRO	SW8015	DUP-12-6-22	2212303-009C	0.077	0.064	mg/L	U	MBD
TPH DRO	SW8015	EB-12-6-22	2212303-001C	0.037	0.064	mg/L	U	MBD, MDLRL
TPH DRO	SW8015	MKTF-46	2212303-002C	0.051	0.064	mg/L	U	MBD, MDLRL
TPH DRO	SW8015	PW-3	2212303-005C	0.019	0.064	mg/L	U	MBD, MDLRL
TPH GRO	SW8015	MKTF-16	2212303-004a	2.1	0.050	mg/L	J+	HR-SUR
TPH GRO	SW8015	East LDU	2212303-006a	0.52	0.050	mg/L	J+	HR-SUR
TPH GRO	SW8015	West LDU	2212303-007a	0.31	0.050	mg/L	J+	HR-SUR
TPH GRO	SW8015	MKTF-38	2212303-010a	0.29	0.050	mg/L	J+	HR-SUR
TPH GRO	SW8015	MKTF-46	2212303-002a	0.033	0.050	mg/L	J	MDLRL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
TPH GRO	SW8015	DUP-12-6-22	2212303-009a	0.030	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-46	2212303-002E	0.0037	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	PW-3	2212303-005E	0.0038	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	East LDU	2212303-006E	0.0061	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	West LDU	2212303-007E	0.0051	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	DUP-12-6-22	2212303-009E	0.0034	0.050	mg/L	J	MDLRL
Vanadium, Dissolved	E 200.7	MKTF-38	2212303-010E	0.0038	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-46	2212303-002D	0.004	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	MKTF-18R	2212303-003D	0.0037	0.050	mg/L	J	MDLRL
Vanadium, Total	E 200.7	DUP-12-6-22	2212303-009D	0.0044	0.050	mg/L	J	MDLRL
Xylenes, Total	SW8260B	West LDU	2212303-007a	0.88	1.5	µg/L	J	MDLRL
Zinc, Dissolved	E 200.7	PW-3	2212303-005E	0.065	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-38	2212303-010E	0.016	0.010	mg/L	JB	EBD
Zinc, Dissolved	E 200.7	MKTF-46	2212303-002E	0.0080	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	DUP-12-6-22	2212303-009E	0.0044	0.010	mg/L	U	EBD, MDLRL
Zinc, Dissolved	E 200.7	EB-12-6-22	2212303-001E	0.0072	0.010	mg/L	J	MDLRL
Zinc, Total	E 200.7	MKTF-18R	2212303-003D	0.0066	0.010	mg/L	J	MDLRL



ATTACHMENT A

CoC Confirmation



02/16/2023

Brittany Nelson
Trihydro Corporation
1252 Commerce Drive
Laramie, WY 82070

Chain of Custody Confirmation

I, Brittany Nelson representing the Marathon Gallup site do confirm the following information inadvertently left off the chain-of-custody (CoC) provided with data set 2212303 or information was not reported accurately in accordance with the field records. In addition, I do confirm that all aqueous samples were provided to the laboratory in the proper, method-referenced, containers and were properly preserved (chemically and physically). The information identified in bold italics will be used to further clarify the CoC documentation.

The required analytical parameters for samples MKTF-38 and Trip Blank were not noted on the CoC.

To the best of my knowledge, the above information is correct.


Brittany Nelson

2-16-23
DATE

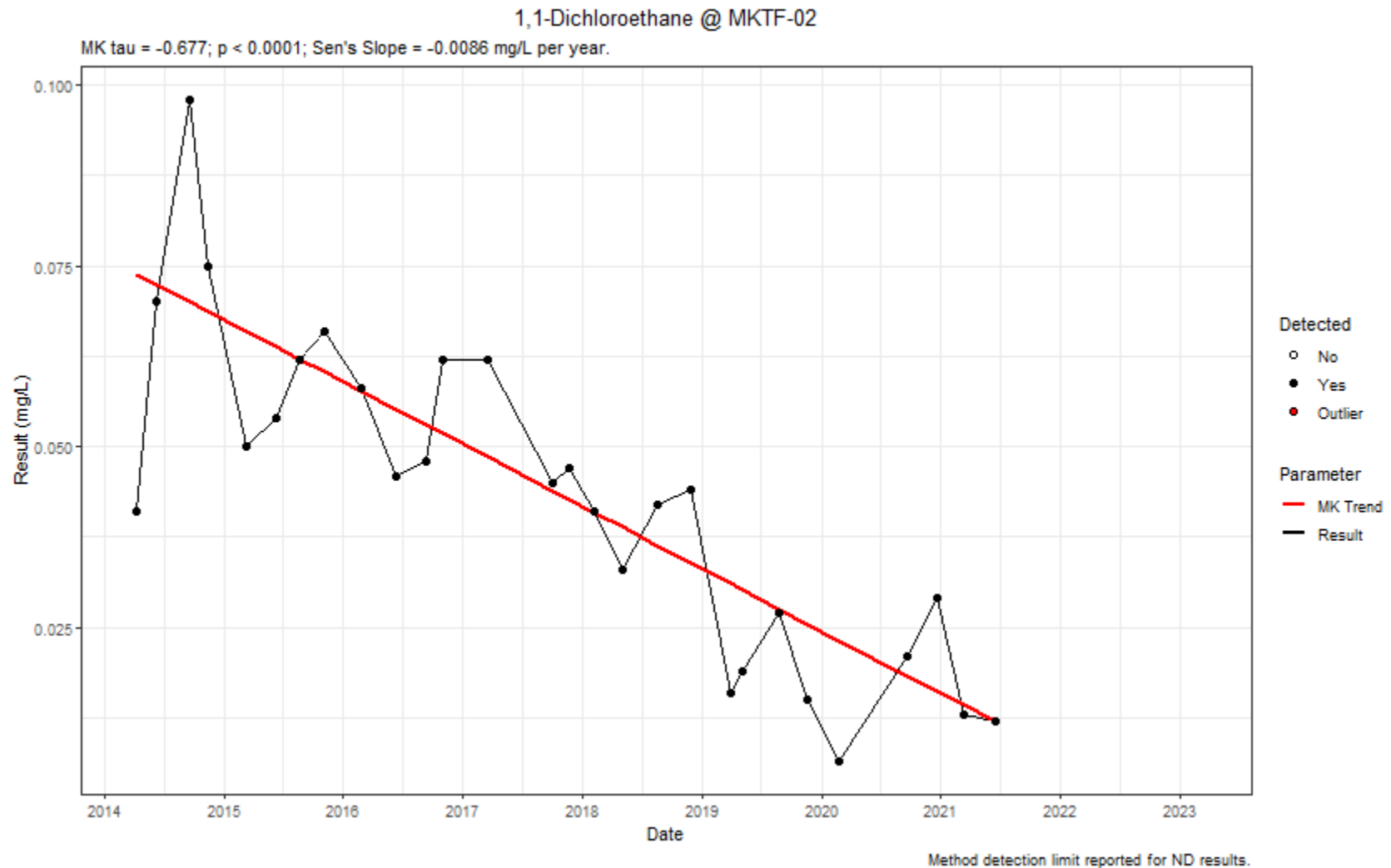
This confirmation is an amendment to the chain-of-custody accompanying the Marathon Gallup, Hall Environmental Analysis Laboratory data set 2212303.



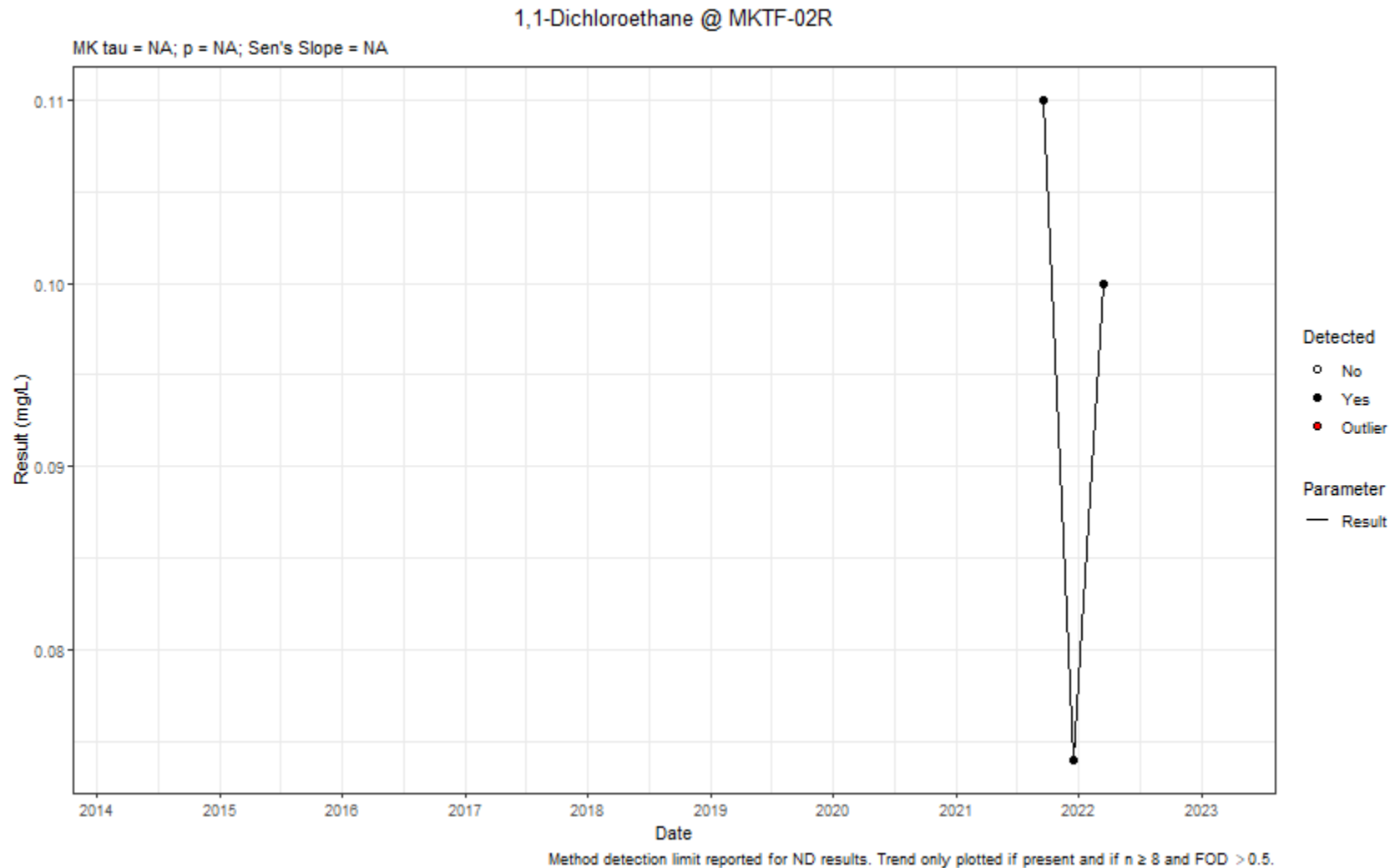
Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Appendix C – CVOC Time Series Plots

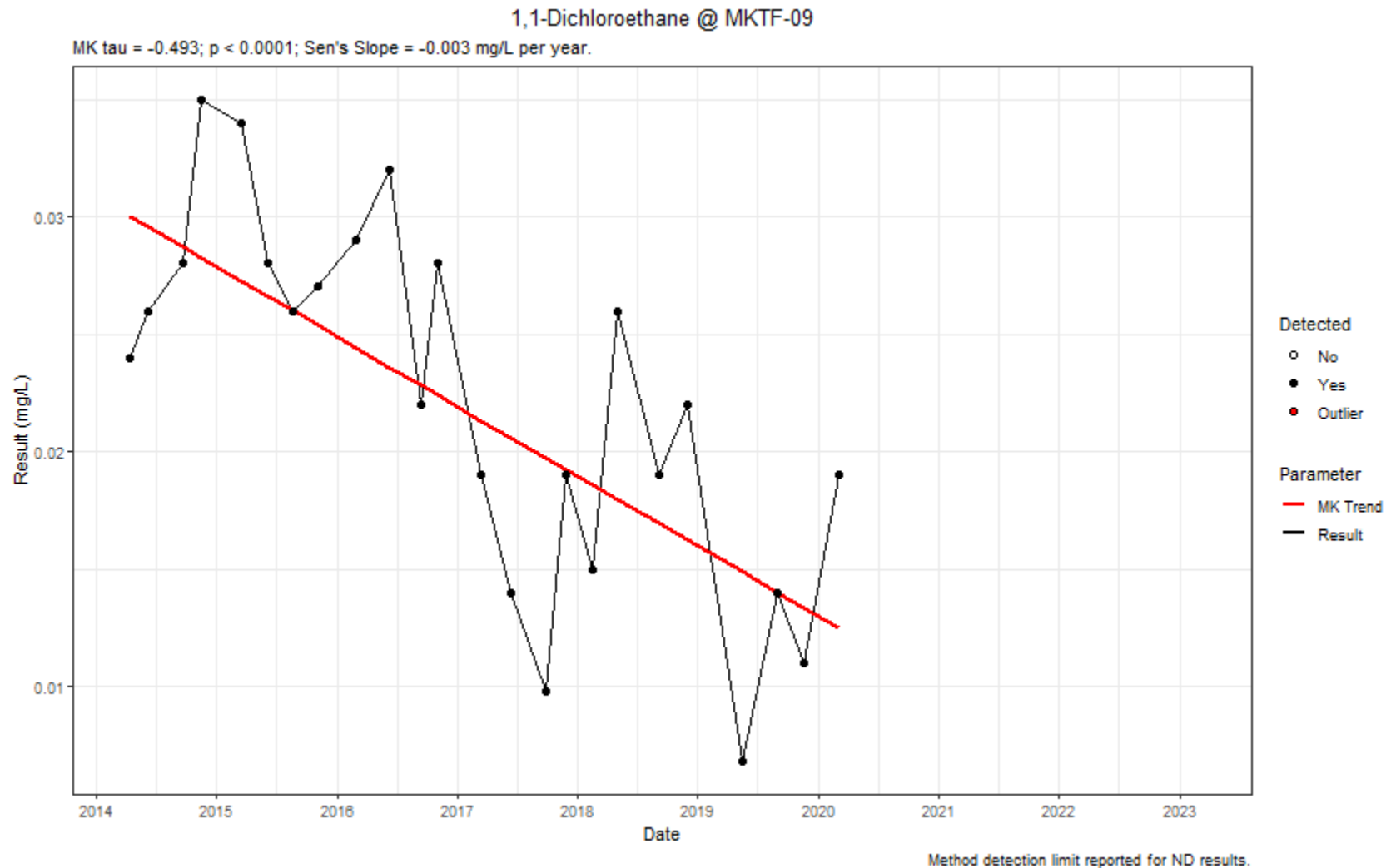
APPENDIX C. TIME SERIES PLOTS WITH NONPARAMETRIC TREND LINE FOR CVOC (2022)
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO



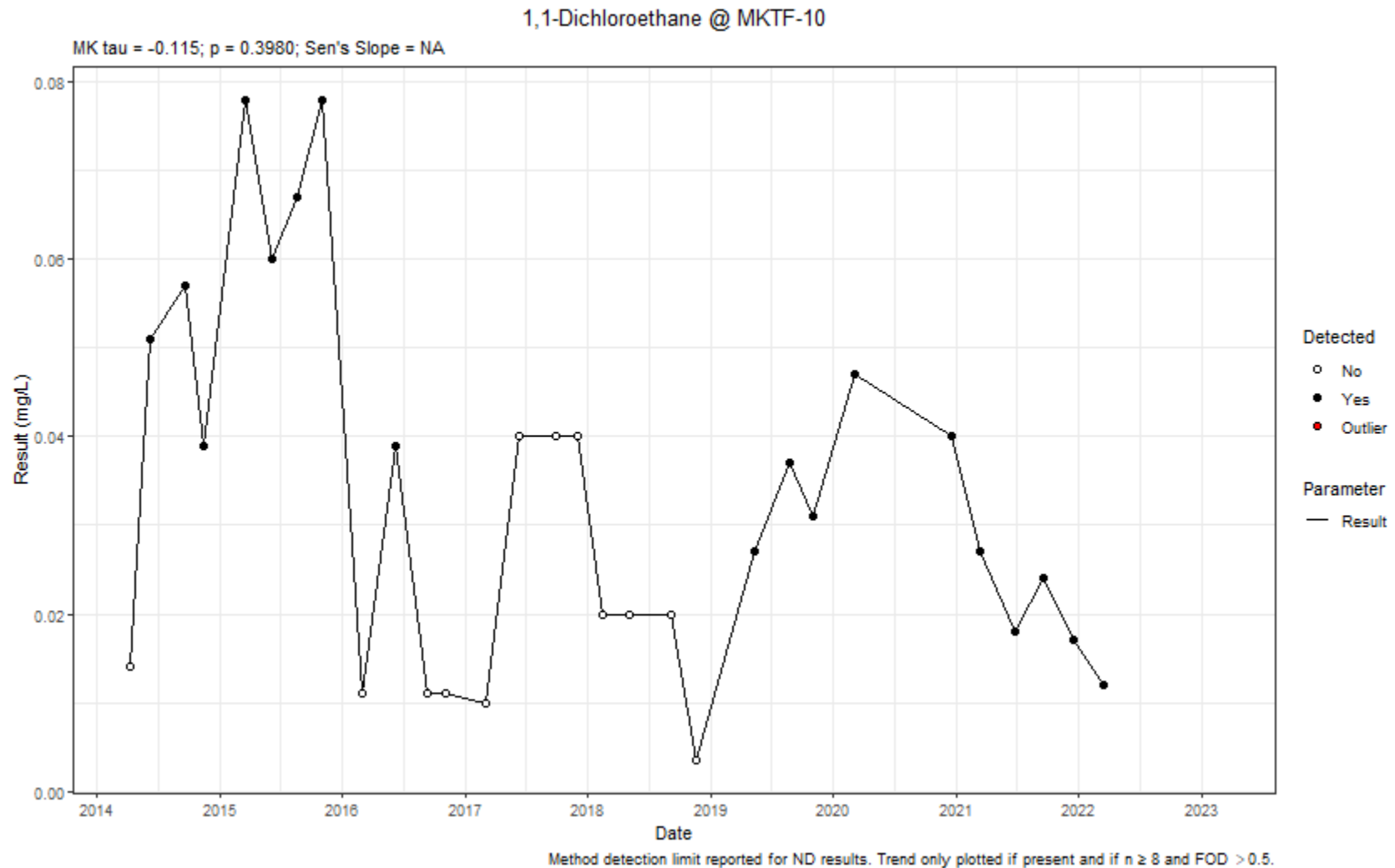
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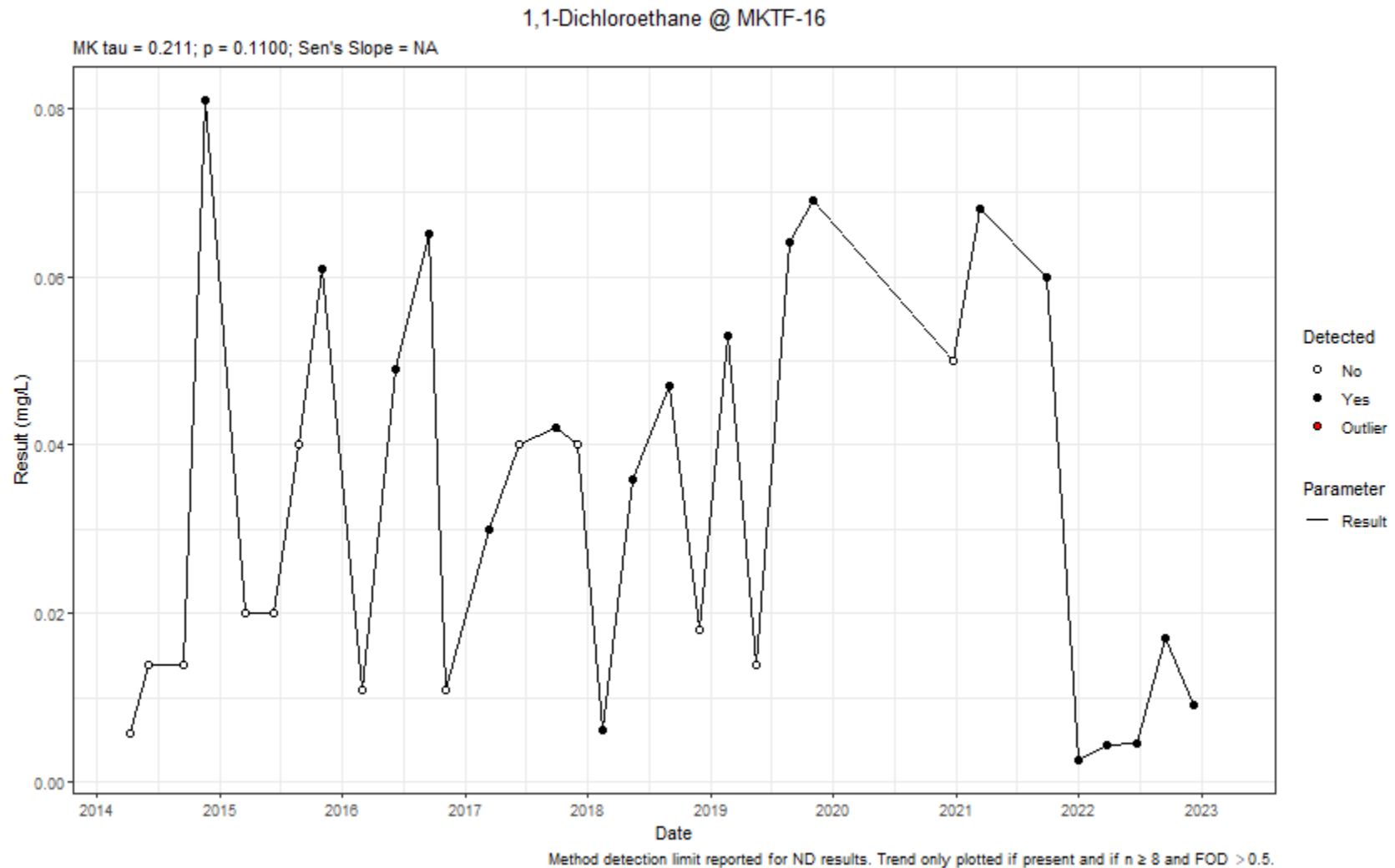
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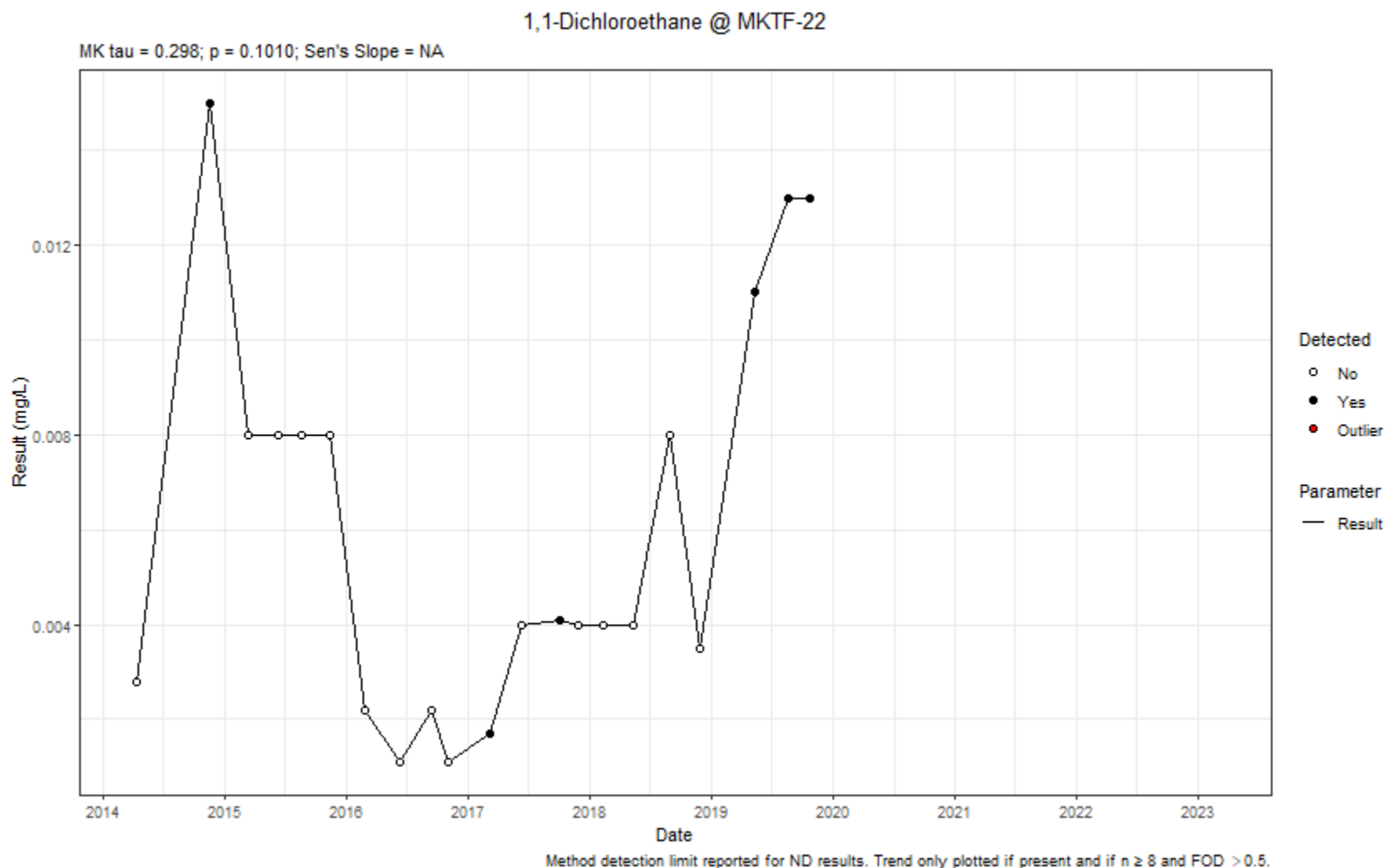
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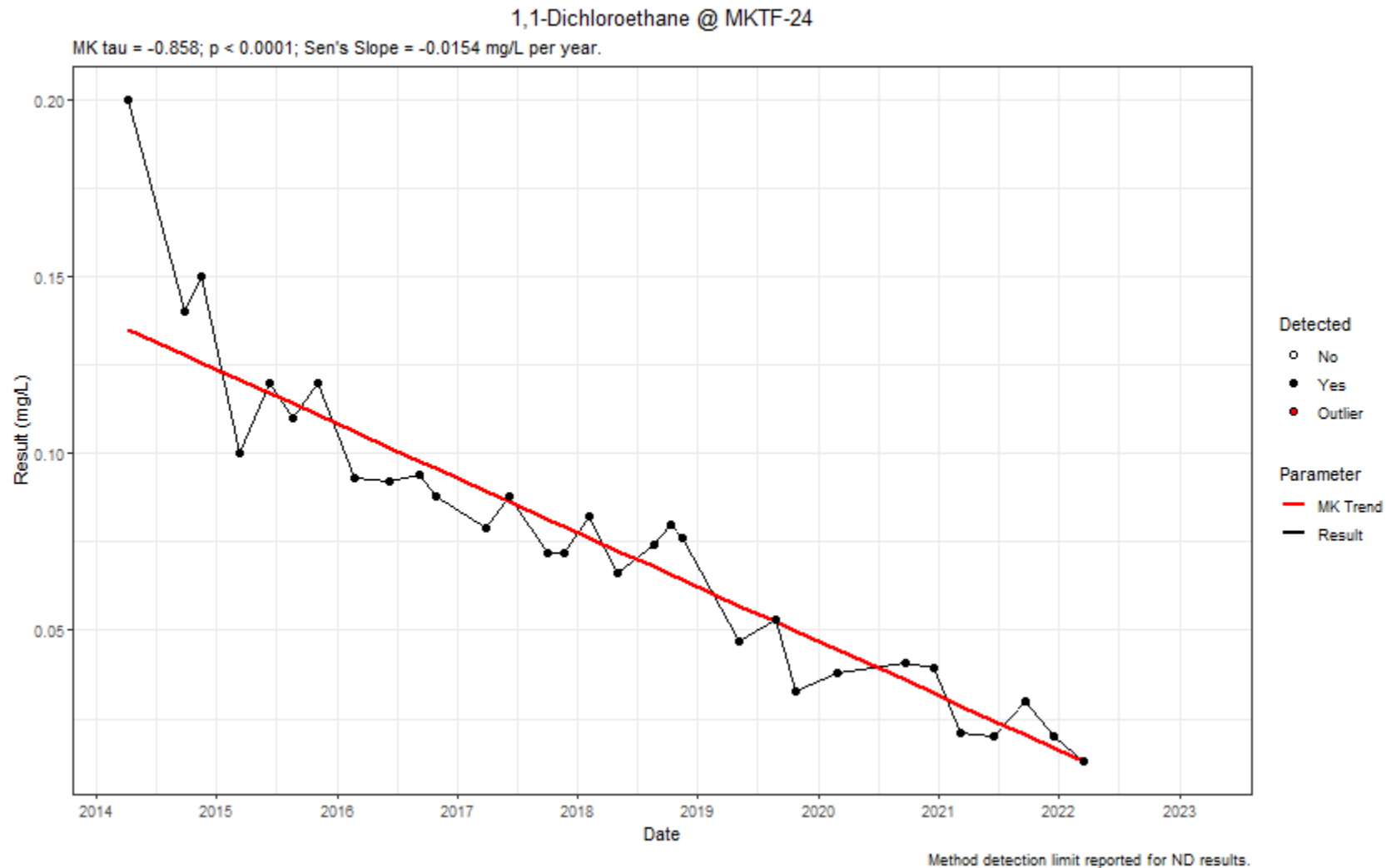
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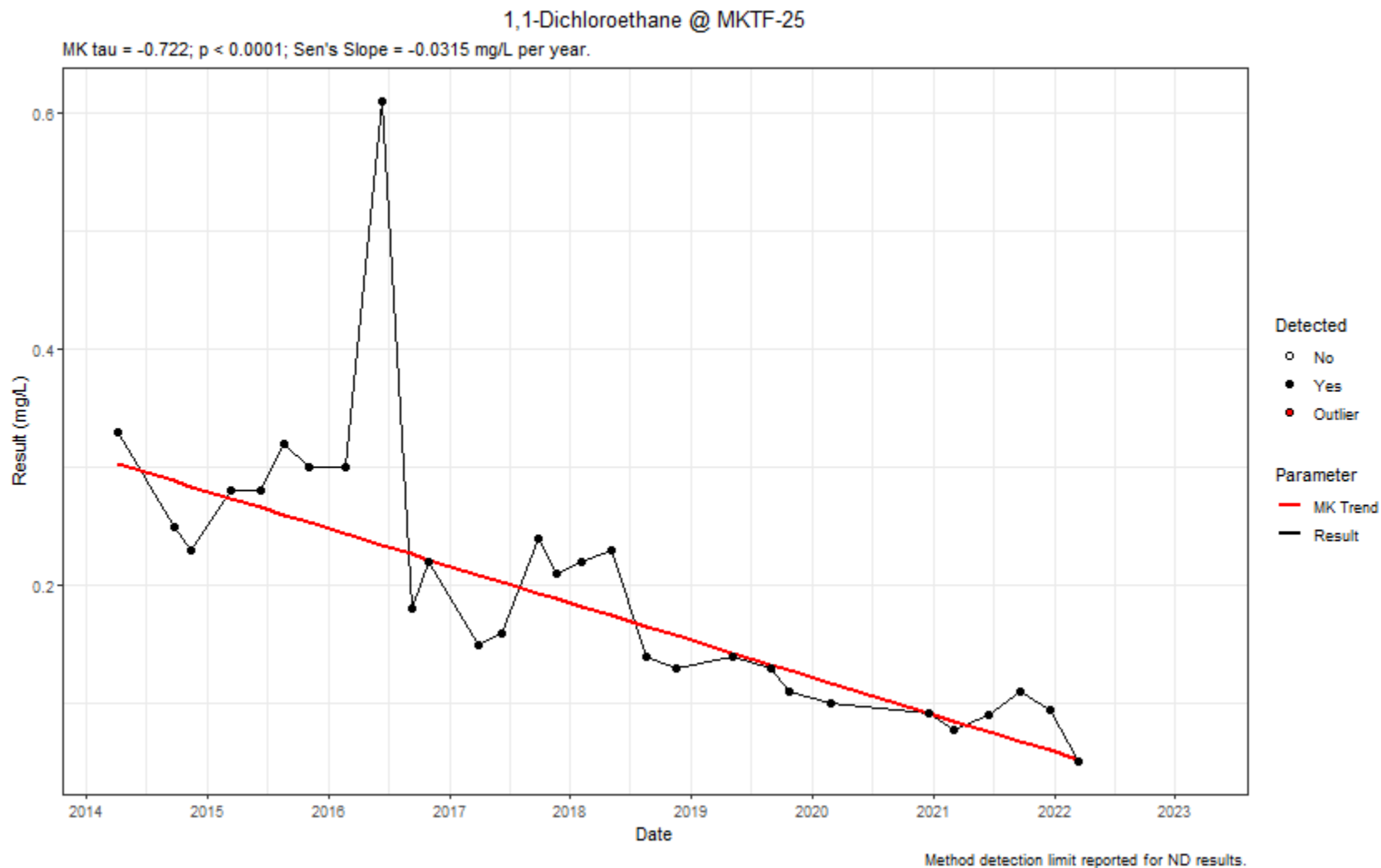
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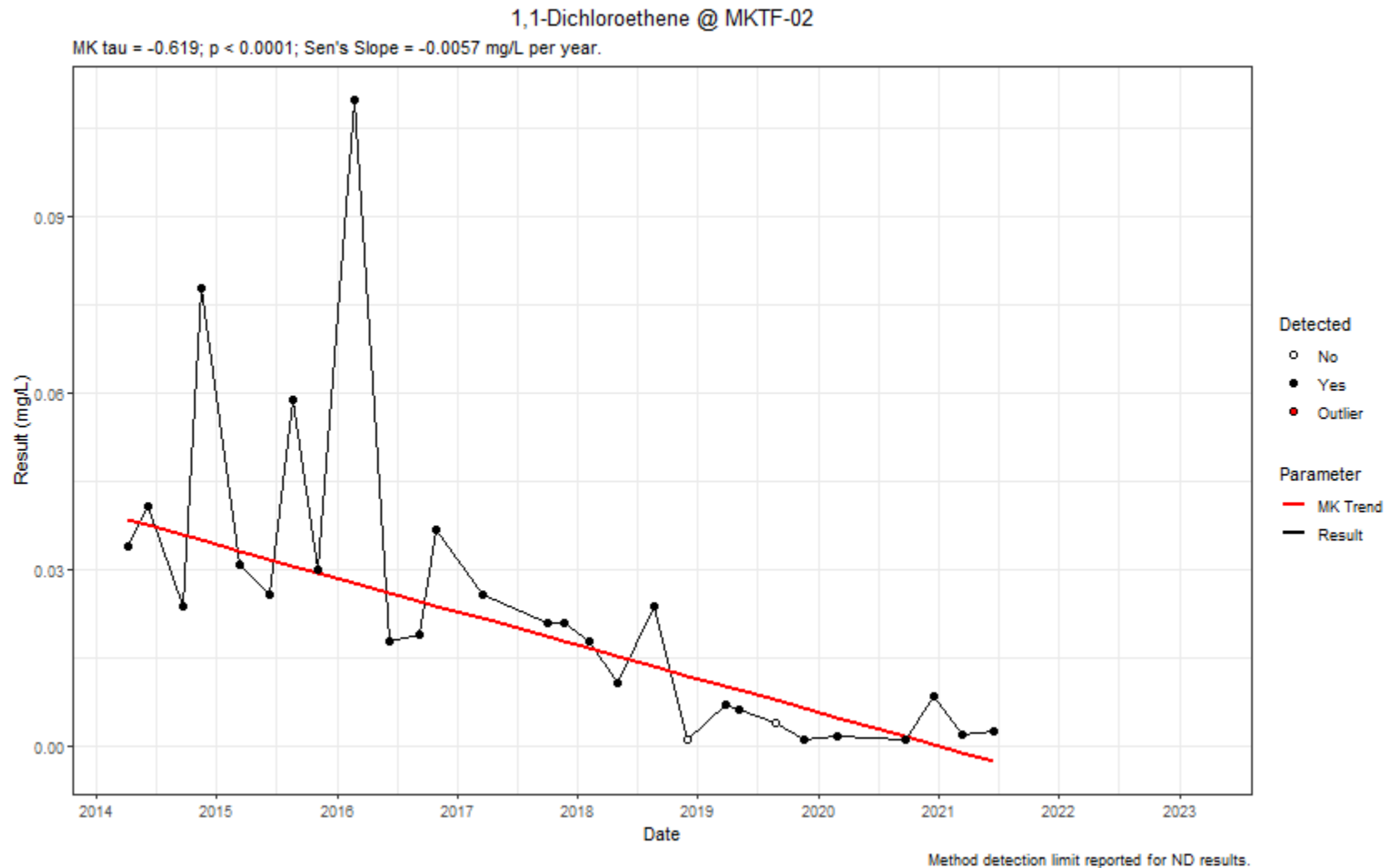
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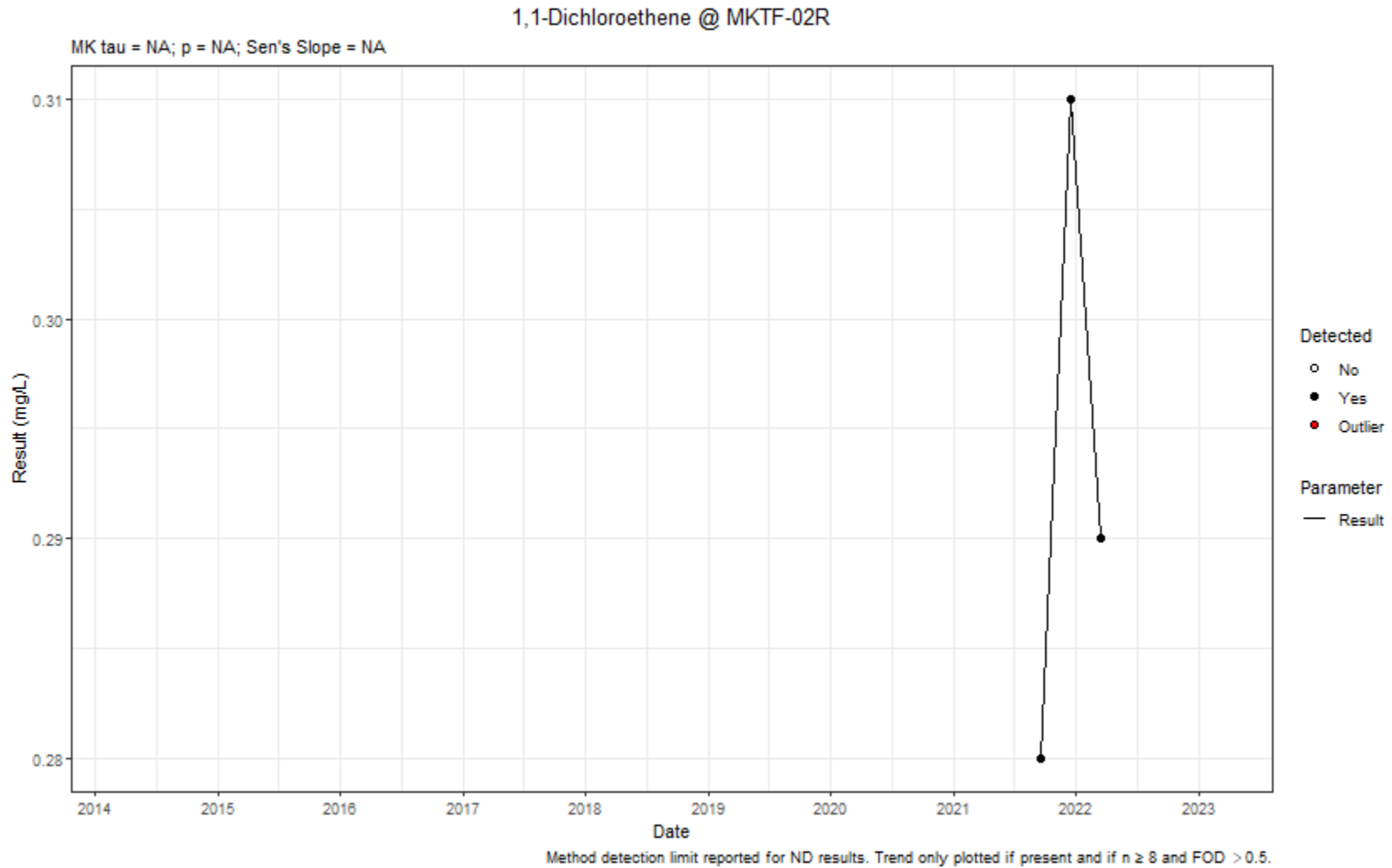
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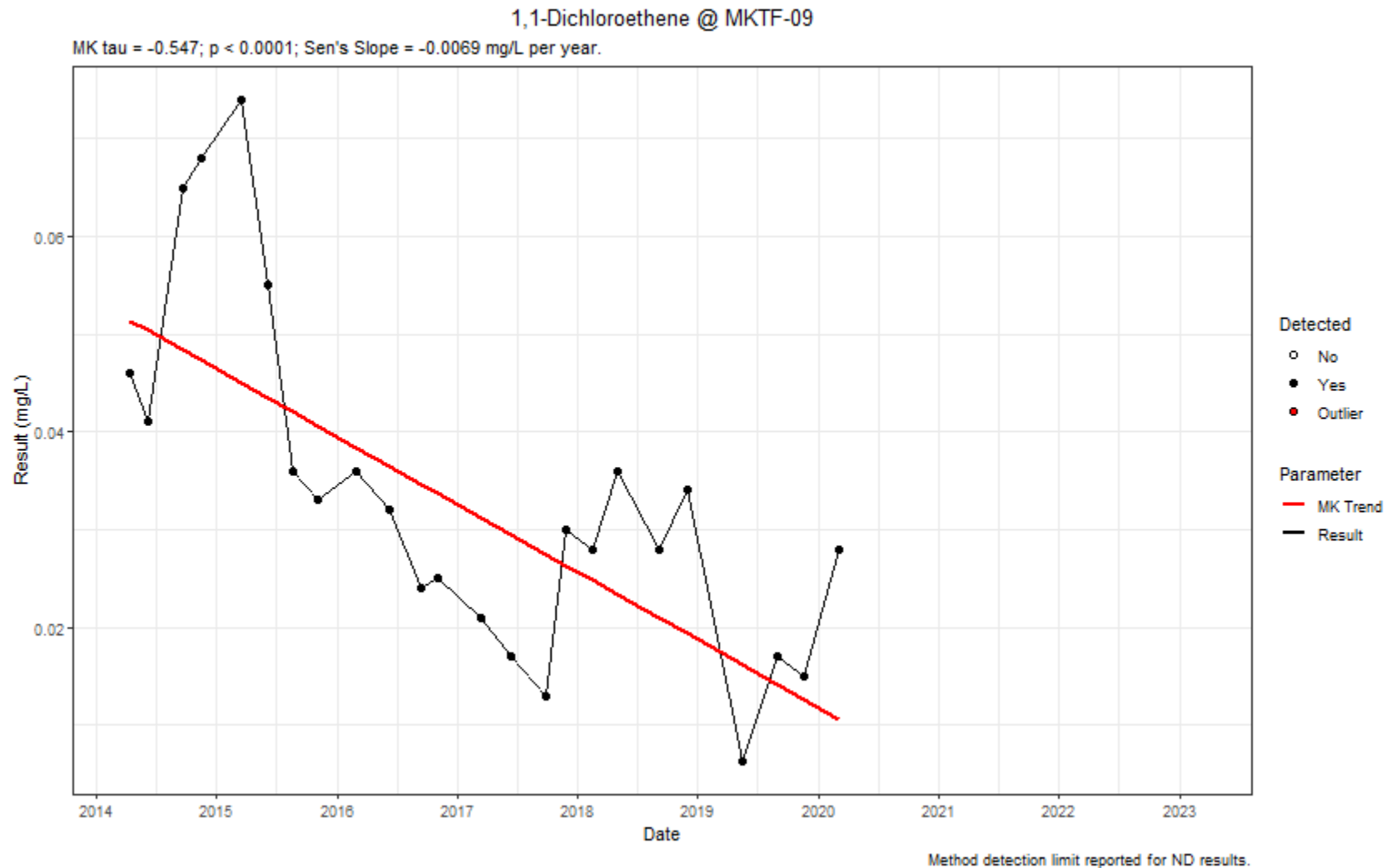
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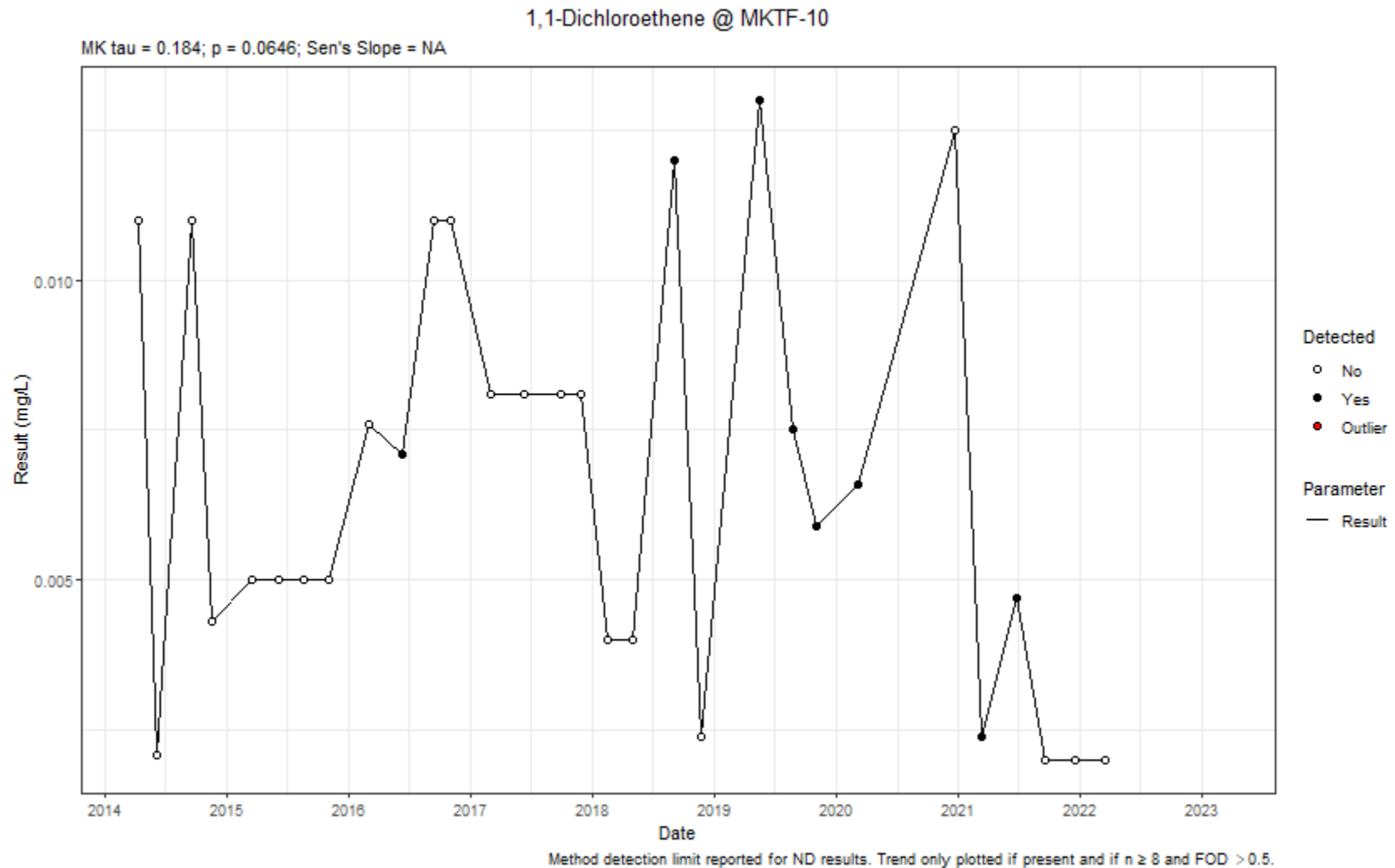
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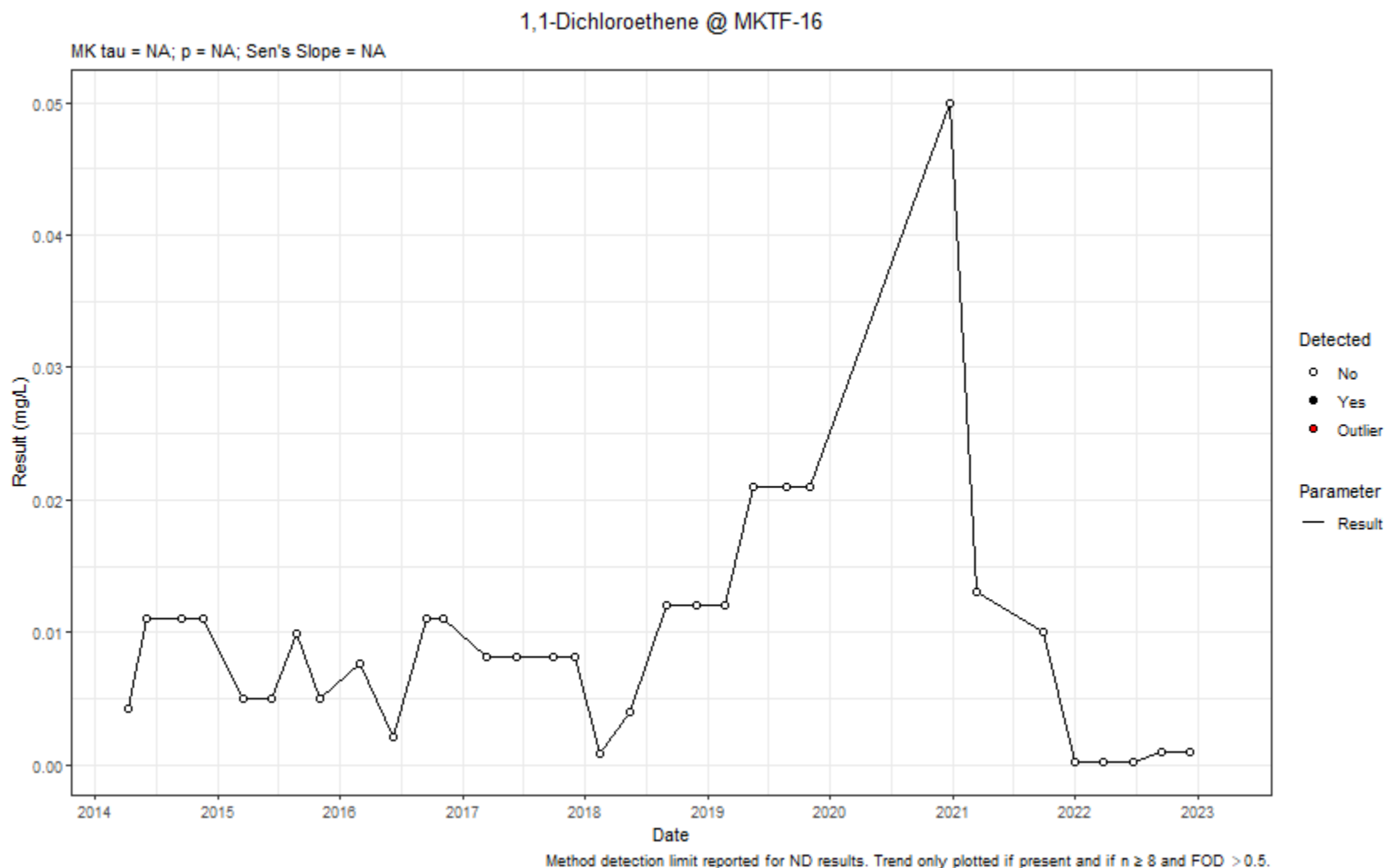
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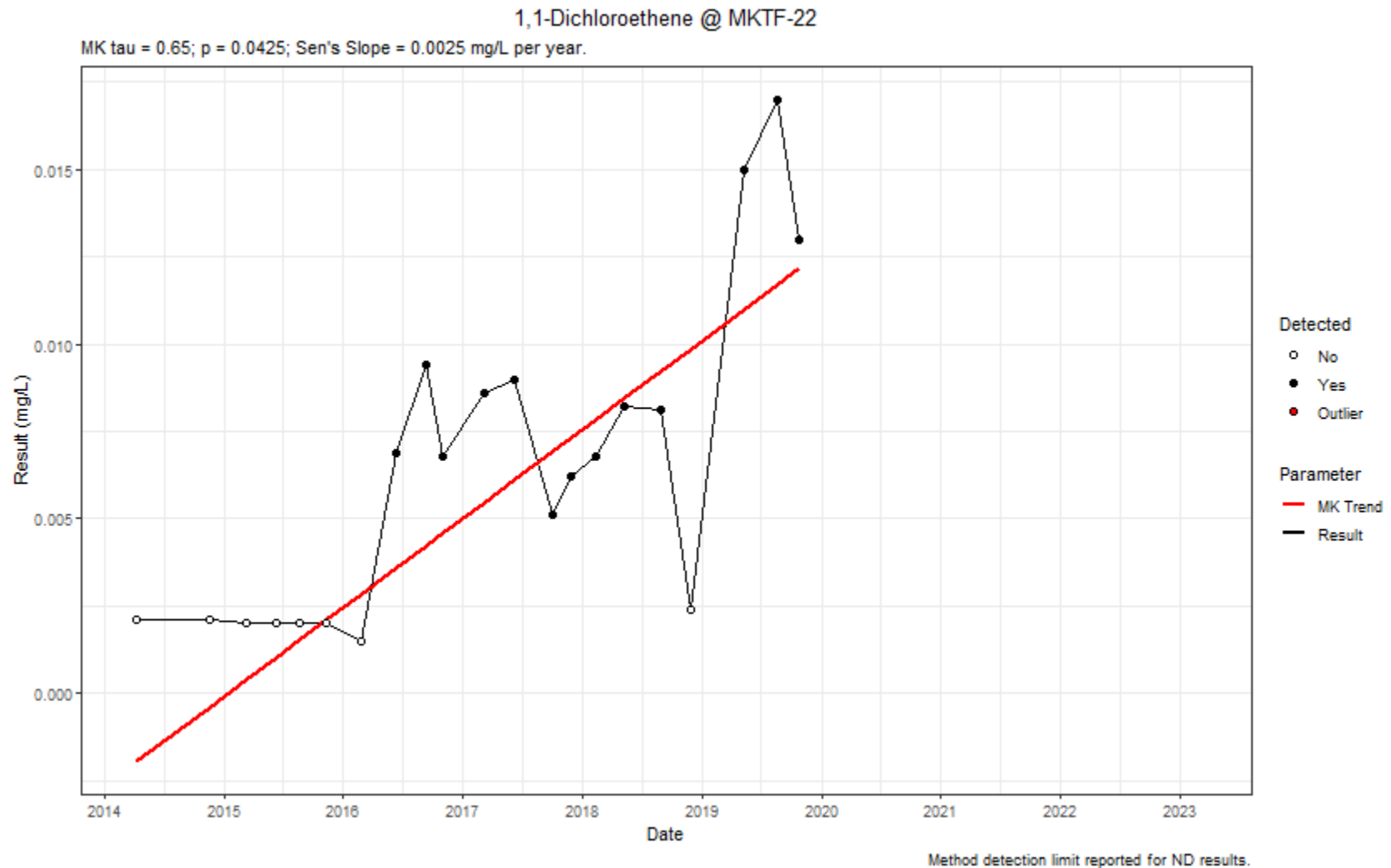
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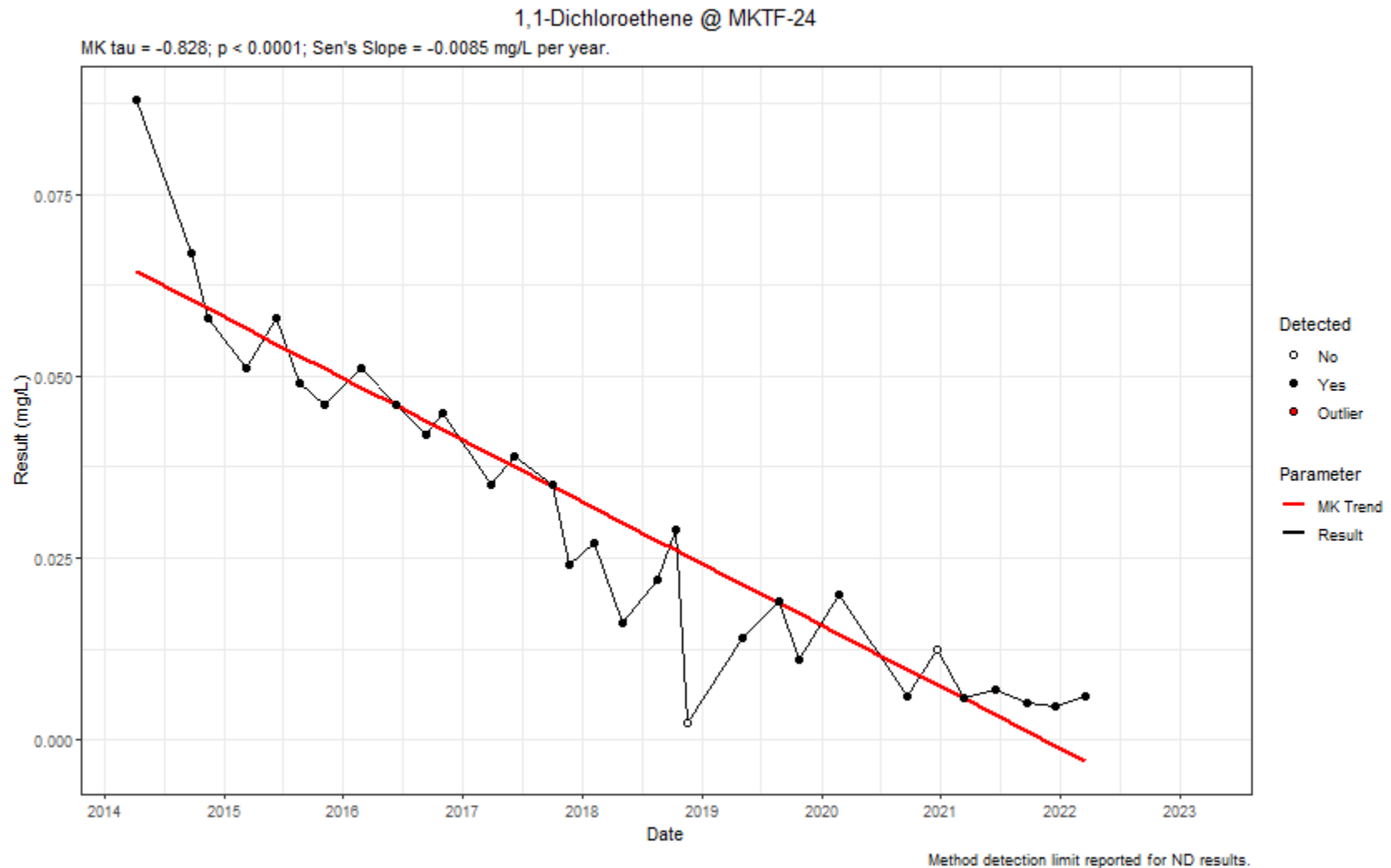
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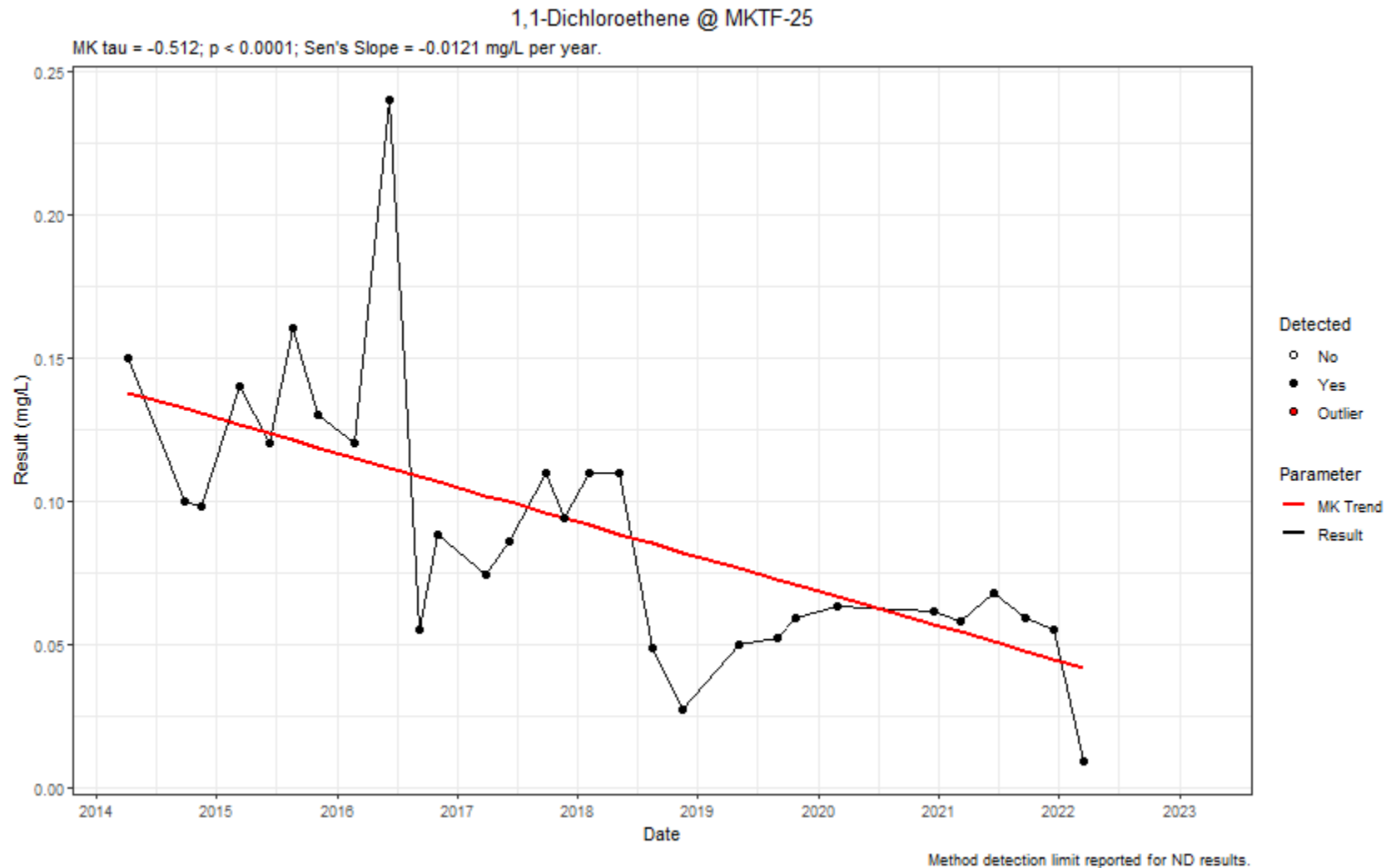
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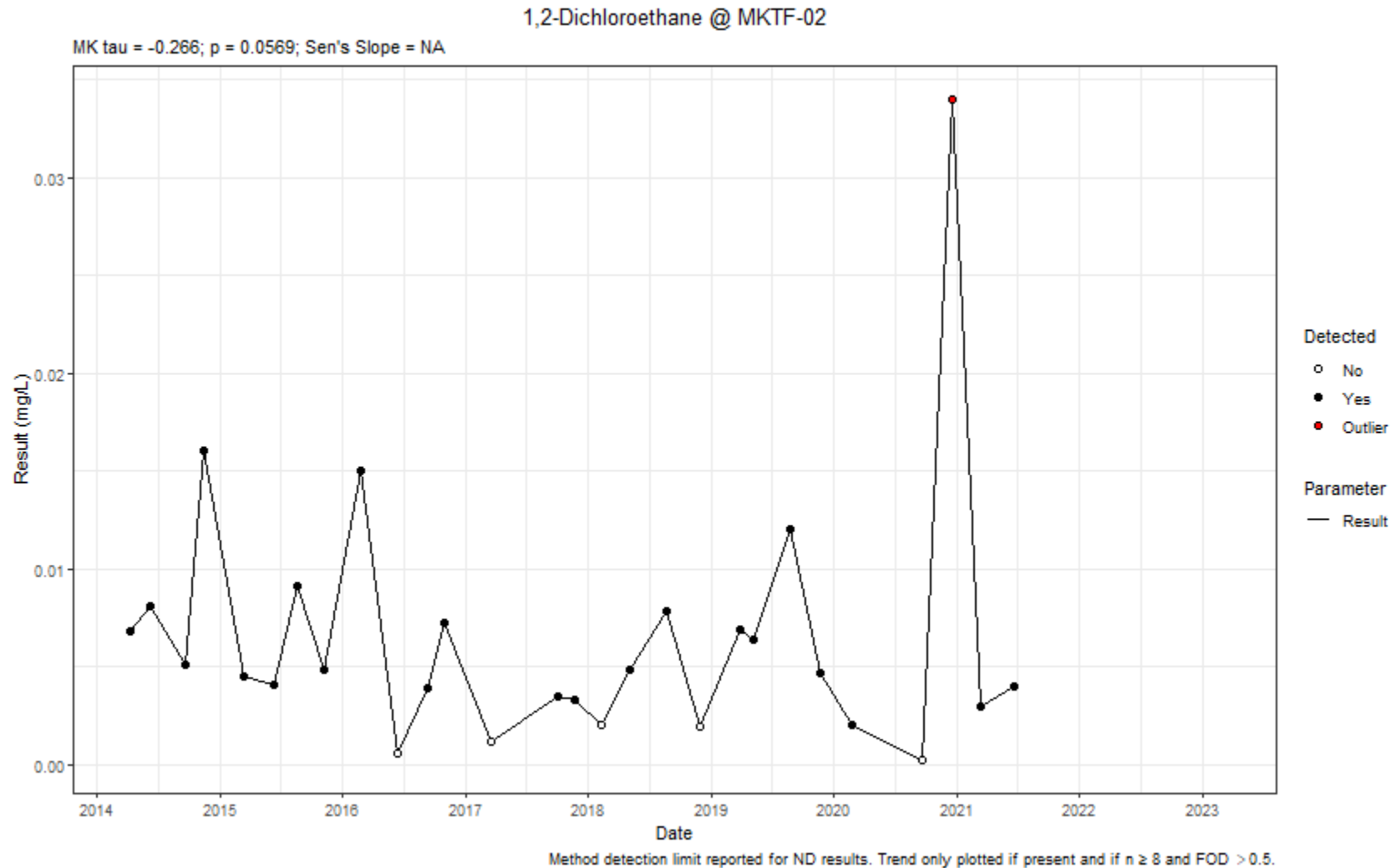
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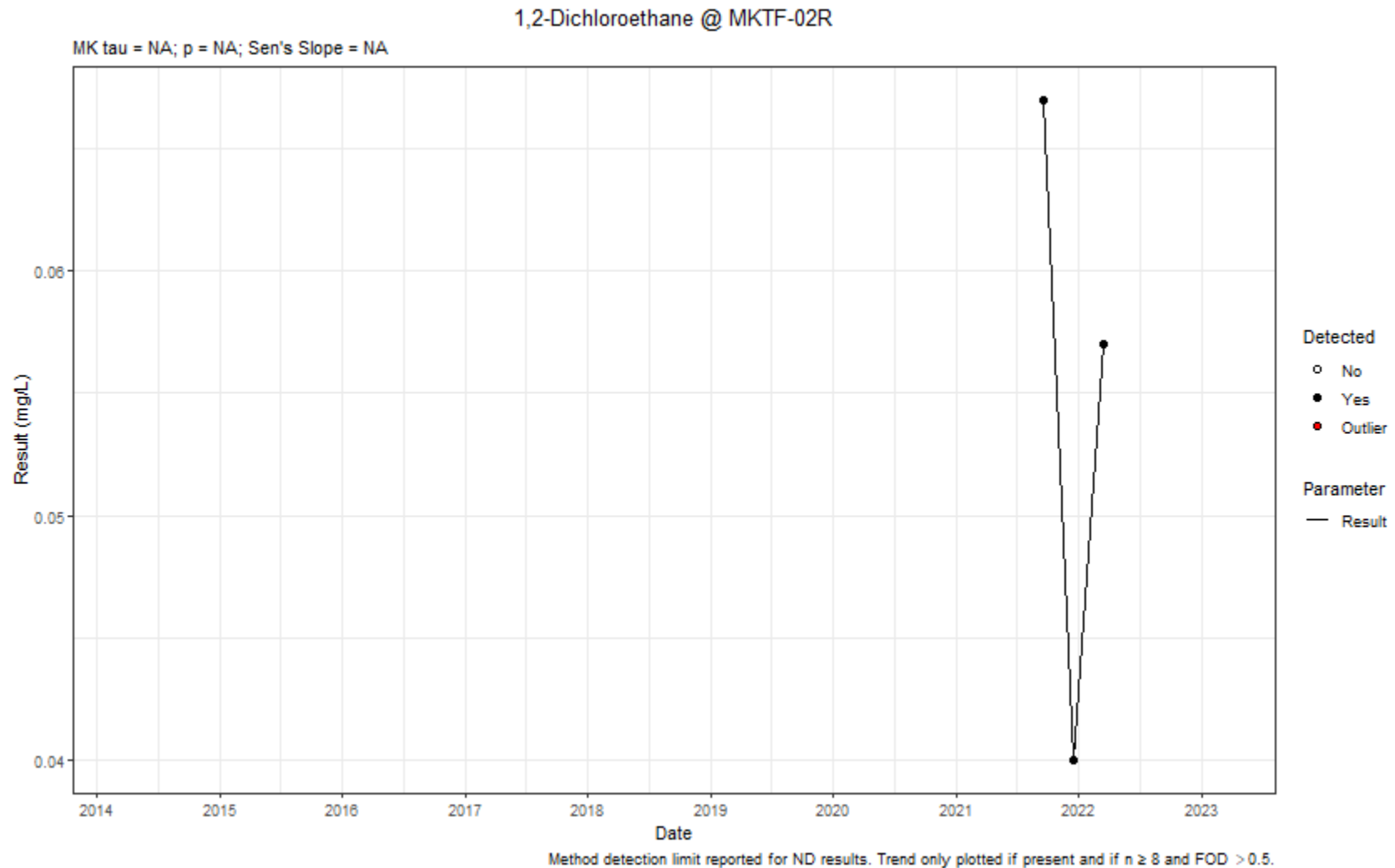
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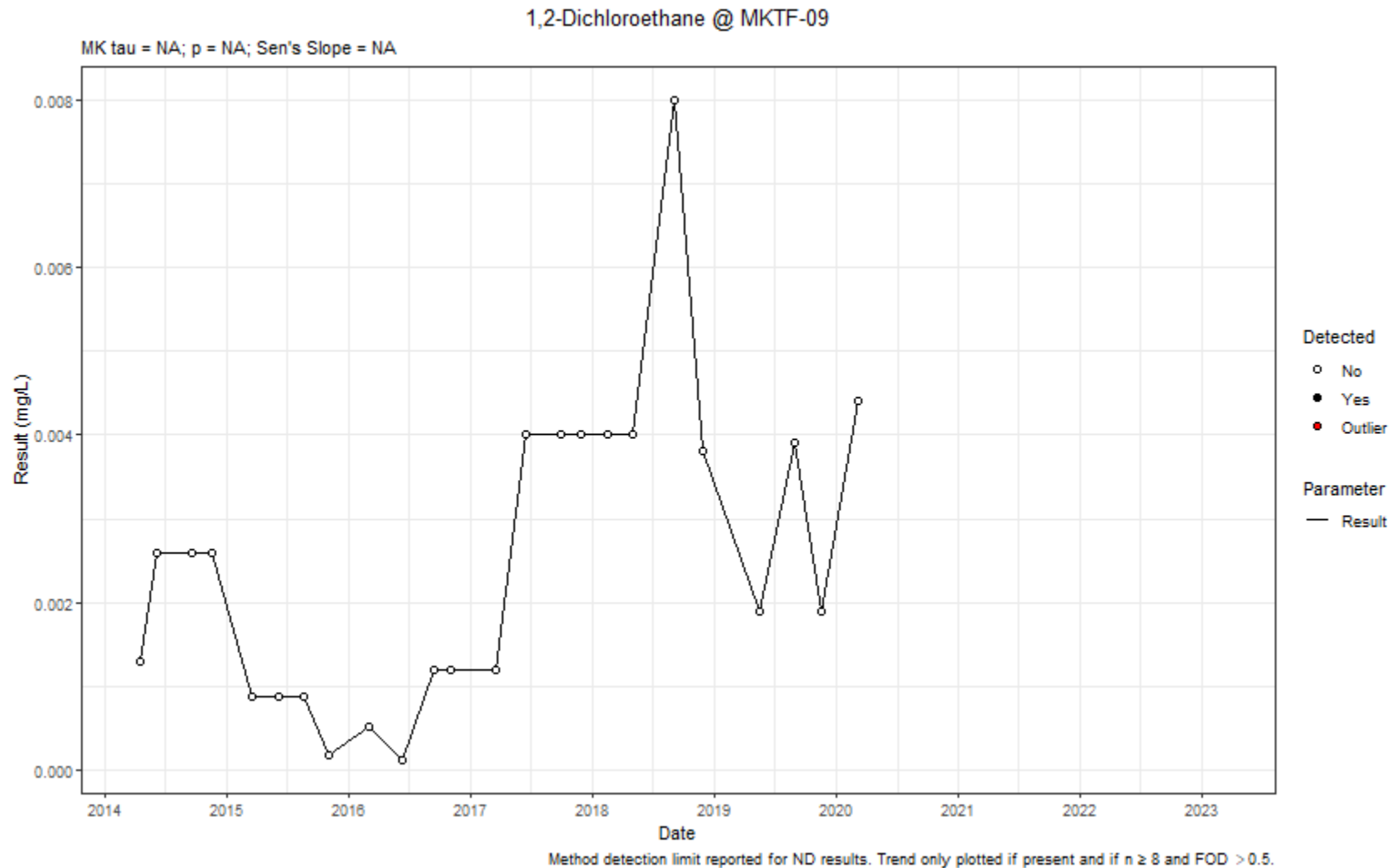
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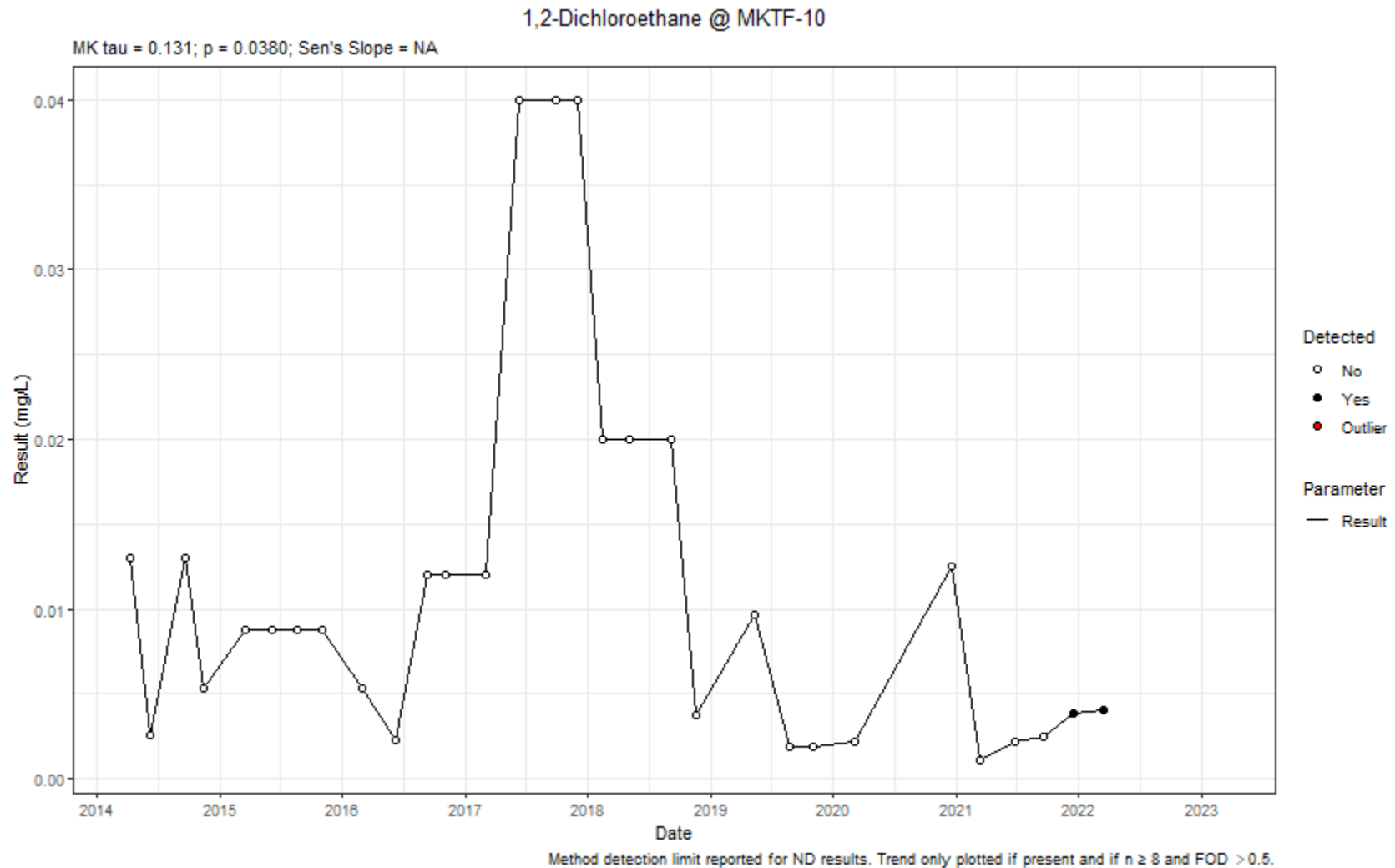
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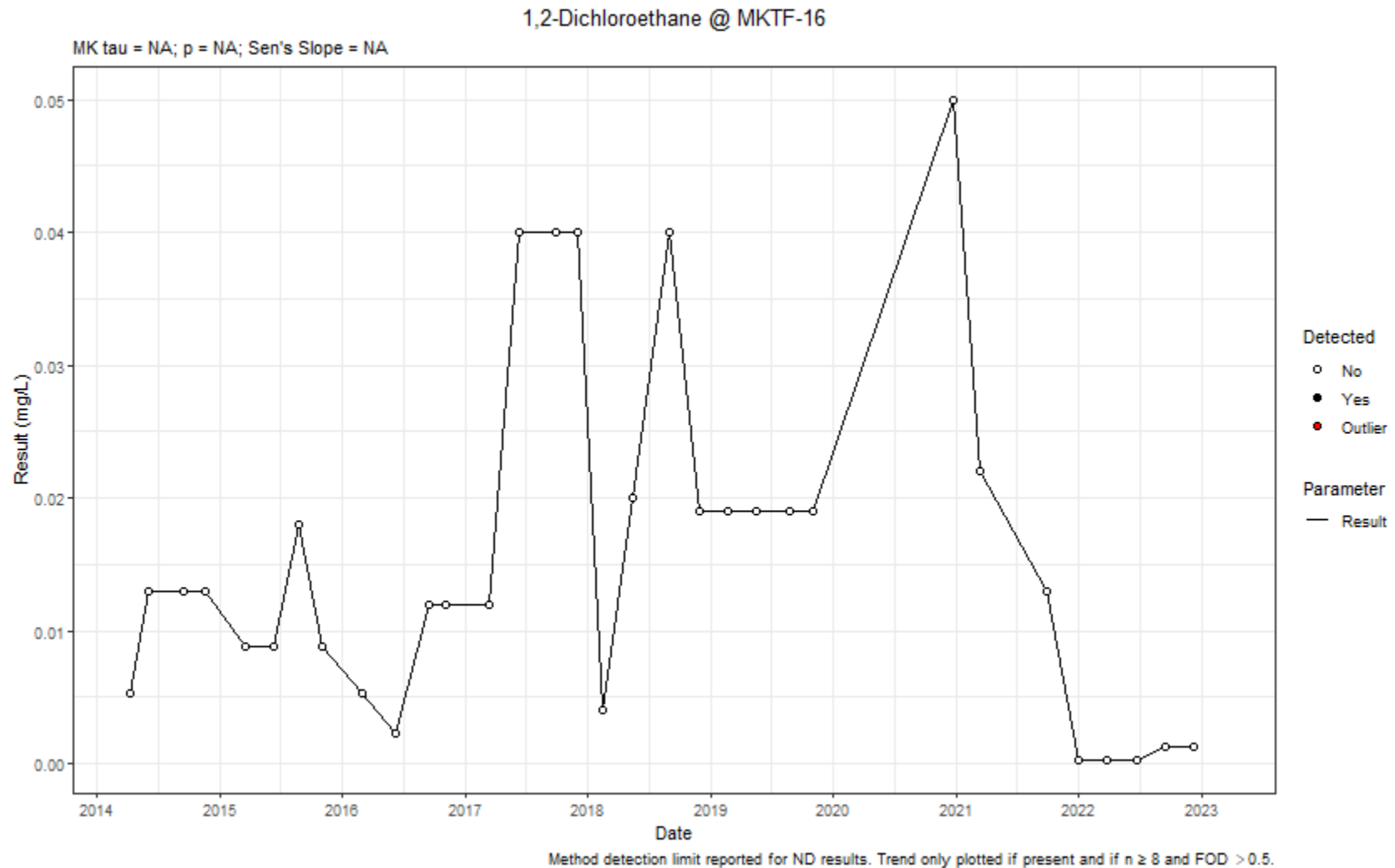
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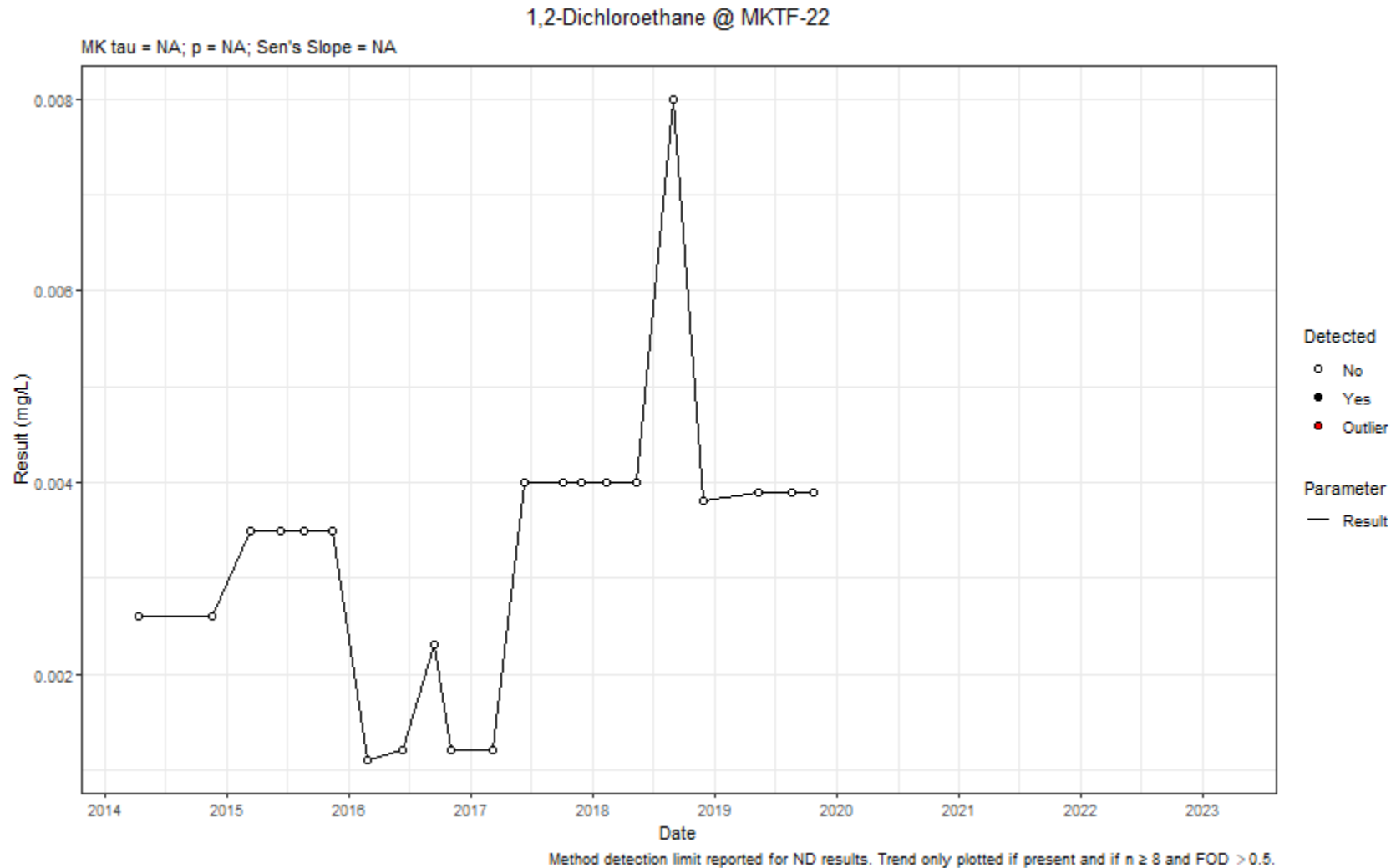
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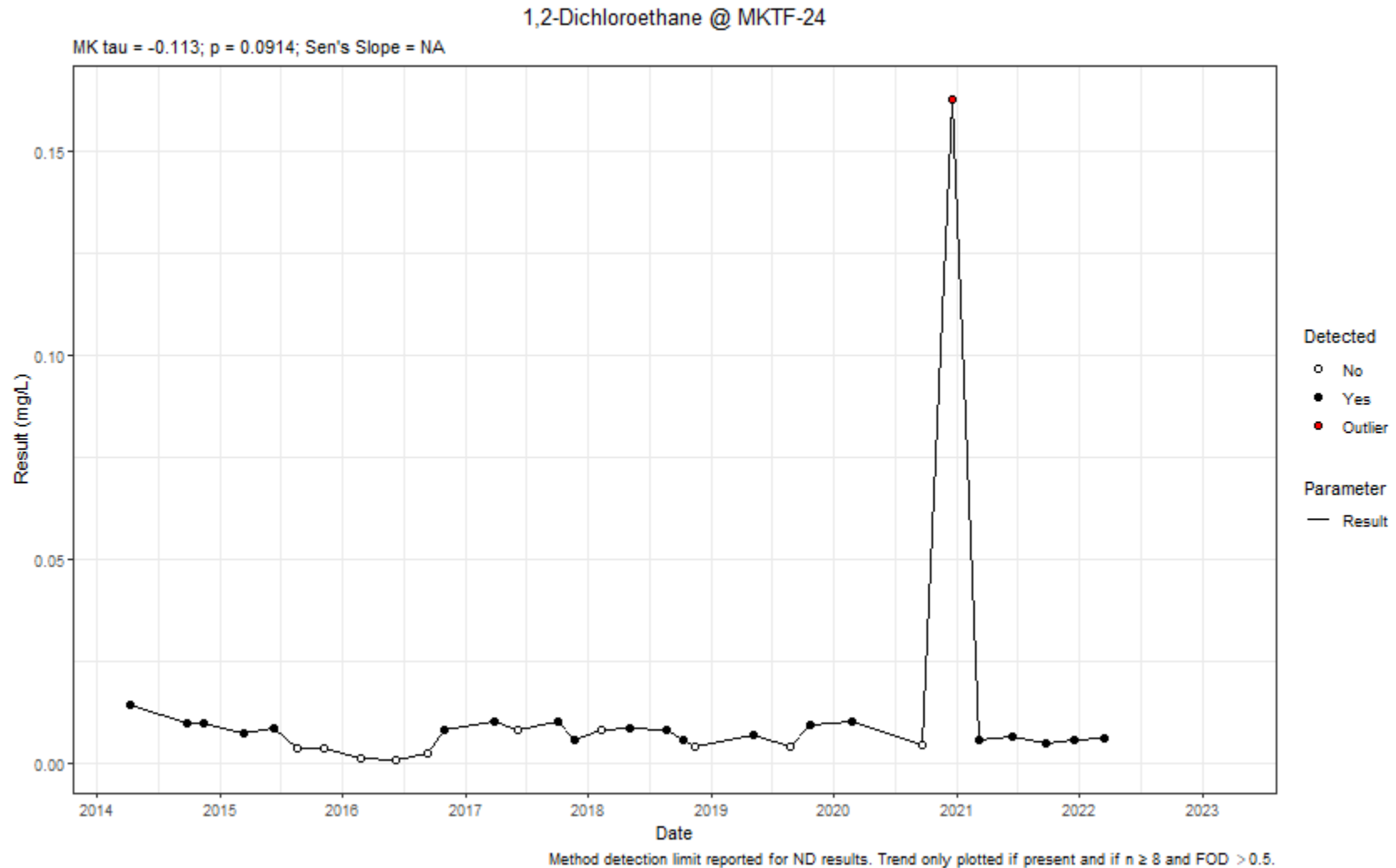
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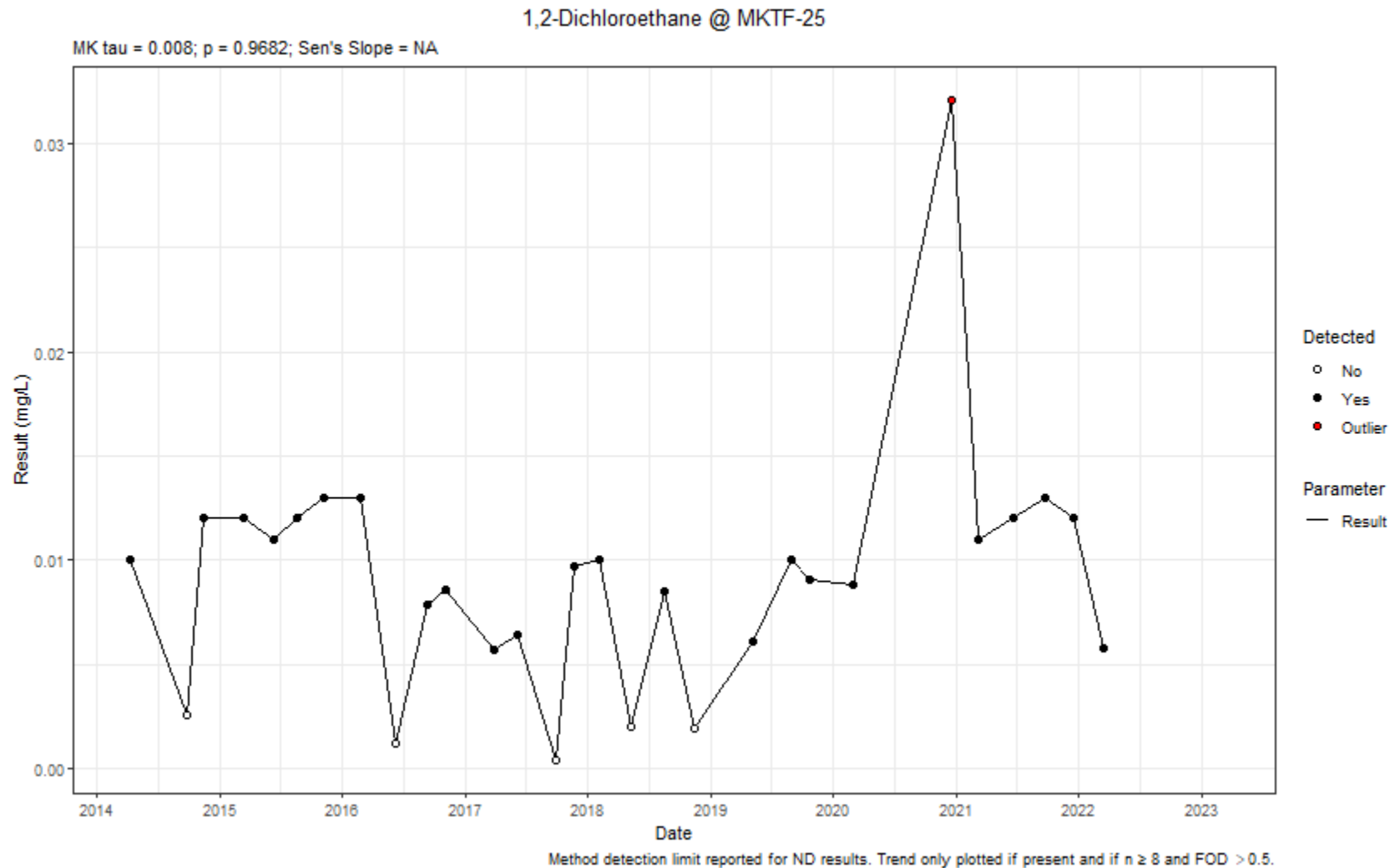
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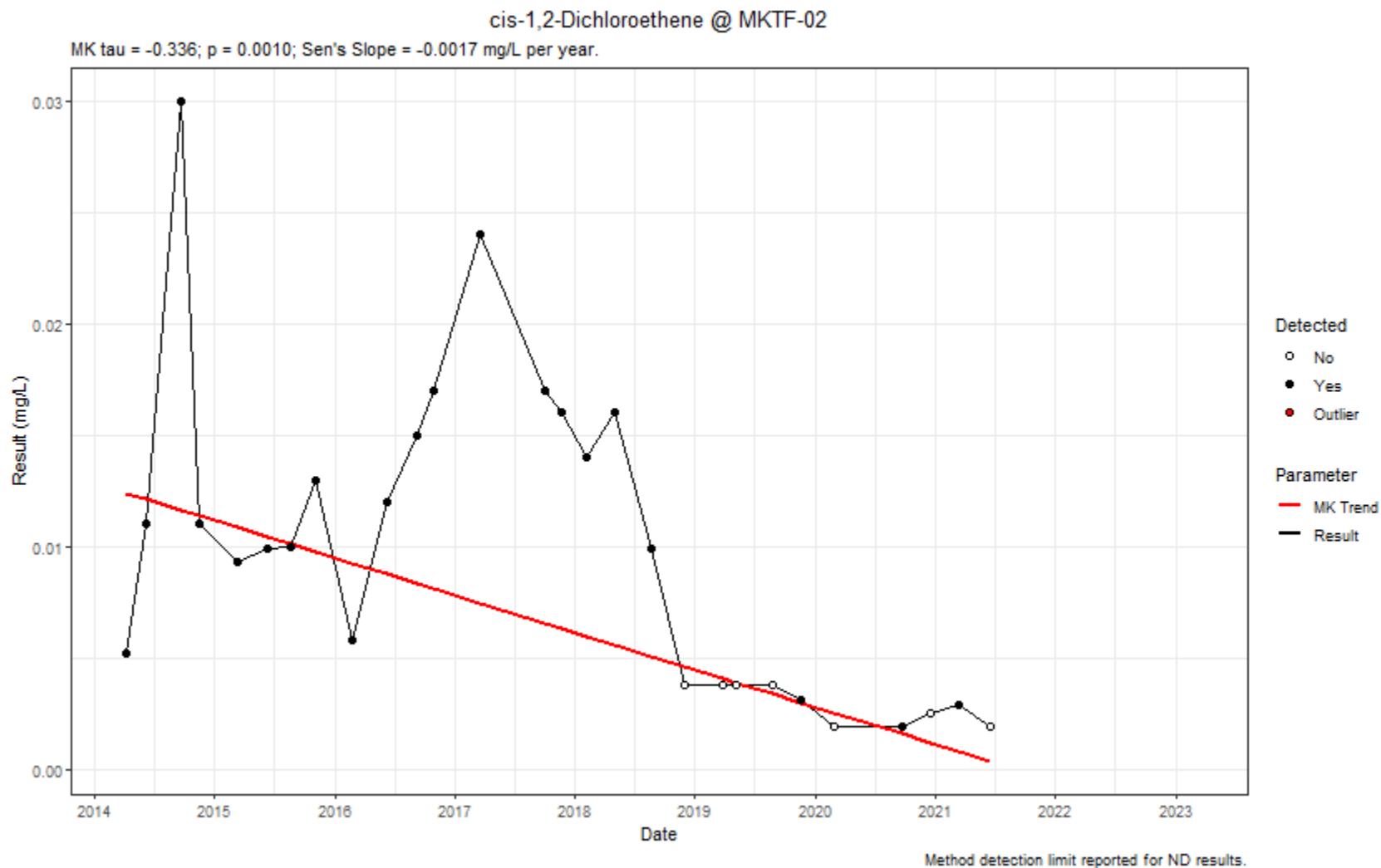
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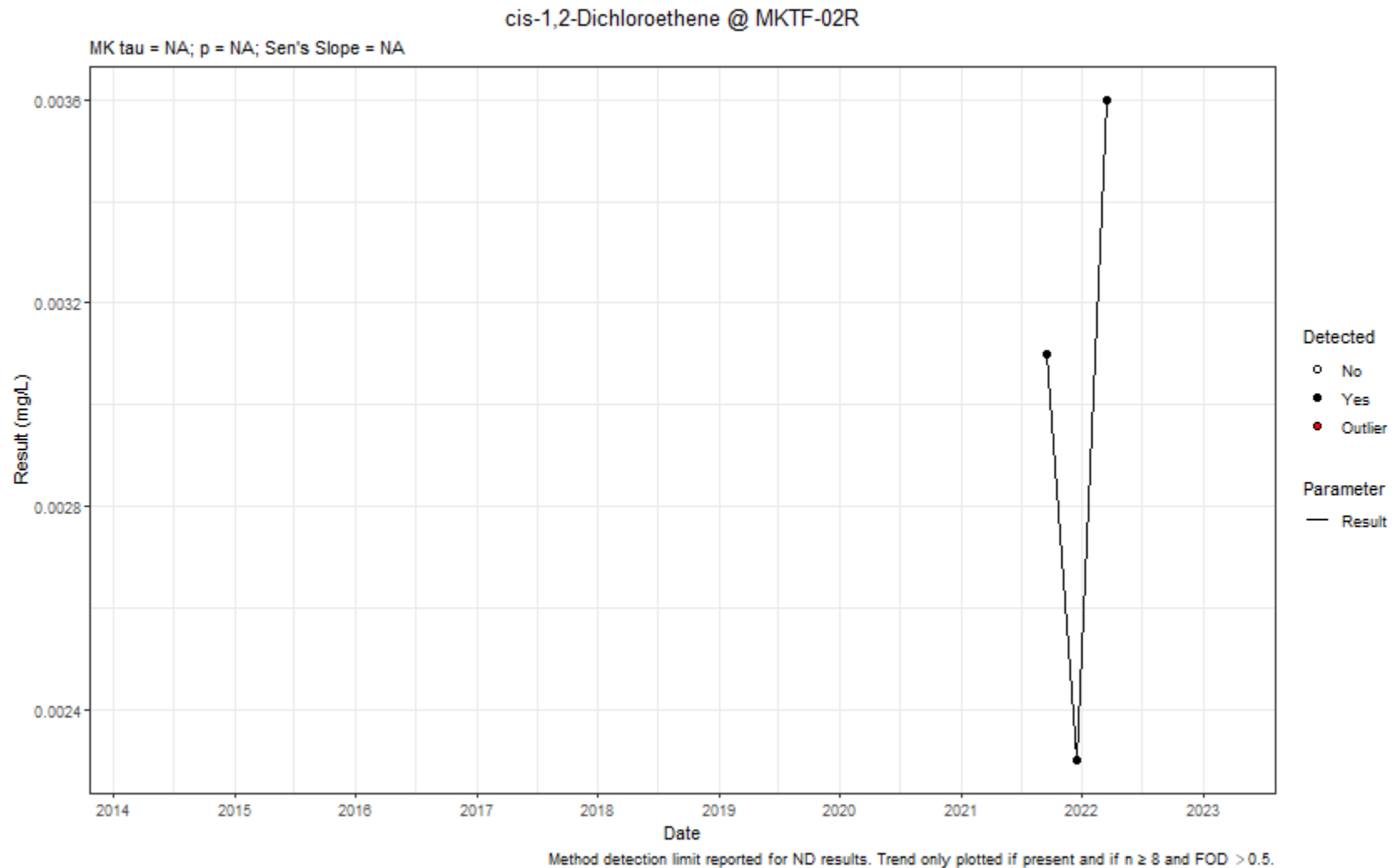
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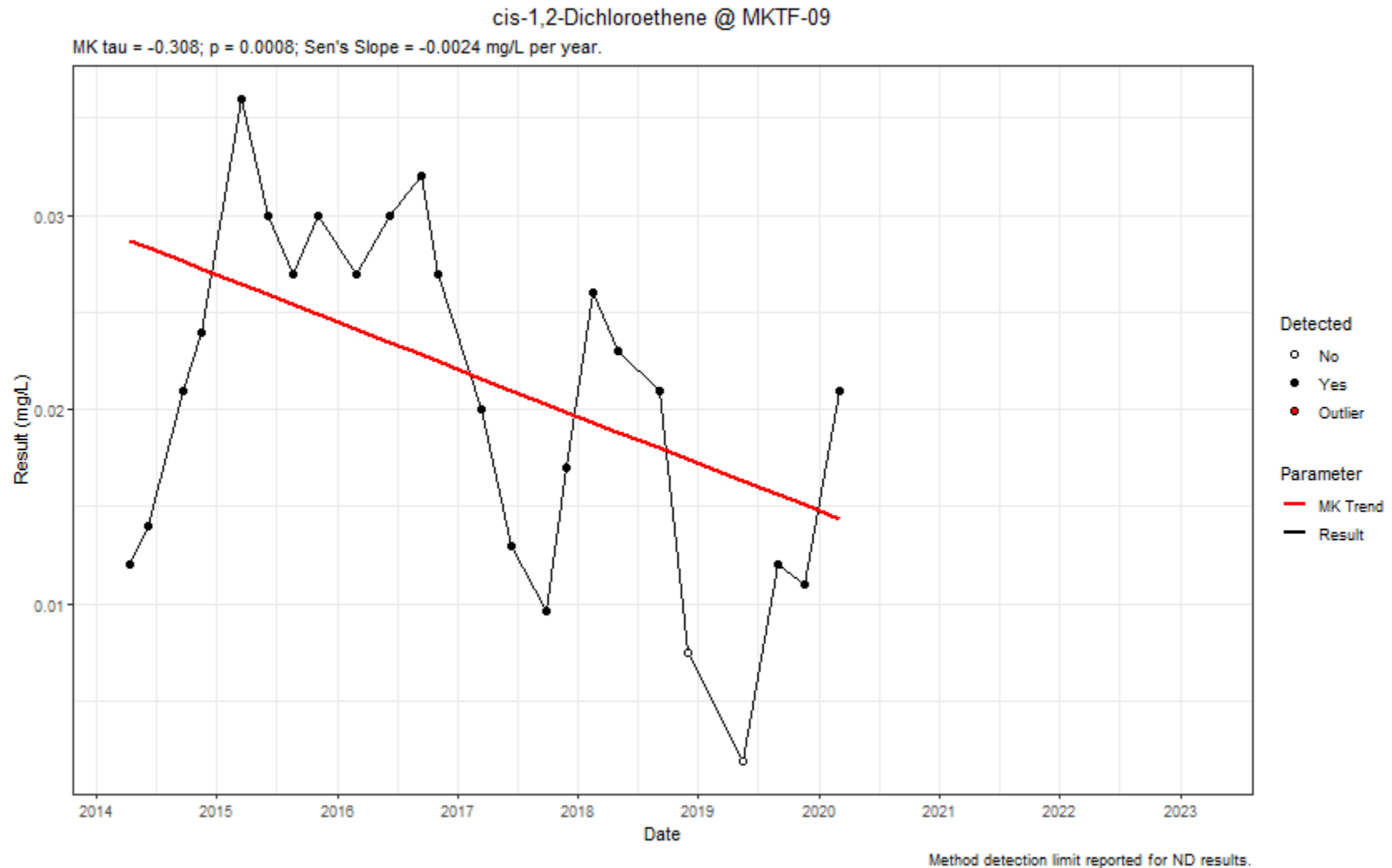
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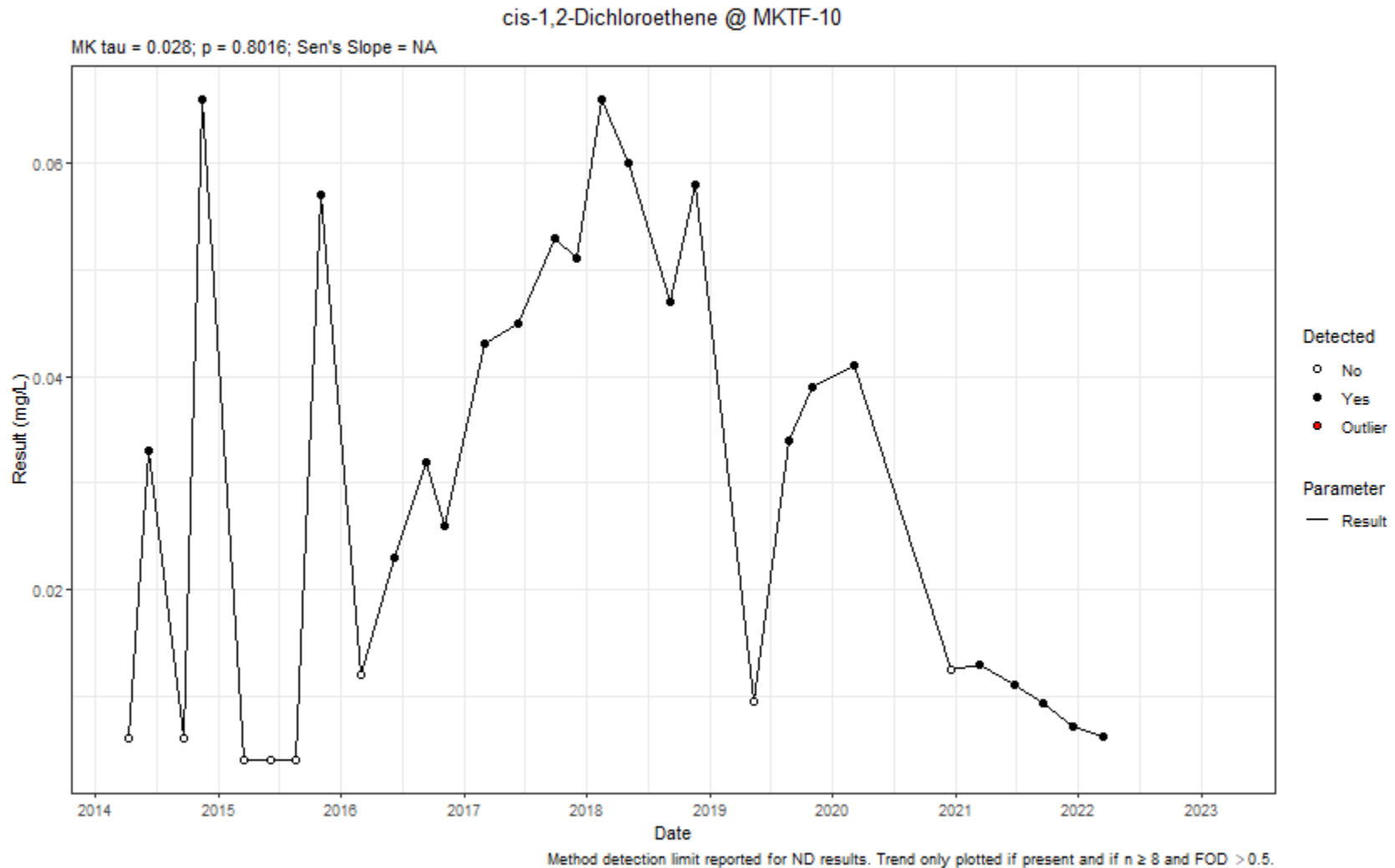
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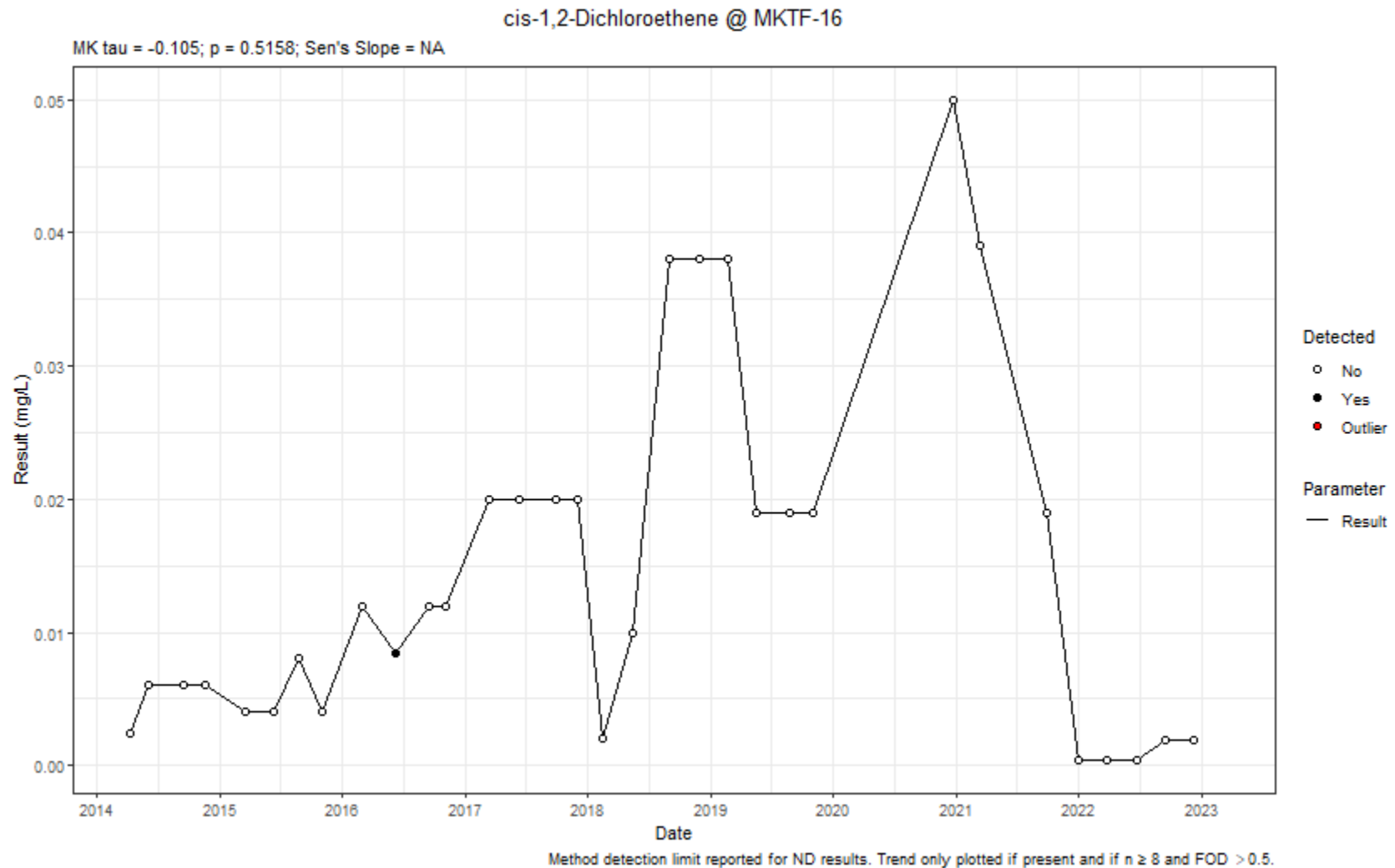
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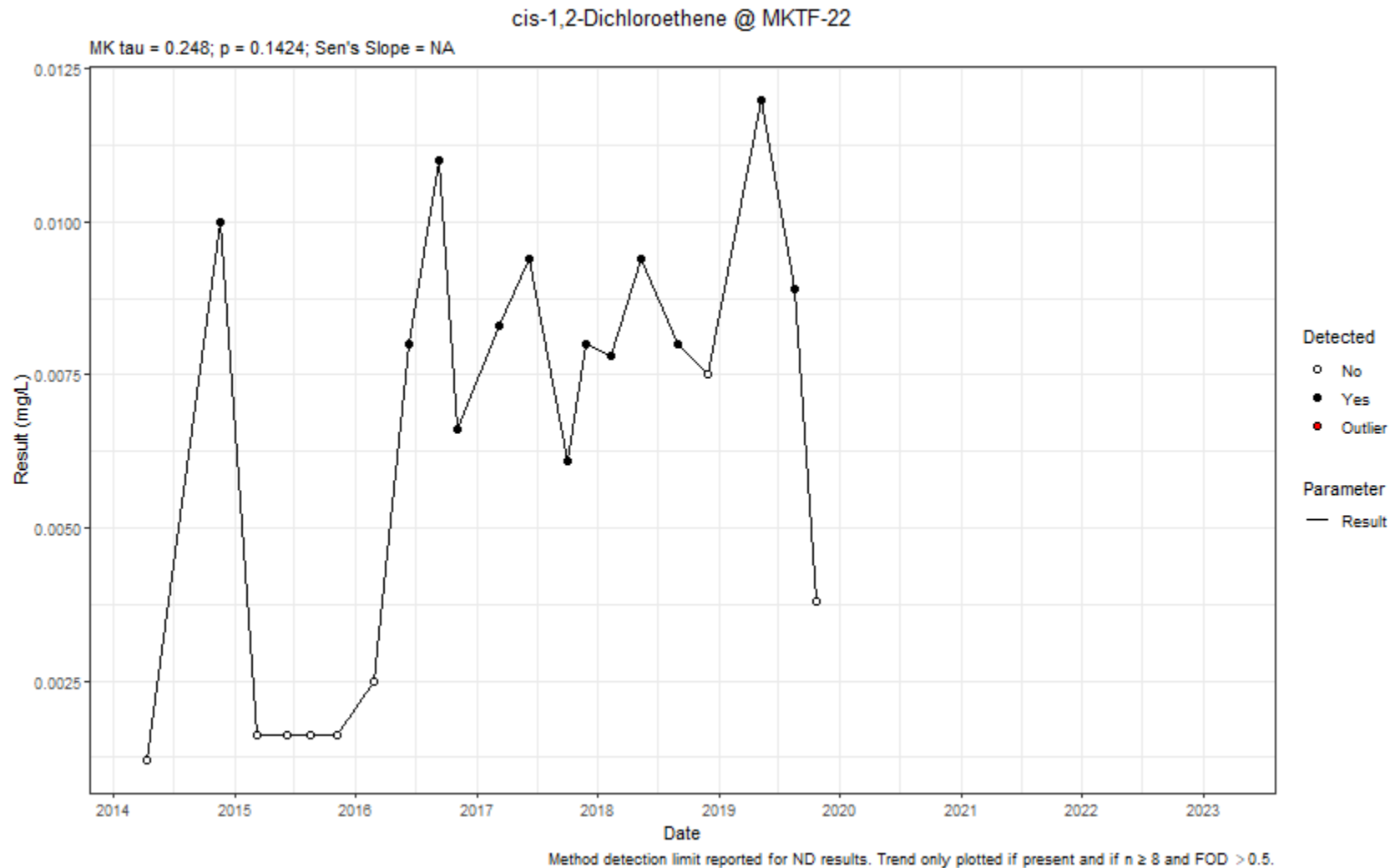
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WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO



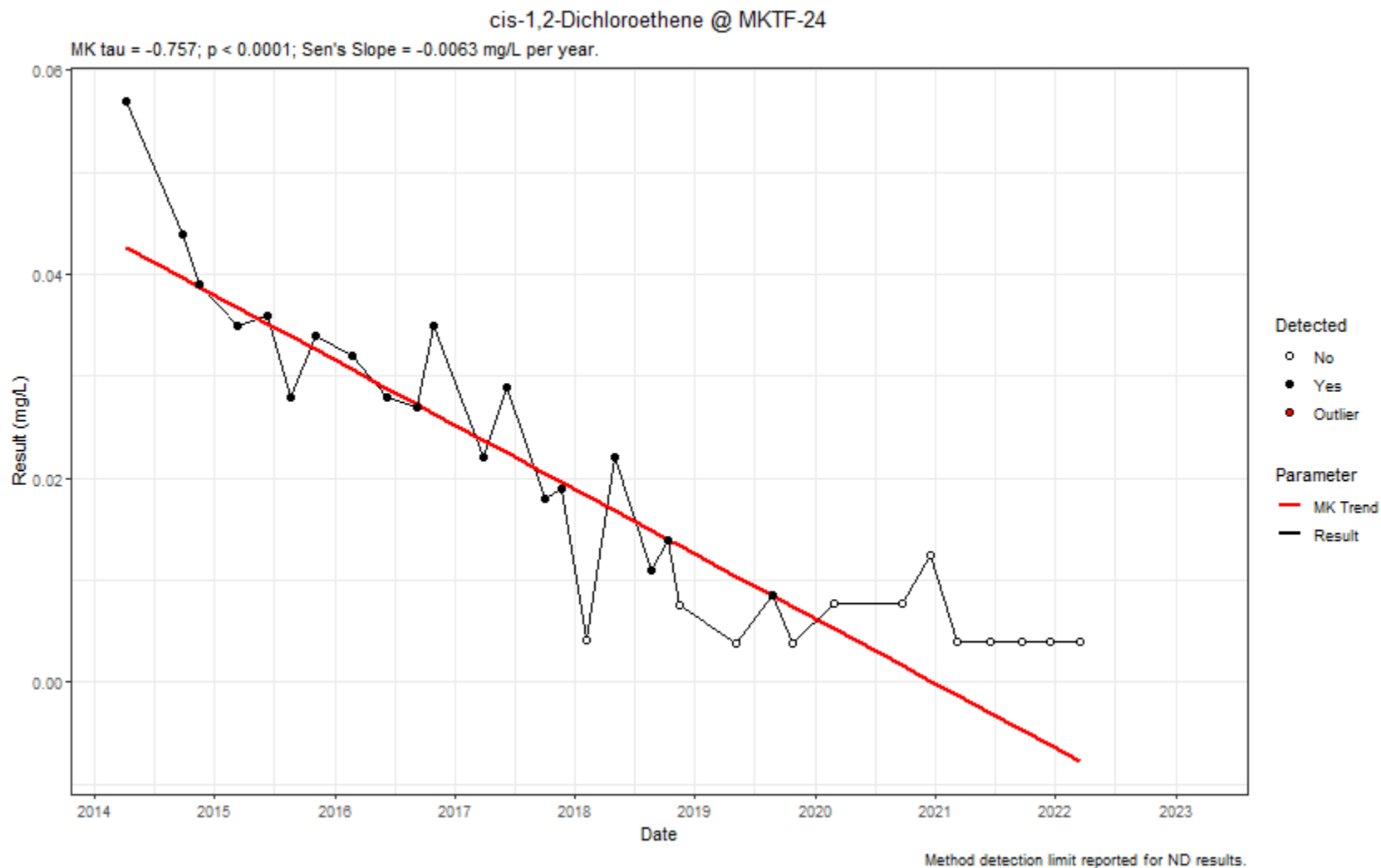
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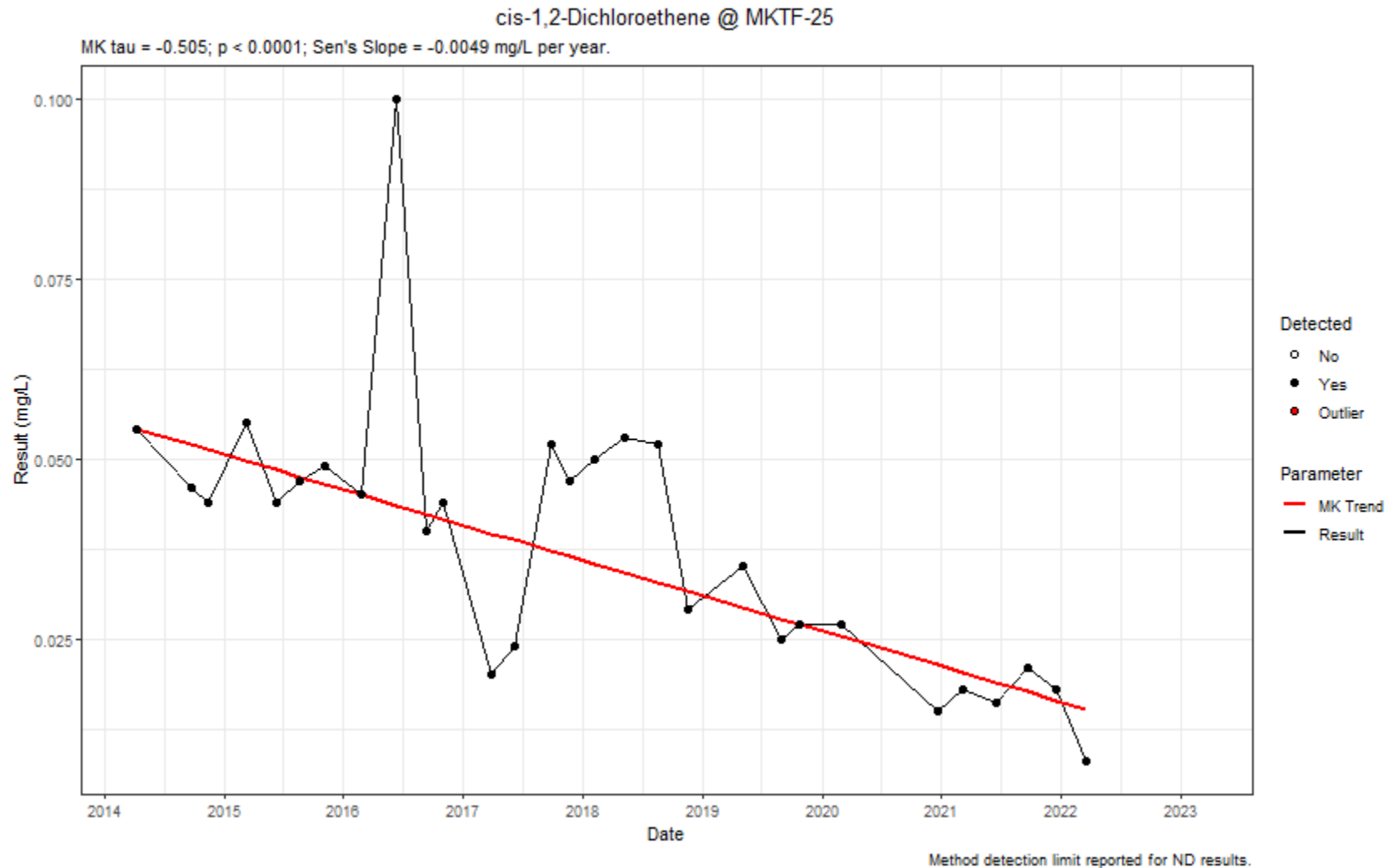
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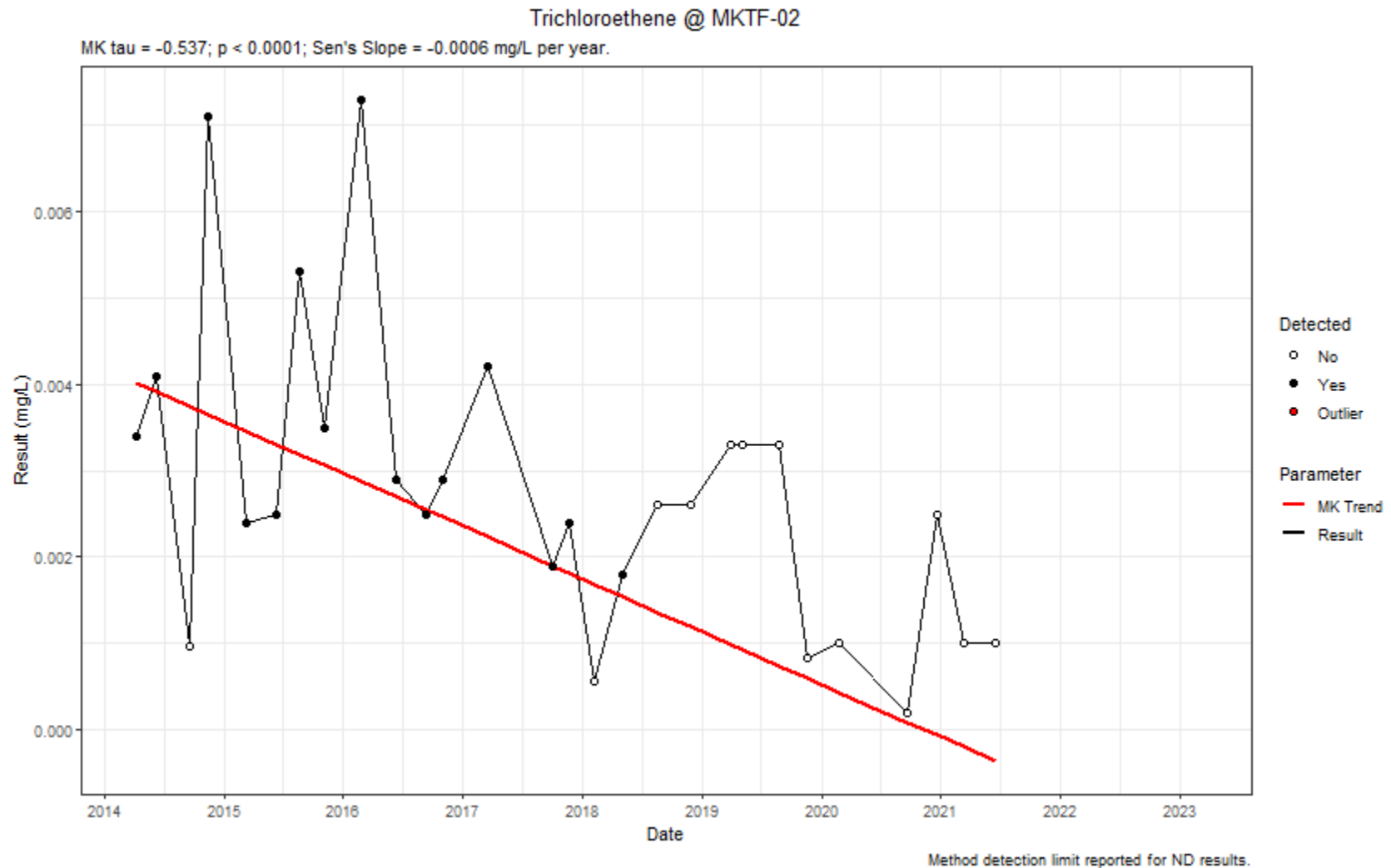
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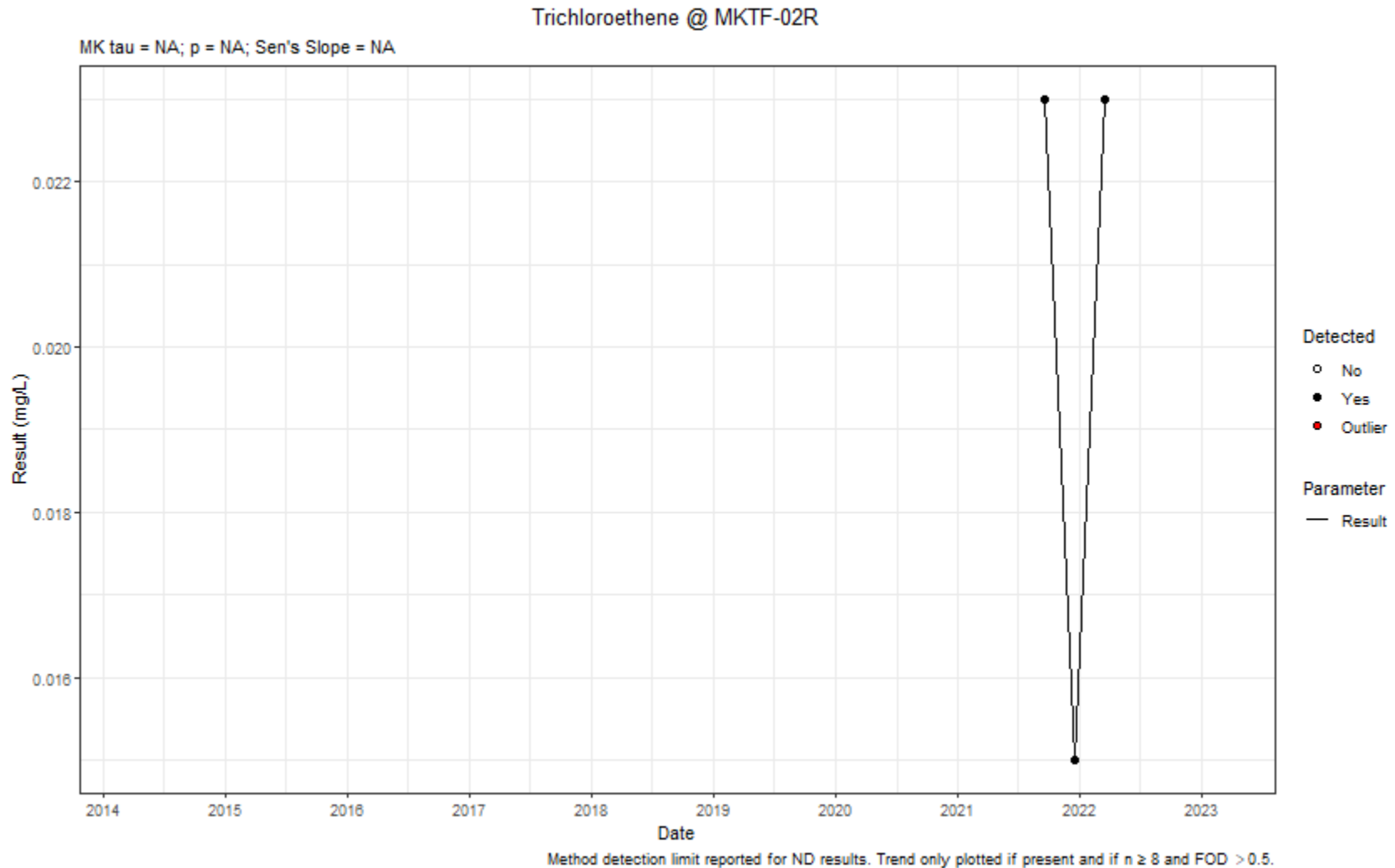
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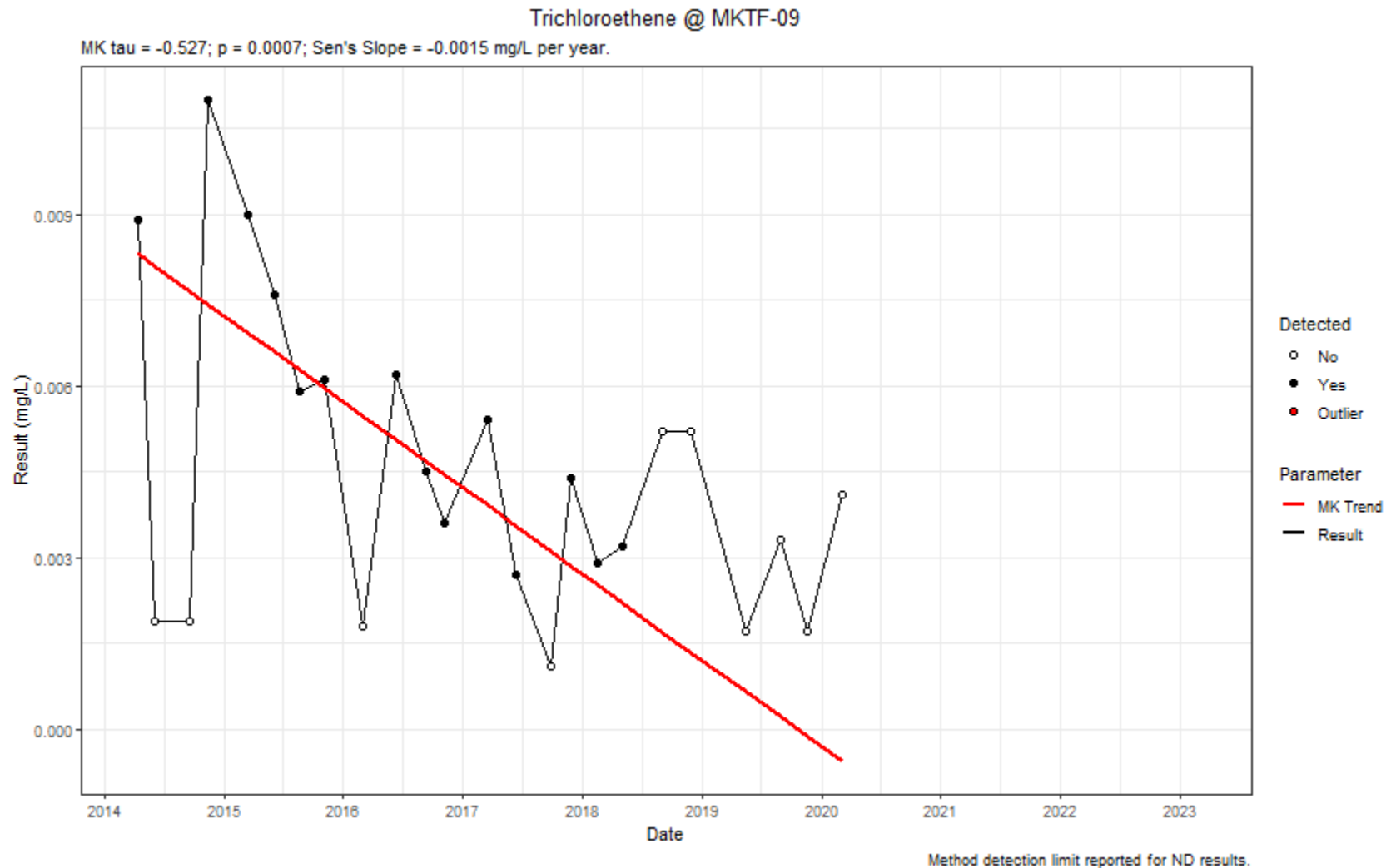
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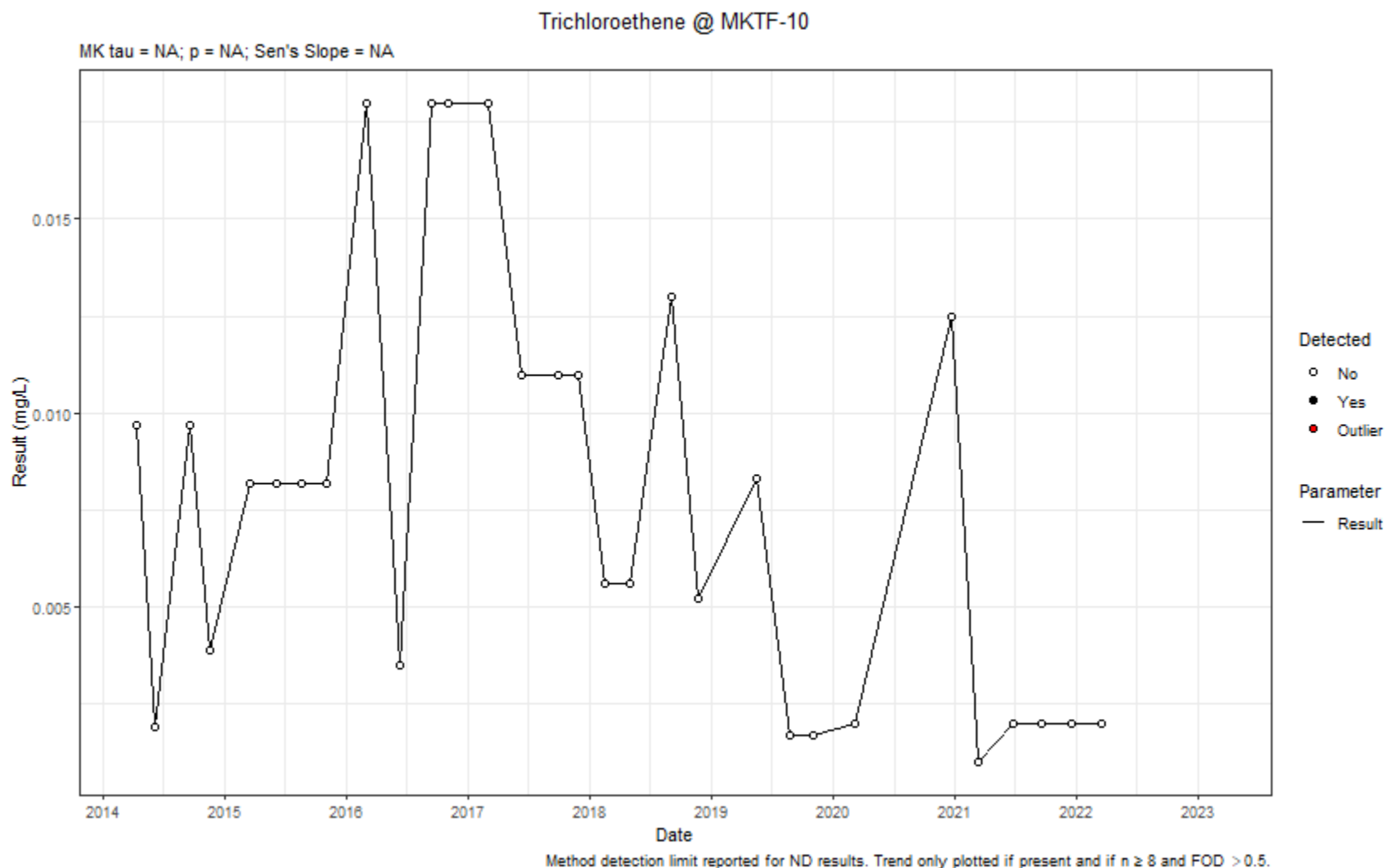
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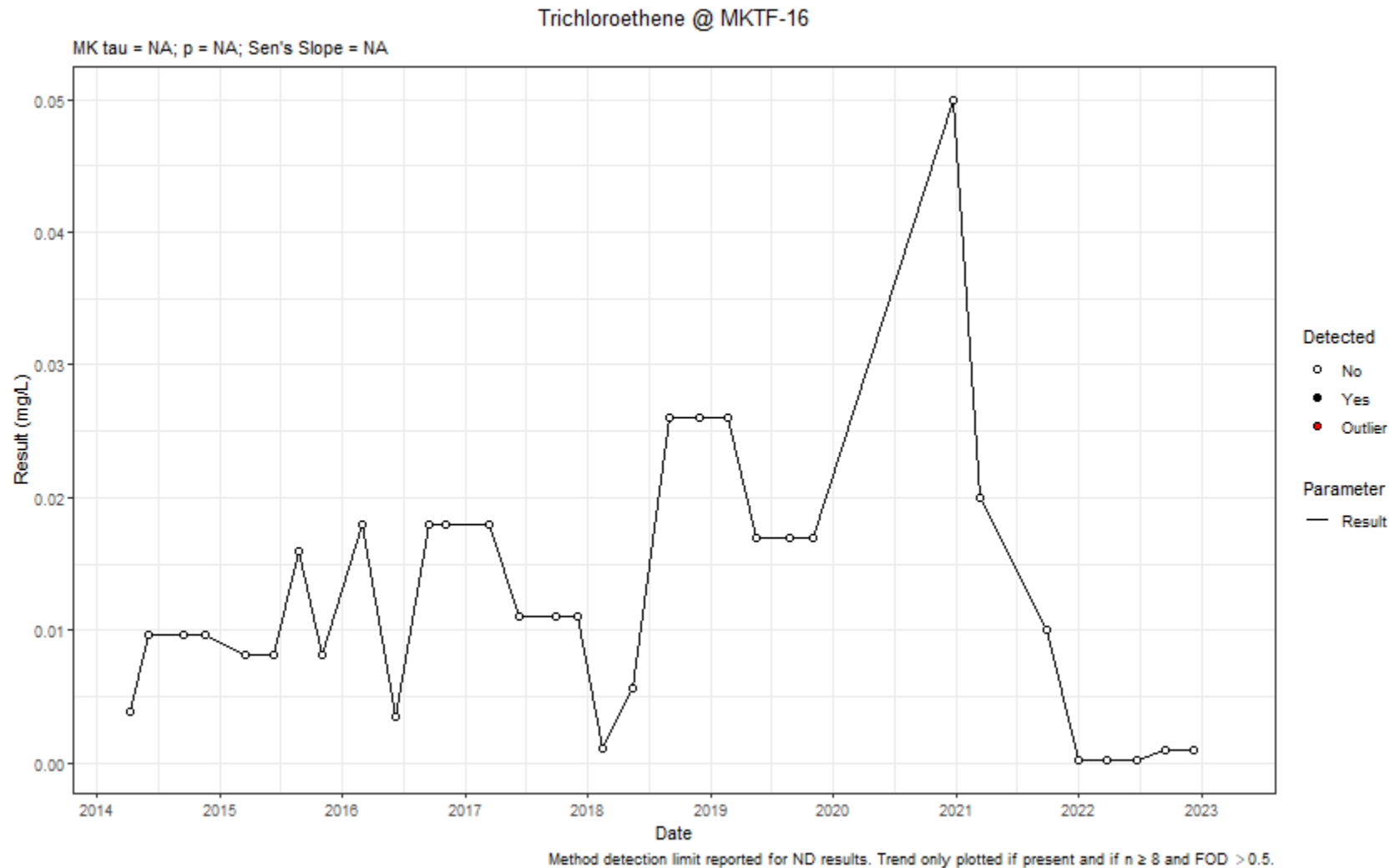
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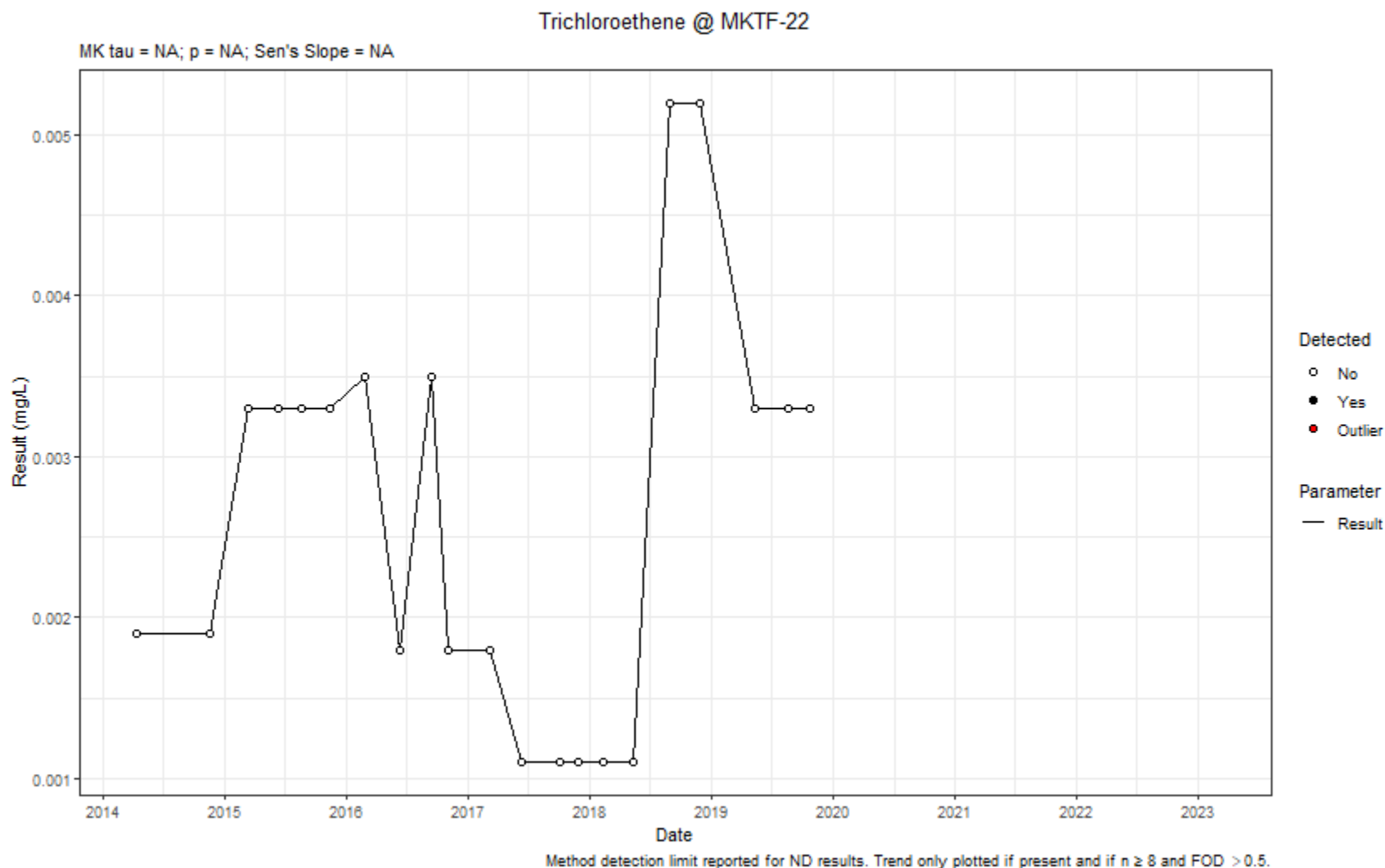
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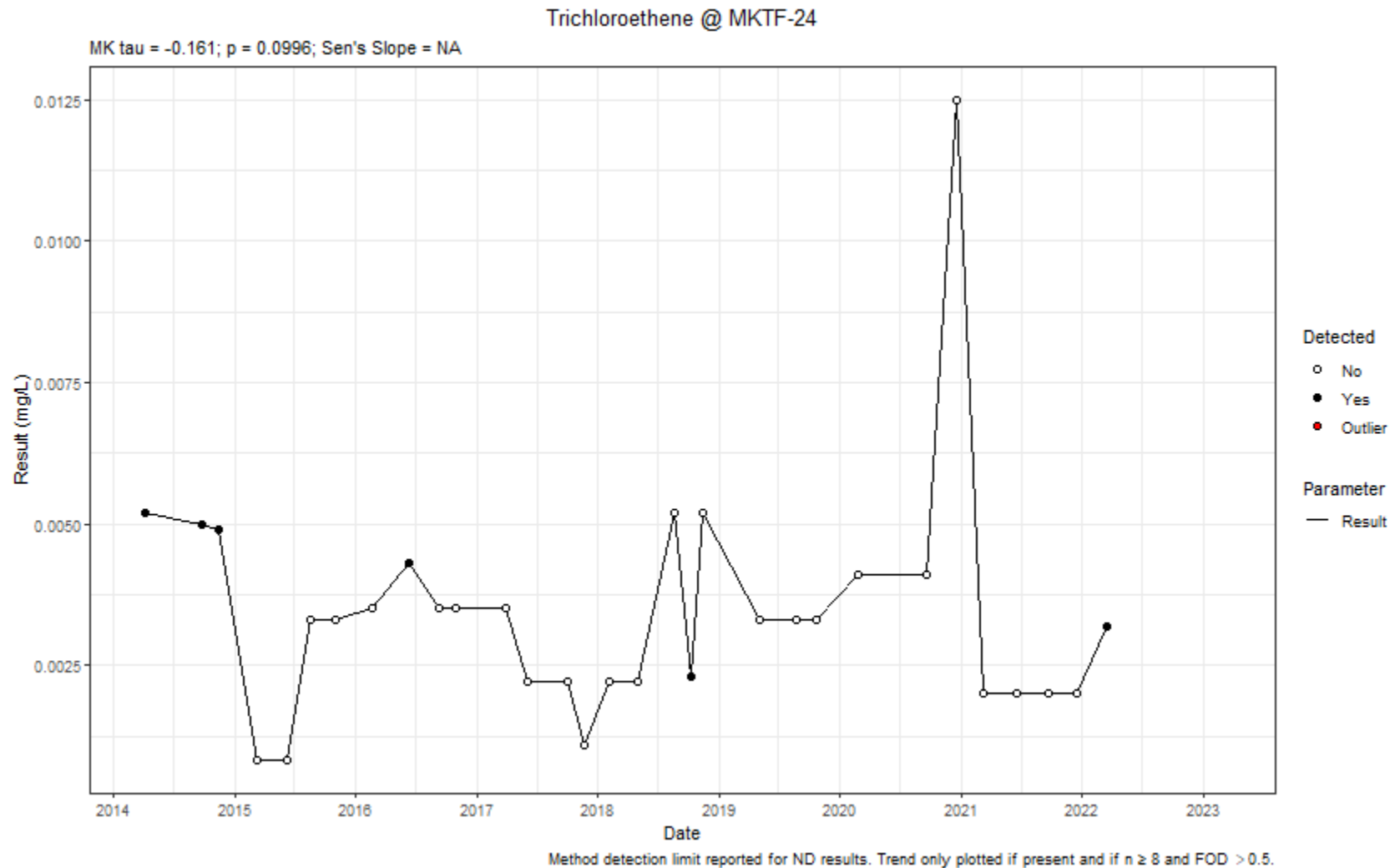
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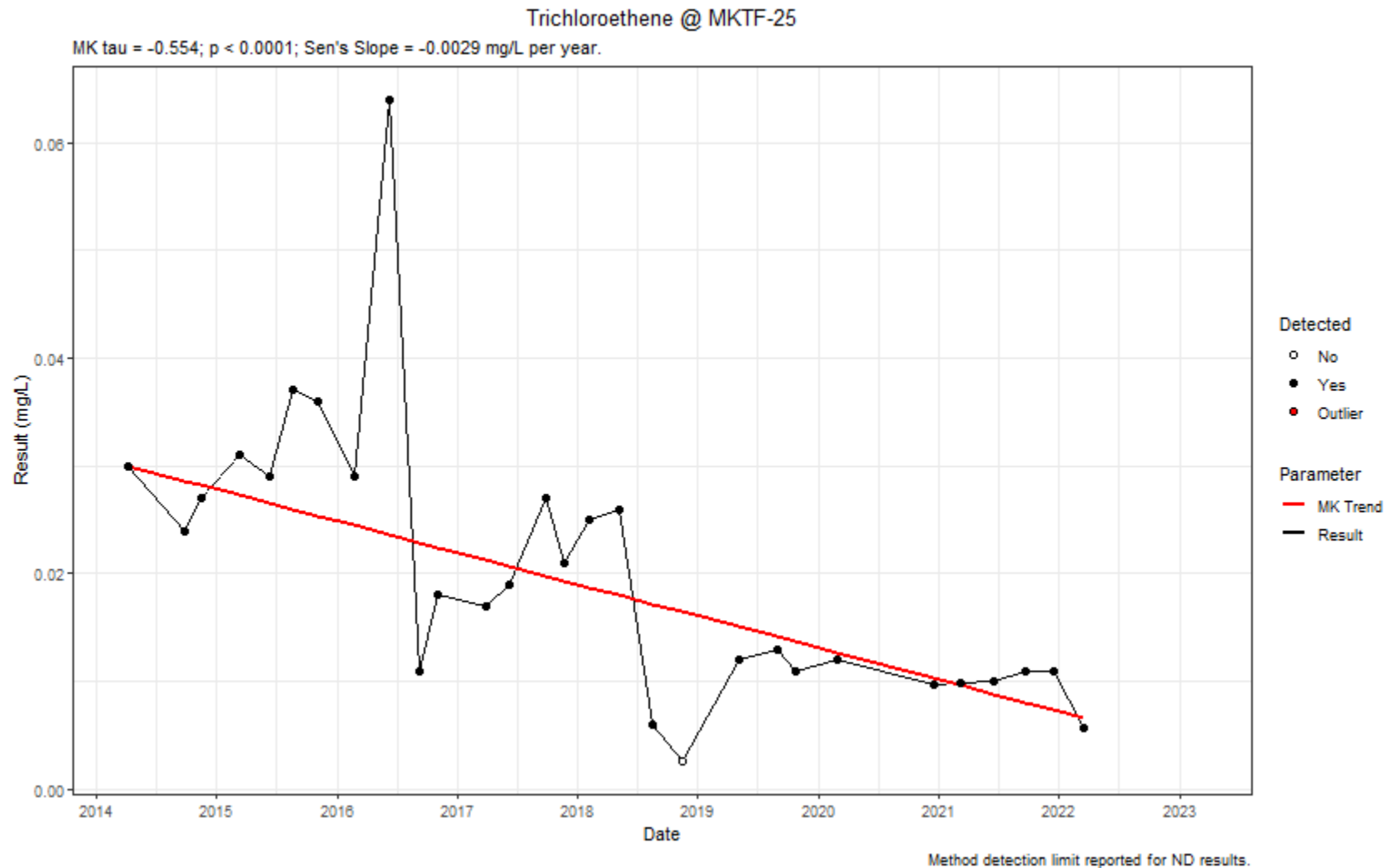
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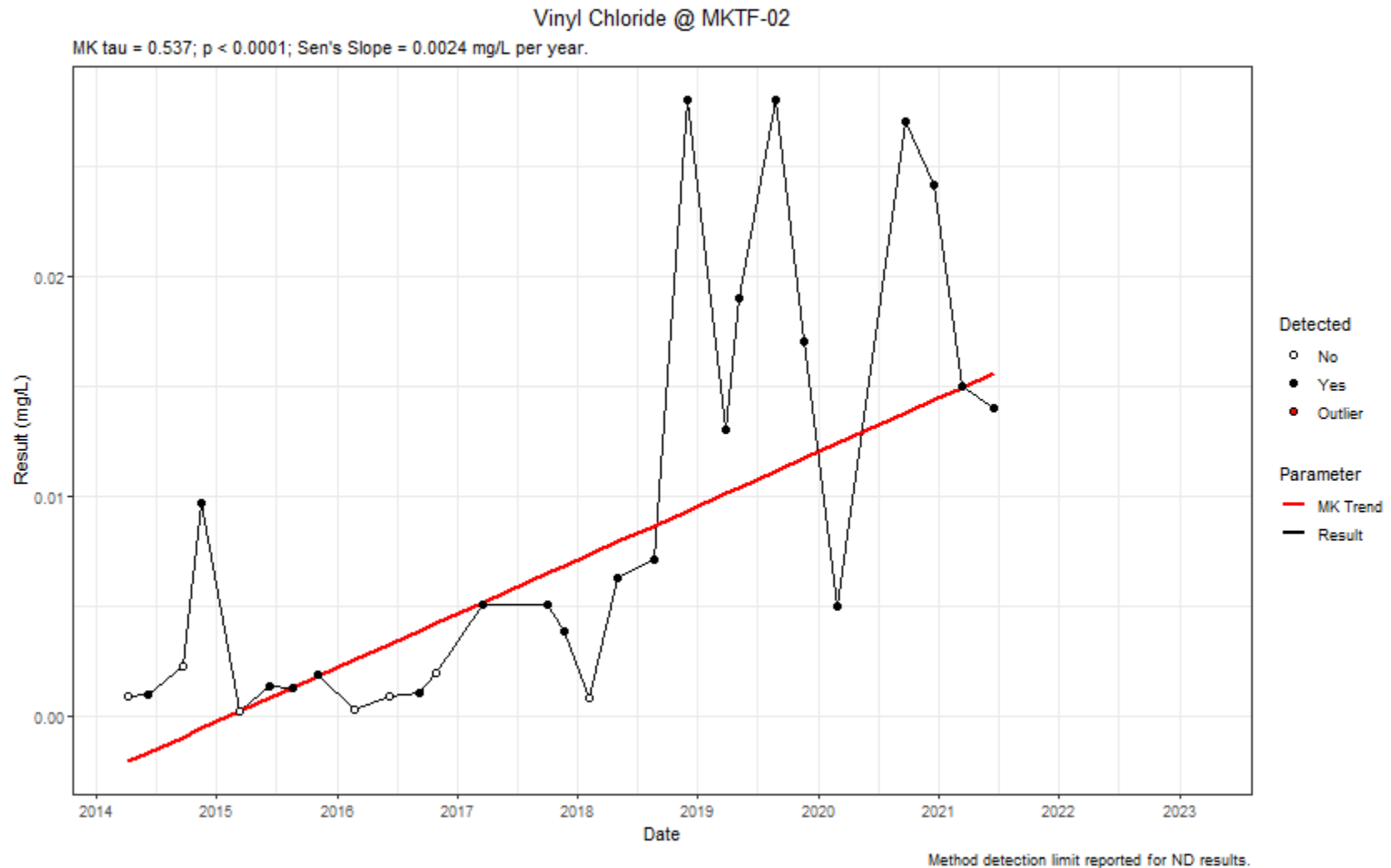
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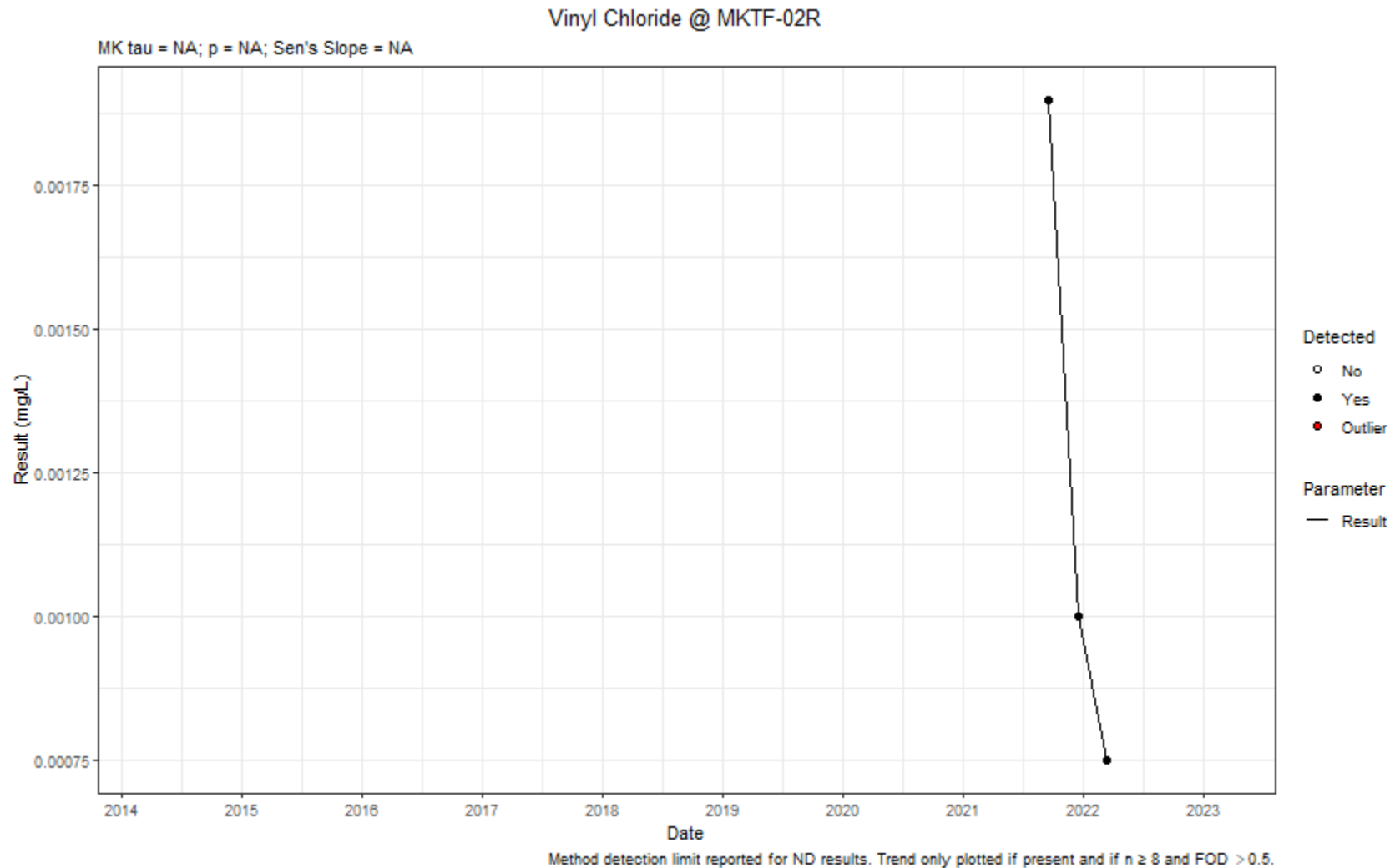
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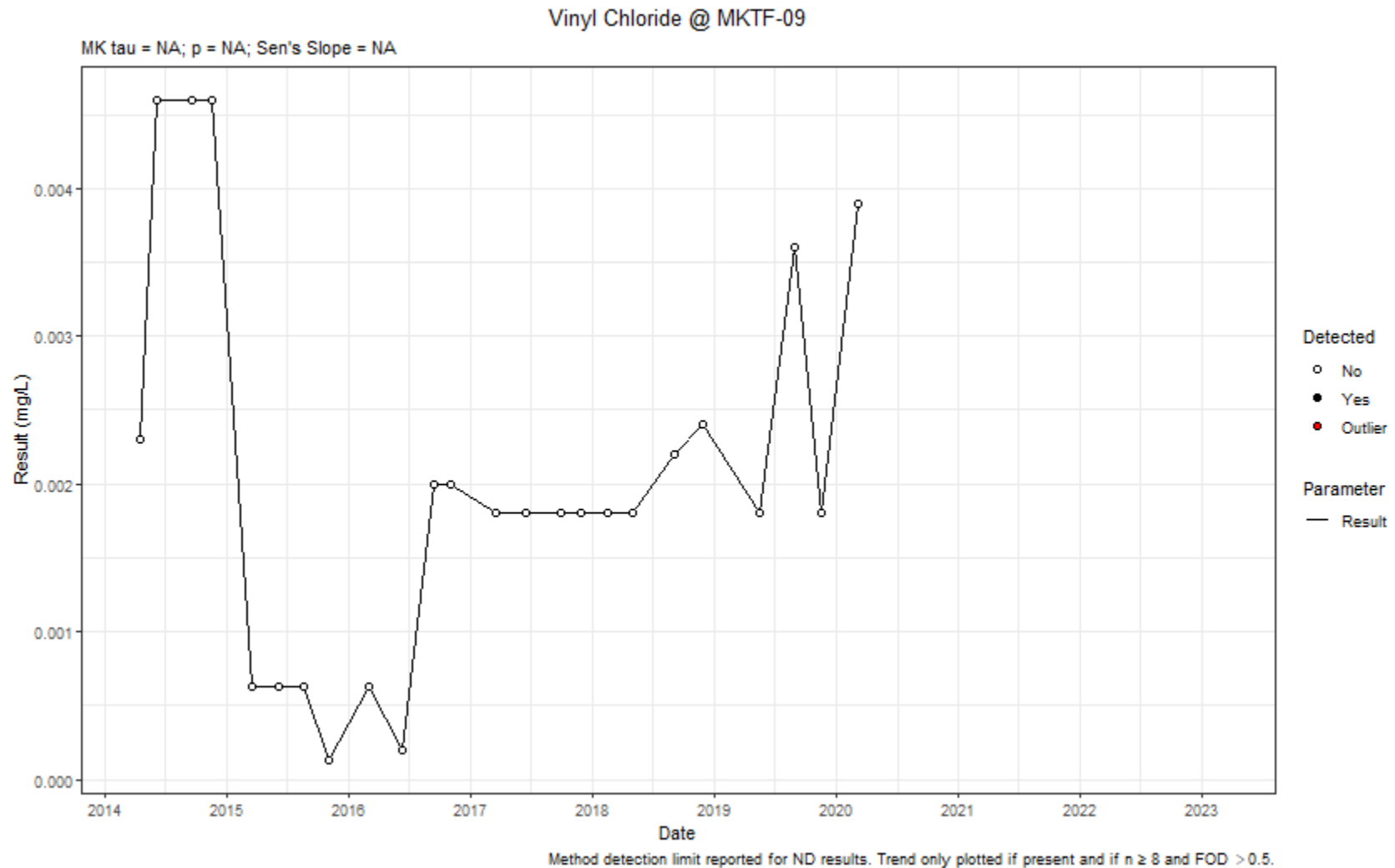
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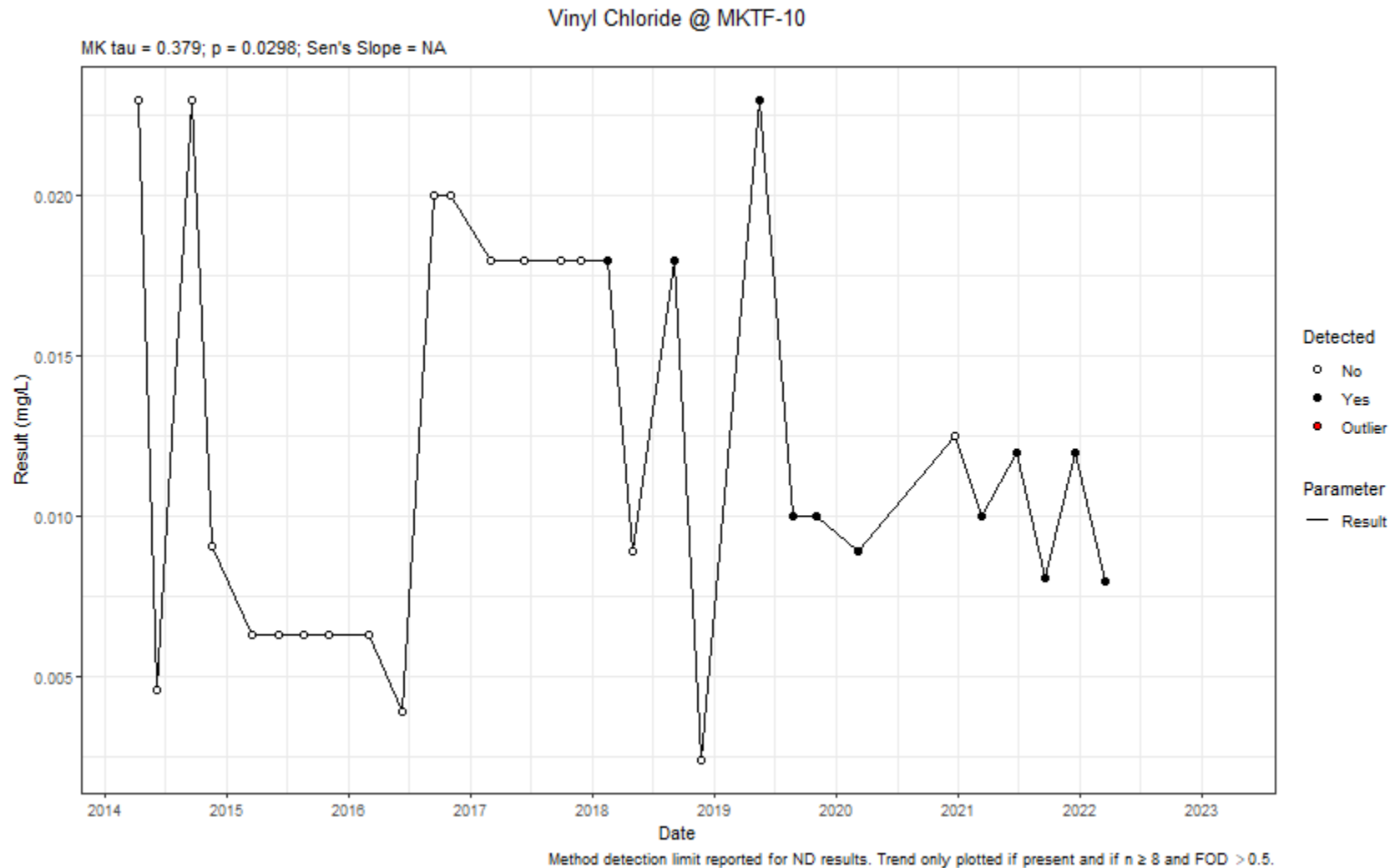
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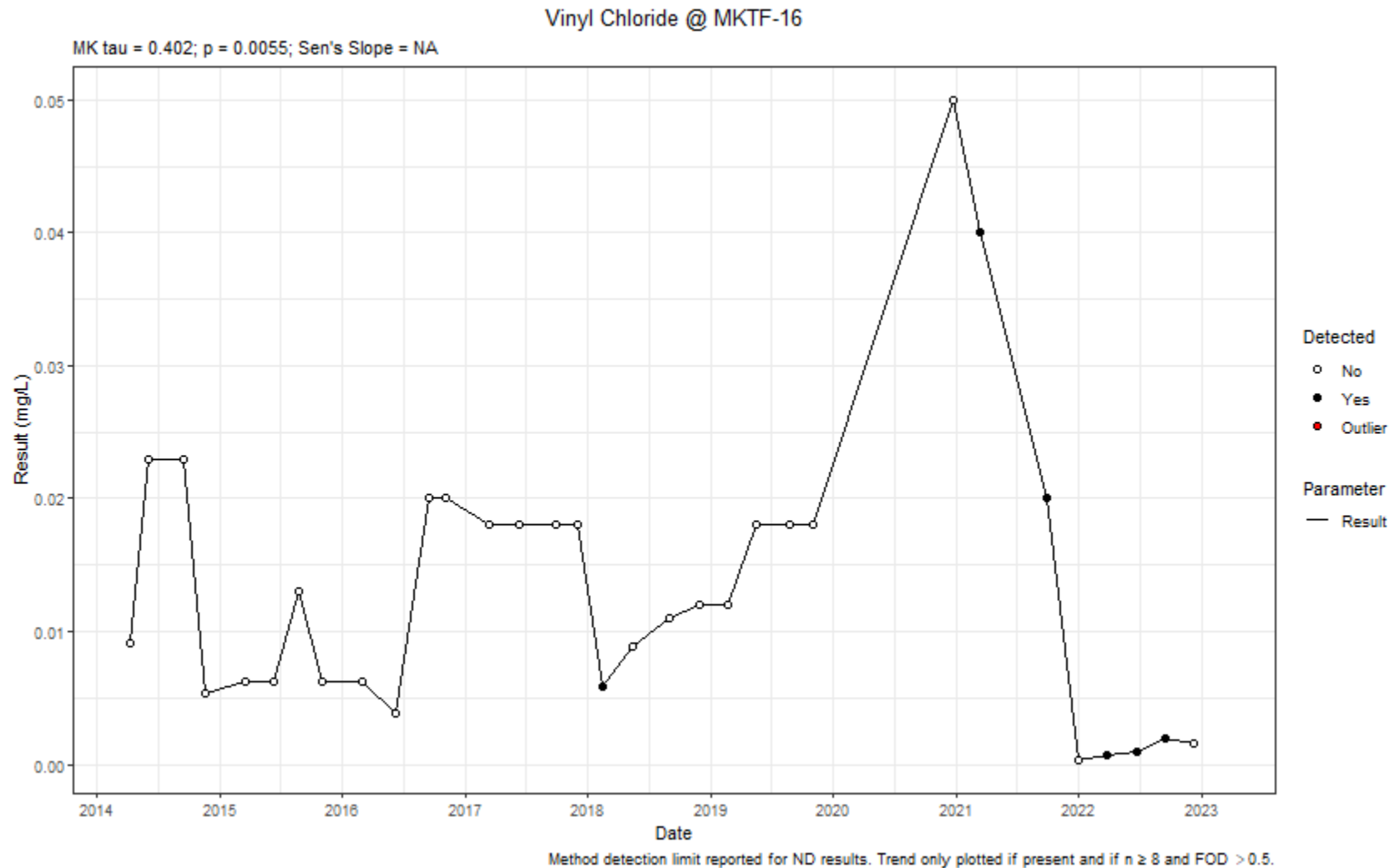
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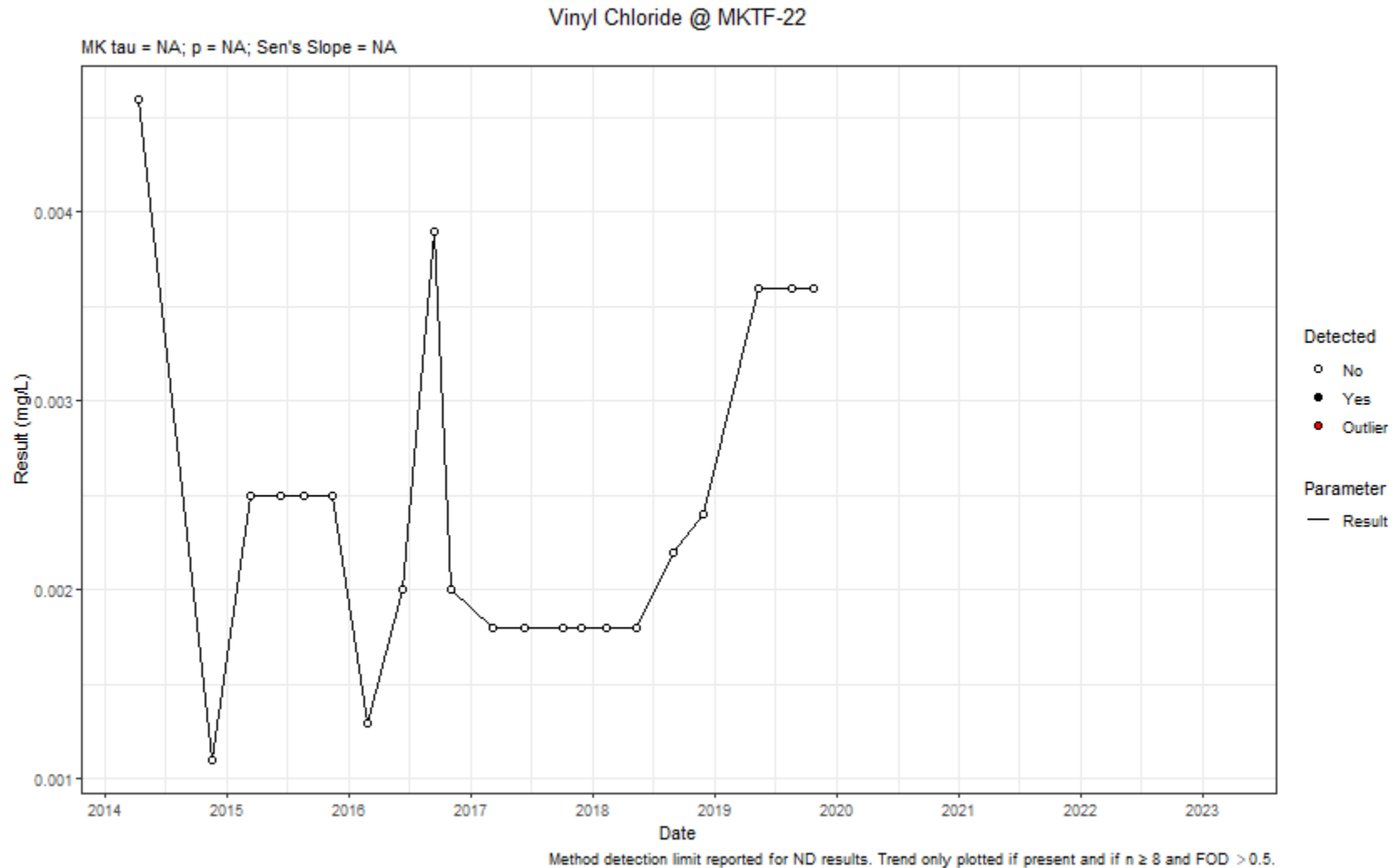
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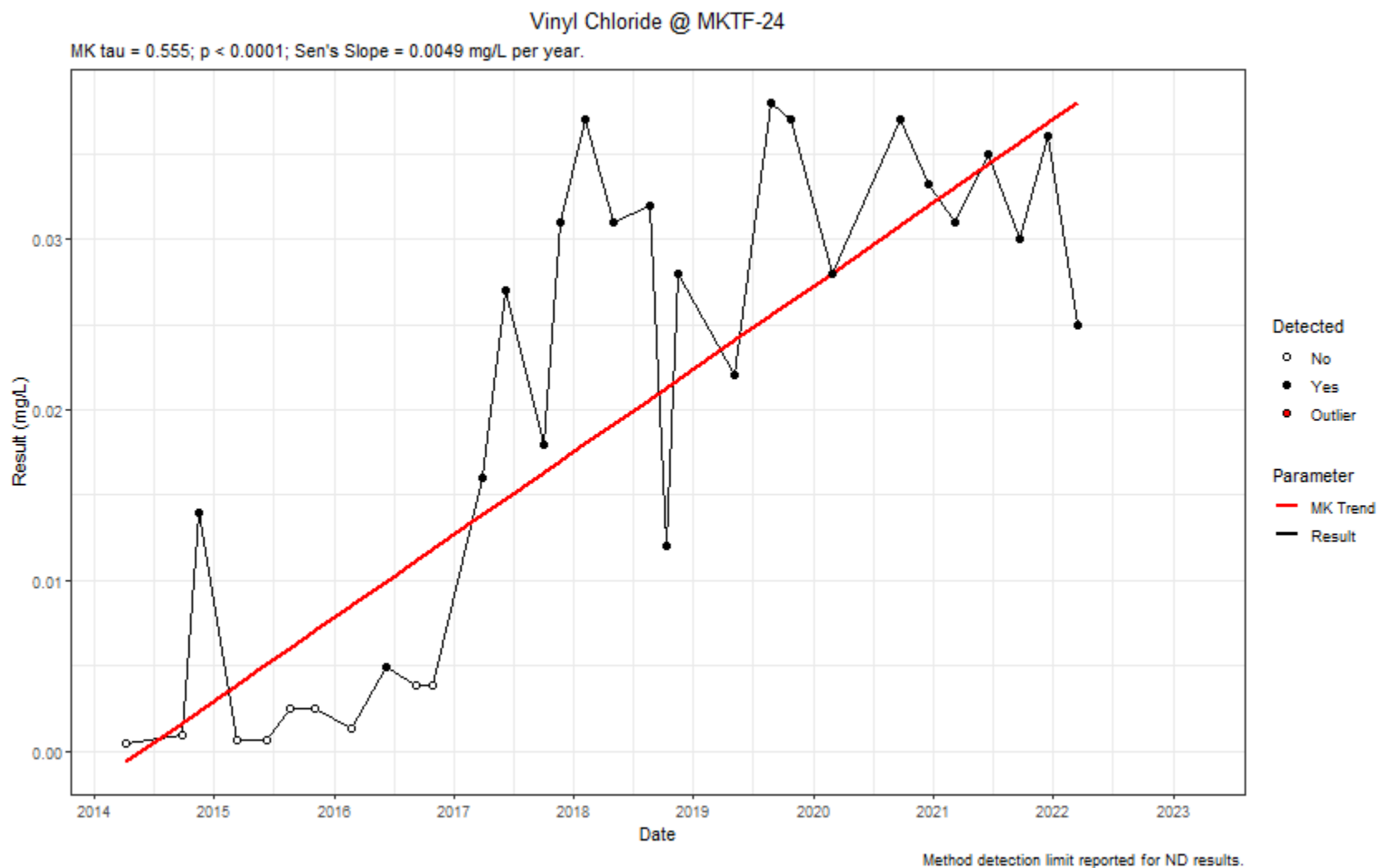
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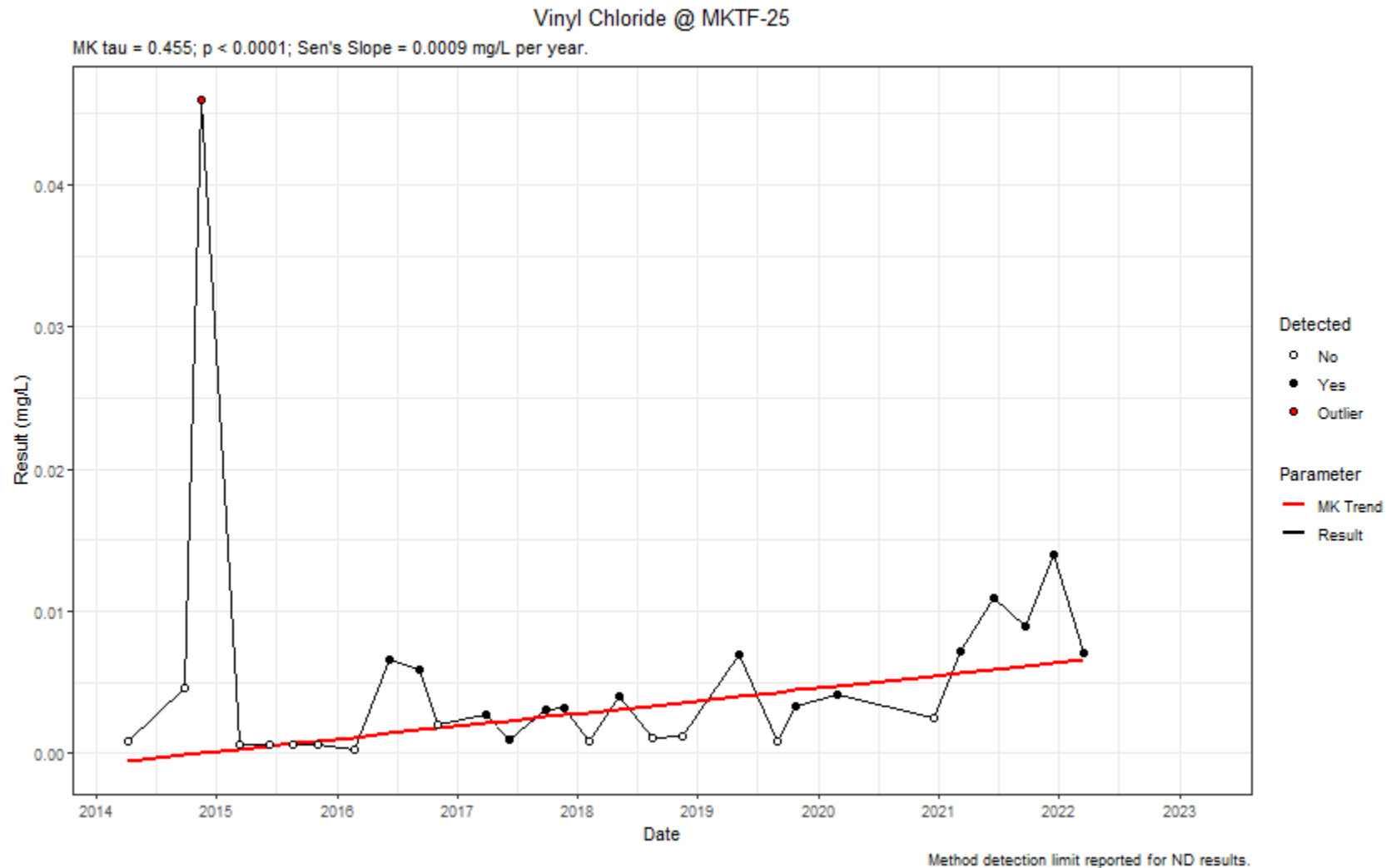
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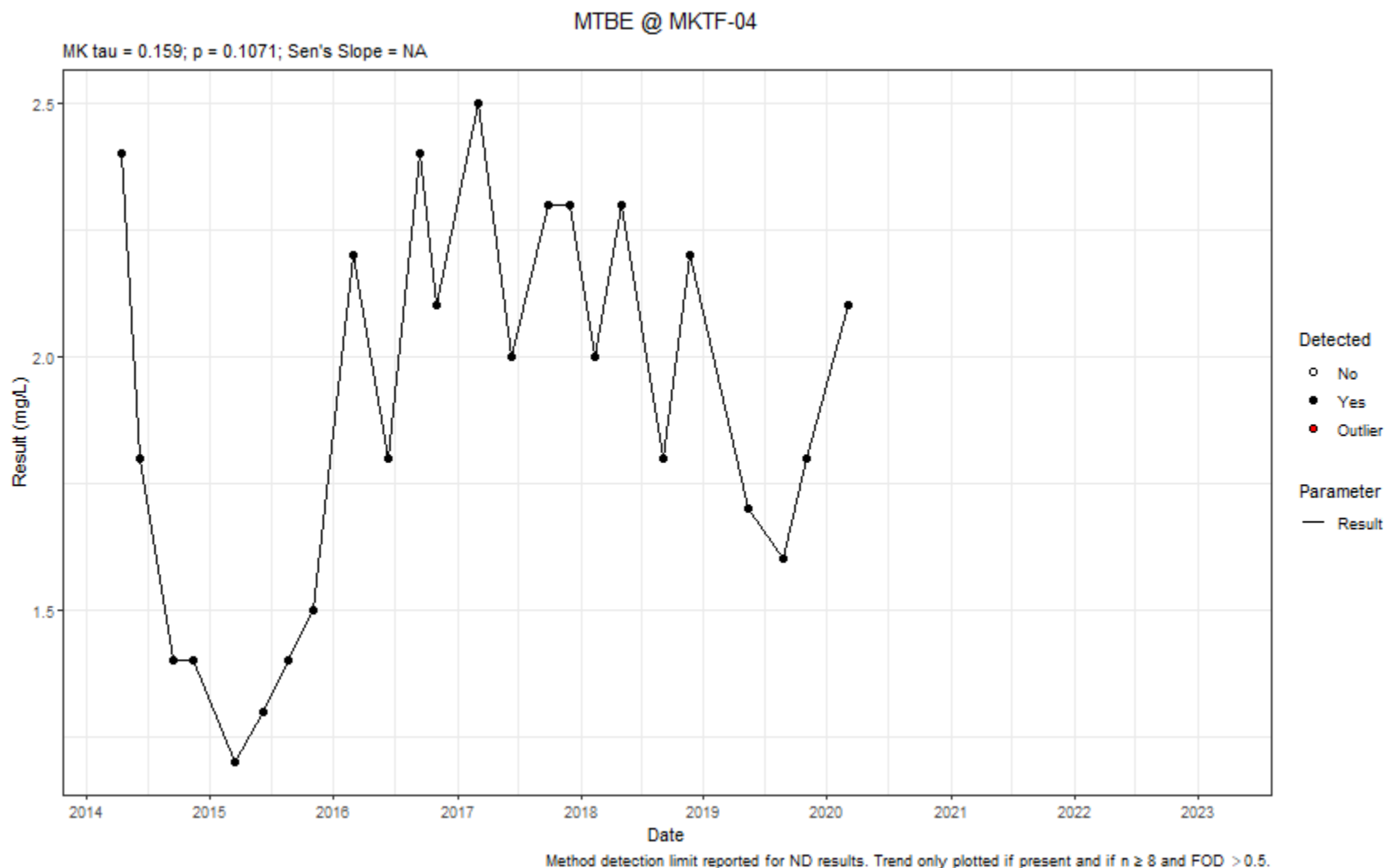




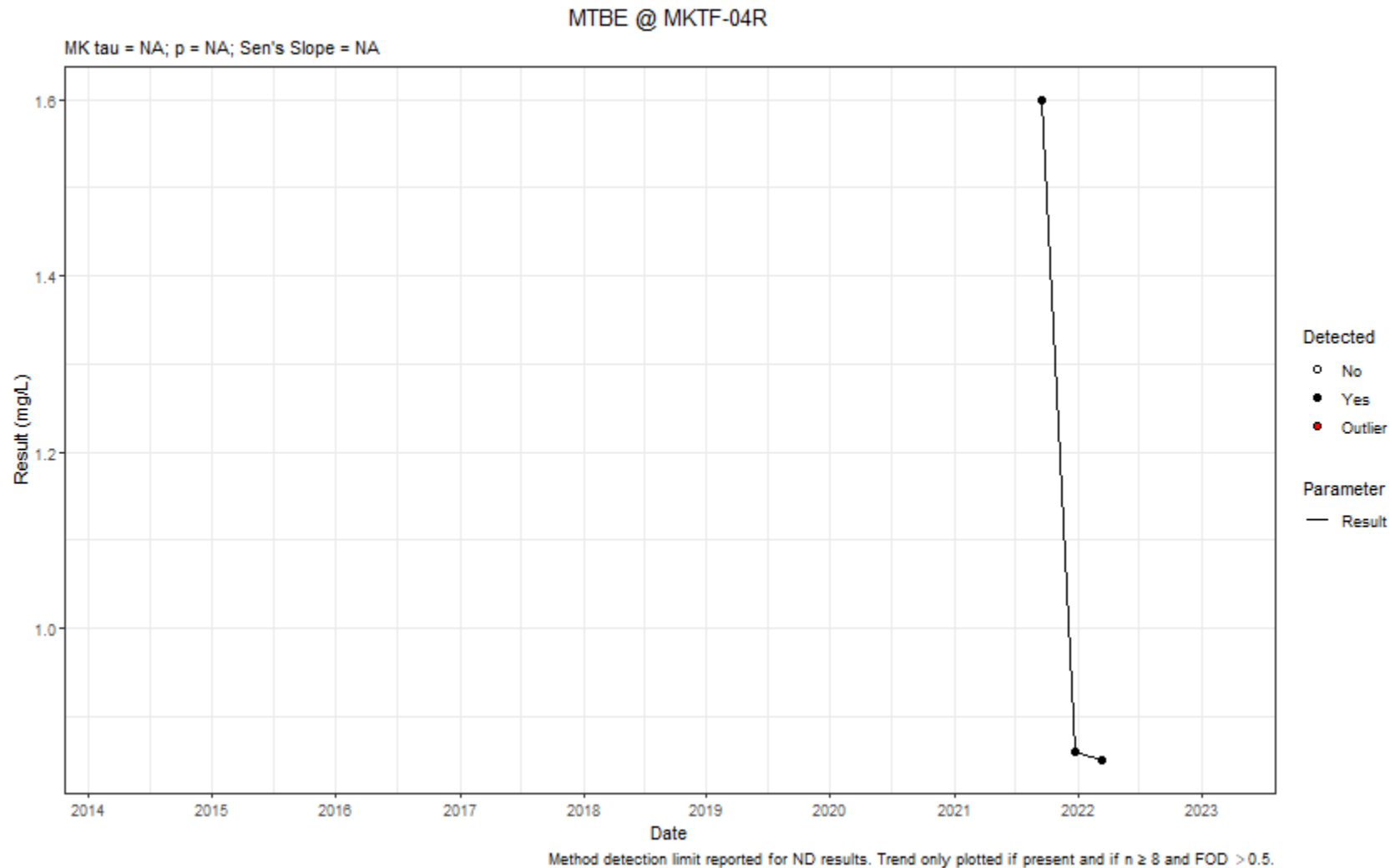
Western Refining Southwest LLC
D/B/A Marathon Gallup Refinery
2022 Annual Monitored Natural Attenuation Report

Appendix D – MTBE Time Series Plots

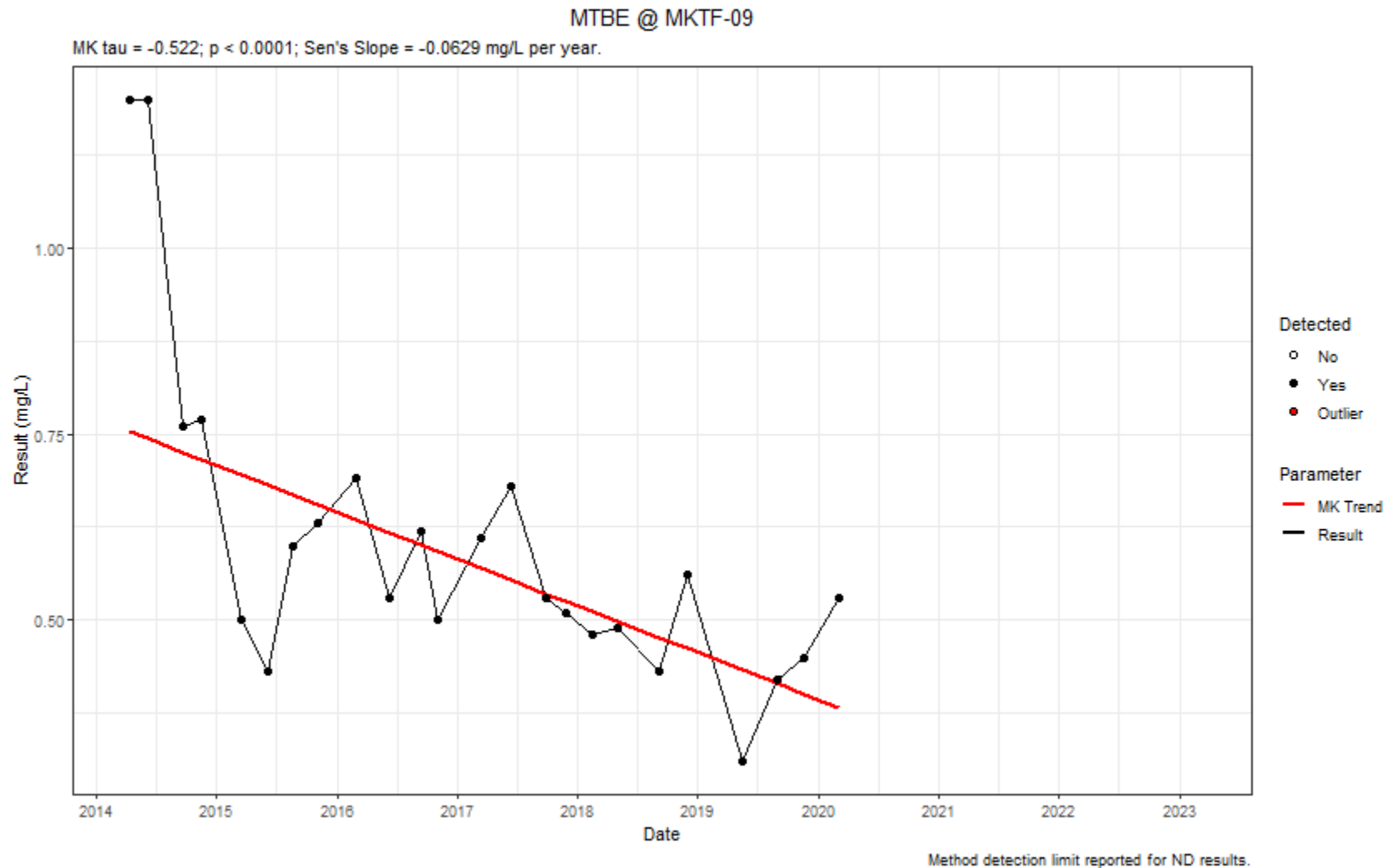
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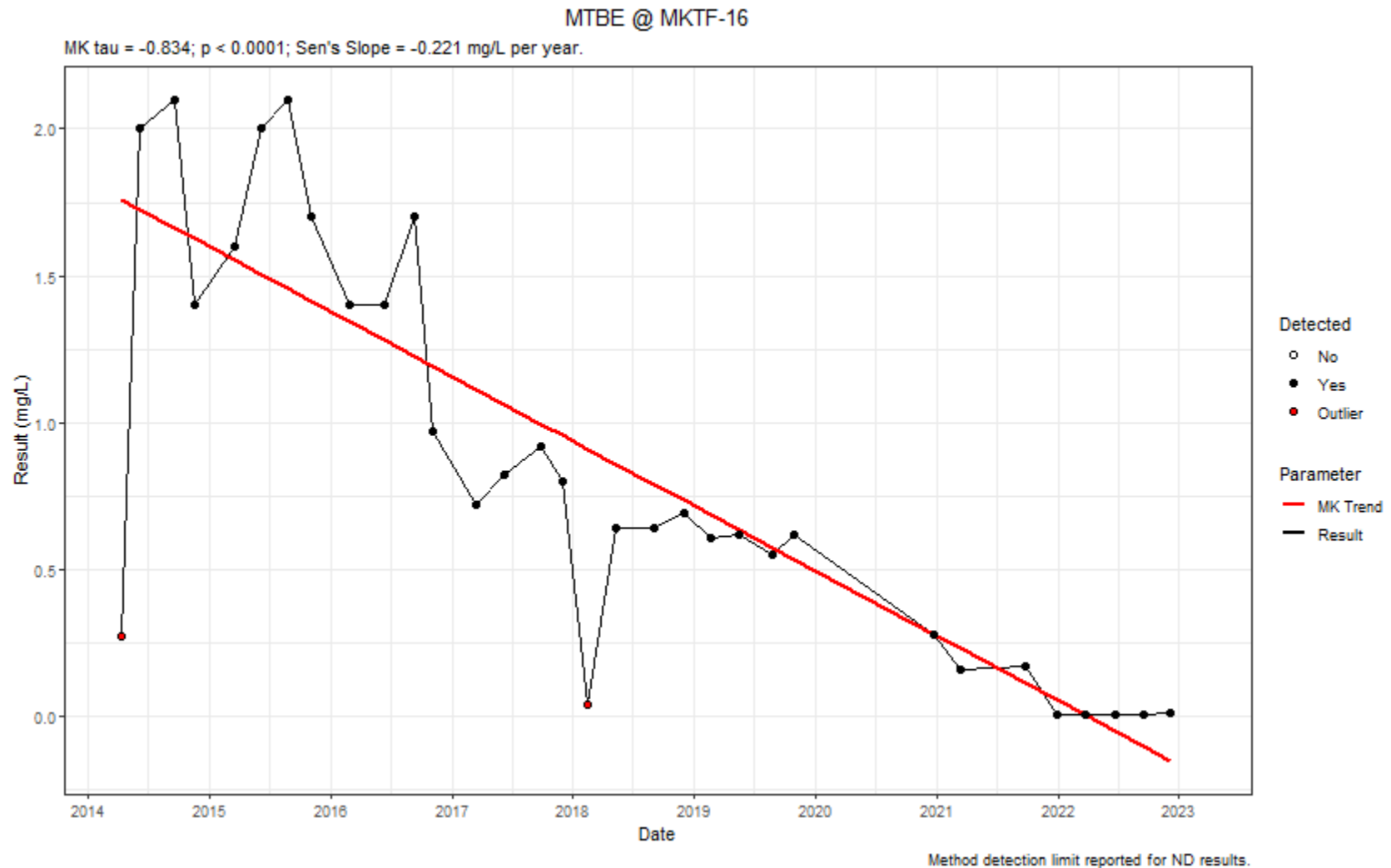
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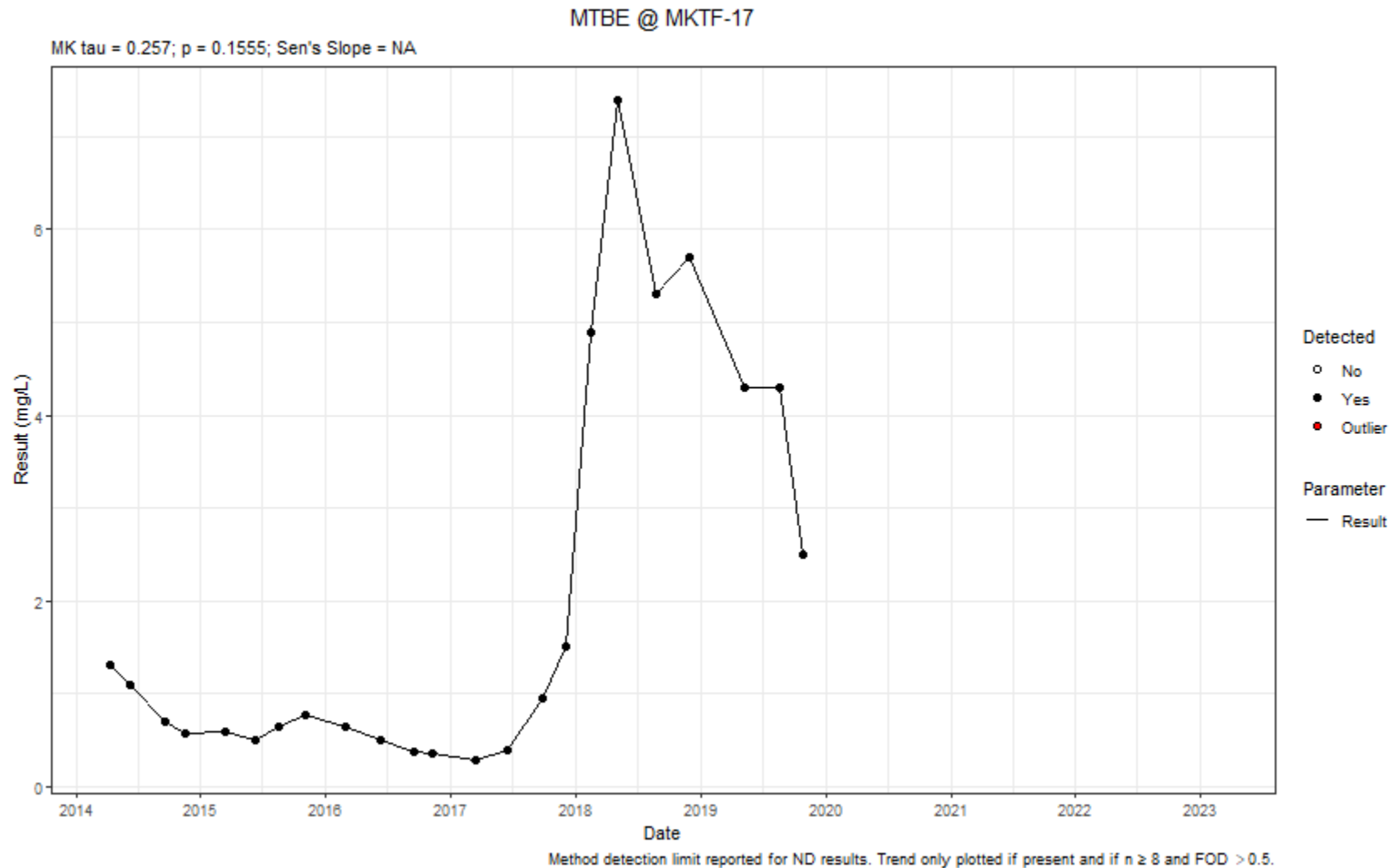
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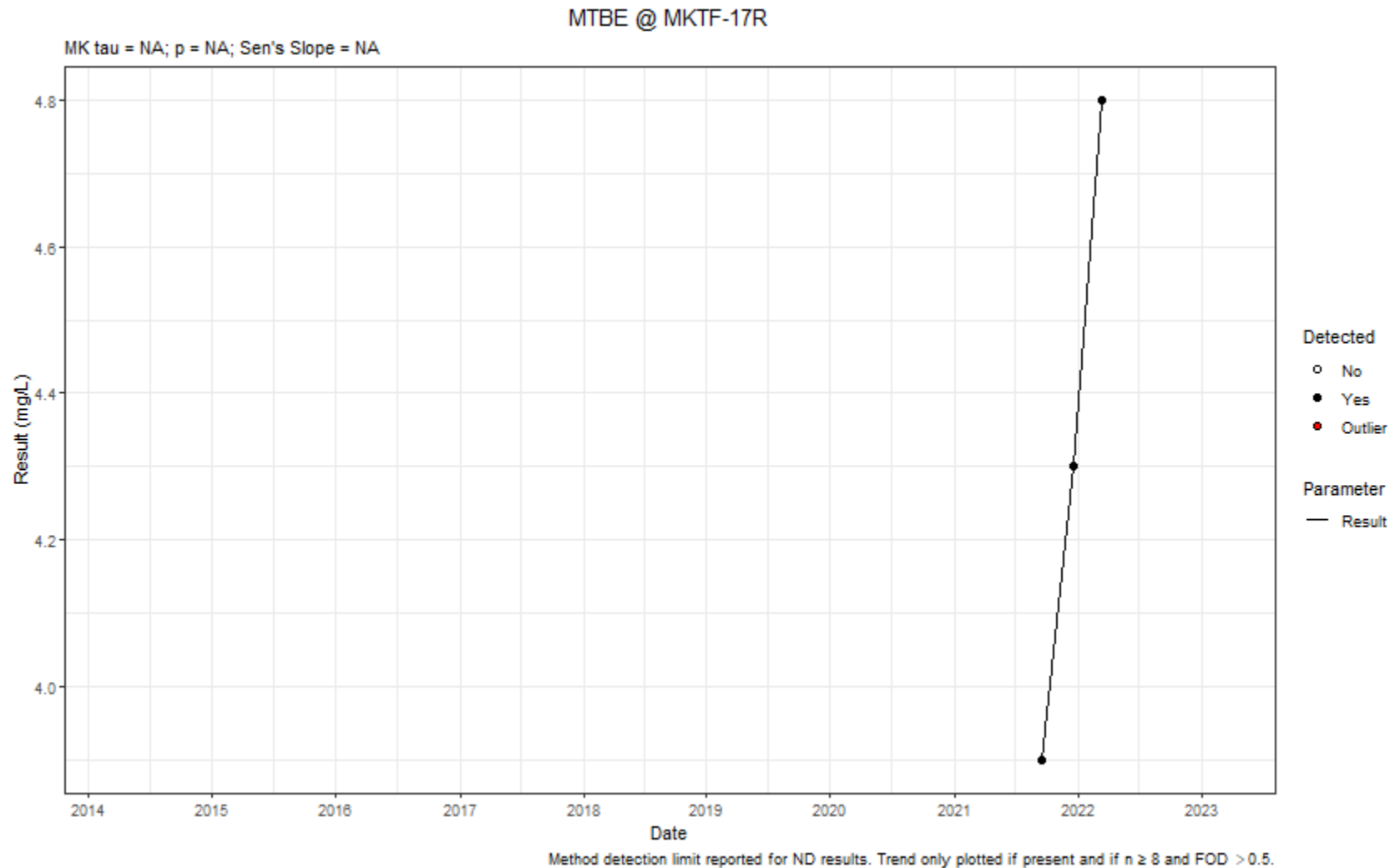
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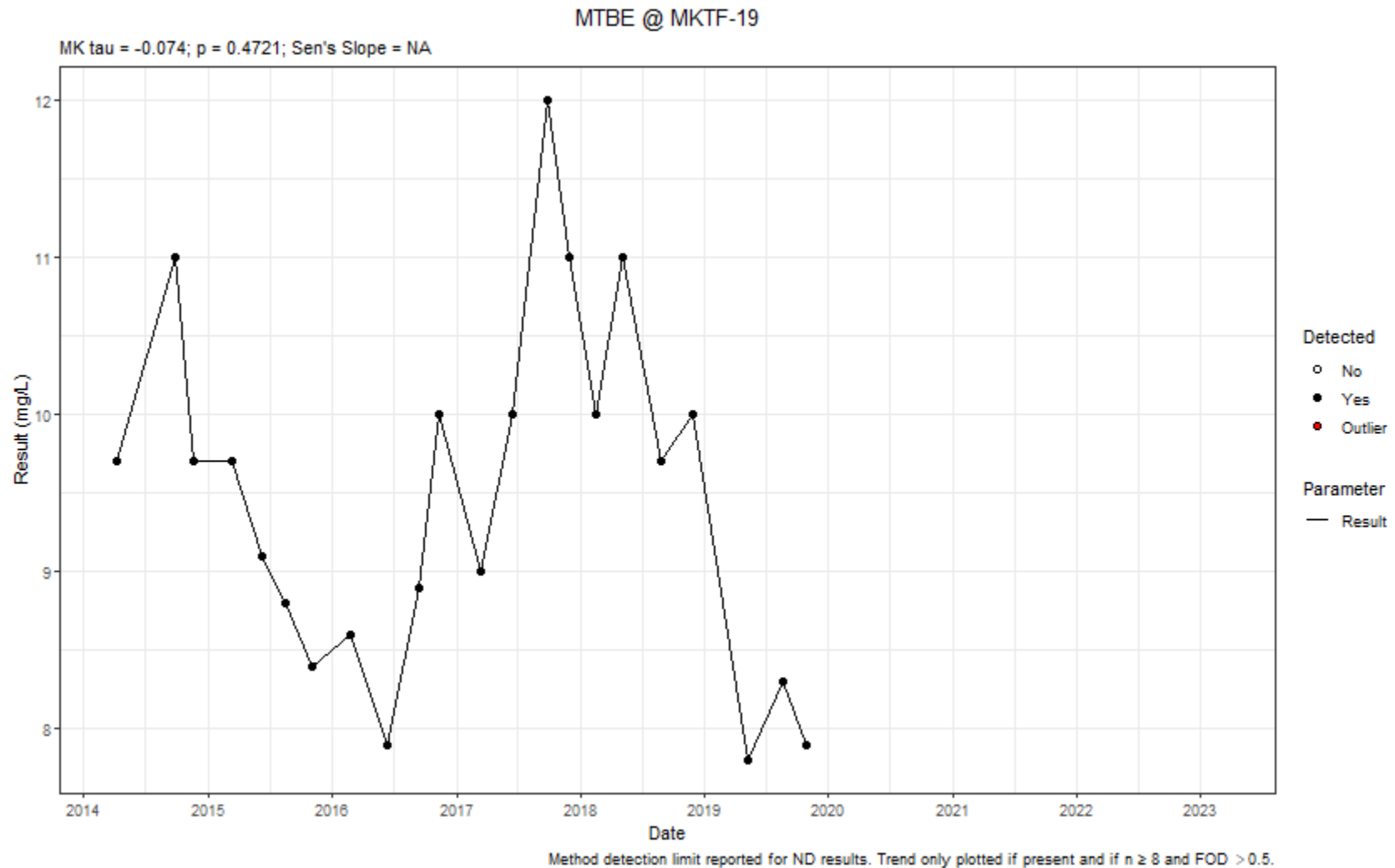
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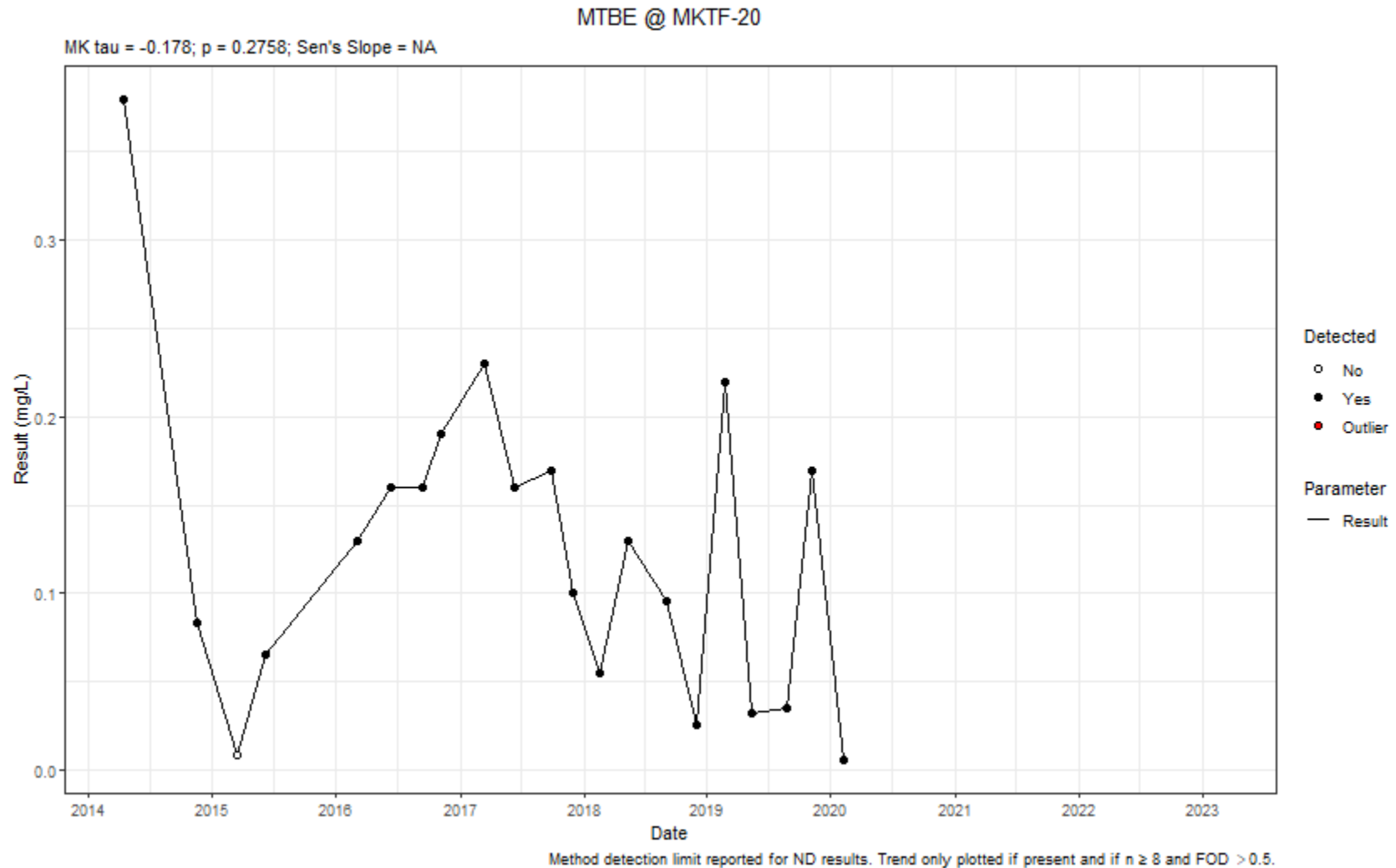
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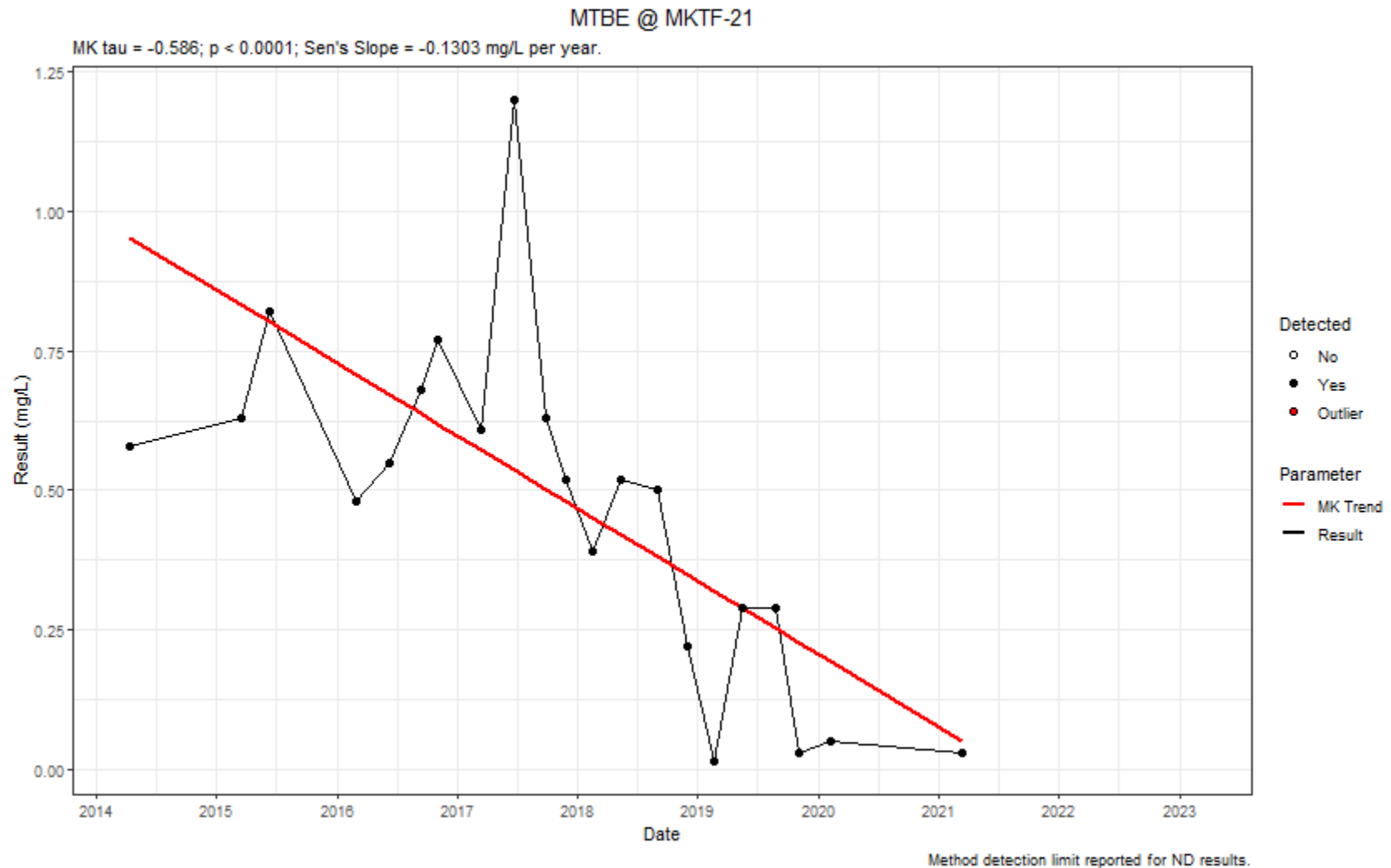
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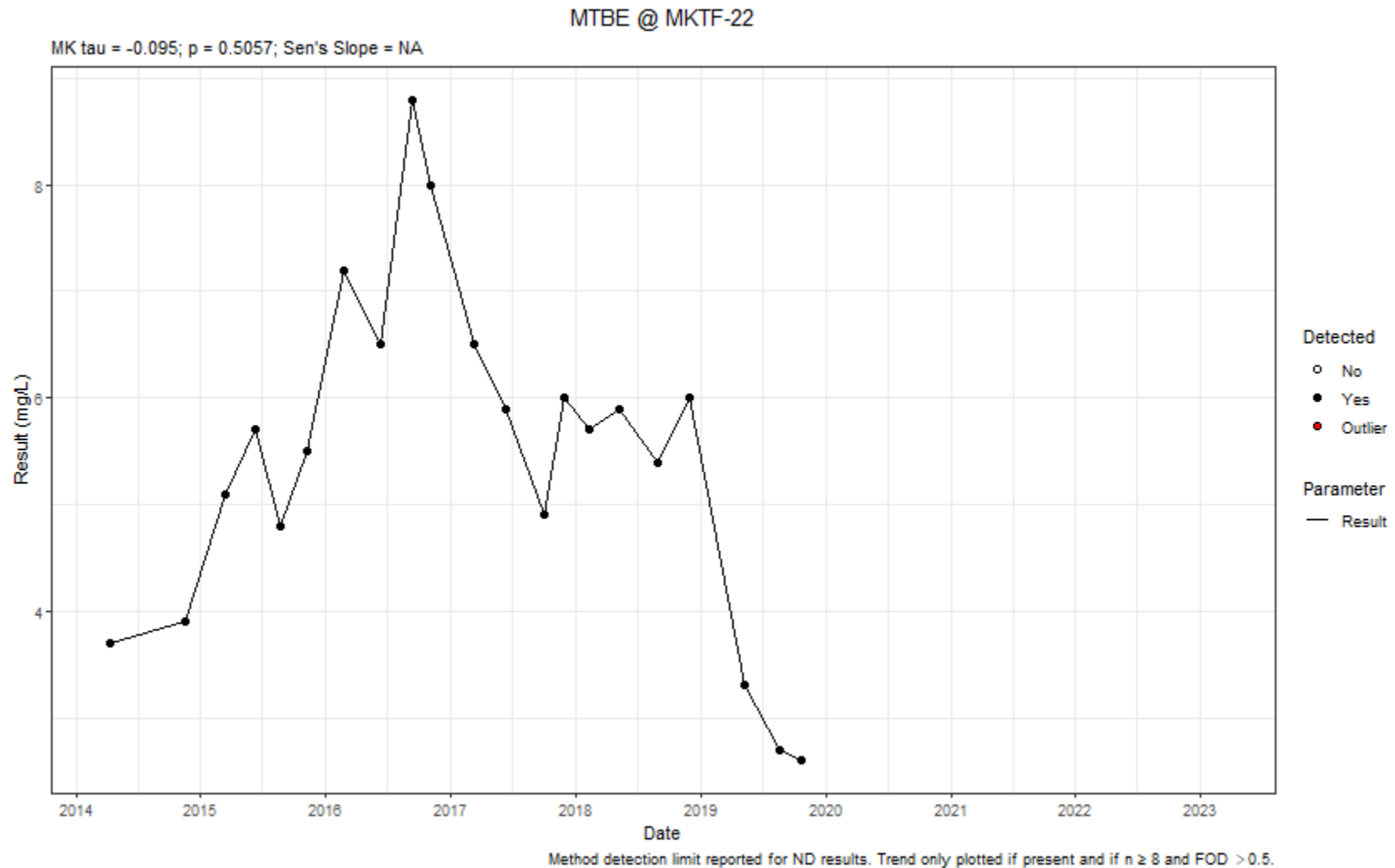
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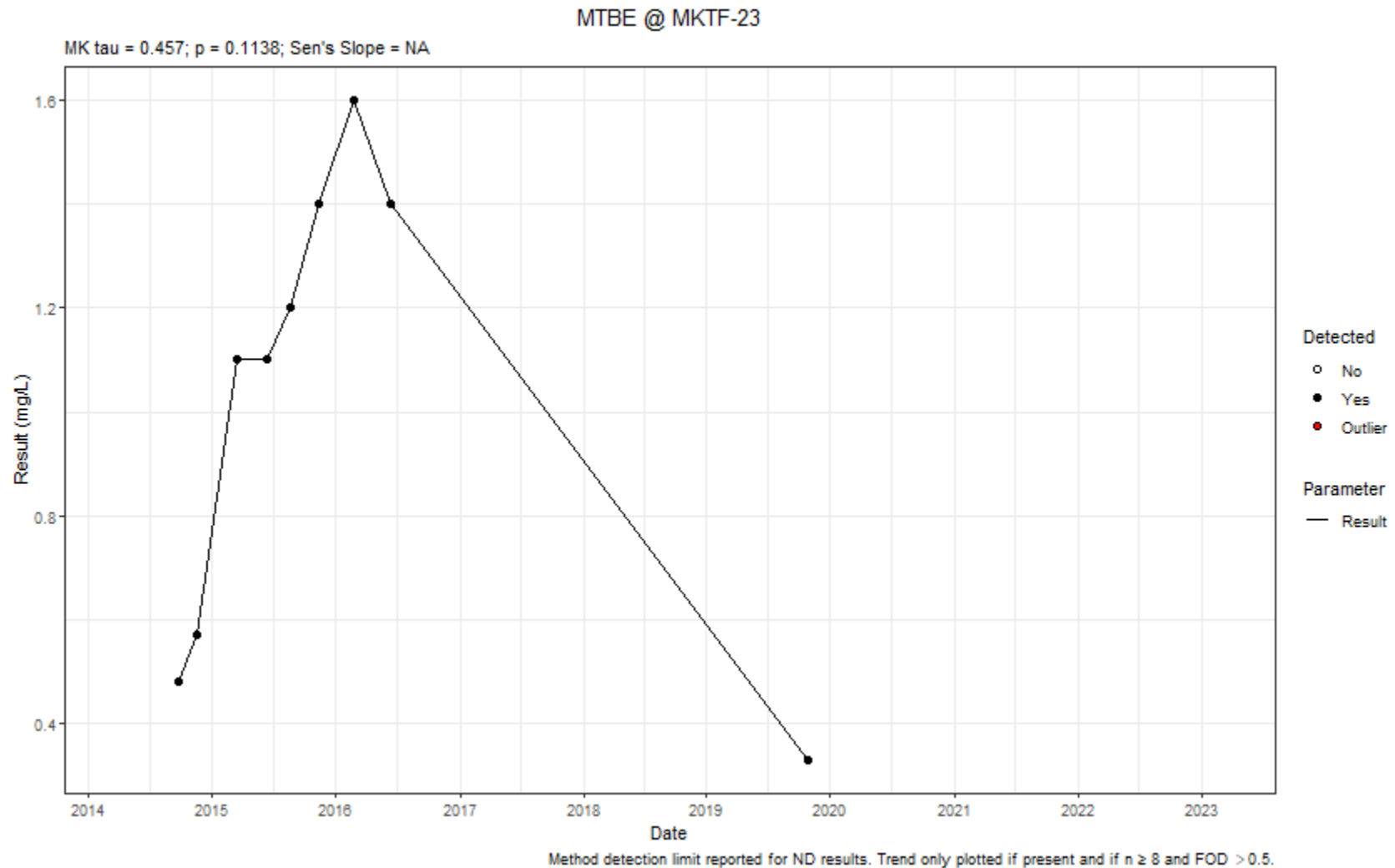
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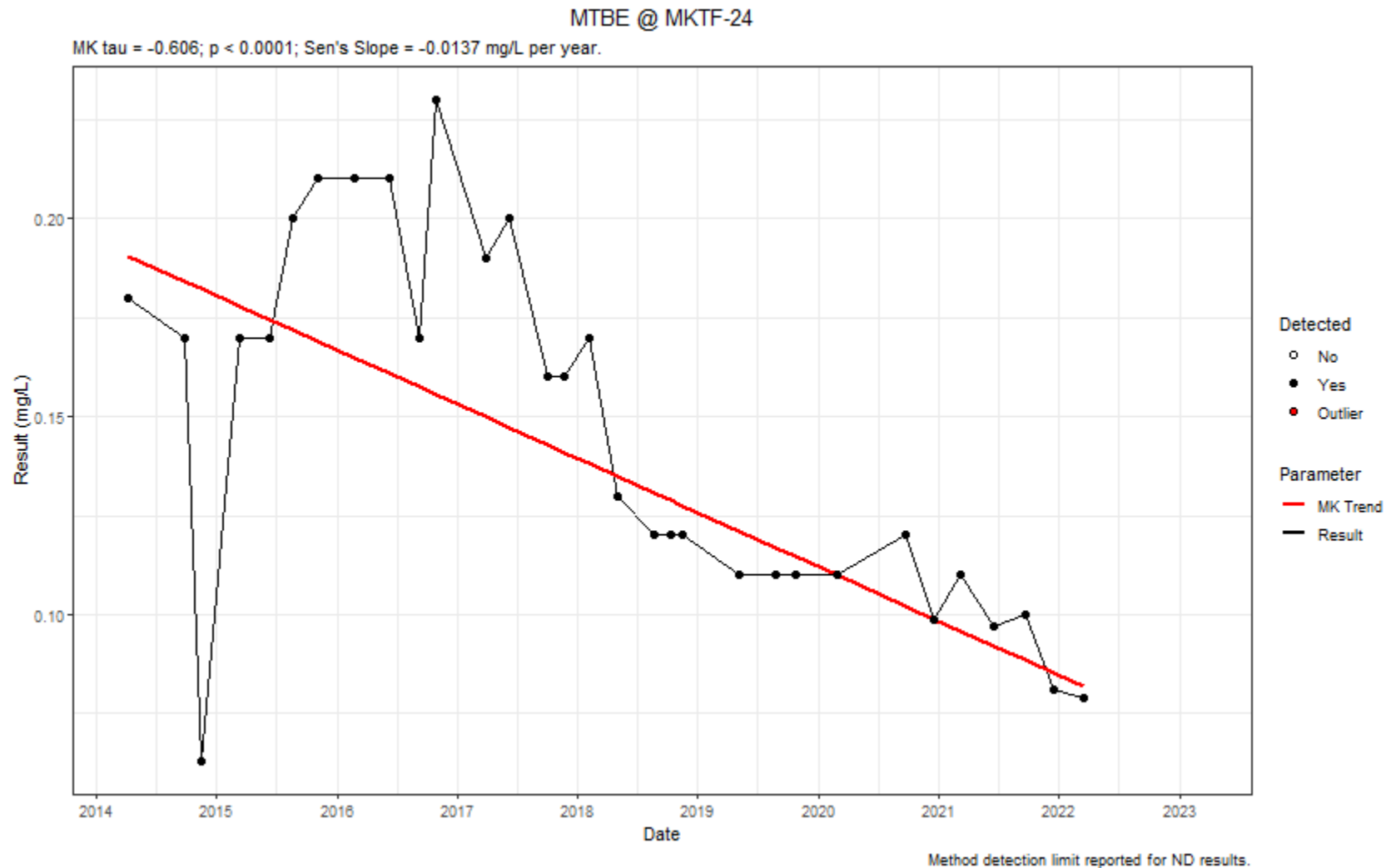
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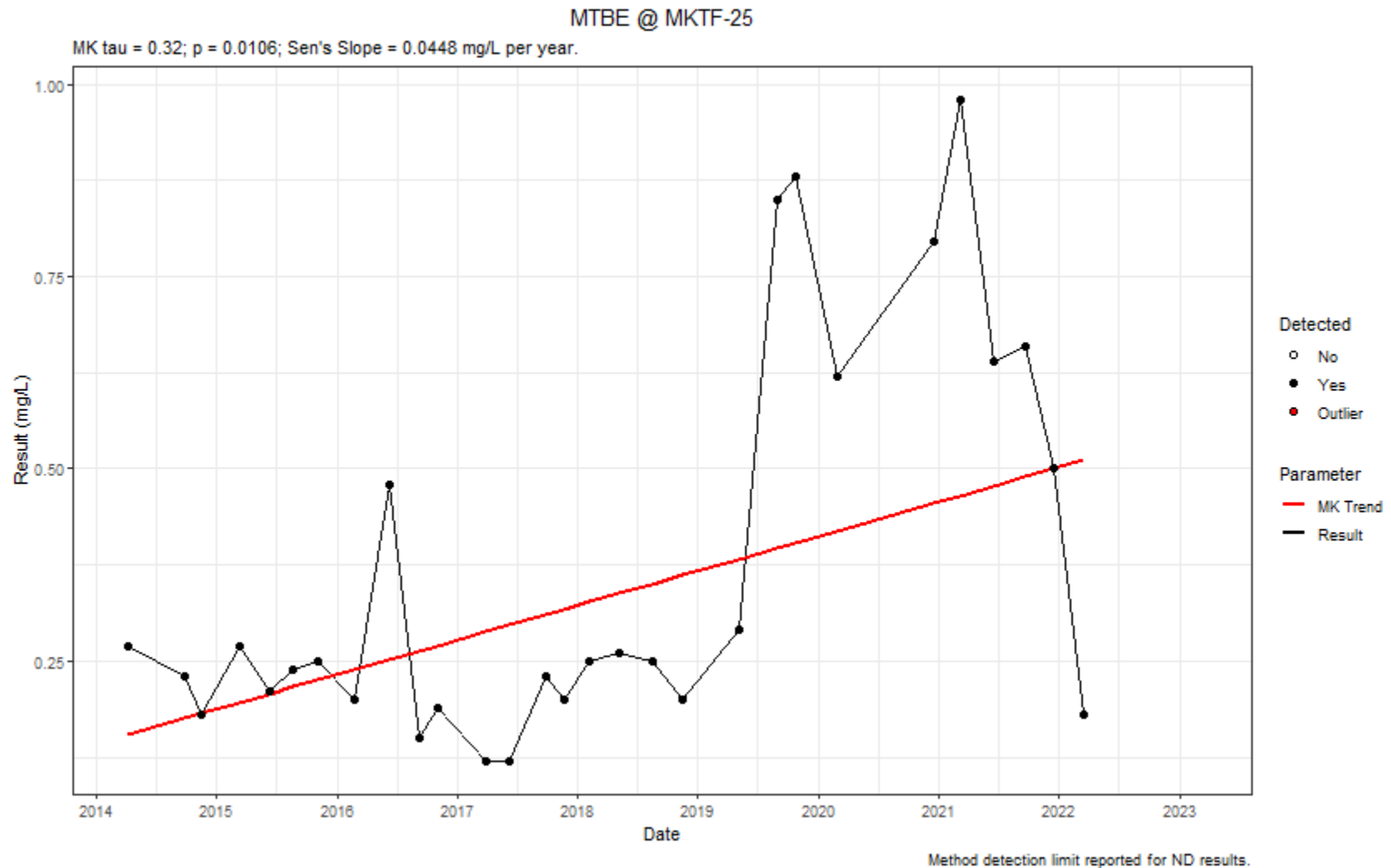
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District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 202660

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 202660
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
scwells	Accepted for Record Retention Purposes Only	3/31/2023