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December 20, 2024

Via Electronic Delivery and Private Courier

Ms. Anuradha Mohanty
Land and Materials Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite: 625
Baltimore, MD 21230

RE: Semi-annual Report – Environmental Covenant

Dear Ms. Mohanty:

In accordance with the Eastalco Environmental Covenant dated December 12, 2017, the attached report representing 1 April 2024 through 30 September 2024 is submitted to the Administration to summarize progress under the Groundwater & Surface Water Monitoring Plan submitted in 2011. Quantum Loophole acquired the property from ALCOA on June 28, 2021, and has assumed the monitoring and reporting requirements at the facility per the Environmental Covenant and the Site Management Plan, a component of the Environmental Covenant.

Detailed laboratory reports are available for your inspection upon request.

Please contact Bill Williams – Chief Operations Officer, if you require additional information or have any questions regarding this report. He can be reached at (703) 505-9378 or via email at bill@ql.email.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with 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 is, to the best of my knowledge andbelief, 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,

Bill Williams
Chief Operations Officer

cc: Josh Mullis, Tetra Tech

TETRA TECH

2024 GROUNDWATER AND SURFACE WATER MONITORING REPORT

Quantum Maryland, LLC

December 2024

complex world

CLEAR SOLUTIONS™

Quantum Maryland, LLC

Groundwater and Surface Water Monitoring Report

QUANTUM MARYLAND, LLC

December 2024

TETRA TECH

Groundwater and Surface Water Monitoring Report

Quantum Maryland, LLC
December 2024

PRESENTED TO

Quantum Maryland, LLC
500 E. 4th Street Suite 333
Austin, TX 7870

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Germantown, MD 20874

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TETRA TECH

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1.0 INTRODUCTION

This annual monitoring report was prepared by Tetra Tech, Inc. (Tetra Tech) for Quantum Maryland, LLC (Quantum) to document and evaluate the results of groundwater monitoring and surface water monitoring activities completed in 2024 at the former Eastalco Works aluminum smelter located in Frederick, Maryland (Figure 1-1). Quantum acquired the property from the Eastalco Aluminum Company (Eastalco) on June 28, 2021. The site is now referred to as Quantum Frederick. Quantum has completed design and permitting for infrastructure of roads, sewer, and water services and has begun the phase-1 construction process for a master planned, first-of-its-kind, clean cloud community campus to be located on the property while continuing groundwater and surface water monitoring at the property per the requirements of the Environmental Covenant (EC) executed on December 12, 2017 (Eastalco, 2017) and the Site Management Plan (SMP), a component of the EC. The EC replaces the previous Administrative Consent Order (ACO) CO-07-026. This monitoring report presents the results of the semiannual and annual groundwater and surface water monitoring activities performed in 2024 in accordance with the Groundwater and Surface Water Monitoring Plan (Tetra Tech, 2011; Exhibit F of the EC).

1.1 OVERVIEW

Aluminum production was curtailed at the Eastalco smelter in December 2005, and the plant was formally closed in March 2010. Demolition of the plant was completed in June 2016. Regrading and seeding of the former plant area were completed by early 2017.

The 2007 ACO CO-07-026 required Eastalco to monitor fluoride concentrations in groundwater and free cyanide concentrations in surface water. A monitoring plan to address the ACO requirements was initially submitted in 2007 and revised in 2011. Groundwater and surface water monitoring occur semiannually and annually, respectively, and reports are submitted annually as approved by Maryland Department of the Environment (MDE, 2017).

The EC was executed in December 2017 and placed restrictions on land and groundwater use as a means of managing contamination and protecting human health and the environment during current and future activities/redevelopment. The SMP addresses the remediation and future management of known and potential environmental concerns (such as contaminated groundwater and surface water) associated with the former facility's operations. In the Activity and Use Limitations (Paragraph 6) of the EC, the property owner, now Quantum, is required to maintain compliance with long-term groundwater monitoring on the site in accordance with the Groundwater and Surface Water Monitoring Plan (Tetra Tech, 2011).

Per the Monitoring Plan, the annual report will contain the following:

1. A complete copy of the laboratory data;
2. A comparison of the results against the Definitions of Contamination;
3. Concentration maps depicting total contaminant concentrations measured during the monitoring events;

4. As applicable, charts depicting concentration trends for fluoride in groundwater and free cyanide in surface water using linear regression to calculate a straight line that best fits the data;
5. A summary of all groundwater elevations measured at the wells included in this monitoring program; and
6. A narrative discussion concerning background information, sampling procedures, and results/trends, etc.

This report contains the above items for the groundwater monitoring events performed during the first and third quarters of 2024, and the surface water monitoring event which was conducted during the third quarter of 2024.

1.2 DOCUMENT ORGANIZATION

Section 2 provides a description of the site setting, and Section 3 describes the monitoring tasks that were performed during the 2024 calendar year. Section 4 provides results and associated conclusions.

2.0 SITE SETTINGS

2.1 TOPOGRAPHY

The Quantum Frederick facility (formerly known as the Eastalco facility) is in the Frederick Valley, a synclinal structure characterized by gently rolling topography. Natural elevations at the site range from approximately 300 feet above sea level in the low areas to about 400 feet in the higher areas (Figure 1-1).

2.2 SURFACE WATER

The site is drained by Tuscarora Creek, a tributary of the Potomac River, located east of the plant. There is also an unnamed tributary to the west that flows south to join Tuscarora Creek. Tuscarora Creek then flows south into the Potomac River. Several man-made drainage ditches flow into Tuscarora Creek or the unnamed tributary.

2.3 GEOLOGY

2.3.1 Regional Geology

The Quantum Frederick facility is located in the southwest corner of a geologic feature known as the Frederick Valley. The valley is the topographic expression of a subsurface asymmetrical synclinorium composed of folded Cambro-Ordovician carbonates and siltstones of the Araby, Frederick, and Grove Formations. The elongated western limb of the synclinorium is truncated by an angular unconformity and overlain by Triassic “redbed" sedimentary strata of the Newark Group, which includes the New Oxford Formation and the Gettysburg Shale. The eastern limb of the synclinorium is foreshortened and in some cases overturned. It is bounded to the east by Precambrian metasedimentary rocks of the Western Piedmont.

The Quantum property straddles the contact between the Triassic siltstones, sandstones, and shale of the New Oxford Formation and the Cambrian limestone of the Adamstown member of the Frederick Formation. The bedrock surface expression of this contact trends north-northeast by south-southwest and dips west-northwest. On the Quantum property, it is located approximately 200 feet southeast of the closed North landfill. From east to west across the Quantum property, the depth to the contact between the New Oxford and Frederick Formations varies from 0 feet at the bedrock surface contact to 90 feet beneath the closed North Landfill. The contact surface is irregular, reflecting the erosional nature of the angular unconformity, which defines the contact between these formations in the subsurface; but, in general, the depth to the contact increases westward.

The Frederick Formation is a thin-bedded, laminated limestone with argillaceous partings and shaley zones. Estimated thickness is approximately 500 feet. The Frederick Formation has been subdivided into three members designated in ascending order: Spring Station, Adamstown, and Lime Kiln. The Adamstown member underlies the south and eastern portion of the plant site and consists of laminated, fine grained, thinly

bedded, argillaceous, dark gray limestone. The beds have a north-northeast strike and dip about 40° to the east.

The New Oxford Formation consists of interbedded red and gray arkosic sandstone, red shale, and siltstone. A distinctive limestone/quartz pebble conglomerate at the base of the unit displays a mottled red and gray texture. Sandstone beds in this formation are lenticular and prone to pinching out over short distances. The total estimated thickness of the unit is 4,500 feet. In the vicinity of Quantum's property, beds of the New Oxford Formation underlie the western and northern portion of the property. The strike of these beds is north to south, and dip is to the west at 5°.

2.3.2 Site Geology

Based on lithologic logs generated during installation of soil borings and monitoring wells at the facility, unconsolidated materials above bedrock (overburden) are composed of clay and silt with varying amounts of sand, gravel, and angular rock fragments. Near surface materials are composed of reddish orange to reddish brown, dense, compact silty clay, with occasional sandstone and shale fragments, gravel, and cobbles. Poorly graded limestone gravel is present at the surface at some locations.

Site boring logs indicate that deeper unconsolidated materials (weathered bedrock) are composed of reddish brown to yellowish orange silt, clay, and occasional zones of clayey gravel. The logs note relict bedding (inclined 20 to 30 degrees from horizontal), micaceous inclusions, and quartzite fragments. Several past reports identify this unconsolidated residual material as saprolite; however, saprolite is derived from the in-situ weathering of igneous or metamorphic material retaining many of the visual characteristics of the parent rock. The deeper unconsolidated materials at the site retain some of the characteristics of the parent rock; but they are derived from in-situ weathering of limestone. The thickness of this highly weathered limestone, which grades into the overlying silty clay unit, varies but averages about 5 feet.

The Quantum property is located within the northeast-trending Frederick syncline. According to geologic maps prepared by the Maryland Geological Survey (MGS), two bedrock formations are present beneath the site: the New Oxford and Frederick Limestone Formations (MGS, 1968). The New Oxford Formation is composed of interbedded red and gray arkosic sandstone, red shale and siltstone, with a basal conglomerate containing a red and gray calcareous matrix (MGS, 1981). The New Oxford Formation overlies the Frederick Formation. To the northwest of the Substation Area, the New Oxford Formation is reportedly about 90 feet thick (beneath the north industrial Landfill) and thicknesses of the New Oxford increase to the west (Atlantic, 1996). The Upper Cambrian bedrock beneath the eastern portion of the Site is the Frederick Limestone Formation, which consists of highly jointed and fractured, thinly bedded, argillaceous limestone with minor shale (MGS, 1981).

The Site-Wide Investigation Report (MFG, 2005) contains a topographic map of the bedrock surface from the western portion of the plant to the southern property boundary that was developed based on survey data and logs of existing wells and former construction borings. The undulating bedrock surface slopes from north to south with a bedrock trough that starts near the former Substation Area and appears to extend southward to the property boundary.

2.4 HYDROGEOLOGY

2.4.1 Regional Hydrogeology

Information on the regional hydrogeology was obtained from the Groundwater Atlas of the United States published by the United States Geological Survey. In the Frederick Valley area, significant sources of groundwater exist in the carbonate rock aquifers. The Frederick Limestone, which underlies most of the site, has a typical well yield of 120 to 170 gallons per minute (GPM) and can yield up to 275 GPM in some areas. The carbonate rocks of the Piedmont have virtually no primary porosity, and water in these rocks moves through secondary openings such as fractures, bedding planes, joints, and faults. Water moving through the secondary openings dissolves the carbonate rock and forms dissolution channels to create an interconnected network of openings, greatly increasing the porosity of the rock. Most of the water obtained from bedrock in this area is found in fractures and dissolution channels.

2.4.2 Site Hydrogeology

The groundwater system beneath the site consists of two water-bearing units: an overburden water bearing zone and a bedrock water bearing zone. Based on lithologic descriptions of the overburden materials, most groundwater flow likely occurs in the highly fractured zone (weathered bedrock) located directly above the competent bedrock (Atlantic, 1996). Groundwater movement in bedrock beneath the site typically occurs through fractures. In both the overburden and bedrock zones, the general direction of horizontal groundwater flow across the plant is toward the southeast (MFG, 2005).

3.0 MONITORING PROGRAM

3.1 MONITORING PLAN SUMMARY

Table 3-1 summarizes the monitoring program (i.e., monitoring points and frequencies) as described in the associated monitoring plan. Figure 3-1 shows the monitoring point locations and indicates monitoring frequencies (semiannual or annual). Five monitoring wells were sampled during the first quarter event on March 26 through March 28, 2024. All eighteen monitoring wells were sampled during the third quarter event on September 24 through 27, 2024. Annual surface water samples from three monitoring points were collected on September 27, 2024.

3.2 SAMPLING AND ANALYSIS

Groundwater and surface water samples were collected in accordance with the standard operating procedures (SOPs) appended to the Groundwater and Surface Water Monitoring Plan (Tetra Tech, 2011). Field measurements, including water levels, pH, conductivity, dissolved oxygen, turbidity, oxidation reduction potential (ORP), and temperature, were collected during purging activities.

The samples were submitted to an off-site laboratory, Eurofins Lancaster Laboratories Environment Testing in Lancaster, Pennsylvania. The Practical Quantitation Limits (PQLs) are 0.1 milligrams per liter (mg/L) for fluoride and 0.005 mg/L for free cyanide.

4.0 RESULTS AND CONCLUSIONS

Groundwater field data collected during the March and September 2024 events are provided in Tables 4-1 and 4-2, respectively. The results of fluoride analyses performed on groundwater samples during the two monitoring events in 2024 are provided in Tables 4-3 and 4-4; results of free cyanide analyses performed on surface water samples collected during the third quarter monitoring event in 2024 are also provided in Table 4-4. The results are also summarized on Figures 4-1 and 4-2.

Figures 4-3 through 4-5 are plots of temporal total fluoride concentrations near the source area, downgradient/cross gradient of the source area, and near the property boundary, respectively. Figure 4-6 is a plot of temporal free cyanide concentrations at the three surface water monitoring locations. The charts contain data collected from 2005 to the present to evaluate concentrations before and after the plant's curtailment in December 2005.

Figures 4-3 through 4-6 also show post-curtailment trends, where applicable. Results are compared to the maximum contaminant level (MCL) for fluoride (4 mg/L) (i.e., 40 Code of Federal Regulations [CFR] 141.62), and the Maryland surface water quality criteria for free cyanide (0.0052 mg/L) (i.e., Code of Maryland Regulations [COMAR] 26.08.02.03-2).

4.1 GROUNDWATER

4.1.1 Source Area

During the post-curtailment period, fluoride concentrations in groundwater near historical source areas (i.e., former Waste Disposal Site #10 [WDS-10] covered in 2016; and North and South Ponds, removed from service in 2005 and excavated in 2016) ranged from 15.0 to 54.0 mg/L in RW-29, MW-45, MW-56, and MW-68, as seen on Figure 4-3. Although MW-45 is not listed in Table 3-1 as a source area/former pumping well, it is located in close proximity to the former North and South Ponds.

Consistent with previous monitoring events, fluoride was detected above the MCL in each well near the source area during the third quarter 2024 monitoring event (Figure 4-2). The concentrations of fluoride in MW-45 have been relatively stable in the most recent sampling events but have showed an overall increasing trend since the third quarter of 2006. However, since the excavation and removal of source materials from source areas in 2016, concentrations in MW-45 have decreased from a maximum concentration of 53.0 mg/L in September 2016 to as low as 15.0 mg/L in the September 2021 monitoring event, with the most recent concentration in the September 2024 monitoring event being 20.0 mg/L. The concentration in MW-68 (located near the South Landfill) spiked to a concentration of 71.5 mg/L in the second quarter of 2006; but since then, the concentrations, although fluctuating, have remained relatively stable with an overall decreasing trend since the elevated second quarter 2006 results. During the September 2024 monitoring event, RW-29 reported an increase in fluoride concentration of 51 mg/L (average of the parent and DUP sample collected). Fluoride concentrations in RW-29 increased during the first year after the plant curtailment; but since then, the concentrations, although fluctuating, have declined overall with exception to the September 2024 results..

The other source areas wells have shown a decreasing trend in concentrations since the complete closure of the facility in 2010, and following the demolition of the facility and excavation and removal of source materials from source areas in 2016.

4.1.2 Downgradient Areas

Concentrations of fluoride in areas that are downgradient or cross-gradient of the source area are plotted on Figure 4-4 and presented in Appendix B. Figure 4-4 shows that the concentrations in these wells are generally much lower than those measured near the source area. Over the last 8 years, concentrations in these wells have been less than 20 mg/L with the exception of an anomalous elevated concentration of 52 mg/L in MW-26 during the third quarter 2015 sampling event.

4.1.3 Property Boundary

During post-curtailment, fluoride concentrations in groundwater near the property boundary wells (MW-52, MW-60, MW-72, and MW-73) ranged from 2.4 to 4.9 mg/L. Fluoride concentrations in MW-13 (off-site well) have ranged from non-detect (less than the reporting limit) to 1.3 mg/L and have remained less than 1.3 mg/L since the first quarter of 2008. Fluoride concentrations at MW-13 in 2024 remained consistent with previous years, with fluoride detections of 0.26 mg/L in March 2023 and 0.42 mg/L in September 2024.

During the 2024 reporting period, three of the four on-site property boundary wells had fluoride concentrations that slightly exceeded the MCL of 4 mg/L with an average concentration of 3.95 mg/L. The concentration in MW-60 has been below the MCL since 2008 and has been fairly stable since then. As shown on Figure 4-5 and presented in Appendix B, concentrations in the other on-site property boundary wells show seasonal fluctuations with slightly increasing trends over the first 6 years of the post-curtailment period (through 2012) followed by slightly decreasing trends over the last 11 years. The fluoride concentration in the off-site well (MW-13) continues to be much lower than the MCL.

It should be noted that the first quarter 2006 monitoring report submitted to MDE showed that concentrations in MW-60, 72, and 73 were less than 1 mg/L. Although the laboratory could not find any evidence suggesting these data were in error, the accuracy of these data is uncertain because the concentrations were historically in range of 5 to 9 mg/L for many years prior; and MW-52, which is paired with MW-60, did not show a similar decline in that quarter. As such, the first quarter 2006 data from MW-60, 72, and 73 were not plotted on Figure 4-5.

4.2 SURFACE WATER

As shown on Figure 4-6, during the first 3 years following curtailment (from 2006 through 2008), free cyanide was detected at least twice at each of three surface water monitoring locations. Since then, there have been eleven detections among all three of the surface water monitoring locations with only two detections slightly above the surface water quality criteria (0.0052 mg/L). During the September 2024 event, free cyanide concentrations were not detected above the laboratory reporting limit for free cyanide.

5.0 REFERENCES

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TABLES

Table 3-1
Groundwater and Surface Water Monitoring Strategy
Quantum Maryland, LLC

Groundwater Monitoring for Fluoride		
Location	**Monitoring Location**	**Monitoring Frequency**
Source Area/Pumping Wells	RW-29	A
	MW-56	A
	MW-68	A
Downgradient/Crossgradient Plume	MW-4	A
	MW-6	A
	MW-26	A
	MW-25	A
	MW-45	A
	MW-51	A
	MW-62	A
	MW-103	A
	MW-107	A
	MW-108	A
Property Boundary	MW-13[(1)]	S
	MW-52	S
	MW-60	S
	MW-72	S
	MW-73	S

Surface Water Monitoring for Free Cyanide		
Location	**Monitoring Location**	**Monitoring Frequency**
Property Boundary	D	A
	E[(1)]	A
	I	A

S = Semi-annually
A = Annually
[(1)] Off-site location

Table 4-1
March 2023 Field Measurements
Quantum Maryland, LLC
Frederick, Maryland

Well ID	TOC Elevation (ft MSL)	Depth to Static Water (ft below TOC)	Groundwater Elevation (ft MSL)	pH (s.u.)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Temperature (^{o}C)	ORP (mV)
MW-13	290.28	4.53	285.75	6.94	0.49	5.21	1.78	13.11	322
MW-52	296.25	5.21	291.04	6.52	0.821	8.79	0.21	11.84	298
MW-60	295.72	17.42	278.30	6.79	0.800	3.91	0.05	14.01	277
MW-72	295.27	5.51	289.76	6.16	0.868	0.32	1.14	8.86	321
MW-73	294.69	4.91	289.78	6.09	0.842	9.11	0.51	10.96	314

Notes:

TOC	Top of Casing
ORP	Oxidation-reduction Potential
ft	Feet
ft MSL	Feet Above Mean Sea Level
s.u.	Standard Units
mS/cm	Millisiemens per Centimeter
NTUs	Nephelometric Turbidity Units
mV	Millivolts
mg/L	Milligrams per Liter
^{o}C	Degrees Centigrade

Table 4-2
September 2024 Field Measurements
Quantum Maryland, LLC
Frederick, Maryland

Well ID	TOC Elevation (ft MSL)	Water (9/23/2024) (ft below TOC)	Groundwater Elevation (ft MSL)	pH (s.u.)	Specific Conductance (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (^{o}C)	ORP (mV)
MW-4	331.27	18.40	312.87	7.45	0.539	6.44	3.45	16.50	182
MW-6	323.66	14.14	309.52	6.58	0.409	69.00	2.60	19.22	-81
MW-13	290.28	6.71	283.57	8.14	0.437	0.02	9.97	13.71	200
MW-25	321.92	17.78	304.14	8.15	0.741	607.00	5.00	17.88	145
MW-26	324.49	17.85	306.64	7.22	0.576	4.66	4.37	17.02	190
RW-29	328.02	21.68	306.34	10.45	3.08	135	1.05	16.91	83
MW-45	328.03	19.80	308.23	7.94	3.14	33.0	4.84	16.76	225
MW-51	308.80	11.68	297.12	8.02	0.480	46.20	10.20	14.55	144
MW-52	296.25	5.46	290.79	7.25	0.623	4.11	2.79	16.74	227
MW-56	330.86	18.54	312.32	8.07	1.080	202.00	2.15	22.40	123
MW-60	295.72	10.05	285.67	7.30	0.574	5.27	0.72	15.83	209
MW-62	329.99	31.81	298.18	7.33	0.567	0.06	15.22	13.77	74
MW-68	328.12	23.68	304.44	7.53	1.16	10.9	4.50	16.25	199
MW-72	295.27	6.02	289.25	7.23	0.636	5.98	1.99	19.16	224
MW-73	294.69	5.42	289.27	7.20	0.620	1.32	2.26	18.35	222
MW-103	330.80	19.40	311.40	7.45	0.355	9.33	2.24	17.59	27
MW-107	329.16	26.47	302.69	6.60	0.359	557.00	10.51	14.98	-25
MW-108	328.72	25.41	303.31	7.41	0.876	19.2	1.52	14.66	88

Notes:

TOC	Top of Casing
ORP	Oxidation-reduction Potential
ft	Feet
ft MSL	Feet above Mean Sea Level
s.u.	Standard units
mS/cm	Millisiemens per Centimeter
NTUs	Nephelometric Turbidity Units
mV	Millivolts
mg/L	Milligrams per Liter
^{o}C	Degrees Centigrade
AU	Attenuation Unit
NA	Not Applicable

Table 4-3
March 2024
Groundwater Analytical Results

Quantum Maryland, LLC
Frederick, Maryland

Well ID	Fluoride (mg/L)
MCL [1]	*4*
MW-13	**0.26**
MW-52	**4.3**
MW-60	**2.4**
MW-72	**4.1**
MW-73	**4**

Notes:
All results are in milligrams/liter (mg/L).
[1] Maximum Contaminant Level (MCL)
(i.e. 40 CFR 141.62)
U = Not detected above the laboratory reporting limit. Value shown is reporting limit.
BOLD indicates detected value

Indicates concentration above maximum contaminant level (MCL)

Table 4-4
September 2024 Groundwater and Surface Water Analytical Results

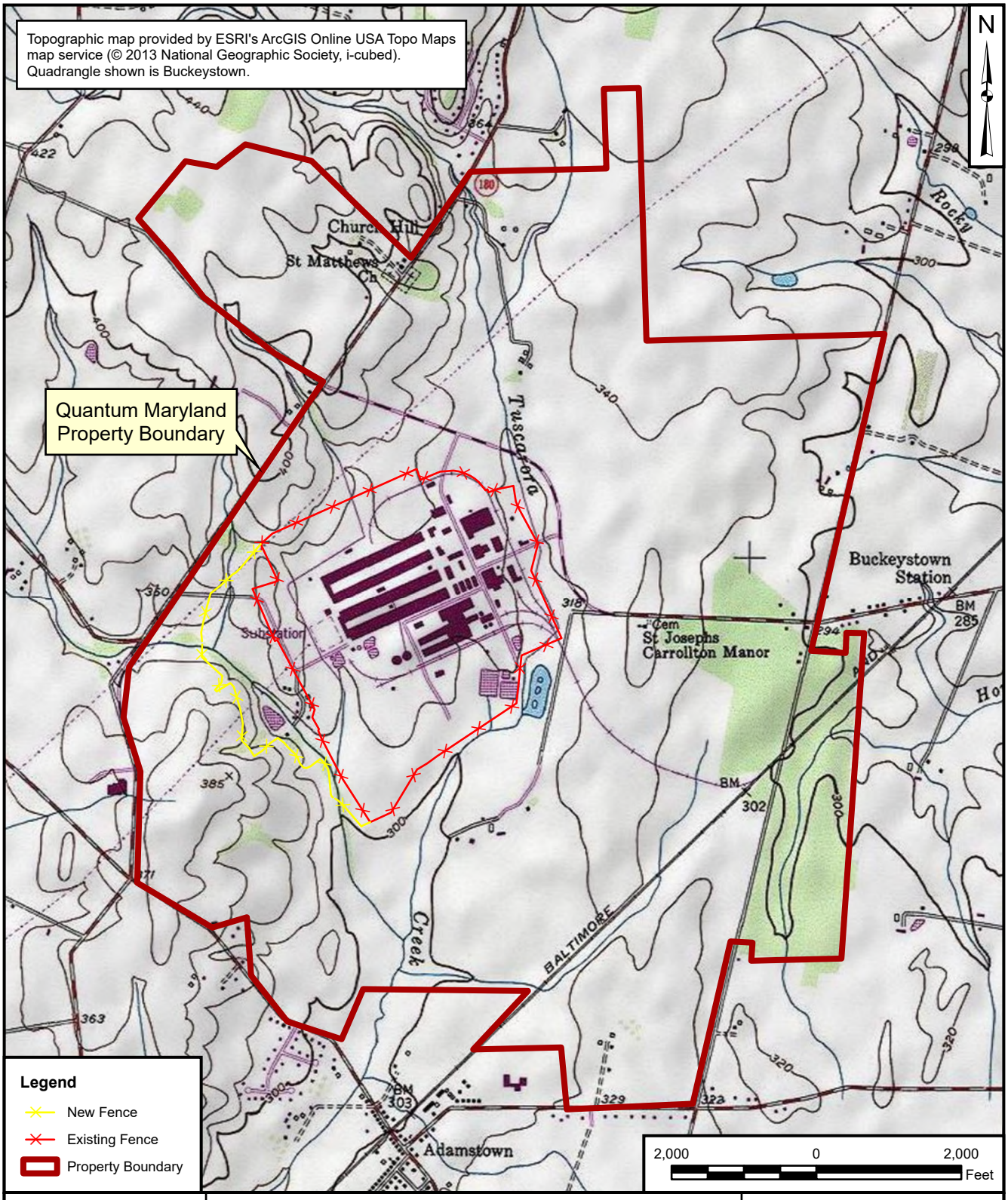
Quantum Maryland, LLC
Frederick, Maryland

Well ID/Surface Water Location	Fluoride (mg/L)	Free Cyanide (mg/L)
MCL [1]	*4*	*0.0052*
MW-4	**2.3**	NA
MW-6	**3.2**	NA
MW-13	**0.42**	NA
MW-25	**11**	NA
MW-26	**5.2**	NA
RW-29	**54**	NA
RW-29 DUP[2]	**48**	NA
MW-45	**20**	NA
MW-51	**1.4**	NA
MW-52	**4.9**	NA
MW-56	**19**	NA
MW-60	**2.4**	NA
MW-62	**3.3**	NA
MW-68	**17**	NA
MW-68 DUP[3]	**15**	NA
MW-72	**4.6**	NA
MW-73	**4.9**	NA
MW-103	**3.5**	NA
MW-107	**0.76**	NA
MW-108	**8.2**	NA
SW-D	NA	<0.005C U
TUSCARORA CREEK DUP[4]	NA	<0.005C U
SW-E	NA	<0.005C U
SW-I	NA	<0.005C U

Notes:
All results are in milligrams/liter (mg/L).
[1] Per the ACO, Maximum Contaminant Level (MCL) (i.e. 40 CFR 141.62) for fluoride, and MDE surface water criterion for free cyanide
[2] Duplicate sample from RW-29
[3] Duplicate sample from MW-68
[4] Duplicate sample from Creek Location D
BOLD indicates detected value
indicates concentration above MCL
NA = not analyzed
J= Estimated value; detected above the method detection limit and below the reporting limit (or limit of quantitation).
U = Not detected above the laboratory reporting limit. Value shown is reporting limit.

FIGURES

PITTSBURGH\GIS\GIS\ALCOA\EASTALCO\MAPDOCS\APRX\SITE_LOCATION_USGS.APRX - FIG 1-1 SITE_LOCATION_USGS 11/11/24 JEE



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SITE LOCATION
QUANTUM MARYLAND, LLC
FREDERICK, MARYLAND

DRAWN BY: J. ZAMUDIO 11/16/23
CHECKED BY: A. BEHZZADI 11/11/24
APPROVED BY:

CONTRACT NUMBER: 112C10300

FIGURE NUMBER	REV
1-1	0

PITTSBURGH\GIS\GIS\ALCOA\EASTALCO\MAPDOCS\APRX\ EASTALCO_GW_SW_LOCS_NOV2024.APRX - LAYOUT 11/11/24 JEE

Aerial photograph obtained from Google Earth,
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N

North Landfill

South Landfill

UNNAMED TRIBUTARY

TUSCARORA CREEK

4
103
56
45
29
26
107
108
6
68
25
62
51
52
60
I
D
72
73
13
E

Legend

- Surface Water Sampling Location
- Overburder Monitoring Well Location
- Bedrock Monitoring Well Location
- Off-Property/Bedrock Monitoring Well Location (Not Owned by Quantum)
- Recovery Well
- New Fence
- Existing Fence
- Closed Industrial Landfill
- Property Boundary

Groundwater Monitoring Program

- Annually
- Semi-Annually

800 0 800
Feet

TETRA TECH

GROUNDWATER AND SURFACE WATER MONITORING POINTS
QUANTUM MARYLAND
FREDERICK, MARYLAND

DRAWN BY: J. ENGLISH 11/11/24
CHECKED BY: A. BEHZADI 11/11/24
APPROVED BY:

CONTRACT NUMBER: 112C10300

FIGURE NUMBER 3-1

REV 0

PITTSBURGH\GIS\GIS\ALCOA\EASTALCO\MAPDOCS\APRX\ EASTALCO_FLOURIDE_SITEWIDE_2024Q1.APRX - LAYOUT 11/11/24 JEE

Aerial photograph obtained from Google Earth,
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N

56
4
103
45
29
26
107
108
6
68
South Landfill
25
62
51
UNNAMED TRIBUTARY
TUSCARORA CREEK
7 pt
52
4.3
60
2.4
I
D
72
4.1
73
4.0
13
0.26
E

Legend

- Surface Water Sampling Location
- Overburden Monitoring Well Location
- Bedrock Monitoring Well Location
- Off-Property/Bedrock Monitoring Well Location (Not Owned by Quantum)
- Recovery Well
- New Fence
- Existing Fence
- Closed Industrial Landfill
- Property Boundary

Groundwater Monitoring Program

- 4 Annually
- 13 Semi-Annually
- *0.26* Groundwater Fluoride Concentration (mg/L)

450 0 450 Feet

TETRA TECH

GROUNDWATER FLOURIDE CONCENTRATIONS
FIRST QUARTER 2024
QUANTUM MARYLAND
FREDERICK, MARYLAND

DRAWN BY: J. ENGLISH 11/11/24
CHECKED BY: A. BEHZADI 11/11/24
APPROVED BY:

CONTRACT NUMBER: 112C10300

FIGURE NUMBER 4-1

REV 0

PITTSBURGH\GIS\GIS\ALCOA\EASTALCO\MAPDOCS\APRX\ EASTALCO_FLOURIDE_SITEWIDE_2024Q3.APRX - LAYOUT 11/11/24 JEE

Aerial photograph obtained from Google Earth,
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N

56
19

4
2.3

45
20

29
51 *

103
3.5

26
5.2

107 0.76
108 8.2

6
3.2

68
16

South
Landfill

25
11

62
3.3

51
1.4

UNNAMED TRIBUTARY

TUSCARORA CREEK

52
4.9

60
2.4

I <0.0050 D <0.0050 *

72
4.6

73
4.9

13
0.42

E
<0.0050

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450 0 450
Feet

Legend

- Surface Water Sampling Location
- Overburder Monitoring Well Location
- Bedrock Monitoring Well Location
- Off-Property/Bedrock Monitoring Well Location (Not Owned by Quantum)
- Recovery Well
- New Fence
- Existing Fence
- Closed Industrial Landfill
- Property Boundary

Groundwater Monitoring Program

- 4 Annually
- 13 Semi-Annually
- 0.26 Groundwater Fluoride Concentration (mg/L)
- 0.0050 Surface Water Free Cyanide Concentration (mg/L)
- * Duplicate sample collected, average result shown

TETRA TECH

GROUNDWATER FLOURIDE CONCENTRATIONS
THIRD QUARTER 2024
QUANTUM MARYLAND
FREDERICK, MARYLAND

DRAWN BY: J. ENGLISH 11/11/24
CHECKED BY: A. BEHZADI 11/11/24
APPROVED BY:

CONTRACT NUMBER: 112C10300

FIGURE NUMBER	REV
4-2	0

APPENDIX A: GROUNDWATER AND SURFACE WATER ANALYTICAL DATA

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Josh Mullis
Tetra Tech Inc
20251 Century Blvd
Suite 200
Germantown, Maryland 20874

Generated 11/6/2024 10:25:11 AM Revision 1

JOB DESCRIPTION

SLF/ACO September 2024

JOB NUMBER

410-189443-1

Eurofins Lancaster Laboratories Environment Testing, LLC
2425 New Holland Pike
Lancaster PA 17601

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Generated
11/6/2024 10:25:11 AM
Revision 1

Authorized for release by
Stephen Gordon, Senior Project Manager
Stephen.Gordon@et.eurofinsus.com
(412)525-0071

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Table of Contents

Definitions/Glossary

Client: Tetra Tech Inc
Job ID: 410-189443-1
Project/Site: SLF/ACO September 2024

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
410-189443-1

REVISION

The report being provided is a revision of the original report sent on 10/2/2024. The report (revision 1) is being revised due to Deliverable cover page fixed to have correct client address..

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 9/24/2024 5:51 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.0°C.

Receipt Exceptions
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): MW-67-092424 (410-189443-4). The container labels list a time of 0925, while the COC lists a time of 0927.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189443-1

Client Sample ID: MW-45-092424 — Lab Sample ID: 410-189443-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	20		2.0	0.90	mg/L	10		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-62-092424 — Lab Sample ID: 410-189443-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	3.3		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-66-092424 — Lab Sample ID: 410-189443-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	9.0		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-67-092424 — Lab Sample ID: 410-189443-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	5.8		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-68-092424 — Lab Sample ID: 410-189443-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	17		2.0	0.90	mg/L	10		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-68DUP-092424 — Lab Sample ID: 410-189443-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	15		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-107-092424 — Lab Sample ID: 410-189443-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.76		0.20	0.090	mg/L	1		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-108-092424 — Lab Sample ID: 410-189443-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	8.2		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-4-092424 — Lab Sample ID: 410-189443-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	2.3		0.20	0.090	mg/L	1		EPA 300.0 R2.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-45-092424
Lab Sample ID: 410-189443-1
Date Collected: 09/24/24 12:25
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	20		2.0	0.90	mg/L			09/30/24 20:36	10

Client Sample ID: MW-62-092424
Lab Sample ID: 410-189443-2
Date Collected: 09/24/24 13:30
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	3.3		1.0	0.45	mg/L			09/28/24 01:07	5

Client Sample ID: MW-66-092424
Lab Sample ID: 410-189443-3
Date Collected: 09/24/24 08:08
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	9.0		1.0	0.45	mg/L			09/28/24 01:30	5

Client Sample ID: MW-67-092424
Lab Sample ID: 410-189443-4
Date Collected: 09/24/24 09:27
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	5.8		1.0	0.45	mg/L			09/28/24 02:17	5

Client Sample ID: MW-68-092424
Lab Sample ID: 410-189443-5
Date Collected: 09/24/24 10:00
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	17		2.0	0.90	mg/L			09/30/24 21:12	10

Client Sample ID: MW-68DUP-092424
Lab Sample ID: 410-189443-6
Date Collected: 09/24/24 00:00
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	15		1.0	0.45	mg/L			09/28/24 03:03	5

Client Sample ID: MW-107-092424
Lab Sample ID: 410-189443-7
Date Collected: 09/24/24 12:15
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.76		0.20	0.090	mg/L			09/28/24 04:35	1

Client Sample Results

Client: Tetra Tech Inc
Job ID: 410-189443-1
Project/Site: SLF/ACO September 2024

Client Sample ID: MW-108-092424
Lab Sample ID: 410-189443-8
Date Collected: 09/24/24 11:50
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	8.2		1.0	0.45	mg/L			09/28/24 05:09	5

Client Sample ID: MW-4-092424
Lab Sample ID: 410-189443-9
Date Collected: 09/24/24 13:33
Matrix: Water
Date Received: 09/24/24 17:51

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	2.3		0.20	0.090	mg/L			09/28/24 05:21	1

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Lab Sample ID: MB 410-556782/5
Matrix: Water
Analysis Batch: 556782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.090		0.20	0.090	mg/L			09/27/24 23:12	1

Lab Sample ID: LCS 410-556782/3
Matrix: Water
Analysis Batch: 556782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	0.750	0.744		mg/L		99	90 - 110

Lab Sample ID: LCSD 410-556782/4
Matrix: Water
Analysis Batch: 556782

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Fluoride	0.750	0.748		mg/L		100	90 - 110	0	20

Lab Sample ID: MB 410-557572/5
Matrix: Water
Analysis Batch: 557572

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.090		0.20	0.090	mg/L			09/30/24 17:52	1

Lab Sample ID: LCS 410-557572/3
Matrix: Water
Analysis Batch: 557572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	0.750	0.751		mg/L		100	90 - 110

Lab Sample ID: LCSD 410-557572/4
Matrix: Water
Analysis Batch: 557572

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Fluoride	0.750	0.756		mg/L		101	90 - 110	1	20

QC Association Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189443-1

HPLC/IC

Analysis Batch: 556782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-189443-2	MW-62-092424	Total/NA	Water	EPA 300.0 R2.1	
410-189443-3	MW-66-092424	Total/NA	Water	EPA 300.0 R2.1	
410-189443-4	MW-67-092424	Total/NA	Water	EPA 300.0 R2.1	
410-189443-6	MW-68DUP-092424	Total/NA	Water	EPA 300.0 R2.1	
410-189443-7	MW-107-092424	Total/NA	Water	EPA 300.0 R2.1	
410-189443-8	MW-108-092424	Total/NA	Water	EPA 300.0 R2.1	
410-189443-9	MW-4-092424	Total/NA	Water	EPA 300.0 R2.1	
MB 410-556782/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-556782/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-556782/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	

Analysis Batch: 557572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-189443-1	MW-45-092424	Total/NA	Water	EPA 300.0 R2.1	
410-189443-5	MW-68-092424	Total/NA	Water	EPA 300.0 R2.1	
MB 410-557572/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-557572/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-557572/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	

Lab Chronicle

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189443-1

Client Sample ID: MW-45-092424
Lab Sample ID: 410-189443-1
Date Collected: 09/24/24 12:25
Matrix: Water
Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		10	557572	W7FX	ELLE	09/30/24 20:36

Client Sample ID: MW-62-092424
Lab Sample ID: 410-189443-2
Date Collected: 09/24/24 13:30
Matrix: Water
Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 01:07

Client Sample ID: MW-66-092424
Lab Sample ID: 410-189443-3
Date Collected: 09/24/24 08:08
Matrix: Water
Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 01:30

Client Sample ID: MW-67-092424
Lab Sample ID: 410-189443-4
Date Collected: 09/24/24 09:27
Matrix: Water
Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 02:17

Client Sample ID: MW-68-092424
Lab Sample ID: 410-189443-5
Date Collected: 09/24/24 10:00
Matrix: Water
Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		10	557572	W7FX	ELLE	09/30/24 21:12

Client Sample ID: MW-68DUP-092424
Lab Sample ID: 410-189443-6
Date Collected: 09/24/24 00:00
Matrix: Water
Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 03:03

Client Sample ID: MW-107-092424
Lab Sample ID: 410-189443-7
Date Collected: 09/24/24 12:15
Matrix: Water
Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		1	556782	L4QM	ELLE	09/28/24 04:35

Lab Chronicle

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189443-1

Client Sample ID: MW-108-092424

Lab Sample ID: 410-189443-8

Date Collected: 09/24/24 11:50

Matrix: Water

Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 05:09

Client Sample ID: MW-4-092424

Lab Sample ID: 410-189443-9

Date Collected: 09/24/24 13:33

Matrix: Water

Date Received: 09/24/24 17:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		1	556782	L4QM	ELLE	09/28/24 05:21

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Tetra Tech Inc
Job ID: 410-189443-1
Project/Site: SLF/ACO September 2024

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Maryland	State	100	10-21-24

Method Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189443-1

Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189443-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-189443-1	MW-45-092424	Water	09/24/24 12:25	09/24/24 17:51
410-189443-2	MW-62-092424	Water	09/24/24 13:30	09/24/24 17:51
410-189443-3	MW-66-092424	Water	09/24/24 08:08	09/24/24 17:51
410-189443-4	MW-67-092424	Water	09/24/24 09:27	09/24/24 17:51
410-189443-5	MW-68-092424	Water	09/24/24 10:00	09/24/24 17:51
410-189443-6	MW-68DUP-092424	Water	09/24/24 00:00	09/24/24 17:51
410-189443-7	MW-107-092424	Water	09/24/24 12:15	09/24/24 17:51
410-189443-8	MW-108-092424	Water	09/24/24 11:50	09/24/24 17:51
410-189443-9	MW-4-092424	Water	09/24/24 13:33	09/24/24 17:51

Eurofins Lancaster Laboratories Environme
2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300 Fax: 717-656-2681

Chain of Custody Record

410-189443 Chain of Custody

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Client Information	Sampler: Will D., Zack M.	Lab PM: Gordon, Stephen J	QC No: 10-130889-36989 1
Client Contact: ~~Alexander Behzadi~~ Josh Mullis WD 9/24/24	Phone: 443-808-7914	E-Mail: Stephen Gordon@et.eurofinsus.com	State of Origin: MD
Company: Tetra Tech Inc	PWSID:		Page: Page 1 of ~~5~~ 1 WO 9/24/24
Address: 20251 Century Blvd Suite 200	Due Date Requested:		Job #:
City: Germantown	TAT Requested (days):		
State, Zip: MD, 20874	Compliance Project: Δ Yes Δ No		
Phone: 301-528-3004(Tel) 301-528-3000(Fax)	PO #: 1206196		
Email: ~~alex.behzadi@tetratech.com~~ Josh.Mullis@tetratech.com WD 9/24/24	WO #: 12C10300		
Project Name: EastAlco WW	Project #: 41001054		
Site: Quantum Loop	SSOW#:		

Analysis Requested

Preservation Codes:
N - None
D - HNO3
B - NaOH
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300_ORGFM_28D - Flouride Only	300_ORGFM_28D, 300_ORGFMS	2320B, 2510B, 2540C_SingleDry, 9040B	SM2130B - Turbidity	6020B, 7470A	1677_Free - Free Cyanide	Total Number of containers	Special Instructions/Note:
Preservation Code:							N	N	N	N	D	B		
~~MW-13~~ MW-45-092424	9/24/24	1225	G	Water			X						1	
~~RW-29~~ MW-62-092424		1330		Water			X						1	
~~RW-29 DUP~~ MW-66-092424		0808		Water			X						1	
~~MW-45~~ MW-67-092424		0927		Water			X						1	
~~MW-51~~ MW-68-092424		1000		Water			X						1	
~~MW-62~~ MW-68DUP-092424		0000		Water			X						1	
~~MW-56~~ MW-107-092424		1215		Water			X						1	
~~MW-68~~ MW-108-092424		1150		Water			X						1	
~~MW-62~~ MW-4-092424		1333		Water			X						1	
~~MW-72~~ WD				Water										
~~MW-103~~ 9/24/24				Water										

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by:	Date/Time: 9/17/24 1605	Company: ECLE	Received by:	Date/Time: 9/27/24 1500	Company: Tetra Tech
Relinquished by: Zach Musser	Date/Time: 9/24/24 1508	Company: TT	Received by:	Date/Time: 9/24/24 15:08	Company: ECLE
Relinquished by:	Date/Time: 9/24/24 17:51	Company: ECLE	Received by:	Date/Time: 9/24/24 1751	Company: ECLE
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 4.4/4.0		

Login Sample Receipt Checklist

Client: Tetra Tech Inc

Job Number: 410-189443-1

Login Number: 189443
List Number: 1
Creator: Wrye, Shaun

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Josh Mullis
Tetra Tech Inc
20251 Century Blvd
Suite 200
Germantown, Maryland 20874

Generated 11/6/2024 10:29:36 AM Revision 1

JOB DESCRIPTION

SLF/ACO September 2024

JOB NUMBER

410-189874-1

Eurofins Lancaster Laboratories Environment Testing, LLC
2425 New Holland Pike
Lancaster PA 17601

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Generated
11/6/2024 10:29:36 AM
Revision 1

Authorized for release by
Stephen Gordon, Senior Project Manager
Stephen.Gordon@et.eurofinsus.com
(412)525-0071

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Table of Contents

Definitions/Glossary

Client: Tetra Tech Inc
Job ID: 410-189874-1
Project/Site: SLF/ACO September 2024

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
410-189874-1

REVISION

The report being provided is a revision of the original report sent on 10/8/2024. The report (revision 1) is being revised due to Deliverable cover page fixed to have correct client address..

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 9/26/2024 5:55 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.9°C.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189874-1

Client Sample ID: MW-51-092624 — Lab Sample ID: 410-189874-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	1.4		0.20	0.090	mg/L	1		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-72-092624 — Lab Sample ID: 410-189874-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	4.6		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-73-092624 — Lab Sample ID: 410-189874-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	4.9		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-52-092624 — Lab Sample ID: 410-189874-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	4.9		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-60-092624 — Lab Sample ID: 410-189874-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	2.4		0.20	0.090	mg/L	1		EPA 300.0 R2.1	Total/NA

Client Sample ID: RW-29-092624 — Lab Sample ID: 410-189874-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	54		5.0	2.3	mg/L	25		EPA 300.0 R2.1	Total/NA

Client Sample ID: RW-29DUP-092624 — Lab Sample ID: 410-189874-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	48		10	4.5	mg/L	50		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-56-092624 — Lab Sample ID: 410-189874-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	19		4.0	1.8	mg/L	20		EPA 300.0 R2.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-51-092624
Lab Sample ID: 410-189874-1
Date Collected: 09/26/24 11:35
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	1.4		0.20	0.090	mg/L			09/28/24 05:44	1

Client Sample ID: MW-72-092624
Lab Sample ID: 410-189874-2
Date Collected: 09/26/24 11:21
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	4.6		1.0	0.45	mg/L			09/28/24 06:42	5

Client Sample ID: MW-73-092624
Lab Sample ID: 410-189874-3
Date Collected: 09/26/24 11:05
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	4.9		1.0	0.45	mg/L			09/28/24 07:05	5

Client Sample ID: MW-52-092624
Lab Sample ID: 410-189874-4
Date Collected: 09/26/24 13:13
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	4.9		1.0	0.45	mg/L			09/28/24 07:28	5

Client Sample ID: MW-60-092624
Lab Sample ID: 410-189874-5
Date Collected: 09/26/24 12:50
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	2.4		0.20	0.090	mg/L			09/28/24 07:39	1

Client Sample ID: RW-29-092624
Lab Sample ID: 410-189874-6
Date Collected: 09/26/24 13:00
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	54		5.0	2.3	mg/L			09/30/24 19:48	25

Client Sample ID: RW-29DUP-092624
Lab Sample ID: 410-189874-7
Date Collected: 09/26/24 00:00
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	48		10	4.5	mg/L			10/05/24 05:50	50

Client Sample Results

Client: Tetra Tech Inc
Job ID: 410-189874-1
Project/Site: SLF/ACO September 2024

Client Sample ID: MW-56-092624
Lab Sample ID: 410-189874-8
Date Collected: 09/26/24 15:00
Matrix: Water
Date Received: 09/26/24 17:55

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	19		4.0	1.8	mg/L			10/05/24 06:02	20

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Lab Sample ID: MB 410-556782/5
Matrix: Water
Analysis Batch: 556782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.090		0.20	0.090	mg/L			09/27/24 23:12	1

Lab Sample ID: LCS 410-556782/3
Matrix: Water
Analysis Batch: 556782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	0.750	0.744		mg/L		99	90 - 110

Lab Sample ID: LCSD 410-556782/4
Matrix: Water
Analysis Batch: 556782

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Fluoride	0.750	0.748		mg/L		100	90 - 110	0	20

Lab Sample ID: MB 410-557572/5
Matrix: Water
Analysis Batch: 557572

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.090		0.20	0.090	mg/L			09/30/24 17:52	1

Lab Sample ID: LCS 410-557572/3
Matrix: Water
Analysis Batch: 557572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	0.750	0.751		mg/L		100	90 - 110

Lab Sample ID: LCSD 410-557572/4
Matrix: Water
Analysis Batch: 557572

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Fluoride	0.750	0.756		mg/L		101	90 - 110	1	20

Lab Sample ID: MB 410-559764/5
Matrix: Water
Analysis Batch: 559764

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.090		0.20	0.090	mg/L			10/05/24 04:53	1

Lab Sample ID: LCS 410-559764/3
Matrix: Water
Analysis Batch: 559764

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	0.750	0.789		mg/L		105	90 - 110

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Lab Sample ID: LCSD 410-559764/4
Matrix: Water
Analysis Batch: 559764

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Fluoride			0.750	0.794		mg/L		106	90 - 110	1	20

Lab Sample ID: 410-189874-8 MS
Matrix: Water
Analysis Batch: 559764

Client Sample ID: MW-56-092624
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Fluoride	19		10.0	30.0		mg/L		108	90 - 110		

Lab Sample ID: 410-189874-8 DU
Matrix: Water
Analysis Batch: 559764

Client Sample ID: MW-56-092624
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Fluoride	19			19.2		mg/L				0.2	15

QC Association Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189874-1

HPLC/IC

Analysis Batch: 556782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-189874-1	MW-51-092624	Total/NA	Water	EPA 300.0 R2.1	
410-189874-2	MW-72-092624	Total/NA	Water	EPA 300.0 R2.1	
410-189874-3	MW-73-092624	Total/NA	Water	EPA 300.0 R2.1	
410-189874-4	MW-52-092624	Total/NA	Water	EPA 300.0 R2.1	
410-189874-5	MW-60-092624	Total/NA	Water	EPA 300.0 R2.1	
MB 410-556782/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-556782/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-556782/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	

Analysis Batch: 557572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-189874-6	RW-29-092624	Total/NA	Water	EPA 300.0 R2.1	
MB 410-557572/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-557572/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-557572/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	

Analysis Batch: 559764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-189874-7	RW-29DUP-092624	Total/NA	Water	EPA 300.0 R2.1	
410-189874-8	MW-56-092624	Total/NA	Water	EPA 300.0 R2.1	
MB 410-559764/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-559764/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-559764/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	
410-189874-8 MS	MW-56-092624	Total/NA	Water	EPA 300.0 R2.1	
410-189874-8 DU	MW-56-092624	Total/NA	Water	EPA 300.0 R2.1	

Lab Chronicle

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189874-1

Client Sample ID: MW-51-092624
Lab Sample ID: 410-189874-1
Date Collected: 09/26/24 11:35
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		1	556782	L4QM	ELLE	09/28/24 05:44

Client Sample ID: MW-72-092624
Lab Sample ID: 410-189874-2
Date Collected: 09/26/24 11:21
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 06:42

Client Sample ID: MW-73-092624
Lab Sample ID: 410-189874-3
Date Collected: 09/26/24 11:05
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 07:05

Client Sample ID: MW-52-092624
Lab Sample ID: 410-189874-4
Date Collected: 09/26/24 13:13
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	556782	L4QM	ELLE	09/28/24 07:28

Client Sample ID: MW-60-092624
Lab Sample ID: 410-189874-5
Date Collected: 09/26/24 12:50
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		1	556782	L4QM	ELLE	09/28/24 07:39

Client Sample ID: RW-29-092624
Lab Sample ID: 410-189874-6
Date Collected: 09/26/24 13:00
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		25	557572	W7FX	ELLE	09/30/24 19:48

Client Sample ID: RW-29DUP-092624
Lab Sample ID: 410-189874-7
Date Collected: 09/26/24 00:00
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		50	559764	L4QM	ELLE	10/05/24 05:50

Lab Chronicle

Client: Tetra Tech Inc
Job ID: 410-189874-1
Project/Site: SLF/ACO September 2024

Client Sample ID: MW-56-092624
Lab Sample ID: 410-189874-8

Date Collected: 09/26/24 15:00
Matrix: Water
Date Received: 09/26/24 17:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		20	559764	L4QM	ELLE	10/05/24 06:02

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Tetra Tech Inc
Job ID: 410-189874-1
Project/Site: SLF/ACO September 2024

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Maryland	State	100	10-21-24

Method Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189874-1

Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-189874-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-189874-1	MW-51-092624	Water	09/26/24 11:35	09/26/24 17:55
410-189874-2	MW-72-092624	Water	09/26/24 11:21	09/26/24 17:55
410-189874-3	MW-73-092624	Water	09/26/24 11:05	09/26/24 17:55
410-189874-4	MW-52-092624	Water	09/26/24 13:13	09/26/24 17:55
410-189874-5	MW-60-092624	Water	09/26/24 12:50	09/26/24 17:55
410-189874-6	RW-29-092624	Water	09/26/24 13:00	09/26/24 17:55
410-189874-7	RW-29DUP-092624	Water	09/26/24 00:00	09/26/24 17:55
410-189874-8	MW-56-092624	Water	09/26/24 15:00	09/26/24 17:55

410-189874 Chain of Custody

Chain of Custody Record

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Client Contact: Alexander Behzadi / Josh Mullis	Sampler: Will D, Zach M.	Lab PM: Gordon, Stephen J	Carrier Tracking No(s):	COC No: 410-130889-36989.4
Company: Tetra Tech Inc	Phone: 443-808-7914	E-Mail: Stephen.Gordon@et.eurofinsus.com	State of Origin: MD	Page: 1 of 1 / Page 4 of 5 — WD 9/26/24
Address: 20251 Century Blvd Suite 200	PWSID:	Due Date Requested:		Job #:
City: Germantown		TAT Requested (days):		
State, Zip: MD, 20874		Compliance Project: Δ Yes Δ No		
Phone: 301-528-3004(Tel) 301-528-3000(Fax)		PO #: 1206196		
Email: WD 9/26/24 alex.behzadi@tetratech.com / Josh.Mullis@tetratech.com		WO #: 12C10300		
Project Name: EastAlco WW		Project #: 41001054		
Site: Quantum loop		SSOW#:		

Analysis Requested

Preservation Codes: N - None; D - HNO3; B - NaOH; Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300_ORGFM_28D - Flouride Only	300_ORGFM_28D, 300_ORGFMS	2320B, 2510B, 2540C_SingleDry, 9040B	SM2130B - Turbidity	6020B, 7470A	1677_Free - Free Cyanide	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	N	N	D	B		
~~MW-111~~ MW-51-092624	9/26/24	1135	G	Water			X						1	
~~MW-84~~ MW-72-092624		1121		Water			X						1	
~~MW-74~~ MW-73-092624		1105		Water			X						1	
~~MW-75~~ WD 9/26/24 ~~MW-52~~ MW-52-092624		1313		Water			X						1	
~~MW-75DUP~~ MW-60-092624		1250		Water			X						1	
~~MW-76~~ RW-29-092624		1300		Water			X						1	
~~MW-77~~ RW-29DUP-092624		0000		Water			X						1	
~~EQR-SA11~~ MW-56-092624		1500	G	Water			X						1	
				Water										
TO		WD 9/26/24		Water										
E				Water										

WD 9/26/24

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: Will D	Date/Time: 9/26/24 1540	Company: T+	Received by: [signature] Date/Time: 9/26/24 1540 Company: ELLE
Relinquished by: [signature]	Date/Time: 9/26/24 1755	Company: ELLE	Received by: [signature] Date/Time: Company:
Relinquished by:	Date/Time:	Company:	Received by: [signature] Date/Time: 9/26/24 1755 Company: CC

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1.3/0.9

Ver: 06/08/2024

Login Sample Receipt Checklist

Client: Tetra Tech Inc

Job Number: 410-189874-1

Login Number: 189874
List Number: 1
Creator: Wrye, Shaun

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	Not present.
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	Not present.
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Josh Mullis
Tetra Tech Inc
20251 Century Blvd
Suite 200
Germantown, Maryland 20874

Generated 11/6/2024 10:37:51 AM Revision 1

JOB DESCRIPTION

SLF/ACO September 2024

JOB NUMBER

410-190055-1

Eurofins Lancaster Laboratories Environment Testing, LLC
2425 New Holland Pike
Lancaster PA 17601

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Generated
11/6/2024 10:37:51 AM
Revision 1

Authorized for release by
Stephen Gordon, Senior Project Manager
Stephen.Gordon@et.eurofinsus.com
(412)525-0071

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Table of Contents

Definitions/Glossary

Client: Tetra Tech Inc
Job ID: 410-190055-1
Project/Site: SLF/ACO September 2024

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
410-190055-1

REVISION

The report being provided is a revision of the original report sent on 10/8/2024. The report (revision 1) is being revised due to Deliverable cover page fixed to have correct client address..

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 9/27/2024 4:50 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.4°C.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-190055-1

Client Sample ID: I-SW-092724 — Lab Sample ID: 410-190055-1

No Detections.

Client Sample ID: TUSCARORA CREEK DUP-SW-092724 — Lab Sample ID: 410-190055-2

No Detections.

Client Sample ID: E-SW-092724 — Lab Sample ID: 410-190055-3

No Detections.

Client Sample ID: D-SW-092724 — Lab Sample ID: 410-190055-4

No Detections.

Client Sample ID: MW-13-092724 — Lab Sample ID: 410-190055-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.42		0.20	0.090	mg/L	1		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-103-092724 — Lab Sample ID: 410-190055-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	3.5		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-6-092724 — Lab Sample ID: 410-190055-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	3.2		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-25-092724 — Lab Sample ID: 410-190055-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	11		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

Client Sample ID: MW-26-092724 — Lab Sample ID: 410-190055-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	5.2		1.0	0.45	mg/L	5		EPA 300.0 R2.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: I-SW-092724
Lab Sample ID: 410-190055-1
Date Collected: 09/27/24 10:30
Matrix: Water
Date Received: 09/27/24 16:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free (OI CORP OIA-1677)	<0.0050		0.0060	0.0050	mg/L			10/07/24 17:24	1

Client Sample ID: TUSCARORA CREEK DUP-SW-092724
Lab Sample ID: 410-190055-2
Date Collected: 09/27/24 00:00
Matrix: Water
Date Received: 09/27/24 16:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free (OI CORP OIA-1677)	<0.0050		0.0060	0.0050	mg/L			10/07/24 17:26	1

Client Sample ID: E-SW-092724
Lab Sample ID: 410-190055-3
Date Collected: 09/27/24 08:10
Matrix: Water
Date Received: 09/27/24 16:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free (OI CORP OIA-1677)	<0.0050		0.0060	0.0050	mg/L			10/07/24 17:29	1

Client Sample ID: D-SW-092724
Lab Sample ID: 410-190055-4
Date Collected: 09/27/24 10:45
Matrix: Water
Date Received: 09/27/24 16:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free (OI CORP OIA-1677)	<0.0050		0.0060	0.0050	mg/L			10/07/24 17:36	1

Client Sample ID: MW-13-092724
Lab Sample ID: 410-190055-5
Date Collected: 09/27/24 09:45
Matrix: Water
Date Received: 09/27/24 16:50

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.42		0.20	0.090	mg/L			10/01/24 07:42	1

Client Sample ID: MW-103-092724
Lab Sample ID: 410-190055-6
Date Collected: 09/27/24 11:45
Matrix: Water
Date Received: 09/27/24 16:50

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	3.5		1.0	0.45	mg/L			10/01/24 08:40	5

Client Sample ID: MW-6-092724
Lab Sample ID: 410-190055-7
Date Collected: 09/27/24 08:55
Matrix: Water
Date Received: 09/27/24 16:50

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	3.2		1.0	0.45	mg/L			10/01/24 09:03	5

Client Sample Results

Client: Tetra Tech Inc
Job ID: 410-190055-1
Project/Site: SLF/ACO September 2024

Client Sample ID: MW-25-092724
Lab Sample ID: 410-190055-8
Date Collected: 09/27/24 12:10
Matrix: Water
Date Received: 09/27/24 16:50

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	11		1.0	0.45	mg/L			10/01/24 09:26	5

Client Sample ID: MW-26-092724
Lab Sample ID: 410-190055-9
Date Collected: 09/27/24 07:56
Matrix: Water
Date Received: 09/27/24 16:50

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	5.2		1.0	0.45	mg/L			10/01/24 09:49	5

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-190055-1

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Lab Sample ID: MB 410-557609/5
Matrix: Water
Analysis Batch: 557609

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.090		0.20	0.090	mg/L			10/01/24 05:47	1

Lab Sample ID: LCS 410-557609/3
Matrix: Water
Analysis Batch: 557609

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	0.750	0.759		mg/L		101	90 - 110

Lab Sample ID: LCSD 410-557609/4
Matrix: Water
Analysis Batch: 557609

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Fluoride	0.750	0.760		mg/L		101	90 - 110	0	20

Method: OIA-1677 - Cyanide, Free (Flow Injection)

Lab Sample ID: MB 410-560613/17
Matrix: Water
Analysis Batch: 560613

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	<0.0050		0.0060	0.0050	mg/L			10/07/24 17:09	1

Lab Sample ID: LCS 410-560613/16
Matrix: Water
Analysis Batch: 560613

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Free	0.0500	0.0494		mg/L		99	82 - 132

QC Association Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-190055-1

HPLC/IC

Analysis Batch: 557609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-190055-5	MW-13-092724	Total/NA	Water	EPA 300.0 R2.1	
410-190055-6	MW-103-092724	Total/NA	Water	EPA 300.0 R2.1	
410-190055-7	MW-6-092724	Total/NA	Water	EPA 300.0 R2.1	
410-190055-8	MW-25-092724	Total/NA	Water	EPA 300.0 R2.1	
410-190055-9	MW-26-092724	Total/NA	Water	EPA 300.0 R2.1	
MB 410-557609/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-557609/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-557609/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	

General Chemistry

Analysis Batch: 560613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-190055-1	I-SW-092724	Total/NA	Water	OIA-1677	
410-190055-2	TUSCARORA CREEK DUP-SW-092724	Total/NA	Water	OIA-1677	
410-190055-3	E-SW-092724	Total/NA	Water	OIA-1677	
410-190055-4	D-SW-092724	Total/NA	Water	OIA-1677	
MB 410-560613/17	Method Blank	Total/NA	Water	OIA-1677	
LCS 410-560613/16	Lab Control Sample	Total/NA	Water	OIA-1677	

Lab Chronicle

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-190055-1

Client Sample ID: I-SW-092724
Lab Sample ID: 410-190055-1
Date Collected: 09/27/24 10:30
Matrix: Water
Date Received: 09/27/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	OIA-1677		1	560613	UJE2	ELLE	10/07/24 17:24

Client Sample ID: TUSCARORA CREEK DUP-SW-092724
Lab Sample ID: 410-190055-2
Date Collected: 09/27/24 00:00
Matrix: Water
Date Received: 09/27/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	OIA-1677		1	560613	UJE2	ELLE	10/07/24 17:26

Client Sample ID: E-SW-092724
Lab Sample ID: 410-190055-3
Date Collected: 09/27/24 08:10
Matrix: Water
Date Received: 09/27/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	OIA-1677		1	560613	UJE2	ELLE	10/07/24 17:29

Client Sample ID: D-SW-092724
Lab Sample ID: 410-190055-4
Date Collected: 09/27/24 10:45
Matrix: Water
Date Received: 09/27/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	OIA-1677		1	560613	UJE2	ELLE	10/07/24 17:36

Client Sample ID: MW-13-092724
Lab Sample ID: 410-190055-5
Date Collected: 09/27/24 09:45
Matrix: Water
Date Received: 09/27/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		1	557609	L4QM	ELLE	10/01/24 07:42

Client Sample ID: MW-103-092724
Lab Sample ID: 410-190055-6
Date Collected: 09/27/24 11:45
Matrix: Water
Date Received: 09/27/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	557609	L4QM	ELLE	10/01/24 08:40

Client Sample ID: MW-6-092724
Lab Sample ID: 410-190055-7
Date Collected: 09/27/24 08:55
Matrix: Water
Date Received: 09/27/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	557609	L4QM	ELLE	10/01/24 09:03

Lab Chronicle

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-190055-1

Client Sample ID: MW-25-092724
Date Collected: 09/27/24 12:10
Date Received: 09/27/24 16:50

Lab Sample ID: 410-190055-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	557609	L4QM	ELLE	10/01/24 09:26

Client Sample ID: MW-26-092724
Date Collected: 09/27/24 07:56
Date Received: 09/27/24 16:50

Lab Sample ID: 410-190055-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	557609	L4QM	ELLE	10/01/24 09:49

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Tetra Tech Inc
Job ID: 410-190055-1
Project/Site: SLF/ACO September 2024

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Maryland	State	100	10-21-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
OIA-1677		Water	Cyanide, Free

Method Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-190055-1

Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	ELLE
OIA-1677	Cyanide, Free (Flow Injection)	OI CORP	ELLE

Protocol References:

EPA = US Environmental Protection Agency

OI CORP = OI Corporation Instrument Manual.

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Tetra Tech Inc
Project/Site: SLF/ACO September 2024

Job ID: 410-190055-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-190055-1	I-SW-092724	Water	09/27/24 10:30	09/27/24 16:50
410-190055-2	TUSCARORA CREEK DUP-SW-092724	Water	09/27/24 00:00	09/27/24 16:50
410-190055-3	E-SW-092724	Water	09/27/24 08:10	09/27/24 16:50
410-190055-4	D-SW-092724	Water	09/27/24 10:45	09/27/24 16:50
410-190055-5	MW-13-092724	Water	09/27/24 09:45	09/27/24 16:50
410-190055-6	MW-103-092724	Water	09/27/24 11:45	09/27/24 16:50
410-190055-7	MW-6-092724	Water	09/27/24 08:55	09/27/24 16:50
410-190055-8	MW-25-092724	Water	09/27/24 12:10	09/27/24 16:50
410-190055-9	MW-26-092724	Water	09/27/24 07:56	09/27/24 16:50

Eurofins Lancaster Laboratories Environme
2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300 Fax: 717-656-2681

Chain of Custody Record

410-190055 Chain of Custody

eurofins | Environment Testing

Client Information	Sampler: Will D., Josh M.	Lab PM: Gordon, Stephen J	COC No: 410-130889-36989.5
Client Contact: ~~Alexander Behzadi~~ WD 9/27/24 Josh Mullis	Phone: 443-808-7914	E-Mail: Stephen.Gordon@et.eurofinsus.com MD	Page: 1 of 1 ~~Page 5 of 5~~ WD 9/27/24
Company: Tetra Tech Inc	PWSID:	**Analysis Requested**	Job #:
Address: 20251 Century Blvd Suite 200	Due Date Requested:		Preservation Codes: N - None; D - HNO3; B - NaOH
City: Germantown	TAT Requested (days):		
State, Zip: MD, 20874	Compliance Project: Δ Yes Δ No		
Phone: 301-528-3004(Tel) 301-528-3000(Fax)	PO #: 1206196		
Email: WD 9/27/24 ~~alex.behzadi@tetratech.com~~ Josh.Mullis@tetratech.com	WO #: 12C10300		Other:
Project Name: EastAlco WW	Project #: 41001054		
Site: Quantum Maryland	SSOW#:		

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300_ORGFM_28D - Flouride Only	300_ORGFM_28D, 300_ORGFMS	2320B, 2510B, 2540C_SingleDry, 9040B	SM2130B - Turbidity	6020B, 7470A	1677_Free - Free Cyanide	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	N	N	D	B		
1-SW-092724	9/27/24	1030	G	Water								X	1	
TUSCARORA CREEK DUP-SW-092724		0000		Water								X	1	
E-SW-092724		0810		Water								X	1	
D-SW-092724		1045		W								X	1	
MW-13-092724		0945					X						1	
MW-103-092724		1145					X						1	
MW-6-092724		0855					X						1	
MW-25-092724		1210					X						1	
MW-26-092724		0756					X						1	
	WD													
		9/27/24												

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by:	Date/Time: 9/27/24 1303	Company: TT	Received by:	Date/Time: 9/27/24 1303	Company: ECLE		
Relinquished by:	Date/Time: 9/27/24 1650	Company: ECLE	Received by:	Date/Time:	Company:		
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time: 9/27/24 1650	Company: ECLE		
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 3.8/3.4				

Eurofins Lancaster Laboratories Environme
2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300 Fax: 717-656-2681

Chain of Custody Record

410-190055 Chain of Custody

eurofins | Environment Testing

Client Information	Sampler: Will D., Josh M.	Lab PM: Gordon, Stephen J	COC No: 410-130889-36989.5
Client Contact: ~~Alexander Behzadi~~ WD 9/27/24 Josh Mullis	Phone: 443-808-7914	E-Mail: Stephen.Gordon@et.eurofinsus.com MD	Page: 1 of 1 ~~Page 5 of 5~~ WD 9/27/24
Company: Tetra Tech Inc	PWSID:	**Analysis Requested**	Job #:
Address: 20251 Century Blvd Suite 200	Due Date Requested:		Preservation Codes: N - None; D - HNO3; B - NaOH
City: Germantown	TAT Requested (days):		
State, Zip: MD, 20874	Compliance Project: Δ Yes Δ No		
Phone: 301-528-3004(Tel) 301-528-3000(Fax)	PO #: 1206196		
Email: WD 9/27/24 ~~alex.behzadi@tetratech.com~~ Josh.Mullis@tetratech.com	WO #: 12C10300		Other:
Project Name: EastAlco WW	Project #: 41001054		
Site: Quantum Maryland	SSOW#:		

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300_ORGFM_28D - Flouride Only	300_ORGFM_28D, 300_ORGFMS	2320B, 2510B, 2540C_SingleDry, 9040B	SM2130B - Turbidity	6020B, 7470A	1677_Free - Free Cyanide	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	N	N	D	B		
1-SW-092724	9/27/24	1030	G	Water								X	1	
TUSCARORA CREEK DUP-SW-092724		0000		Water								X	1	
E-SW-092724		0810		Water								X	1	
D-SW-092724		1045		W								X	1	
MW-13-092724		0945					X						1	
MW-103-092724		1145					X						1	
MW-6-092724		0855					X						1	
MW-25-092724		1210					X						1	
MW-26-092724		0756					X						1	
	WD													
		9/27/24												

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by:	Date/Time: 9/27/24 1303	Company: TT	Received by:	Date/Time: 9/27/24 1303	Company: ECLE		
Relinquished by:	Date/Time: 9/27/24 1650	Company: ECLE	Received by:	Date/Time:	Company:		
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time: 9/27/24 1650	Company: ECLE		
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 3.8/3.4				

Login Sample Receipt Checklist

Client: Tetra Tech Inc

Job Number: 410-190055-1

Login Number: 190055
List Number: 1
Creator: Wrye, Shaun

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

APPENDIX B: HISTORICAL GROUNDWATER AND SURFACE WATER DATA

Appendix B
Groundwater and Surface Water Monitoring Data Summary
Quantum Maryland, LLC

Free Cyanide Concentrations in Surface Water

Monitoring Era	Yr-Qtr	Monitoring Location		
		D	E*	I
Pre-Curtailment	05-Q3	0.005 U	0.0106	0.0019
Post-Curtailment	06-Q2	0.0099	0.0090	0.0063
	06-Q4	0.0055	0.0057	0.005 U
	07-Q4	0.005 U	0.005 U	0.005 U
	08-Q3	0.006 J	0.008 J	0.007 J
	09-Q4	0.0034 U	0.0034 U	0.0034 U
	10-Q3	0.0034 U	0.0034 U	0.0034 U
	11-Q3	0.005 U	0.005 U	0.0068
	12-Q3	0.005 U	0.005 U	0.005 U
	13-Q3	0.005 U	0.005 U	0.005 U
	14-Q3	0.005 U	0.0050	0.005 U
	15-Q3	0.005 U	0.0055	0.005 U
	16-Q3	0.005 U	0.0051	0.005 U
	17-Q3	0.0032 J	0.0021 J	0.0024 J
	18-Q3	0.0036 J	0.0025 J	0.0036 J
	19-Q3	0.0020 U	0.0020 U	0.0020 U
	20-Q3	0.0060 U	0.0028 J	0.0060 U
	21-Q3	0.0060 U	0.0060 U	0.0060 U
	22-Q3	0.0060 U	0.006 U	0.0060 U
	23-Q3	0.006 U	0.006 U	0.006 U
	24-Q3	<0.005 U	<0.005 U	<0.005 U

Units = mg/L
*Off-Site Location
U = Not detected above reporting limit