



May 4, 2022

Christopher Maurer, PE
HQ – Toxics Cleanup Program
P.O. Box 47600
Olympia, Washington 98504-7600

Re: 2022 Groundwater Monitoring and Asphalt Inspection
Darling-Tacoma Facility (aka Darling Delaware Co., Inc. and Puget Sound By-Products)
Facility No.: 25455514, Cleanup Site No.: 8475, VCP Project No.: SW1317

Dear Mr. Maurer,

Tetra Tech, Inc. (Tetra Tech) is submitting this groundwater monitoring and asphalt inspection report on behalf of Darling Ingredients, Inc. (Darling) for their facility located at 2041 Marc Avenue in Tacoma, Washington (**Figures 1 and 2; Attachment A**). Tetra Tech conducted these monitoring actions for Darling based on the No Further Action (NFA) designation received from Washington Department of Ecology (Ecology), dated September 3, 2021. The work was conducted as described in the Cleanup Action Plan (CAP; Tetra Tech 2020).

The following sections present a summary of the work conducted. Attachments to this report include figures (**Attachment A**), data tables (**Attachment B**), laboratory analytical report (**Attachment C**), and completed asphalt inspection form (**Attachment D**). Tetra Tech entered groundwater monitoring data collected during this event into Ecology's EIM database.

1.0 GROUNDWATER MONITORING

Tetra Tech initially conducted the 2022 groundwater monitoring event on February 3, 2022. Tetra Tech's project manager reviewed the February 3, 2022 field notes documenting the sampling event and laboratory report. It was discovered that the field technician had incorrectly sampled wells MFG-1 and MFG-2 by placing the tubing intake in bottom well screen and sump area of each well instead of within the mid- to upper-portion of the saturated well screen, as per U.S. Environmental Protection Agency (EPA) guidelines. This field error resulted in high sample turbidity, quality control concerns, and collection of unrepresentative samples. Tetra Tech's project manager re-sampled wells MFG-1 and MFG-2 on March 25, 2022. The results presented herein are for the March 25, 2022 sample event.

Field personnel purged and sampled both wells using new, dedicated disposable tubing and low flow purging and sampling methods with the tubing intake placed at a depth of approximately 6.5 feet below ground surface (bgs); within the upper 2 feet of saturated well screen, a sample zone which is consistent with prior sample events. The low flow purging rate was estimated at 0.1 liters per minute for each well.

Static Water Levels

Field personnel recorded the depth to water in each well after opening both wells and allowing the wells to vent and stabilize. **Table 1 (Attachment B)** provides static water level data. Static water levels

Tetra Tech, Inc.

2525 Palmer Street, Suite 2 Missoula, MT 59808

Tel +1.406.543.3045 Direct +1.406.327.5235 Natalie Morrow tetratech.com

recorded on March 25, 2022 were 5.12 feet in MFG-1 and 4.89 feet in MFG-2, which equate to elevations of 10.89 and 10.75 feet above mean sea level (amsl), respectively. Recorded water levels were consistent with prior sampling events and seasonal variations.

Field Parameters

Field personnel monitored field parameters of pH, temperature (°C), specific conductance (uS/cm), oxygen reduction potential (mV), turbidity (NTU), and dissolved oxygen (mg/L) during purging through an in-line low flow cell until parameters stabilized to limits specified in the CAP. Water levels were also recorded during purging to ensure minimal to no drawdown. **Table 2 (Attachment B)** provides field parameter results. **Table 1-1**, below, summarizes the results from this event.

Table 1-1. Field Parameter Results

Field Parameter	Results Range	
	MFG-1	MFG-2
pH	6.7	6.7
Temperature (°C)	15.8	13.7
Specific Conductance (µS/cm)	3,140	1,610
Oxygen Reduction Potential (mV)	-124	-132
Dissolved Oxygen (mg/L)	3.8	4.1

For this event, field personnel monitored turbidity, which was 2.1 for sample MFG-1 and 2.2 NTU for sample MFG-2. Field parameter results were relatively consistent with prior monitoring events, except for specific conductance in MFG-1. It is unclear why the value is greater than prior events.

Field personnel collected groundwater samples after field parameters stabilized. Field personnel transferred water from the wells by pumping directly from the sample tubing into laboratory-provided sample containers. Samples were preserved as required per laboratory and method requirements, then placed into a cooler containing a doubled-resealable bag filled with ice. Tetra Tech hand delivered the groundwater samples to Eurofins Test America in Tacoma, Washington for analysis within approximately 1 hour of collection of the second sample, MFG-1.

Table 2 (Attachment B) presents the laboratory analytical results. **Table 1-2**, below, summarizes the results.

Table 1-2. Analytical Results

Analytical Parameter (µg/L)		MFG-1	MFG-2
Diesel Range (C10-24)	Without SGT	1,000	590
	With SGT	91 J+	300J+ / <65
Heavy Oil Range / Motor Oil Range (>C24-C36)	Without SGT	920 J+	860
	With SGT	<96	180 J+ / <96
<i>J+ Result considered estimated and potentially biased high due to method blank detection and/or laboratory control sample outside control limit.</i>			

The laboratory encountered quality control issues while analyzing samples MFG-1 and MFG-2. **Appendix C** includes the laboratory report and data validation checklist that discusses the issues encountered.

Previous analytical results have shown fluctuations in contaminant levels while overall maintaining a reducing trend. The results for the March 25, 2022 sampling event are consistent with those observed during prior sampling events.

Deviations from the CAP

As noted above, Tetra Tech initially sampled the wells on February 3, 2022 but re-sampled the wells on March 25, 2022 due to sampling errors and quality control issues related to the February event.

2.0 ASPHALT INSPECTION

Tetra Tech conducted an inspection of the asphalt surface across the facility at the time of the initial groundwater monitoring event on February 3, 2022. Prior to the inspection, Tetra Tech prepared an asphalt inspection form to help guide the inspection and document conditions observed. **Attachment D** includes a copy of the completed asphalt inspection form.

General asphalt surface conditions during the time of inspection were wet with rain falling during the asphalt inspection. Several areas were observed with pooled water from the rain but no evidence of asphalt degradation in or near those pooled areas. Slight alligator cracking was observed in an approximately 10-foot square area at a location about 40 feet north of the weigh scale. Overall condition of the asphalt was good with no ruts, cracks, or gaps observed at the time of the site visit.

3.0 CAP MONITORING SCHEDULE

The CAP (2020) and NFA letter from Ecology (2021) specify a general monitoring schedule for groundwater and asphalt inspection work. **Table 3-1**, below, presents a monitoring schedule for NFA compliance monitoring for the next three anticipated monitoring events. Groundwater monitoring will be conducted once every 3 years, unless modified by Darling and/or Ecology. Asphalt inspections will be conducted annually. More frequent monitoring or asphalt maintenance may be required if annual inspections indicate asphalt conditions of concern.

Table 3-1. NFA Compliance Monitoring

Monitoring Type	Tentative Schedule
Groundwater Monitoring	January/February – 2025 January/February – 2028 January/February – 2031
Asphalt Monitoring	January/February 2023 January/February 2024 January/February 2025

4.0 TPCHD VARIANCE

Tetra Tech has submitted a variance request for Tacoma-Pierce County Health Department’s (TPCHD’s) requirement for the yearly Underground Storage Tank (UST) Permit. Preliminary discussions with Rob Olsen of TPCHD indicates the variance request will be approved.



Please contact Natalie Morrow with questions or comments regarding this report or future monitoring events.

Sincerely,

Tetra Tech, Inc.



Natalie J. Morrow, LG, LHG
Project Manager/Sr. Environmental Geologist
406-327-5235
natalie.morrow@tetrattech.com

Cc: Bill McMurtry – VP of Environmental Affairs, Darling Ingredients, Inc.

Sarah Weeks – Port of Tacoma

Attachments:

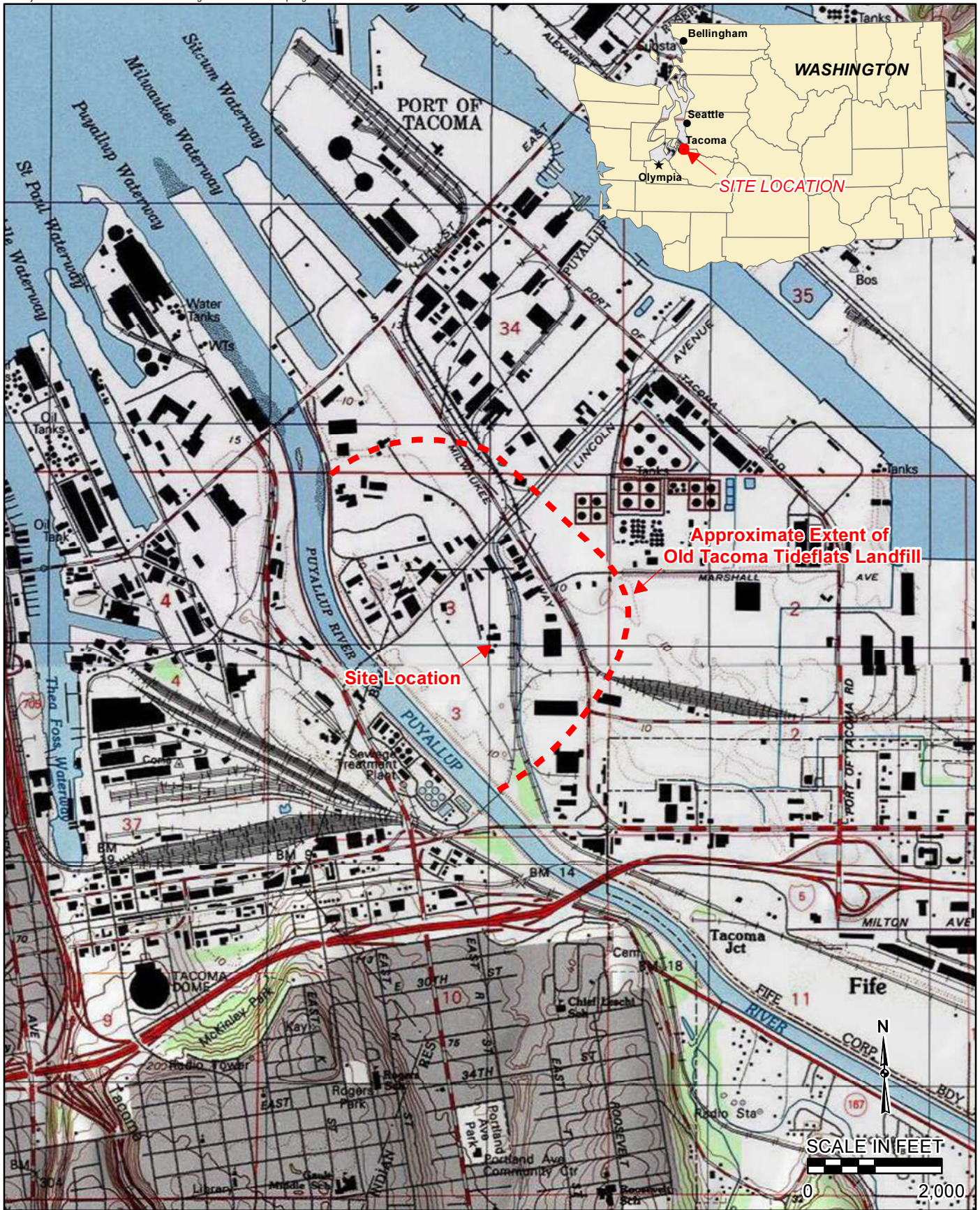
Attachment A – Figures

Attachment B – Tables

Attachment C – Laboratory and Data Validation

Attachment D – Asphalt Inspection Form

ATTACHMENT A - FIGURES



Topographic Quad Background: Tacoma North 1993 (North Half) / Tacoma South 1978 (South Half)

January 2017



Figure 1
Location Map
Darling-Tacoma
2041 Marc Avenue, Tacoma, WA



114-570494
4/5/2019



- ← Groundwater Flow (estimated)
- + Groundwater Monitoring Well
- Soil Boring Location
- 8.99 (10.54) 2017 (2019) Water Table Elevation (feet amsl)
- x-x-x Fence
- Former USTs

Figure 2
Site Map
Darling-Tacome
2041 Marc Avenue
Tacoma, Washington

ATTACHMENT B - TABLES

TABLE 1
Water Table Elevation Data
 Darling International, Inc.
 2041 Marc Avenue, Tacoma, Washington

Well	Date	Measuring Point Elevation (ft AMSL)	Depth to Water (top of PVC)	Potentiometric Surface Elevation (ft AMSL)		
MFG-1	2/8/2002	16.27	5.06	11.21		
	2/13/2002		5.30	10.97		
	2/26/2002		5.20	11.07		
	6/19/2002		7.09	9.18		
	9/26/2002		8.33	7.94		
	12/19/2002		7.46	8.81		
	9/3/2003		8.27	8.00		
	12/9/2003		5.75	10.52		
	3/4/2004		5.50	10.77		
	6/8/2004		7.06	9.21		
	7/20/2017	16.01	7.02	8.99		
	1/24/2019	5.47	10.54			
	2/3/2022	5.43	10.58			
	3/25/2022	5.12	10.89			
MFG-2	2/8/2002	15.8	4.59	11.21		
	2/13/2002		4.82	10.98		
	2/26/2002		4.72	11.08		
	6/19/2002		6.63	9.17		
	9/26/2002		7.86	7.94		
	12/19/2002		7.00	8.80		
	9/3/2003		7.81	7.99		
	12/9/2003		5.30	10.50		
	3/4/2004		5.06	10.74		
	6/8/2004		6.63	9.17		
	7/20/2017	15.64	6.83	8.81		
	1/24/2019	5.25	10.39			
	2/3/2022	5.25	10.39			
	3/25/2022	4.89	10.75			
MFG-3	2/8/2002	16.85	5.69	11.16		
	2/13/2002		5.89	10.96		
	2/26/2002		5.77	11.08		
	6/19/2002		7.66	9.19		
	9/26/2002		8.87	7.98		
	12/19/2002		8.04	8.81		
	9/3/2003		8.84	8.01		
	12/9/2003		6.31	10.54		
	3/4/2004		6.06	10.79		
	6/8/2004		7.82	9.03		
	7/20/2017		7.37	9.48 (9.22*)		
	MFG-4		2/8/2002	15.67	4.51	11.16
			2/13/2002		4.70	10.97
2/26/2002		4.58	11.09			
6/19/2002		6.49	9.18			
9/26/2002		7.71	7.96			
12/19/2002		6.86	8.81			
9/3/2003		7.67	8.00			
12/9/2003		5.16	10.51			
3/4/2004		4.91	10.76			
6/8/2004	6.46	9.21				

Survey datum = NAVD88

Survey datum = NAVD88/2012B for 2017 elevations for MFG-1 and MFG-2

*MFG-3 value adjusted to estimate NAVD88/2012B elevation.

MFG-3 - abandoned in 2017 due to destruction during asphalt paving.

MFG-4 - could not be found in 2017, likely destroyed and paved over.

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

DARLING - TACOMA
2041 Marc Avenue, Tacoma, WA

Monitoring Well	MTCA Method A Groundwater Cleanup Levels	MFG-1										MFG-2											
		2/13/2002	6/19/2002	9/26/2002	12/19/2002	9/3/2003	12/9/2003	3/4/2004	6/8/2004	7/20/2017	1/24/2019	3/25/2022	2/13/2002	6/19/2002	9/26/2002	12/19/2002	9/3/2003	12/9/2003	3/4/2004	6/8/2004	7/20/2017	1/24/2019	3/25/2022
Field Measurements																							
Water Table Elevation (ft amsl)		10.97	9.18	7.94	8.81	8.00	10.52	10.77	9.21	8.99	10.54	10.89	10.98	9.17	7.94	8.80	7.99	10.50	10.74	9.17	8.81	10.39	10.75
Temperature (°C)	---	12.8	18.7	19.4	16.4	16.9	15.3	14.2	17.7	15.8	12.7	15.8	13.5	19.8	21.6	18.2	20.0	16.5	13.3	20.3	17.5	13.3	13.7
pH (standard units)	---	6.1	6.0	5.9	5.9	6.7	6.7	6.7	7.4	6.5	6.5	6.7	6.2	6.1	5.9	6.0	6.5	6.6	6.7	7.5	6.7	6.5	6.7
Specific Conductivity (µS/cm)	---	1,043	1,311	1,133	1,081	1,830	1,284	787	751	1,980	1,258	3,140	992	1,181	982	1,111	1,693	1,434	815	1,200	1,281	989	1,610
Oxidation-Reduction Potential (mV)	---	-322	-87	-87	-81	NM	NM	NM	NM	-147	-86.2	-124	-331	-93	-98	-96	NM	NM	NM	NM	-87	-112	-132
Dissolved Oxygen (mg/L)	---	-322	-87	-87	-81	NM	NM	NM	NM	0.29	NM	3.81	-331	-93	-98	-96	NM	NM	NM	NM	0.31	NM	4.1
Total Petroleum Hydrocarbons (ug/L) without Acid/Silica Gel Treatment																							
Diesel Range (C10-24)	500	3,100	4,160	3,130	1,350	2,870	1,350	3,120	1,270	990	800	1,000	2,300	2,920	1,710	1,630	2,050	1,430	2,000	837	600 B	510	590
Heavy Oil Range / Motor Oil Range (>C24-C36)	500	730	763	612	514	<500	<500	666	<500	450	550	920 J+	<500	992	634	620	1,110	897	607	<500	290	430	860
Mineral Oil Range (<C10)	500	3,300	2,390	1,970	949	2,300	976	2,100	852	---	---	---	2,500	1,750	1,120	1,160	1,790	1,130	1,390	615	---	---	---
Total Petroleum Hydrocarbons (ug/L) with Acid/Silica Gel Treatment																							
Diesel Range (C10-24)	500	---	---	---	---	<250	<250	<250	<250	220	120	91 J+	---	---	---	---	<250	<250	<250	<250	79 J	<65	300 J+/-65
Heavy Oil Range / Motor Oil Range (>C24-C36)	500	---	---	---	---	<500	<500	<500	<500	<77	<96	<96	---	---	---	---	<500	<500	<500	<500	<78	<96	180 J+/-96
Mineral Oil Range (<C10)	500	---	---	---	---	<500	<500	<500	<500	---	---	---	---	---	---	---	<500	<500	<500	<500	---	---	---
Extractable Petroleum Hydrocarbons (ug/L)																							
C8-C10 Aliphatics	---	<100	<100	<50	<50	<50	<50	<50	<50	48 U			<100	<100	<50	<50	<50	<50	<50	<50	48 U		
C10-C12 Aliphatics	---	<100	<100	<50	<50	<50	<50	<50	<50	48 U			<100	<100	<50	<50	<50	<50	<50	<50	48 U		
C12-C16 Aliphatics	---	<100	<100	<50	<50	<50	<50	<50	<50	48 U			<100	<100	<50	<50	<50	<50	<50	<50	48 U		
C16-C21 Aliphatics	---	<100	<100	<50	<50	<50	<50	<50	<50	<4.4			<100	<100	<50	<50	<50	<50	<50	<50	<4.4		
C21-C34 Aliphatics	---	126	<100	<50	<50	<50	<50	<50	<50	<10			<100	<100	<50	<50	<50	<50	<50	<50	<10		
C8-C10 Aromatics	---									<14											<14		
C10-C12 Aromatics	---	<100	<100	<50	<50	63.3	<50	<50	<50	47 J			<100	<100	<50	<50	<50	<50	<50	<50	12 J		
C12-C16 Aromatics	---	<100	<100	<50	82.1	<50	<50	<50	58.6	16 J			<100	<100	<50	79.9	<50	<50	<50	<50	6.2 J		
C16-C21 Aromatics	---	<100	<100	<50	<50	<50	<50	<50	<50	48 U			<100	<100	<50	<50	<50	<50	<50	<50	48 U		
C21-C34 Aromatics	---	<100	<100	<50	<50	<50	<50	<50	<50	<14			<100	<100	<50	<50	<50	<50	<50	<50	<14		
Total EPH	---	126	NA	NA	82.1	63.3	NA	NA	58.6	63			NA	NA	<50	79.9	NA	NA	NA	NA	38.2		
Carcinogenic Polynuclear Aromatic Hydrocarbons (ug/L)																							
Benzo(a)anthracene	---	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100				<0.100	<0.100	0.100	<0.100	<0.100	<0.100	<0.100	<0.100			
Benzo(a)pyrene	0.1	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100				<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100			
Benzo(b)fluoranthene	---	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100				<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100			
Benzo(k)fluoranthene	---	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100				<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100			
Chrysene	---	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100				<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100			
Dibenz(a,h)anthracene	---	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100				<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100			
Ideno(1,2,3-cd)pyrene	---	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100				<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100			
Total Carcinogenic PAHs	0.1	NA	NA	NA	NA	NA	NA	NA	NA				NA	NA	0.100	NA	NA	NA	NA	NA			
Naphthalenes (ug/L)																							
1-Methylnaphthalene	---	1.0	2.51	1.08	0.738	3.04	0.343	0.904	<0.100				0.330	0.218	0.120	<0.10	<0.10	<0.100	<0.100	<0.100			
2-Methylnaphthalene	---	<0.10	0.416	<0.100	<0.10	0.170	<0.100	<0.100	<0.100				0.21	<0.10	<0.10	<0.10	<0.10	<0.100	<0.100	<0.100			
Naphthalene	---	<0.10	0.277	<0.100	<0.10	0.321	<0.100	<0.100	<0.100				<0.10	<0.10	<0.10	<0.10	<0.10	<0.100	<0.100	<0.100			
Total Naphthalenes	160	1.0	3.19	1.08	0.738	3.53	0.343	0.904	NA				0.54	0.218	0.12	NA	NA	NA	NA	NA			
BTEX (ug/L)																							
Benzene	5	<0.5	<0.5	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500				<0.5	<0.5	<0.5	<0.500	<0.500	<0.500	<0.500	<0.500			
Toluene	1,000	<0.5	<0.5	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500				<0.5	<0.5	<0.5	<2.00	<0.500	<0.500	<0.500	<0.500			
Ethylbenzene	700	<0.5	<0.5	<0.500	<1.00	<0.500	<0.500	<0.500	<0.500				<0.5	<0.5	<0.5	<1.00	<0.500	<0.500	<0.500	<0.500			
Xylenes (total)	1,000	<1.00	<1.00	<1.00	<1.50	<1.00	<1.00	<1.00	1.08				<1.00	<1.00	<1.00	<1.50	<1.00	<1.00	<1.00	<1.00			

bgs = below ground surface
Bold=At or Above MTCA Method A Groundwater Cleanup Level
 < =analyte was not detected at or above the method reporting limit
 NM = Not Measured
 NA = Not Applicable.
 --- Not Analyzed
 U Qualified as non-detect at reporting limit due to blank contamination.

J+ - Result estimated and potentially biased high due to laboratory quality control outside control limits and/or method blank detection.
 2003-2004 PAHs results are for dissolved PAHs
 Total/Semivolatile Petroleum Hydrocarbons NWTPH-Dx with acid/silica gel clean-up and without acid/silica gel cleanup
 EPH by Modified WDOE Interim TPH Policy Method GC/MS-SIM
 BTEX by EPA Method 8021B
 SGT - Silica Gel Treatment
 * Constituents detected in the method blank and LCS recoveries outside control limits; results were considered estimated and biased high. Sample was re-analyzed by the laboratory outside holding time. Both results presented.

ATTACHMENT C – LABORATORY AND DATA VALIDATION

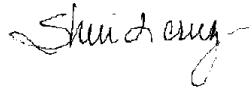
ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-111862-1
Client Project/Site: Darling-Tacoma

For:
Tetra Tech, Inc.
2525 Palmer Street
Suite 2
Missoula, Montana 59808-1744

Attn: Natalie Morrow



Authorized for release by:
4/18/2022 4:08:05 PM

Sheri Cruz, Project Manager I
(253)922-2310
Sheri.Cruz@et.eurofinsus.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Job ID: 580-111862-1

Laboratory: Eurofins Seattle

Narrative

Job Narrative 580-111862-1

Comments

No additional comments.

Receipt

The samples were received on 3/25/2022 3:04 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 was 13.4° C.

Receipt Exceptions

The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of >2: MFG-1 (580-111862-1). The sample was preserved to the appropriate pH in the laboratory. Reagent: 3036616

GC Semi VOA

Method NWTPH-Dx: The method blank for preparation batch 580-386548 and 580-387516 in analytical batch 387702 contained #2 Diesel (C10-C24) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound above the reporting limit; therefore, re-extraction and/or re-analysis of samples were not performed. Sample MFG-2 (580-111862-2) was above the RL and was re-extracted and re-analyzed outside of holding time. Both sets of data have been reported.

Method NWTPH-Dx: Motor Oil (>C24-C36) and #2 Diesel (C10-C24) was detected above the reporting limit (RL) in the method blank associated with preparation batch 580-386838 and 580-387515 and analytical batch 580-387604 as well as in the following sample: MFG-2 (580-111862-2) and (MB 580-386838/1-D). All affected samples were re-extracted and re-analyzed outside of holding time. Both sets of data have been reported.

Method NWTPH-Dx: The laboratory control sample (LCS) for preparation batch 580-386838, 580-387515, 580-387707 and 580-387763 and analytical batch 580-387604 recovered outside control limits for the following analytes: #2 Diesel (C10-C24) and Motor Oil (>C24-C36). The associated sample was re-prepared and re-analyzed outside holding time. Both sets of data have been reported. MFG-2 (580-111862-2)

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

Organic Prep

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 580-386548.

Method 3510C: The following sample was re-prepared outside of preparation holding time due to out of volume during the analysis process. : MFG-2 (580-111862-2).

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

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Client Sample ID: MFG-1

Lab Sample ID: 580-111862-1

Date Collected: 03/25/22 13:30

Matrix: Water

Date Received: 03/25/22 20:01

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1.0		0.11	0.065	mg/L		04/06/22 11:43	04/08/22 17:11	1
Motor Oil (>C24-C36)	0.92	B	0.35	0.096	mg/L		04/06/22 11:43	04/08/22 17:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	69		50 - 150				04/06/22 11:43	04/08/22 17:11	1

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.091	J B	0.11	0.065	mg/L		04/06/22 11:43	04/18/22 12:44	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		04/06/22 11:43	04/18/22 12:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	76		50 - 150				04/06/22 11:43	04/18/22 12:44	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Client Sample ID: MFG-2

Lab Sample ID: 580-111862-2

Date Collected: 03/25/22 12:20

Matrix: Water

Date Received: 03/25/22 20:01

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.59		0.11	0.066	mg/L		04/08/22 10:03	04/13/22 12:41	1
Motor Oil (>C24-C36)	0.86		0.35	0.097	mg/L		04/08/22 10:03	04/13/22 12:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	82		50 - 150	04/08/22 10:03	04/13/22 12:41	1

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.30	*+ B	0.11	0.066	mg/L		04/08/22 10:03	04/15/22 12:33	1
#2 Diesel (C10-C24)	ND	H	0.11	0.065	mg/L		04/18/22 09:36	04/18/22 14:02	1
Motor Oil (>C24-C36)	0.18	J ** B *1	0.35	0.097	mg/L		04/08/22 10:03	04/15/22 12:33	1
Motor Oil (>C24-C36)	ND	H	0.35	0.096	mg/L		04/18/22 09:36	04/18/22 14:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	140		50 - 150	04/08/22 10:03	04/15/22 12:33	1
<i>o</i> -Terphenyl	87		50 - 150	04/18/22 09:36	04/18/22 14:02	1

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-386548/1-A
Matrix: Water
Analysis Batch: 386854

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386548

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		04/06/22 11:43	04/08/22 14:35	1
Motor Oil (>C24-C36)	0.157	J	0.35	0.096	mg/L		04/06/22 11:43	04/08/22 14:35	1
Surrogate		MB MB	Limits			Prepared	Analyzed	Dil Fac	
%Recovery	Qualifier								
o-Terphenyl	54		50 - 150			04/06/22 11:43	04/08/22 14:35	1	

Lab Sample ID: LCS 580-386548/2-A
Matrix: Water
Analysis Batch: 386854

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386548

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Motor Oil (>C24-C36)	4.00	2.93		mg/L		73	64 - 120
Surrogate		LCS LCS	Limits			%Rec	
%Recovery	Qualifier						
o-Terphenyl	80		50 - 150				

Lab Sample ID: LCSD 580-386548/3-A
Matrix: Water
Analysis Batch: 386854

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386548

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
#2 Diesel (C10-C24)	4.00	2.65		mg/L		66	50 - 120	10	26
Motor Oil (>C24-C36)	4.00	2.66		mg/L		67	64 - 120	10	24
Surrogate		LCSD LCSD	Limits			%Rec			
%Recovery	Qualifier								
o-Terphenyl	70		50 - 150						

Lab Sample ID: MB 580-386838/1-A
Matrix: Water
Analysis Batch: 387299

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386838

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		04/08/22 10:03	04/13/22 11:42	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		04/08/22 10:03	04/13/22 11:42	1
Surrogate		MB MB	Limits			Prepared	Analyzed	Dil Fac	
%Recovery	Qualifier								
o-Terphenyl	81		50 - 150			04/08/22 10:03	04/13/22 11:42	1	

Lab Sample ID: LCS 580-386838/2-A
Matrix: Water
Analysis Batch: 387299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386838

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Motor Oil (>C24-C36)	4.00	3.57		mg/L		89	64 - 120

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 580-386838/2-A
Matrix: Water
Analysis Batch: 387299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386838

Surrogate	LCS		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	90		50 - 150

Lab Sample ID: LCSD 580-386838/3-A
Matrix: Water
Analysis Batch: 387299

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386838

Analyte	Spike Added	LCSD		Unit	D	%Rec	%Rec		RPD	Limit
		Result	Qualifier				Limits	RPD		
#2 Diesel (C10-C24)	4.00	3.27		mg/L		82	50 - 120	4		26
Motor Oil (>C24-C36)	4.00	3.54		mg/L		89	64 - 120	1		24

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	95		50 - 150

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Lab Sample ID: MB 580-386548/1-B
Matrix: Water
Analysis Batch: 387702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386548

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
#2 Diesel (C10-C24)	0.124		0.11	0.065	mg/L		04/06/22 11:43	04/18/22 11:45	1
Motor Oil (>C24-C36)	0.233	J	0.35	0.096	mg/L		04/06/22 11:43	04/18/22 11:45	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
<i>o</i> -Terphenyl	68		50 - 150	04/06/22 11:43	04/18/22 11:45	1

Lab Sample ID: LCS 580-386548/2-B
Matrix: Water
Analysis Batch: 387702

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386548

Analyte	Spike Added	LCS		Unit	D	%Rec	%Rec	
		Result	Qualifier				Limits	RPD
#2 Diesel (C10-C24)	4.00	3.46		mg/L		87	50 - 120	
Motor Oil (>C24-C36)	4.00	3.77		mg/L		94	64 - 120	

Surrogate	LCS		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	91		50 - 150

Lab Sample ID: LCSD 580-386548/3-B
Matrix: Water
Analysis Batch: 387702

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386548

Analyte	Spike Added	LCSD		Unit	D	%Rec	%Rec		RPD	Limit
		Result	Qualifier				Limits	RPD		
#2 Diesel (C10-C24)	4.00	3.11		mg/L		78	50 - 120	11		26
Motor Oil (>C24-C36)	4.00	3.27		mg/L		82	64 - 120	14		24

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	77		50 - 150

Eurofins Seattle

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup (Continued)

Lab Sample ID: MB 580-386838/1-D
Matrix: Water
Analysis Batch: 387604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386838

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.162		0.11	0.065	mg/L		04/08/22 10:03	04/15/22 11:35	1
Motor Oil (>C24-C36)	0.125	J	0.35	0.096	mg/L		04/08/22 10:03	04/15/22 11:35	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	110		50 - 150				04/08/22 10:03	04/15/22 11:35	1

Lab Sample ID: LCS 580-386838/2-D
Matrix: Water
Analysis Batch: 387604

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386838

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
#2 Diesel (C10-C24)	4.00	4.78		mg/L		120	50 - 120
Motor Oil (>C24-C36)	4.00	5.24	*+	mg/L		131	64 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
<i>o</i> -Terphenyl	114		50 - 150				

Lab Sample ID: LCSD 580-386838/3-D
Matrix: Water
Analysis Batch: 387604

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386838

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	4.00	6.24	*+	mg/L		156	50 - 120	26	26
Motor Oil (>C24-C36)	4.00	6.81	*+ *1	mg/L		170	64 - 120	26	24
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
<i>o</i> -Terphenyl	148		50 - 150						

Lab Sample ID: MB 580-387707/1-B
Matrix: Water
Analysis Batch: 387702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387707

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		04/18/22 09:36	04/18/22 13:04	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		04/18/22 09:36	04/18/22 13:04	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	93		50 - 150				04/18/22 09:36	04/18/22 13:04	1

Lab Sample ID: LCS 580-387707/2-B
Matrix: Water
Analysis Batch: 387702

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387707

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
#2 Diesel (C10-C24)	4.00	4.15		mg/L		104	50 - 120
Motor Oil (>C24-C36)	4.00	4.46		mg/L		111	64 - 120

Eurofins Seattle

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup (Continued)

Lab Sample ID: LCS 580-387707/2-B
Matrix: Water
Analysis Batch: 387702

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387707

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
<i>o-Terphenyl</i>	104		50 - 150

Lab Sample ID: LCSD 580-387707/3-B
Matrix: Water
Analysis Batch: 387702

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387707

<i>Analyte</i>	<i>Spike</i> <i>Added</i>	<i>LCSD</i> <i>Result</i>	<i>LCSD</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec</i> <i>Limits</i>	<i>RPD</i>	<i>RPD</i> <i>Limit</i>
#2 Diesel (C10-C24)	4.00	4.09		mg/L		102	50 - 120	1	26
Motor Oil (>C24-C36)	4.00	4.21		mg/L		105	64 - 120	6	24

<i>Surrogate</i>	<i>LCSD</i> <i>%Recovery</i>	<i>LCSD</i> <i>Qualifier</i>	<i>Limits</i>
<i>o-Terphenyl</i>	105		50 - 150

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Client Sample ID: MFG-1

Date Collected: 03/25/22 13:30

Date Received: 03/25/22 20:01

Lab Sample ID: 580-111862-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			386548	04/06/22 11:43	KLW	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	386854	04/08/22 17:11	JAE	FGS SEA
Total/NA	Prep	3510C			386548	04/06/22 11:43	KLW	FGS SEA
Total/NA	Cleanup	3630C			387516	04/14/22 15:50	Y1F	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	387702	04/18/22 12:44	JAE	FGS SEA

Client Sample ID: MFG-2

Date Collected: 03/25/22 12:20

Date Received: 03/25/22 20:01

Lab Sample ID: 580-111862-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			386838	04/08/22 10:03	KLW	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	387299	04/13/22 12:41	Y1F	FGS SEA
Total/NA	Prep	3510C			386838	04/08/22 10:03	KLW	FGS SEA
Total/NA	Cleanup	3630C			387515	04/14/22 15:47	Y1F	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	387604	04/15/22 12:33	JAE	FGS SEA
Total/NA	Prep	3510C			387707	04/18/22 09:36	JAE	FGS SEA
Total/NA	Cleanup	3630C			387763	04/18/22 12:37	Y1F	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	387702	04/18/22 14:02	JAE	FGS SEA

Laboratory References:

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Laboratory: Eurofins Seattle

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

Authority	Program	Identification Number	Expiration Date
Washington	State	C788	07-13-22

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Darling-Tacoma

Job ID: 580-111862-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-111862-1	MFG-1	Water	03/25/22 13:30	03/25/22 20:01
580-111862-2	MFG-2	Water	03/25/22 12:20	03/25/22 20:01

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 580-111862-1

Login Number: 111862

List Source: Eurofins Seattle

List Number: 1

Creator: Greene, Ashton R

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION CHECKLIST

INTRODUCTION

General Project Information			
Project Name:	Triumph Mine – Mine Water	Date Validated:	4/26/22
Tetra Tech Project Number:	117-8090004	Data Validated By:	N.Morrow
Sample Start and End Dates:	3-25-22	Laboratory Name:	Eurofins Test America
Sample Matrix:	Aqueous	Laboratory Project ID#:	J111862-1
Analytical Parameters:	NWTPH-Dx		
Name & Date of Approved SAP, QAPP, Work Plan, Etc.	Cleanup Action Plan, Darling-Tacoma Facility (aka Darling Delaware Co., Inc. and Puget Sound By-Products) Facility no.: 25455514, Cleanup Site No.: 8475, VCP Project No.: SW1317. Prepared by Tetra Tech, Inc. for Darling Ingredients, Inc. Dated October 28, 2020.		

LIST OF SAMPLES REVIEWED IN THIS REPORT

List all samples in the sample delivery group that were validated in this report.

Validated Samples		
Field Sample ID#	Laboratory Sample ID#	Sample Type (Natural, Duplicate, Field Blank, Etc.)
MFG-1	580-111862-1	Natural
MFG-2	580-111862-1	Natural

QC Review <i>(Discuss any discrepancies or issues identified for each of the following)</i>	Y	N	NA
FIELD COMPLIANCE WITH PROJECT REQUIREMENTS			
Were all the required samples collected as specified in the SAP/QAPP?	X		
Were samples collected as per the field and analytical methods specified in the QAPP?	X		
LABORATORY NARRATIVE, CHAIN-OF-CUSTODY, AND SAMPLE RECEIPT CHECKLIST			
Was a laboratory narrative provided?	X		
Were any non-conformance issues identified with the analytical data? Discuss issues. <u>Sample cooler temperature was 13.4°C upon receipt</u> - The samples were hand delivered shortly after collection and were properly preserved on ice and the cooling process underway. No qualification is required. <u>Sample MFG-1 had a pH of >2 upon receipt by the laboratory</u> - The bottle was filled appropriately in the field and was not overfilled. The laboratory added additional acid to preserve the sample at the proper pH. The low pH may be due to sample water characteristics or a low volume of pH in the pre-preserved bottle. No qualification is required. <u>One or more method blank contained #2 Diesel (C10-C24) or Motor Oil (>C24-C36)</u> - MFG-2 required re-extraction and re-analysis but this was conducted outside holding time. Affected samples with detections above the MDL were qualified as estimated, J. Of note, LCS/LCSD %Rs were also outside control limits but not noted in the narrative. See below sections.		X	
Were sample Chain-of-Custody (CoC) forms complete? Discuss discrepancies.	X		
Were the requested analytical methods in compliance with project requirements (i.e., QAPP, SAP, etc.)?	X		
Were samples received in good condition within method specified temperatures and holding times? One sample required additional acid to reduce sample pH to <2. Sample temperature was outside the control limit of <6°C; however, the samples were hand delivered to the laboratory shortly after collection, the sample cooler contained ice and the cooling process of the samples had begun. No qualifications for these conditions is required.	X		

QC Review <i>(Discuss any discrepancies or issues identified for each of the following)</i>	Y	N	NA
LABORATORY COMPLIANCE WITH PROJECT REQUIREMENTS			
Were samples extracted and analyzed within method-specified holding times? One exception includes re-analysis of sample MFG-2 due to method blank detection and LCS results	X		
Do the laboratory reports include all constituents requested to be analyzed on the COC or under the QAPP, SAP, or other applicable project document?	X		
Were reported units appropriate for the associated sample matrix/matrices and method(s) of analysis?	X		
Did any samples require dilution?	X		
Besides those samples that required dilution, were all other detection limits reported by the laboratory in accordance with project requirements?	X		
Did the laboratory qualify any results based on the results falling between the laboratory reporting limit (laboratory practical quantitation limit) and the method detection limit?		X	
LABORATORY QUALITY CONTROL			
CCVs			
Were continuing calibration verification (CCV) results reported?		X	
If so, Were CCV results within control limits?			X
Were any qualifications related to the CCV required?			X
LCS/LCSD			
Were laboratory control samples (LCSs) used by the laboratory and of the same matrix as the natural samples?	X		
Was the number of LCSs used equal to at least 5% (1 in 20) of the total number of samples submitted for analysis per analytical method?	X		
Were all LCS and all LCS/LCSD recoveries and RPDs within control limits? %R LCS and LCSD for SGT Motor Oil (>24-36) was above the upper control limit. %R LCSD for SGT #2 Diesel was above the upper control limit and LCS/LCSD RPD was above the control limit for Motor Oil (>C24-C36). The laboratory noted affected samples with a *+ and *1.	X		
Were any qualifications related to LCSs or LCS/LCSDs required? SGT #2 Diesel and SGT Motor Oil (<C24-C36) were qualified as estimated, J, and considered potentially biased high due to LCS %Rs outside control limits for the initial analysis date of April 8, 2022. The samples were re-extracted and re-analyzed outside the holding time; results outside holding time were non-detect and qualified as UJ.		X	
Laboratory Blanks			
Was the number of laboratory blanks analyzed equal to at least 5% (1 in 20) of the total number of samples submitted per analytical method?	X		
Were laboratory blank samples free of analyte contamination? No. The laboratory denoted affected samples using a "B" in the report. Motor Oil (>C24-C36) was detected at 0.157 J mg/L for the non-SGT blank run on April 6, 2022. The SGT blank run for April 18, 2022 detected #2 Diesel (C10-C24) at 0.124 mg/L and Motor Oil (>C24-C36) at 0.233 J mg/L.	X		

QC Review <i>(Discuss any discrepancies or issues identified for each of the following)</i>	Y	N	NA
If not, did any samples require qualification as estimated (J) due to blank contamination? MFG-1 – Motor Oil (>C24-C36) result of 0.92 mg/L was qualified as estimated and potentially biased high, J+, due to method blank contamination. MFG-1 - SGT #2 Diesel (C10-C24) result of 0.091 J mg/L was qualified as estimated and potentially biased high, J+, due to method blank contamination. MFG-2 – SGT#2 Diesel (C10-C24) result of 0.30 mg/L was qualified as estimated and potentially biased high, J+, due to method blank contamination. MFG-2 – SGT #2 Diesel (C10-C24) result of 0.091 J mg/L was qualified as estimated and potentially biased high, J+, due to method blank contamination.	X		
MS/MSDs			
Were project-specific samples used to prepare MS and MSD samples? The samples did not include enough volume to prepare project-specific MS/MSDs. LCS results were used to evaluate the samples.		X	
Was the number of MS/MSDs prepared equal to at least 5% (1 in 20) of the total number of samples submitted per analytical method?			X
Were any MS recoveries or MS/MSD RPDs outside control limits?			X
Were any qualifications related to MS or MS/MSDs required?			X
Laboratory Duplicates			
Were laboratory duplicates analyzed?		X	
Were laboratory duplicate RPDs within laboratory-specified control limits?			X
Were any qualifications related to laboratory duplicates required?			X
Surrogates			
Were surrogate recoveries within laboratory QC limits?	X		
Were any qualifications related to surrogates required?		X	
FIELD QUALITY CONTROL			
Field Blanks (<i>Trip, Equipment Rinsate, Field</i>)			
Were field blanks analyzed?		X	
Were field blanks free of contamination?			
Field Duplicates			
Was a field duplicate analyzed?		X	
Were RPDs within control limits?			
ADDITIONAL COMMENTS			

ATTACHMENT D – ASPHALT INSPECTION FORM


ASPHALT INSPECTION FORM

Darling Ingredients - Tacoma, Washington Facility

Facility No.: 25455514, Cleanup Site No.: 8475, VCP Project No.: SW1317

Asphalt inspection is a requirement in the Corrective Action Plan (Tetra Tech 2020) and as part of Washington Department of Ecology's (Ecology's) No Further Action (NFA) designation for the Darling Ingredients facility at 2041 Marc Avenue in Tacoma, Washington.

This inspection form was developed as a basic guide for conducting an inspection of the asphalt cap at the facility to help identify areas that may be of potential concern. Areas identified may require more frequent monitoring, or additional inspection and possibly repair by a qualified asphalt contractor to maintain asphalt integrity. Maintenance of asphalt cracks is critical to prevent further damage and/or limit pathways for contaminant migration to, or mobilization of existing contaminants in, the subsurface.

GENERAL INSPECTION INFORMATION			
Company Conducting Inspection:	<input checked="" type="checkbox"/> Tetra Tech <input type="checkbox"/> Darling Ingredients	Date: 2/3/22	Time: 1115
Inspection Conducted By:	Weather at Time of Inspection:		
Name: Dylan Davis	42° Temperature (°F) Rain		
Signature: 	<input type="checkbox"/> Sunny <input type="checkbox"/> Partly Sunny <input type="checkbox"/> Mostly Cloudy <input type="checkbox"/> Overcast <input checked="" type="checkbox"/> Raining <input checked="" type="checkbox"/> Rain within Past 24 hours		

ASPHALT INSPECTION	
<i>Complete the following questions and document areas identified on the attached map. If unsure, document and describe the condition(s) to the best of your ability. Additional consultation with an asphalt specialist may be needed for areas identified as a concern.</i>	
1. General Asphalt Surface Conditions at Time of Inspection:	
<input checked="" type="checkbox"/> Wet <input type="checkbox"/> Mostly Wet with Dry Patches <input type="checkbox"/> Dry <input type="checkbox"/> Mostly Dry with Wet Patches	
2. Areas of Ponded Water, Indications Ponded Water in the Past, or Moisture/Water Evident in Cracks? If yes, document these areas below and on the attached map.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
How many areas were identified with ponded water or indications of past ponded water (e.g., asphalt staining, sediment accumulation, prior observations), or evidence of water?	# of Areas 3
For the areas identified, are there indications of asphalt degradation (cracking, loose rock, sand, broken asphalt, etc.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
List the location(s) of the areas identified that indicate potential degradation and describe the condition observed. Locate the locations on the map. 10ft N of scale. 40ft North of scale 5ft East of scale	
3. Cracking – Were any of the following types of cracking observed? If yes, document cracks below and on the attached map.	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Alligator Cracks? (Resemble chicken wire or alligator skin and are caused by repeated traffic loading). If yes, how many? 5ft x 2ft patch 40ft North of scale	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Shrinkage Cracks? (Caused by temperature variations that can expand and contract pavement, leading to stress and cracking). If yes, how many? Discuss the location and characteristics of features identified:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Reflective Cracks or Opening Along Joints? (Occurs when the pavement overlay was done in unsecured conditions, leading to openings of joints, which can allow water to get to the underlying aggregate and cause pavement damage).	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Edge Cracks? (Occur due to poor shoulder support, frost action, or inadequate drainage. Usually begin as hairline cracks that can be seal coated.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Cracks within Wheel Paths?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Cracks from Swell?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Edge Cracks/Failure?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

ASPHALT INSPECTION FORM

Darling Ingredients - Tacoma, Washington Facility

Facility No.: 25455514, Cleanup Site No.: 8475, VCP Project No.: SW1317

Crack Seals Present? Identify location of crack sealant areas and describe their condition (good, worn, lifting, cracked, etc.).	__ Yes <input checked="" type="checkbox"/> No
How many areas of the above types of cracking were identified?	# of Areas ____
List the location(s) of the cracks identified and describe the condition and pattern observed (hairline, linear, circular, etc.). Locate the crack areas on the map.	
4. Potholes identified?	__ Yes <input checked="" type="checkbox"/> No
How many potholes were identified?	# of Areas ____
List the location(s) of the potholes identified and describe the condition observed. Locate the potholes on the map.	
5. Other Issues?	__ Yes <input checked="" type="checkbox"/> No
Asphalt lifting? (e.g., due to tree roots or another subsurface feature). If yes, describe and locate on the map.	__ Yes <input checked="" type="checkbox"/> No
Asphalt gaps? (e.g., significant gaps around features such as drains, bollards, gutters, posts, foundations, etc. that allows water to drain to the subsurface). If yes, describe and locate on the map.	__ Yes <input checked="" type="checkbox"/> No
Rutting from Vehicles or Equipment? If yes, describe and locate on the map.	__ Yes <input checked="" type="checkbox"/> No
Discoloration, fading, wear that may indicate a future area of concern? If yes, describe and locate on the map.	__ Yes <input checked="" type="checkbox"/> No
Vegetation Growing in Cracks/Micro-Cracks or Along Asphalt Edges that Could Lead to Cracking? If yes, describe and locate on the map.	__ Yes <input checked="" type="checkbox"/> No
Other Observations?	__ Yes <input checked="" type="checkbox"/> No
6. Were areas identified that require potential follow-up with the facility manager, more frequent monitoring, or asphalt maintenance contractor?	__ Yes <input checked="" type="checkbox"/> No
If yes, discuss which areas require follow up and the type of recommended follow-up.	

FORM DISTRIBUTION

Provide a copy of this completed and signed inspection form to the following. A copy of the completed form will be submitted to Ecology as part of the NFA requirement.

Darling Ingredients personnel:

Tacoma Facility Manager – Charles Berg - cberg@darlingii.com
 Martin Guthrie – Environmental Affairs Manager mguthrie@darlingii.com
 Bill McMurtry – VP of Environmental Affairs - bmcumrtry@darlingii.com

Environmental Consultant

Tetra Tech, Inc.: Natalie Morrow natalie.morrow@tetrattech.com

406-327-5235 direct 406-370-8170 cell
406-543-3045 main office

ASPHALT INSPECTION PHOTOGRAPH LOG
DARLING-TACOMA 2041 MARC AVENUE
February 3, 2025

