Joint Base Pearl Harbor-Hickam
Drinking Water Quality Monitoring

Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring

April 25, 2024

Low-Level Hydrocarbon Detections Result of Test Method Interferences in Total Petroleum Hydrocarbon (TPH) Analysis of Chlorinated Drinking Water

Introduction

In November 2021, a release of jet propellant (JP-5) fuel from the Red Hill Bulk Fuel Storage Facility contaminated portions of Joint Base Pearl Harbor Hickam's (JBPHH) drinking water system. The Navy took emergency actions and initiated recovery actions to bring the drinking water system back to meeting federal and state regulatory requirements. In addition, in March 2022 the Navy initiated a two-year Long-Term Monitoring (LTM) program to validate the Hawai'i Department of Health's (DOH) declaration that the water is safe to drink, and to continue to ensure drinking water meets all federal and state drinking water standards. During LTM, the Navy observed an increase in low-level detections, all below the state action levels, of total petroleum hydrocarbons (TPH) beginning in the summer of 2023. When these TPH detections were analyzed, they did not match JP-5 (jet fuel) or other fuel-related compounds. The Navy assembled an interagency team of experts from across the Navy, private industry, and in conjunction with the U.S. Environmental Protection Agency (EPA) and DOH to evaluate potential causes for these low-level TPH detections. The Navy prepared a technical memorandum explaining the team's evaluation, actions taken, and results found from its analysis.

Assessment

The interagency team of experts evaluated potential causes for low-level TPH detections and concluded that low-level detections of TPH in the JBPHH drinking water system are (1) not associated with the release of JP-5 or other fuel, and (2) are the result of interferences from chlorine in the drinking water reacting with other compounds required in the method for TPH analysis that is not designed to evaluate drinking water.

The following list are potential factors evaluated:

- Considerations with the required test method for TPH analysis (a method designed to evaluate soils and wastewaters high in contaminants, not chlorinated drinking water)

- Microbial or bacterial growth (i.e. biofilm activity) in distribution system
- Premise Plumbing (e.g. plumbing systems within a home)
- Pipe erosion and/or mineral buildup in drinking water system
- Changes in levels of disinfection treatment (e.g. addition of chlorine) in drinking water system
- Hydrocarbons in source water at Waiawa Well (Navy's only drinking water source since December 2021, located over 6 miles from Red Hill)
- Changes in water quality of JBPHH source water
- Residual JP-5 or fuel additives distributed or accumulated in JBPHH drinking water system
- Pesticides leaching from external sources
- Changes in operation of the JBPHH drinking water system
- Contaminant/debris introduced into drinking water system during water main breaks

Evidence Considered

The team evaluated multiple lines of evidence to provide insight into how the low-level TPH detections are not JP-5 or any other fuel-related product. These lines of evidence include:

- Evaluation of data trends across geographic zones over the course of the two-year LTM program
- Simulation of water flow in the JBPHH drinking water system
- Evaluation of EPA-approved methods used by the laboratory to test for TPH
- Side-by-side comparison of TPH test results using different sample preparation methods
- Evaluation of the presence/absence of other compounds that indicate the presence of JP-5 or other fuel-related products
- Statistical analysis of TPH data, chlorine in drinking water, and standards added for quality control in the testing method

When considered together, all lines of evidence support the conclusion that the low-level detections of TPH observed during LTM are not associated with the release of JP-5 or any other fuel-related product. A chemical in the required test method was found to interact with chlorine present in the drinking water samples, producing an increased frequency of TPH readings in the sample results. These readings have unique chemical signatures that do not match the signature of JP-5 or any other fuel-related products. Additionally, pushing testing to such sensitive levels (trying to find any signature even at low concentrations) is challenging based on the design and intent of the method.

Path Forward

The Navy is voluntarily continuing enhanced water quality monitoring through March 2025. Under this "Extended Drinking Water Monitoring" program, the laboratories will continue to use the same approved testing method, but with an EPA approved alternative sample processing method to reduce sensitivities of sample method procedure.

A copy of the technical memorandum is available at www.jbphh-safewaters.org.

Technical Memorandum

Date: 24 April 2024

Subject: Joint Base Pearl Harbor-Hickam (JBPHH) Water Distribution System (System): Lines of Evidence (LOEs) Regarding Total Petroleum Hydrocarbon (TPH) Detections during Long-Term Monitoring (LTM)

EXECUTIVE SUMMARY

During the week of 29 January 2024, an interagency team comprised of subject matter experts (SMEs) from the United States Environmental Protection Agency (EPA), State of Hawaii Department of Health (DOH), Department of the Navy (Navy), and Navy contractors met to discuss low-level total petroleum hydrocarbon (TPH) detections reported in drinking water samples collected from the Joint Base Pearl Harbor-Hickam (JBPHH) Drinking Water System (System). The SMEs evaluated numerous potential root causes for the low-level TPH detections and concluded that the most likely root causes were laboratory and method challenges. Other root causes that were evaluated by the interagency team included: TPH within source water, regulated disinfection byproducts, residual jet propellant (JP-5) fuel in the System from the November 2021 release from the Red Hill Bulk Fuel Storage Facility (Red Hill), biofilm activity, premise plumbing concerns, water line scaling, pesticides, change in system operations, and contaminants introduced during line breaks. All of these potential causes were evaluated to have either a low likelihood or extremely low likelihood of being the potential root cause.

Therefore, the purpose of this technical memorandum (Tech Memo) is to summarize the Lines of Evidence (LOEs) considered by the interagency team of SMEs to evaluate the hypothesis that low-level detections of TPH observed during Long-Term Monitoring (LTM) <u>are not associated</u> with the November 2021 release of JP-5 and/or another release from Red Hill in the JBPHH System, but rather are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples). The table below summarizes the Key Findings and Conclusions for each of the LOEs evaluated in this Tech Memo and provides a summary of the recommended path(s) forward.

Hypothesis: Low-level TPH detections observed during LTM are not associated with the November 2021 release of JP-5 and/or another release from Red Hill in the JBPHH System. Low-level TPH detections are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples).	
Summary of Lines of Evidence (LOE) Considered by SMEs to Evaluate the Hypothesis	**Does LOE Support Hypothesis?**
LOE: Spatial and Temporal Distribution of TPH Results	**Yes**
Key Findings: • TPH detections appear to be randomly distributed throughout all Zones. • The majority (85% to 100% depending on Zone and LTM Period) of TPH detections were less than 100 µg/L. • Temporal changes in TPH levels from one LTM period to the next were consistent across all Zones. • Granular Activated Carbon (GAC) Absorbers treat drinking water in Zones H1, H2, H3, and I1 prior to distribution to residences. GAC treatment removes TPH, if present, from drinking water prior to distribution to the residences. However, the frequency	

Hypothesis: Low-level TPH detections observed during LTM are not associated with the November 2021 release of JP-5 and/or another release from Red Hill in the JBPHH System. Low-level TPH detections are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples).	
Summary of Lines of Evidence (LOE) Considered by SMEs to Evaluate the Hypothesis	**Does LOE Support Hypothesis?**
of TPH detections and temporal changes in TPH detections in Zones with GAC treatment were similar to TPH detections in Zones without GAC treatment. **Conclusions**: • The temporal variation and spatial distribution of TPH levels in the JBPHH System (and evaluation of sampling data in zones with inline GAC treatment) supports the hypothesis that TPH detections are not associated with the November 2021 JP-5 release and/or another release from Red Hill in the JBPHH System.	
LOE: Hydraulic Modeling of the JBPHH System Following the November 2021 Release **Key Findings**: • Many Zones on the System were never supplied by the Red Hill Shaft and, therefore, could not have been impacted by the JP-5 release. • During LTM, low-level TPH detections occurred in all Zones, and the Zones generally exhibited similar trends of TPH concentrations. **Conclusions:** • The spatial pattern of TPH detections is not consistent with a JP-5 release from Red Hill because Zones that would not have been impacted by the November 2021 JP-5 release exhibit similar patterns to Zones that were likely impacted by the JP-5 release.	**Yes**
LOE: Detailed Review of the Analytical Methods Used to Identify and Quantify TPH **Key Findings:** • The analytical procedure (EPA SW-846 Test Method 8015) used to test for TPH was not designed for analyzing drinking water samples, and it does not include steps to prevent analytical interferences/reactions that may occur due to the presence of disinfectants (e.g., free chlorine) in drinking water samples. • The majority of low-level TPH detections were between the method detection limit (MDL) and the method reporting limit (MRL), which demonstrates the challenges the laboratory had reporting detected concentrations to the MDL rather than the MRL. • Low-level TPH detections were commonly found in laboratory method blanks, which contributed to "detections" of TPH concentrations in samples. • The similar spatial and temporal profiles for TPH detections throughout each LTM period indicate a systemic effect on all samples. • Ghost peaks occur due to chemical reactions taking place in the sample during the sample preparation and extraction process because of the presence of free chlorine (a common disinfectant in drinking water). These peaks were observed in samples where TPH was detected and in samples where TPH was not detected. Empirical data has demonstrated that the ghost peaks do not appear if the sample was dechlorinated prior to analysis. • The low-level detections are significantly impacted by the laboratory method blank/cross-contamination issues and the ghost peaks occurring as a result of chemical reactions with free chlorine taking place in the samples.	**Yes**

Hypothesis: Low-level TPH detections observed during LTM are not associated with the November 2021 release of JP-5 and/or another release from Red Hill in the JBPHH System. Low-level TPH detections are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples).

Summary of Lines of Evidence (LOE) Considered by SMEs to Evaluate the Hypothesis	Does LOE Support Hypothesis?
Conclusions: • Free chlorine in the drinking water samples reacts with organic precursors, resulting in ghost peaks that appear as TPH detections. In addition to the ghost peaks, laboratory method blank/cross-contamination issues were frequently observed and impacted sample analysis and quantitation. This was observed in drinking samples collected from all Zones (spatial) and LTM Periods (temporal). These observations strongly indicate there is a systemic "treatment" effect occurring that is <u>not</u> associated with JP-5 (or other fuel-related TPHs). This treatment effect is consistent with spatial and temporal observations of TPH and explains why TPH was detected in Zones that were not impacted by the November 2021 release of JP-5 from Red Hill (see LOE: Spatial and Temporal Trends of TPH Results and Hydraulic Modelling of the JBPHH System Following the November 2021 Release).	
LOE: Side-By-Side Comparison of Laboratory Results using Sample Preparation using Separatory Funnels Without Dechlorination Versus Micro-Extraction with Quenching **Key Findings:** Samples from all Zones on the JBPHH System (including samples from 123 locations with prior TPH detections above 100 µg/L) were analyzed for TPHs using two methods. The first method (referred to as the Separatory Funnel [SF] Method) used separatory funnel extraction using EPA Method 3510 and analysis by gas chromatography and flame ionization detection (GC/FID) using EPA Method 8015 with no dechlorination. The SF Method is the same method used to analyze drinking water samples during LTM Periods 1 through 7. The second method (referred to as the Micro-Extraction Quench [MEQ] Method) includes the addition of sodium thiosulfate to remove residual chlorine (in a process called "quenching"), micro-extraction using EPA Method 3511, and analysis by GC/FID using EPA Method 8015. • The TPH results using the two methods were compared side-by-side to determine whether the alternative method (MEQ Method), which removed residual chlorine in the sample, would eliminate the analytical interferences observed when using the SF Method. • Six hundred and fifty-eight samples were included in the evaluation. Samples were collected from all Zones in the JBPHH System. Drinking water samples primarily focused on residences; however, other location types (e.g., schools, Child Development Centers [CDCs], non-residences, and hydrants) were also sampled. **Conclusions** • TPH was detected in 31 of 658 samples (4.7%) using the SF Method (i.e., separatory funnel extraction without quenching). TPH was not detected using the MEQ Method (i.e., micro-extraction with quenching) in any of these 31 samples where TPHs were detected using the SF Method. • In addition, 30 matrix spike samples were collected in the field, spiked with 70 µg/L of JP-5 in the lab prior to preparation. The matrix spike results demonstrate that the MEQ method does not prevent accurate and precise determination of TPH in field samples that contain JP-5, and by extension, other fuels.	**Yes**

Hypothesis: Low-level TPH detections observed during LTM are not associated with the November 2021 release of JP-5 and/or another release from Red Hill in the JBPHH System. Low-level TPH detections are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples).

Summary of Lines of Evidence (LOE) Considered by SMEs to Evaluate the Hypothesis	Does LOE Support Hypothesis?
LOE: Absence of Indicator Compounds Associated with JP-5	**Yes**
Key Findings: • Based on theoretical solubilities and experimental data, the water-soluble fraction of JP-5 is expected to contain significant concentrations of identifiable compounds that were monitored during the LTM. • Because water distribution systems are disinfected and isolated, no significant removal of these compounds is expected due to photooxidation, biodegradation, and/or evaporation. • Consequently, frequent detections of compounds such as 1-methylnaphthalene, 2-methylnaphthalene, ethylbenzene, naphthalene, toluene, or xylenes would have occurred if JP-5 was present in drinking water. However, these compounds have been detected in approximately 0.2% of drinking water samples collected and analyzed during LTM. These compounds (or other compounds associated with JP-5) have not been frequently detected throughout the JBPHH System. **Conclusions:** • The absence of frequent detections of JP-5-associated compounds throughout the JBPHH System supports the hypothesis that the TPH detections are not associated with the November 2021 release of JP-5 from Red Hill and are likely associated with other non-petrogenic causes.	
LOE: Statistical Analysis of TPH Data, Chlorine Residuals, and Surrogate Doses	**Yes**
Key Findings: • Statistical analyses of over 8,000 samples indicate that the odds of encountering TPH detections are significantly higher in water with elevated chlorine levels or when a high surrogate dose is utilized for the laboratory analysis. *Note: If chlorine reactions with organic precursors cause low-level TPH detections, then they are expected to be encountered more frequently in water with higher residual chlorine or surrogate concentrations.* • Statistical analyses of the residual chlorine concentrations also indicate that disinfectant levels increased during the second half of 2023, coinciding with the higher frequency of TPH detections observed during LTM Period 6 (which began in July 2023). The subsequent decrease in the number of detections in January 2024 is likely associated with a reduction in the surrogate dose. **Conclusions:** • Analysis of TPH and chlorine data collected over two years strongly supports the hypothesis that halogenated byproducts, not JP-5, are causing the TPH detections.	

Hypothesis: Low-level TPH detections observed during LTM are not associated with the November 2021 release of JP-5 and/or another release from Red Hill in the JBPHH System. Low-level TPH detections are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples).

Summary of Lines of Evidence (LOE) Considered by SMEs to Evaluate the Hypothesis	Does LOE Support Hypothesis?
Overall Assessment of All Lines of Evidence	**Yes**
All lines of evidence support the conclusion that the low-level TPH detections observed during LTM are <u>not</u> associated with the November 2021 release of JP-5 and/or another release from Red Hill, and are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples). **Recommended Path(s) Forward**: • Request regulatory concurrence to alter the analytical method for diesel- and oil-range TPHs by adding a step to dechlorinate (or "quench") the sample with sodium thiosulfate. The intent is to inhibit reactions between free chlorine and laboratory reagents that contribute to the creation of halogenated hydrocarbons, resulting in false-positive TPH detections. • Quenching is expected to eliminate potential "ghost" indications of TPH without affecting the ability to detect actual JP-5 (and other fuel-related TPHs) contamination, if present, in a sample. *Note: If JP-5 is present in a sample, quenching will not remove or reduce the concentration of JP-5 (or other fuel-related TPHs) in the sample. This has been demonstrated by collecting Matrix Spike/Matrix Spike Duplicates (which are field samples spiked with known concentrations of JP-5 by the laboratory) in order to assess the relative % recovery in the samples.*	

BACKGROUND AND PURPOSE

In November 2021, a release of JP-5 from the Red Hill Bulk Fuel Storage Facility (Red Hill) resulted in the contamination of the Joint Base Pearl Harbor-Hickam's (JBPHH's) Drinking Water System (System). Both the Navy and State of Hawaii Department of Health (DOH) received complaints of a chemical or fuel-like odor and taste in the drinking water served by the JBPHH System, which serves approximately 93,000 consumers. On November 29, 2021, DOH issued a public health advisory recommending JBPHH System consumers to avoid using the water for drinking, cooking, or oral hygiene. The System was divided into 19 manageable Zones where systematic remedial action was conducted to remove petroleum contamination from the System through comprehensive flushing of the water distribution lines and premise plumbing. For DOH to amend the public health advisory, evidentiary benchmarks were developed, which included (among other things) sampling for indicators of contamination and response by-products as well as cross-connection surveys to understand the potential for contaminants to spread throughout the System. In addition, a Drinking Water Long-Term Monitoring Plan (LTM) was developed jointly by representatives of the DOH, the Navy, the Army, and a team of technical subject matter experts (SMEs). This plan was designed to fulfil the post-advisory requirements stated in the Sampling and Analysis Plan titled *Drinking Water Sampling Plan for JBPHH, O'ahu, Hawai'i, Addendum 3, Version 10*, dated 25 February 2022 and the 19 Removal Action Reports (RAR) for each Zone established for the JBPHH System to ensure safe drinking water for the community drinking water system.

During LTM Period 6, the frequency of total petroleum hydrocarbon (TPH) detections increased, primarily in the diesel-range organics (TPH-d). None of these detections has exceeded the DOH's incident-specific parameter (ISP) level of 266 micrograms per liter (µg/L), as shown in Table 1.

As Table 1 shows, the majority of the low-level TPH detections during LTM were at concentrations less than 100 µg/L (i.e., near the Method Detection Limit [MDL] of ~50 µg/L and the Method Reporting Limit [MRL] of ~75 µg/L) throughout all Zones in the JBPHH System.

Since October 2023, the Navy has proactively worked with the United States Environmental Protection Agency (EPA) and DOH on actions to investigate these low-level TPH detections in drinking water samples collected from the JBPHH System. These actions have included inspection and sampling of hot water heaters and interior faucets to ensure there is no contaminant buildup, as well as collection of samples from various points throughout the System.

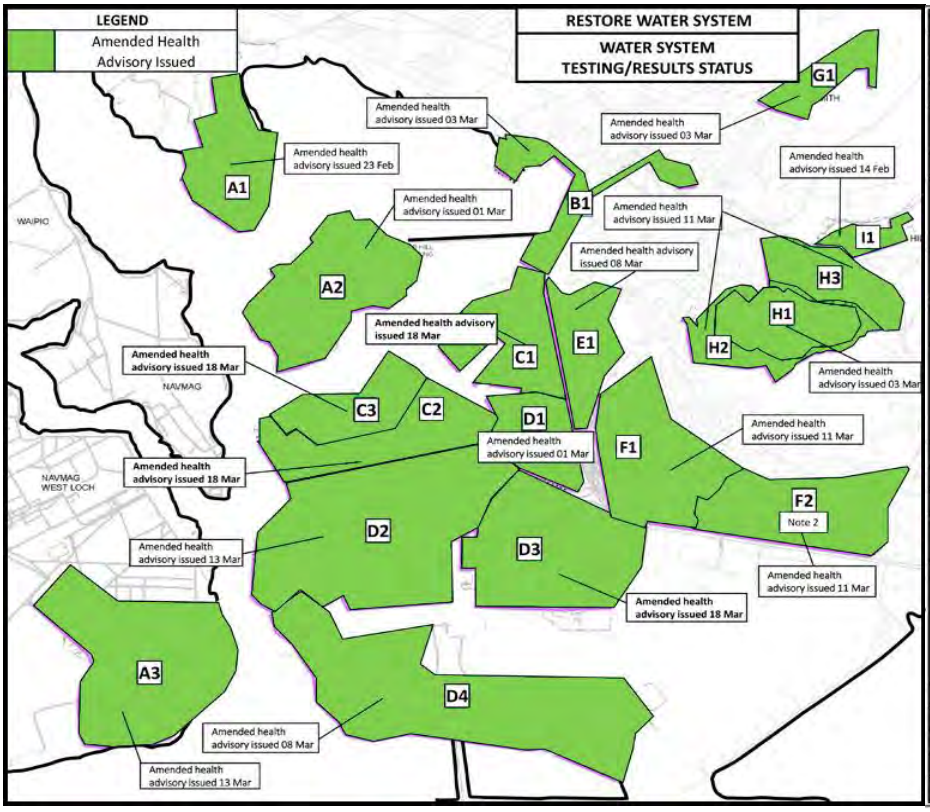
During the week of 29 January 2024, an interagency team consisting of SMEs from the EPA, DOH, Navy, and Navy contractors met to discuss low-level TPH detections in the JBPHH System. The purpose of this technical memorandum (Tech Memo) is to summarize the lines of evidence (LOEs) evaluated by the interagency team of SMEs convened to specifically evaluate these low-level TPH detections in the JBPHH System, including root causes and potential paths forward. The LOEs evaluated and discussed in this Tech Memo include:

1. Spatial and Temporal Distribution of TPH Results
2. Hydraulic Modeling of the JBPHH System Following the November 2021 Release
3. Detailed Review of the Analytical Methods Used to Identify and Quantify TPH
4. Side-By-Side Comparison of Laboratory Results using Alternative Sample Preparation Methods
5. Absence of Indicator Compounds Associated with JP-5
6. Statistical Analysis of TPH Data, Chlorine Residuals, and Surrogate Doses

A summary of the Root Cause Analysis is also presented in the final section of this Tech Memo. The following sections summarize the LOEs, supported by a corresponding, detailed appendix.

SPATIAL AND TEMPORAL DISTRIBUTION OF TPH RESULTS

After the November 2021 JP-5 release from Red Hill, the Navy divided the JBPHH System into 19 Zones, as shown in Figure 1.



Zone	Community
A1	Pearl City Peninsula
A2	Ford Island
A3	Iroquois Point
B1	McGrew
	Halawa
C1	SUB BASE
C2	Hale Alii
	Marine Barracks
	Hospital Point
C3	Shipyard
	Hospital Point
D1	Hale Moku
	Hokulani
D2	Hickam
	Hale Na Koa
	Officer Field Area
	Onizuka Village
D3	Earhart Village
D4	Hawaii Air National Guard
E1	Makalapa
F1	NEX
	Moanalua Terrace
F2	Catlin Park
	Maloelap
	Doris Miller
	Halsey Terrace
	Radford Terrace
G1	Camp Smith
H1	Aliamanu Military Reservation
H2	Aliamanu Military Reservation
H3	Aliamanu Military Reservation
I1	Red Hill Housing

Figure 1. JBPHH Water Distribution System Zones

Figure 2 provides a time-series graph of TPH-d concentrations measured from December 2021 through January 2024 in the Zones outlined in Figure 1 and the Waiawa Shaft (post-chlorination), which provides all water to the JBPHH System. The data is color-coded by analytical laboratory data qualifiers, which includes non-detects ("U" and "UJ" qualified values), detects where an associated numerical value is approximate ("J" qualifier), and detects without qualifiers.

The data shows frequent approximate TPH-d detections (i.e., samples flagged with a "J" qualifier) in all Zones of the System. Since July 2023, there has been a discernible increase in detections significantly above the MDL of 50 µg/L. Appendix A includes additional information on the TPH detection data.

Figure 2. JBPHH LTM TPH-d Data

Table 1 and Appendix A, including Figures A-4 through A-10, present the TPH results for all residences sampled during LTM Period 1 through LTM Period 7.

Note: Figures A-4 through A-10 are included in a separate PDF in order to keep the file size of the Appendices as small as possible for reader usability.

Table 1. Total TPH Detection Frequency (as a percentage [%]) for Each Zone by LTM Period (Residences Only)

LTM Period	A1	A2	A3	B1	C2	D1	D2	D3	E1	F1	F2	G1	H1	H2	H3	I1	Weighted Average
# of Residences in Zone	635	411	1,459	227	32	508	1,577	912	89	752	1,435	10	918	230	379	135	
Frequency of Detection of TPH (All Detections) - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	2.7	33	19.2	67	50	58.5	29	16	50	16	16.5	0	9.6	17	38	0	22
Period 2 (Month 2)	0	12	8.5	0	0	21	6.8	15	20	12	1.3	0	15	7.1	0	0	8
Period 3 (Month 3)	33.9	19	25.2	0	50	22	27.3	43	0	32.3	21.4	0	7.7	21	33.8	29	25
Period 4 (Month 4 – 9)	31.4	36.9	24.2	48	100	38	26.6	19	9.1	29.2	28	0	39.8	33.7	22.5	25	29
Period 5 (Month 10 – 15)	29.2	31	34	36	--	41	40.7	39.9	27	65	23	--	44	41	39	30	37
Period 6 (Month 16 – 21)	58.5	54.8	47.8	65.4	100	79.9	62	65.62	72	66.1	66	--	83.6	53.8	61	78	63
Period 7 (Month 22 – 24)	16	5.4	6.9	3.3	--	7.4	28	36.4	0	1.1	30.6	--	3.8	3.7	2.1	0	16
Frequency of Detection of TPH < 100 ug/L - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	2.7	33	18	67	50	52	29	14	50	16	14	0	9.6	17	38	0	21
Period 2 (Month 2)	0	12	7.3	0	0	21	6.8	15	0	12	1.3	0	15	7.1	0	0	8
Period 3 (Month 3)	31	19	24	0	50	22	25	41	0	30	19	0	7.7	21	29	29	24
Period 4 (Month 4 – 9)	30	31	23	48	100	38	26	18	9.1	28	28	0	37	30	20	25	28
Period 5 (Month 10 – 15)	25	31	34	36	--	41	36	34	27	65	23	--	44	30	39	12	35
Period 6 (Month 16 – 21)	53	53	46	62	100	72	46	61	72	55	53	--	69	50	47	67	54
Period 7 (Month 22 – 24)	13	5.4	6.3	0	--	7.4	17.5	27	0	1.1	20	--	2.7	0	2.1	0	11
Frequency of Detection of TPH >= 100 & < 200 ug/L - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	0	0	1.2	0	0	6.5	0	2	0	0	2.5	0	0	0	0	0	1
Period 2 (Month 2)	0	0	1.2	0	0	0	0	0	20	0	0	0	0	0	0	0	0
Period 3 (Month 3)	2.9	0	1.2	0	0	0	2.3	2	0	2.3	2.4	0	0	0	4.8	0	2
Period 4 (Month 4 – 9):	1.4	5.9	1.2	0	0	0	0.57	1	0	1.2	0	0	2.8	3.7	2.5	0	1
Period 5 (Month 10 – 15)	4.2	0	0	0	--	0	4.7	5.9	0	0	0	--	0	11	0	18	2
Period 6 (Month 16 – 21)	4.1	1.8	1.8	3.4	0	6.3	14	3.7	0	10	12	--	13	3.8	14	11	8
Period 7 (Month 22 – 24)	3	0	0.6	3.3	--	0	10.5	9.1	0	0	9.3	--	1.1	3.7	0	0	4
Frequency of Detection of TPH >= 200 & < 266 ug/L - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 2 (Month 2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 3 (Month 3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 4 (Month 4 – 9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 5 (Month 10 – 15)	0	0	0	0	--	0	0	0	0	0	0	--	0	0	0	0	0
Period 6 (Month 16 – 21)	1.4	0	0	0	0	1.6	2	0.92	0	1.1	1	--	1.6	0	0	0	1
Period 7 (Month 22 – 24)	0	0	0	0	--	0	0	0.80	0	0	1.1	--	0	0	0	0	0

Notes:

Zones with 100% Waiawa Shaft Water During Red Hill Release in November 2021.
Zones with Blended Red Hill Shaft and Waiawa Shaft Water During Red Hill Release in November 2021.
Zones with 75% - 100% Red Hill Shaft Water During Red Hill Release in November 2021.
Zones with Inline GAC Treatment on the JBPHH System.

All Total TPH Detections were less than the ISP of 266 ug/L.
The Frequency of Detection is calculated by the number of TPH detections divided by the number of residences sampled in each Zone during the specific LTM Period and does not represent the Frequency of Detection for all residences in each Zone.
This table shows only Zones with residential samples. Zones C1, C3, and D4 do not have residential buildings.
--: No residential samples were collected during this period.

Note: The Spatial/Temporal evaluations of TPH results compare results from all Zones to: (1) those that received 0% of their water from the Red Hill Shaft (Zones: A1, A2, B1, C1, and G1) and (2) those Zones protected by inline granular activated carbon (GAC) treatment (Zones: H1, H2, H3, and I1)

These comparisons are critical to interpreting the spatial distribution of TPH results during LTM because TPH would not be expected to be detected in these Zones due to (1) Not receiving source water from the Red Hill Shaft (therefore, JP-5 from the November 2021 Red Hill release was not transported to these Zones) and (2) the inline GAC filters should remove any TPH (and other organics) from the drinking water prior to distribution.

The results of the spatial (visual) summary of TPH detections by Zone, period, and TPH concentrations are summarized below:

- The weighted average (weighted based on the total number of homes in each Zone) frequency of low-level TPH detections (i.e., values < 100 µg/L) nearly tripled from Period 1 to Period 6 (i.e., 22%, 8%, 25%, 29%, 37%, and 63%, see Table A-2) over the 21-month duration of LTM and generally increased slightly every LTM period (except for Period 2, which decreased). In addition, there was a marked increase in the frequency of low-level TPH detections between Period 5 (37%) and Period 6 (63%; see Table 1). However, the frequency of low-level TPH detections (i.e., values < 100 µg/L) decreased during Period 7 (16%; see Table 1).
- The vast majority (typically between 85% and 100%) of all TPH detections were less than 100 µg/L in all Zones over all LTM Periods (see Table 1).
- No TPH concentrations ≥ 200 µg/L and < 266 µg/L were detected in any Zone until Period 6 and Period 7 of LTM. During Period 6, the frequency of TPH detections ≥ 200 µg/L and < 266 µg/L in Zones A1, D1, D2, D3, F1, F2, and H1 were consistent (1.4, 1.6, 2, 0.92, 1.1, 1, and 1.6%, respectively). During Period 7, the frequency of TPH detections ≥ 200 µg/L and < 266 µg/L in Zones D3 and F2 were consistent (0.80% and 1.1%, respectively) and similar to the trends observed in LTM Period 6 (see Table A-2).
- Temporal[1] changes in the frequency of TPH detections from one LTM Period to the next were generally consistent (with some exceptions) across all Zones (see Table A-2). Not including Zones C2 (32 residences, E1 (89 residences), and G1 (10 residences)), which have much fewer residences than the rest of the Zones, makes this comparison more difficult due to the much smaller sample sizes from these Zones.
- Zones B1, D1, D2, D3, F1, F2, H1, H3, and I1 had > 60% frequency of detection of TPH during LTM Period 6 (see Table A-2), not including Zones C2 (32 residences), E1 (89 residences), and G1 (10 residences). These Zones have much fewer residences than others and thus make this comparison more difficult due to much smaller sample sizes. No Zone had more than 60% TPH detection during LTM Period 7 (see Table A-2).

[1] Temporal changes are changes over time.

- The spatial distribution of TPH detections appears to be randomly distributed throughout each Zone within each LTM Period (see Figures A4 – A-10).
    - LTM Period 2 is anomalous relative to the other LTM Periods because the weighted average frequency of TPH detections was 8%; however, low-level detections were observed in the majority of the Zones that were sampled (see Figure A-5).
    - LTM Periods 1, 3, and 4 had similar weighted average frequency of detections (at 22, 25, and 27%, respectively) and the spatial distribution of TPH detections was similar across all Zones (see Figures A-4, A-6, and A-7). Note that approximately 5% of homes in each Zone were sampled during LTM Periods 1 through 3 and approximately 10% of homes were sampled during LTM Periods 4 through 6 so there is a higher density of "dots" on Figures A-6 and A-7 than Figure A-1 but the overall spatial pattern of detections is random and consistent between the LTM Periods.
    - LTM Periods 5 and 6 had weighted average frequency of detections of 37%, and 63%, respectively, which are higher than any other LTM Period. However, the spatial distribution of TPH detections is similar across all Zones (see Figures A-8 and A-9).
    - LTM Period 7 had a weighted average frequency of detections of 16%, which is similar to the detection frequency observed during LTM Periods 1, 3, and 5, and lower than the detection frequency observed during Periods 5 and 6 (see Figure A-10).
- The frequency of TPH detections observed in Zones that did not receive water from the Red Hill Shaft during the release in November 2021 (i.e., Zones A1, A2, B1, C1, and G1) and Zones that received the majority of their water from the Red Hill Shaft (F1, F2) were similar (with occasional exceptions) over the Periods 1 through 7 of the LTM Program. If residual fuel from the JP-5 release in November 2021 were still impacting the JBPHH System, it is expected the impacts would be localized to the Zones that obtained the majority of their drinking water, at the time of the release, from the Red Hill Shaft (e.g., Zones F1 and F2) and not in other parts of the System. However, as the frequency of TPH detections are fairly consistently distributed throughout all Zones, it is highly unlikely that residual fuel from the November 2021 release is responsible for the low-level TPH detections that have been observed over the LTM timeline (see Table A-2 and Figures A-4 through A-10).
- The frequency of TPH detections observed in Zones that did not receive water from the Red Hill Shaft during the release in November 2021 (i.e., Zones A1, A2, B1, C1, and G1) and Zones that have inline GAC filters to remove potential contaminants (if any) from JBPHH drinking water prior to distribution to the residences (i.e., Zones H1, H2, H3, and I1) were similar (with occasional exceptions) over the Periods 1 through 7 of the LTM Program. If TPH was present in the JBPHH System (e.g., due to another source of contamination [i.e., not associated with the release of JP-5 from Red Hill]), detections of TPH contamination would be expected in the influent samples to the inline GACs in Zones H1, H2, H3, and I1). However, according to the U.S. Army, which owns/operates the GAC treatment systems, only very low and infrequent detections of any TPH fractions have been observed. In addition, the inline GACs should remove TPH (and numerous other contaminants), if present, from the drinking water prior to distribution to the residences in Zones H1, H2, H3, and I1. However, the frequency of TPH detections and temporal changes in TPH detections in these Zones are similar to the TPH detections and temporal changes in TPH detections in those without GAC treatment. Therefore,

based on these results it is highly unlikely that there is another source of contamination impacting the JBPHH System (see Table A-2 and Figures A-4 through A-10).

HYDRAULIC MODELING OF THE JBPHH SYSTEM FOLLOWING THE NOVEMBER 2021 RELEASE

In 2022, Naval Facilities Engineering Systems Command (NAVFAC) contractor AH Engineering Consultants (AH) developed a hydraulic model of the JBPHH System, capable of simulating flows, pressures, and contaminant transport over time.

To track the distribution of water from the Red Hill Shaft, the model simulated the addition of a conservative chemical (or tracer) to the source starting at noon on 27 November 2021. Neither the actual time the fuel entered the JBPHH System, nor the actual concentration of the contaminant is known. The time was selected so that the first occurrence of the model-simulated tracer in the System coincided roughly with the earliest reports of fuel-like odors by System users. Figure 3 shows the results of the simulation which confirms, based on the flow of the water through the System, that there are large areas of the System that were not supplied with drinking water by the Red Hill Shaft around the time of the fuel release (color-coded as blue zones on Figure 3). Instead, these Zones received water from the Navy Aiea/Halawa and Waiawa Shafts. The Navy Aiea/Halawa and Waiawa Shafts were not affected by the 2021 fuel release. Therefore, the drinking water in these zones could not have been impacted by the November 2021 fuel release despite the TPH-d detections. The Zones of the System supplied water partly or solely by the Red Hill Shaft coincide with Zones where fuel-like odors were reported shortly after the incident. TPH-d detections during the LTM have occurred throughout the JBPHH System, including Zones that would not have been impacted by the fuel release and Zones within the Army water distribution system downstream of GAC treatment based on the determinations of the hydraulic model. GAC treatment units are expected to remove organic compounds, including TPH. As a result, based on the hydraulics of the JBPHH System, the November 2021 JP-5 release has not caused the TPH-d detections observed during LTM.

Appendix B provides further details of the hydraulic model development and calibration, including the development of the model scenario to estimate the extent of fuel contamination in the JBPHH System and additional supporting figures.

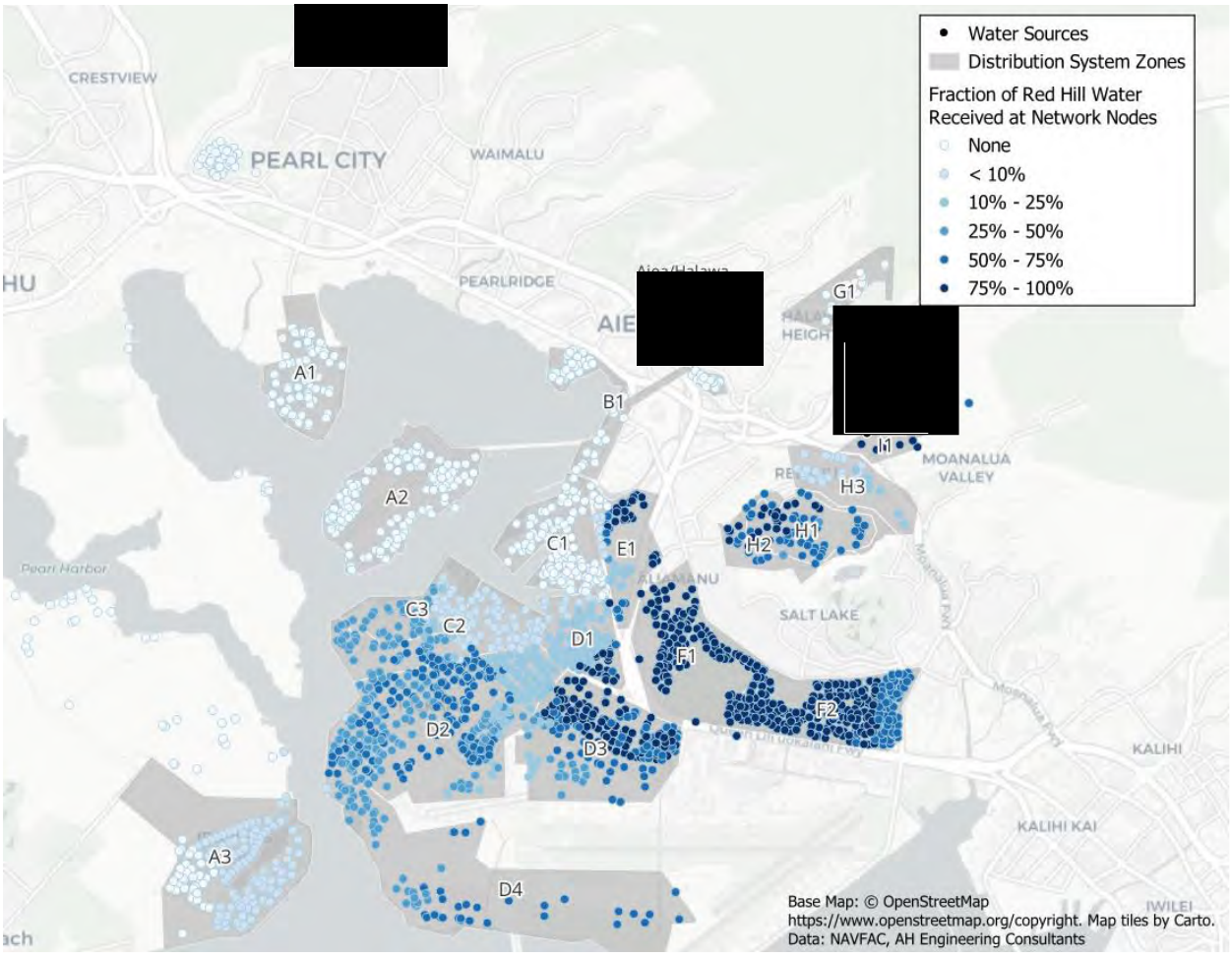


Figure 3. Model-Simulated Distribution of Red Hill Shaft Water in the JBPHH System

REVIEW OF THE ANALYTICAL METHODS USED TO IDENTIFY AND QUANTIFY TPH

Sodium Thiosulfate Evaluation

TPH was detected in all Zones and the Zones generally have similar TPH concentration profiles over each LTM period. Based on the Spatial/Temporal/Concentration pattern of low-level TPH detections observed, LTM generally indicates a systemic treatment effect (e.g., water quality changes/field process/lab process, limitations/uncertainty in resolution of analytical method at low levels) on the samples.

One hypothesis that the interagency (i.e., Navy, EPA, DOH, SMEs) team of experts evaluated based on the observed pattern of low-level TPH detections during LTM was the presence of ghost peaks (i.e., peaks that are not associated with TPH in the actual field sample) on the TPH chromatograms. Ghost peaks occur due to chemical reactions during the sample preparation and extraction process when free chlorine present in the drinking water samples reacts with organic substances, including surrogate chemicals (i.e., chemicals that are added to the sample as required by Method 8015) and the solvent that is used to extract contaminants from water. Ghost peaks are potentially significant in the low-level TPH detections (e.g., TPH concentrations detected less than 100 µg/L) because these peaks are identified as TPH and are included in the TPH concentration reported by the laboratory. Analytical methods designed to quantify volatile and semi-volatile organic carbons (including hydrocarbons) in

drinking water samples (e.g., EPA Drinking Water Method 524 and Method 525) include the addition of a reducing agent (e.g., sodium thiosulfate) to prevent this from occurring. The method used for the analysis of TPH-d and TPH-oil-range organics (TPH-o; EPA SW-846 Method 8015) was developed for non-drinking water matrices. However, at the time of developing the LTM Plan, EPA, DOH, Navy, and Army representatives determined EPA Method 8015 was the best available scientific method for analyzing TPH in drinking water samples because there is no method specifically designed to measure JP-5 (or other fuels) in drinking water. In non-chlorinated water samples that are analyzed using Method 8015, a quenching step (i.e., the addition of a reducing agent such as sodium thiosulfate) is not required because halogens like chlorine are not naturally present; therefore, halogenation reactions are not expected to occur. Mass spectral analysis of the extracted samples indicated the presence of a brominated derivative of o-terphenyl (used as a marker in the chromatographic analysis) and other brominated and chlorinated species. Furthermore, the laboratory conducted experiments that revealed that the ghost peaks can be eliminated by adding a reducing agent, such as sodium thiosulfate, prior to extraction, and that the surrogate, o-terphenyl, was the primary precursor for the undesired oxidation byproducts.

Figure 4 illustrates the effect of introducing sodium thiosulfate prior to extraction. The chromatogram on the left is from a sample analyzed using the preparation and analytical method used during LTM, and the one on the right is from the same sample with sodium thiosulfate added to it prior to extraction. The sample extracted after quenching no longer exhibits the four peak patterns shortly after the solvent front, which is seen in virtually all LTMsamples, and the ghost peaks following the surrogate are also absent. This is evidence that the sodium thiosulfate inhibits the oxidizing reactions (which otherwise result from the chlorine in the drinking water samples) from occurring in the laboratory.

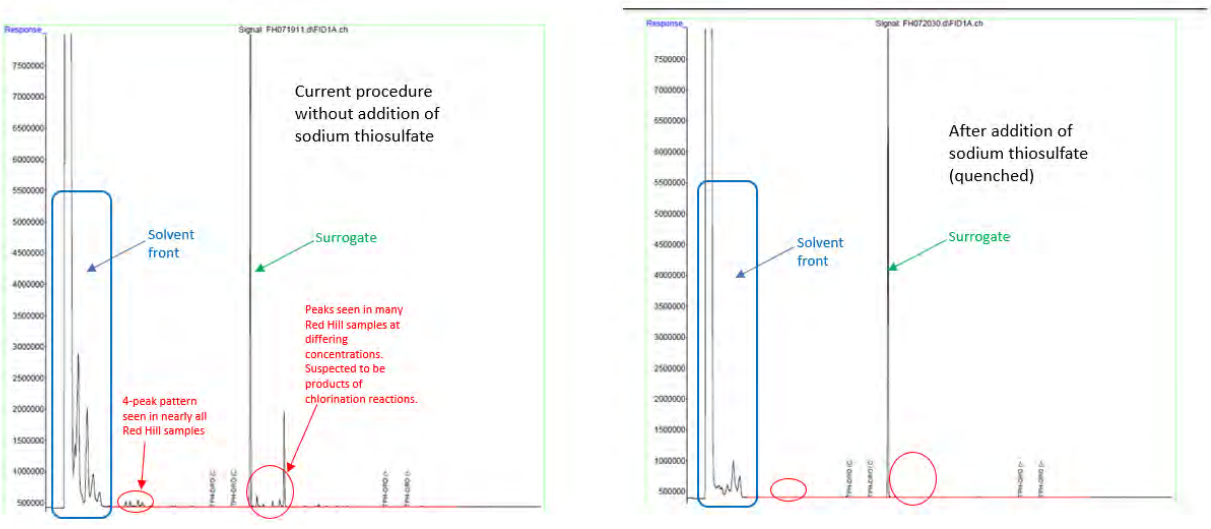


Figure 4. Effect of Sodium Thiosulfate Addition (Quenching) Sample H3-TW-0013887-23335-A

Appendix C details the effect of the introduction of sodium thiosulfate prior to extraction and the role played by the surrogate in the formation of halogenated ghost peaks. Results of the evaluation demonstrate that the addition of sodium thiosulfate inhibits the oxidizing reactions during the laboratory analysis. The sample extracted after quenching no longer exhibits the four peak patterns eluding shortly after the solvent front, which is seen in virtually all LTM samples. Results also support the hypothesis that the surrogate solution is the primary source of chemicals being halogenated in the unquenched samples, resulting in ghost peaks.

Extraction Limited Ion Profile Screening (ELIPS) Evaluation.

Following the recommendation of the interagency team, an ion profile[2] screening was conducted using historical drinking water results obtained using EPA Method 525. Ion profiling involves searching mass spectroscopy (MS) results for specific analytes based on their mass-to-charge ratio. As EPA Method 8015 TPH results are considered "method-defined" due to the non-specific nature of the detector (carbon) and inclusion of a wide integration window, TPH detections from the 8015 analyses were further evaluated using an additional screen for key components of JP-5. In addition to the samples that were collected and analyzed for TPH by Method 8015, samples were also collected for corresponding analysis by EPA Method 525 (semi-volatiles by Gas Chromatography-MS [GC/MS]). An extracted ion profile screen was performed on the previous Method 525 tested data corresponding to the nine highest Method 8015 tested TPH detections and the corresponding method blanks. The targeted analytes for the ELIPS screen and their corresponding ions are provided in Table 2 below. Targeted analytes were selected based on their prominence in JP-5, specific requests from EPA or DOH, or their presence as biomarkers that are resistant to weathering. Both alkanes (organic compounds that consist of single-bonded carbon and hydrogen atoms) and aromatic compounds (organic compounds that consist of one or more benzene rings) were represented.

Table 1. Extracted Ion Profile Target Analytes (Key Components of JP-5)

Analyte	Ion
Undecane	m/z 43*, 57, 156
Di Methylnaphthalene	m/z 156, 141
1 Methylnaphthalene	m/z 142, 115
1-Ethylpropylbenzene	m/z 91, 119
Cyclohexane	m/z 56, 84
Tridecane	m/z 43*, 57, 184
Dodecane	m/z 43*, 57, 170
Sesquiterpanes	m/z 123, 179
Benzocyclohexane	m/z 104, 132
Propylbutylbenzene	m/z 176, 91
Trimethylbenzene	m/z 105, 120

**Ion m/z 43 cannot be reviewed in the historical data because the instrument was set up to begin scanning at m/z 45.

Appendix D provides a detailed summary of the final ELIPS results for each sample, including the initial Method 8015 chromatograms indicating TPH and their respective extraction blanks for each of the nine samples, followed by the corresponding Total Ion Chromatograms (TICs) and their respective extraction blanks for the EPA 525 analyses.

Except where noted in Appendix C, the observed patterns were not significantly different between most of the selected samples and associated method blanks. It is emphasized that EPA Method 8015 and Method 525 are obtained under different chromatographic conditions and use different surrogates. In addition, EPA Method 525 samples are preserved with sodium thiosulfate; therefore, the presence of the proposed halogenated species that appear to be present in the Method 8015 chromatograms that show TPH cannot be confirmed by the ELIPS screening. <u>There were no petroleum signatures observed in any of the samples examined using the ELIPS screening</u>. This further supports the conclusion that blank

[2] A mass spectrum is a graph that shows the ion signal as a function of the mass-to-charge ratio (m/z) of the ions present in a sample. It can be used to determine the elemental or isotopic composition, the molecular mass, and the chemical structure of a compound. The peaks in a mass spectrum represent the different m/z values and their relative abundances in the sample.

sample contamination may be causing the petroleum signatures in samples DA57284-14, 59235-14, and DA58544-4. The only unknown peaks in any of the samples meeting the ELIPS screening criteria were fatty acids and phthalates, both of which are not petrogenic hydrocarbons. These compounds are likely contributing to some TPH-o) detections.

Comparison of EPA Method 8015 Standard Extraction and Micro-Extraction Results.

The current EPA-approved extraction method (used during LTM) is EPA Method 3510C: Separatory Funnel Liquid-Liquid Extraction (EPA 3510) for administering the analytical EPA Method 8015 for determining the concentration of TPH in the sample. This method involves using multiple pieces of laboratory glassware and equipment, each of which has the potential to introduce laboratory contamination into the sample. EPA Method 8015 is not intended for analysis of chlorinated drinking water samples but for wastewater analysis/solid waste analysis. Method 3510 requires the use of a large volume of solvent (three successive extractions with 60 milliliters [mL] of methylene chloride, plus additional solvents to rinse glassware to facilitate complete transfer between steps, amounting to approximately 200 mL in total). This solvent is then concentrated to 1 mL prior to analysis, potentially increasing the effective concentration of any laboratory contaminant introduced into the sample by 100-fold or more. In contrast, the EPA Method 3511 (i.e., micro-extraction) eliminates most of the potential for laboratory contamination during processing; the extraction takes place in the sample collection bottle and uses only two mL of solvent, eliminating both contact with reusable supplies and any concentration step. These differences are summarized in Appendix E, which also provides an illustration of the supplies required for each procedure.

SIDE-BY-SIDE COMPARISON OF LABORATORY RESULTS USING ALTERNATIVE SAMPLE PREPARATION METHODS

To evaluate the effectiveness of eliminating false positive TPH detections due to the reaction of chlorine with laboratory reagent and other organics (see Appendix F), 658 drinking water samples were collected through 29 March 2024, from the JBPHH System. The samples were analyzed for TPH via the following methods:

1. **Separatory Funnel (SF) Method**: Separatory funnel extraction (EPA Method 3510) and analysis by gas chromatography and flame ionization detection (GC/FID, EPA Method 8015) without dechlorination (also referred to as quenching). Note: The SF Method is the same approach used to analyze the TPH in drinking water samples that were collected during LTM.[3]

[3] This is the same approach that was used since LTM Period 1. However, it should be noted that the laboratory reduced the concentration of the surrogate o-Terphenyl from 2,000 ug/L that was used during LTM to 100 µg/L on January 18, 2024. This modification is consistent with EPA Method 8015 and greatly reduces the formation of halogenation by-products which are suspected to have contributed to the low-level, false positive detections of TPH-total that were observed during LTM.

2. **Micro-Extraction Quench (MEQ) Method**: Addition of sodium thiosulfate (quenching) to remove residual chlorine, micro-extraction via EPA Method 3511, and analysis GC/FID (EPA Method 8015).

Samples were collected from all Zones in the JBPHH System. Drinking water samples were primarily focused on residences; however, other location types (e.g., schools Child Development Centers [CDCs], non-residences, and hydrants) were also sampled. The residential sampling locations included 121 locations that had TPH detections above 100 µg/L during LTM.

TPH was detected in 31 of the 658 samples (4.7%) using the SF Method with concentrations ranging between 50.3 µg/L and 359 µg/L. TPH was not detected using the MEQ Method in any of the 31 samples where TPHs were detected using the SF Method. Additionally, TPH was detected in six of the 658 samples (0.91%) using the MEQ Method with concentrations ranging between 49.7 µg/L and 106.6 µg/L. However, these samples were (1) not detected in the corresponding SF Method samples, and (2) the laboratory confirmed that these detections were due to the presence siloxane (i.e., a non-petrogenic organic chemical) in the bottle caps of the sampling containers.

In addition, 30 matrix spike samples were collected in the field, spiked with 70 µg/L of JP-5 in the lab prior to preparation. The analytical results showed that the percent recoveries for JP-5 were within recommended quality assurance and quality control (QA/QC) guidelines, which demonstrates that the accuracy and precision of analyzing field samples from JPBPHH using the MEQ method is acceptable. In other words, the MS results demonstrate that the MEQ method does not prevent accurate and precise determination of TPH in field samples that contain JP-5, and by extension, other fuels.

Further details on this evaluation are provided in Appendix H.

ABSENCE OF INDICATOR COMPOUNDS ASSOCIATED WITH JP-5

Table 2 presents data from an experiment conducted by the DOH, showing the makeup of the hydrocarbons that are soluble in water and could thus be dispersed through a water distribution system. The table shows that compounds such as xylenes, toluene, naphthalene, 1-methylnaphthalene, and 2-methylnapthalene would be expected to comprise a significant fraction of TPH, if it was detected in drinking water samples.

Table 2. Water-Fuel Experiment Measured Relative Makeup of Neat- and Dissolved-Phase JP-5[4]

Chemical/ Carbon Range	Relative Weight Percent Makeup of Neat Fuel*	Makeup of Dissolved-Phase Hydrocarbons (mg/L)	Relative Makeup of Dissolved- Phase Hydrocarbons
Total BTEXMN:	1.4%	2.1	41%
Total Carbon Ranges:	98.6%	3.1	59%
Benzene	0.00%	0.01	0.2%
Toluene	0.02%	0.15	3.0%
Ethylbenzene	0.03%	0.08	1.6%
Xylenes	0.21%	0.63	12.2%
Naphthalene	0.29%	0.65	12.5%
1-Methylnaphthalene	0.54%	0.34	6.5%

[4] Reproduced from Attachment 5, Table A, page 60 in Hawai'i Department of Health (2023). Exposure Assessment: November 2021 Release of JP-5 Jet Fuel into the Joint Base Pearl Harbor Hickam Drinking Water System, June 2023. Internet (Accessed March 2024): https://health.hawaii.gov/about/files/2023/06/JBPHH-JP-5-Exposure-Assessment-HIDOH-June-2023.pdf

Chemical/ Carbon Range	Relative Weight Percent Makeup of Neat Fuel*	Makeup of Dissolved-Phase Hydrocarbons (mg/L)	Relative Makeup of Dissolved- Phase Hydrocarbons
2-Methylnaphthalene	0.36%	0.25	4.8%
C5-C8 Aliphatics	0.16%	0.01	-
>C8-C18 Aliphatics	81%	0.00	-
>C18-C32 Aliphatics	0.00%	0.00	-
>C8 Aromatics	18%	3.1	59%
Total	101%	5.2	100%

In the dissolved phase, these compounds would be transported with water in a water distribution system. Because water distribution systems are disinfected and isolated, no significant removal of these contaminants is expected from photooxidation, biodegradation, or evaporation. Consequently, frequent detections of 1-methylnaphthalene, 2-methylnaphthalene, ethylbenzene, naphthalene, toluene, or xylenes should have occurred, with concentrations in the sub-microgram to tens of micrograms per liter range. However, these compounds have been detected in less than 1% of drinking water samples collected. Indicator compounds have been detected in 13 of the 8,670 (0.2%) drinking water samples collected during LTM. TPHs were detected in two of the 13 locations where indicator compounds were detected and are summarized below:

- Ethylbenzene (0.27 µg/L) and xylenes (0.64 µg/L) were detected in Sample ID D2-TW-0007635-23157-N and were co-located with a TPH detection of 74.9 µg/L.
- Xylenes (0.31 µg/L) were detected in Sample ID F1-DL-0017719-22340-N and were co-located with a TPH detection of 59.2 µg/L.

Indicator compounds were not detected widely throughout the JBPHH System, and in the instances where indicator compounds were detected, they were primarily co-located with a TPH result that was non-detect. All results for TPHs and associated indicator compounds were below DOH action levels (i.e., EALs, MCLs, and ISPs). A summary of the indicator compounds and TPHs analyzed during LTM is presented in Table 3.

Table 3. Summary of Indicator Compounds Associated with JP-5

Analyte	Number of Detects	DOH Project Screening Level (µg/L)	Maximum Detected Concentration (µg/L)
Total TPH	2,653 of 8,668 (31%)	266 (ISP)	256
Benzene	1 of 8,638 (0.01%)	5 (MCL)	0.5
1-Methylnaphthalene	1 of 8,637 (0.01%)	10 (EAL)	0.33
2-Methylnaphthalene	1 of 8,637 (0.01%)	10 (EAL)	0.25
Ethylbenzene	4 of 8,638 (0.05%)	700 (MCL)	0.32
Naphthalene	4 of 8,637 (0.05%)	17 (EAL)	1.6
Xylenes (total)	9 of 8,638 (0.1%)	10,000 (MCL)	0.64
Toluene	1 of 8,638 (0.01%)	1,000 (MCL)	2.8

Notes:
The DOH uses multiple criteria to assess the safety of the drinking water including maximum contaminant levels (MCLs), previously established environmental action levels (EALs), and incident specific parameters (ISPs)

Consequently, the TPH detections in the JBPHH System are not likely associated with JP-5 or other petrogenic sources.

STATISTICAL ANALYSIS OF TPH DATA, CHLORINE RESIDUALS, AND SURROGATE DOSES

Based on the foregoing discussion, the interagency team of SMEs agreed that low-level TPH detections at JBPHH during the LTM are likely due to the reaction of the residual chlorine disinfectant in the potable water with natural organic precursor material or with chemical reagents employed during the laboratory analysis. Chemistry principles predict that TPH-d detections are more likely to be encountered in water with higher residual chlorine concentrations. This hypothesis was confirmed by statistical analysis of the LTM data.

Figure 5 shows box-and-whisker plots depicting TPH detects versus non-detects by distribution system zone. The median chlorine residual has been systematically higher in samples where TPH was detected, regardless of Zone.

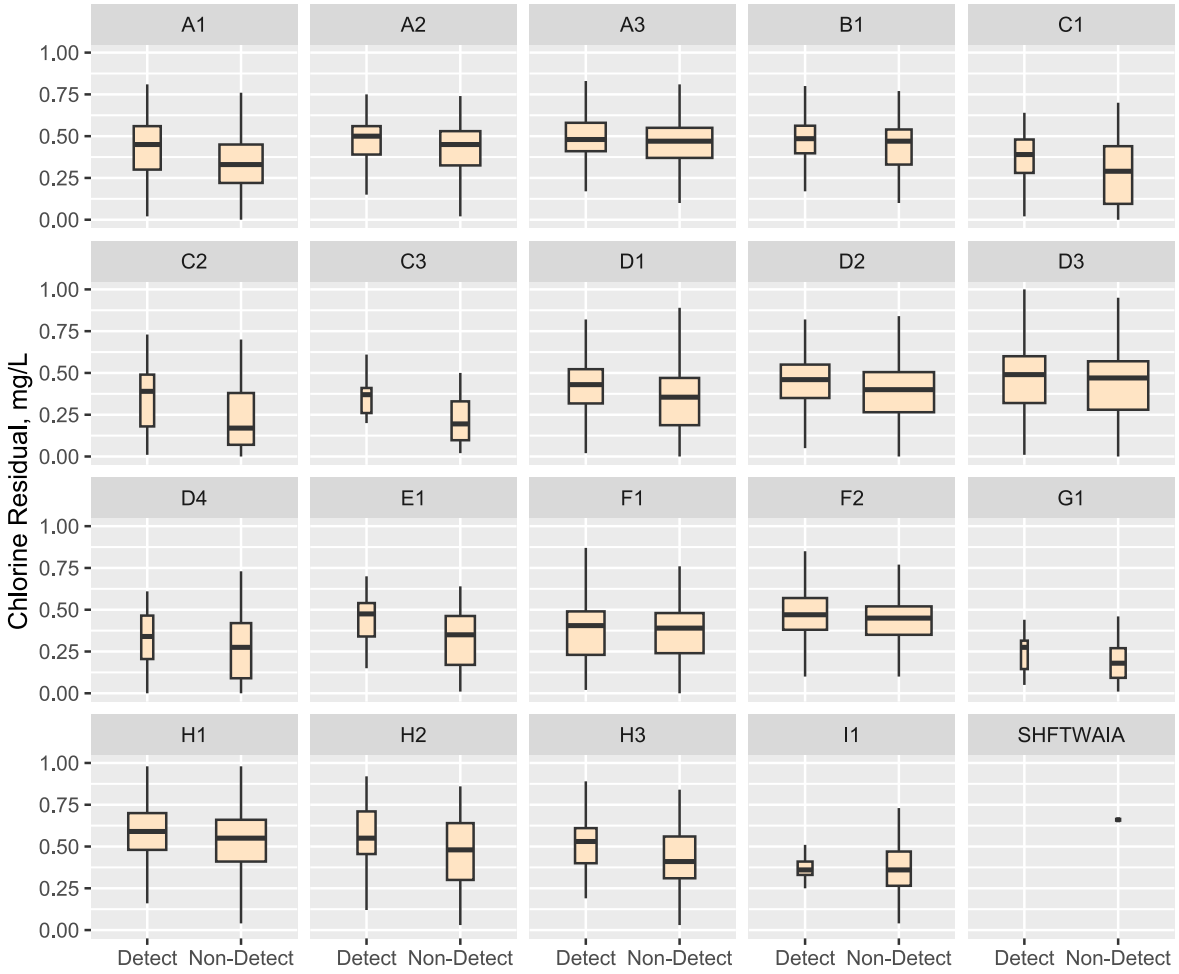


Figure 5. Effect of Residual Chlorine Concentrations on TPH Detections

A statistical model showed that the odds of a TPH-d detection increased significantly with an increase in the residual chlorine measured at the time of sample collection. In mid-January 2024, TPH-d detections started to decline again, which was suspected to be due to a reduction in the surrogate dose by a factor of 20. A surrogate is an organic chemical added during the laboratory analysis for QA/QC. Using the level of surrogate addition as another confounding variable further improved the predictive power of the statistical model: a unit increase in chlorine residual increased the odds of a TPH-d detection by a factor of 5, whereas using the high surrogate dose increased the odds of detection by a factor of 11. This finding strongly supports the hypothesis that halogenated byproducts formed during sample preparation, not jet fuel, are causing the TPH detections. More information on the data analysis with the supporting logistic model can be found in Appendix F.

Statistical analysis of residual chlorine concentrations indicates that disinfectant levels in the JBPHH Systemhave increased during the second half of 2023, coinciding with the onset of more frequent TPH detections, shown in Figure 6. Even though the higher chlorine residuals persisted in LTM Period 7, the reduction of the surrogate dose more than compensated for the effect of the disinfectant, resulting in a decrease in TPH detections.

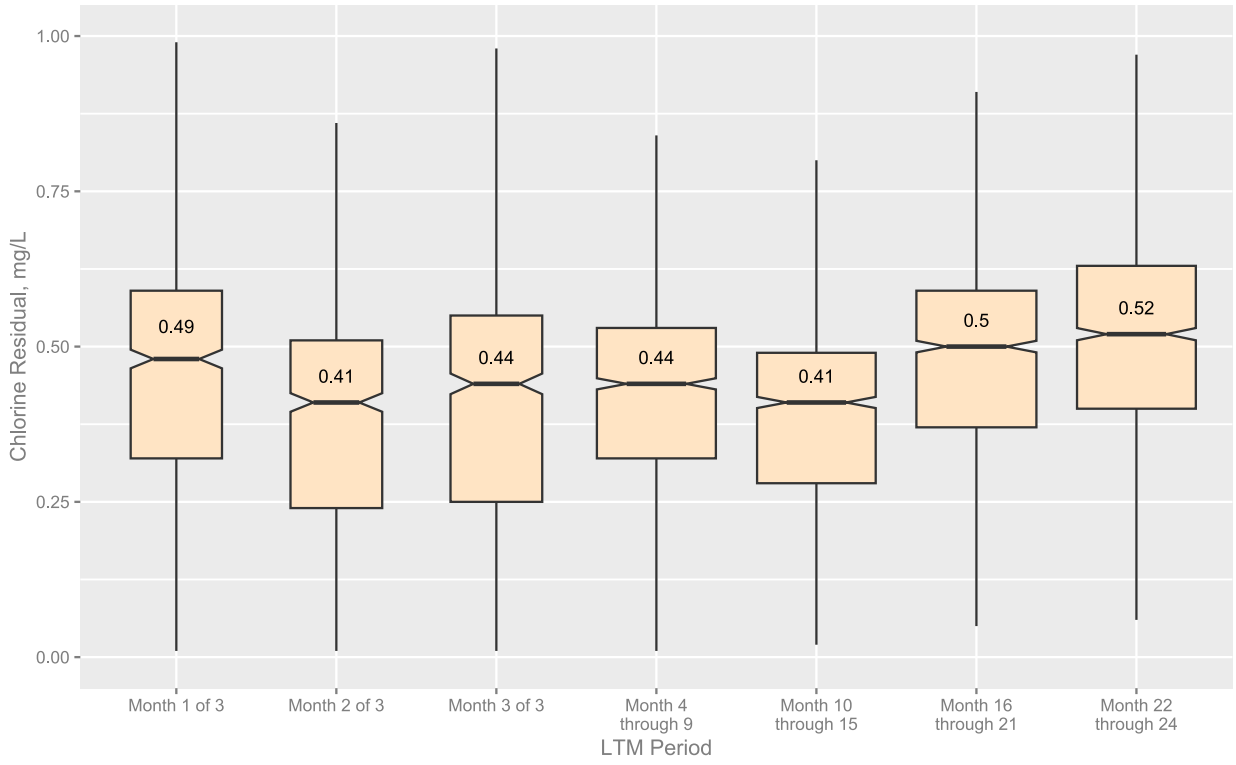


Figure 6. LTM Chlorine Residual Data

ROOT CAUSE ANALYSIS

The interagency team and SMEs performed an analysis of potential root causes for:

- TPH Detections (i.e., laboratory/method challenges),
- TPH in Waiawa Source Water,
- Regulated Disinfection By-Products (DBP),
- Residual JP-5 in the JBPHH System,
- Residual Fuel Additives in the JBPHH System,
- Biofilm Activity,
- Premise Plumbing,
- Pipe Scale Sloughing,
- Pesticides,
- Change in System Operations,
- Contaminant/Debris Introduced During Water Main Breaks, and
- Other.

No evidence was found for the following potential root causes contributing to the increase in TPH detections:

- TPH in Waiawa Source Water,
- Regulated DBP,
- Residual JP-5 in the JBPHH System,
- Residual JP-5 Additives in the JBPHH System,

- Premise Plumbing,
- Pipe Scale Sloughing,
- Pesticides,
- Change in System Operations, and
- and Contaminant/Debris Introduced During Water Main Break.

Assessed Potential Root Causes

Below, each potential root cause is presented followed by a rating (e.g., high, medium, low) that reflects the interagency team's assessment of how likely it is related to/responsible for the increase in the frequency of low-level TPH detections observed during LTM.

- Laboratory Method Challenges – High Likelihood.
- TPH in the Waiawa Source Water – Extremely Low Likelihood.
- Regulated Disinfection Byproducts – Low Likelihood.
- Residual JP-5 in Distribution System – Extremely Low Likelihood.
- Residual Fuel Additives in Distribution System – Extremely Low Likelihood.
- Biofilm Activity – Medium/Low Likelihood.
- Premise Plumbing – Low Likelihood.
- Pipe Scale Sloughing – Low Likelihood.
- Pesticides – Extremely Low Likelihood.
- Change in System Operations – Extremely Low Likelihood.
- Change in Source Water (Waiawa Shaft) Water Quality – Extremely Low Likelihood.
- Contaminant / Debris Introduced During Water Main Breaks – Extremely Low Likelihood.
- Other – Unknown Likelihood.

Additional information on the root cause analysis can be found in Appendix I.

The most likely root cause of the TPH detections identified is laboratory and method challenges. As previously discussed, ghost peaks (i.e., peaks that are not associated with TPH in the actual field sample) appear on the TPH chromatograms. Ghost peaks occur due to chemical reactions during the sample preparation and extraction process when free chlorine present in the drinking water samples reacts with organic substances, including surrogate chemicals (i.e., chemicals that are added to the sample as required by Method 8015) and the solvent that is used to extract contaminants from water. Low-level laboratory contamination was frequently observed in the method blanks. Theses laboratory and method challenges potentially had significant impacts on the low-level TPH detections (e.g., TPH concentrations detected less than 100 µg/L) because these peaks are identified as TPH and are included in the TPH concentration reported by the laboratory. As mentioned above, EPA Method 8015 is not intended for analysis of chlorinated drinking water samples, but for wastewater analysis/solid waste analysis. Quenching of samples with sodium thiosulfate eliminates the ghost peaks. Micro-Extraction via Method 3511 prior to analysis via Method 8015 minimizes the potential for laboratory contamination of the sample.

Biofilms also occur in drinking water systems and can be a source of organic material, which can react with residual chlorine and result in halogenated compounds. However, there have been no temporal changes in source water composition or chlorination rates and only very infrequent total organic carbon (TOC) detections near the MRL (i.e., 0.50 mg/L) were found during LTM.

Impact of Findings on Historical Results

Based on the comparison of the two preparation and extraction methods, the modified extraction method (MEQ Method) is recommended for future analysis because the use of the SF Method is likely the cause for ghost peaks and the increased frequency of low-level TPH detections. The modified method will improve the accuracy of results by eliminating the two known pathways for the introduction of method artifacts. This improved accuracy does not negatively impact the usability of the results generated under the existing procedure; fuel related compounds would have been detected had they been present. However, the existing results are likely biased high due to the presence of method artifacts.

Recommended Path Forward for EPA Method 8015 Samples

Moving forward, the interagency team recommends:

1. Regulatory concurrence for samples to be quenched with sodium thiosulfate to remove free chlorine from the water, thereby eliminating ghost peaks tied to elevated TPH results. Sample spikes will be extracted at the MRL with and without sodium thiosulfate to ensure addition of sodium thiosulfate does not create a bias.
2. Regulatory concurrence on using micro-extraction for the Extended Drinking Water Monitoring (EDWM) Plan sampling with Method 8015 to address any impurities in solvents and lab equipment. The use of the micro-extraction procedure will greatly minimize, if not eliminate, the introduction of potential sources of error during laboratory handling.
3. Naval Sea Systems Command (NAVSEA) Laboratory Quality and Accreditation Office (LQAO) will also inspect and evaluate the laboratory.

Conclusion

The LOEs evaluated and summarized in this Tech Memo (spatial and temporal distribution of TPH results, hydraulic modeling, evaluation of analytical methods, analysis of chlorine residual, analysis of the side-by-side comparison, and absence of indicator compounds) and information from the root cause analysis support the hypothesis that the low-level detections of TPH observed during LTM are not associated with the November 2021 release of JP-5 and/or another release from Red Hill in the JBPHH System and are most likely associated with laboratory (e.g., method blank contamination/laboratory cross-contamination) and method challenges (e.g., interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples). The interagency team recommends that all future analyses of drinking water samples be quenched with sodium thiosulfate, followed by micro-extraction via Method 3511 and then analysis via Method 8015.

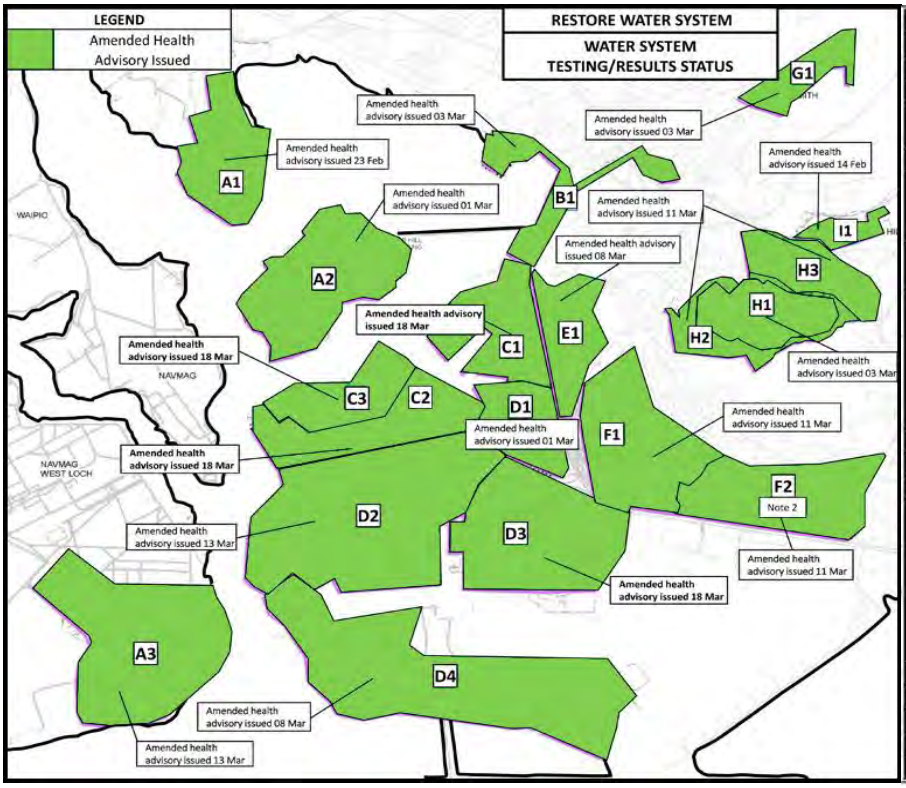
LIST OF APPENDICES

A. Spatial and Temporal Distribution of TPH Results
B. Spatial Analysis and Hydraulic Modeling
C. Sodium Thiosulfate Evaluation
D. ELIPS Evaluation Report of Red Hill Historical Data
E. Comparison of EPA Method 8015 Standard Extraction and Micro-Extraction Results
F. LTM Chlorine Residual Data Analysis
G. JBPHH Water System TPH Side-by-Side Comparison
H. TPH Root Cause Analysis Summary

Appendix A. Spatial and Temporal Distribution of TPH Results

This appendix presents the spatial and temporal distribution of TPH results during the Long-Term Monitoring (LTM) Program. It includes a number of tables and figures that demonstrate the pattern of low-level TPH detections. The following bullets provide important context for interpreting the data presented on the figures and tables:

- Figure A-1 shows the extent of the JBPHH drinking water system (System), broken down by Zones designated by the Navy during the initial spill response.



Zone	Community
A1	Pearl City Peninsula
A2	Ford Island
A3	Iroquois Point
B1	McGrew
	Halawa
C1	SUB BASE
C2	Hale Alii
	Marine Barracks
	Hospital Point
C3	Shipyard
	Hospital Point
D1	Hale Moku
	Hokulani
D2	Hickam
	Hale Na Koa
	Officer Field Area
	Onizuka Village
D3	Earhart Village
D4	Hawaii Air National Guard
E1	Makalapa
F1	NEX
	Moanalua Terrace
F2	Catlin Park
	Maloelap
	Doris Miller
	Halsey Terrace
	Radford Terrace
G1	Camp Smith
H1	Aliamanu Military Reservation
H2	Aliamanu Military Reservation
H3	Aliamanu Military Reservation
I1	Red Hill Housing

Figure A-1. JBPHH Water Distribution System Zones

- As presented in Appendix B Spatial Analysis of Hydraulic Modeling, when the JP-5 release occurred at Red Hill on November 20, 2021, the Red Hill Shaft contributed up to:
  - 100% of the potable water to the following Zones:
    - Zones H1, H2, and H3: Aliamanu Military Reservation
    - Zone I1: Red Hill
    - Zone F1: NEX, Moanalua Terrace
    - Zone F2: Catlin Park, Maloelap, Doris Miller, Halsey Terrace, Radford Terrace
  - 0% of the potable water to the following Zones (i.e., 100% of the water in these Zones was sourced from the Navy Aiea/Halawa Shaft/Waiawa Shaft at the time of the Red Hill release):

        - Zone A1: Pearl City Peninsula
        - Zone A2: Ford Island
        - Zone B1: McGrew/Halawa
        - Zone C1: Sub Base
        - Zone G1: Camp Smith
    - The remainder of the Zones (i.e., A3, C2, C3, D1, D2, D3, D4, and E1) on the JBPHH System received blended water from the Waiawa Shaft, Navy Aiea/Halawa Shaft, and Red Hill Shaft at the time of the Red Hill release.
- Since March 16, 2022 (LTM Period 1 Samples were collected March through April of 2022), the drinking water from JBPHH in Zones H1, H2, and H3 (Aliamanu Military Reservation) has been treated by inline Granular Activated Carbon (GAC) filters and re-chlorinated prior to final distribution to the homes.
- Since October 14, 2022 (LTM Period 4 Samples were Collected June through December of 2022), the drinking water from JBPHH in Zone I1 (Red Hill Housing) has been treated by inline GAC filters and re-chlorinated prior to final distribution to the homes.

Note: The Spatial/Temporal evaluations of TPH results compare results from all Zones to: (1) those that received 0% of their water from Red Hill (Zones: A1, A2, B1, C1, and G1) and (2) those Zones protected by inline GAC treatment (Zones: H1, H2, H3, and I1)

These comparisons are critical to interpreting the spatial distribution of TPH results during LTM because TPH would not be expected to be detected in these Zones due to (1) Not receiving source water from the Red Hill Shaft (therefore, JP-5 from the Red Hill Release was not transported to these Zones) and (2) the inline GAC filters should remove any TPH (and other organics) from the drinking water prior to distribution.

Background

Table A-1 presents the number of residences in each Zone, to-date, during the LTM Program. Note that Zone C2 only has 32 total residences, Zone E1 only has 89 total residences, and Zone G1 only has 10 total residences which adds uncertainty (due to low statistical power) to compare the frequency of detections within these Zones to other Zones on the JBPHH System.

Table A-1. Total Number of Residences Sampled Per Zone and LTM Period

LTM Period	Total Number of Residences Sampled Per Zone and LTM Period															
	A1	A2	A3	B1	C2	D1	D2	D3	E1	F1	F2	G1	H1	H2	H3	I1
Total # of Residences in Zone	**635**	**411**	**1,459**	**227**	**32**	**508**	**1,577**	**912**	**89**	**752**	**1,435**	**10**	**918**	**230**	**379**	**135**
Period 1 (Month 1)	37	24	83	12	2	31	92	50	6	43	80	3	52	12	24	9
Period 2 (Month 2)	37	26	82	17	3	29	88	53	5	42	80	2	52	14	20	7
Period 3 (Month 3)	35	27	83	14	2	27	88	51	5	43	84	2	52	14	21	7
Period 4 (Month 4 – 9)	73	51	162	25	2	55	175	100	11	86	158	1	106	27	40	16
Period 5 (Month 10 – 15)	71	61	166	28	0	59	192	101	15	84	164	0	119	27	41	17
Period 6 (16 – 21)	74	57	166	29	1	64	245	109	18	89	195	0	124	26	43	18
Period 7 (22 – 24)	77	56	160	30	0	68	228	132	8	93	183	0	120	27	47	17
Total # of Residences Sampled in LTM	**404**	**302**	**902**	**155**	**10**	**333**	**1,108**	**596**	**68**	**480**	**944**	**8**	**625**	**147**	**236**	**91**

Notes:
Only Zones with residential samples are shown in this table. Zones C1, C3, and D4 do not have residential buildings in the zone.

Tabular Summary of TPH Detections by Zone, Period, and TPH Concentrations

Table A-2 presents the frequency of TPH detections[1] in each Zone by LTM Period and also broken out by:

- Frequency of all TPH Detections (regardless of concentration)
- Frequency of TPH Detections < 100 µg/L
- Frequency of TPH Detections ≥ 100 µg/L and < 200 µg/L
- Frequency of TPH Detections ≥ 200 µg/L and < 266 µg/L

Figure A-2 provides a time-series graph of TPH-d concentrations measured from March 2022 through mid-March 2024 in the zones outlined in Figure A-1 and at the Waiawa Shaft, which provided all water to the JBPHH water distribution system. The data is color-coded by analytical laboratory data qualifiers, which included non-detects (“U” and “UJ” qualified values), detects where associated numerical value is approximate (“J” qualifier), and detects without qualifiers.

The data in Figure A-2 show frequent TPH-d “J” detections in all areas of the distribution system. Since July 2023, there has been a discernible increase in detections significantly above the reporting limit. Note the logarithmic scale on the ordinate of the graphs.

Only a few samples were collected at the groundwater source (i.e., Waiawa Shaft, which is abbreviated as SHFTWAIA in Figure A-2). Waiawa Shaft samples were collected downstream of the chlorine addition and some of the sample results were reported under Zone I1. The

[1] Laboratory results for TPH obtained using micro-extraction for sample preparation (EPA Method SW3511) and dechlorination (“quenching”) were omitted from this analysis.

Waiawa Shaft has been the sole water source since the Navy Aiea/Halawa and Red Hill Shafts were secured following the release. There was also an increase in detections for TPH-o, although it was only clearly discernible in two zones (Figure A-3) because oil-range organics were mostly not detected. Gasoline-range organics (TPH-g) were not detected.

Table A-2. Total TPH Detection Frequency for Each Zone by LTM Period (Residences Only)

LTM Period	A1	A2	A3	B1	C2	D1	D2	D3	E1	F1	F2	G1	H1	H2	H3	I1	Weighted Average
# of Residences in Zone	635	411	1,459	227	32	508	1,577	912	89	752	1,435	10	918	230	379	135	
Frequency of Detection of TPH (All Detections) - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	2.7	33	19.2	67	50	58.5	29	16	50	16	16.5	0	9.6	17	38	0	22
Period 2 (Month 2)	0	12	8.5	0	0	21	6.8	15	20	12	1.3	0	15	7.1	0	0	8
Period 3 (Month 3)	33.9	19	25.2	0	50	22	27.3	43	0	32.3	21.4	0	7.7	21	33.8	29	25
Period 4 (Month 4 – 9)	31.4	36.9	24.2	48	100	38	26.6	19	9.1	29.2	28	0	39.8	33.7	22.5	25	29
Period 5 (Month 10 – 15)	29.2	31	34	36	--	41	40.7	39.9	27	65	23	--	44	41	39	30	37
Period 6 (Month 16 – 21)	58.5	54.8	47.8	65.4	100	79.9	62	65.62	72	66.1	66	--	83.6	53.8	61	78	63
Period 7 (Month 22 – 24)	16	5.4	6.9	3.3	--	7.4	28	36.4	0	1.1	30.6	--	3.8	3.7	2.1	0	16
Frequency of Detection of TPH < 100 ug/L - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	2.7	33	18	67	50	52	29	14	50	16	14	0	9.6	17	38	0	21
Period 2 (Month 2)	0	12	7.3	0	0	21	6.8	15	0	12	1.3	0	15	7.1	0	0	8
Period 3 (Month 3)	31	19	24	0	50	22	25	41	0	30	19	0	7.7	21	29	29	24
Period 4 (Month 4 – 9)	30	31	23	48	100	38	26	18	9.1	28	28	0	37	30	20	25	28
Period 5 (Month 10 – 15)	25	31	34	36	--	41	36	34	27	65	23	--	44	30	39	12	35
Period 6 (Month 16 – 21)	53	53	46	62	100	72	46	61	72	55	53	--	69	50	47	67	54
Period 7 (Month 22 – 24)	13	5.4	6.3	0	--	7.4	17.5	27	0	1.1	20	--	2.7	0	2.1	0	11
Frequency of Detection of TPH >= 100 & < 200 ug/L - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	0	0	1.2	0	0	6.5	0	2	0	0	2.5	0	0	0	0	0	1
Period 2 (Month 2)	0	0	1.2	0	0	0	0	0	20	0	0	0	0	0	0	0	0
Period 3 (Month 3)	2.9	0	1.2	0	0	0	2.3	2	0	2.3	2.4	0	0	0	4.8	0	2
Period 4 (Month 4 – 9):	1.4	5.9	1.2	0	0	0	0.57	1	0	1.2	0	0	2.8	3.7	2.5	0	1
Period 5 (Month 10 – 15)	4.2	0	0	0	--	0	4.7	5.9	0	0	0	--	0	11	0	18	2
Period 6 (Month 16 – 21)	4.1	1.8	1.8	3.4	0	6.3	14	3.7	0	10	12	--	13	3.8	14	11	8
Period 7 (Month 22 – 24)	3	0	0.6	3.3	--	0	10.5	9.1	0	0	9.3	--	1.1	3.7	0	0	4
Frequency of Detection of TPH >= 200 & < 266 ug/L - Based on Number of Samples Collected During the LTM Period (Typically 5% of Homes During Periods 1 - 3 and 10% of Homes During Periods 4 - 7)																	
Period 1 (Month 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 2 (Month 2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 3 (Month 3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 4 (Month 4 – 9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period 5 (Month 10 – 15)	0	0	0	0	--	0	0	0	0	0	0	--	0	0	0	0	0
Period 6 (Month 16 – 21)	1.4	0	0	0	0	1.6	2	0.92	0	1.1	1	--	1.6	0	0	0	1
Period 7 (Month 22 – 24)	0	0	0	0	--	0	0	0.80	0	0	1.1	--	0	0	0	0	0

Notes:

Zones with 100% Waiawa Shaft Water During Red Hill Release in November 2021.

Zones with Blended Red Hill Shaft and Waiawa Shaft Water During Red Hill Release in November 2021.

Zones with 75% - 100% Red Hill Shaft Water During Red Hill Release in November 2021.

Zones with Inline Granular Activated Carbon Treatment on the Drinking Water Distribution System.

All Total TPH Detections were less than the ISP of 266 ug/L.

The Frequency of Detection is calculated by the number of TPH detections divided by the number of residences sampled in each Zone during the specific LTM Period and does not represent the Frequency of Detection for all residences in each Zone.

--: No residential samples were collected during this period.

Figure A-2. JBPHH Long Term Monitoring (LTM) TPH-d Data

Figure A-3. JBPHH Long Term Monitoring (LTM) TPH-o Data

TPH detections decreased again in the last LTM monitoring period (January through March 2024), presumably because the laboratory reduced the concentration of the surrogate o-Terphenyl from 2,000 µg/L to 100 µg/L on January 18, 2024. Reactions between residual chlorine in the sample and o-Terphenyl are believed to have caused the increased TPH detections as described in Appendix C.

Spatial (Visual) Summary of TPH Detections by Zone, Period, and TPH Concentrations

Figures A-4 through A-10, present the TPH results for all residences sampled during LTM Period 1 through LTM Period 7. *Note: These figures are included in a separate PDF in order to keep the file size of this Appendix as small as possible for reader usability.*

Spatial and Temporal Distribution of TPH Results Observations/Findings/Conclusions

Table A-2 and Figures A-4 through A-10 present the spatial and temporal distribution of TPH detections from LTM Period 1 (March 2022) through LTM Period 7 (January through March 2024) and the results are summarized below:

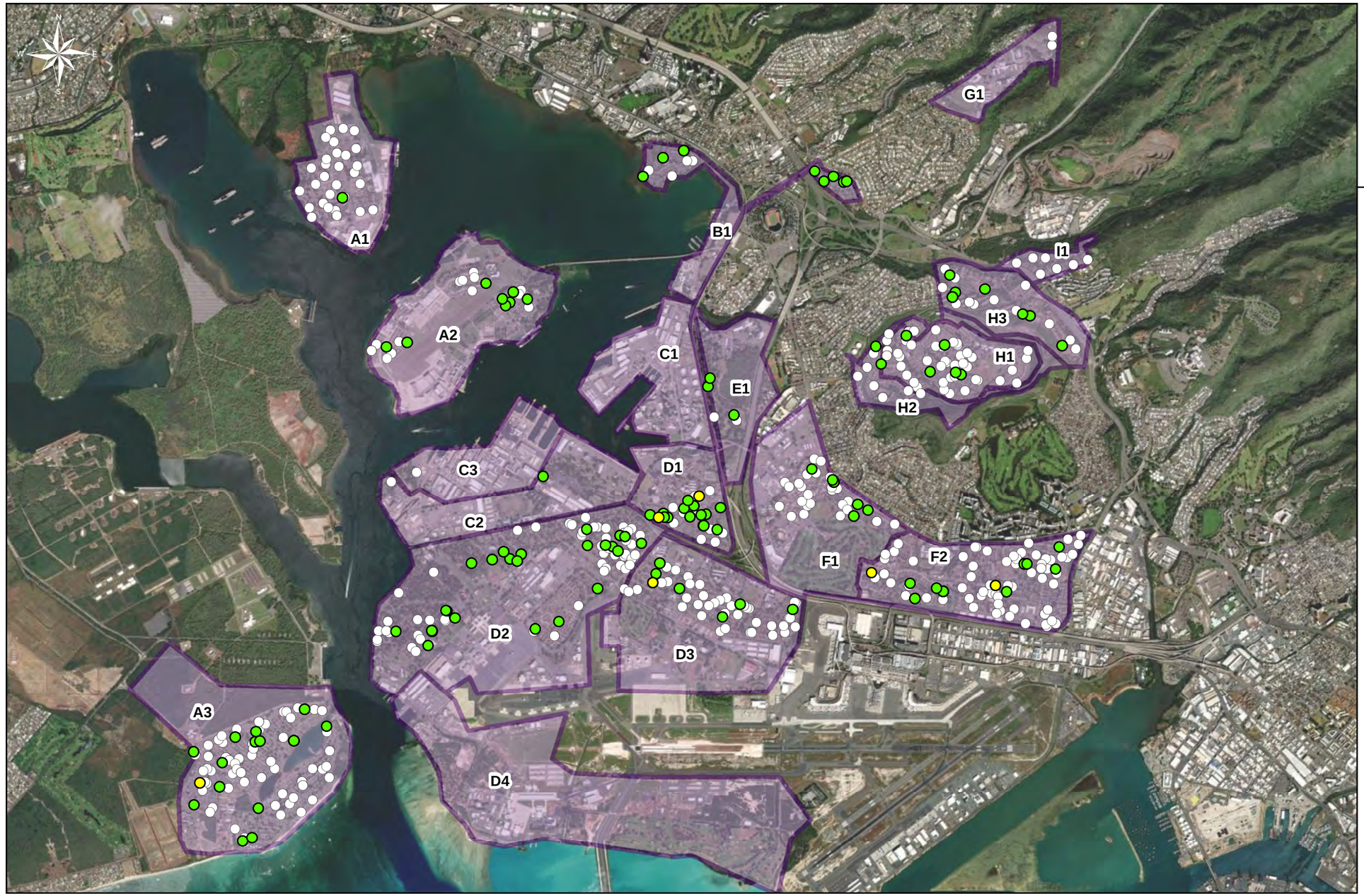
- The weighted average (weighted based on the total number of homes in each Zone) frequency of low-level TPH detections (i.e., values < 100 µg/L) nearly tripled from Period 1 to Period 6 (i.e., 22, 8, 25, 29, 37, and 63 see Table A-2) over the 21-month duration of LTM and generally increased slightly every LTM period (except for Period 2, which decreased). There was a marked increase in the frequency of low-level TPH detections between Period 5 (37%) and Period 6 (63%; see Table A-2). However, the frequency of low-level TPH detections (i.e., values < 100 µg/L) decreased during Period 7 (16%; see Table A-2).
- The majority (typically between 85% and 100%) of all TPH detections were less than 100 µg/L in all Zones over all LTM Periods (see Table A-2).
- No TPH concentrations ≥ 200 µg/L and < 266 µg/L were detected in any Zone until Period 6 and Period 7 of LTM. During Period 6 frequency of TPH detections ≥ 200 µg/L and < 266 µg/L in Zones A1, D1, D2, D3, F1, F2, and H1 were consistent (1.4, 1.6, 2, 0.92, 1.1, 1, and 1.6%, respectively). During Period 7 frequency of TPH detections ≥ 200 µg/L and < 266 µg/L in Zones D3 and F2 were consistent (0.80 and 1.1%, respectively) and similar to the trends observed in LTM Period 6 (see Table A-2).
- Temporal[2] changes in the frequency of TPH detections from one LTM Period to the next were consistent (with some exceptions) across all Zones (see Table A-2). Not including Zones C2 (32 residences, E1 (89 residences), and G1 (10 residences), which have much fewer residences than the rest of the Zones, makes this comparison more difficult due to the much smaller sample sizes from these Zones.
- Zones B1, D1, D2, D3, F1, F2, H1, H3, and I1 had > 60% frequency of detection of TPH during LTM Period 6 (see Table A-2). Not including Zones C2 (32 residences), E1 (89 residences), and G1 (10 residences) which have much fewer residences than the rest of the Zones and thus make this comparison more difficult because of reduced statistical power due to much smaller sample sizes from these Zones. No Zones had > 60% frequency of detection of TPH during LTM Period 7 (see Table A-2).
- The spatial distribution of TPH detections appears to be randomly distributed throughout each Zone within each LTM Period (see Figures A-4 – A-10).
    - LTM Period 2, is anomalous relative to the other LTM Periods because the weighted average frequency of TPH detections was 8%; however, low level detections were observed in the majority of the Zones that were sampled (see Figure A-5).
    - LTM Periods 1, 3, and 4 had similar weighted average frequency of detections (at 22, 25, and 27%, respectively) and the spatial distribution of TPH detections was similar across all Zones (see Figures A-4, A-6, and A-7). Note that approximately 5% of homes in each Zone were sampled during LTM Periods 1 through 3 and approximately 10% of homes were sampled during LTM Periods 4 through 6 so there is a higher density of

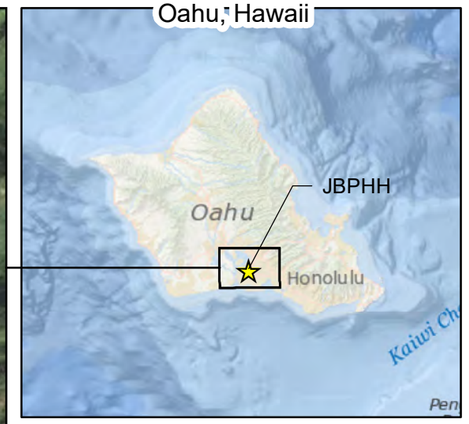
[2] Temporal changes are changes over time.

"dots" on Figures A-6 and A-7 than Figure A-1 but the overall spatial pattern of detections is random and consistent between the LTM Periods.

- LTM Periods 5 and 6 had weighted average frequency of detections of 37%, and 63%, respectively, which are higher than any other LTM Period. However, the spatial distribution of TPH detections is similar across all Zones (see Figures A-8 and A-9).
- LTM Period 7 had a weighted average frequency of detections of 16%, which is similar to the detection frequency observed during LTM Periods 1, 3, and 4, and lower than the detection frequency observed during Periods 5 and 6 (see Figure A-10).

- The frequency of TPH detections observed in Zones that did not receive water from the Red Hill Shaft during the release in November 2021 (i.e., Zones A1, A2, B1, C1, and G1) and Zones that received the majority of their water from the Red Hill Shaft (F1, F2) were similar (with occasional exceptions) over the Periods 1 through 7 of the LTM Program. If residual fuel from the Red Hill release in November 2021 were still impacting the JBPHH System, it is expected the impacts would be localized to the Zones that obtained the majority of their drinking water, at the time of the release, from the Red Hill Shaft (e.g., Zones F1 and F2) and not in other parts of the System. However, as the frequency of TPH detections are fairly consistently distributed throughout all Zones it is highly unlikely that residual fuel from the Red Hill release is responsible for the low-level TPH detections that have been observed over the LTM timeline (see Table A-2 and Figures A-4 through A-10).
- The frequency of TPH detections observed in Zones that did not receive water from the Red Hill Shaft during the release in November 2021 (i.e., Zones A1, A2, B1, C1, and G1) and Zones that have inline GAC filters to remove potential contaminants (if any) from JBPHH drinking water prior to distribution to the residences (i.e., Zones H1, H2, H3, and I1) were similar (with occasional exceptions) over the Periods 1 through 7 of the LTM Program. If TPH was present in the JBPHH distribution system (e.g., due to another source of contamination [i.e., not associated with the release of JP-5 from Red Hill]), detections of TPH contamination would be expected in the influent samples to the inline GACs in Zones H1, H2, H3, and I1). However, according to the U.S. Army which owns/operates the GAC treatment systems, only very low and infrequent detections of any TPH fractions have been observed. In addition, the inline GACs should remove TPH (and numerous other contaminants), if present, from the drinking water prior to distribution to the residences in Zones H1, H2, H3, and I1. However, the frequency of TPH detections and temporal changes in TPH detections in these Zones are similar to the TPH detections and temporal changes in TPH detections in those without GAC treatment. Therefore, based on these results it is highly unlikely that there is another source of contamination impacting the JBPHH drinking water system (see Table A-2 and Figures A-4 through A-10).





Legend

LTM Period 1 Sampling Locations

- Non-Detect
- Less than 100 ug/L
- 100 ug/L ≤ X < 200 ug/L
- 200 ug/L ≤ X < 266 ug/L
- Greater than 266 ug/L
- LTM Zones

Notes:
The Total TPH ISP is 266 ug/L.
A total of 561 residential drinking water samples were collected during LTM Period 1 and analyzed for Total TPHs. Total TPHs were detected in 126 of 561 (22%) residential samples with detected concentrations ranging between 50 ug/L and 163 ug/L.

0 0.5 1 1.5 Miles

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LTM Period 1 Residential Drinking Water Total TPH Results
Joint Base Pearl Harbor-Hickam

Figure A-4

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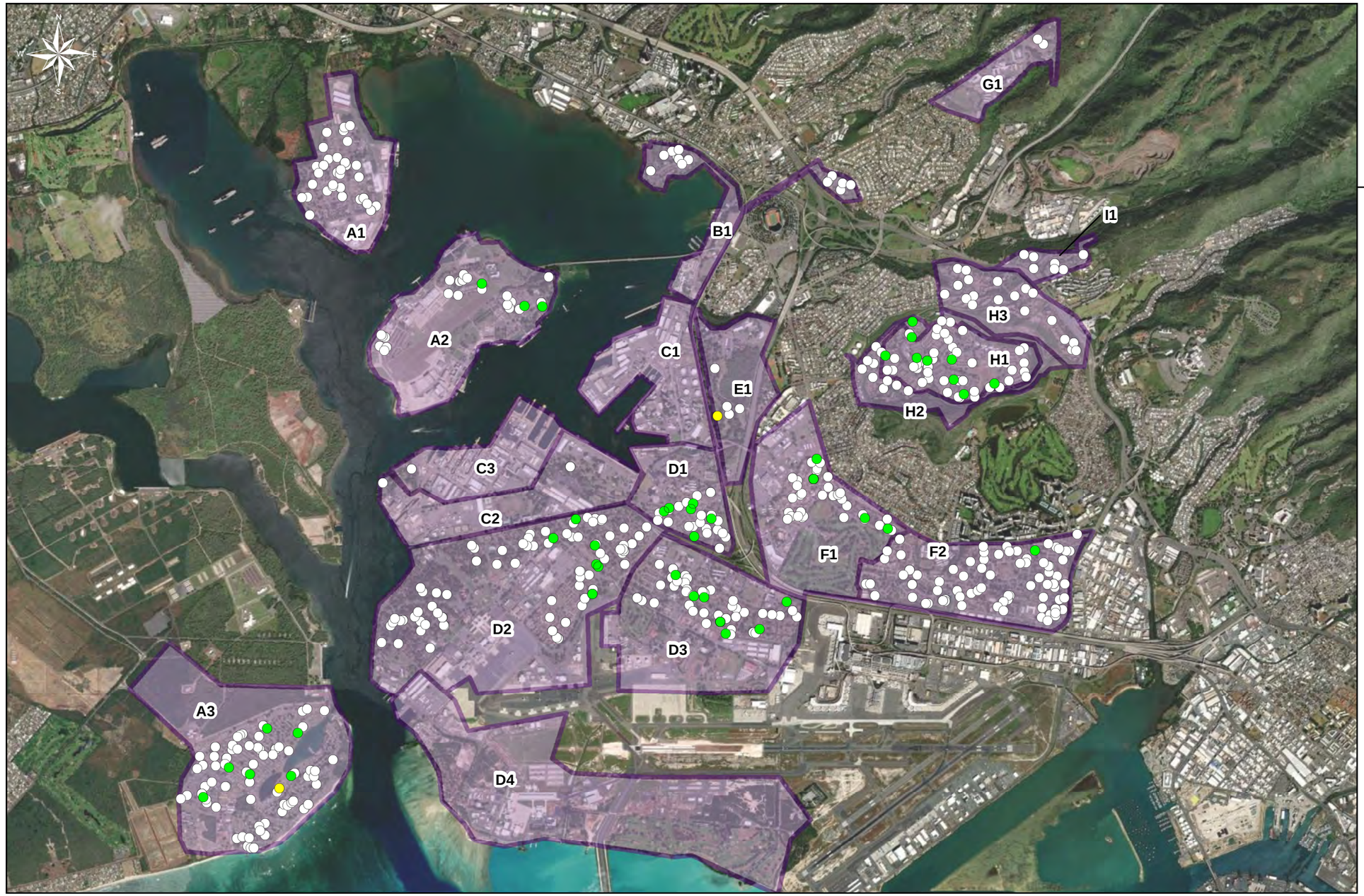

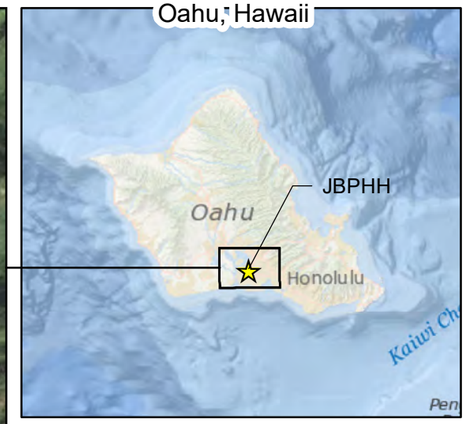

Legend

LTM Period 2 Sampling Locations

- Non-Detect
- Less than 100 ug/L
- 100 ug/L ≤ X < 200 ug/L
- 200 ug/L ≤ X < 266 ug/L
- Greater than 266 ug/L
- LTM Zones

Notes:
The Total TPH ISP is 266 ug/L.
A total of 558 residential drinking water samples were collected during LTM Period 2 and analyzed for Total TPHs. Total TPHs were detected in 46 of 558 (8.2%) residential samples with detected concentrations ranging between 51 ug/L and 159 ug/L.

0 0.5 1 1.5 Miles

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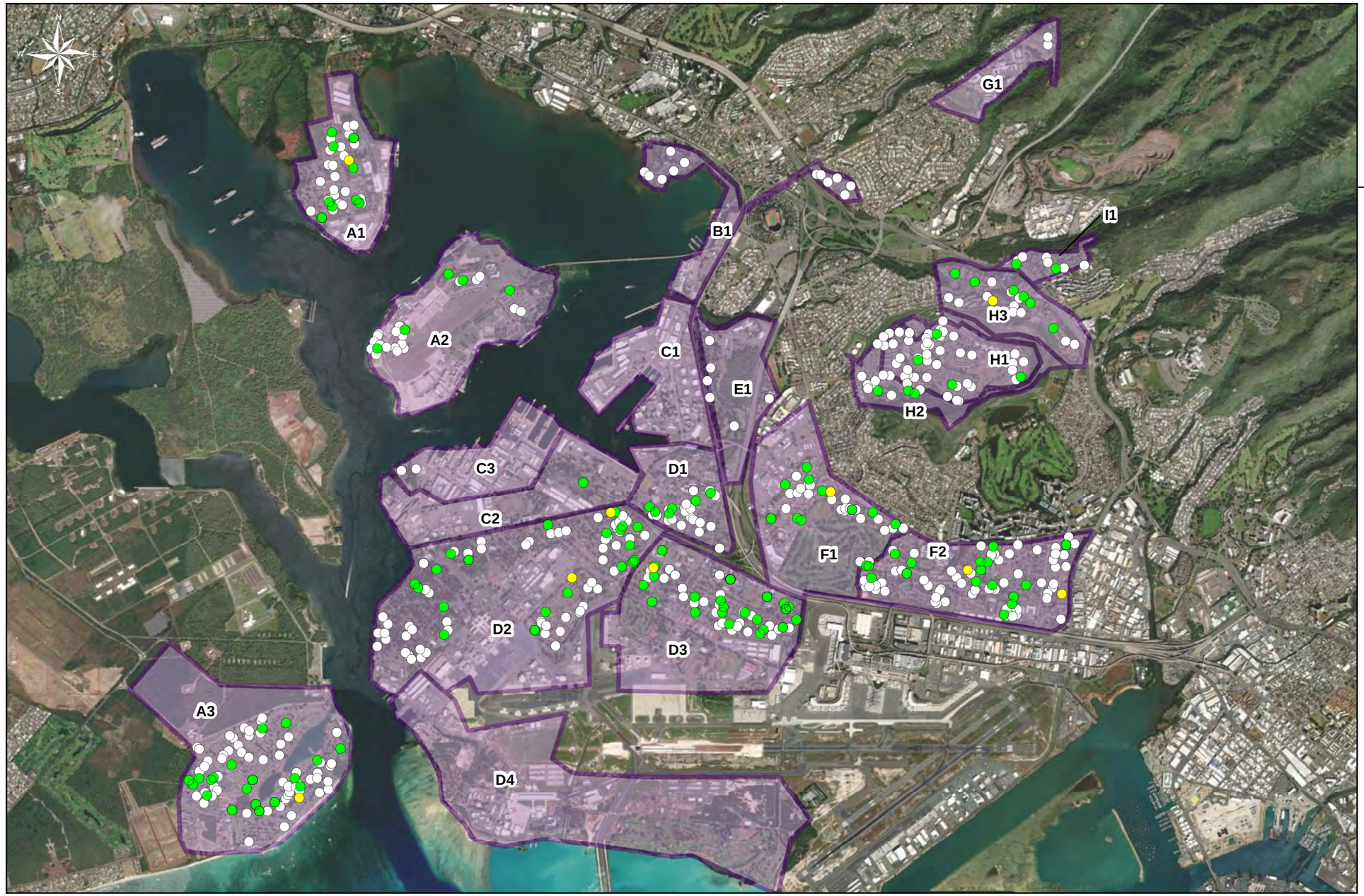
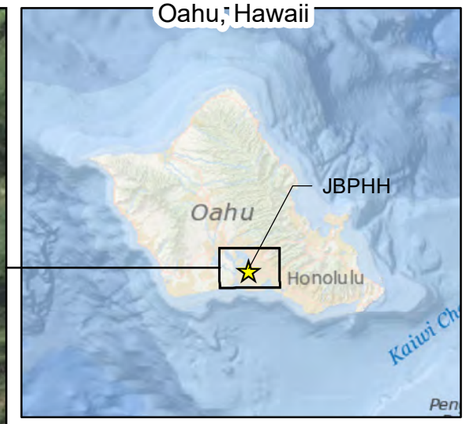
LTM Period 2 Residential Drinking Water Total TPH Results
Joint Base Pearl Harbor-Hickam

Figure A-5





Legend

LTM Period 3 Sampling Locations

- Non-Detect
- Less than 100 ug/L
- 100 ug/L ≤ X < 200 ug/L
- 200 ug/L ≤ X < 266 ug/L
- Greater than 266 ug/L
- LTM Zones

Notes:
The Total TPH ISP is 266 ug/L.
A total of 619 residential drinking water samples were collected during LTM Period 3 and analyzed for Total TPHs. Total TPHs were detected in 148 of 619 (24%) residential samples with detected concentrations ranging between 50 ug/L and 148 ug/L.

0 0.5 1 1.5 Miles

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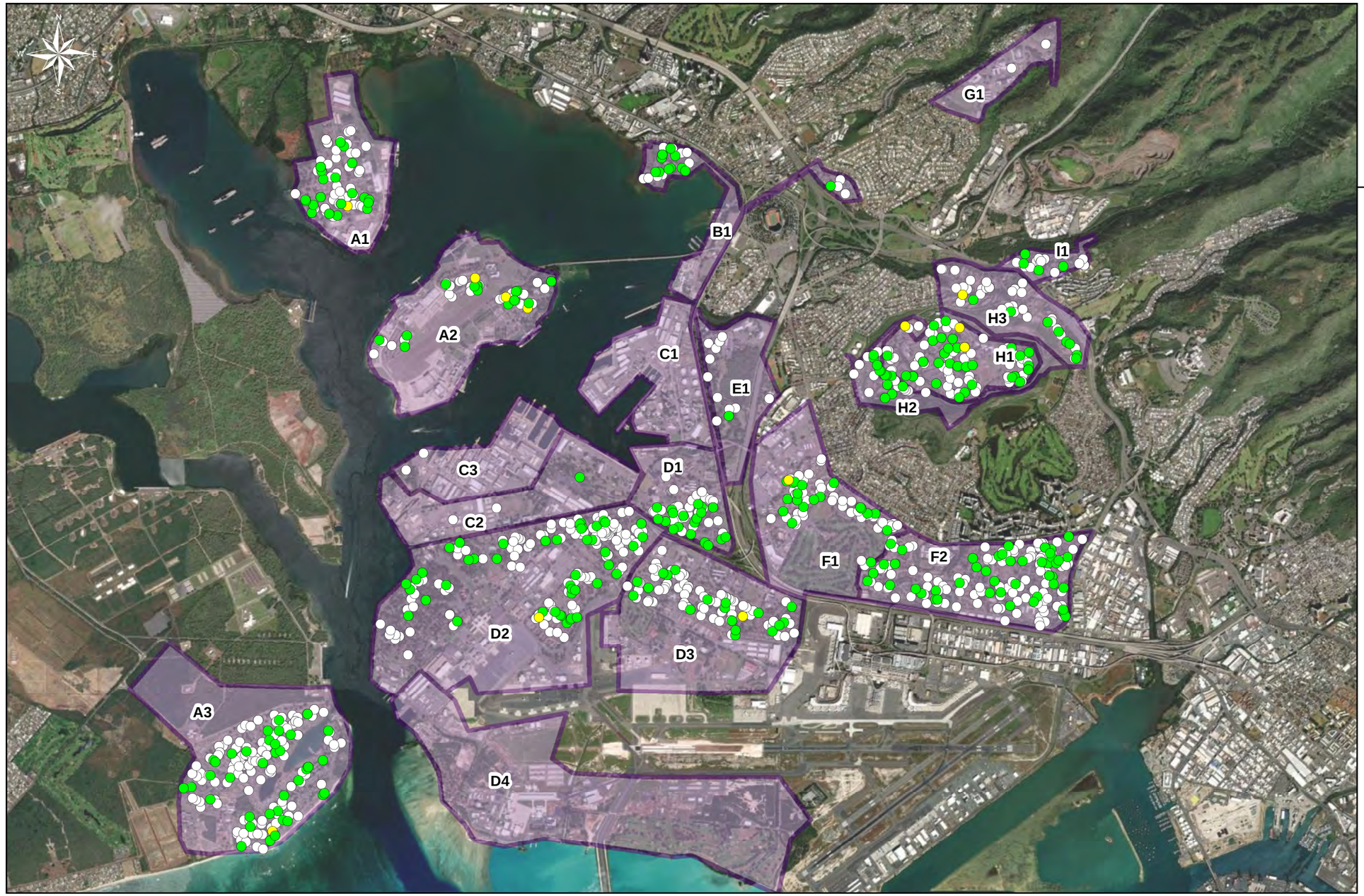
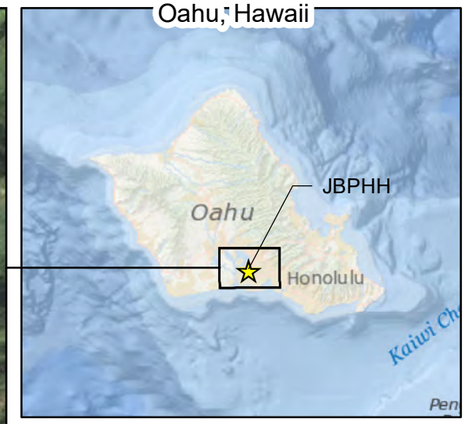
LTM Period 3 Residential Drinking Water Total TPH Results
Joint Base Pearl Harbor-Hickam

Figure A-6





Legend

LTM Period 4 Sampling Locations

- Non-Detect
- Less than 100 ug/L
- 100 ug/L ≤ X < 200 ug/L
- 200 ug/L ≤ X < 266 ug/L
- Greater than 266 ug/L
- LTM Zones

Notes:
The Total TPH ISP is 266 ug/L.
A total of 1,089 residential drinking water samples were collected during LTM Period 4 and analyzed for Total TPHs. Total TPHs were detected in 317 of 1,089 (29%) residential samples with detected concentrations ranging between 50 ug/L and 159 ug/L.

0 0.5 1 1.5 Miles

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LTM Period 4 Residential Drinking Water Total TPH Results
Joint Base Pearl Harbor-Hickam

Figure A-7

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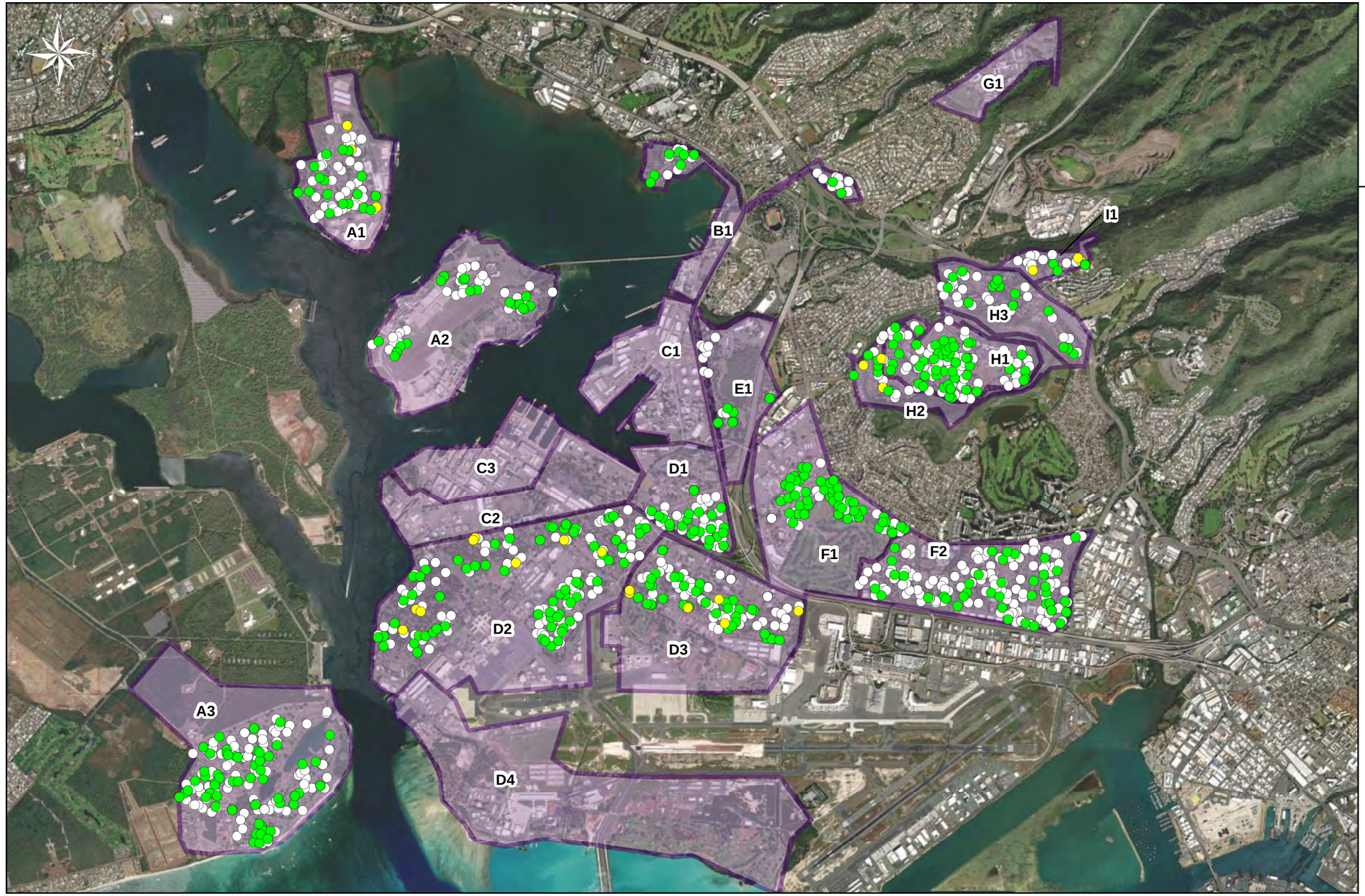
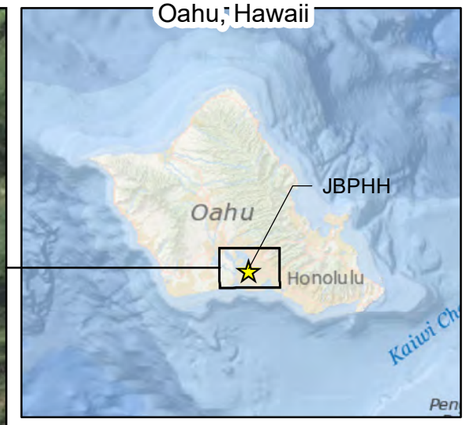




Legend

LTM Period 5 Sampling Locations

- Non-Detect
- Less than 100 ug/L
- 100 ug/L ≤ X < 200 ug/L
- 200 ug/L ≤ X < 266 ug/L
- Greater than 266 ug/L
- LTM Zones

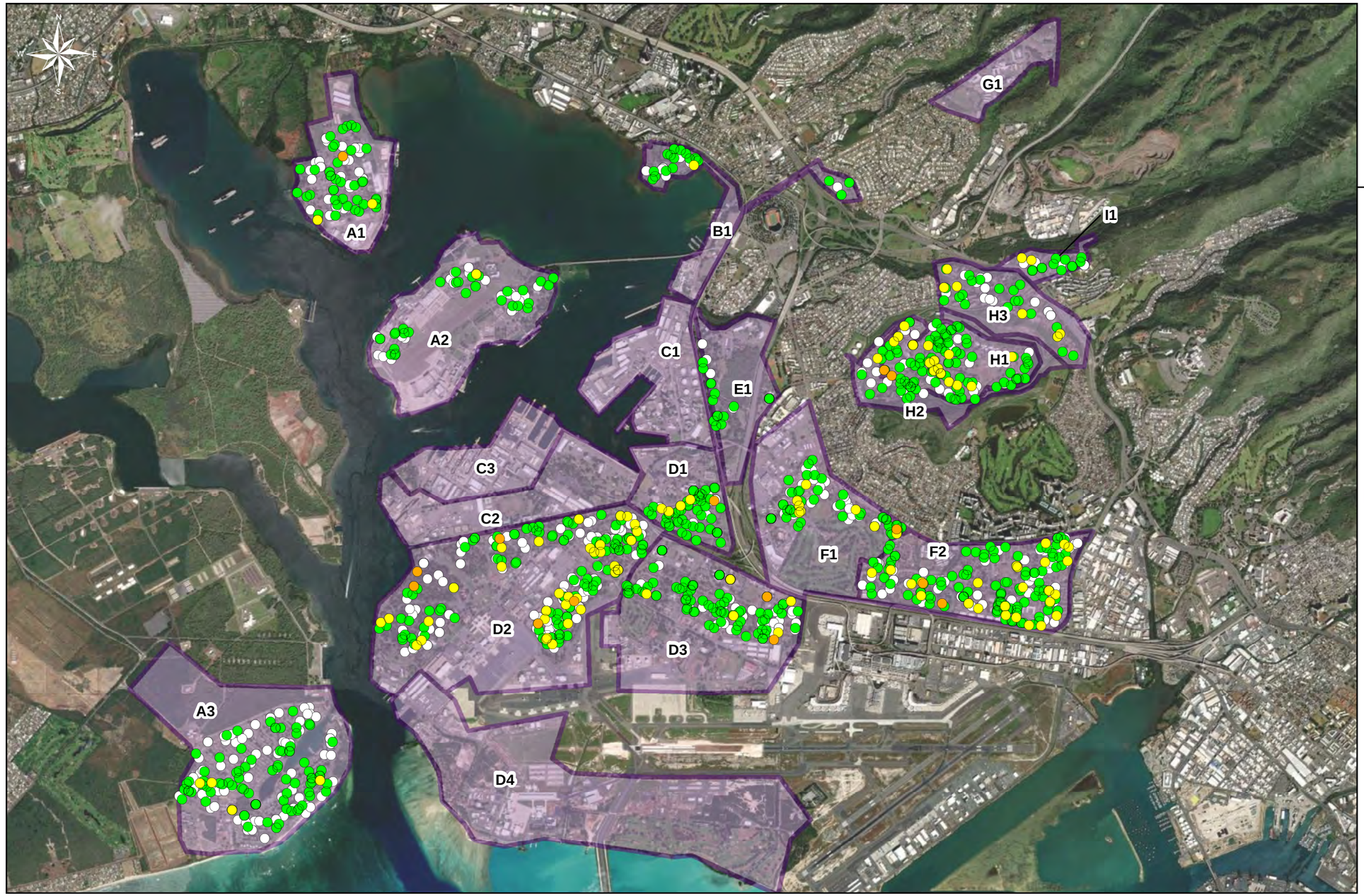
Notes:
The Total TPH ISP is 266 ug/L.
A total of 1,204 residential drinking water samples were collected during LTM Period 5 and analyzed for Total TPHs. Total TPHs were detected in 437 of 1,204 (36%) residential samples with detected concentrations ranging between 50 ug/L and 161 ug/L.

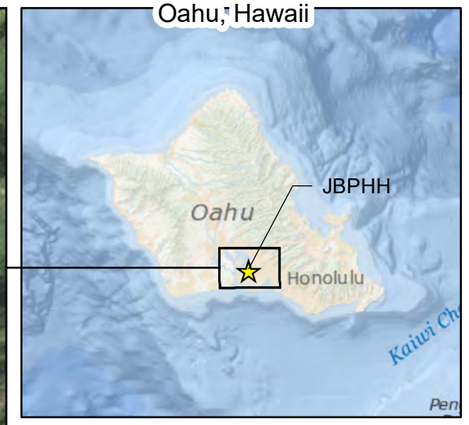
0 0.5 1 1.5 Miles

PIONEER TECHNOLOGIES CORPORATION

LTM Period 5 Residential Drinking Water Total TPH Results
Joint Base Pearl Harbor-Hickam

Figure A-8





Legend

LTM Period 6 Sampling Locations

- Non-Detect
- Less than 100 ug/L
- 100 ug/L ≤ X < 200 ug/L
- 200 ug/L ≤ X < 266 ug/L
- Greater than 266 ug/L
- LTM Zones

Notes:
The Total TPH ISP is 266 ug/L.
A total of 1,314 residential drinking water samples were collected during LTM Period 6 and analyzed for Total TPHs. Total TPHs were detected in 843 of 1,314 (64%) residential samples with detected concentrations ranging between 50 ug/L and 256 ug/L.

0 0.5 1 1.5 Miles

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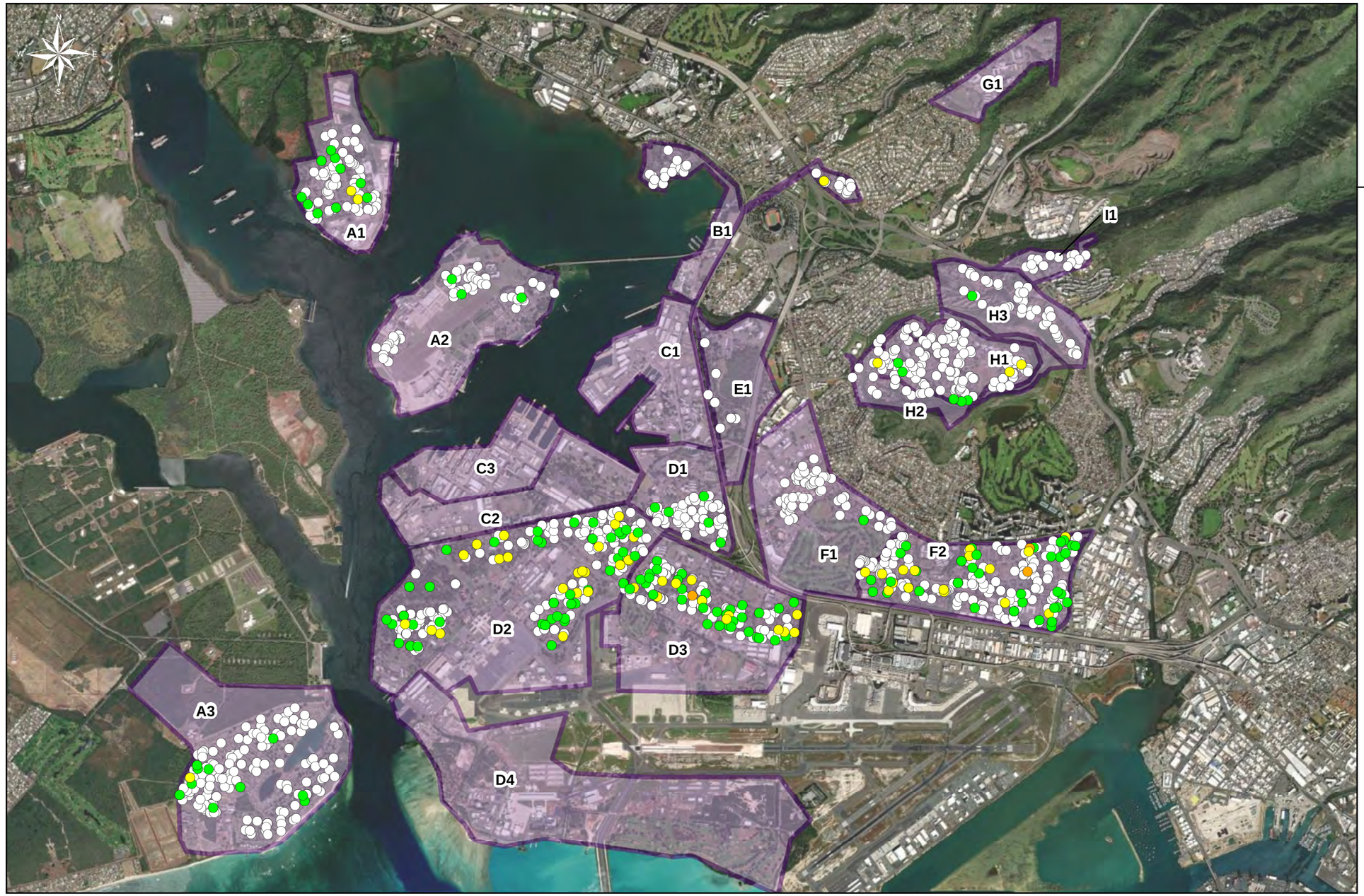
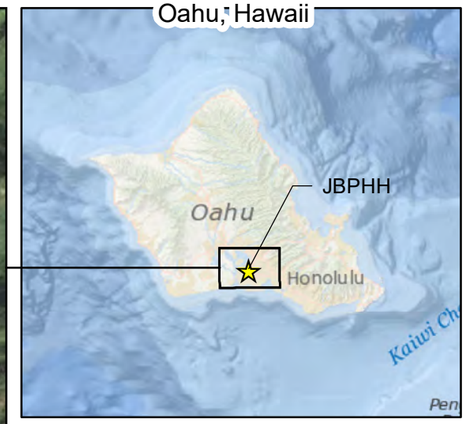
LTM Period 6 Residential Drinking Water Total TPH Results
Joint Base Pearl Harbor-Hickam

Figure A-9





Legend

LTM Period 7 Sampling Locations

- Non-Detect
- Less than 100 ug/L
- 100 ug/L ≤ X < 200 ug/L
- 200 ug/L ≤ X < 266 ug/L
- Greater than 266 ug/L
- LTM Zones

Notes:
The Total TPH ISP is 266 ug/L.
A total of 1,247 residential drinking water samples were collected during LTM Period 7 and analyzed for Total TPHs. Total TPHs were detected in 210 of 1,247 (17%) residential samples with detected concentrations ranging between 50 ug/L and 226 ug/L.

0 0.5 1 1.5 Miles

PIONEER TECHNOLOGIES CORPORATION

LTM Period 7 Residential Drinking Water Total TPH Results
Joint Base Pearl Harbor-Hickam

Figure A-10

Appendix B. Hydraulic Modeling of the JBPHH System Following the November 2021 Release

In 2022, AH Engineering Consultants (AH) developed a hydraulic model of the JBPHH water distribution system, capable of simulating flows, pressures, and contaminant transport over extended periods. Details of the hydraulic model development and calibration are provided in a separate report.[3] As part of the Naval Facilities Engineering Systems Command (NAVFAC) Hawaii staff training on using the hydraulic model, AH also created a model scenario to estimate the extent of fuel contamination in the JBPHH System. The scenario simulated the hourly flows and pressures in the JBPHH System over a 12-day period starting on 24 November 2021 to 5 December 2021. Water demand and source pump patterns for the simulation period were developed as described for the model verification runs in Section 5.5 of the model development report.[2]

To illustrate the dispersal of a conservative chemical in the system, the simulation included the introduction of a tracer starting at noon on 27 November 2021. The tracer was added at a constant concentration at the first node downstream of the fixed head reservoir representing the Red Hill Shaft water source. Neither the actual time the fuel entered the JBPHH System, nor the actual concentration of the contaminant is known. The time was selected so that the first occurrence of the model-simulated tracer in the system coincided with the earliest reports of fuel odors by water system customers. The tracer concentration at the source was held constant at an arbitrary value of 1.0. The operation of the raw water pumps at the three water sources was simulated to replicate the actual measured hourly water production. Water demands in the system were adjusted to match the observed water production and fill-and-drain cycles of the various water storage tanks in the system.

Figure B-1 shows that model-predicted pressures and flows in the system agreed with real-time measurements from the operator's supervisory control and data acquisition system. An animation demonstrating the transport of the Red Hill tracer through the distribution system following the 2021 fuel spill can be viewed at this hyperlink.[4] The animation shows a map of the water system network nodes where water is consumed, color-coded by the tracer concentration, starting on 27 November 2021.

[3] AH/BC Navy JV, LLC (2022). Hydraulic Modeling Study for the Joint Base Pearl Harbor – Hickam, Hawaii. Prepared for the Naval Facilities Engineering Systems Command Pacific, Contract Number: N62470-19-D-4001, Task Order Number N6274222F0108, November 2022.
[4] Link will expire 6 May 2024.

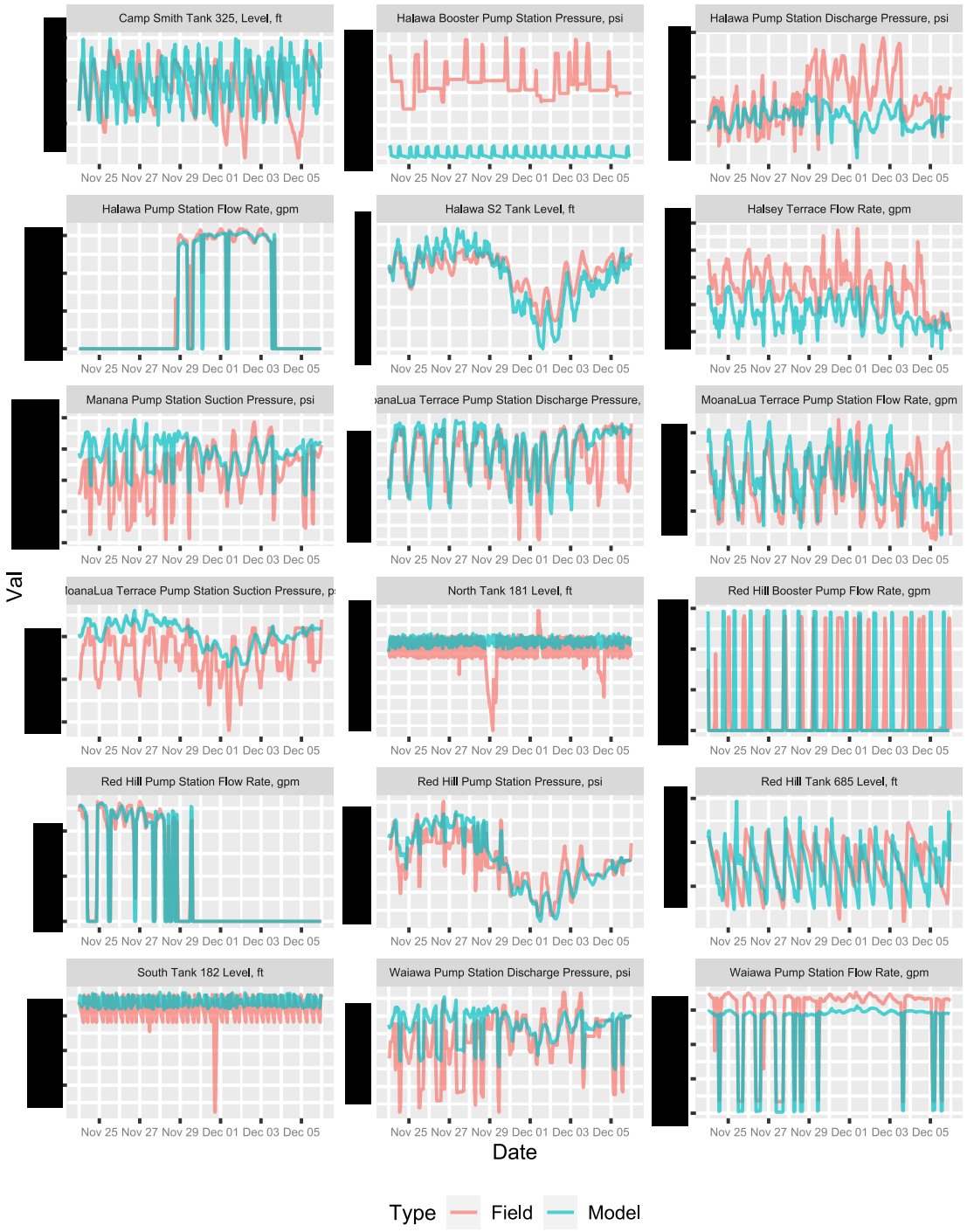


Figure B-1. Model-Predicted and Field-Observed Pressures and Flows for Tracer Simulation

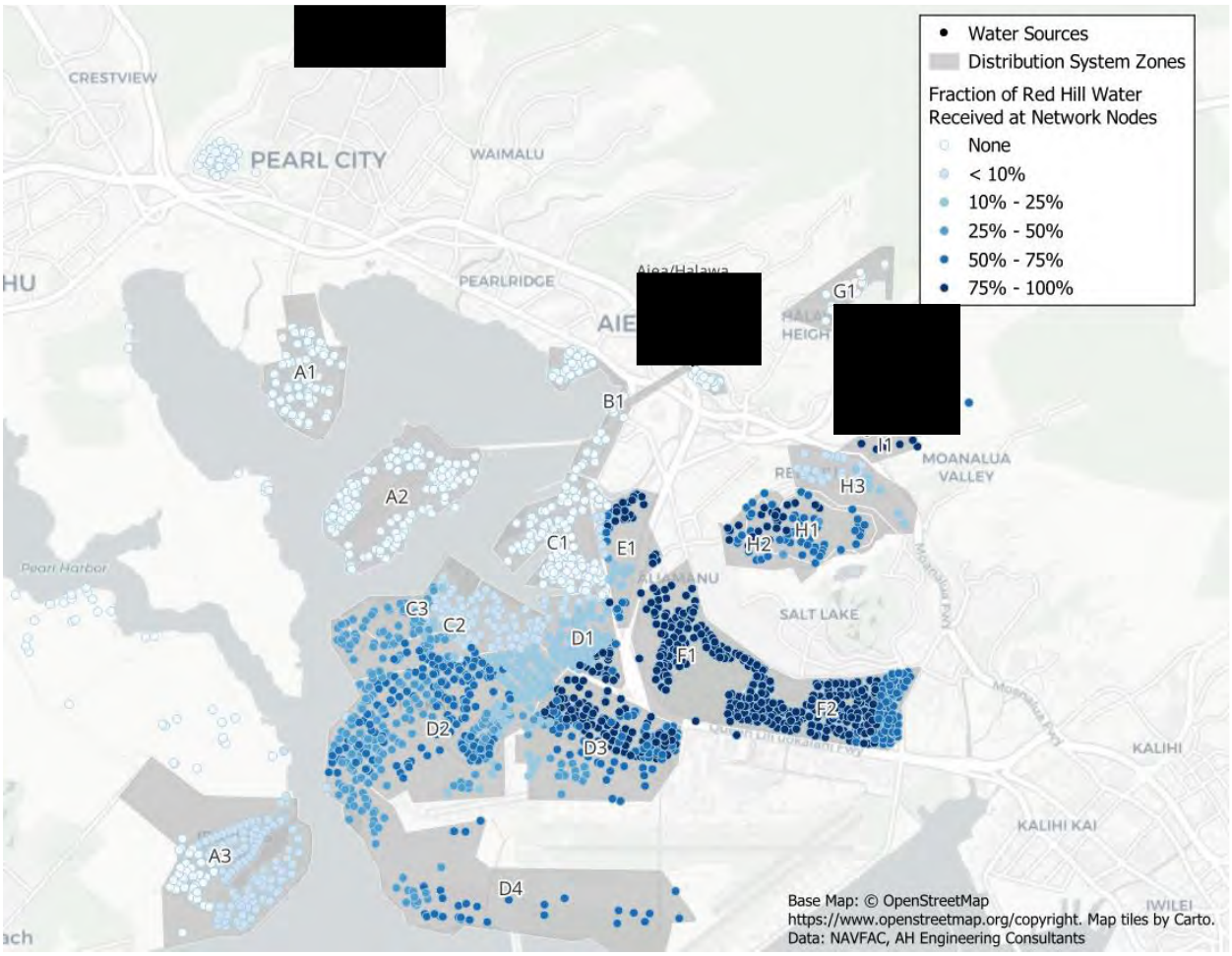


Figure B-2. Model-Simulated Distribution of Red Hill Shaft Water in the JBPHH System

Figure B-2 shows that the Red Hill Shaft contributed up to 100% of the potable water to the eastern portion of the system, including the Army Housing at the Aliamanu Military Reservation and Red Hill Housing (Zones H1, H2, H3, and I1), the eastern housing areas along Salt Lake Boulevard (F1, F2), Makalapa (E1), and eastern parts of Hickam Air Force Base (D3). Other parts of Hickam and the shipyard (Zones C2, C3, D1, D2, and D4), and parts of Iroquois Point (A3) received a blend of water from the three sources. Depending on varying hydraulic condition, several zones in the system can receive water stored in tanks. These areas may have received Red Hill water after a considerable delay and after dilution with clean, stored water. This is evident in Zone H3 for example, which is fed from the North Tank. The North Tank gets replenished from the Middle Tank, which in turn can receive water from the Halawa reservoirs.

The model simulation also shows that none of the tracer arrived in other areas of the system, including the Pearl City Peninsula (A1), Ford Island (A2), McGrew and Halawa Housing (B1), Camp Smith (G1), the submarine base (SUB BASE, Zone C1), and areas around the Naval

Magazine (no Zone). Consequently, these Zones received water only from the Waiawa and/or Navy Aiea/Halawa Shaft[5].

Engineers familiar with the JBPHH System expected these findings. The Waiawa Shaft is the pre-dominant water source at JBPHH with a pumping capacity of up to [redacted] and it operates continuously, while the Aiea/Halawa and Red Hill Shafts supplement water production as needed with flows of [redacted] respectively. Figure B-3 further illustrates this point. The schematic shows the average, model-predicted hourly flows in transmission mains from 24 through 28 November 2021 in million gallons per day (MGD) in red. Flows [redacted] are not shown. Parallel transmission mains are depicted as a single line. The out-of-service, sub-aqueous transmission main connecting Ford Island to the shipyard was omitted. Discrepancies between in- and outflows from the nodes (shown in green) are due to local water consumption, transport of water through smaller mains, or rounding.

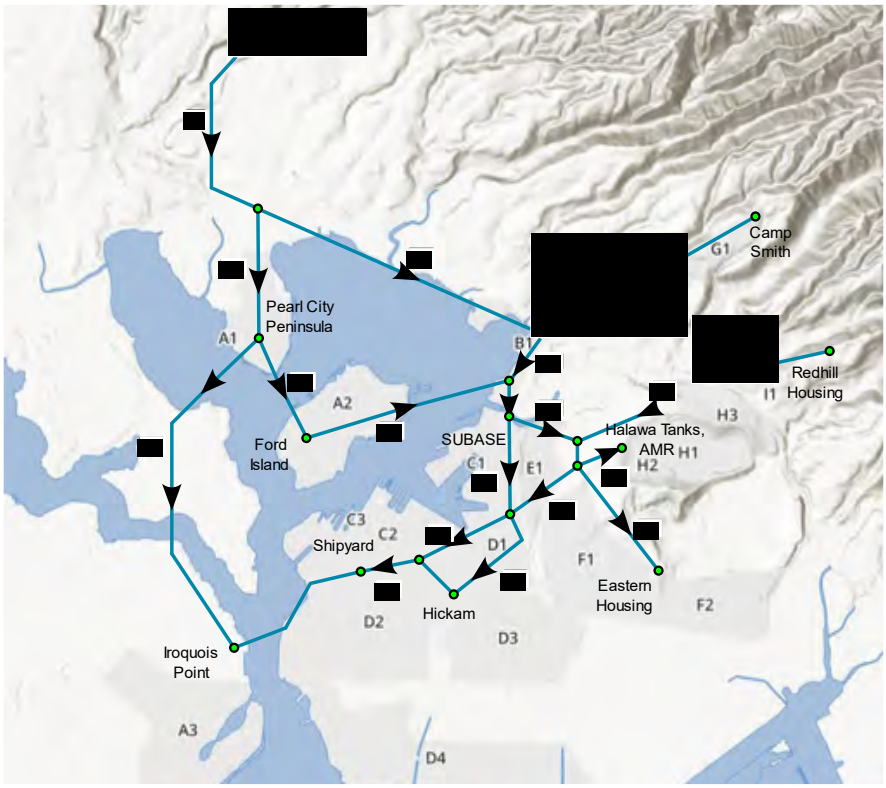


Figure B-3. Average Hourly Transmission Main Flows in MGD, 24 – 28 November 2021

To demonstrate that the summary of the November 2021 flows are the rule, not an exception, consider the monthly water production between 2015 and 2021 depicted in Figure B-4. With rare exceptions due to water main breaks or other maintenance, the Waiawa Shaft pumps had an uptime of over 99% in this period, yielding 75% of the total production.

[5] The Aiea/Halawa Shaft was put in operation for nearly 5 days after the shutdown of the Red Hill Shaft.

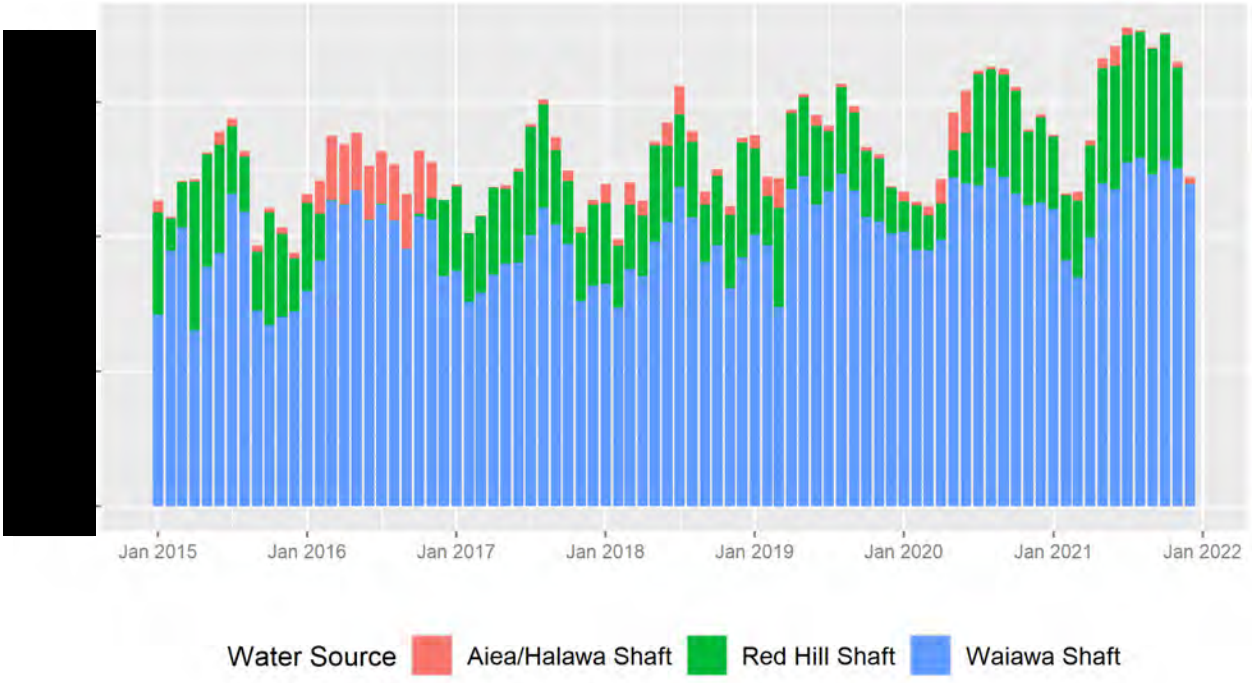


Figure B-4. Historical Water Production Data

Appendix C. Sodium Thiosulfate Evaluation

The spatial, temporal, and concentration patterns (i.e., TPH was detected in all zones and the zones have similar TPH concentration profiles over each LTM period) of low-level TPH detections during LTM, suggests a systemic treatment effect, such as changes in water quality, field or laboratory processes, or limitations and uncertainty in resolution of the analytical method at low-levels.

One hypothesis that the interagency team (made up of experts from EPA, DOH, Navy, and SMEs) of experts evaluated, based the spatial, temporal, and concentration patterns of low-level TPH detections during LTM, was the presence of “ghost” peaks (i.e., peaks that are not associated with TPH in the actual field sample) on the TPH chromatograms. Ghost peaks could occur due to chemical reactions taking place in the sample during the extraction process because of the oxidizing environment present in finished (chlorinated) drinking water samples. They are potentially significant in low-level TPH detections (e.g., TPH concentrations detected less than 100 µg/L) because these peaks are identified as TPH and are included in the TPH concentration reported by the laboratory. Analytical methods designed for drinking water samples include the addition of a reducing agent (quenching) to prevent this from occurring. However, since the method used for TPH analysis (SW 846 Method 8015) was developed for non-drinking water matrices, there is no quenching step, potentially allowing these reactions to occur. The laboratory conducted experiments to evaluate the hypotheses that the suspected peaks would be eliminated by the introduction of sodium thiosulfate (a reducing agent) prior to extraction, and that the surrogate, *o*-terphenyl, was the primary chemical being oxidized. This appendix summarizes the result of these experiments.

Figure C-1 illustrates the effect of the introduction of sodium thiosulfate prior to extraction. The chromatogram on the left is from a sample analyzed using the current procedure, and the one on the right is from the same sample that has had sodium thiosulfate added to it prior to extraction. The sample extracted after quenching no longer exhibits the four-peak pattern shortly after the solvent front which is seen in all Red Hill samples and the ghost peaks following the surrogate are also absent. This is evidence that the sodium thiosulfate is inhibiting the oxidizing reactions (resulting from the chlorine in the drinking water samples) from occurring in the laboratory.

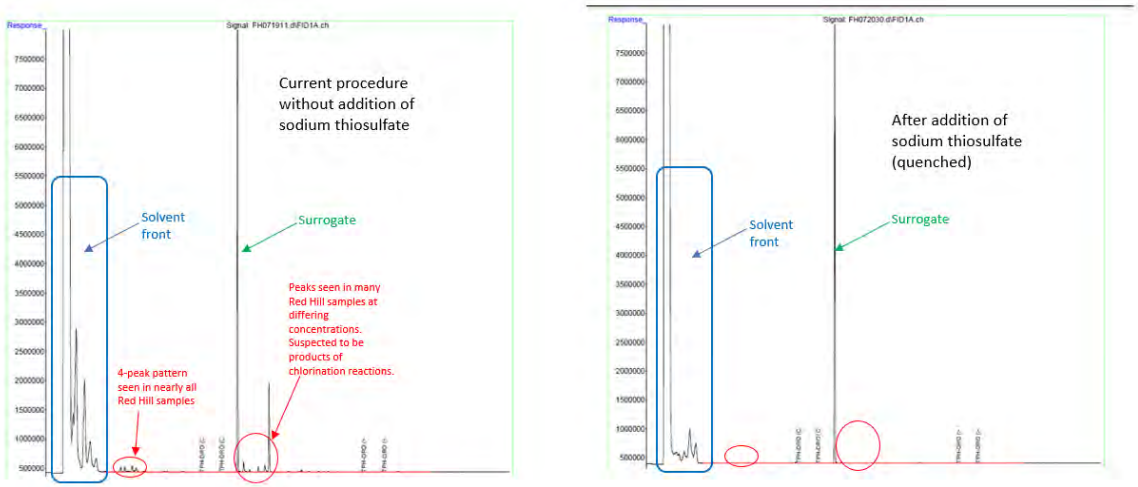


Figure C-1. Effect of Sodium Thiosulfate Addition (Quenching) Sample H3-TW-0013887-23335-A

Figure C-2 illustrates the role played by the reaction of the surrogate with chlorine in the formation of these halogenated ghost peaks. The chromatogram on the left is from a sample analyzed using the current procedure, and the one on the right is from the same sample that has been analyzed without the addition of the surrogate. Note: These samples were not quenched with sodium thiosulfate to neutralize chlorine. The purpose of this experiment was to demonstrate if the surrogate (o-terphenyl) was reacting with chlorine in the drinking water samples – resulting in the ghost peaks on the chromatogram that immediately follow the peak for the surrogate. The chromatogram from the analysis without surrogate shows that all the peaks (except the characteristic four-peak pattern following the solvent front) are no longer present. This is evidence that the surrogate solution is the primary source of chemicals being halogenated in the unquenched sample.

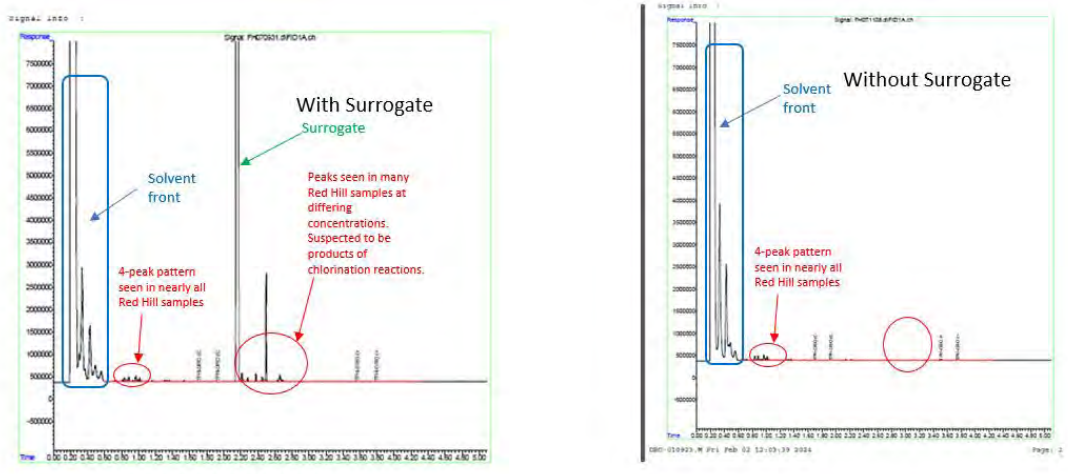


Figure C-2. Surrogate Contribution of Precursors to Halogenation Reaction Sample F2-TW-0009845-23335-N

Appendix D. Extraction Limited Ion Profile Screening (ELIPS) Evaluation Report of Red Hill Historical Data

Overview

Based on the recommendation of the interagency team that met between January and February 2024, an ion profile screening was conducted on historical drinking water results obtained on data obtained via EPA Method 525. As EPA Method 8015 TPH results are considered “method defined” due to the non-specific nature of the detector and inclusion of a wide integration window, TPH detections reported using EPA Method 8015 were further evaluated using an additional screen for key components of JP-5. In addition to the samples collected and analyzed for TPH by EPA Method 8015, additional samples were also collected for corresponding analysis by EPA Method 525 (semi-volatiles by gas chromatography [GC] / mass spectroscopy [MS]). An extracted ion profile screen was performed on historical drinking water data analyzed using EPA Method 525corresponding to the nine highest TPH detections reported using EPA Method 8015 and the corresponding method blanks. Table D-1 provides the targeted analytes for the ELIPS screen and their corresponding ions. Targeted analytes were selected based upon their prominence in JP-5, specific requests from EPA or DOH, or their presence as biomarkers that are resistant to weathering. Both alkanes and aromatic compounds were represented.

Table D-1. Extracted Ion Profile Target Analytes (Key Components of JP-5)

Analyte	Ion
Undecane	m/z 43*, 57, 156
Di Methylnaphthalene	m/z 156, 141
1 Methylnaphthalene	m/z 142, 115
1-Ethylpropylbenzene	m/z 91, 119
Cyclohexane	m/z 56, 84
Tridecane	m/z 43*, 57, 184
Dodecane	m/z 43*, 57, 170
Sesquiterpanes	m/z 123, 179
Benzocyclohexane	m/z 104, 132
Propylbutylbenzene	m/z 176, 91
Trimethylbenzene	m/z 105, 120

*Ion m/z 43 cannot be reviewed in the historical data because the instrument was set up to begin scanning at m/z 45.

Background

EPA Method 8015 for Total Petroleum Hydrocarbons (TPH) utilizes separatory funnel extraction (EPA Method 3510) using methylene chloride followed by gas chromatography and flame ionization detection (GC-FID). Results obtained are “method-defined” due to the non-specific nature of the detector and wide total integration window. In short, the detected analytes are classified as TPH but may or may not be related to petroleum (i.e., the method reports all hydrocarbons and is not petroleum-specific). Final interpretation of results to actual petroleum signatures is dependent upon the experience of the chemist performing the analysis. EPA Method 8015 has limited sensitivity relative to other, more sensitive methods using mass

spectrometry. Over 8,000 samples have been collected and analyzed by EPA Method 8015 using separatory funnel extraction (EPA Method 3510), with the majority of the results being non-detect (detection limits 50-80 µg/L). While there have been detections of miscellaneous peaks within the general elution range of JP-5 analytes, visual comparison of those GC-FID chromatograms reveals that many of the integrated detections are consistent with unknown extracted material in the corresponding method blanks. There have been no obvious petroleum patterns in the chromatograms that match retention time patterns of JP-5 or other known petroleum products in any drinking water samples collected and analyzed by EPA Method 8015. In addition, there were no indications of Unresolved Chromatographic Material (UCM) in any of the water samples that is usually indicative of weathered hydrocarbon signatures. Due to the non-specific nature of the detector, the co-extracted material detected in the extraction blanks, and the lack of definitive petroleum signatures, the interagency team believes that most of the TPH detections are associated with laboratory artifacts rather than compounds unique to the extracted sample. This is more likely indicative of limitations in the capabilities of the method at such low concentrations rather than laboratory performance. All extraction solvents have impurities. Some laboratories will apply the “B” qualifier to data where the target analyte is also detected in the method or extraction blank. In all cases, the laboratory must report target analytes as detected when found at concentrations above the method detection limit (MDL). During data validation, results less than five times the concentration found in the method blank may be qualified as non-detects or as estimated, biased high in accordance with the DoD validation guidance.

Procedure and Decision Criteria

1. For the entire expected TIC region, peaks were first selected that have a signal to noise ratio greater than 3:1 and have a response greater than five times that found in the corresponding method blank. All EPA Method 525 surrogate and internal standard peaks were also eliminated during this step.
2. For the peaks identified above, a preliminary extracted ion profile was performed for the ELIPS ions specified above. All ELIPS ions were evaluated for the concurring overlapping signatures. Obvious petroleum or Gaussian patterns that may have been present were noted.
3. For the identified peaks from step 2, a full mass spectrum was obtained at the apex of the peak and an appropriate background subtraction was performed followed by a library search. Library search results were included, as necessary.

Results

For reference, the initial TPH chromatograms associated with using EPA Method 8015 and their respective extraction blanks are provided for each of the nine samples, followed by the corresponding Total Ion Chromatograms (TICs) and their respective extraction blanks for the

EPA Method 525 analyses. A summary of the final ELIPS results for each sample is provided directly in the captions.

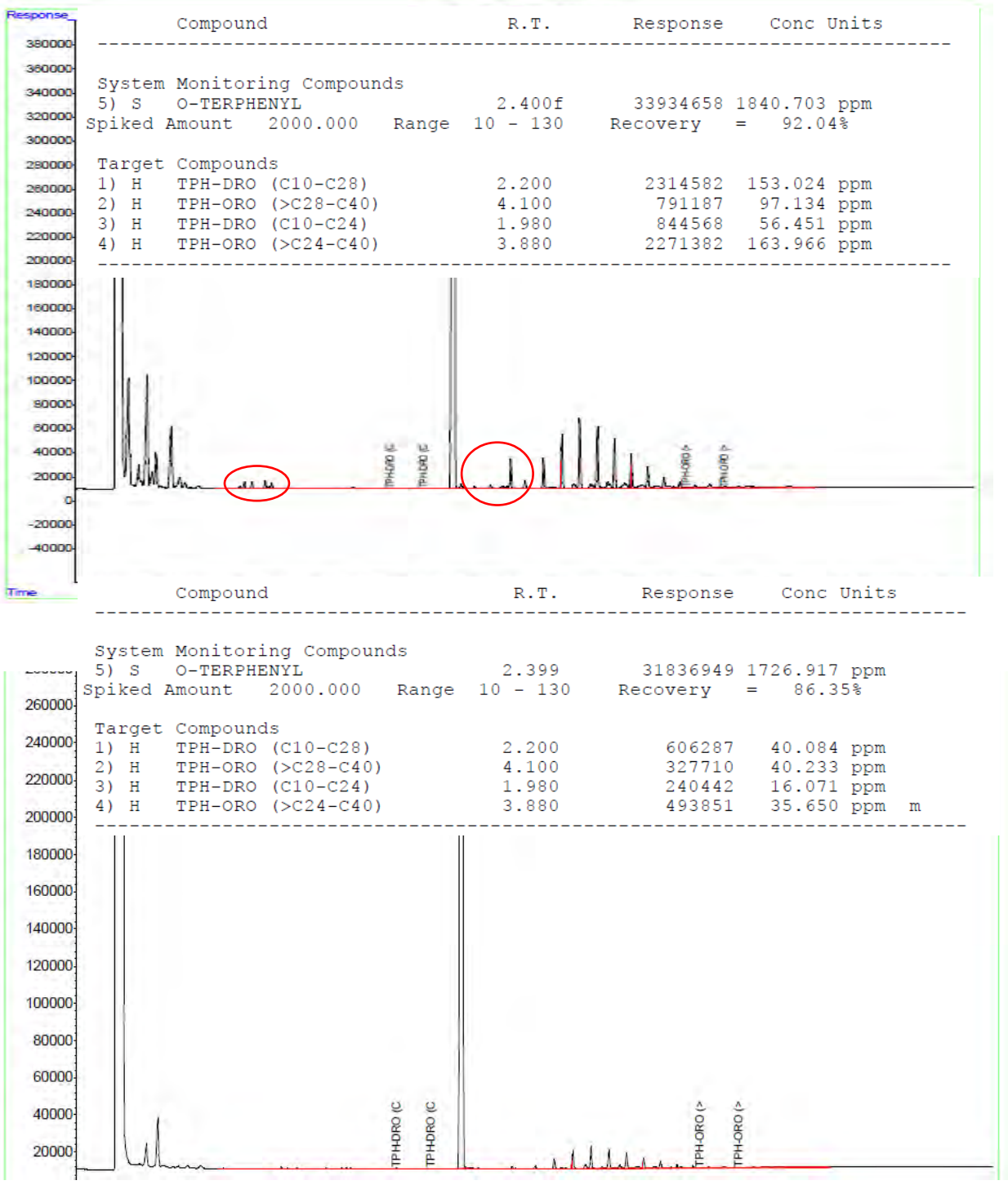


Figure D-1. 8015 TPH Chromatograms of Sample DA57284-14 (Top) and its Respective Extraction Blank (Bottom)

There is obvious laboratory contamination in the ORO range within Table D-1 that is responsible for the high TPH result. Halogenated products are also present and contributed to the TPH detection.

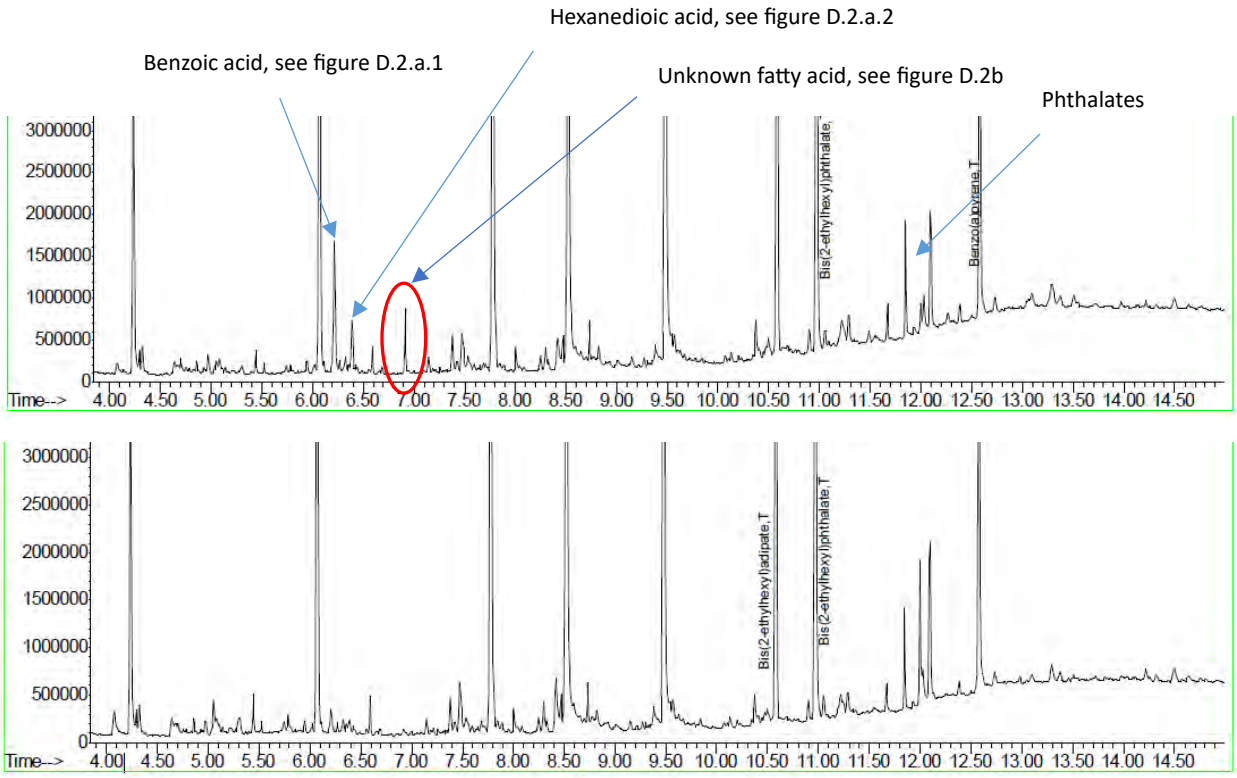


Figure D-2. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA57284-14 (Top) and the Respective Extraction Blank (Bottom)

The one peak in Figure D-2 (highlighted in red) matched the ELIPS criteria requiring further evaluation. The unknown peak is identified as a fatty acid. Full mass spectral evaluation is provided in Figure D-2.b. The other peaks circled in blue did not meet the ELIPS criteria. These were identified by mass spectral evaluation in Figure D-2.a.1 and Figure D-2.a.2.

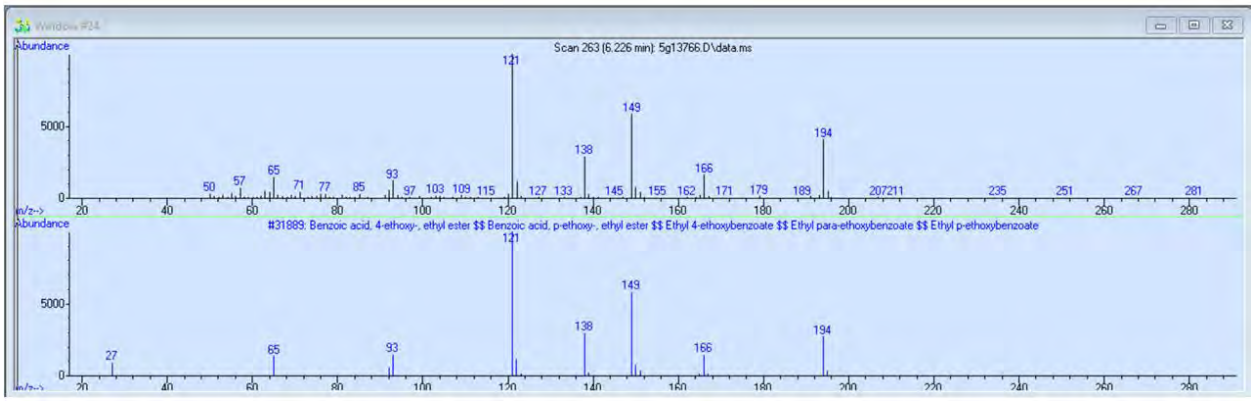


Figure D-2.a.1. Derivative of Benzoic Acid (6.226 Retention Time)

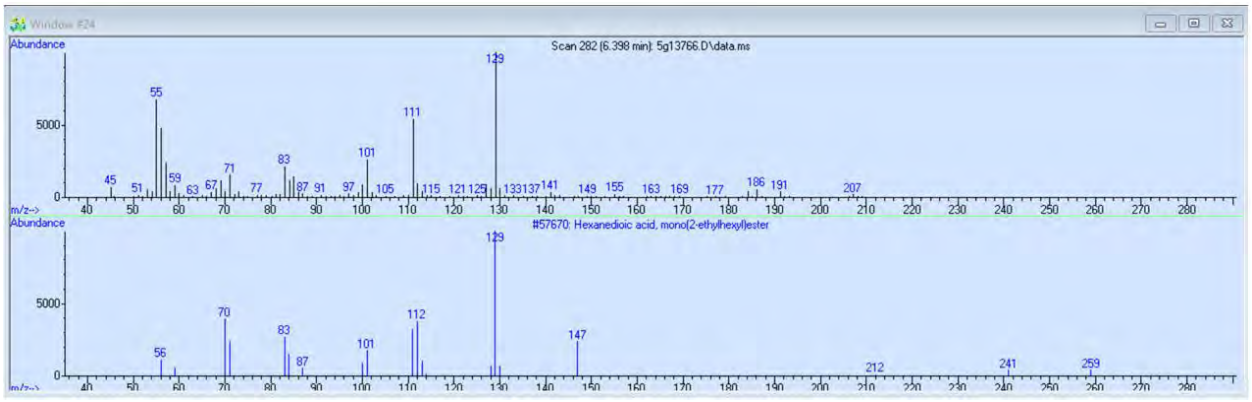


Figure D-2.a.2 Hexanedioic Acid (Retention Time 6.398)

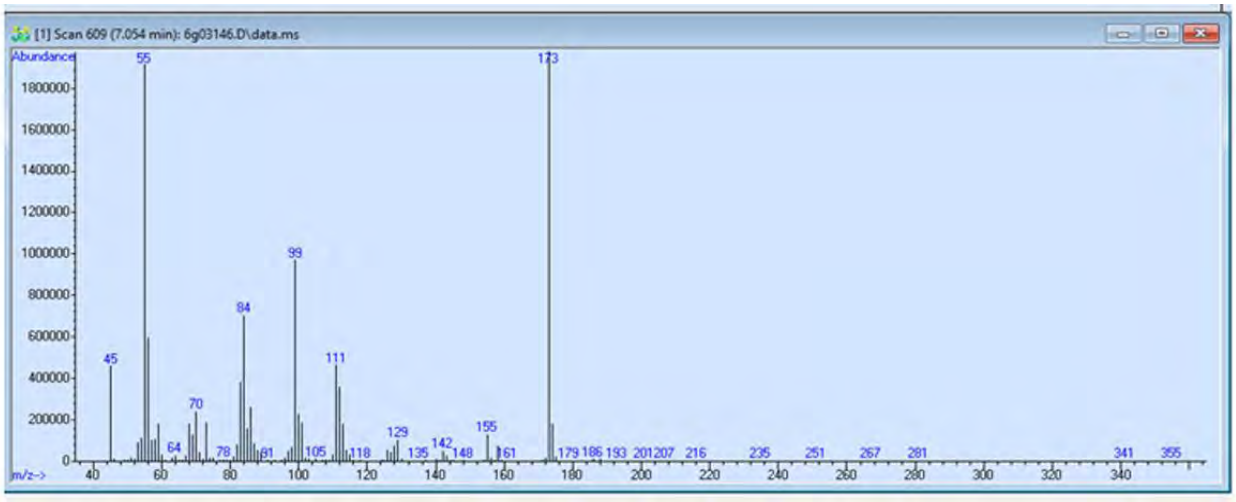
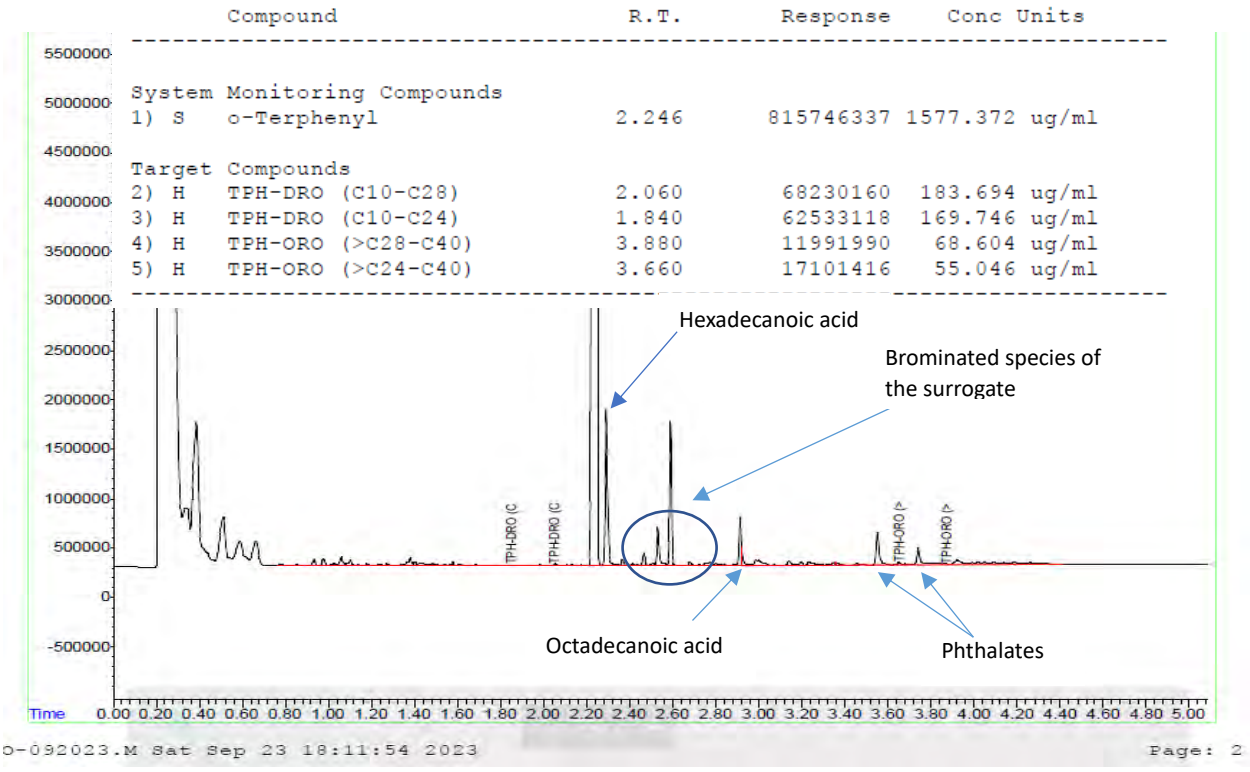


Figure D-2.b. Mass spectrum of Unknown Fatty Acid.

The peak at retention time 7.054 met the initial ELIPS criteria but was identified not to be associated with petroleum. The specific identification of this peak could not be verified through the library search, but the fragmentation pattern is characteristic of another fatty acid. The ion representing loss of 74 units (both *m/z* = 74 *per se* and $[M-74]^+$ at *m/z* = 173) confirms the presence of a methyl ester.



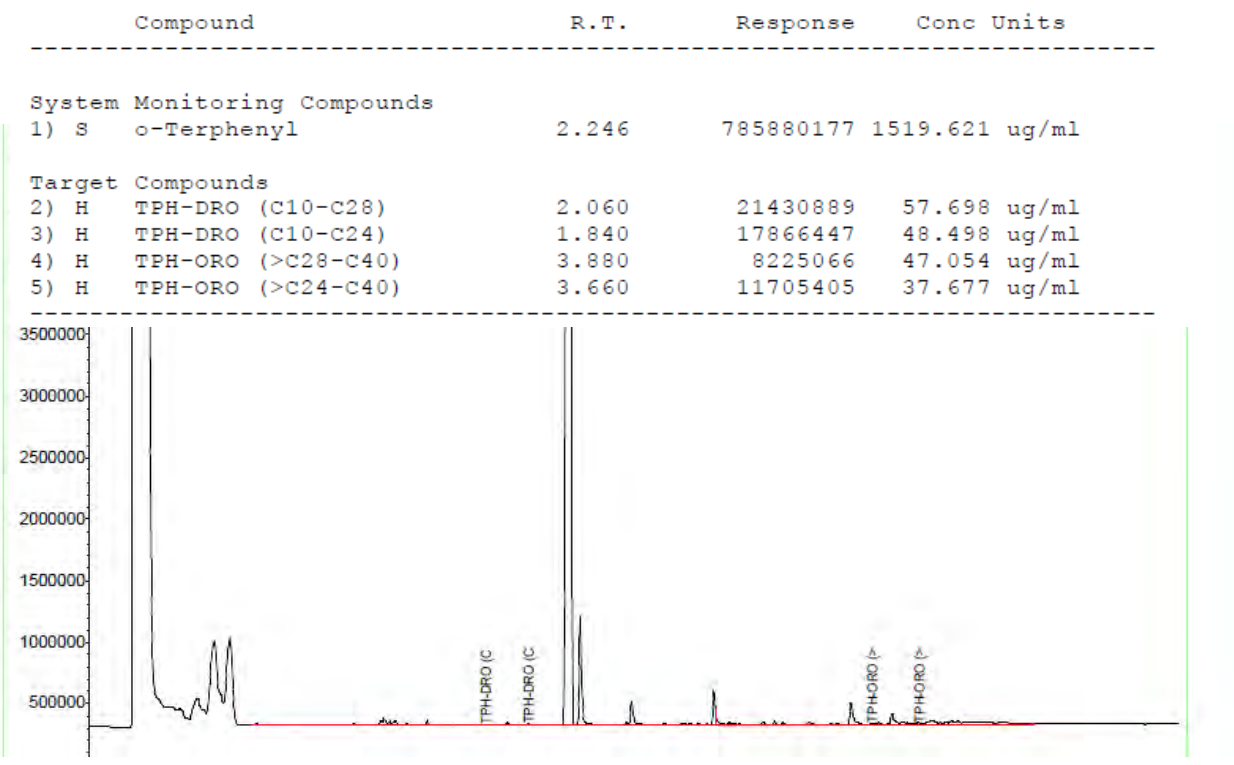


Figure D-3. 8015 TPH Chromatograms of Sample DA58747-4 (Top) and the Respective Method Blank (Bottom)

Method blank contamination and halogenated products are the primary contributors to the detected TPH in Figure D-3. Mass spectral analysis of the TPH extract confirmed the presence of halogenated products, hexa- and octa-decanoic acid, and phthalates.

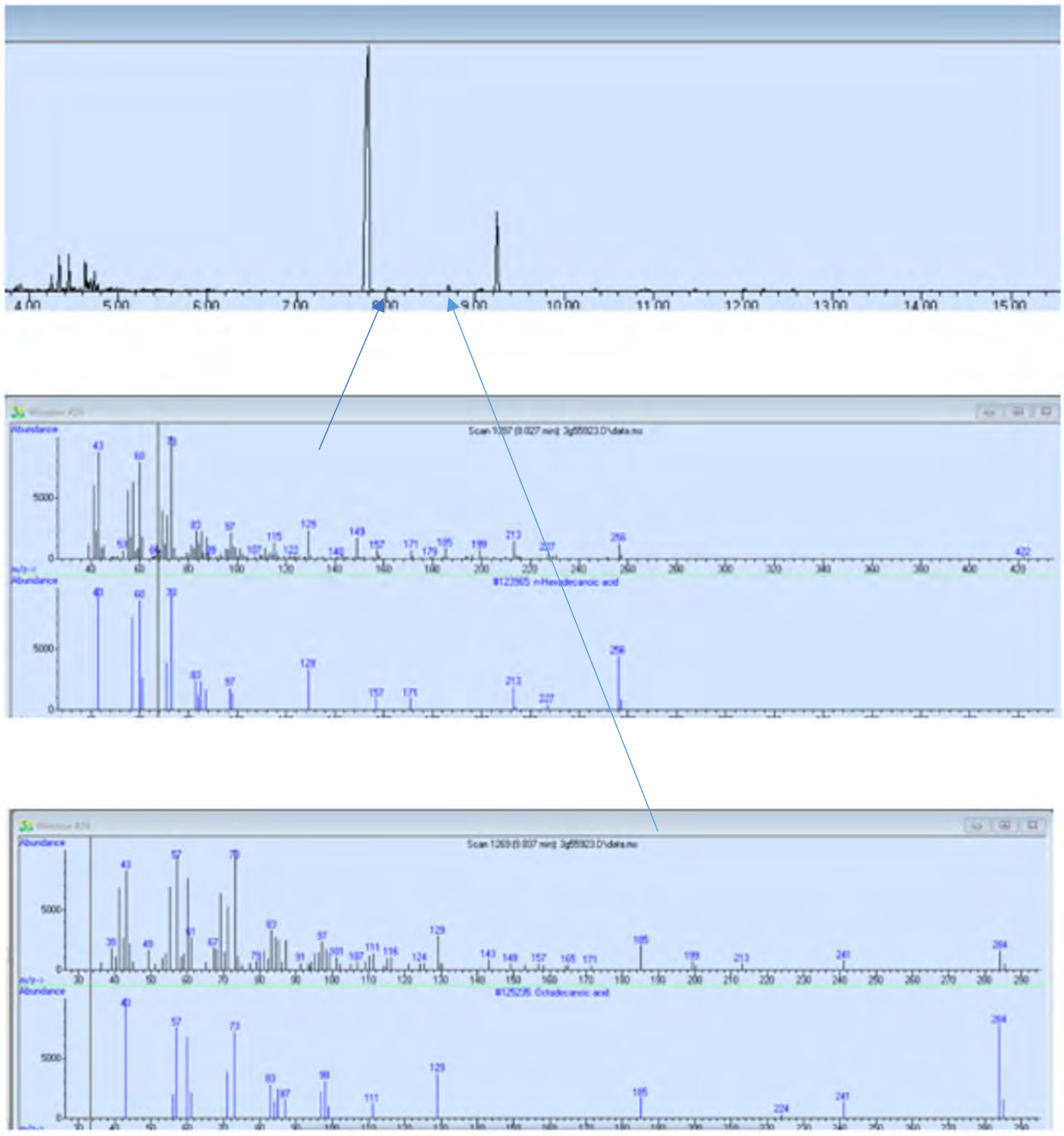


Figure D-4. Presence of Hexadecanoic and Octadecanoic Acids by Mass Spectral Analysis of TPH Extract

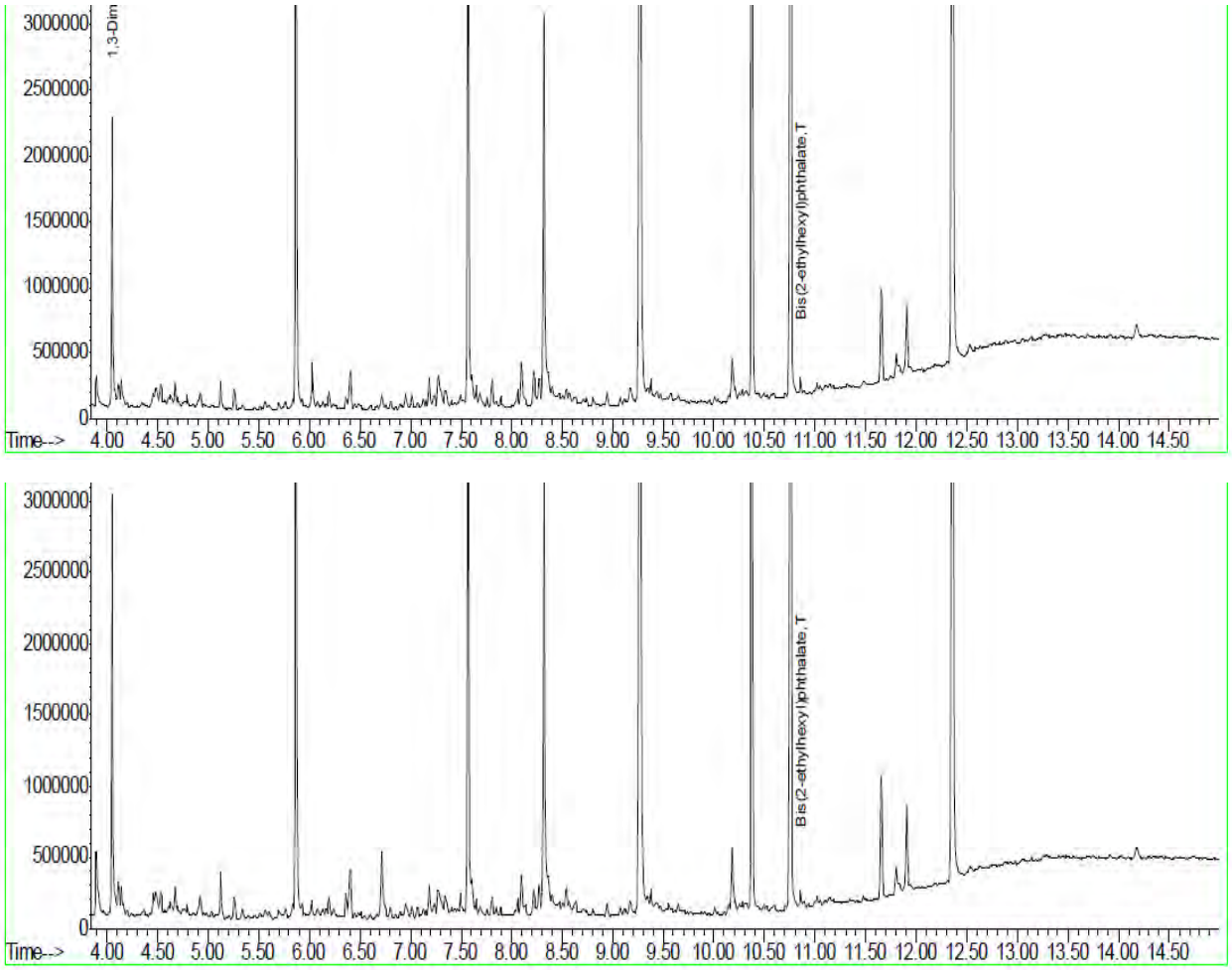


Figure D-5. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA58747-4 (Top) and the Respective Extraction Blank (Bottom)

There were no targets identified in Figure D-5 that met the ELIPS criteria for further analysis.

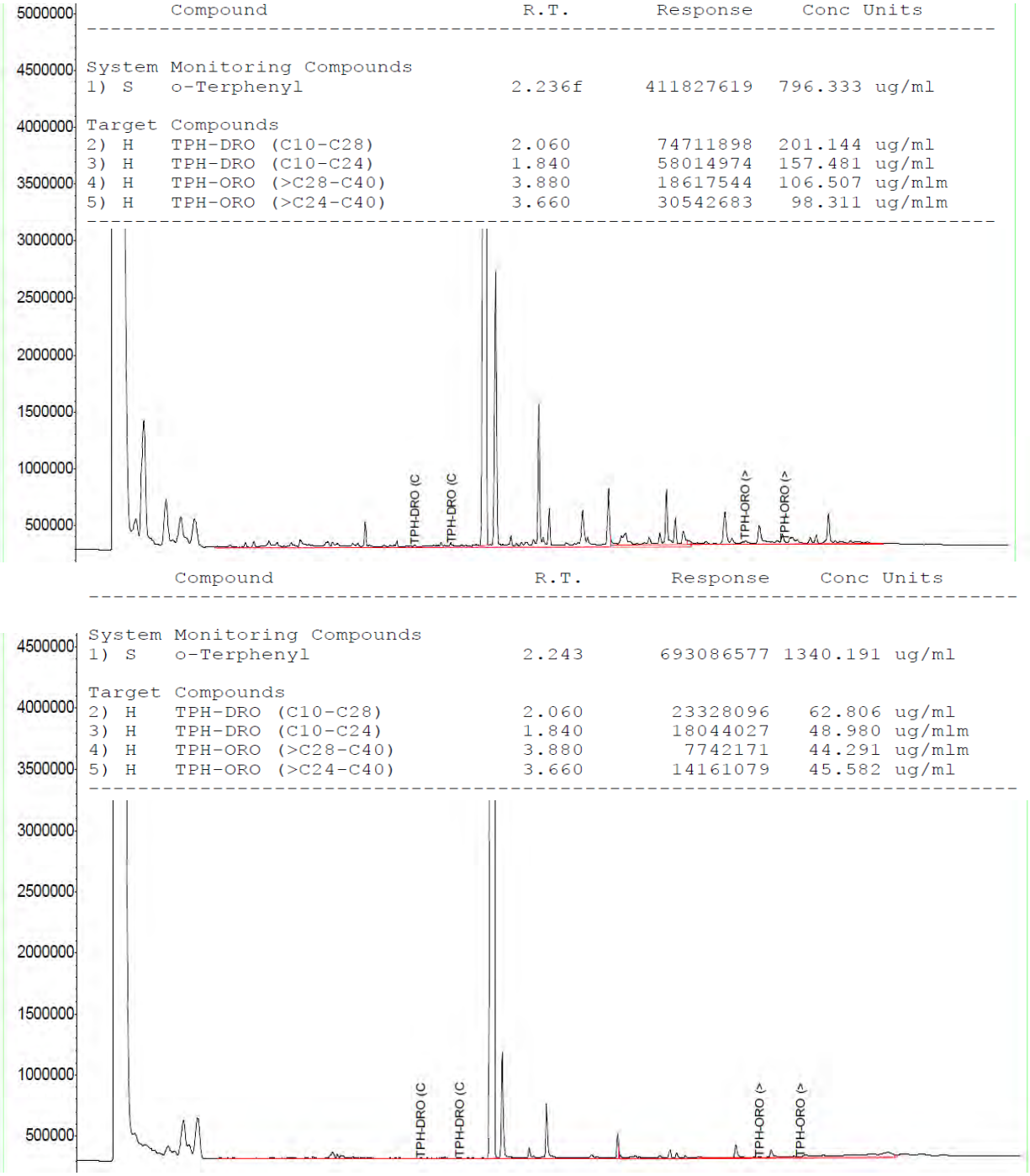


Figure D-6. 8015 TPH Chromatograms of Sample DA58996-6 (Top) and the Respective Method Blank (Bottom)

Blank contamination and halogenated species are the primary contributors to the detected TPH in Figure D-6. Mass spectral analysis confirmed the presence of halogenated products of the surrogate, hexadecanoic acid, octadecanoic acid, and phthalates.

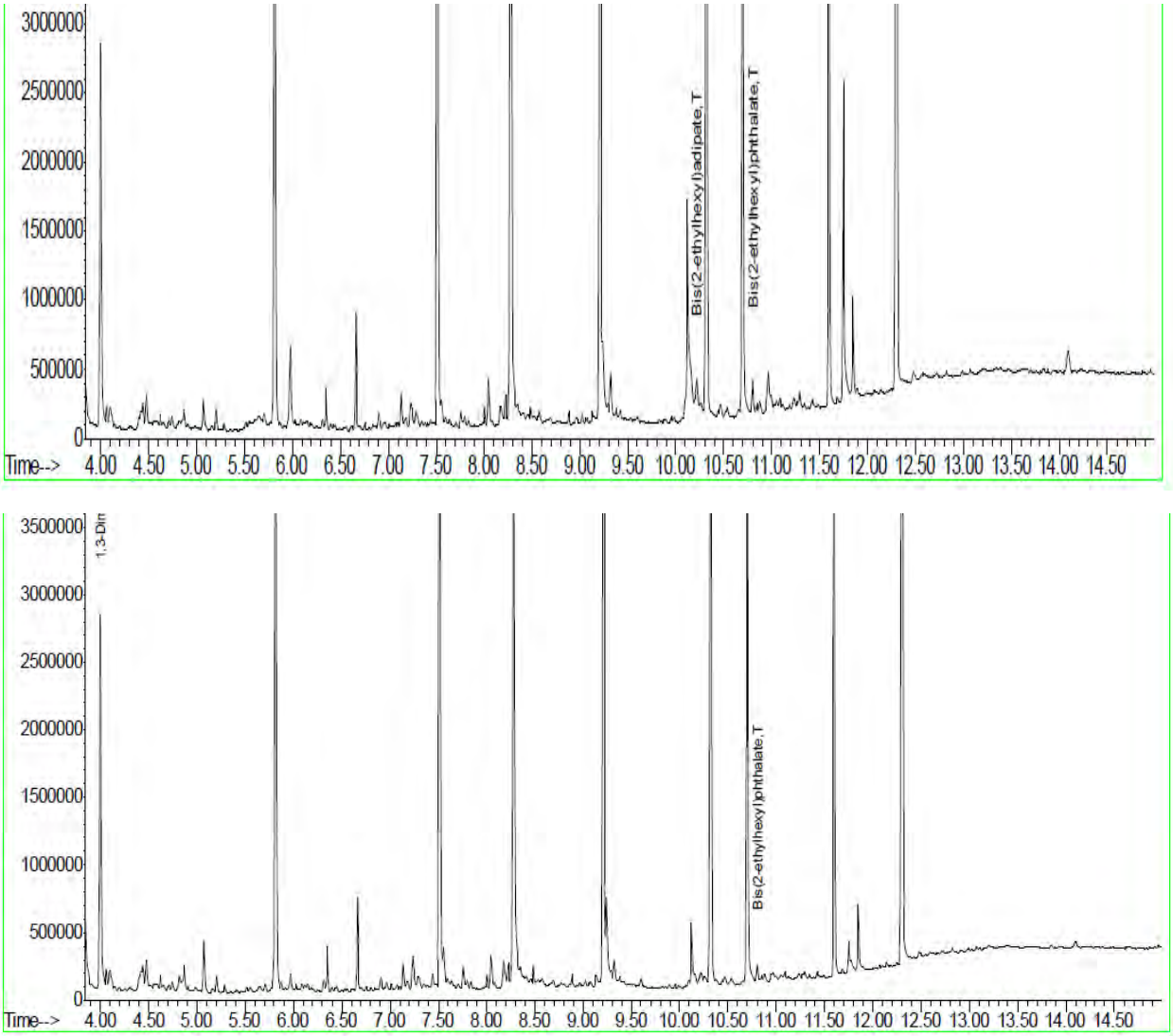
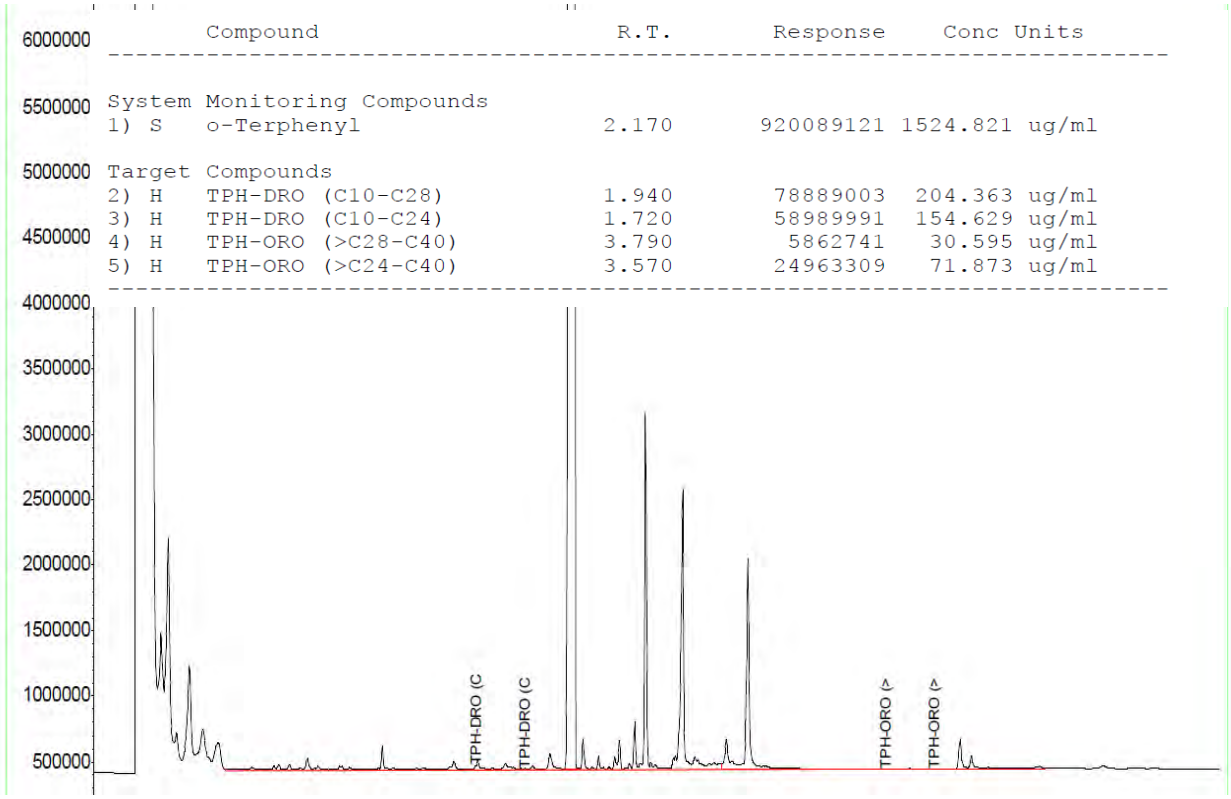


Figure D-7. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA58996-6 (Top) and the Respective Extraction Blank (Bottom) There were no targets identified that met the ELIPS criteria for further analysis.

In Figure D-8, detections are primarily from reaction products and other peaks in the ORO range. Mass spectral analysis of the TPH extract confirm the presence of bromoterphenyl and unknown contaminants from field contamination during sampling. Root cause analysis confirmed that this contamination was from a specific batch of wide-mouth bottles. Field blanks were also instituted as part of the corrective action.



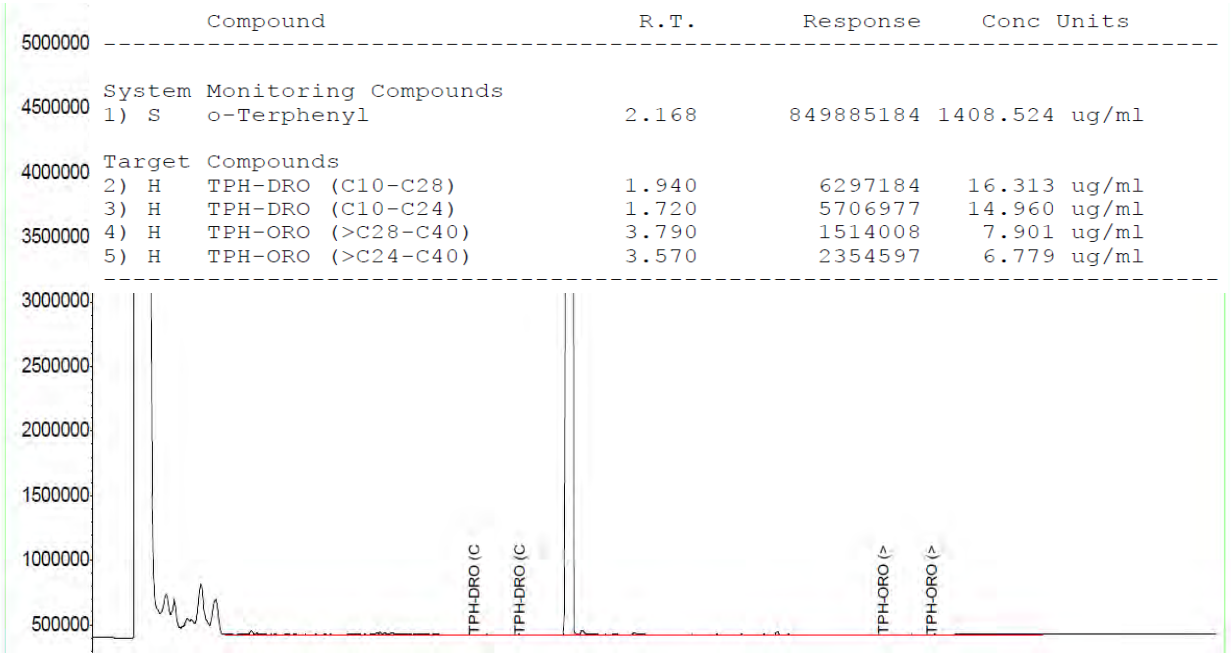


Figure D-8. Figure D-8. 8015 TPH Chromatograms of Sample DA61231-15 (Top) and the Respective Method Blank (Bottom)

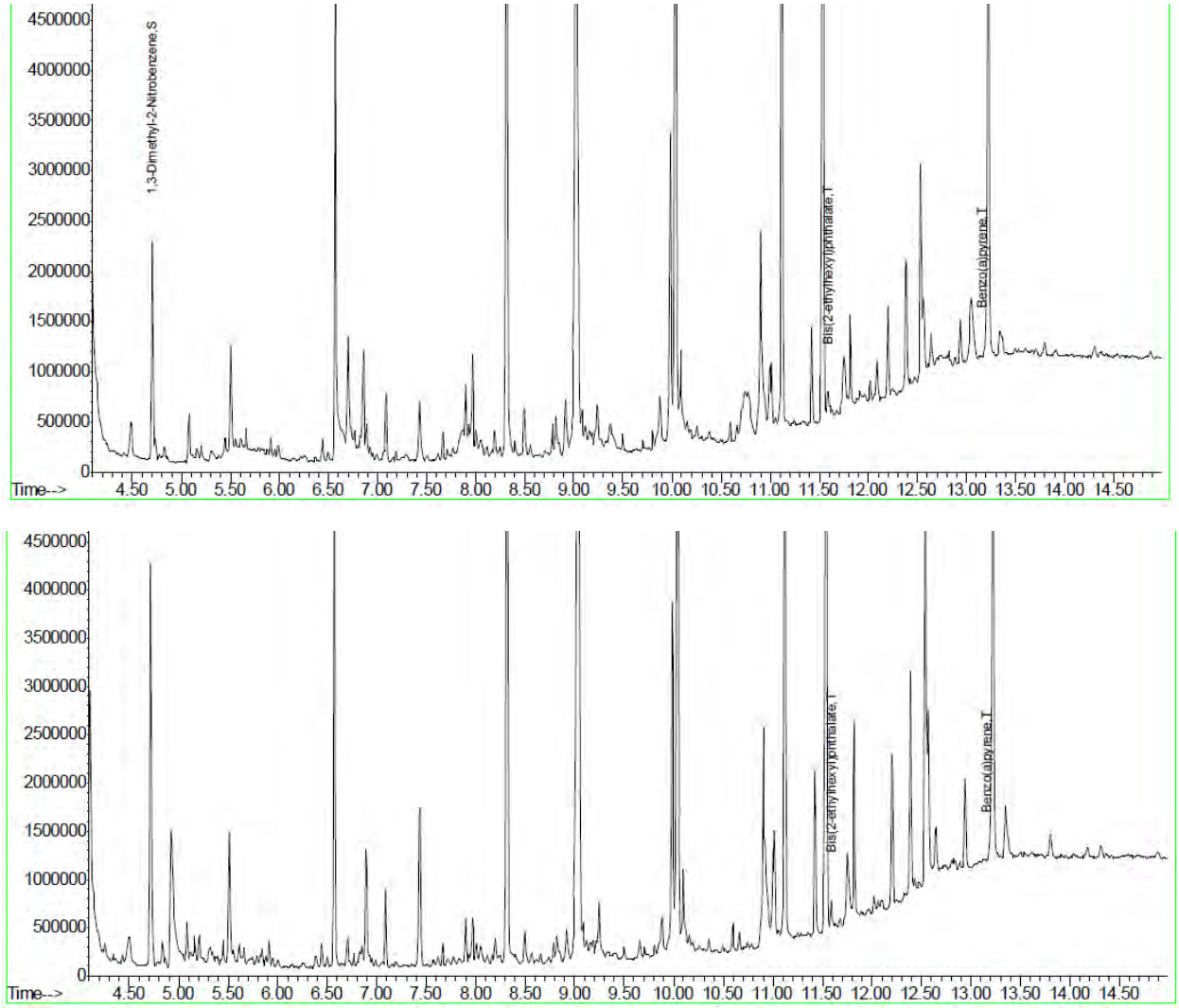
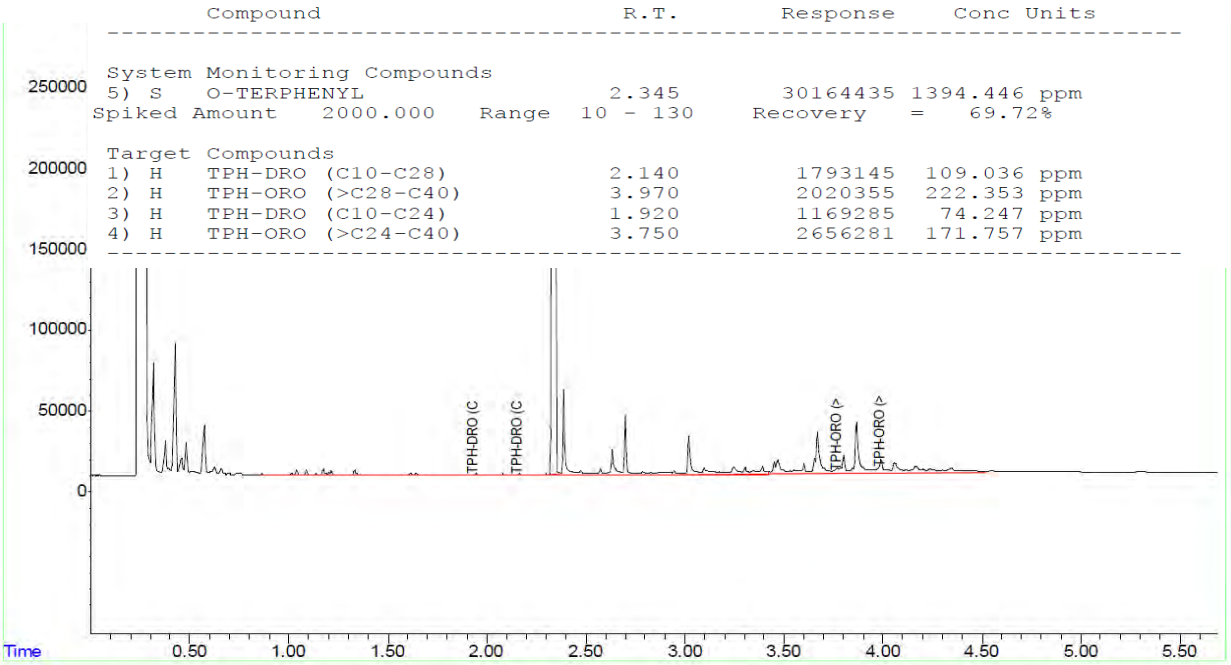


Figure D-9. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA61231-15 (Top) and the Respective Extraction Blank (Bottom) There were no targets identified that met the ELIPS criteria for further analysis in Figure D-9.



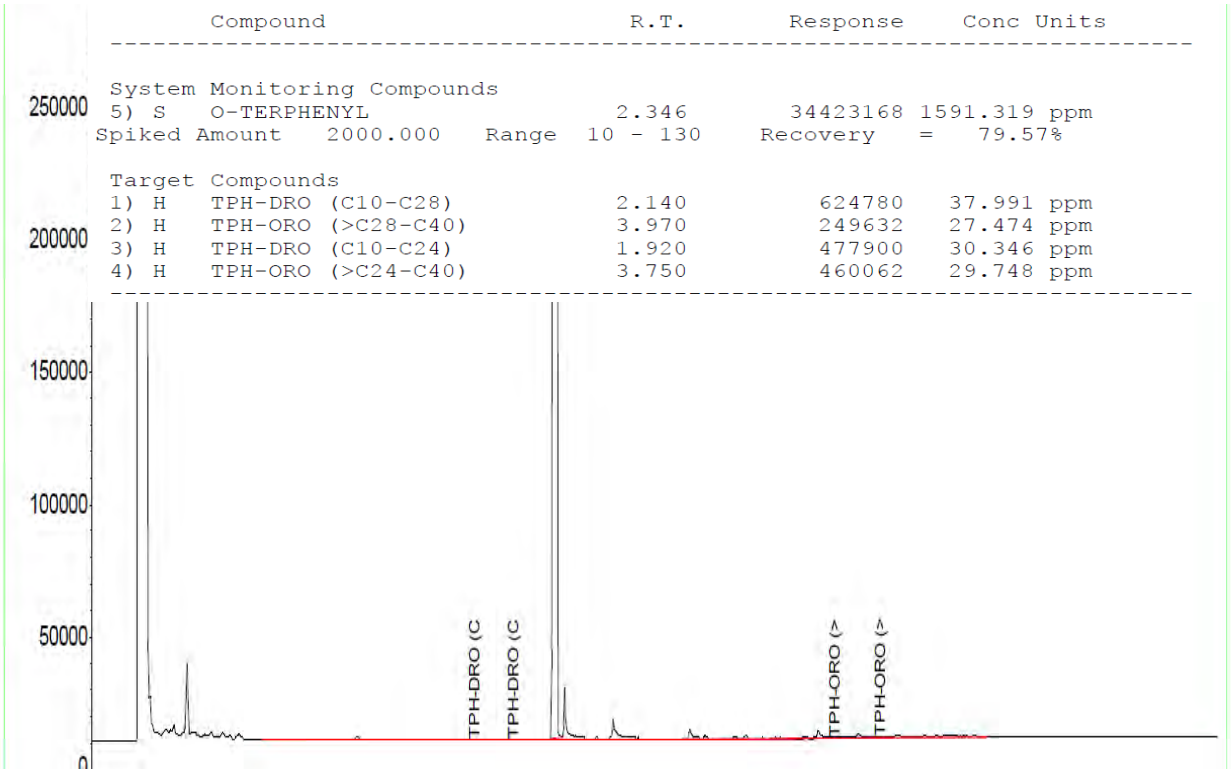


Figure D-10. 8015 TPH Chromatograms of Sample DA58265-9 (Top) and the Respective Method Blank (Bottom)

In Figure D-10, detections are primarily from reaction products and other peaks in the ORO range. Mass Spectral analysis of the TPH extract confirm the presence of halogenated products, phthalates and hexadecanoic acid in the ORO range.

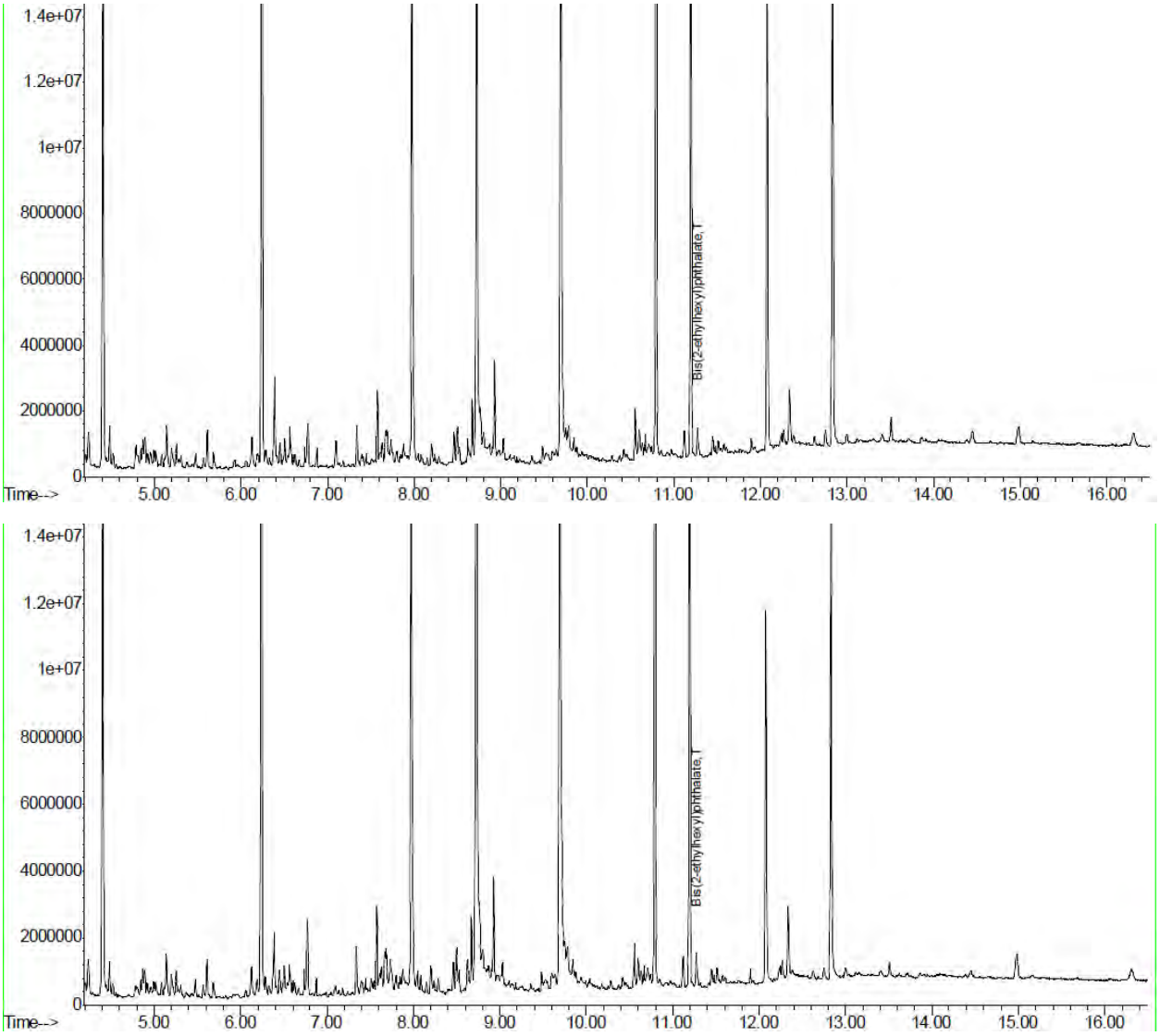


Figure D-11. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA58265-9 (Top) and the Respective Extraction Blank (Bottom) There were no targets identified in Figure D-11 that met the ELIPS criteria for further analysis.

The pattern depicted in Figure D-12 is of a severely weathered heavy oil. The result is thought to be due to contamination, although there was no significant contamination noted in the method blank. A duplicate sample was extracted as DA58544-4A without significant TPH detected. The laboratory instituted further corrective actions to segregate all glassware and related equipment specific to drinking water analysis for Red Hill.

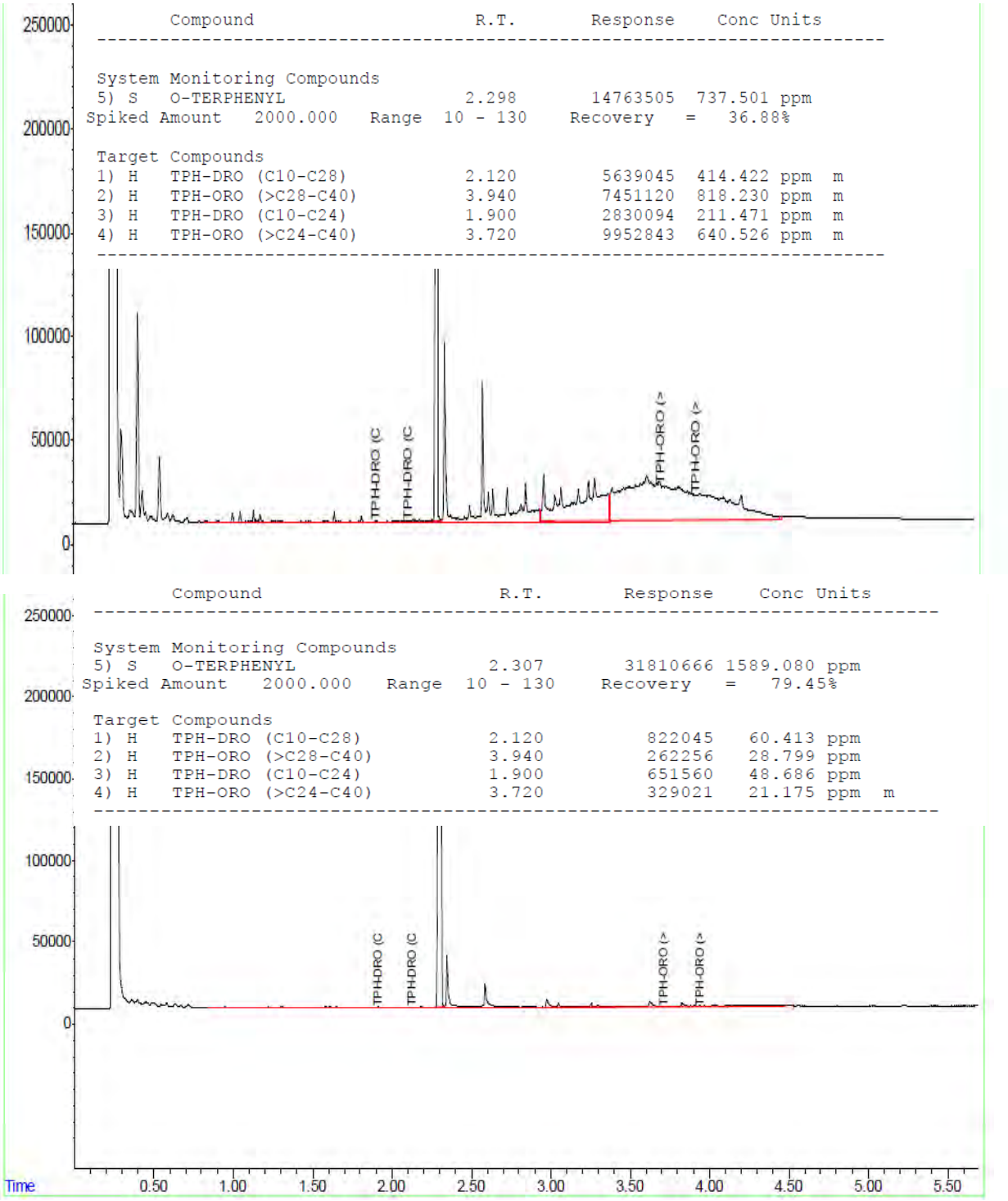
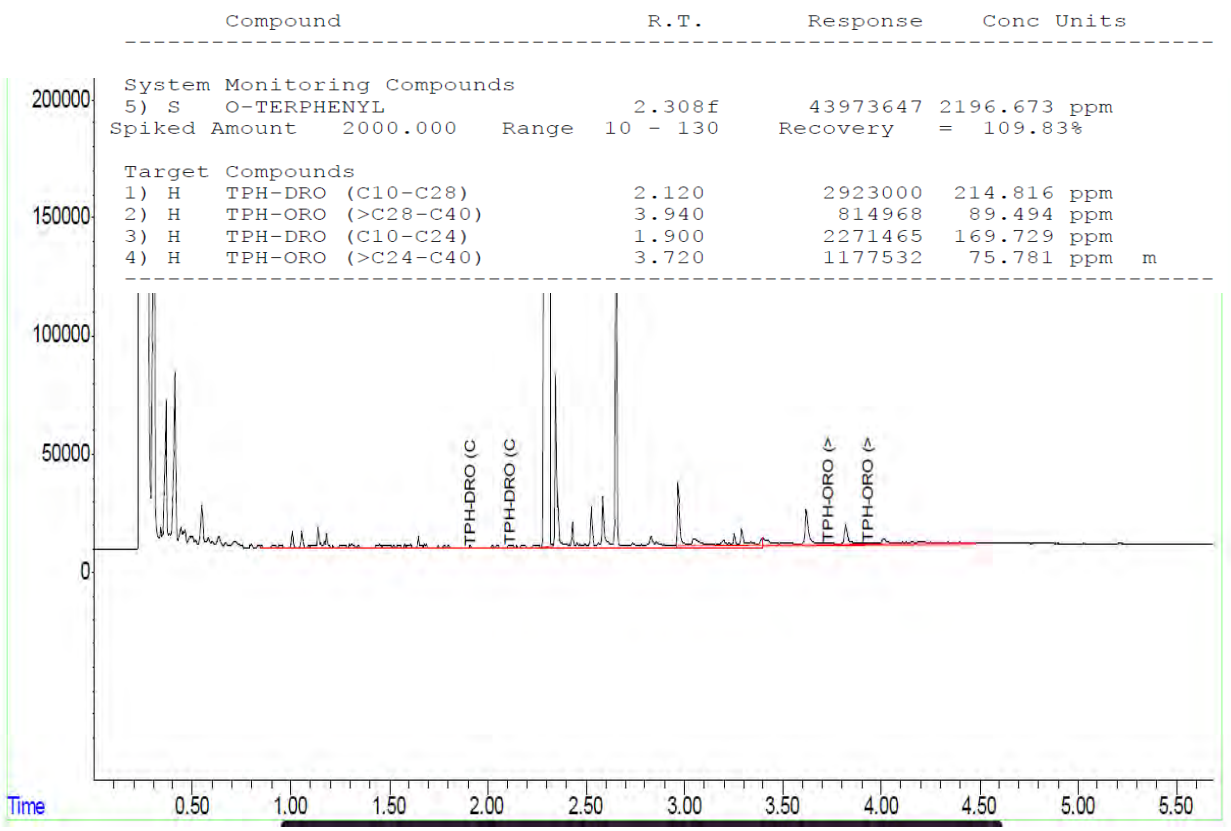


Figure D-12. 8015 TPH Chromatograms of Sample DA58544-4 and the Respective Method Blank



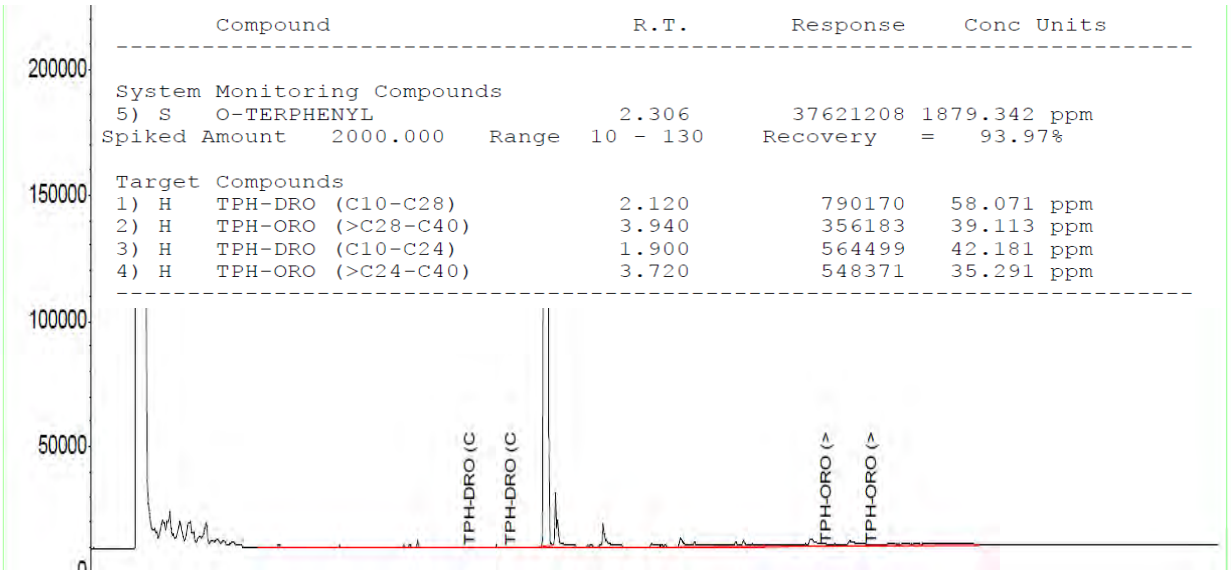


Figure D-13. TPH 8015 Chromatograms of Sample DA58544-4A Reanalysis (Top) and the Respective Method Blank (Bottom) The original detected heavy oil detection was not confirmed in Figure D-13. Halogenated byproducts are causing the majority of the TPH detection.

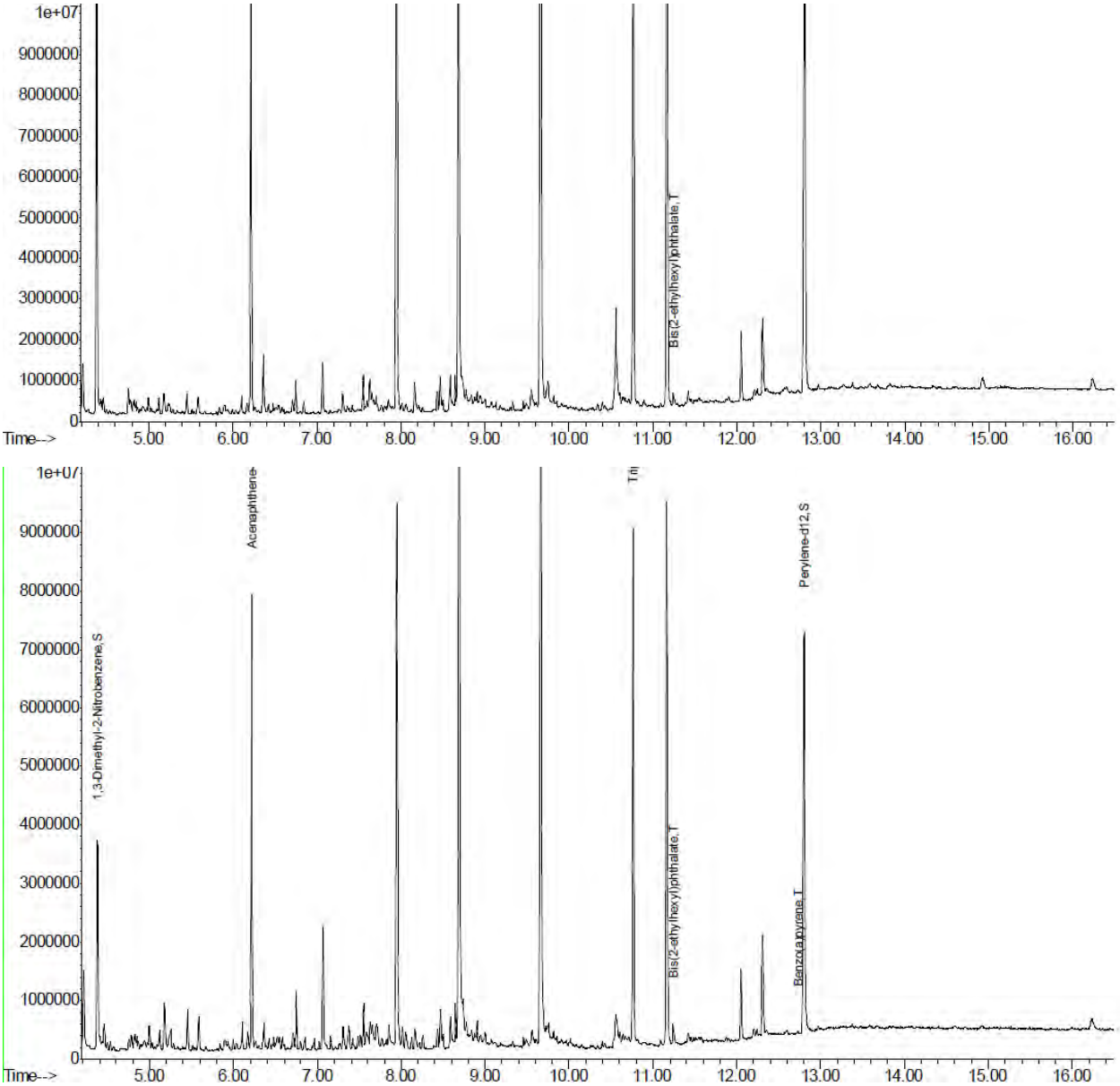
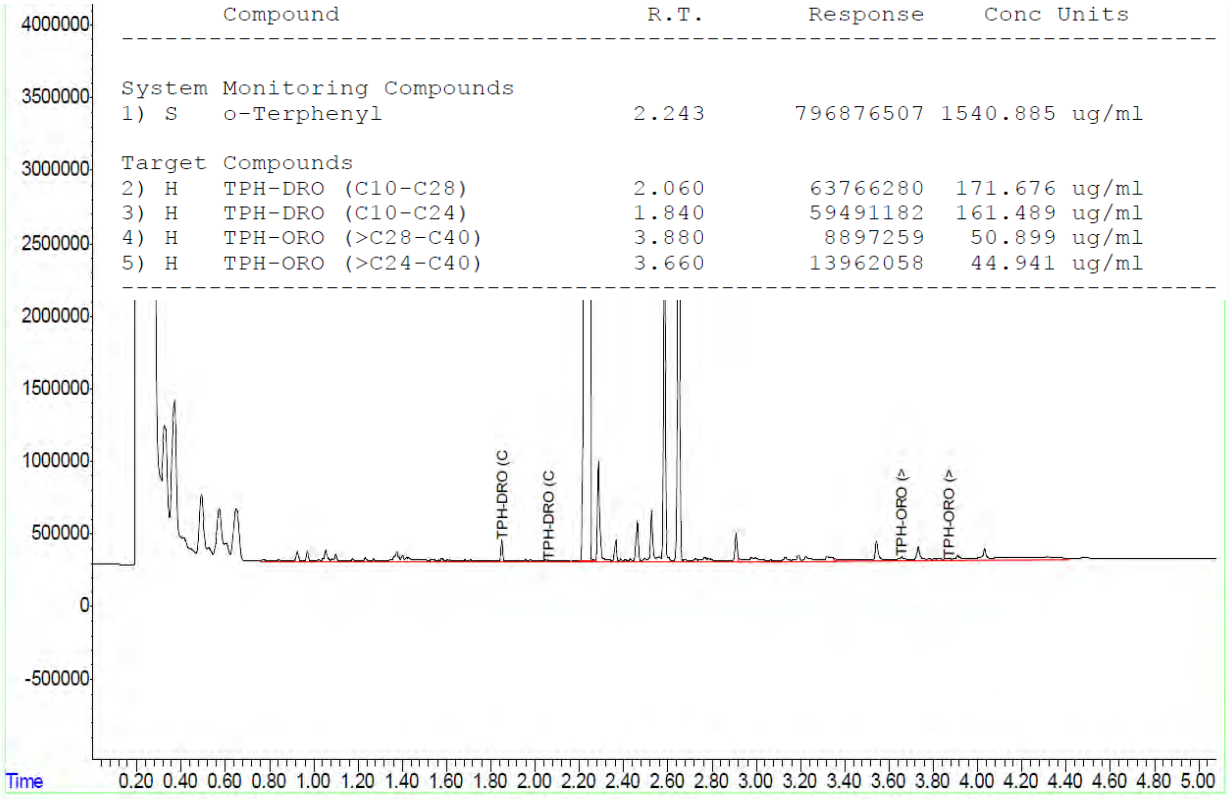


Figure D-14. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA58544-4 (Top) and the Respective Extraction Blank (Bottom) There were no targets identified in Figure D-14 that met the ELIPS criteria for further analysis.



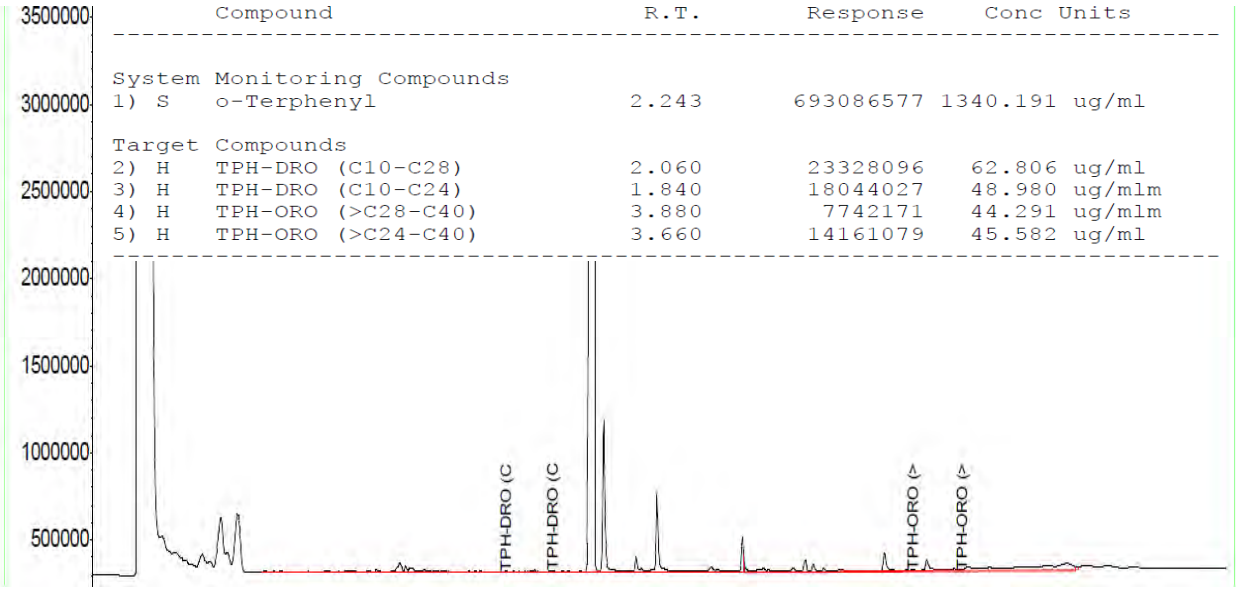


Figure D-15. TPH 8015 Chromatograms of Sample DA58974-14 (Top) and the Respective Method Blank (Bottom)

In Figure D-15, mass spectral examination of the extract confirmed hexa- and octa-decanoic acids, phthalates and halogenated products as the primary species of the detections.

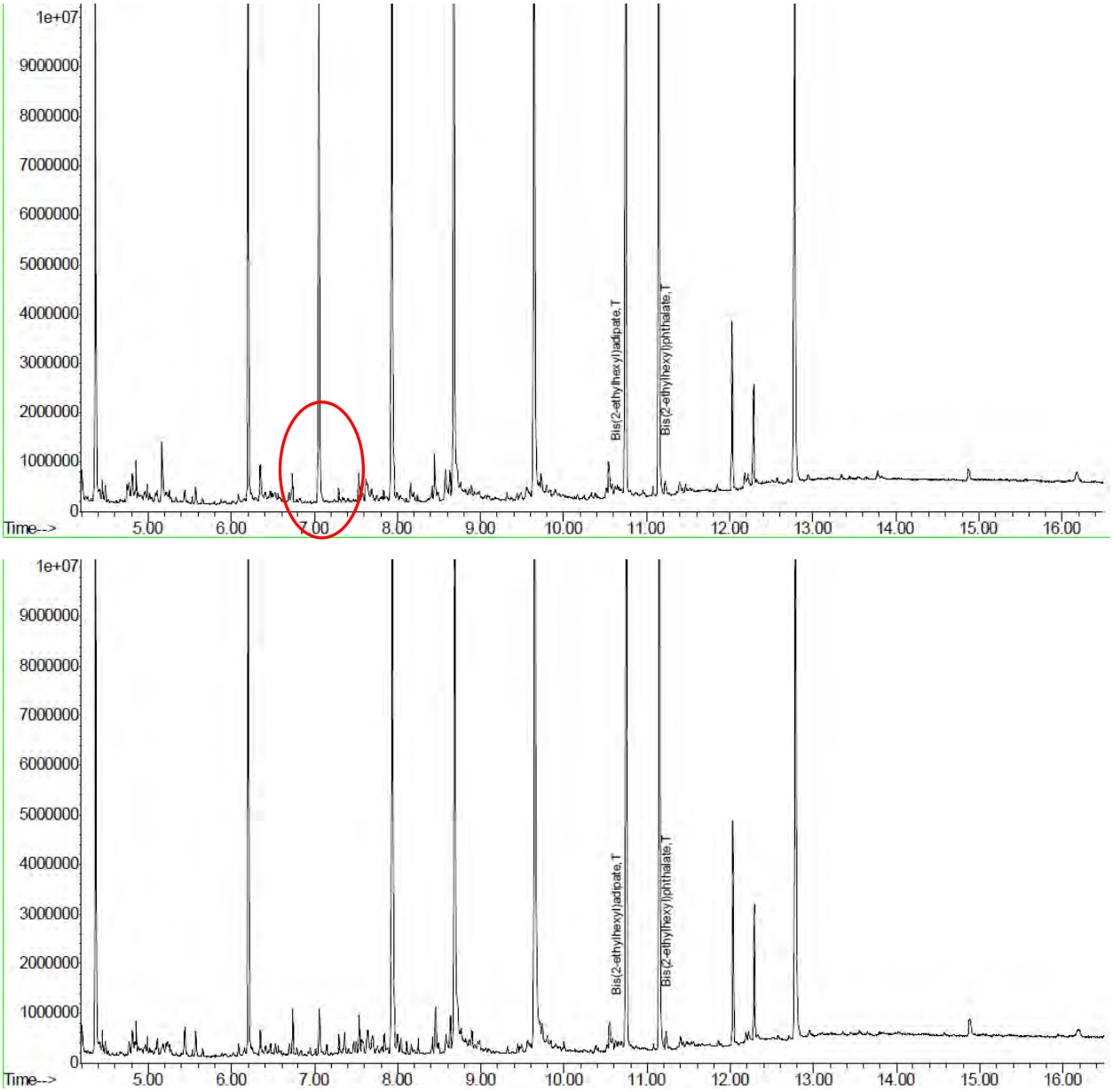
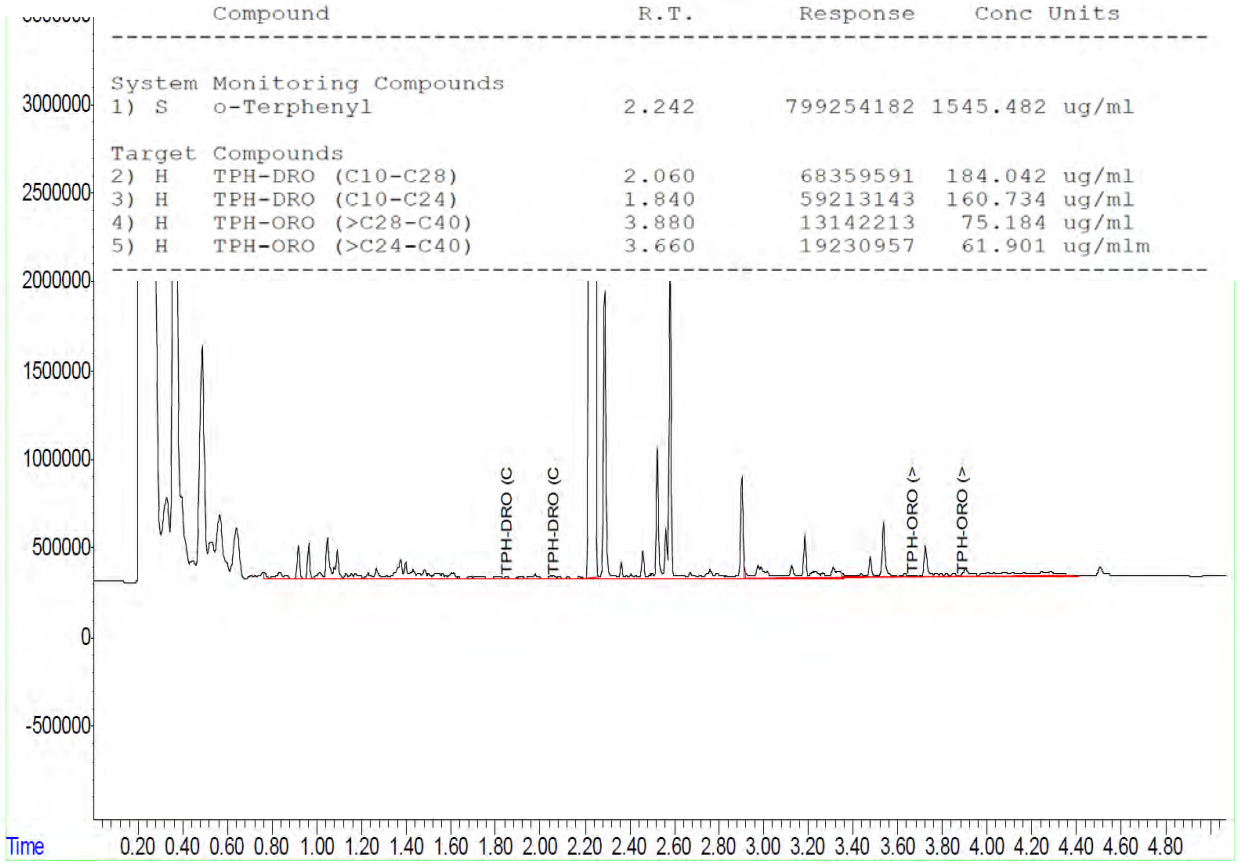


Figure D-16. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA58974-14 (Top) and the Respective Extraction Blank (Bottom)

In Figure D-16, there was only one peak identified in red that met the ELIPS screening criteria for further evaluation. The mass spectrum was identical to that of the proposed fatty acid shown in Figure D-2.b



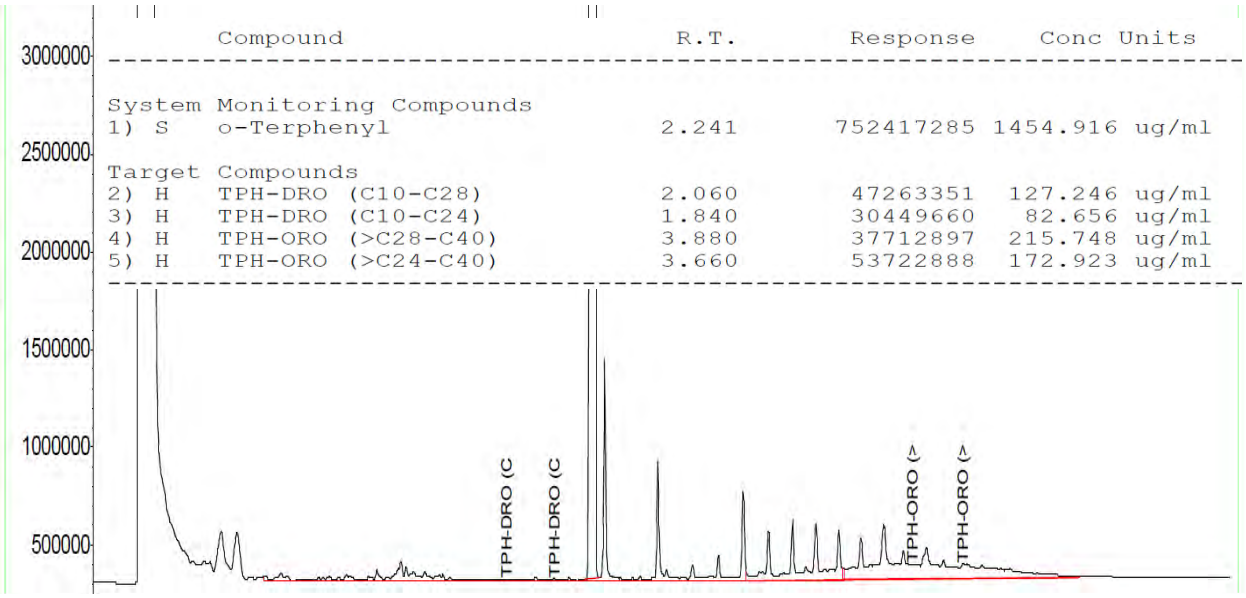


Figure D-17. 8015 Chromatograms of Sample DA59235-14 (Top) and the Respective Method Blank (Bottom)

The method blank in Figure D-17 shows contamination. Detected peaks outside the influence of the method blank contamination were confirmed by mass spectral analysis to be hexadecanoic acids and halogenated reaction by-products.

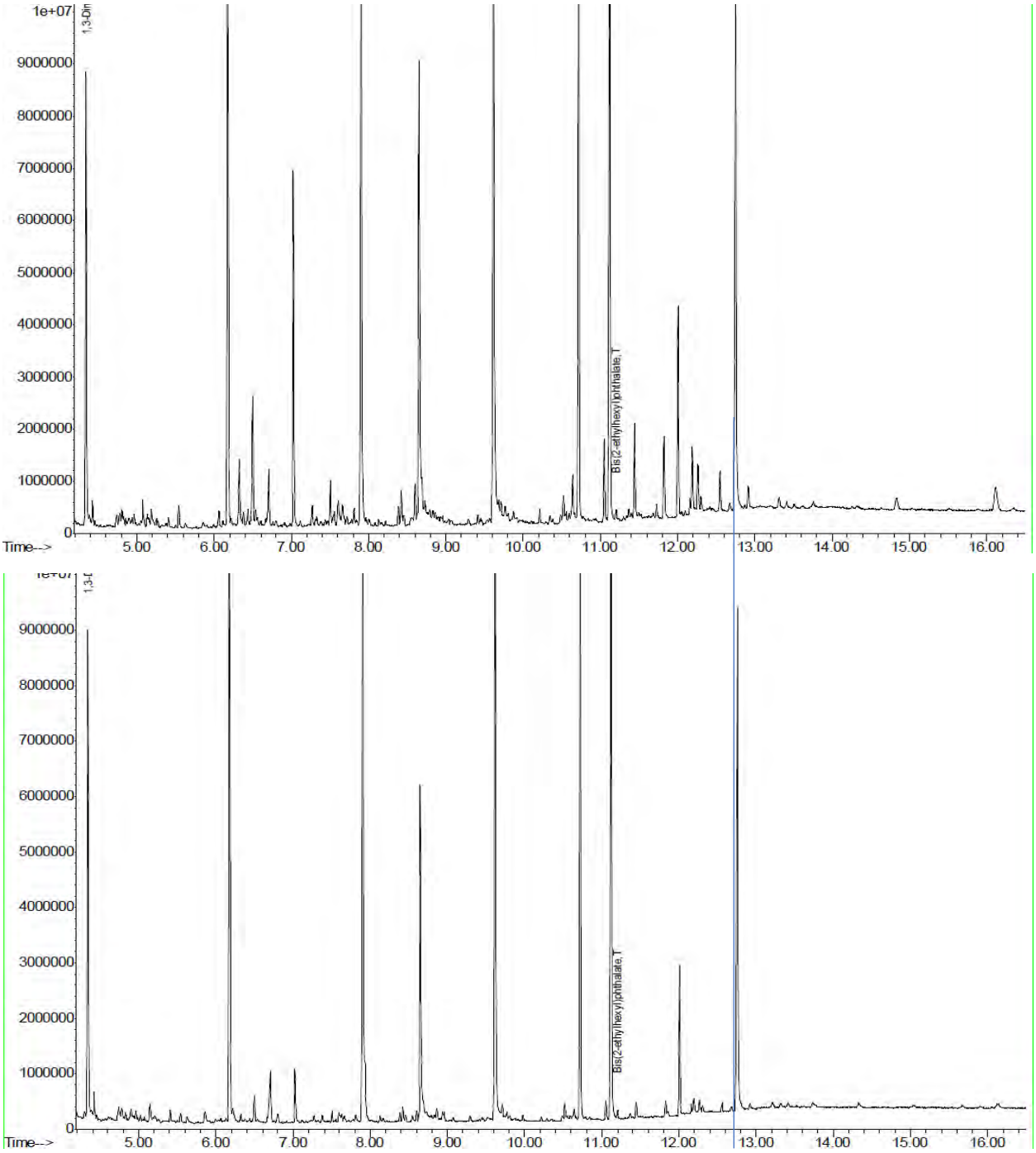


Figure D-18. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA59235-11 (Top) and the Respective Extraction Blank (Bottom)

There were no targets identified in Figure D-18 that met the ELIPS criteria for further analysis.

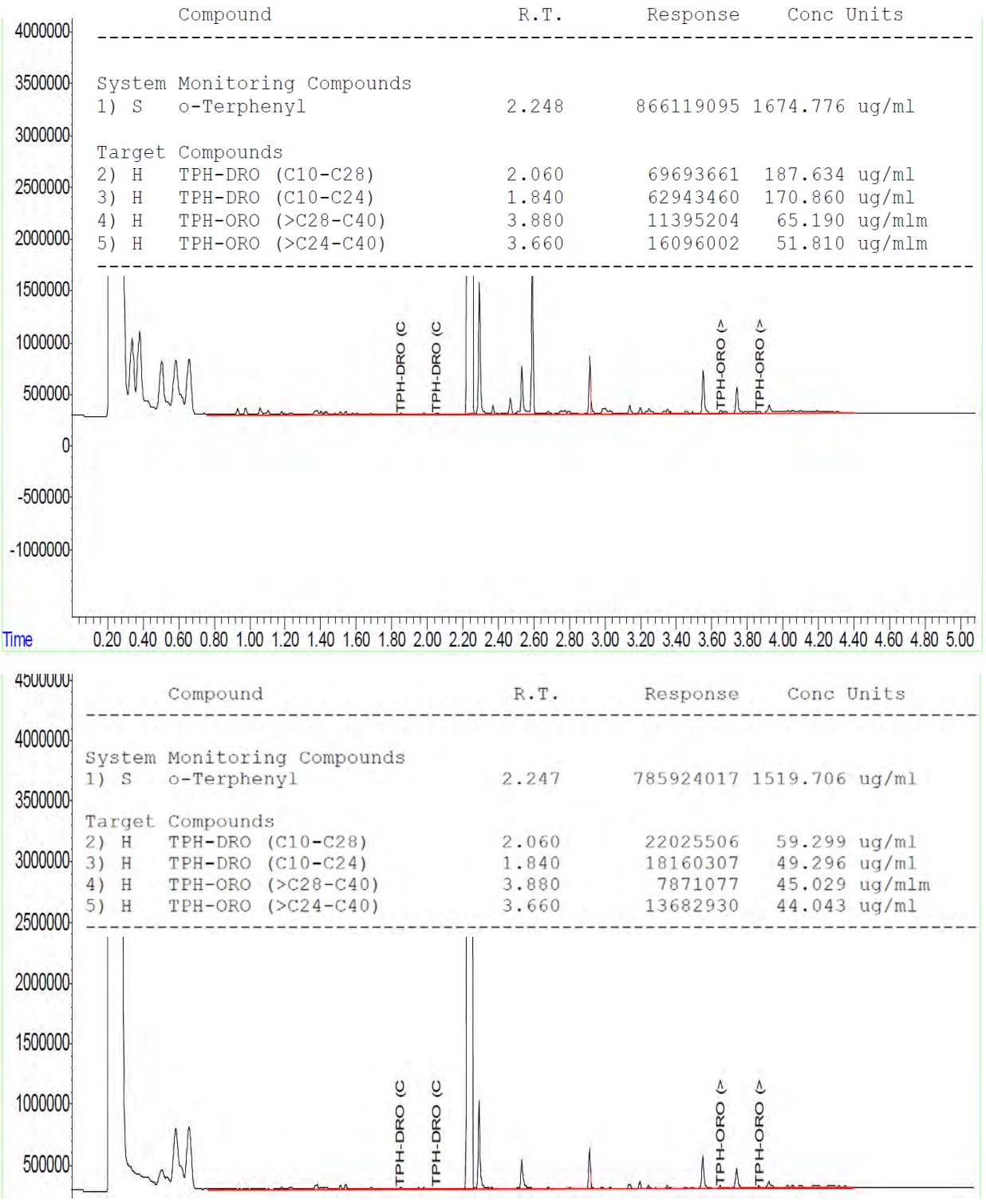


Figure D-19. 8015 Chromatograms of Sample DA58639-7 (Top) and the Respective Method Blank (Bottom)

In Figure D-19, mass spectral analysis of the TPH extract confirmed the presence of mostly halogenated reaction by-products, hexa- and octa-decanoic acids, and phthalates.

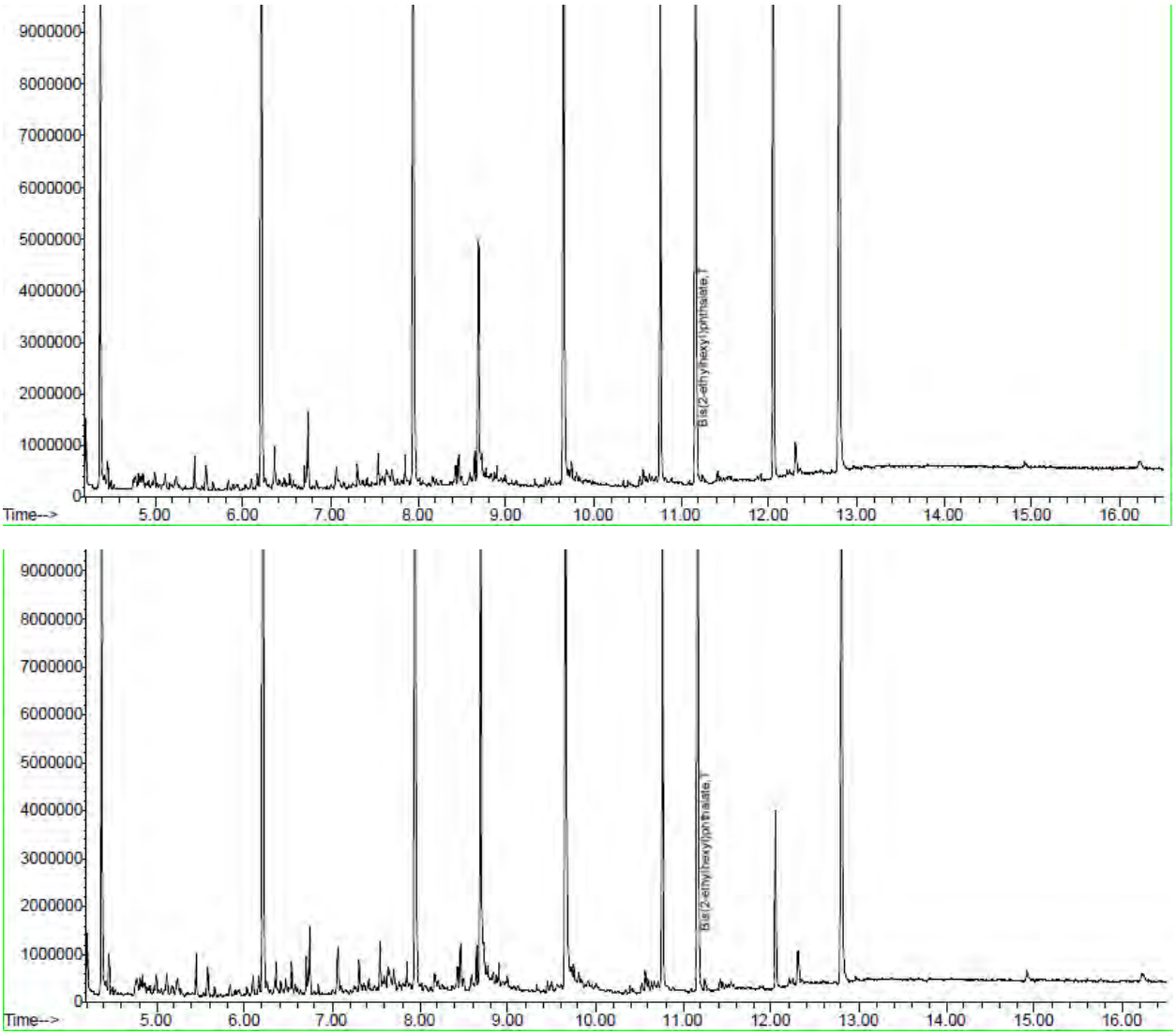
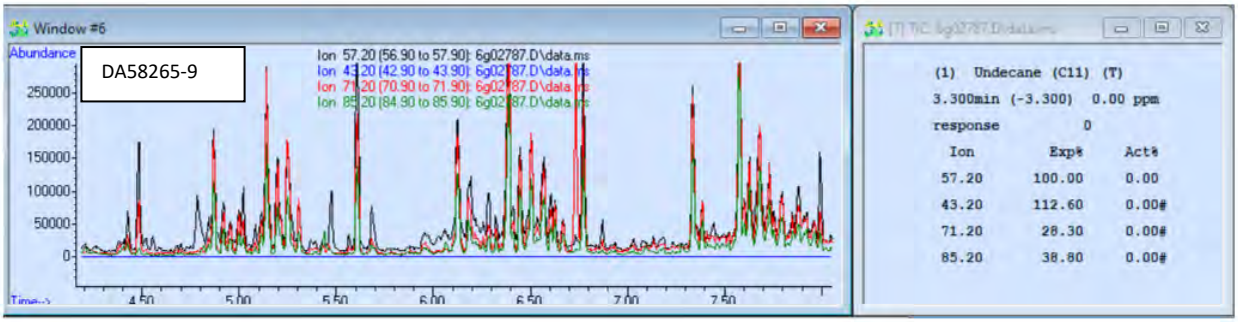
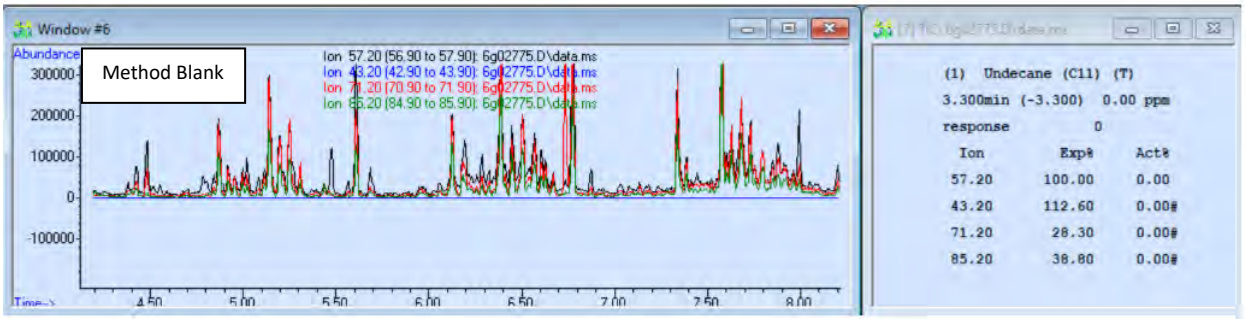


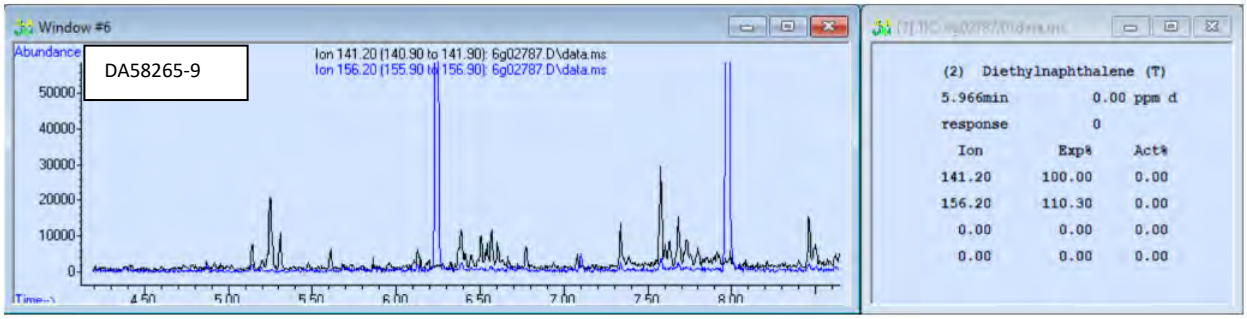
Figure D-20. Total Ion Chromatograms (TICs) from EPA Method 525 GC/MS Analysis for Sample DA58639-7 (Top) and the Respective Extraction Blank (Bottom)

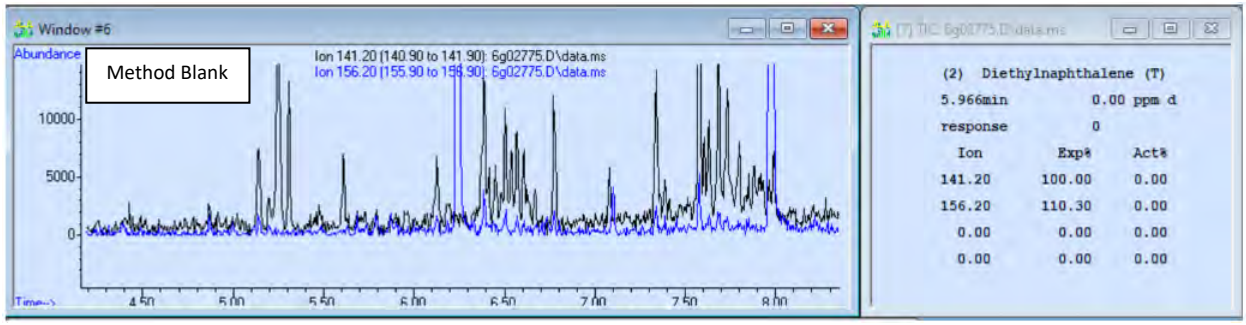
There were no targets identified in Figure D-20 that met the ELIPS criteria for further analysis.

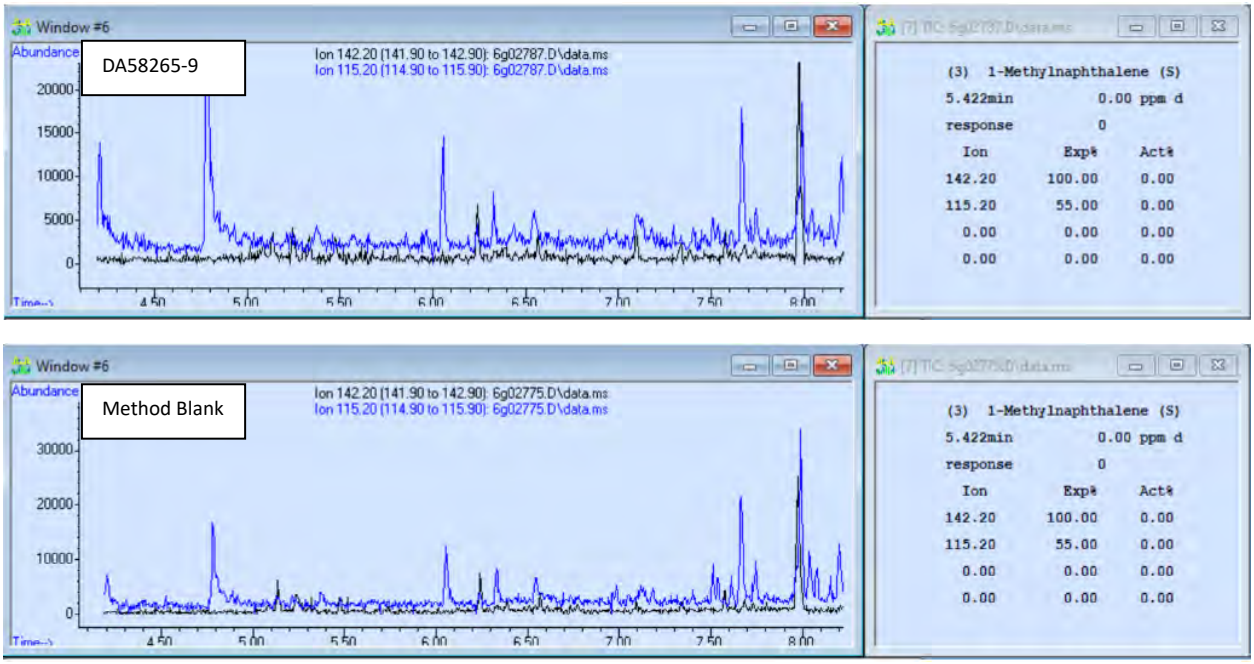
ELIPS Summary: Except where noted, the observed patterns were not significantly different between most of the selected samples and associated method blanks. It is emphasized that EPA Method 8015 and EPA Method 525 are obtained under different chromatographic conditions and utilize different surrogates. In addition, EPA Method 525 samples are preserved with sodium thiosulfate; therefore, the presence of the proposed halogenated species that are present in the TPH chromatograms associated with EPA Method 8015 cannot be confirmed by the ELIPS screening, but the halogenated species of the surrogate were confirmed by additional mass spectral evaluation of the TPH extracts using EPA Method 8015. There were no petroleum signatures observed in any of the samples examined using the ELIPS screening other than those identified as contamination/laboratory artifacts. This further supports the proposed blank contamination issues causing the petroleum signatures in samples DA57284-14, 59235-14, and DA58544-4. The only unknown peaks in any of the samples meeting the ELIPS screening criteria were found to be fatty acids. Hexadecanoic and octadecanoic acids, as well as phthalates, were confirmed by mass spectral identification to be contributing to some TPH-o detections and were also detected in most method blanks.

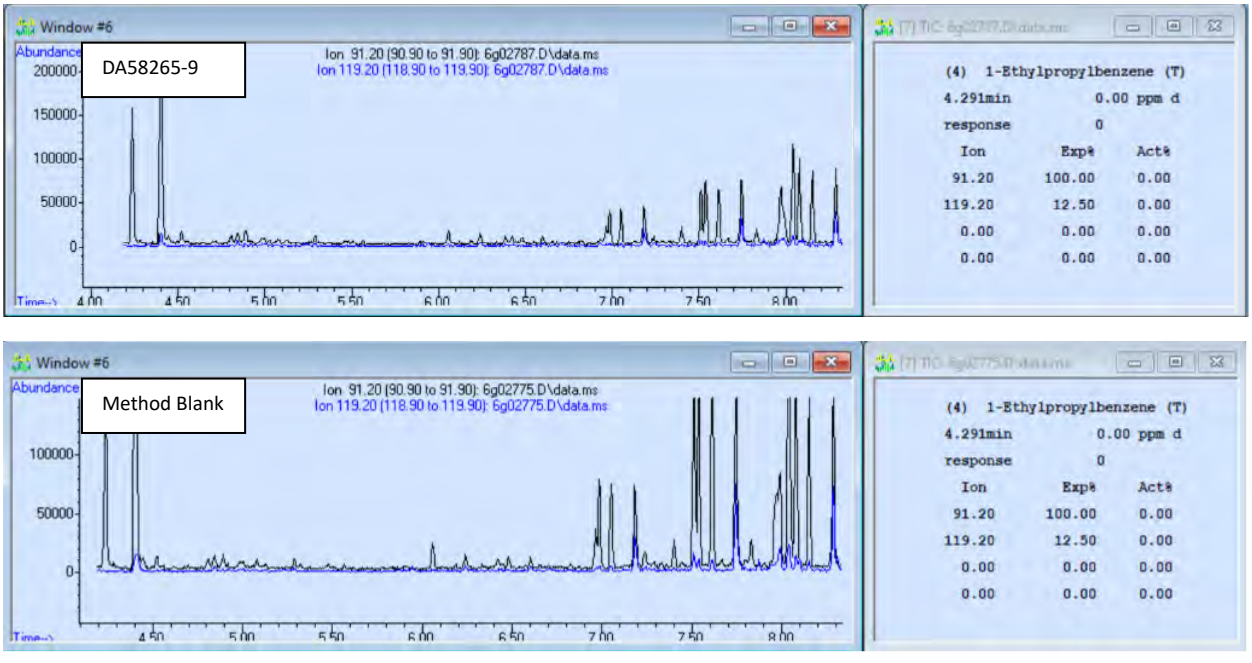

Window #6
Abundance
DA58265-9
Ion 57.20 (56.90 to 57.90): 6g02787.D\data.ms
Ion 43.20 (42.90 to 43.90): 6g02787.D\data.ms
Ion 71.20 (70.90 to 71.90): 6g02787.D\data.ms
Ion 85.20 (84.90 to 85.90): 6g02787.D\data.ms
(1) Undecane (C11) (T)
3.300min (-3.300) 0.00 ppm
response 0
Ion Exp% Act%
57.20 100.00 0.00
43.20 112.60 0.00#
71.20 28.30 0.00#
85.20 38.80 0.00#

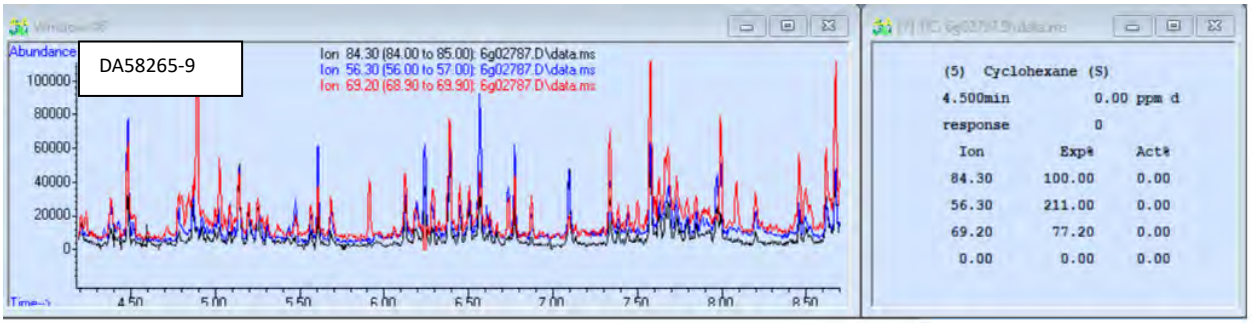

Window #6
Abundance
Method Blank
Ion 57.20 (56.90 to 57.90): 6g02775.D\data.ms
Ion 43.20 (42.90 to 43.90): 6g02775.D\data.ms
Ion 71.20 (70.90 to 71.90): 6g02775.D\data.ms
Ion 85.20 (84.90 to 85.90): 6g02775.D\data.ms
(1) Undecane (C11) (T)
3.300min (-3.300) 0.00 ppm
response 0
Ion Exp% Act%
57.20 100.00 0.00
43.20 112.60 0.00#
71.20 28.30 0.00#
85.20 38.80 0.00#

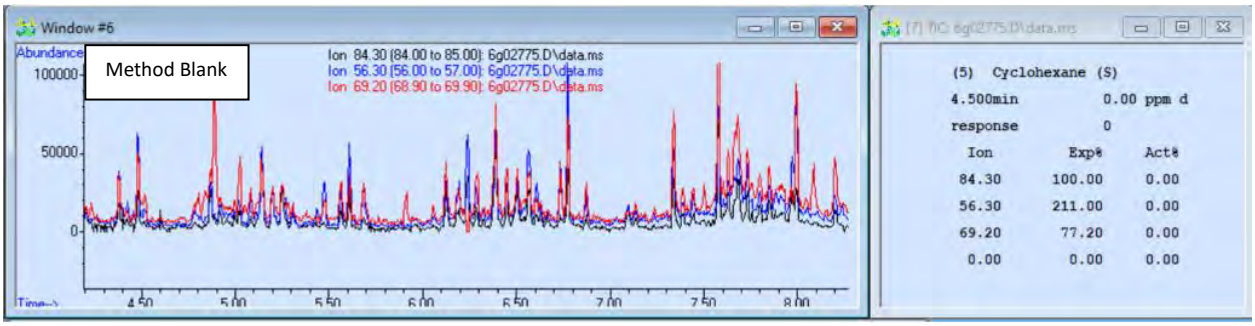

Window #6
Abundance
DA58265-9
Ion 141.20 (140.90 to 141.90): 6g02787.D\data.ms
Ion 156.20 (155.90 to 156.90): 6g02787.D\data.ms
(2) Diethylnaphthalene (T)
5.966min 0.00 ppm d
response 0
Ion Exp% Act%
141.20 100.00 0.00
156.20 110.30 0.00
0.00 0.00 0.00
0.00 0.00 0.00

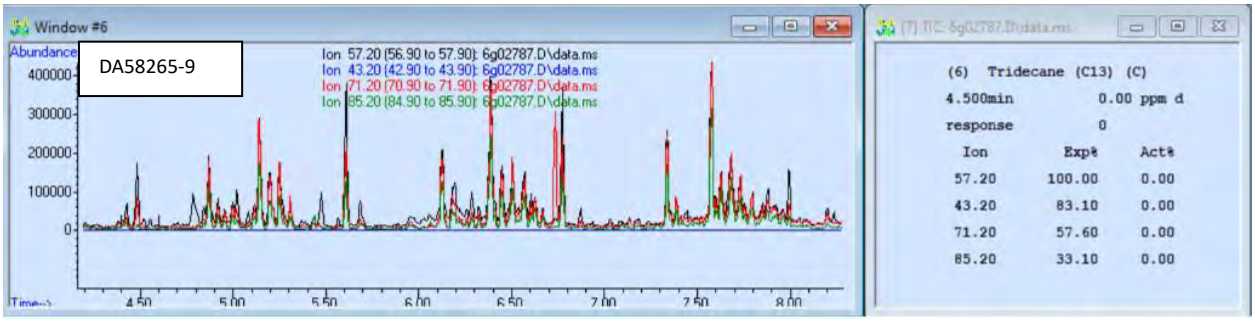

Window #6
Abundance
Method Blank
Ion 141.20 (140.90 to 141.90): 6g02775.D\data.ms
Ion 156.20 (155.90 to 156.90): 6g02775.D\data.ms
(2) Diethylnaphthalene (T)
5.966min 0.00 ppm d
response 0
Ion Exp% Act%
141.20 100.00 0.00
156.20 110.30 0.00
0.00 0.00 0.00
0.00 0.00 0.00

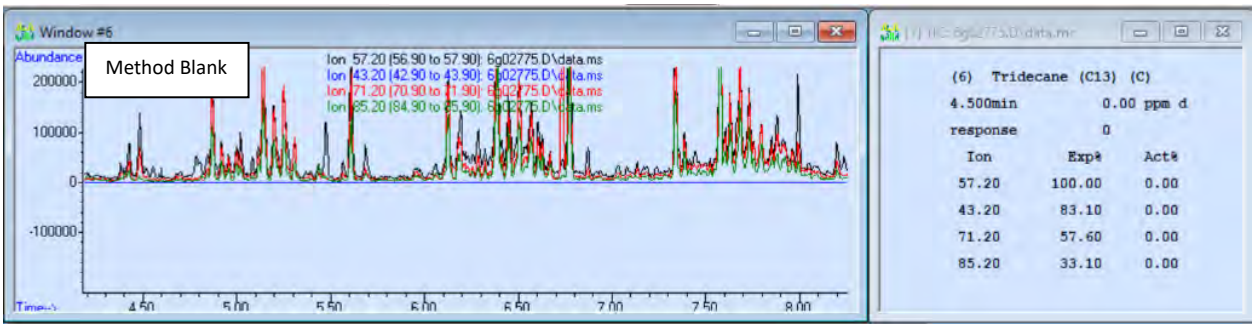

Window #6
DA58265-9
Abundance
Ion 142.20 (141.90 to 142.90): 6g02787.D\data.ms
Ion 115.20 (114.90 to 115.90): 6g02787.D\data.ms
(3) 1-Methylnaphthalene (S)
5.422min 0.00 ppm d
response 0
Ion Exp% Act%
142.20 100.00 0.00
115.20 55.00 0.00
0.00 0.00 0.00
0.00 0.00 0.00
Window #6
Method Blank
Abundance
Ion 142.20 (141.90 to 142.90): 6g02775.D\data.ms
Ion 115.20 (114.90 to 115.90): 6g02775.D\data.ms
(3) 1-Methylnaphthalene (S)
5.422min 0.00 ppm d
response 0
Ion Exp% Act%
142.20 100.00 0.00
115.20 55.00 0.00
0.00 0.00 0.00
0.00 0.00 0.00

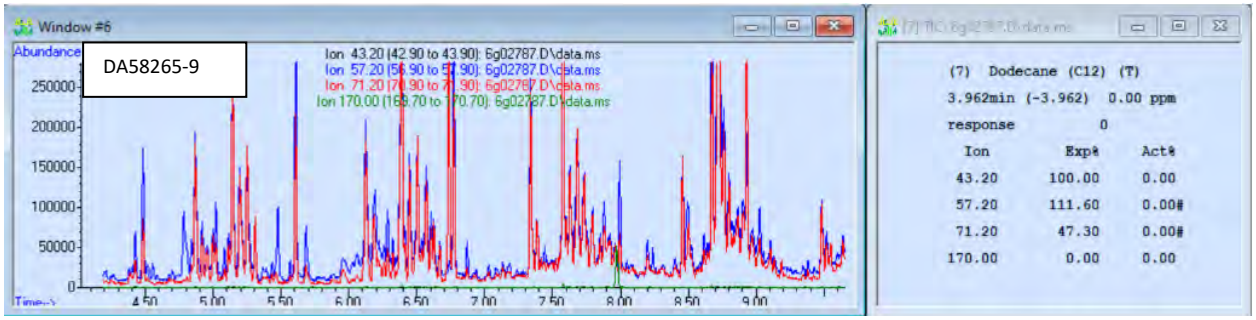

Window #6
DA58265-9
Abundance
Ion 91.20 (90.90 to 91.90): 6g02787.D\data.ms
Ion 119.20 (118.90 to 119.90): 6g02787.D\data.ms
(4) 1-Ethylpropylbenzene (T)
4.291min 0.00 ppm d
response 0
Ion Exp% Act%
91.20 100.00 0.00
119.20 12.50 0.00
0.00 0.00 0.00
0.00 0.00 0.00
Window #6
Method Blank
Abundance
Ion 91.20 (90.90 to 91.90): 6g02775.D\data.ms
Ion 119.20 (118.90 to 119.90): 6g02775.D\data.ms
(4) 1-Ethylpropylbenzene (T)
4.291min 0.00 ppm d
response 0
Ion Exp% Act%
91.20 100.00 0.00
119.20 12.50 0.00
0.00 0.00 0.00
0.00 0.00 0.00

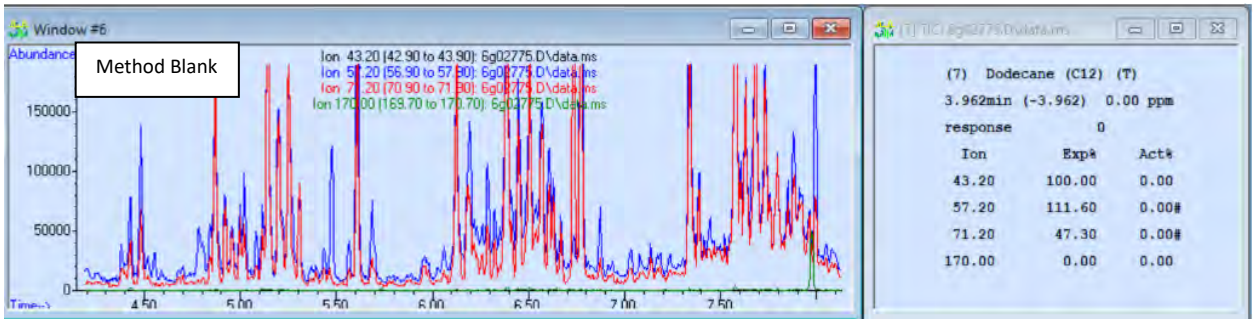

DA58265-9
Abundance
Ion 84.30 (84.00 to 85.00): 6g02787.D\data.ms
Ion 56.30 (56.00 to 57.00): 6g02787.D\data.ms
Ion 69.20 (68.90 to 69.90): 6g02787.D\data.ms
(5) Cyclohexane (S)
4.500min 0.00 ppm d
response 0
Ion Exp% Act%
84.30 100.00 0.00
56.30 211.00 0.00
69.20 77.20 0.00
0.00 0.00 0.00

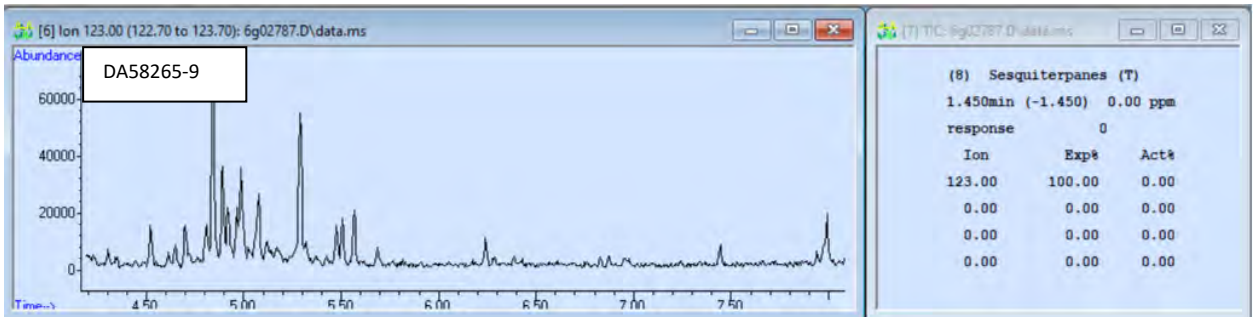

Window #6
Method Blank
Abundance
Ion 84.30 (84.00 to 85.00): 6g02775.D\data.ms
Ion 56.30 (56.00 to 57.00): 6g02775.D\data.ms
Ion 69.20 (68.90 to 69.90): 6g02775.D\data.ms
(5) Cyclohexane (S)
4.500min 0.00 ppm d
response 0
Ion Exp% Act%
84.30 100.00 0.00
56.30 211.00 0.00
69.20 77.20 0.00
0.00 0.00 0.00

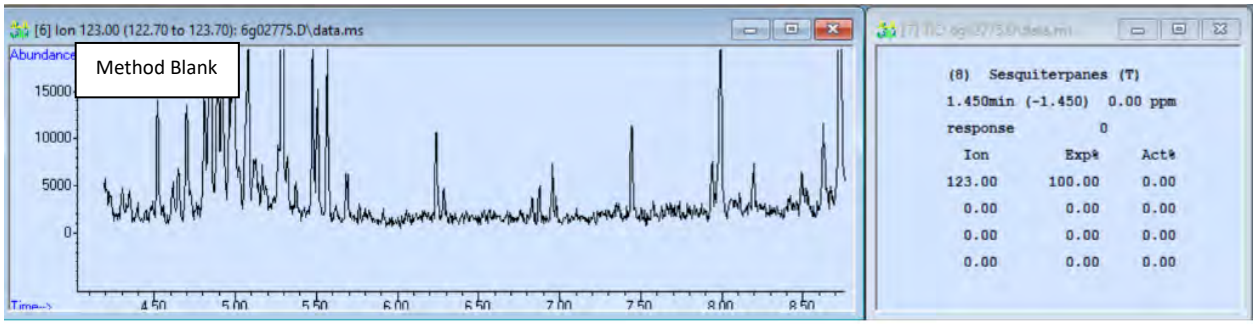

Window #6
DA58265-9
Abundance
Ion 57.20 (56.90 to 57.90): 6g02787.D\data.ms
Ion 43.20 (42.90 to 43.90): 6g02787.D\data.ms
Ion 71.20 (70.90 to 71.90): 6g02787.D\data.ms
Ion 85.20 (84.90 to 85.90): 6g02787.D\data.ms
(6) Tridecane (C13) (C)
4.500min 0.00 ppm d
response 0
Ion Exp% Act%
57.20 100.00 0.00
43.20 83.10 0.00
71.20 57.60 0.00
85.20 33.10 0.00


Window #6
Method Blank
Abundance
Ion 57.20 (56.90 to 57.90): 6g02775.D\data.ms
Ion 43.20 (42.90 to 43.90): 6g02775.D\data.ms
Ion 71.20 (70.90 to 71.90): 6g02775.D\data.ms
Ion 85.20 (84.90 to 85.90): 6g02775.D\data.ms
(6) Tridecane (C13) (C)
4.500min 0.00 ppm d
response 0
Ion Exp% Act%
57.20 100.00 0.00
43.20 83.10 0.00
71.20 57.60 0.00
85.20 33.10 0.00


Window #6
DA58265-9
Abundance
Ion 43.20 (42.90 to 43.90): 6g02787.D\data.ms
Ion 57.20 (56.90 to 57.90): 6g02787.D\data.ms
Ion 71.20 (70.90 to 71.90): 6g02787.D\data.ms
Ion 170.00 (169.70 to 170.70): 6g02787.D\data.ms
(7) Dodecane (C12) (T)
3.962min (-3.962) 0.00 ppm
response 0
Ion Exp% Act%
43.20 100.00 0.00
57.20 111.60 0.00#
71.20 47.30 0.00#
170.00 0.00 0.00


Window #6
Method Blank
Abundance
Ion 43.20 (42.90 to 43.90): 6g02775.D\data.ms
Ion 57.20 (56.90 to 57.90): 6g02775.D\data.ms
Ion 71.20 (70.90 to 71.90): 6g02775.D\data.ms
Ion 170.00 (169.70 to 170.70): 6g02775.D\data.ms
(7) Dodecane (C12) (T)
3.962min (-3.962) 0.00 ppm
response 0
Ion Exp% Act%
43.20 100.00 0.00
57.20 111.60 0.00#
71.20 47.30 0.00#
170.00 0.00 0.00


[6] Ion 123.00 (122.70 to 123.70): 6g02787.D\data.ms
DA58265-9
Abundance
(8) Sesquiterpanes (T)
1.450min (-1.450) 0.00 ppm
response 0
Ion Exp% Act%
123.00 100.00 0.00
0.00 0.00 0.00
0.00 0.00 0.00
0.00 0.00 0.00


[6] Ion 123.00 (122.70 to 123.70): 6g02775.D\data.ms
Method Blank
Abundance
(8) Sesquiterpanes (T)
1.450min (-1.450) 0.00 ppm
response 0
Ion Exp% Act%
123.00 100.00 0.00
0.00 0.00 0.00
0.00 0.00 0.00
0.00 0.00 0.00

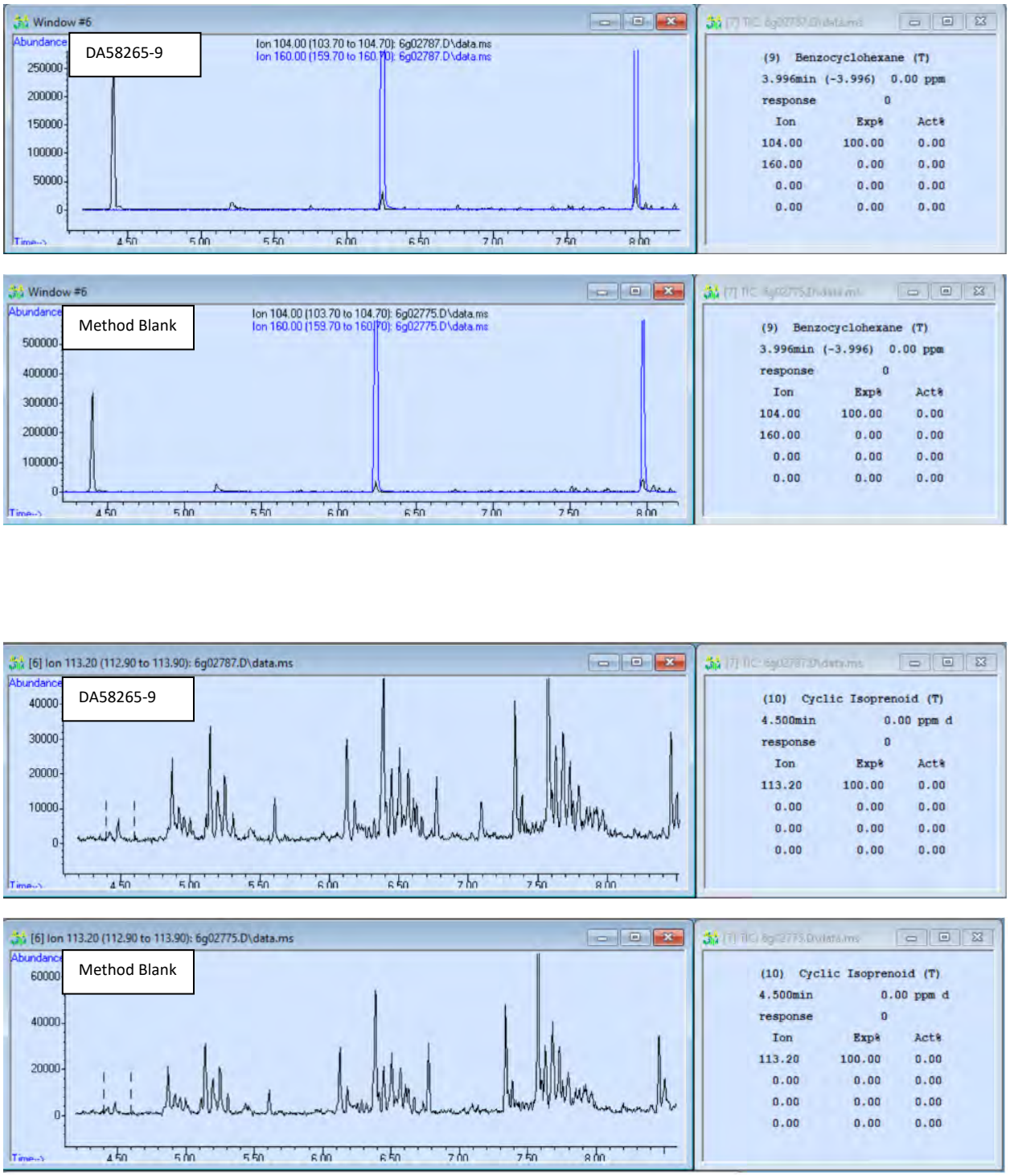


Figure D-21. ELIPS Profile Scans for Sample DA58265-9 and the Respective Method Blanks

Note: The ion scans for the remaining samples are not included but are available upon request.

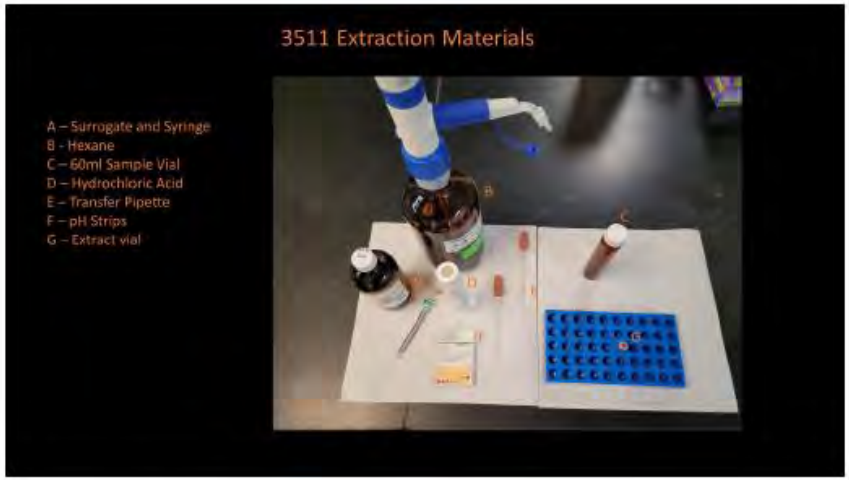
Appendix E. Comparison of EPA Method 8015 Standard Extraction and Micro-Extraction Results

Table E-1. Extraction Method Comparison

Parameter	3510C (Separatory Funnel)	3511 (Microextraction)	Advantages
Sample Containers	2 x 1L Amber – no preservative	3 X 60 ml VOA Vials - No preservative	Reduces introduction of laboratory artifacts (Extraction directly from vials instead of transfer from ambers to separatory funnel)
Sample Volume Extracted	1 L	55 mL	Reduced waste
Solvent	Methylene chloride (Dichloromethane)	Hexane	Environmental and health and safety advantages (methylene chloride is carcinogenic and more toxic than hexane)
Extraction Solvent Volume	60 mL x 3 times + additional volume used in transfers	2 mL	Reduces volume of laboratory waste (200 mL vs 2 mL)
Extract Final Volume	1 mL	2 mL	
Injection Volume	2 µL	25 µL	Allows maintenance of sensitivity despite lower volume of extraction solvent
Laboratory Handling	Extensive – multiple sample transfers and use of reusable glassware	Minimal – no reusable glassware and only one transfer to injection vial	Reduces introduction of laboratory artifacts with reduction of sample handling by the lab
Minimum Detection Limit (MDL)	50 µg/L DRO; 50 µg/L ORO	50 µg/L DRO; 50 µg/L ORO	No difference
Reporting Limit (RL)	80 µg/L DRO; 80 µg/L ORO	75 µg/L DRO; 75 µg/L ORO	Lower reporting limit – minimal difference
Laboratory QC Limits – Percent Recovery	Surrogate: 10-131% LCS DRO:20-130% LCS ORO: 27-130%	Surrogate: 70-130% LCS DRO:70-130% LCS ORO: 70-130%	Narrower range of laboratory QC limits

Acronyms: DRO – diesel range organics; L – liters; LCS – laboratory control samples; mL – milliliters; ORO – oil range organics; QC – quality control; µg/L – micrograms per liter

Figure E-1. Supplies and Reagents Method
Method 3510C (Separatory Funnel) vs. 3511 (Microextraction)



Reusable Glassware Method 3510C

B – 2L Separatory Funnel
C – Glass Graduated Cylinder
G – Syringe
H – Glass Beaker
I – Concentration Tube
M – Glass Funnel

Additional Supplies Contacting Sample or Equipment

D – Filter Paper
E – Sodium Sulfate
L – Acetone (for rinsing funnel, filter paper, and sodium sulfate)

Reusable Glassware Method 3511

A – Syringe

Appendix F. LTM Chlorine Residual Data Analysis

As discussed in Appendix C, the interagency team of SMEs from EPA, DOH, the Navy, and Navy contractors evaluated the presence of ghost peaks (i.e., peaks that are not associated with TPH in the actual field sample) in the TPH chromatograms. Ghost peaks could occur due to chemical reactions taking place in the sample during the extraction process because of the oxidizing environment present in finished (chlorinated) drinking water. The purpose of this appendix is to evaluate the relationship between low-level TPH detections and residual chlorine in the samples in order to evaluate this hypothesis further by performing statistical analysis on the LTM data. Basic chemistry principles dictate that TPH detections are more likely to be encountered in water with higher residual chlorine concentrations.

Figure F-1 shows box-and-whisker plots[6] for TPH-d detects (no or "J" qualifier) versus non-detects ("U" or "UJ" qualifier) by distribution system zone during LTM periods 1 through 6. Outliers were omitted for clarity. Each sub-plot represents between 36 (Zone G1) and over 1,000 paired chlorine-TPH-d results (Zone D2).[7] The left box in each sub-plot represents the chlorine residuals measured in samples where TPH-d was detected. The right box represents non-detects. The median chlorine residual has been systematically higher in samples where TPH-d was detected, regardless of zone. While the difference in the median is not statistically significant in every zone, it is statistically significant when all data are evaluated together (6,410 data points).

To provide a more quantitative assessment, AH developed a logistic model to predict the odds of a TPH-d detection as a function of the chlorine residual. The model, developed in *R*,[8] provides support for the hypothesis that halogenated byproducts have caused the spurious detections. The odds ratio[9] for all data points is 4.7 (95%-confidence interval: 3.6 – 6.2, *p*-value < 0.001). That is, a unit increase in chlorine residual increased the odds of a TPH-d detection by a factor of almost 5 during LTM periods 1 through 6.

[6] In box-and-whisker plots, the box encompasses the central half of the data points (i.e., the height represents the range of values between the 25th and 75th percentile). The horizontal line in the center of the box indicates the median, or 50th percentile. The whiskers above and below the box extend to the data points that are not outliers. The dots indicate statistical outliers. The width of the box is proportional to the number of samples.
[7] The Waiawa Shaft had too few data points for a meaningful analysis.
[8] *R* Core Team (2023). *R*: A Language and Environment for Statistical Computing. *R* Foundation for Statistical Computing, Vienna, Austria. Internet: https://www.R-project.org.
[9] The odds ratio (OR) is a statistic that quantifies the strength of the association between the event of having a TPH-d detect and the chlorine residual. TPH-d detections are independent of the chlorine residual if the OR equals 1.0, i.e., the odds of a detect are the same regardless of the chlorine residual.

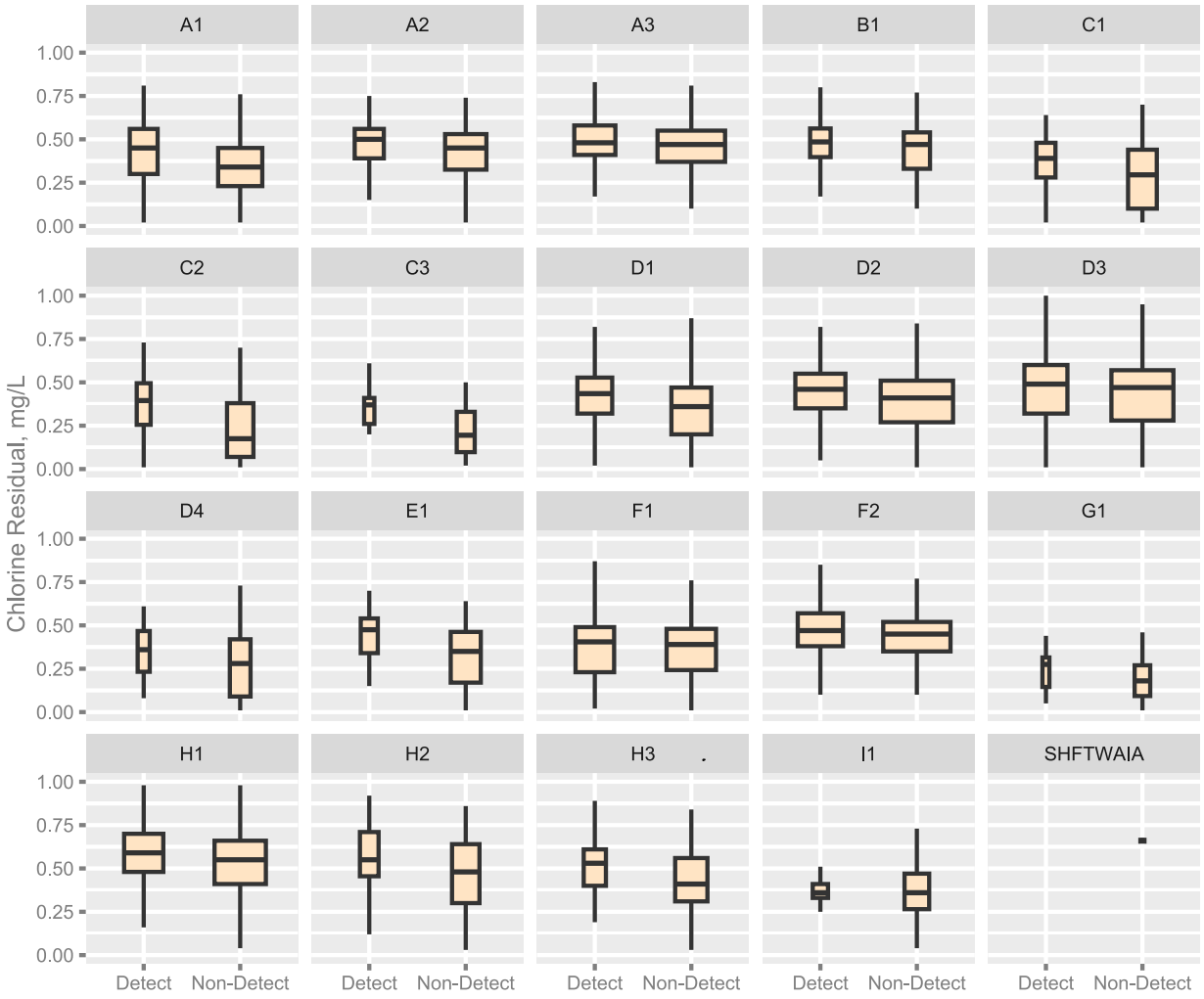


Figure F-1. Effect of Residual Chlorine Concentrations on TPH-d Detections

On 18 January 2024, the laboratory lowered the surrogate dose for the TPH analysis from 2,000 mg/L to 100 mg/L due to the suspected interference of free chlorine, causing the formation of halogenated byproducts of *o*-terphenyl that were then detected as TPH-d. This change introduced an additional confounding variable when LTM Period 7 data were included in the statistical data analysis. The regression analysis showed that the odds of detection of TPH-d in the presence of residual free chlorine, while still significant, decreased from 4.7 to 3.2 when LTM Period 7 data were included. Consequently, the surrogate dose was added to the binomial generalized linear model as an additional categorical predictor, which assumed the values "high" or "low," depending on the date of sample preparation being before or after 18 January 2024. Including both quantitative (chlorine residual) and a categorical (surrogate dose) variables, yielded a meaningful improvement in the predictive power of the logistic model. A unit increase in chlorine residual increased the odds of a TPH-d detect by a factor of 5.1 (95%-

confidence interval: 3.9 – 6.2, *p*-value < 0.001), whereas using the high surrogate dose (2,000 mg/L), increased the odds of detection by a factor of 11.1 (95%-confidence interval: 9.0 – 16.0, *p*-value < 0.001). Figure F-2 provides these results graphically.

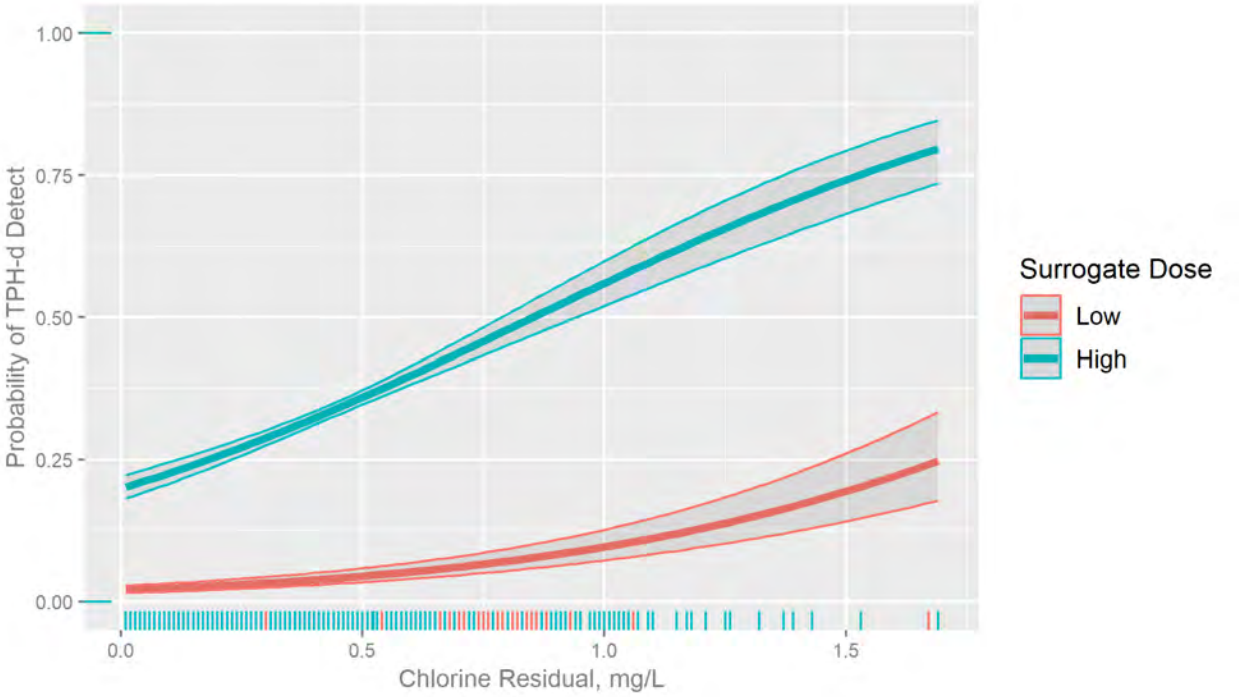


Figure F-2. Model-Predicted Probability of TPH-d Detects.

Statistical analyses of the residual chlorine concentrations measured during TPH sample collection indicate that disinfectant levels have increased during the second half of 2023, coinciding with the onset of more frequent TPH-d detections. The system-wide median value increased by 0.1 mg/L to 0.5 mg/L and has remained there (Figure F-3). The subsequent decrease in TPH-d could have been caused by the decrease in the surrogate dose.

It is worth noting that while chlorine residuals in the System increased, sampling results for trihalomethanes, a class of regulated disinfection byproducts, have not exhibited an increasing trend. This could be explained with the extremely low amounts of natural organic matter (as measured by total organic carbon concentrations) in the Waiawa Shaft water. In the presence of moderately high chlorine concentrations, reactive sites on natural organic molecules may have quickly been depleted. However, the high concentration of the (organic) surrogate chemical as well as the presence of other trace organic contaminants in reagents during the laboratory analysis may have provided additional reactive sites for oxidation by chlorine. The statistical model supports the hypothesis that the modest increase in chlorine levels could have affected halogenated byproducts.

Additional investigations, including a review of Supervisory Control and Data Acquisition (SCADA) data, operator logs and changes in chemical use, have been inconclusive.

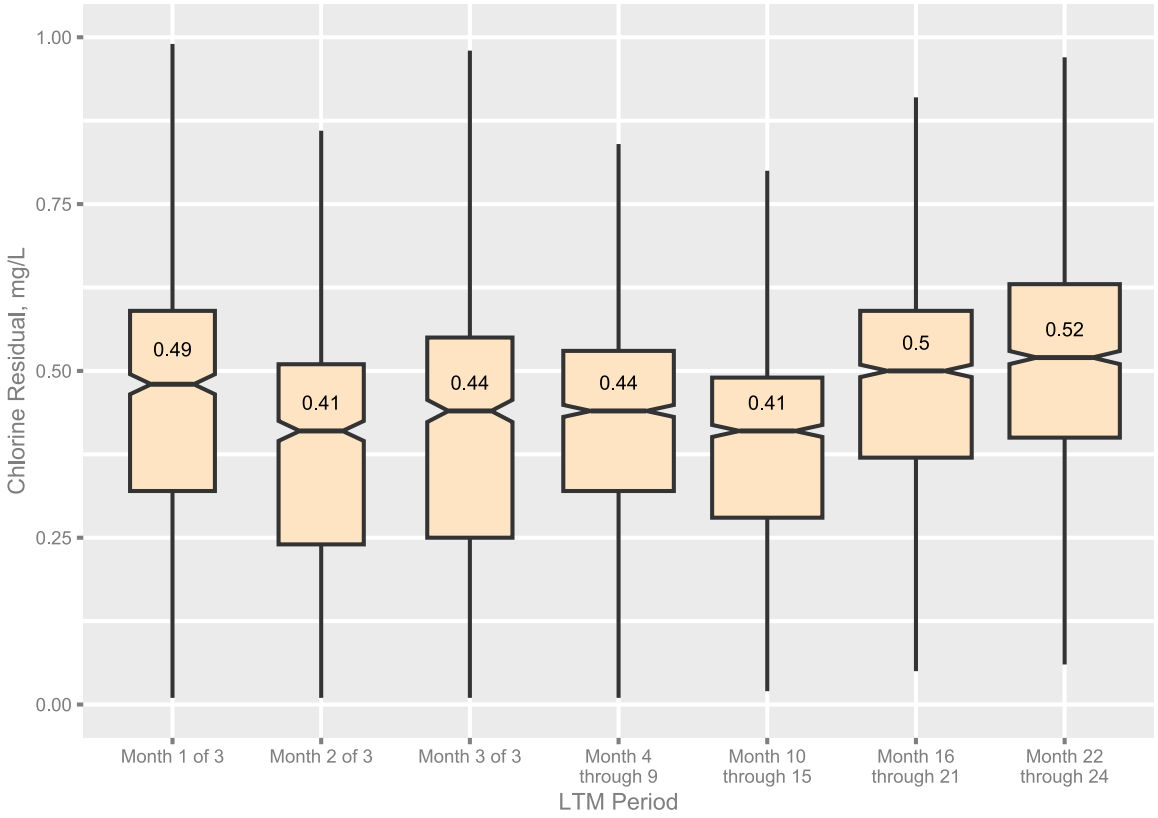


Figure F-3. LTM Chlorine Residual Data

Appendix G. JBPHH Drinking Water System TPH Side-by-Side Comparison

Summary

To evaluate the effectiveness of false positive TPH detections due to the reaction of chlorine with laboratory reagent and other organics (see Appendix F), 658 drinking water samples were collected through 29 March 2024, from the Joint Base Pearl Harbor Hickam (JBPHH) drinking water system (System). The samples were analyzed for TPH via the following methods:

1. **Separatory Funnel (SF) Method**: Separatory funnel extraction (EPA Method 3510) and analysis by gas chromatography and flame ionization detection (GC/FID, EPA Method 8015) without dechlorination (also referred to as quenching). Note: The SF Method is the same approach used to analyze TPH in drinking water samples that were collected during LTM.[10]

2. **Micro-Extraction Quench (MEQ) Method**: Addition of sodium thiosulfate (quenching) to remove residual chlorine, micro-extraction via EPA Method 3511, and analysis GC/FID (EPA Method 8015).

Samples were collected from all Zones in the JBPHH System. Drinking water samples were primarily focused on residences; however, other location types (e.g., schools, Child Development Centers [CDCs], non-residences, and hydrants) were also sampled. Drinking water samples were collected from 121 residential location that had TPH detections above 100 µg/L during LTM.

TPH was detected in 31 of the 658 samples (4.7%) using the SF Method with concentrations ranging between 50.3 µg/L and 359 µg/L. TPH was not detected using the MEQ Method in any of the 31 samples where TPHs were detected using the SF Method. TPH was detected in six of the 658 samples (0.91%) using the MEQ Method with concentrations ranging between 49.7 µg/L and 106.6 µg/L. However, these samples were (1) not detected in the corresponding SF Method samples, and (2) the laboratory confirmed that these detections were due to the presence siloxane (i.e., a non-petrogenic organic chemical in the bottle caps of the sampling containers).

In addition, 30 matrix spike samples were collected in the field, spiked with 70 µg/L of JP-5 in the lab prior to preparation. The analytical results showed that the percent recoveries for JP-5 were within recommended quality assurance and quality control (QA/QC) guidelines, which demonstrates that the accuracy and precision of analyzing field samples from JPBPHH using

[10] This is the same approach that was used since LTM Period 1. However, it should be noted that the laboratory reduced the concentration of the surrogate o-Terphenyl from 2,000 ug/L that was used during LTM to 100 ug/L on January 18, 2024. This modification is consistent with EPA Method 8015 and greatly reduces the formation of halogenation by-products which are suspected to have contributed to the low-level, false positive detections of TPH-total that were observed during LTM.

Attachment G-1

Chromatograms for LTM Residences with Detected Concentrations of TPH-total > 150 ug/L

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\220320\
Data File : LW002088.D
Signal(s) : FID2B.CH
Acq On : 21 Mar 2022 3:49 pm
Operator : IANV
Sample : DA43043-6
Misc : OP21372,GLW56,1055,,,1.0,1
ALS Vial : 64 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 22 10:26:59 2022
Quant Method : C:\msdchem\1\METHODS\DRO220318.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Mar 19 14:10:31 2022
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.415	23145726	1579.035	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 78.95%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.179	1404671	127.357	ppm	
2) H TPH-ORO (>C28-C40)	4.066	448263	69.823	ppm	m
3) H TPH-DRO (C10-C24)	1.947	959873	88.192	ppm	
4) H TPH-ORO (>C24-C40)	3.834	906996	78.257	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

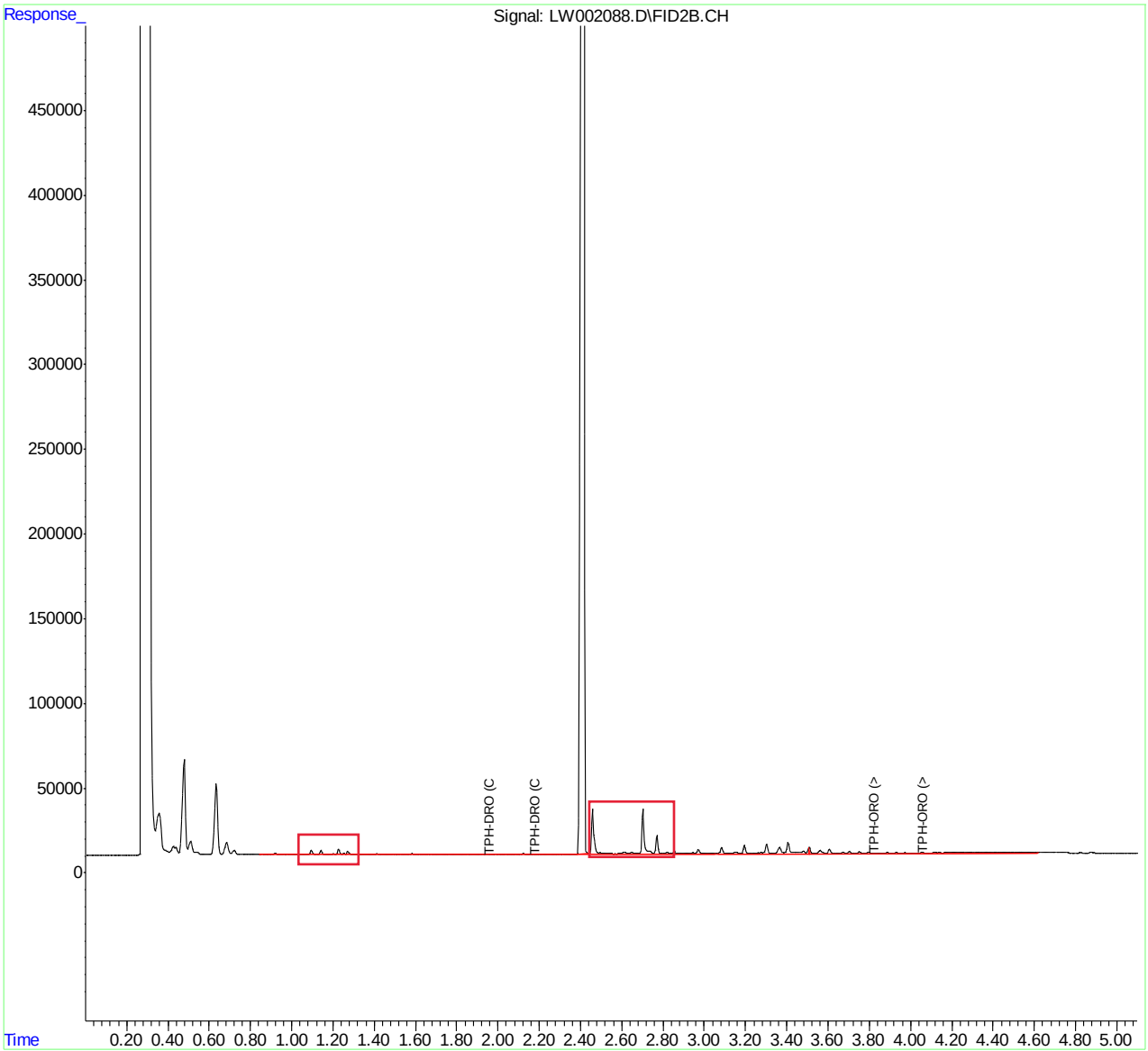
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\220320\
Data File : LW002088.D
Signal(s) : FID2B.CH
Acq On : 21 Mar 2022 3:49 pm
Operator : IANV
Sample : DA43043-6
Misc : OP21372,GLW56,1055,,,1.0,1
ALS Vial : 64 Sample Multiplier: 1

D1-TW-0000946-22060-N
DRO 83.6 J
ORO 74.2 J
Total TPH 157.8

Integration File: autoint1.e
Quant Time: Mar 22 10:26:59 2022
Quant Method : C:\msdchem\1\METHODS\DRO220318.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Mar 19 14:10:31 2022
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\071423a\
Data File : LW13307.d
Signal(s) : FID1B.CH
Acq On : 14-Jul-23, 21:06:59
Operator : jackb
Sample : da56861-1
Misc : OP23985,GLW486,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jul 15 07:58:50 2023
Quant Method : C:\msdchem\1\methods\DRO070823.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sun Jul 09 12:32:29 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.399	39093480	1634.326 ppm
Spiked Amount 2000.000 Range 10 - 130 Recovery = 81.72%			
Target Compounds			
1) H TPH-DRO (C10-C28)	2.160	1243100	69.193 ppm
2) H TPH-ORO (>C28-C40)	4.090	173402	17.155 ppm
3) H TPH-DRO (C10-C24)	1.940	1104551	62.803 ppm
4) H TPH-ORO (>C24-C40)	3.870	349234	19.784 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.7 11

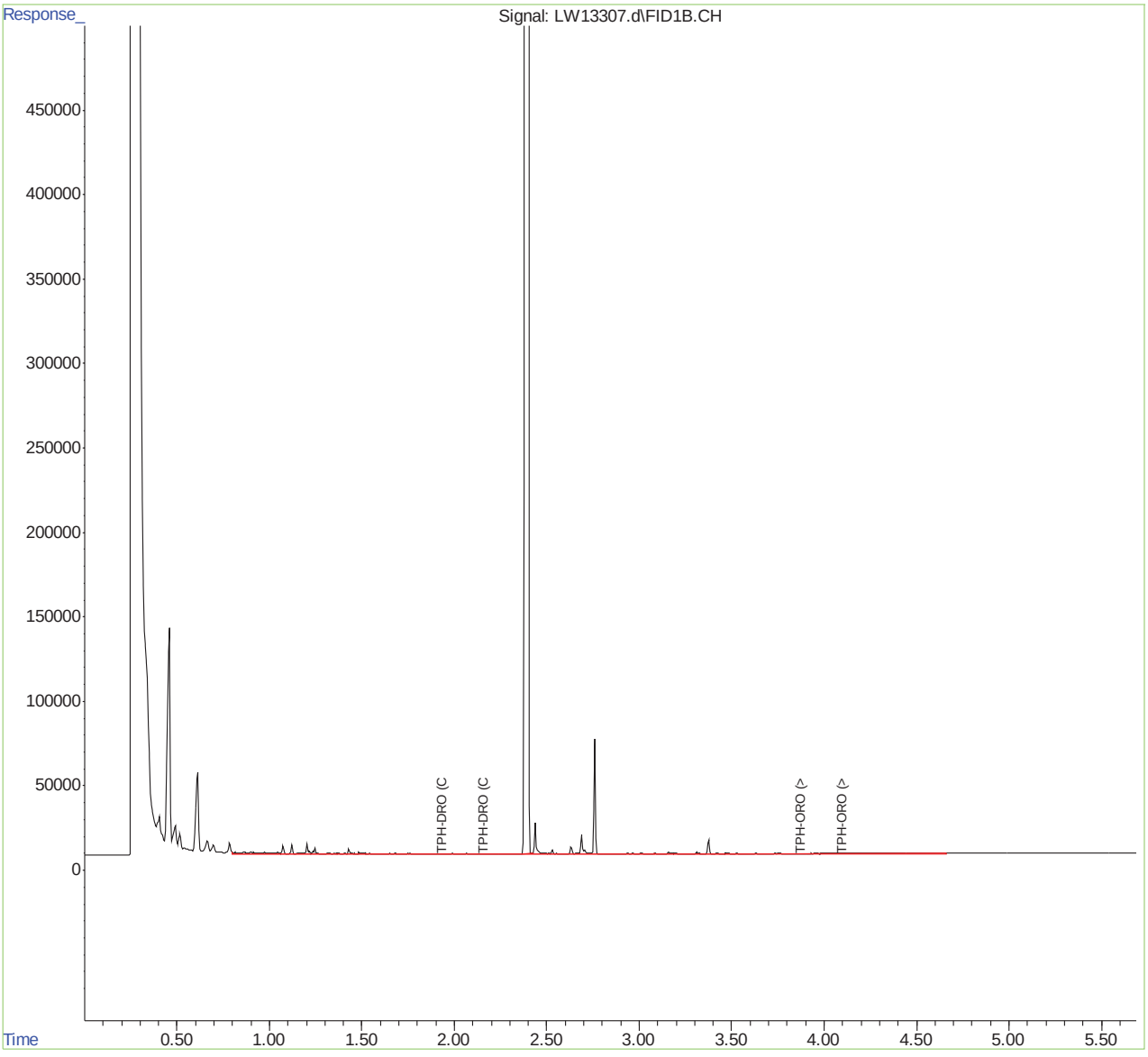
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\071423a\
Data File : LW13307.d
Signal(s) : FID1B.CH
Acq On : 14-Jul-23, 21:06:59
Operator : jackb
Sample : da56861-1
Misc : OP23985,GLW486,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D1-TW-0000946-23145-N-T
DRO 60.4 J
ORO 50.0 U
Total TPH 60.4

Integration File: autoint1.e
Quant Time: Jul 15 07:58:50 2023
Quant Method : C:\msdchem\1\methods\DRO070823.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sun Jul 09 12:32:29 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO070823.M Sun Jul 16 15:56:10 2023 Page: 2

11.1.7 11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074981.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 10:23 am
Operator : jackb
Sample : da62512-1
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 79 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 14:31:16 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.337	5845856	12.675	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	3809004	12.562	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2342745	9.550	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

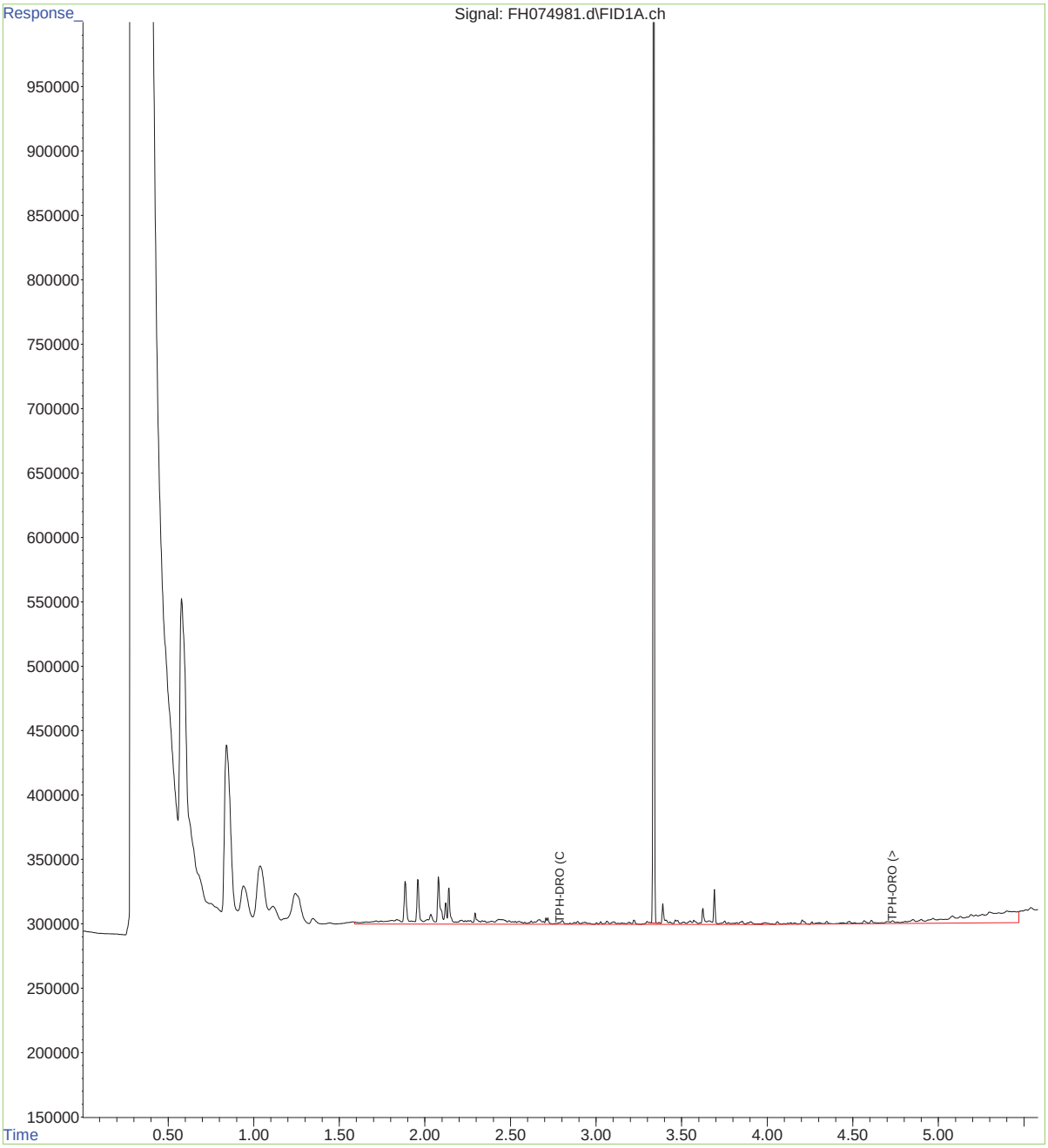
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074981.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 10:23 am
Operator : jackb
Sample : da62512-1
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 79 Sample Multiplier: 1

D1-TW-0000946-22060-N-R1
DRO 50.0 UJ
ORO 50.0 UJ
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 14:31:16 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030824\
Data File : LW23466.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 11:07:36
Operator : jackb
Sample : DA62523-1
Misc : OP25309,GLW661,56.6,,,2.0,1
ALS Vial : 54 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 09 11:14:57 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	3.274	14388257	7.705	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 77.05%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	2.880	334541	0.245	ppm	
4) H TPH-ORO (>C24-C40)	4.680	229849	0.289	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030824\
Data File : LW23466.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 11:07:36
Operator : jackb
Sample : DA62523-1
Misc : OP25309,GLW661,56.6,,,2.0,1
ALS Vial : 54 Sample Multiplier: 1

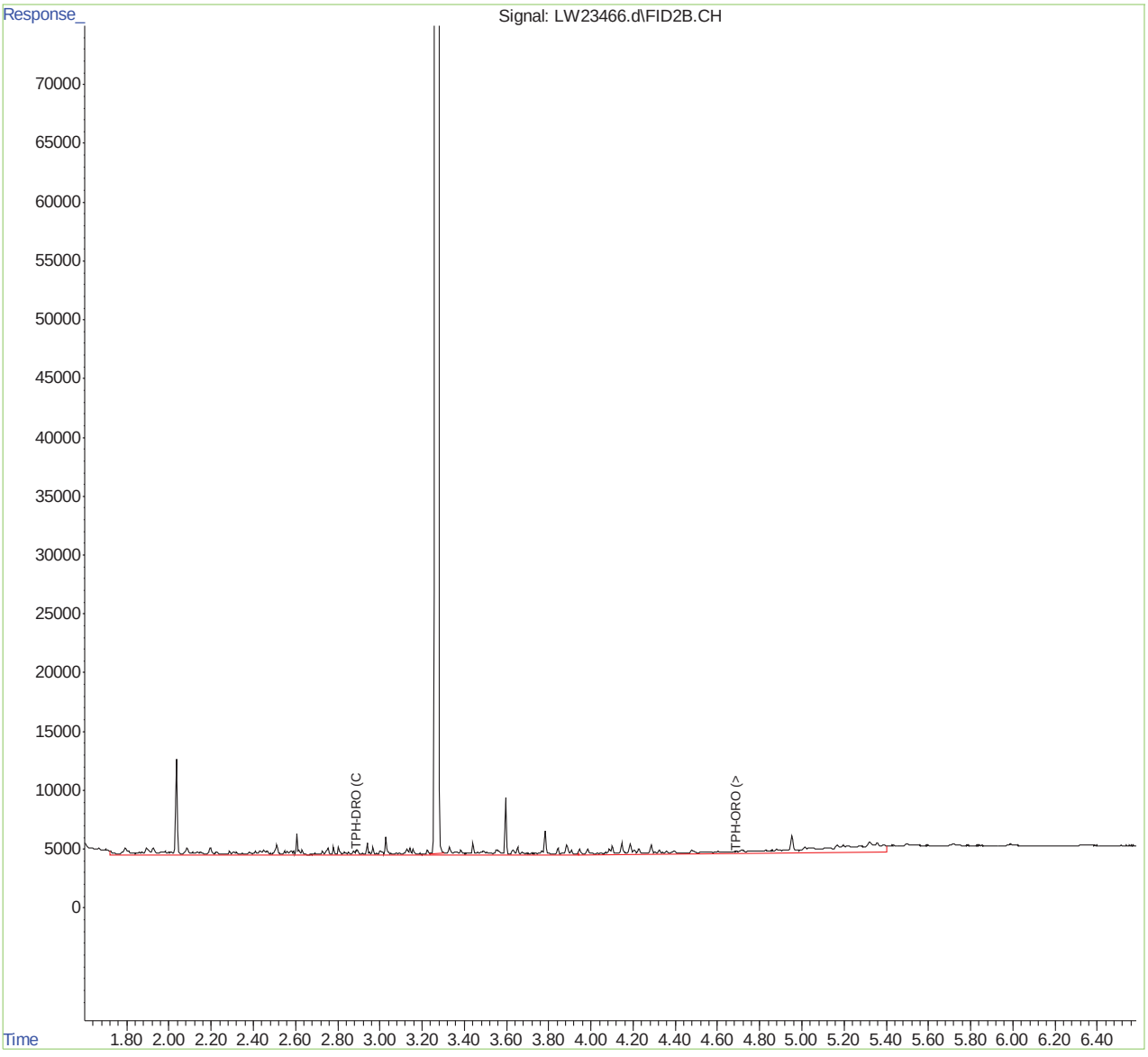
D1-TW-0000946-22060-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 09 11:14:57 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

7.1.1

7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\220915aa\
Data File : LW2684a.d
Signal(s) : FID1B.CH
Acq On : 15-Sep-22, 23:33:05
Operator : michaelb
Sample : da49138-3a
Misc : OP22465,GLW218,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 06:05:48 2022
Quant Method : C:\msdchem\1\data\220915aa\DRO220904.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Oct 10 09:38:52 2022
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.417	26200905	1548.317 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery = 77.42%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.180	1490792	116.667 ppm
2) H TPH-ORO (>C28-C40)	4.130	689518	85.996 ppm
3) H TPH-DRO (C10-C24)	1.950	1012112	79.924 ppm
4) H TPH-ORO (>C24-C40)	3.900	1136466	86.869 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

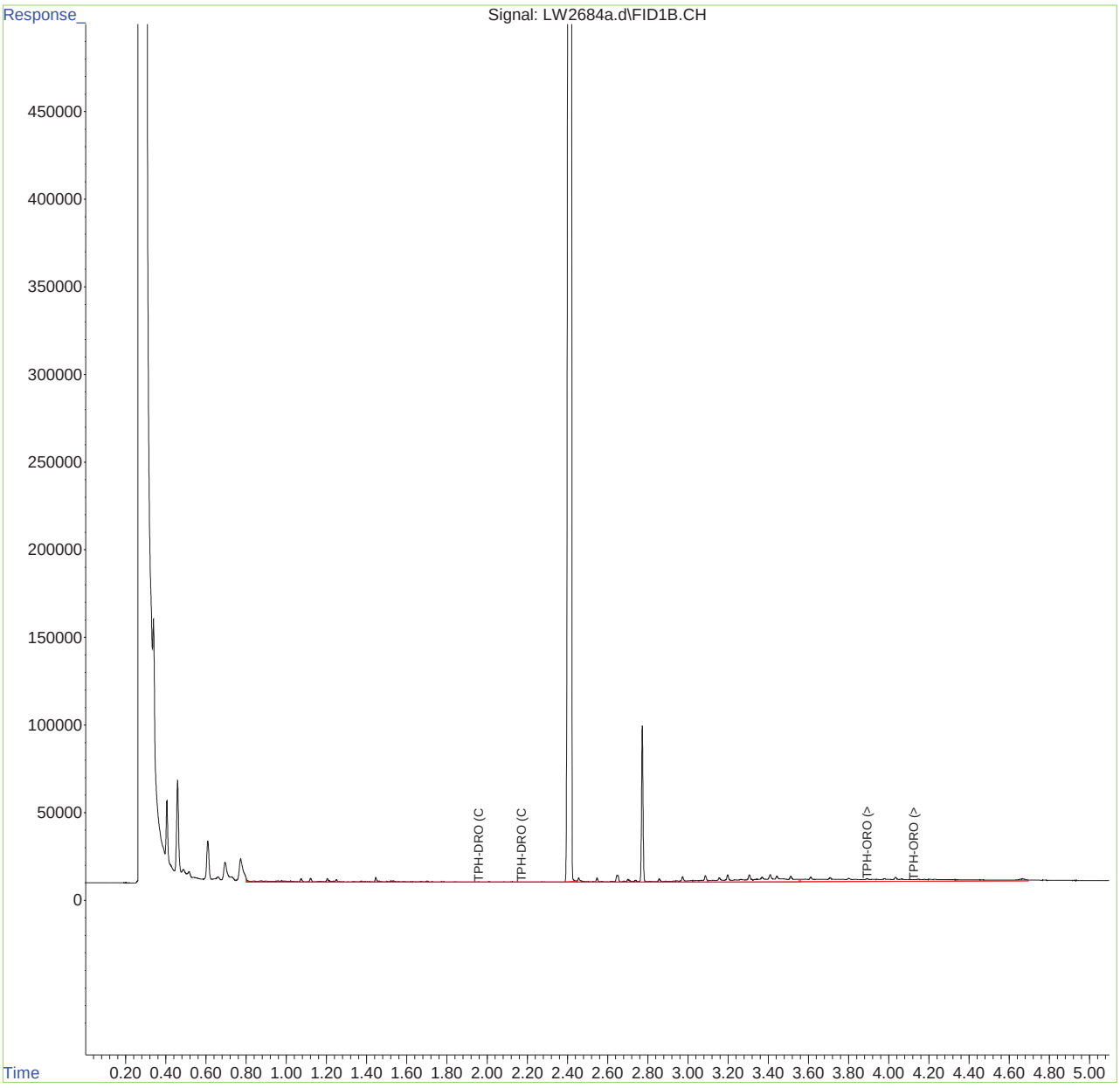
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\220915aa\
Data File : LW2684a.d
Signal(s) : FID1B.CH
Acq On : 15-Sep-22, 23:33:05
Operator : michaelb
Sample : da49138-3a
Misc : OP22465,GLW218,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F1-TW-0008971-22160-N
DRO 76.1 J
ORO 82.7 J
Total TPH 158.8

Integration File: autoint1.e
Quant Time: Oct 11 06:05:48 2022
Quant Method : C:\msdchem\1\data\220915aa\DRO220904.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Oct 10 09:38:52 2022
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\082723\
Data File : LW15792.d
Signal(s) : FID1B.CH
Acq On : 27-Aug-23, 17:17:11
Operator : jackb
Sample : da58149-9
Misc : OP24230,GLW538,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 28 10:12:25 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.349	38432467	1776.662 ppm
Spiked Amount 2000.000 Range 10 - 130		Recovery = 88.83%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	1295951	78.803 ppm
2) H TPH-ORO (>C28-C40)	3.970	151388	16.661 ppm
3) H TPH-DRO (C10-C24)	1.920	1102823	70.027 ppm
4) H TPH-ORO (>C24-C40)	3.750	264636	17.112 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.18 11

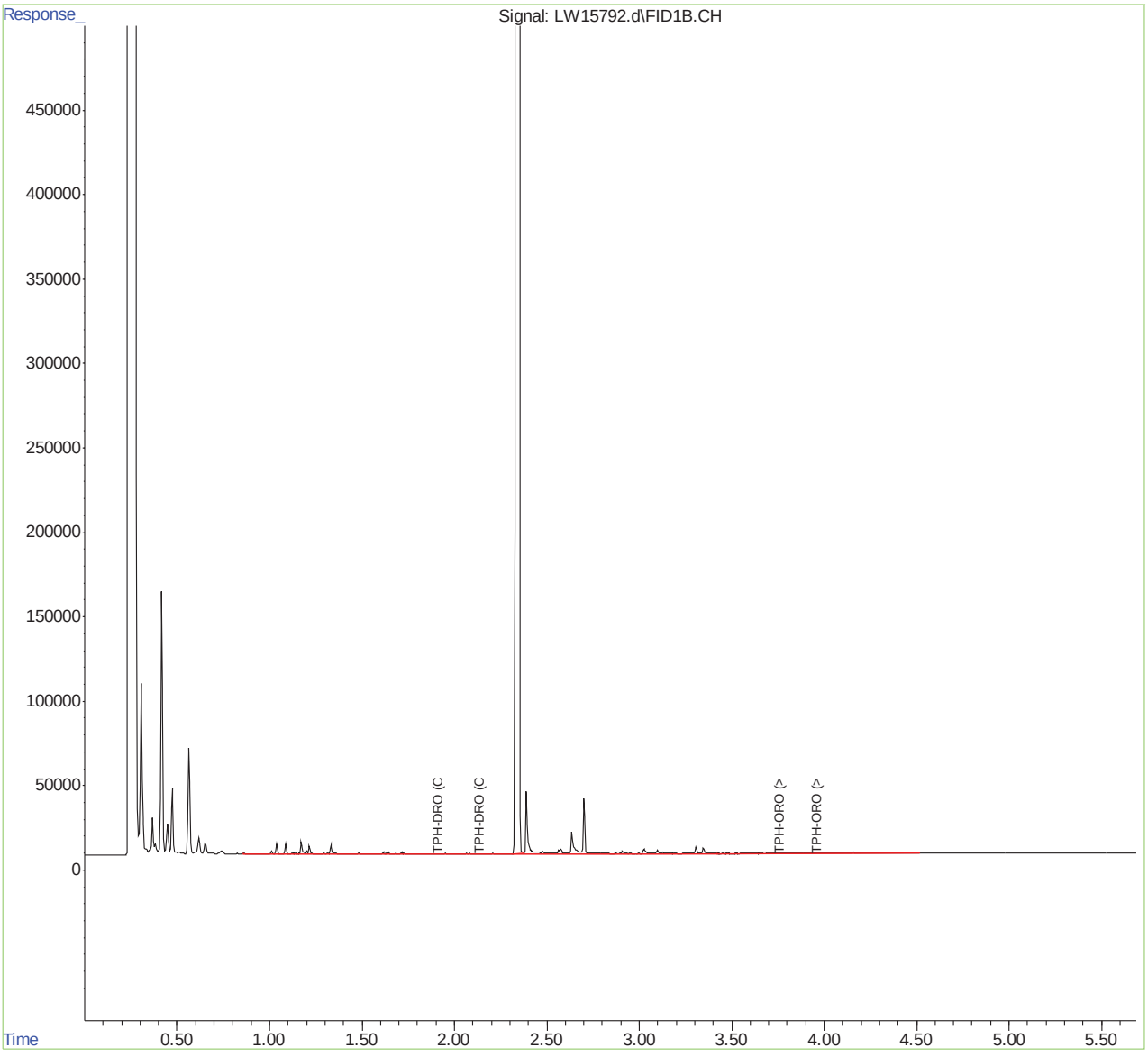
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\082723\
Data File : LW15792.d
Signal(s) : FID1B.CH
Acq On : 27-Aug-23, 17:17:11
Operator : jackb
Sample : da58149-9
Misc : OP24230,GLW538,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F1-TW-0008971-23155-N-T
DRO 70.0 J
ORO 52 U
Total TPH 70.0

Integration File: autoint1.e
Quant Time: Aug 28 10:12:25 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.18
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074977.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 9:40 am
Operator : jackb
Sample : da62509-2
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 75 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 14:30:33 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.339	38819862	84.169	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	9673805	31.904	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	3506264	14.293	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

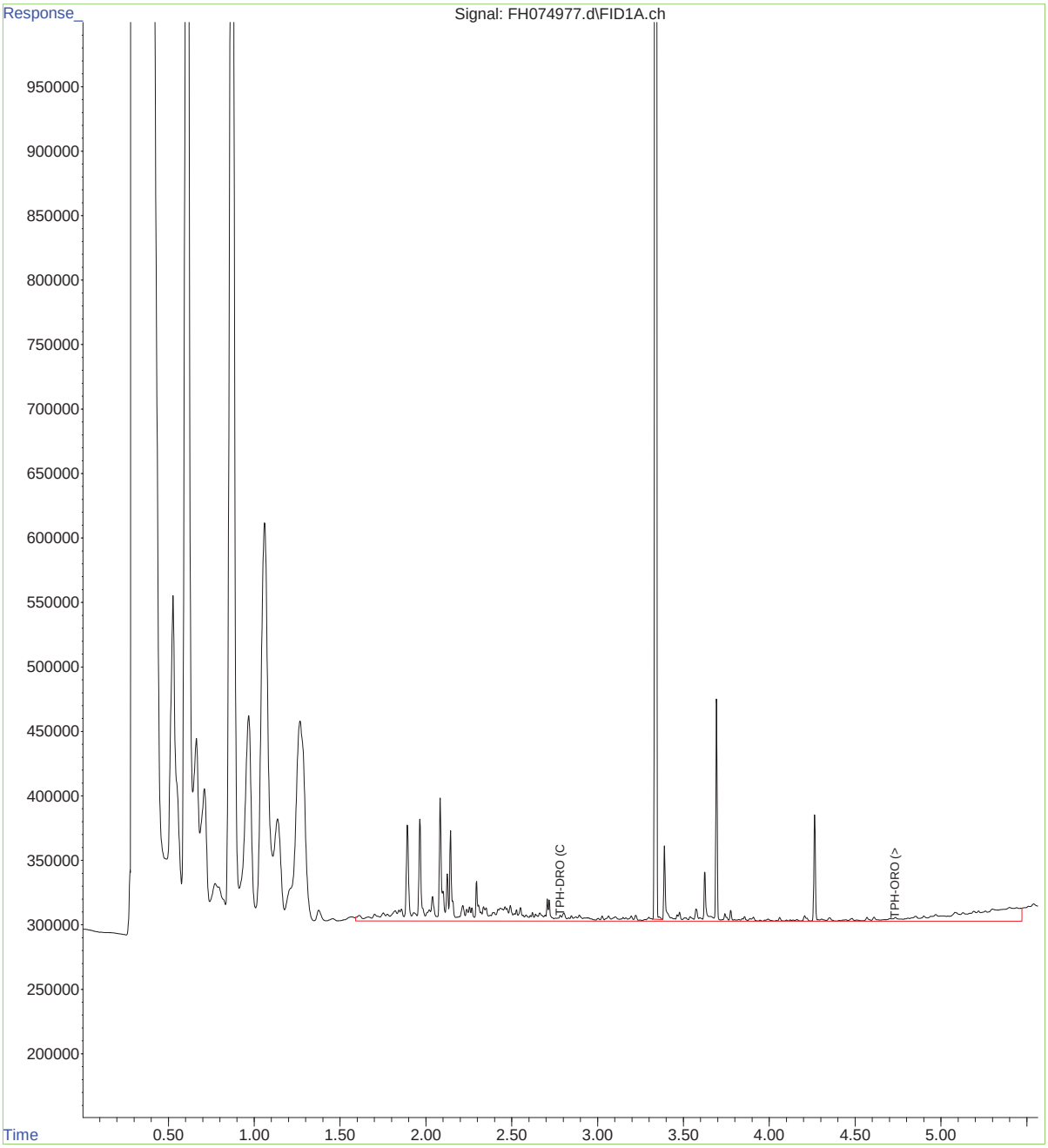
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074977.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 9:40 am
Operator : jackb
Sample : da62509-2
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 75 Sample Multiplier: 1

F1-TW-0008971-22160-N-1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 14:30:33 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030824\
Data File : LW23463.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 10:32:28
Operator : jackb
Sample : DA62520-2
Misc : OP25309,GLW661,56.6,,,2.0,1
ALS Vial : 51 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 09 10:54:59 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	3.276	14939303	8.011	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 80.11%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	2.880	378197	0.277	ppm	
4) H TPH-ORO (>C24-C40)	4.680	366102	0.461	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

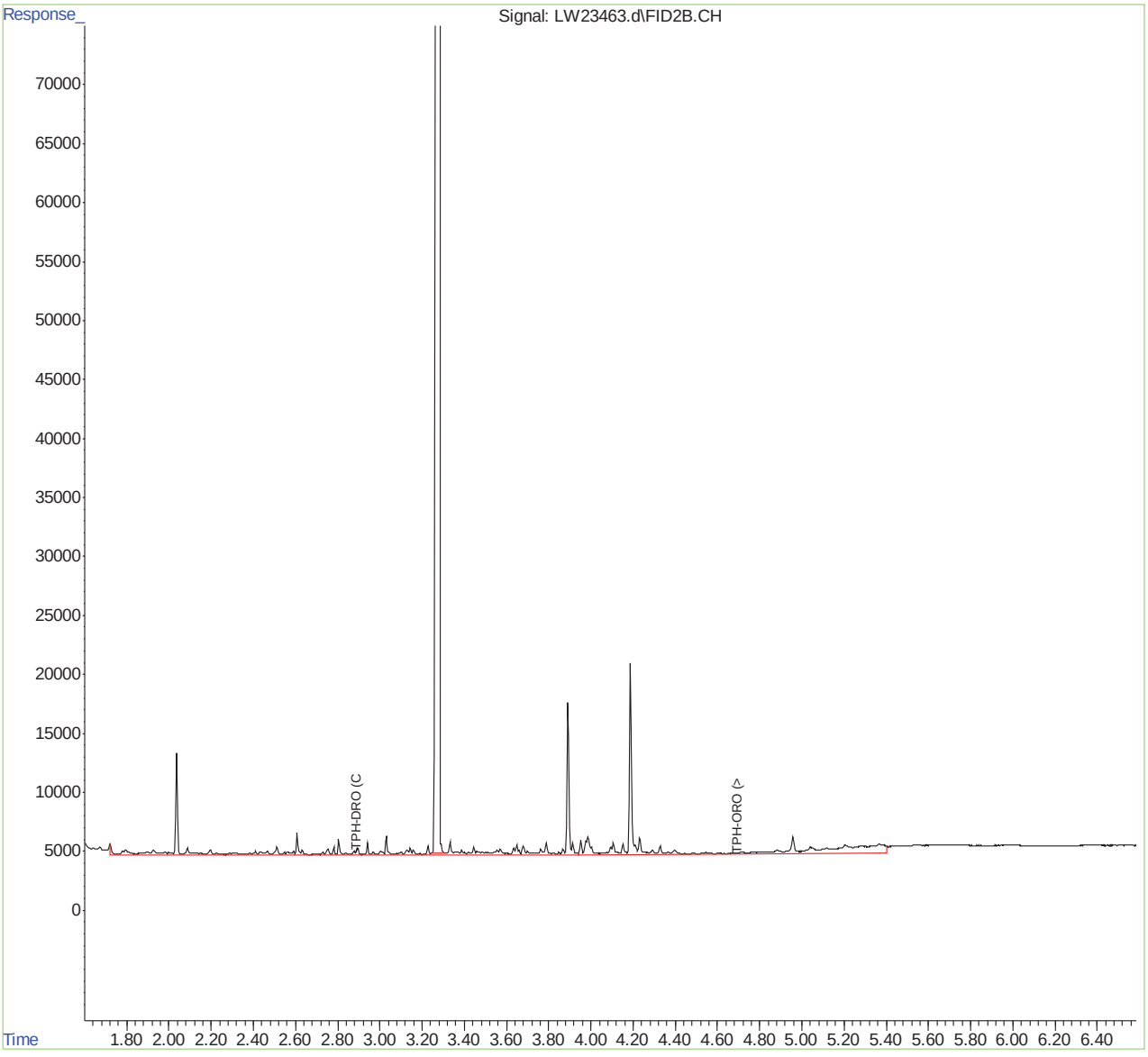
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030824\
Data File : LW23463.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 10:32:28
Operator : jackb
Sample : DA62520-2
Misc : OP25309,GLW661,56.6,,,2.0,1
ALS Vial : 51 Sample Multiplier: 1

F1-TW-0008971-22160-N-1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 09 10:54:59 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Sat Mar 09 13:17:53 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh101923\
Data File : FH069029.D
Signal(s) : FID1A.ch
Acq On : 19 Oct 2023 9:50 pm
Operator : jackb
Sample : da59404-2
Misc : OP24521,GFH23741,1020,,,1,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 09:32:05 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.238f	712263835	1377.273	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	39483353	106.300	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	36389660	98.780	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	4973592	28.453	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	8570847	27.588	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

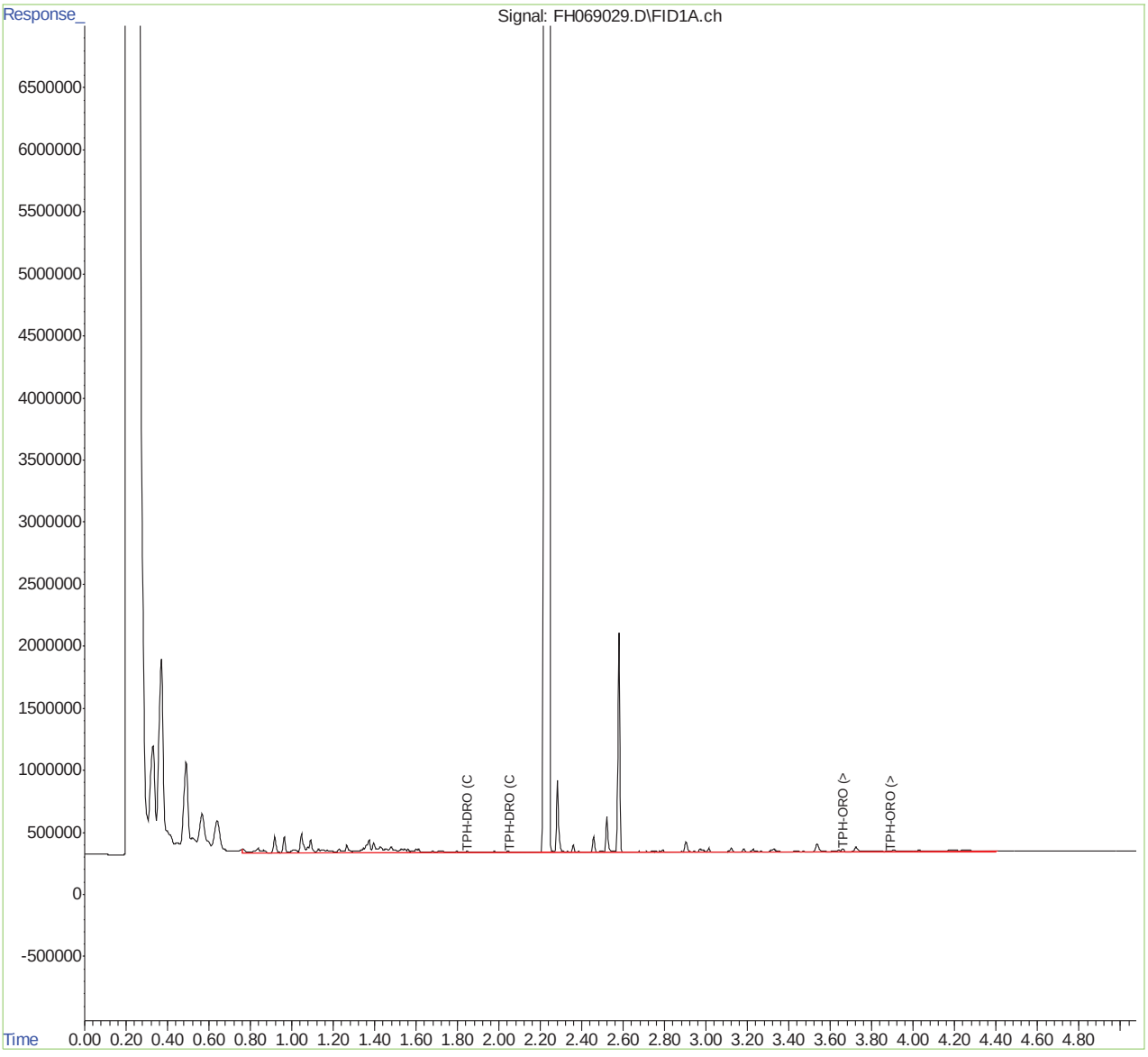
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh101923\
Data File : FH069029.D
Signal(s) : FID1A.ch
Acq On : 19 Oct 2023 9:50 pm
Operator : jackb
Sample : da59404-2
Misc : OP24521,GFH23741,1020,,,1,1
ALS Vial : 15 Sample Multiplier: 1

A1-TW-0001561-23139-3-N
TPH-DRO 96.8 J
TPH-ORO 51.0 U
Total TPH 96.8

Integration File: autoint1.e
Quant Time: Oct 20 09:32:05 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.9

11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh1012123\
Data File : FH069108.D
Signal(s) : FID1A.ch
Acq On : 21 Oct 2023 6:37 pm
Operator : jackb
Sample : da59404-1a
Misc : OP24532,GFH23743,1020,,,1,1
ALS Vial : 13 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 22 21:51:09 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.241	966607048	1869.085	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	48343028	130.152	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	37936127	102.977	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	14231645	81.416	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	19331593	62.224	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

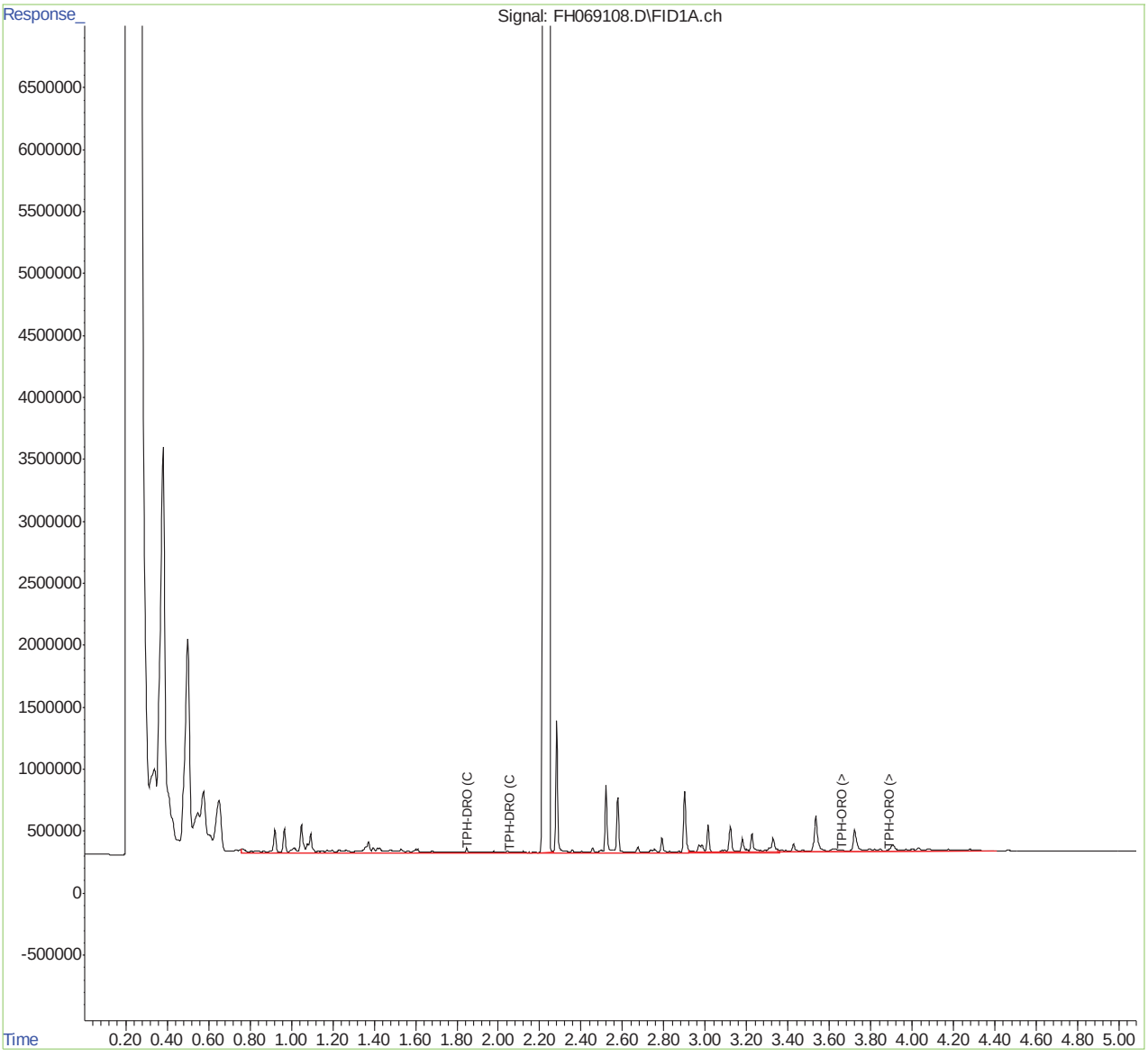
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh1012123\
Data File : FH069108.D
Signal(s) : FID1A.ch
Acq On : 21 Oct 2023 6:37 pm
Operator : jackb
Sample : da59404-1a
Misc : OP24532,GFH23743,1020,,,1,1
ALS Vial : 13 Sample Multiplier: 1

A1-TW-0001561-23139-N
DRO 101
ORO 61.0 J
Total TPH 162

Integration File: autoint1.e
Quant Time: Oct 22 21:51:09 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.8
11

Manual Integrations APPROVED (compounds with "m" flag)

[redacted]

03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074907.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:03 pm
Operator : jackb
Sample : da62452-4
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:05:49 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.343	33549047	72.741	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	17049850	56.231	ug/mlm
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2905334	11.843	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.4

7

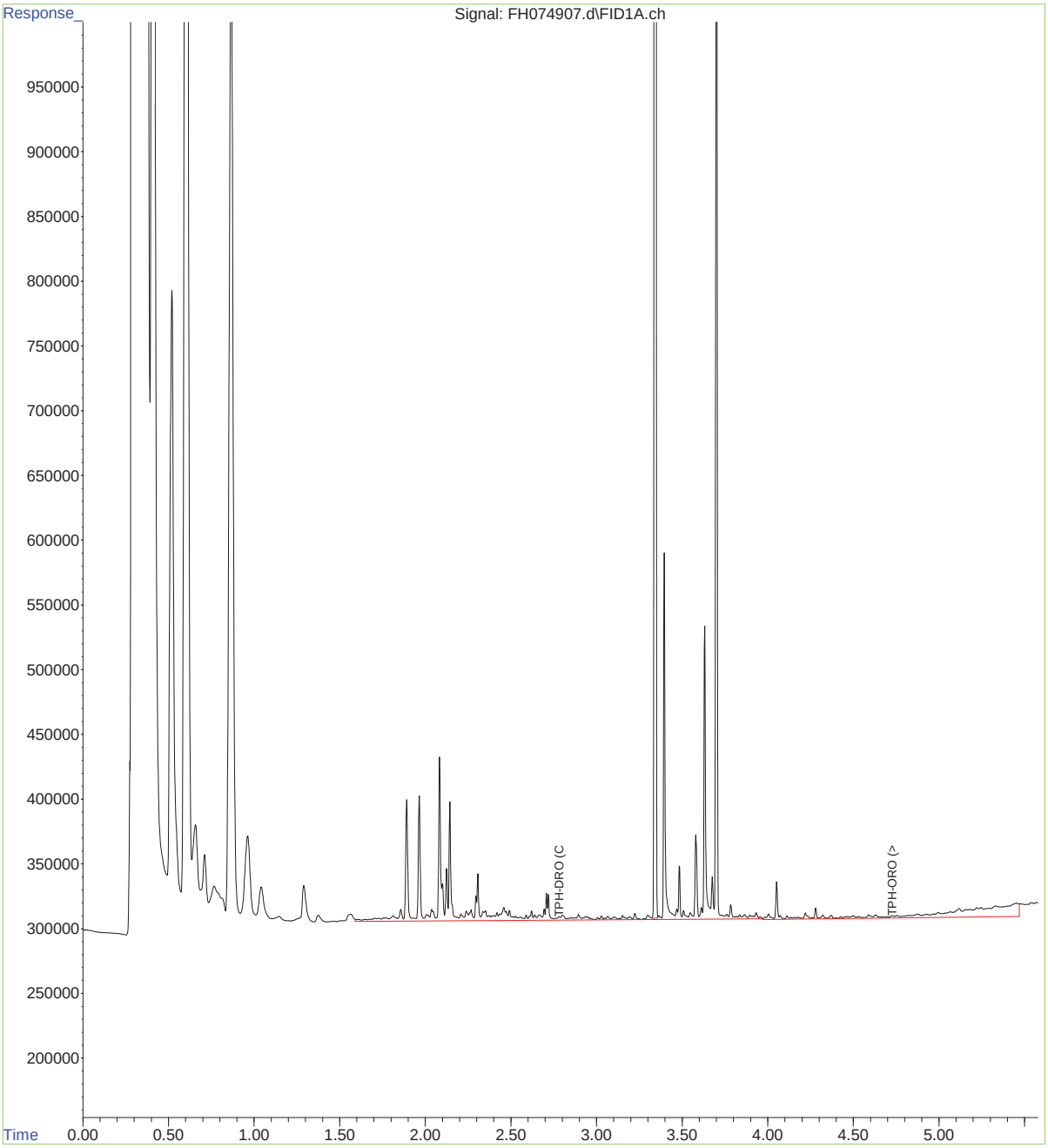
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074907.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:03 pm
Operator : jackb
Sample : da62452-4
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 15 Sample Multiplier: 1

A1-TW-0001561-23139-N-R1
DRO 53.6 J
ORO 50 U
Total TPH 53.6

Integration File: autoint1.e
Quant Time: Mar 06 21:05:49 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23254.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 18:43:36
Operator : jackb
Sample : DA62464-4 (P)
Misc : OP25294,GLW659,55.6,,,2,1
ALS Vial : 6 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 07:22:42 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	3.287	14568218	7.805	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 78.05%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	2.880	584273	0.427	ppm	
4) H TPH-ORO (>C24-C40)	4.680	462928	0.582	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

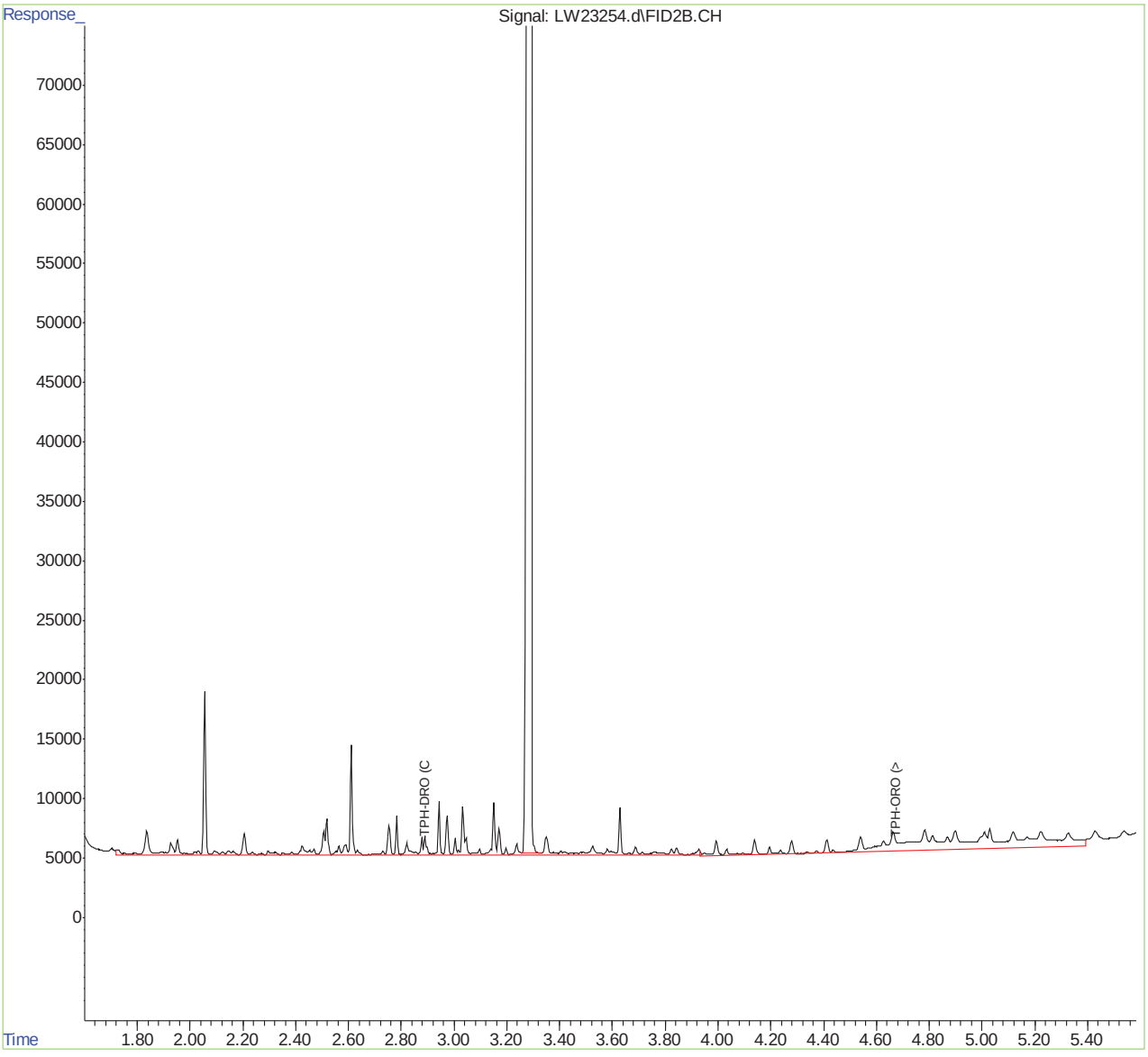
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23254.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 18:43:36
Operator : jackb
Sample : DA62464-4 (P)
Misc : OP25294,GLW659,55.6,,,2,1
ALS Vial : 6 Sample Multiplier: 1

A1-TW-0001561-23139-N-R1-MEQ
TPH-DRO 0.049U
TPH-ORO 0.049U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 07:22:42 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Fri Mar 08 08:08:29 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH100223\
Data File : FH068235.D
Signal(s) : FID1A.ch
Acq On : 2 Oct 2023 2:34 pm
Operator : jackb
Sample : da58996-6
Misc : OP24420,GFH23725,1030,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 02 15:55:41 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.236f	411827619	796.333	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	74711898	201.144	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	58014974	157.481	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	18617544	106.507	ug/mlm
5) H	TPH-ORO (>C24-C40)	3.660	30542683	98.311	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.22 11

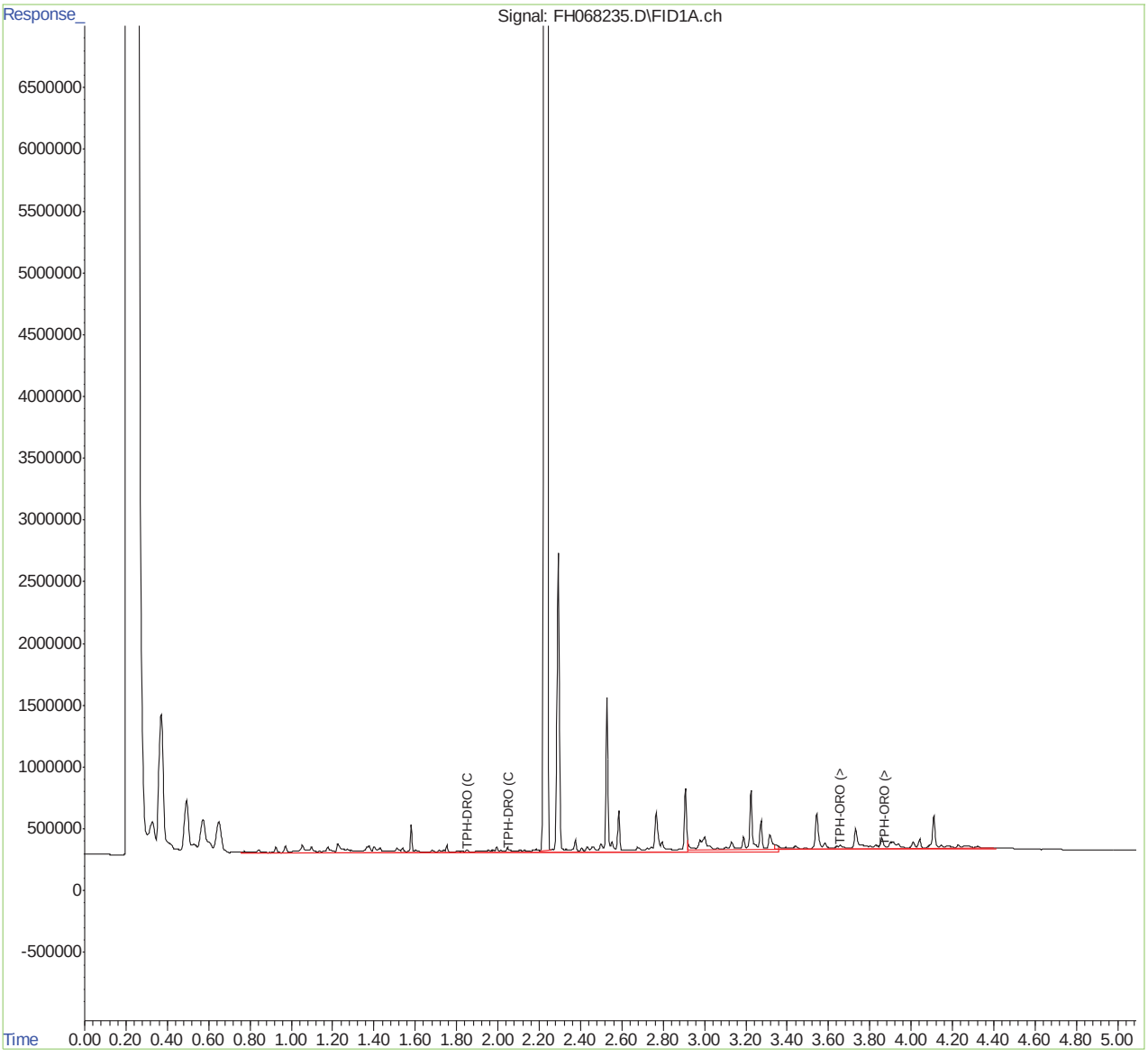
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH100223\
Data File : FH068235.D
Signal(s) : FID1A.ch
Acq On : 2 Oct 2023 2:34 pm
Operator : jackb
Sample : da58996-6
Misc : OP24420,GFH23725,1030,,,1,1
ALS Vial : 28 Sample Multiplier: 1

A1-TW-0001673-23139-N
DRO 153 J
ORO 95.4 J
Total TPH 248.4

Integration File: autoint1.e
Quant Time: Oct 02 15:55:41 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.22
11

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074905.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 8:41 pm
Operator : jackb
Sample : da62452-2
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 13 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:03:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.342	25486019	55.259	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	10402084	34.306	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	7830811	31.921	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

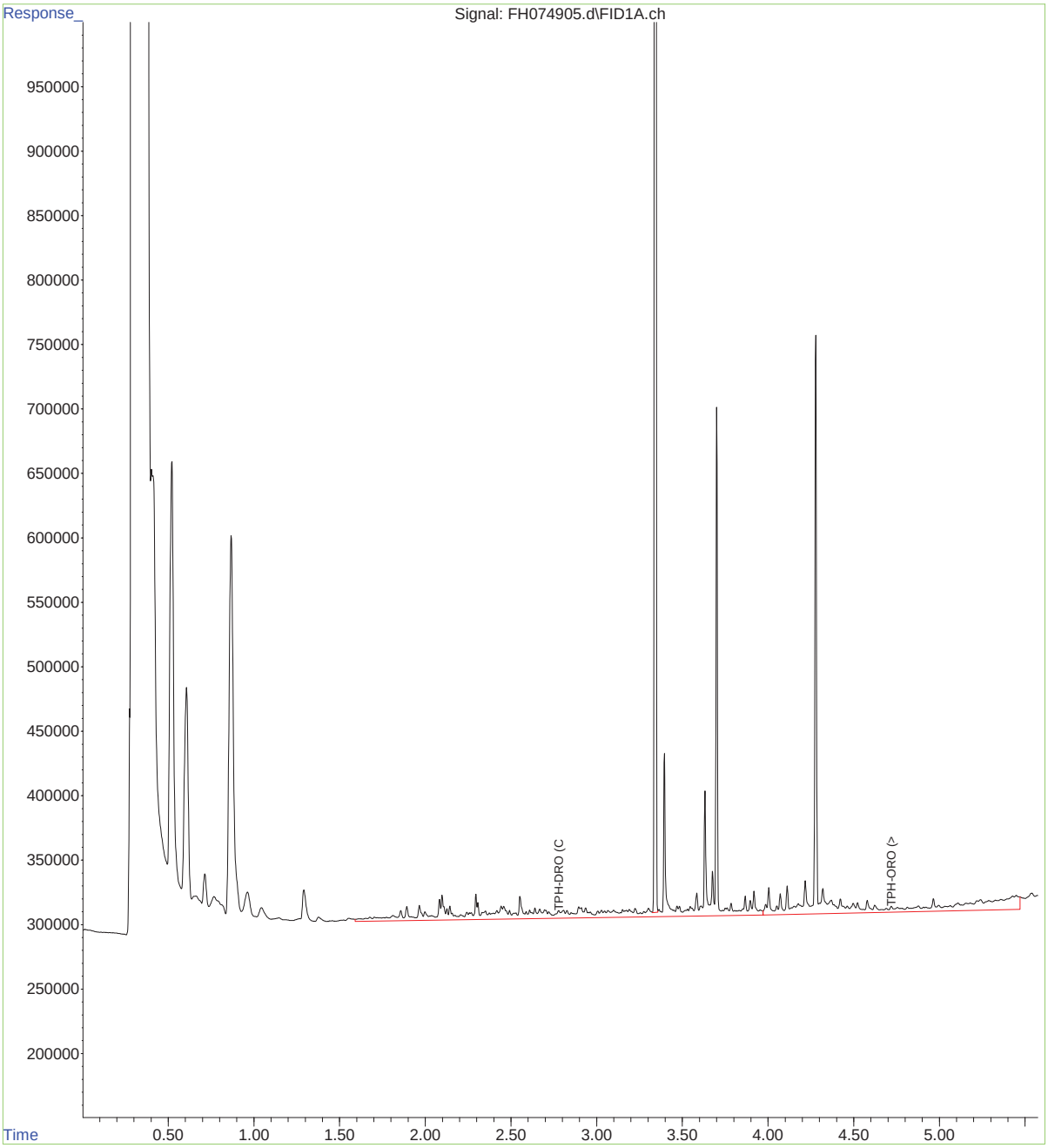
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074905.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 8:41 pm
Operator : jackb
Sample : da62452-2
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 13 Sample Multiplier: 1

A1-TW-0001673-23139-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:03:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23069.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 08:04:47
Operator : jackb
Sample : DA62464-2
Misc : OP25268,GLW656,57.7,,,2,1
ALS Vial : 71 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 15:15:34 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.276	14237506	7.621 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 76.21%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	385334	0.286 ppm
2) H TPH-ORO (>C28-C40)	4.880	176612	0.419 ppm
3) H TPH-DRO (C10-C24)	2.880	333677	0.244 ppm
4) H TPH-ORO (>C24-C40)	4.680	258991	0.326 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23069.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 08:04:47
Operator : jackb
Sample : DA62464-2
Misc : OP25268,GLW656,57.7,,,2,1
ALS Vial : 71 Sample Multiplier: 1

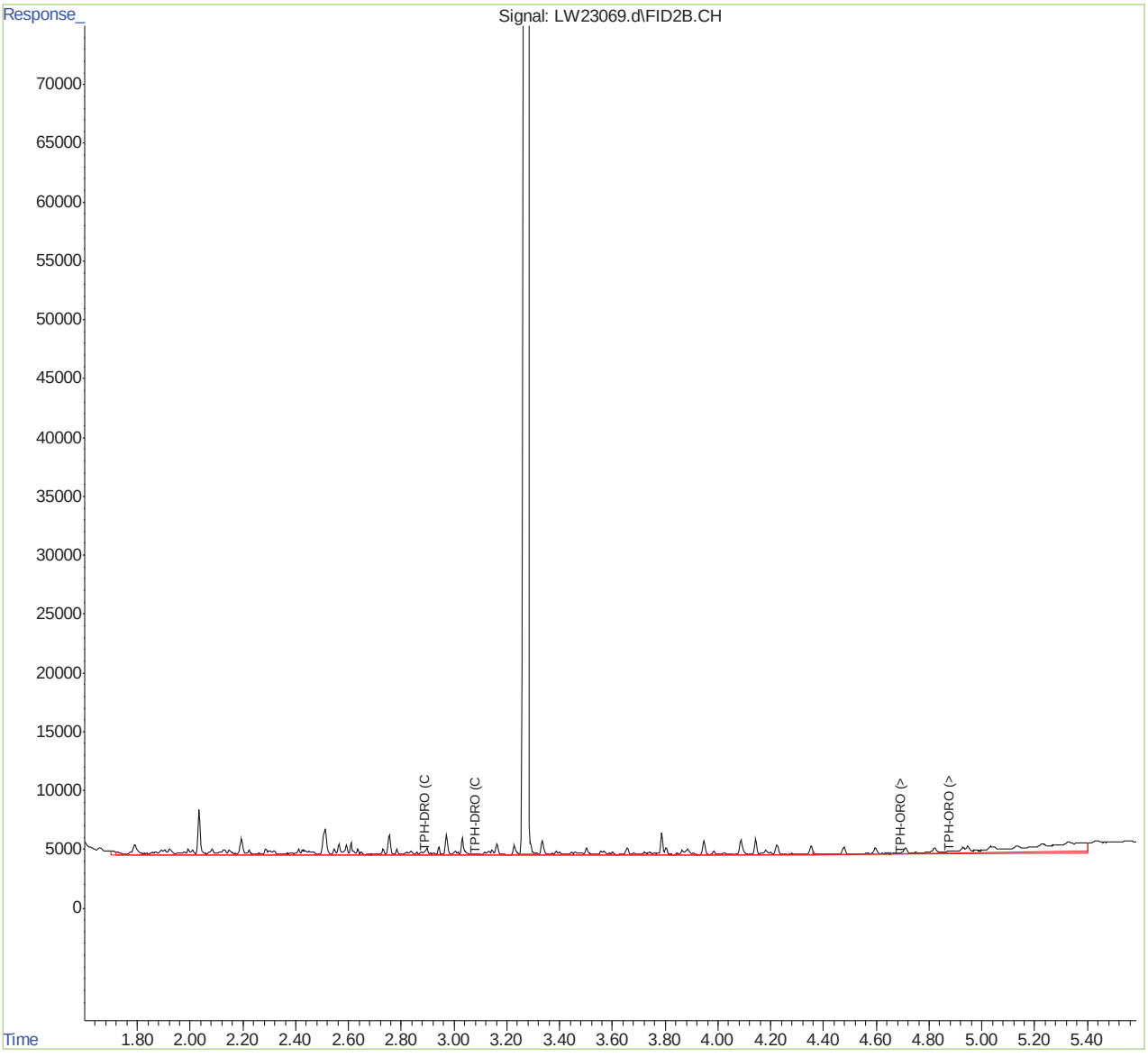
A1-TW-0001673-23139-N-R1-MEQ
TPH-DRO 0.047 U
TPH-ORO 0.047 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 15:15:34 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

7.1.2

7



DROLVI-030324.M Tue Mar 05 16:46:29 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh1012123\
Data File : FH069147.D
Signal(s) : FID1A.ch
Acq On : 21 Oct 2023 11:55 pm
Operator : jackb
Sample : da59475-3
Misc : OP24533,GFH23743,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 22 21:43:23 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.240	955258132	1847.140	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	53365079	143.673	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	35450968	96.232	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	13918873	79.627	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	30909367	99.491	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.9 11

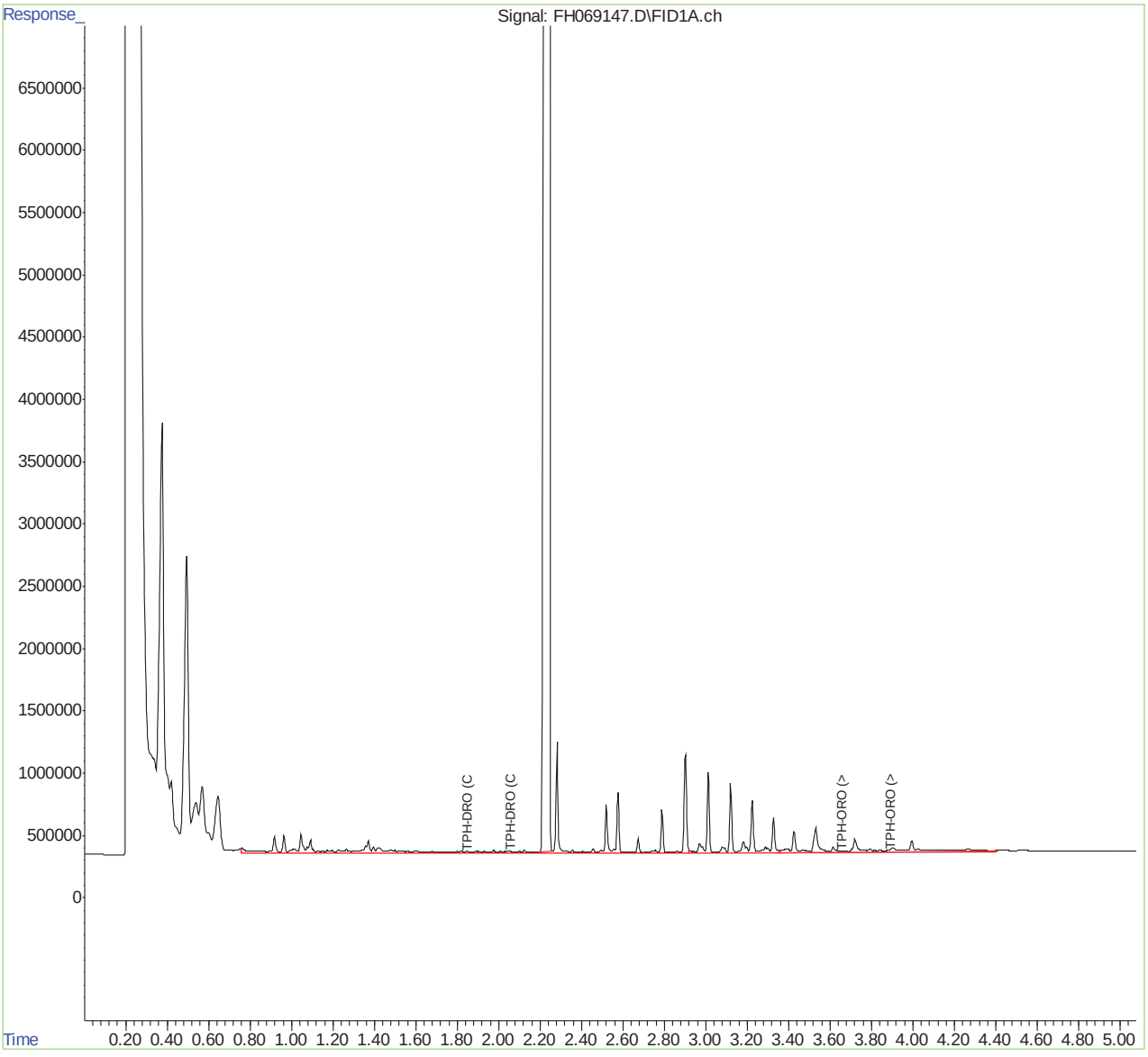
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh1012123\
Data File : FH069147.D
Signal(s) : FID1A.ch
Acq On : 21 Oct 2023 11:55 pm
Operator : jackb
Sample : da59475-3
Misc : OP24533,GFH23743,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

A3-TW-0017354-23157-N
DRO 91.6
ORO 94.8
Total TPH 186.4

Integration File: autoint1.e
Quant Time: Oct 22 21:43:23 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.9

11

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/09/24 14:39

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075166.d
Signal(s) : FID1A.ch
Acq On : 8 Mar 2024 5:38 am
Operator : jackb
Sample : da62626-1
Misc : OP25288,GFH23866,1050,,,1,1
ALS Vial : 128 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 23:46:57 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.332	29758198	64.522	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	10472334	34.538	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2980272	12.149	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.1
7

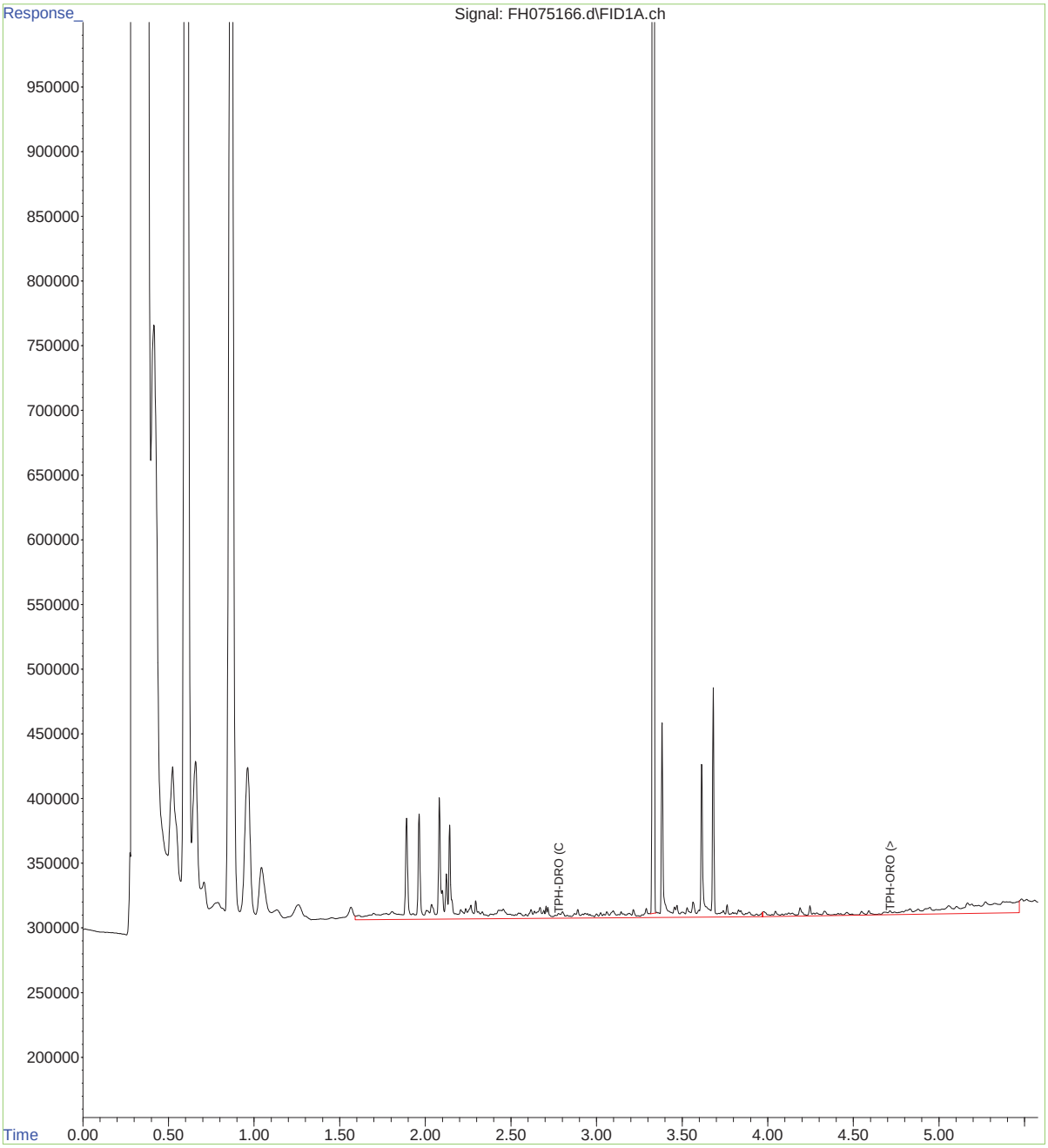
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075166.d
Signal(s) : FID1A.ch
Acq On : 8 Mar 2024 5:38 am
Operator : jackb
Sample : da62626-1
Misc : OP25288,GFH23866,1050,,,1,1
ALS Vial : 128 Sample Multiplier: 1

A3-TW-0017354-23157-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 23:46:57 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031324\
Data File : LW23879.d
Signal(s) : FID2B.CH
Acq On : 13-Mar-24, 20:26:23
Operator : jackb
Sample : da62635-1
Misc : OP25335,GLW667,56.6,,,2,1
ALS Vial : 6 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 14 14:03:48 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.229	16309816	8.774 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 87.74%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	518474	0.384 ppm
2) H TPH-ORO (>C28-C40)	4.880	95630	0.227 ppm
3) H TPH-DRO (C10-C24)	2.880	468325	0.343 ppm
4) H TPH-ORO (>C24-C40)	4.680	162238	0.204 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

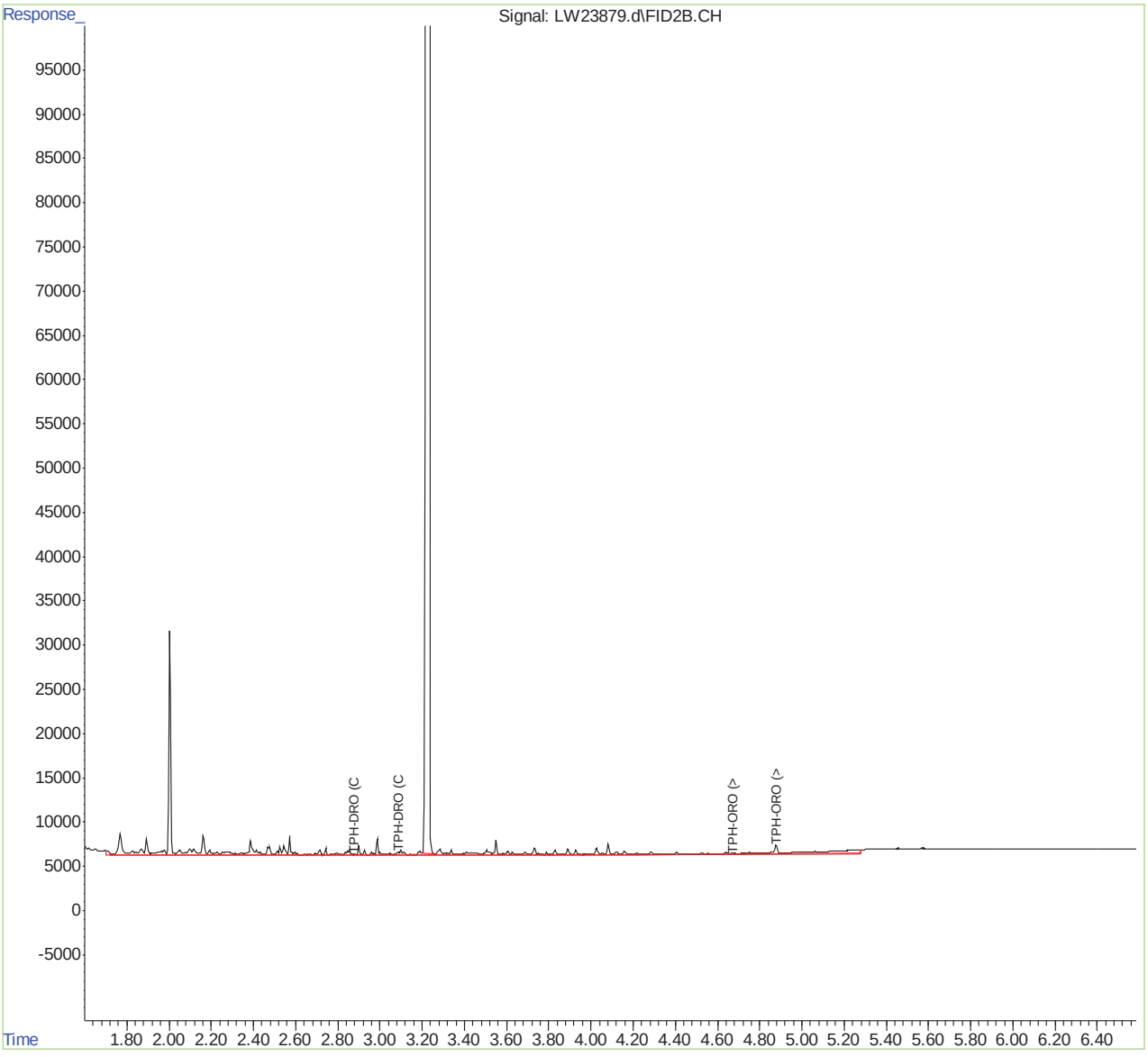
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031324\
Data File : LW23879.d
Signal(s) : FID2B.CH
Acq On : 13-Mar-24, 20:26:23
Operator : jackb
Sample : da62635-1
Misc : OP25335,GLW667,56.6,,,2,1
ALS Vial : 6 Sample Multiplier: 1

A3-TW-0017354-23157-N-R1-MEQ
TPH-DRO 0.048 U
TPH-ORO 0.048 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 14 14:03:48 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Thu Mar 14 16:10:44 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16072.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 20:30:57
Operator : jackb
Sample : DA58233-2
Misc : OP24261,GLW543,950,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 02 15:16:11 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.346	36128185	1670.139 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery =	83.51%
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	2055055	124.962 ppm
2) H TPH-ORO (>C28-C40)	3.970	741172	81.571 ppm
3) H TPH-DRO (C10-C24)	1.920	1515810	96.251 ppm
4) H TPH-ORO (>C24-C40)	3.750	1317180	85.170 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.4

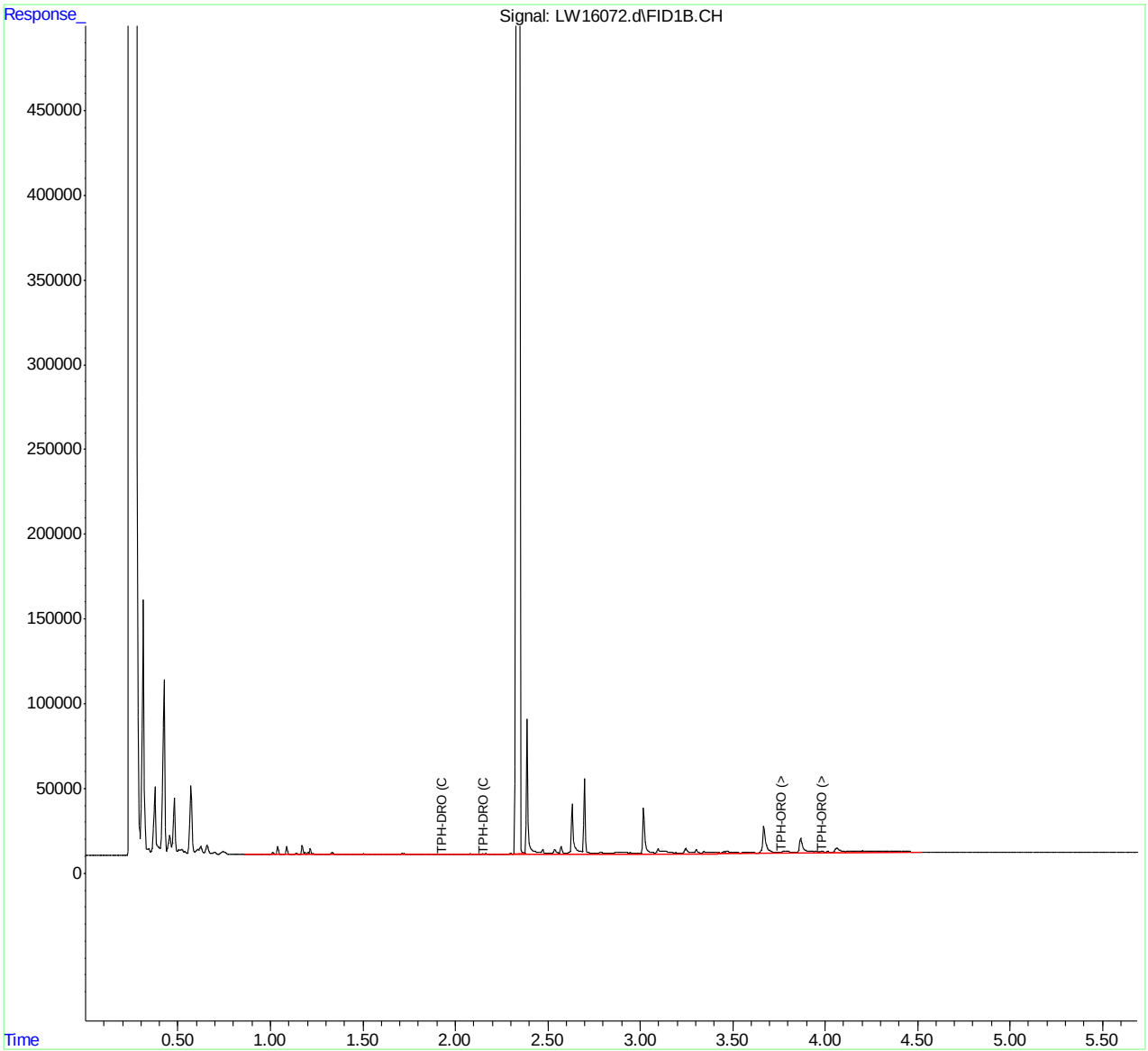
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16072.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 20:30:57
Operator : jackb
Sample : DA58233-2
Misc : OP24261,GLW543,950,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D1-TW-0000774-23145-N
DRO 101
ORO 89.7
Total TPH 190.7

Integration File: autoint1.e
Quant Time: Sep 02 15:16:11 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074418.d
Signal(s) : FID1A.ch
Acq On : 28 Feb 2024 3:25 pm
Operator : jackb
Sample : da62350-11
Misc : OP25229,GFH23860,1050,,,1,1
ALS Vial : 19 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 28 17:39:04 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.062	24083650	48.795 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	7153524	22.520 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	6820137	22.092 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	917579	6.556 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1192282	4.756 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.21

11

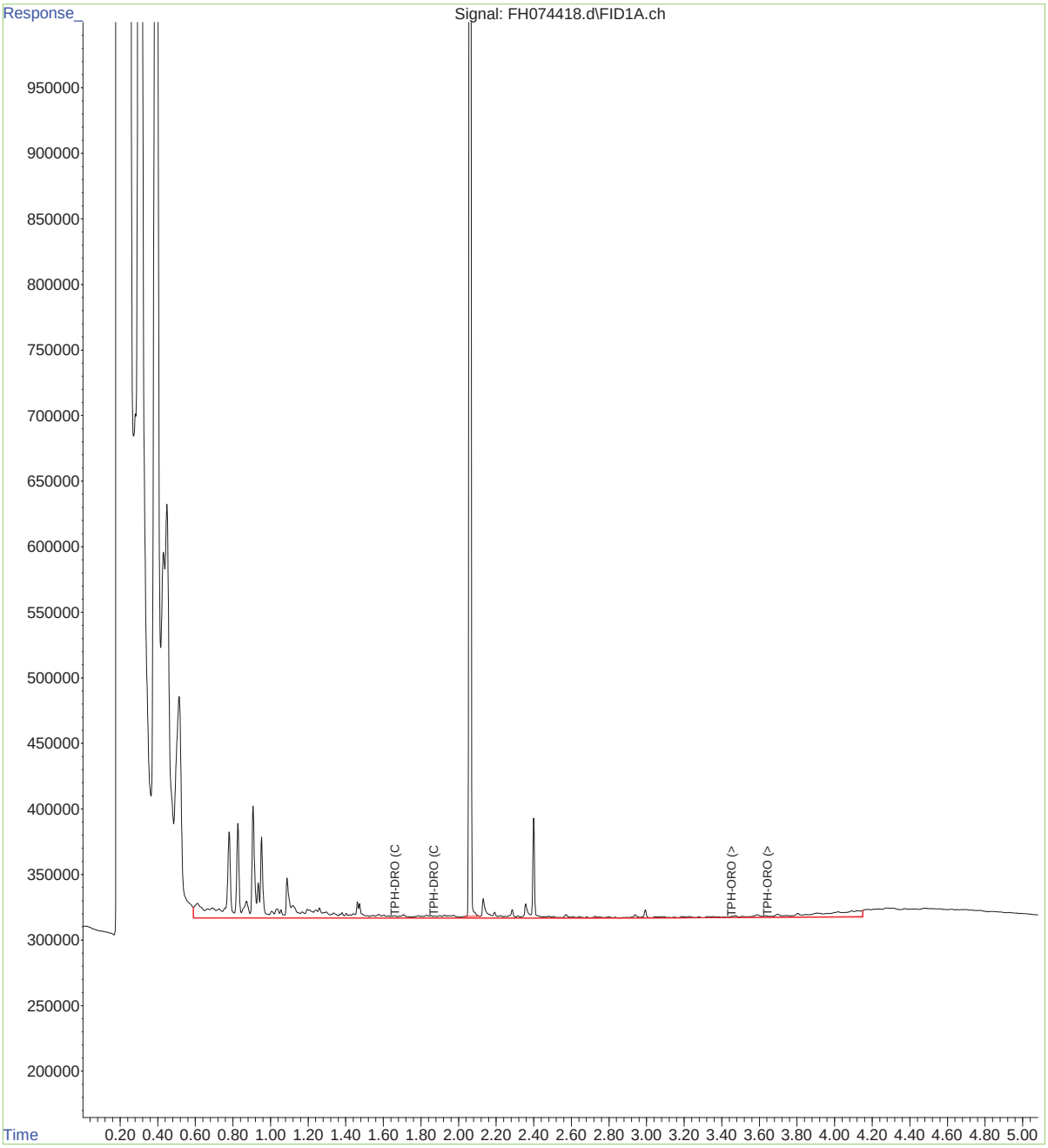
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074418.d
Signal(s) : FID1A.ch
Acq On : 28 Feb 2024 3:25 pm
Operator : jackb
Sample : da62350-11
Misc : OP25229,GFH23860,1050,,,1,1
ALS Vial : 19 Sample Multiplier: 1

D1-TW-0000774-23145-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 28 17:39:04 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.21
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23259.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 19:36:29
Operator : jackb
Sample : DA62363-11, gro (1 vial)
Misc : OP25294,GLW659,41.8,,,2.0,1
ALS Vial : 11 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 07:24:43 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	3.279	15017117	8.055	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 80.55%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	2.880	291562	0.213	ppm	
4) H TPH-ORO (>C24-C40)	4.680	272937	0.343	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

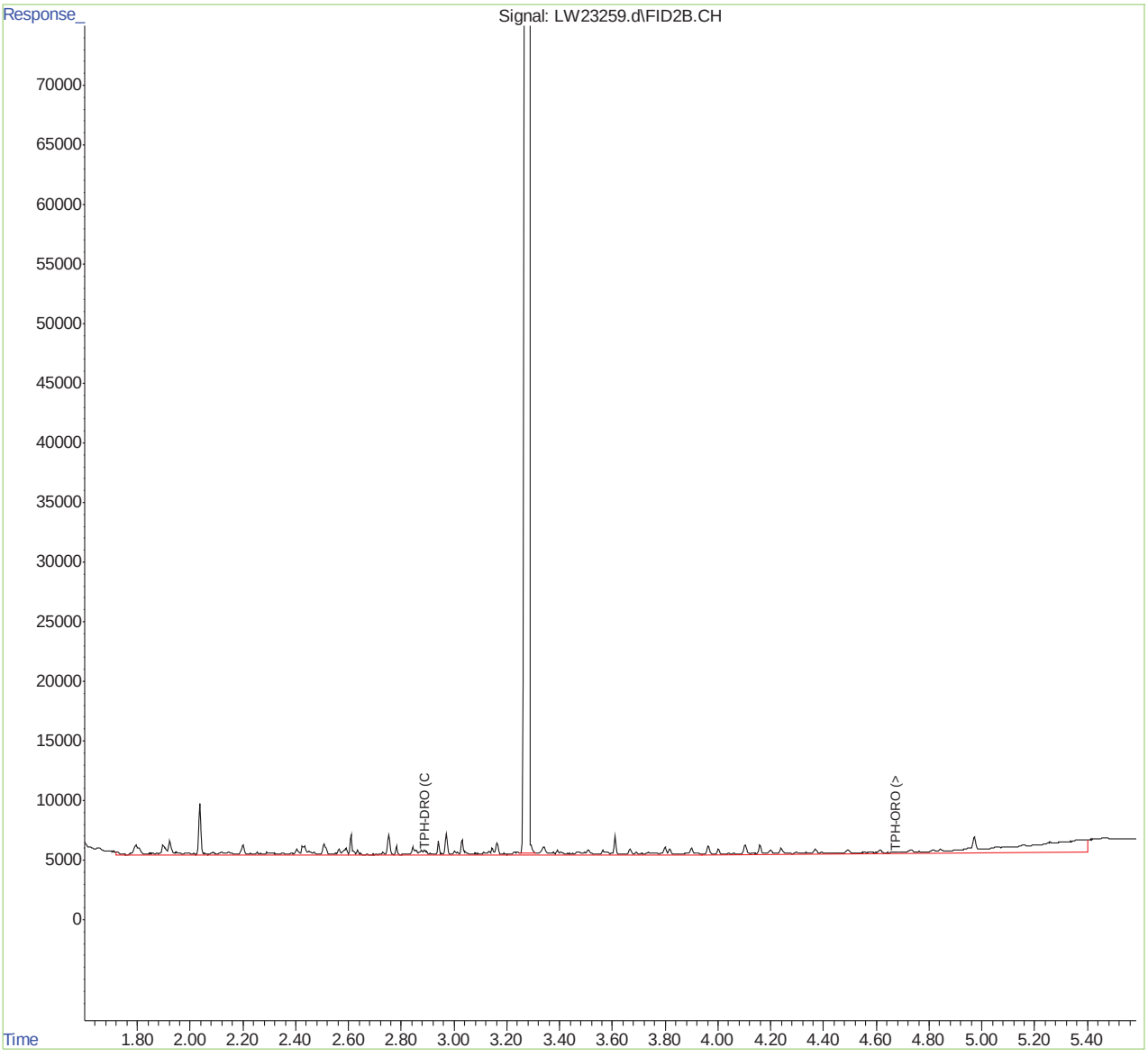
Quantitation Report (QT Reviewed)

D1-TW-0000774-23145-N-R1-MEQ
TPH-DRO 0.066 U
TPH-ORO 0.066 U
Total TPH ND

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23259.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 19:36:29
Operator : jackb
Sample : DA62363-11, gro (1 vial)
Misc : OP25294,GLW659,41.8,,,2.0,1
ALS Vial : 11 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 07:24:43 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Fri Mar 08 07:47:31 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16071.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 20:20:54
Operator : jackb
Sample : DA58233-1
Misc : OP24261,GLW543,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 02 15:16:09 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.347	41344481	1911.278 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery =	95.56%
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	2550701	155.100 ppm
2) H TPH-ORO (>C28-C40)	3.970	949905	104.543 ppm
3) H TPH-DRO (C10-C24)	1.920	1879794	119.363 ppm
4) H TPH-ORO (>C24-C40)	3.750	1663813	107.583 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.3

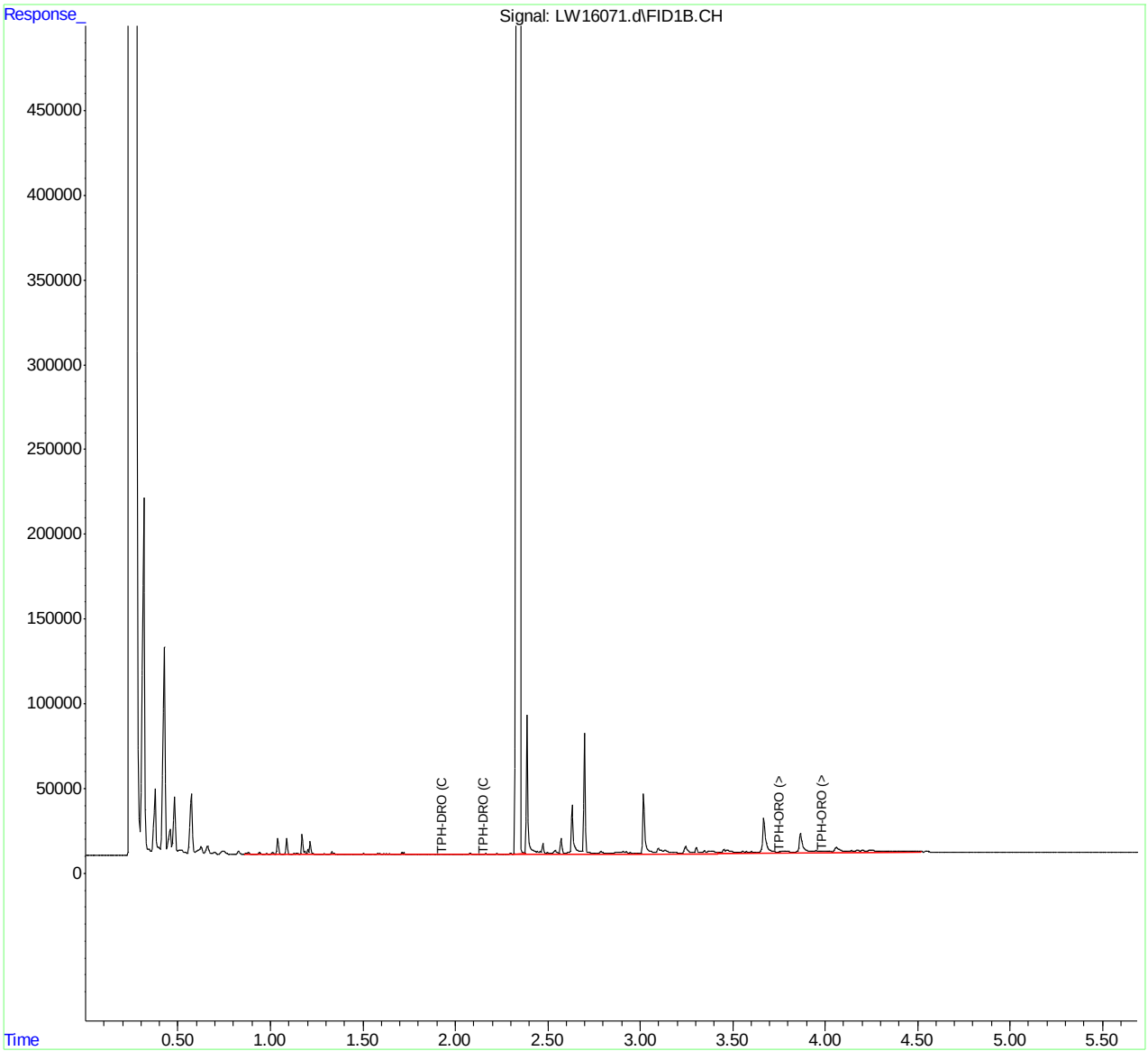
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16071.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 20:20:54
Operator : jackb
Sample : DA58233-1
Misc : OP24261,GLW543,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D1-TW-0000997-23145-N
DRO 119
ORO 108
Total TPH 227

Integration File: autoint1.e
Quant Time: Sep 02 15:16:09 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074915.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 10:29 pm
Operator : jackb
Sample : da62455-2
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 23 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:15:22 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.338	42836972	92.879	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	10600268	34.960	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2854884	11.638	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.2
7

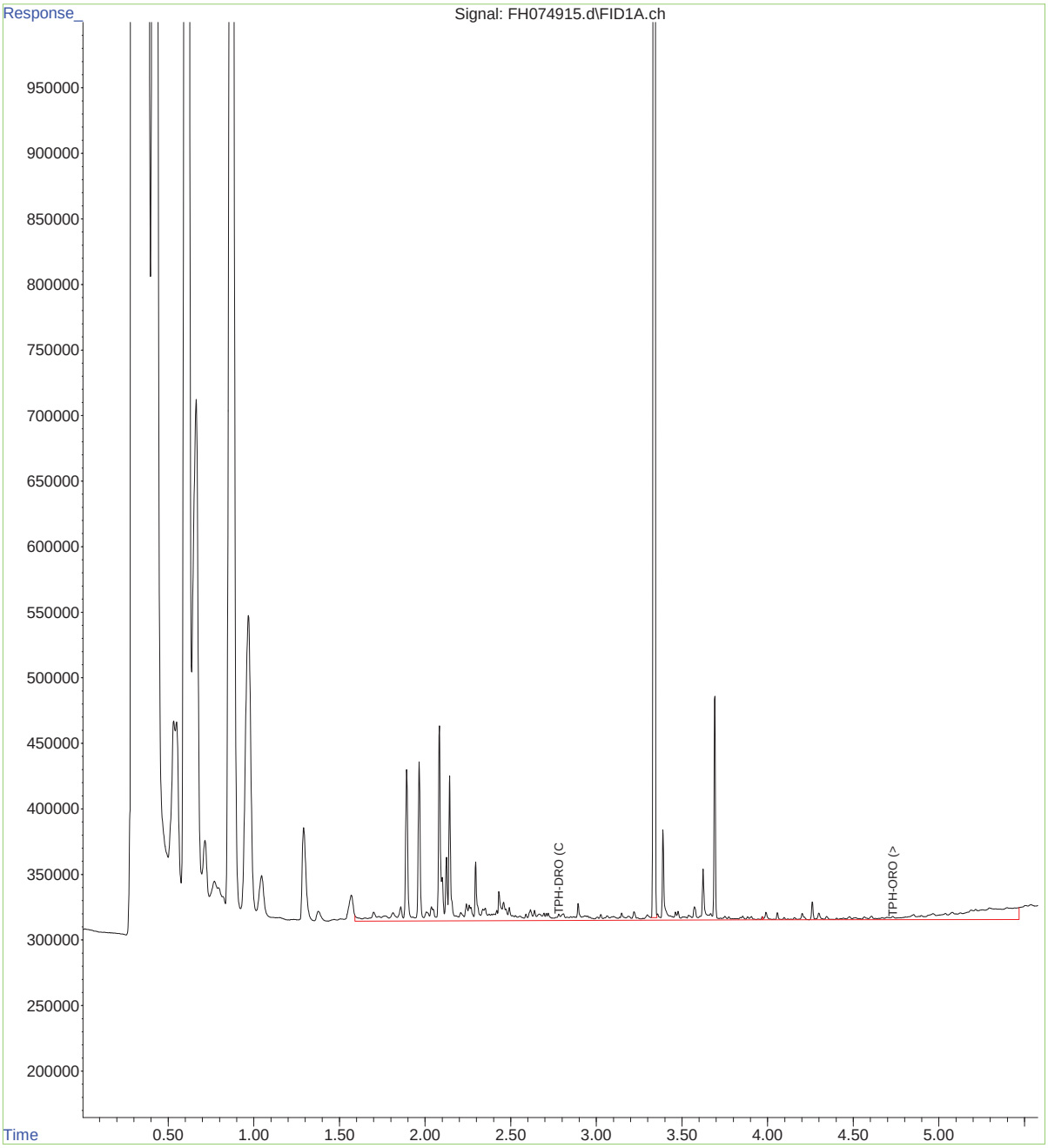
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074915.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 10:29 pm
Operator : jackb
Sample : da62455-2
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 23 Sample Multiplier: 1

D1-TW-0000997-23145-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:15:22 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22953.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 07:43:05
Operator : jackb
Sample : DA62467-2
Misc : OP25271,GLW655,57.7,,,2,1
ALS Vial : 50 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 10:54:58 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.288	19237381	10.399 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 103.99%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	466143	0.346 ppm
2) H TPH-ORO (>C28-C40)	4.880	251259	0.596 ppm
3) H TPH-DRO (C10-C24)	2.880	391796	0.287 ppm
4) H TPH-ORO (>C24-C40)	4.680	321371	0.404 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

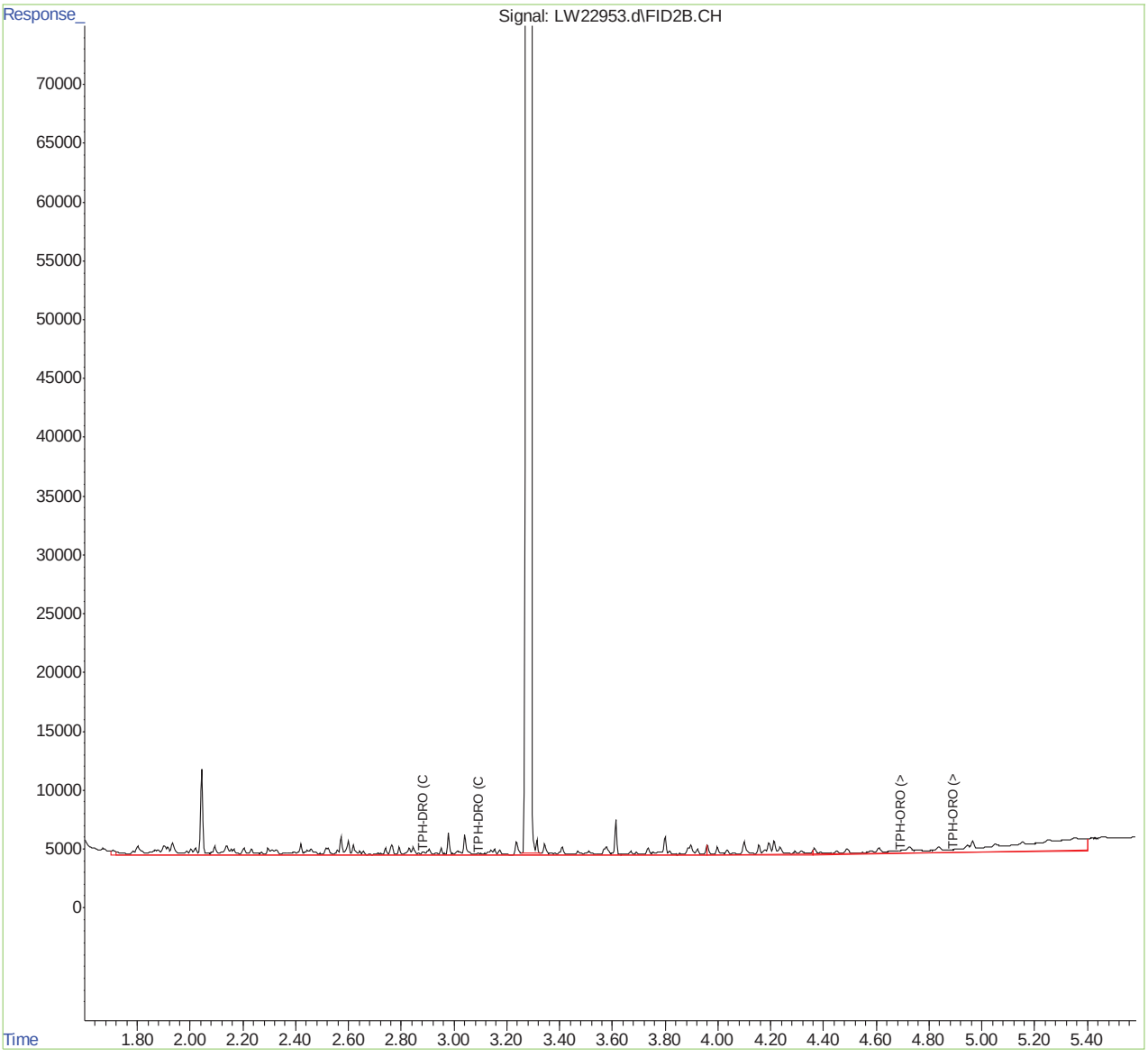
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22953.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 07:43:05
Operator : jackb
Sample : DA62467-2
Misc : OP25271,GLW655,57.7,,,2,1
ALS Vial : 50 Sample Multiplier: 1

D1-TW-0000997-23145-N-R1-MEQ
TPH-DRO 0.047 U
TPH-ORO 0.047 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 04 10:54:58 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Mon Mar 04 11:04:36 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074527.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 6:27 am
Operator : jackb
Sample : da62396-11
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 29 10:42:32 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.062	28729464	58.208 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	16696625	52.563 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	16092730	52.128 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	808838	5.779 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1292208	5.155 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

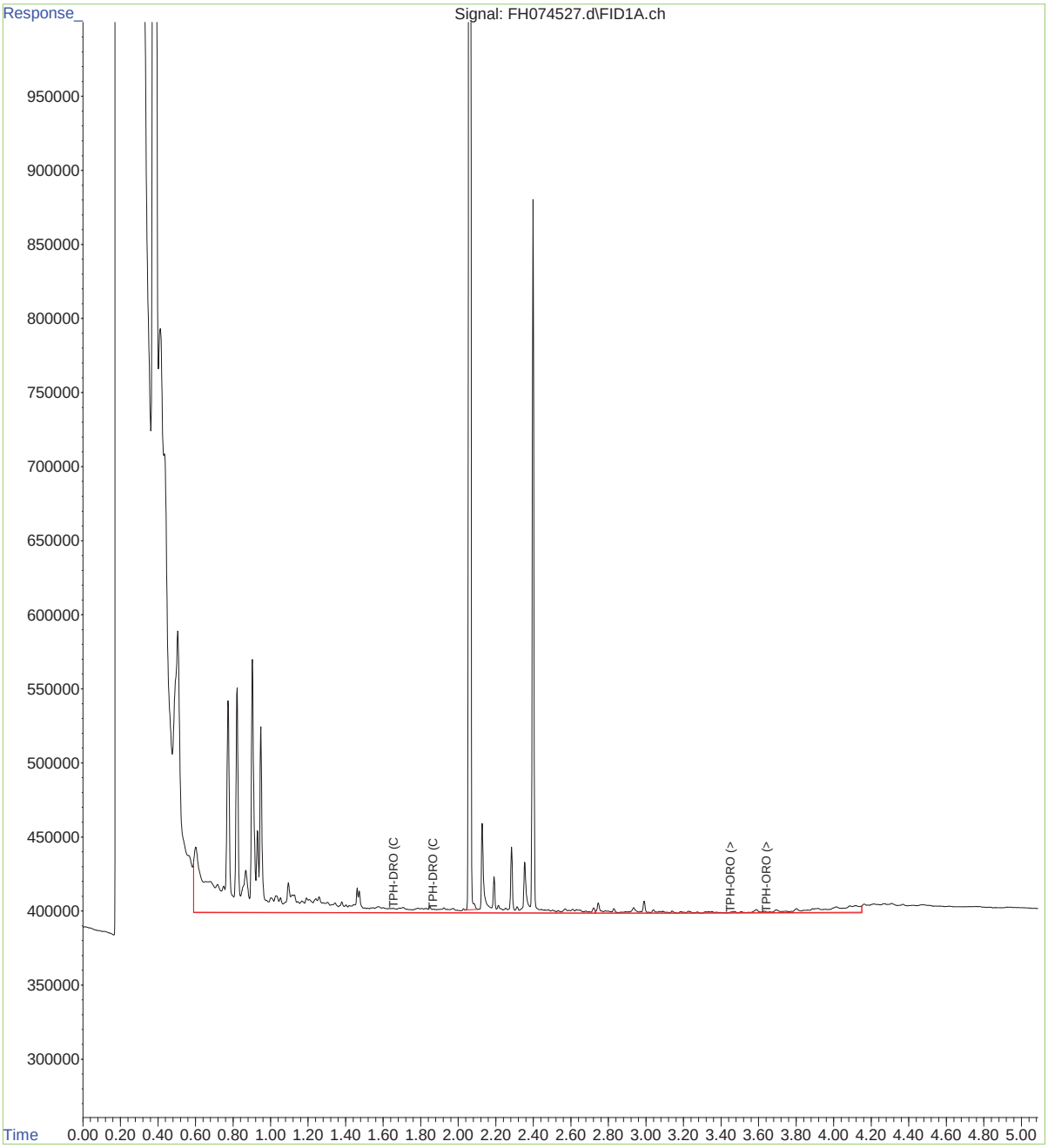
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074527.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 6:27 am
Operator : jackb
Sample : da62396-11
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 53 Sample Multiplier: 1

D2-TW-0008352-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 29 10:42:32 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Thu Feb 29 14:40:13 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14285.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 21:57:46
Operator : jackb
Sample : da57313-14
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 02 09:36:04 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.399	33786915	1832.689	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 91.63%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.200	2551625	168.696	ppm	
2) H TPH-ORO (>C28-C40)	4.100	567885	69.719	ppm	
3) H TPH-DRO (C10-C24)	1.980	1867682	124.836	ppm	
4) H TPH-ORO (>C24-C40)	3.880	1058950	76.443	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.34 11

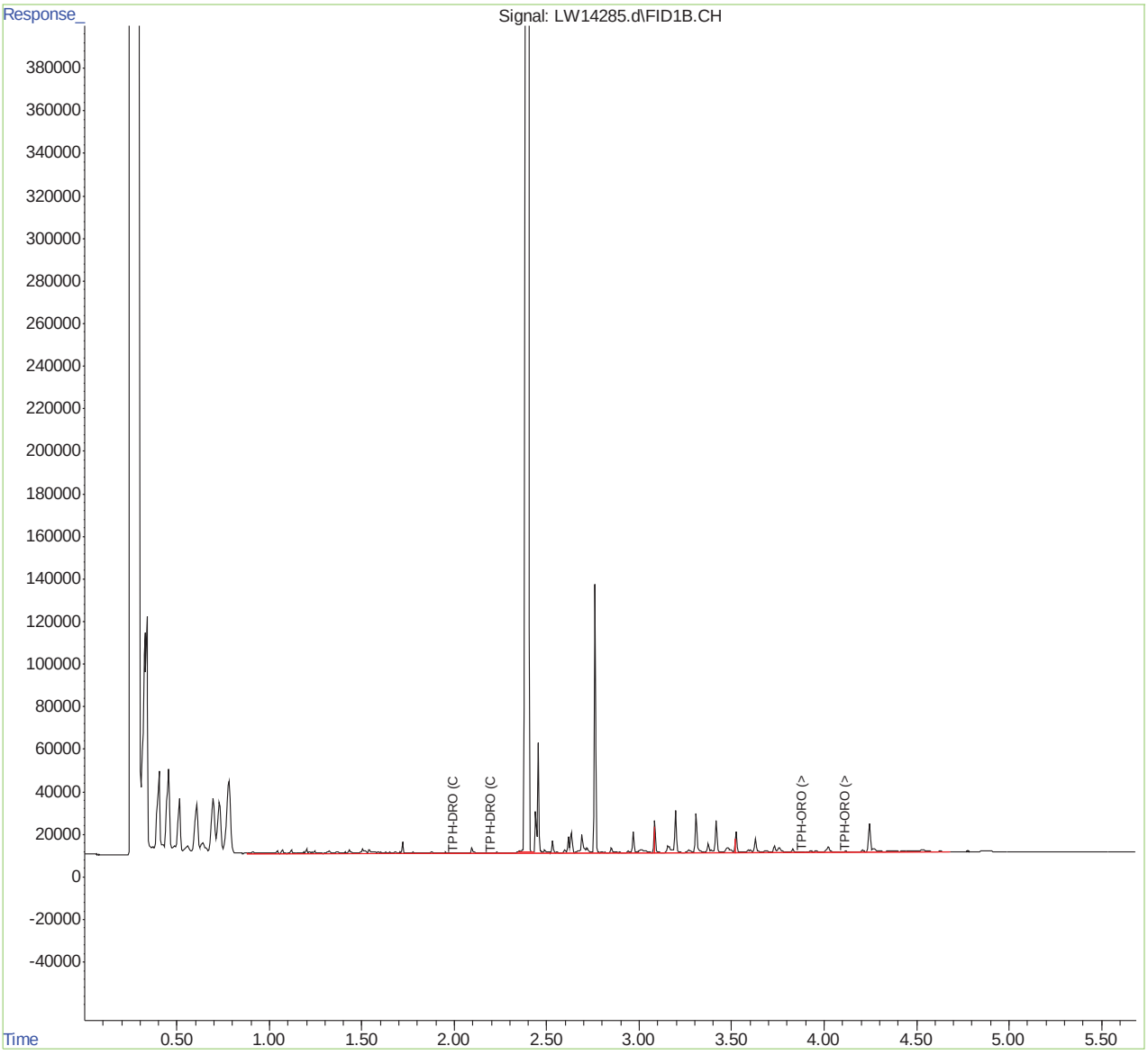
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14285.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 21:57:46
Operator : jackb
Sample : da57313-14
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0008352-23157-N
DRO 120
ORO 73.5 J
Total TPH 193.5

Integration File: autoint1.e
Quant Time: Aug 02 09:36:04 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\072823a\
Data File : LW14097.d
Signal(s) : FID1B.CH
Acq On : 29-Jul-23, 01:23:07
Operator : jackb
Sample : da57284-13
Misc : OP24063,GLW503,1010,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jul 29 09:59:22 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
5) S	O-TERPHENYL	2.399	31592028	1713.632 ppm
Spiked Amount	2000.000	Range 10 - 130	Recovery =	85.68%
	Target Compounds			
1) H	TPH-DRO (C10-C28)	2.200	2076163	137.262 ppm
2) H	TPH-ORO (>C28-C40)	4.100	802980	98.582 ppm
3) H	TPH-DRO (C10-C24)	1.980	825041	55.146 ppm
4) H	TPH-ORO (>C24-C40)	3.880	2058732	148.615 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

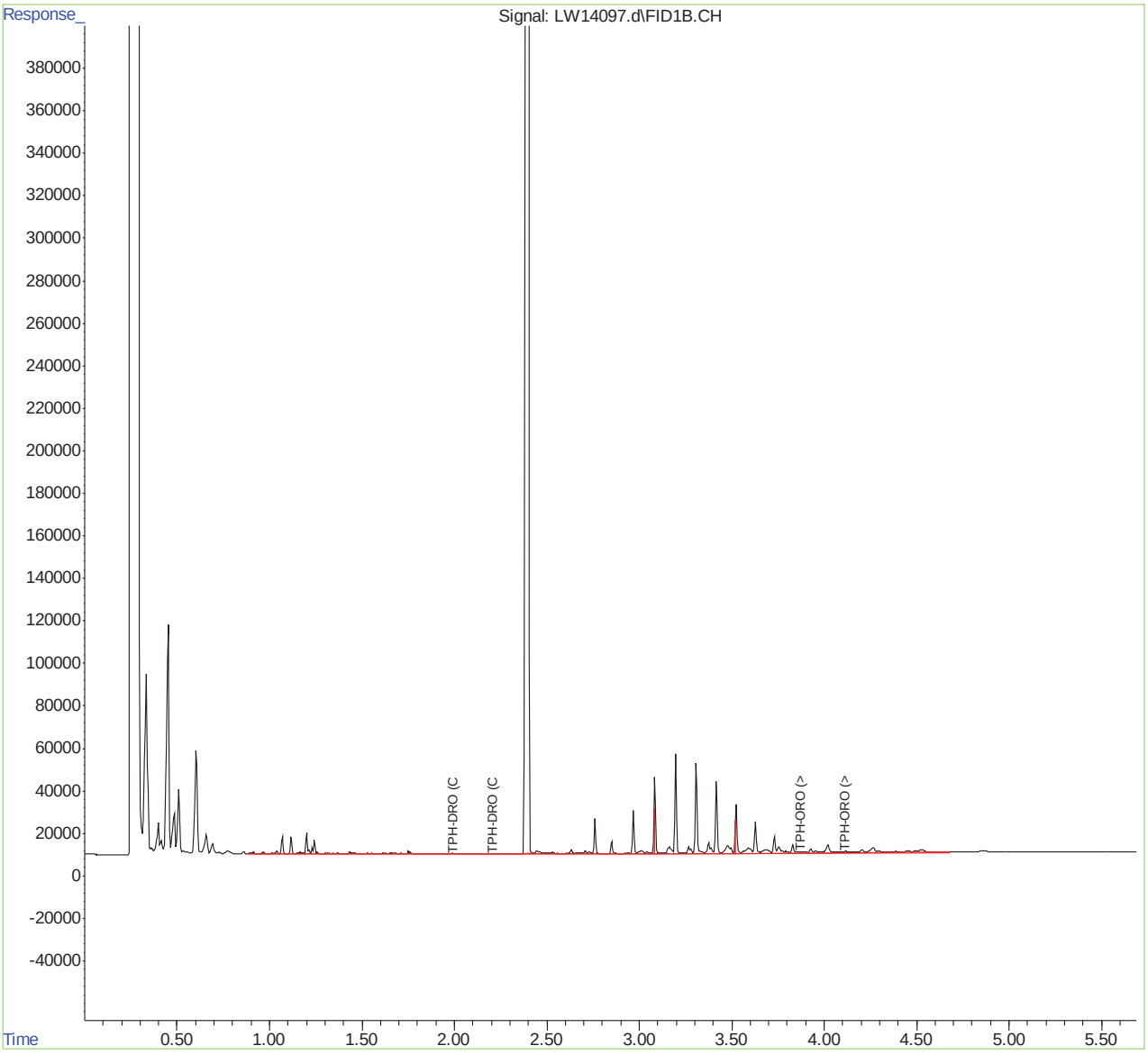
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\072823a\
Data File : LW14097.d
Signal(s) : FID1B.CH
Acq On : 29-Jul-23, 01:23:07
Operator : jackb
Sample : da57284-13
Misc : OP24063,GLW503,1010,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0008402-23157-N
DRO 54.6 J
ORO 147
Total TPH 201.6

Integration File: autoint1.e
Quant Time: Jul 29 09:59:22 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO072623a.M Mon Jul 31 16:54:20 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : FH075399.d
Signal(s) : FID1A.ch
Acq On : 10 Mar 2024 6:32 pm
Operator : jackb
Sample : da62547-1
Misc : OP25274,GFH23868,1050,,,1,1
ALS Vial : 12 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 10 22:52:49 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.340	35391382	76.735	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	13539938	44.655	ug/mlm
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2511577	10.238	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.1

7

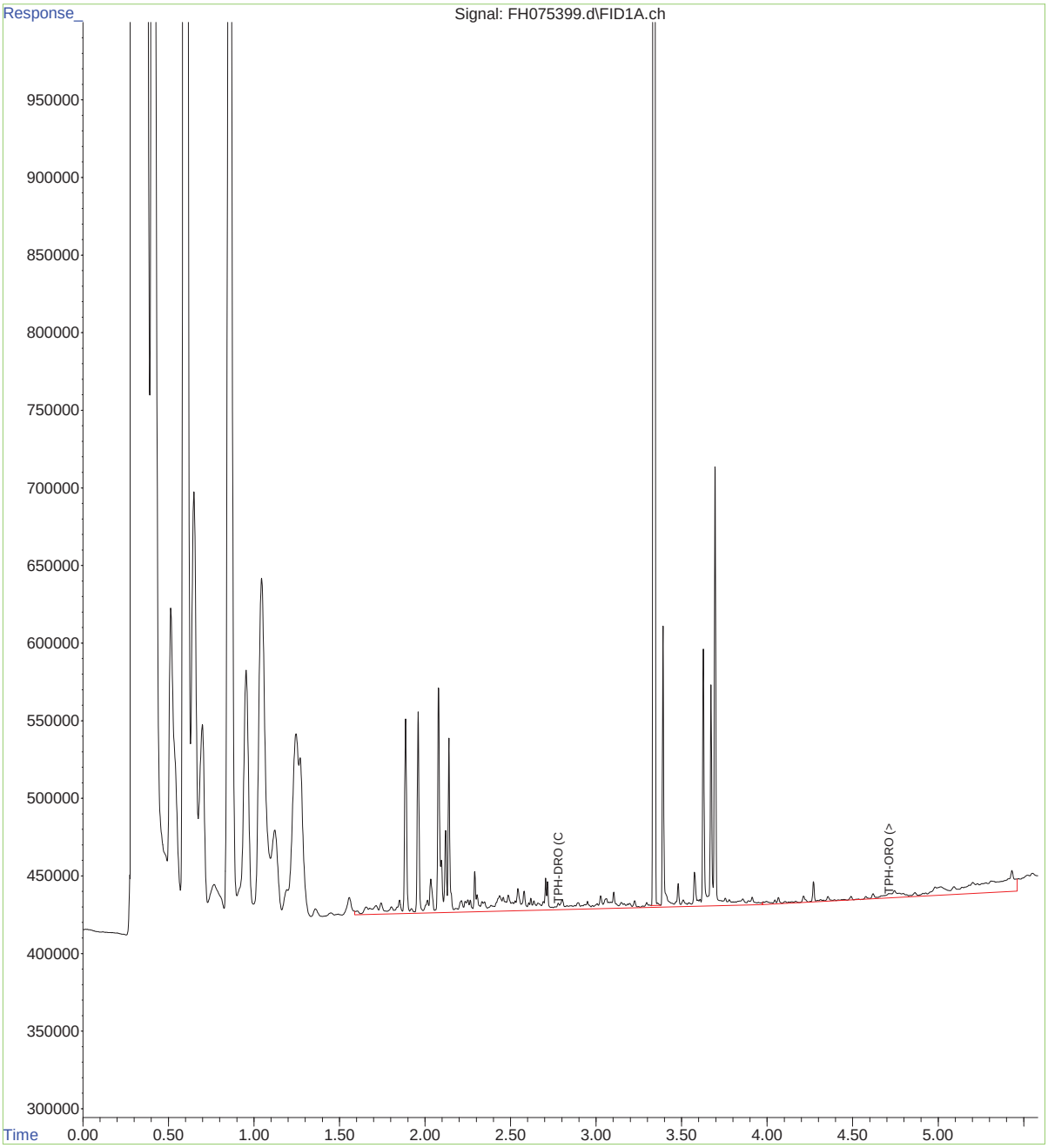
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : FH075399.d
Signal(s) : FID1A.ch
Acq On : 10 Mar 2024 6:32 pm
Operator : jackb
Sample : da62547-1
Misc : OP25274,GFH23868,1050,,,1,1
ALS Vial : 12 Sample Multiplier: 1

D2-TW-0008402-23157-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 10 22:52:49 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024b\
Data File : LW23649.d
Signal(s) : FID2B.CH
Acq On : 11-Mar-24, 11:28:18
Operator : jackb
Sample : DA62555-1
Misc : OP25333,GLW664,57.9,,,2.0,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 12 09:27:17 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.222	14034285	7.508 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 75.08%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	558071	0.414 ppm
2) H TPH-ORO (>C28-C40)	4.880	139046	0.330 ppm
3) H TPH-DRO (C10-C24)	2.880	505831	0.370 ppm
4) H TPH-ORO (>C24-C40)	4.680	205961	0.259 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

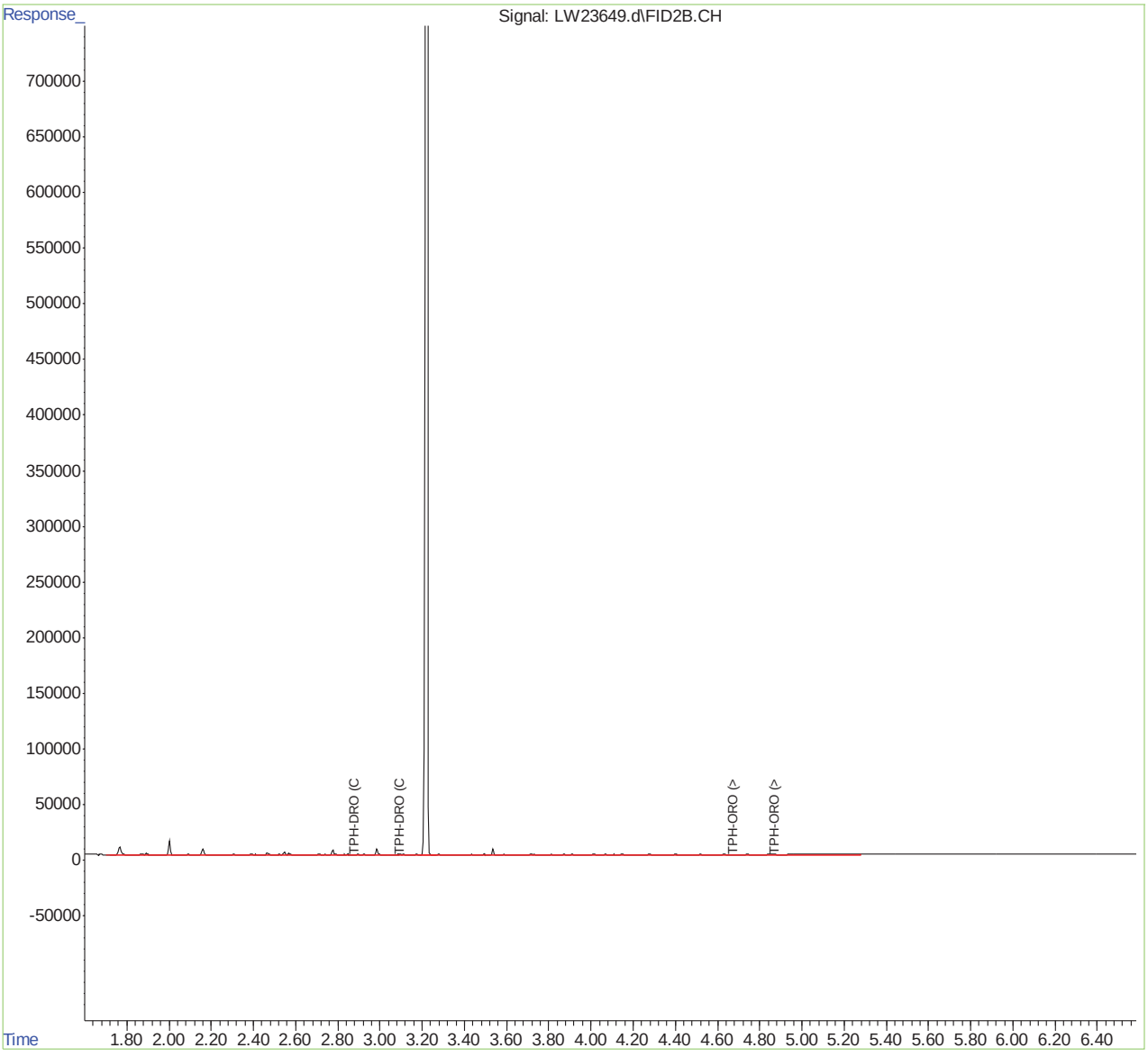
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024b\
Data File : LW23649.d
Signal(s) : FID2B.CH
Acq On : 11-Mar-24, 11:28:18
Operator : jackb
Sample : DA62555-1
Misc : OP25333,GLW664,57.9,,,2.0,1
ALS Vial : 15 Sample Multiplier: 1

D2-TW-0008402-23157-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 12 09:27:17 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Tue Mar 12 20:42:20 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067705.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 6:33 am
Operator : jackb
Sample : da58747-18
Misc : OP24370,GFH23714,1040,,,1,1
ALS Vial : 35 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 23 15:29:45 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.244	693802485	1341.575	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	44439651	119.643	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	38031530	103.236	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	11907464	68.120	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	18153863	58.434	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

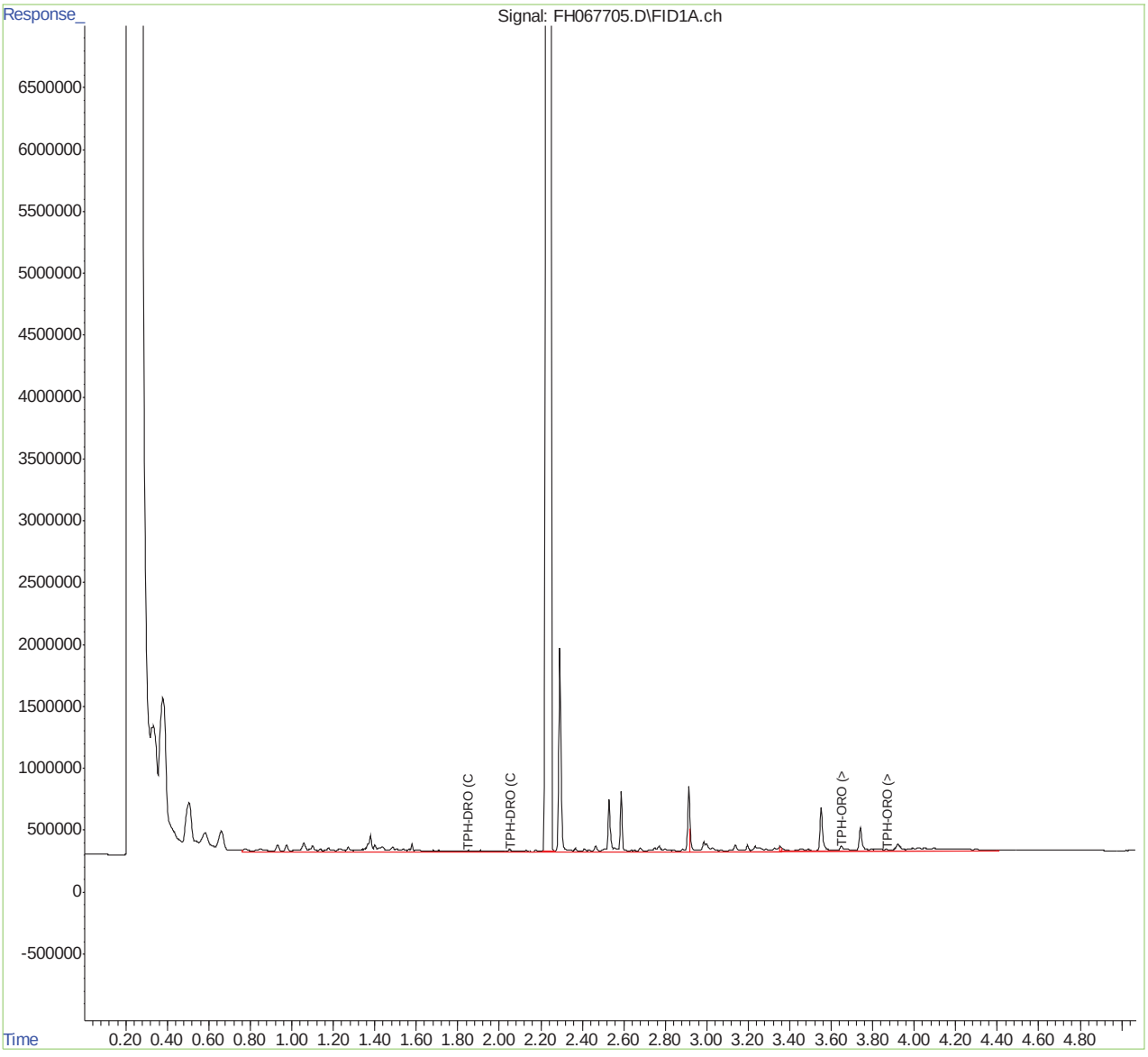
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067705.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 6:33 am
Operator : jackb
Sample : da58747-18
Misc : OP24370,GFH23714,1040,,,1,1
ALS Vial : 35 Sample Multiplier: 1

D2-TW-0008275-23157-N
DRO 99.3
ORO 56.2 J
Total TPH 155.5

Integration File: autoint1.e
Quant Time: Sep 23 15:29:45 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074945.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 3:54 am
Operator : jackb
Sample : da62504-14
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 47 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:37:06 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.339	52284378	113.363	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	13041934	43.013	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	3039561	12.390	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.14
7

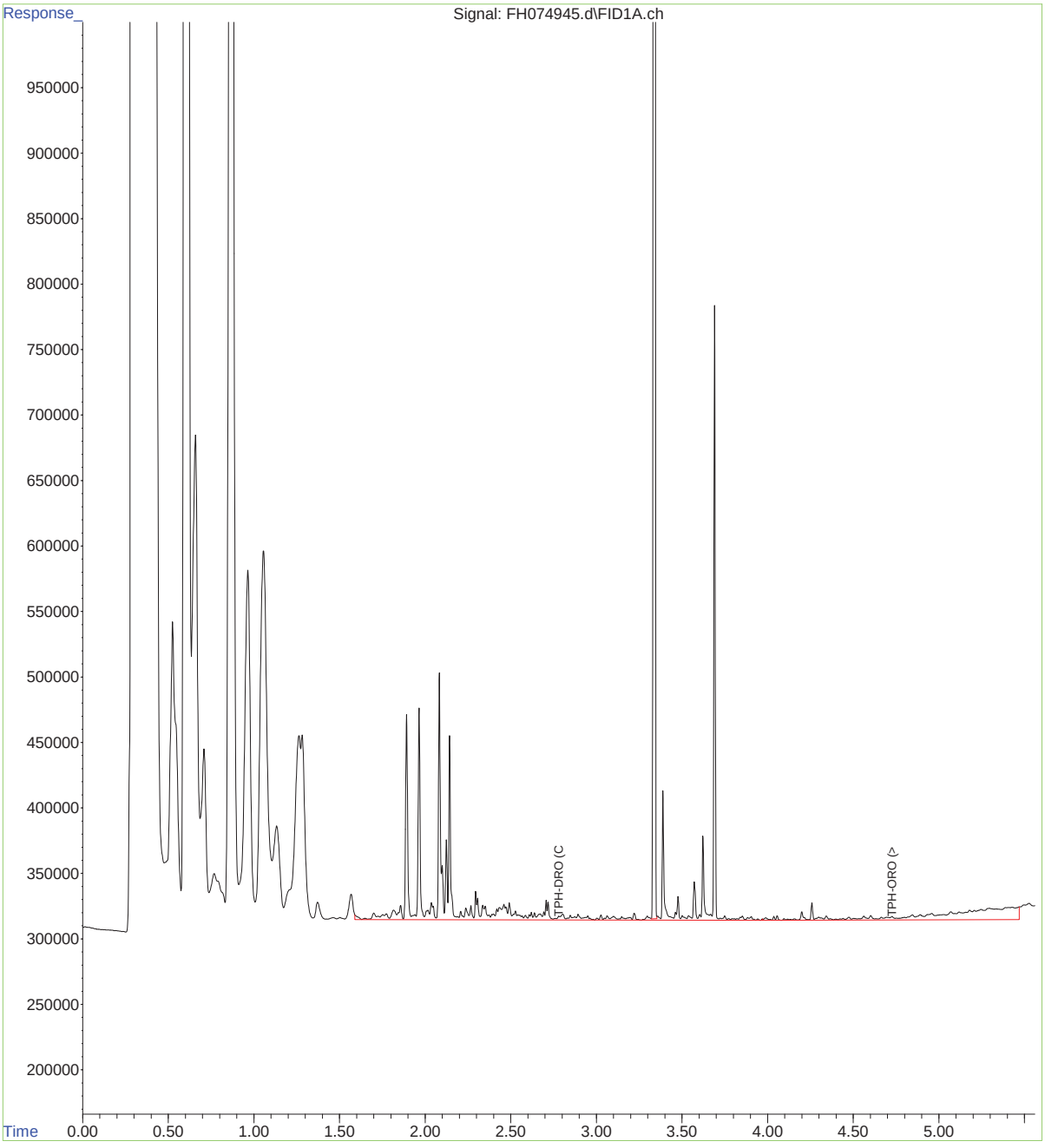
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074945.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 3:54 am
Operator : jackb
Sample : da62504-14
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 47 Sample Multiplier: 1

D2-TW-0008275-23157-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:37:06 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22931.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 03:48:09
Operator : jackb
Sample : DA62515-14
Misc : OP25270,GLW655,57.1,,,2,1
ALS Vial : 28 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 08:30:06 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.286	16416212	8.833 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 88.33%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	448006	0.332 ppm
2) H TPH-ORO (>C28-C40)	4.880	179478	0.426 ppm m
3) H TPH-DRO (C10-C24)	2.880	358488	0.262 ppm
4) H TPH-ORO (>C24-C40)	4.680	293558	0.369 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22931.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 03:48:09
Operator : jackb
Sample : DA62515-14
Misc : OP25270,GLW655,57.1,,,2,1
ALS Vial : 28 Sample Multiplier: 1

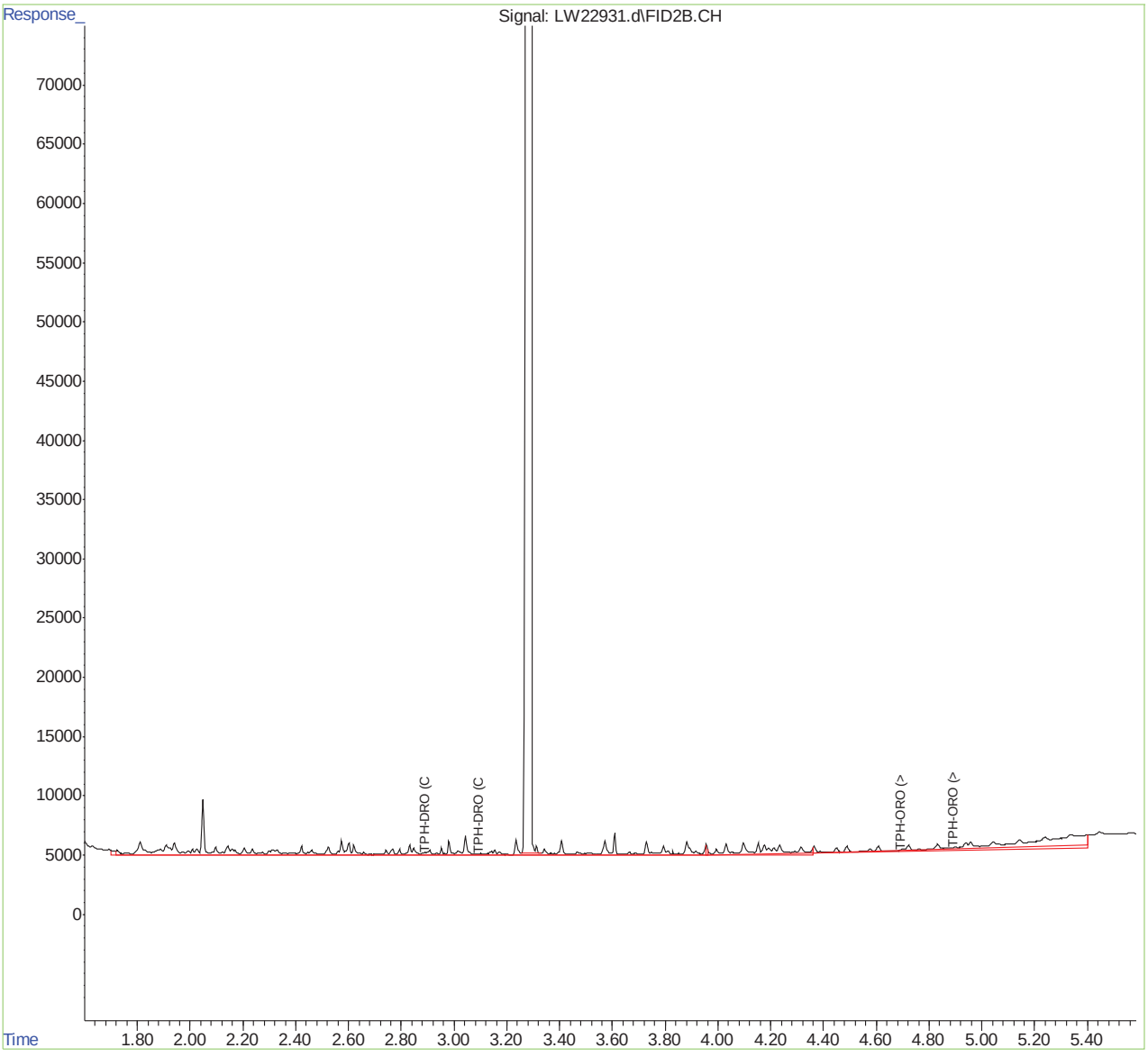
D2-TW-0008275-23157-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 04 08:30:06 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

7.1.14

7



DROLVI-030324.M Mon Mar 04 09:37:31 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080923a reprocessed\
Data File : LW14708.d
Signal(s) : FID1B.CH
Acq On : 10-Aug-23, 01:19:19
Operator : jackb
Sample : da57534-14
Misc : OP24135,GLW515,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 11 13:06:13 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.401f	34181965	1854.117 ppm
Spiked Amount 2000.000 Range 10 - 130	Recovery = 92.71%		
Target Compounds			
1) H TPH-DRO (C10-C28)	2.200	2037197	134.686 ppm
2) H TPH-ORO (>C28-C40)	4.100	532240	65.343 ppm
3) H TPH-DRO (C10-C24)	1.980	955533	63.868 ppm
4) H TPH-ORO (>C24-C40)	3.880	1667413	120.367 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

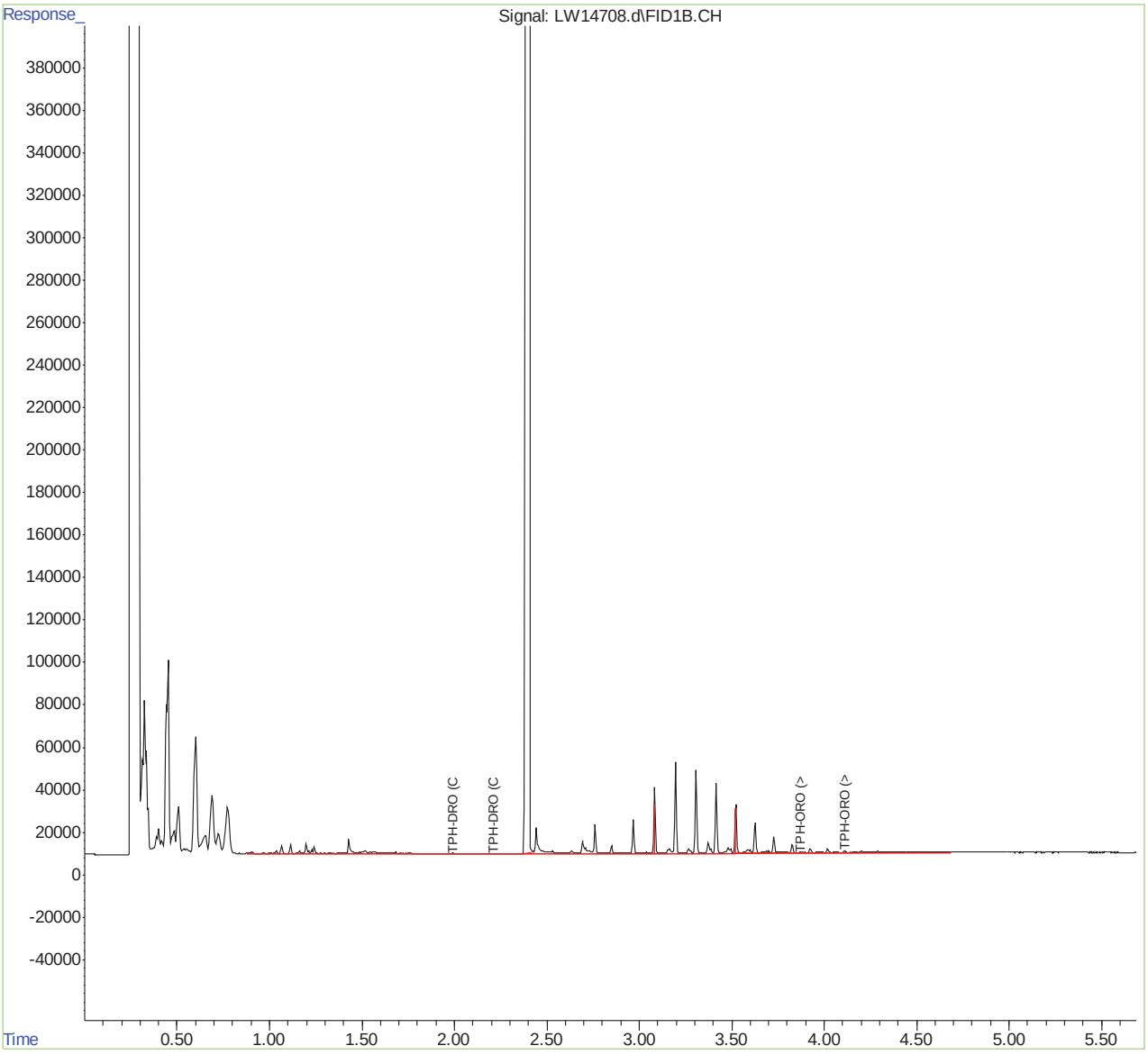
Quantitation Report (QT Reviewed)

D2-TW-0007572-23157-N
DRO 60.8 J
ORO 115
Total TPH 175.8

Data Path : C:\msdchem\1\data\2023\08.23\080923a reprocessed\
Data File : LW14708.d
Signal(s) : FID1B.CH
Acq On : 10-Aug-23, 01:19:19
Operator : jackb
Sample : da57534-14
Misc : OP24135,GLW515,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 11 13:06:13 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.36
11

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074912.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:57 pm
Operator : jackb
Sample : da62454-2
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 20 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:09:57 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.339	40442831	87.688	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	8564571	28.246	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	1541532	6.284	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.2
7

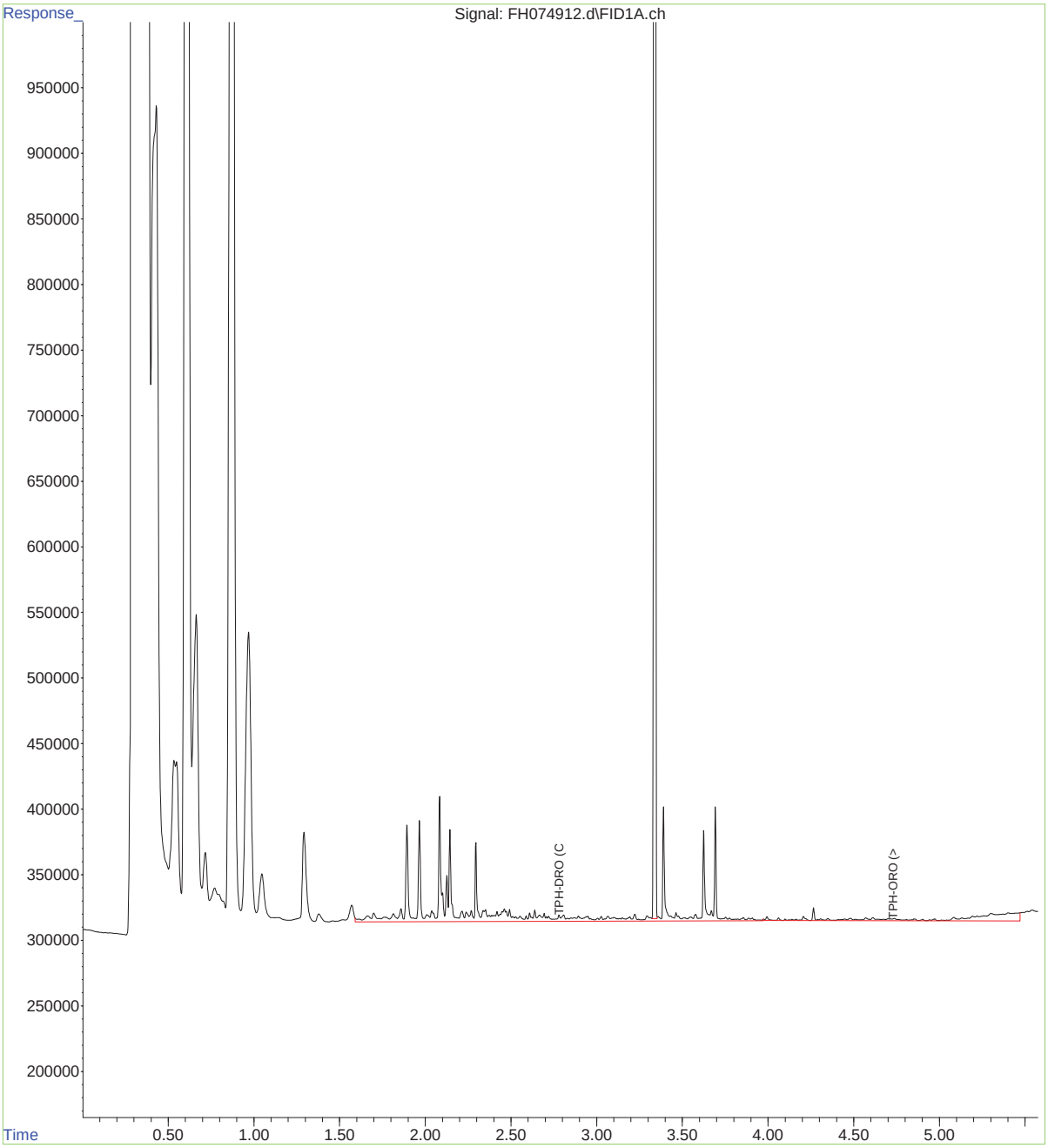
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074912.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:57 pm
Operator : jackb
Sample : da62454-2
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 20 Sample Multiplier: 1

D2-TW-0007572-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:09:57 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22991.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 14:31:21
Operator : jackb
Sample : DA62466-2
Misc : OP25272,GLW655,57.3,,,2,1
ALS Vial : 86 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 14:42:11 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
5) S	O-TERPHENYL	3.281	14832494	7.952 ppm
Spiked Amount	10.000	Range 70 - 130	Recovery =	79.52%
	Target Compounds			
1) H	TPH-DRO (C10-C28)	3.080	394845	0.293 ppm
2) H	TPH-ORO (>C28-C40)	4.880	196292	0.466 ppm
3) H	TPH-DRO (C10-C24)	2.880	334314	0.245 ppm
4) H	TPH-ORO (>C24-C40)	4.680	283118	0.356 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

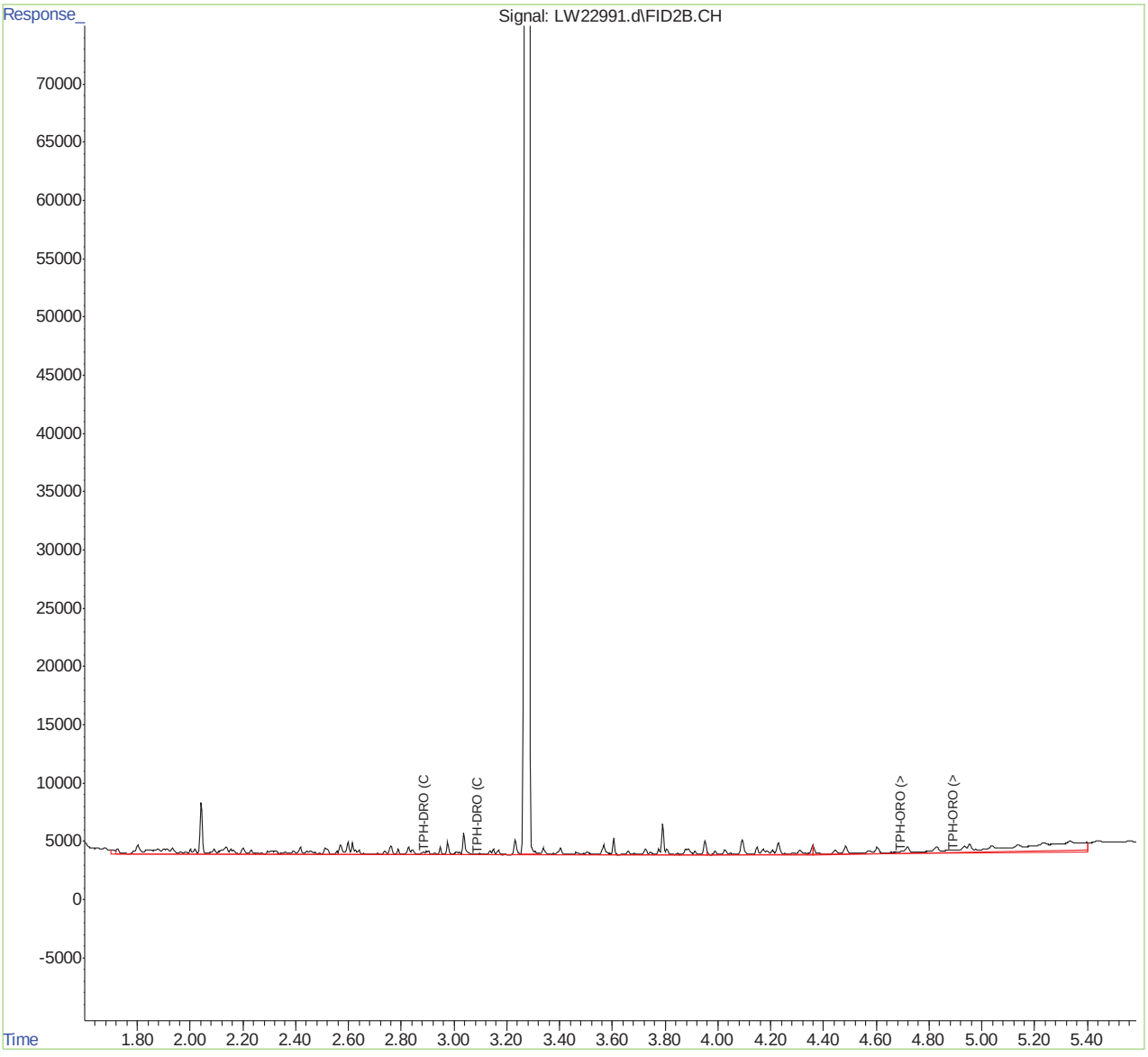
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22991.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 14:31:21
Operator : jackb
Sample : DA62466-2
Misc : OP25272,GLW655,57.3,,,2,1
ALS Vial : 86 Sample Multiplier: 1

D2-TW-0007572-23157-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 04 14:42:11 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Mon Mar 04 15:16:15 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14278.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:48:57
Operator : jackb
Sample : da57313-9
Misc : OP24080,GLW507,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 02 09:30:36 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.396	24984582	1355.228 ppm
Spiked Amount 2000.000 Range 10 - 130	Recovery = 67.76%		
Target Compounds			
1) H TPH-DRO (C10-C28)	2.200	2419538	159.963 ppm
2) H TPH-ORO (>C28-C40)	4.100	613707	75.345 ppm
3) H TPH-DRO (C10-C24)	1.980	1562668	104.449 ppm
4) H TPH-ORO (>C24-C40)	3.880	1321010	95.361 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.29 11

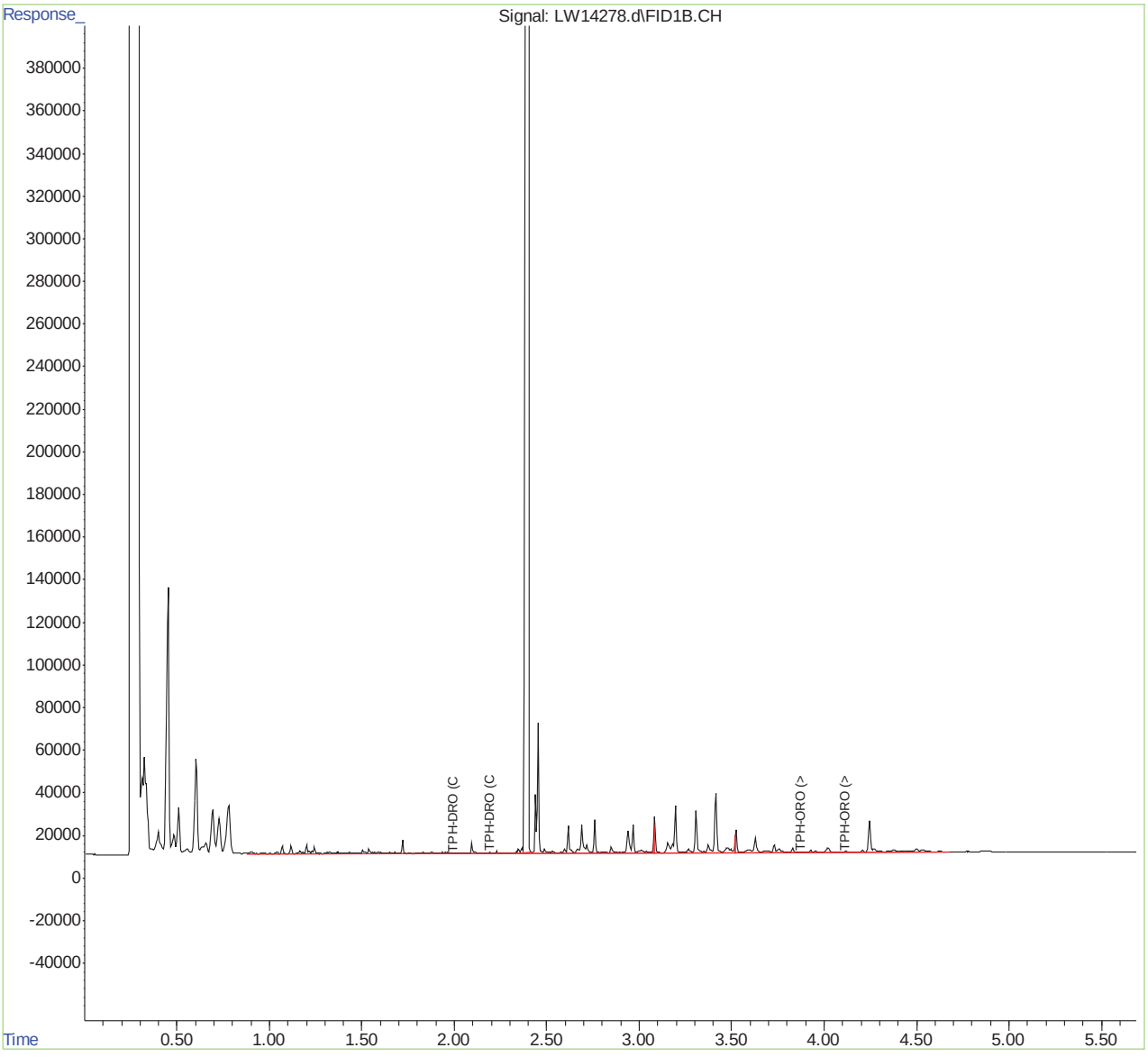
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14278.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:48:57
Operator : jackb
Sample : da57313-9
Misc : OP24080,GLW507,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0008325-23157-N
DRO 99.5
ORO 90.8
Total TPH 190.3

Integration File: autoint1.e
Quant Time: Aug 02 09:30:36 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074517.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:04 am
Operator : jackb
Sample : da62396-1
Misc : OP25243,GFH23861,1040,,,1,1
ALS Vial : 43 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 29 10:42:12 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.063	30926154	62.659 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	9498176	29.902 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	7422289	24.043 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	3294544	23.539 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	5301335	21.147 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

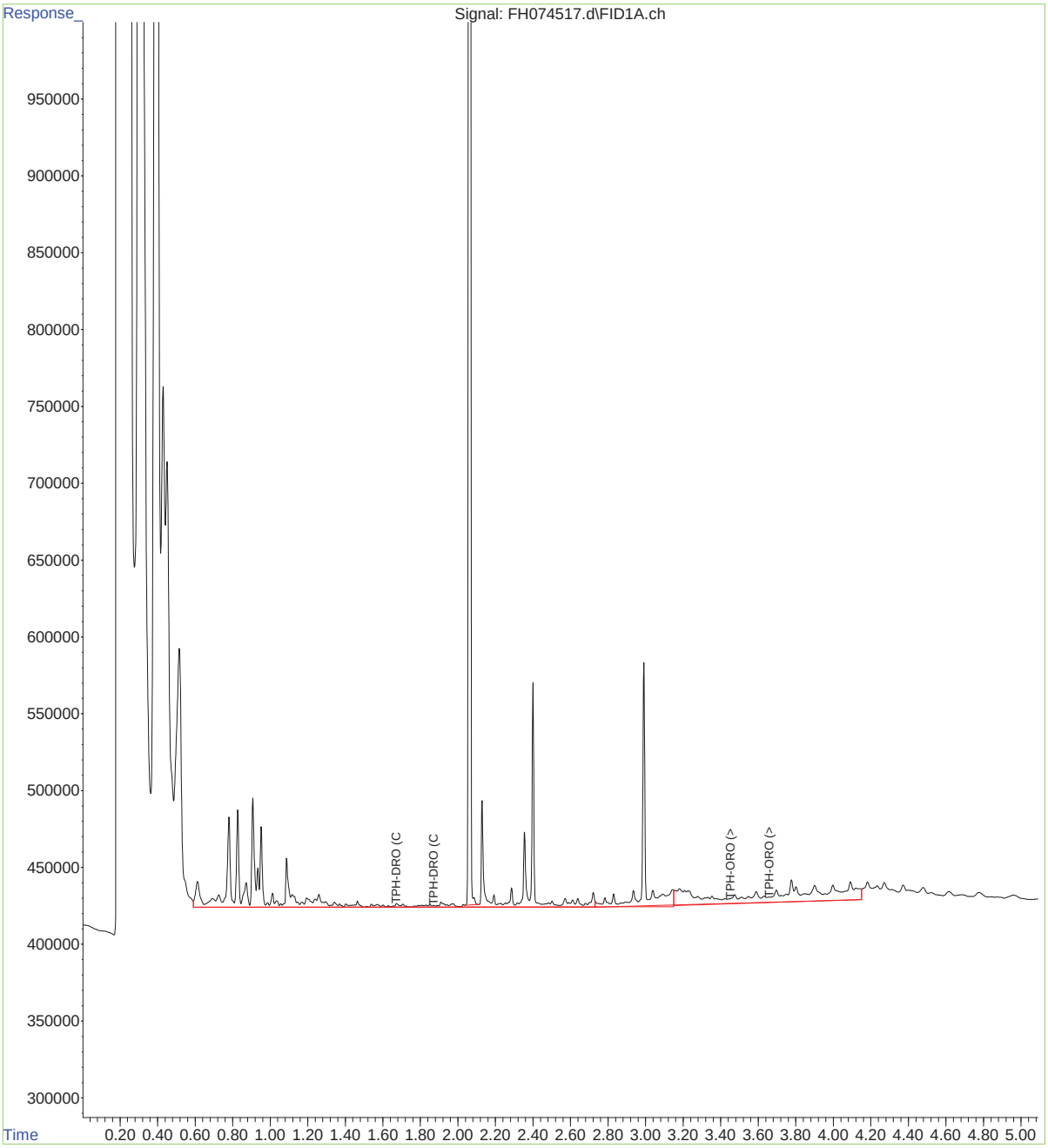
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074517.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:04 am
Operator : jackb
Sample : da62396-1
Misc : OP25243,GFH23861,1040,,,1,1
ALS Vial : 43 Sample Multiplier: 1

D2-TW-0008325-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 29 10:42:12 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14269.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 19:20:56
Operator : jackb
Sample : da57313-2
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 02 09:26:04 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

	Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds						
5) S	O-TERPHENYL	2.397	26816574	1454.600	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 72.73%				
Target Compounds						
1) H	TPH-DRO (C10-C28)	2.200	2231716	147.546	ppm	
2) H	TPH-ORO (>C28-C40)	4.100	562755	69.090	ppm	
3) H	TPH-DRO (C10-C24)	1.980	1427255	95.398	ppm	
4) H	TPH-ORO (>C24-C40)	3.880	1192323	86.071	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.22 11

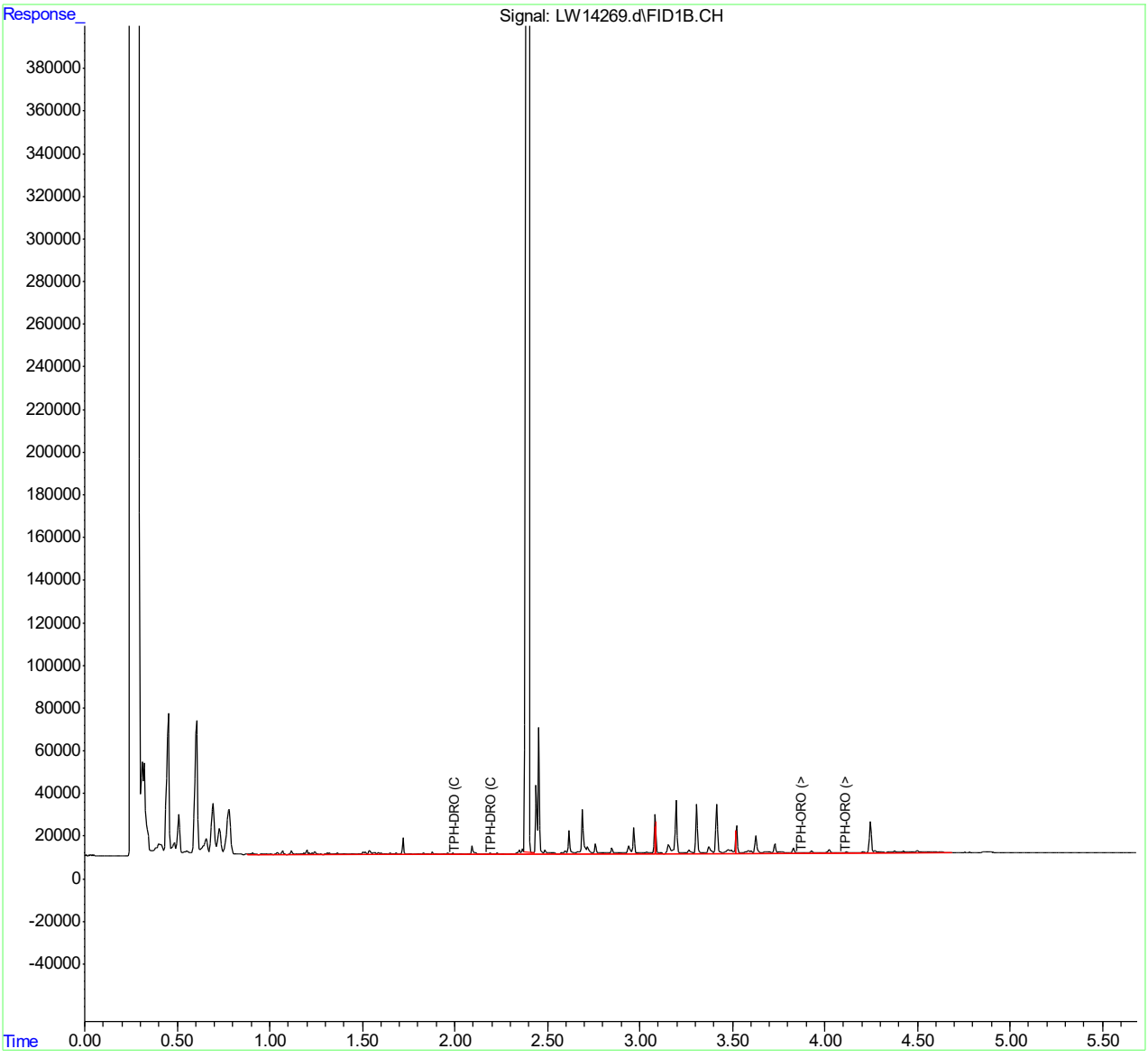
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14269.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 19:20:56
Operator : jackb
Sample : da57313-2
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0007205-23157-N
DRO 91.7
ORO 82.8
Total TPH 174.5

Integration File: autoint1.e
Quant Time: Aug 02 09:26:04 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074332.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 1:59 am
Operator : jackb
Sample : da62311-6
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 12 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:39:53 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.070	71522974	144.910 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	11979340	37.713 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	11728556	37.992 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	963450	6.884 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1336477	5.331 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

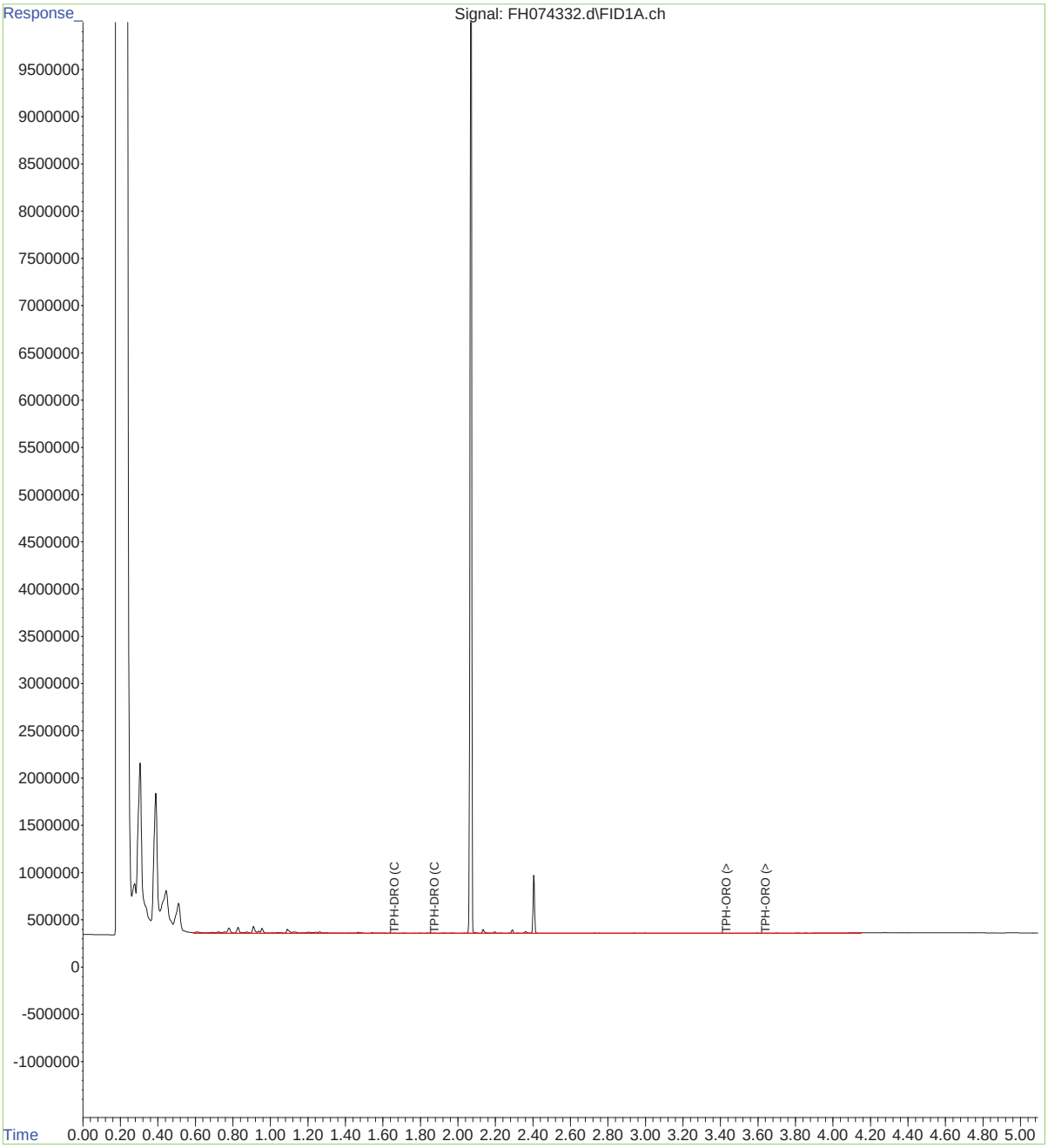
Quantitation Report (QT Reviewed)

D2-TW-0007205-23157-N-R1
TPH-DRO 50 U
TPH-ORO 50 U
Total TPH ND

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074332.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 1:59 am
Operator : jackb
Sample : da62311-6
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 12 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:39:53 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22465.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 05:15:18
Operator : jackb
Sample : da62324-6 (p)
Misc : OP25220,GLW649,57.2,,,2,1
ALS Vial : 8 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 09 13:50:21 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	4.561	20803732	8.752	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 87.52%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	3.750	861092	0.520	ppm	
4) H TPH-ORO (>C24-C40)	6.210	59128	0.047	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

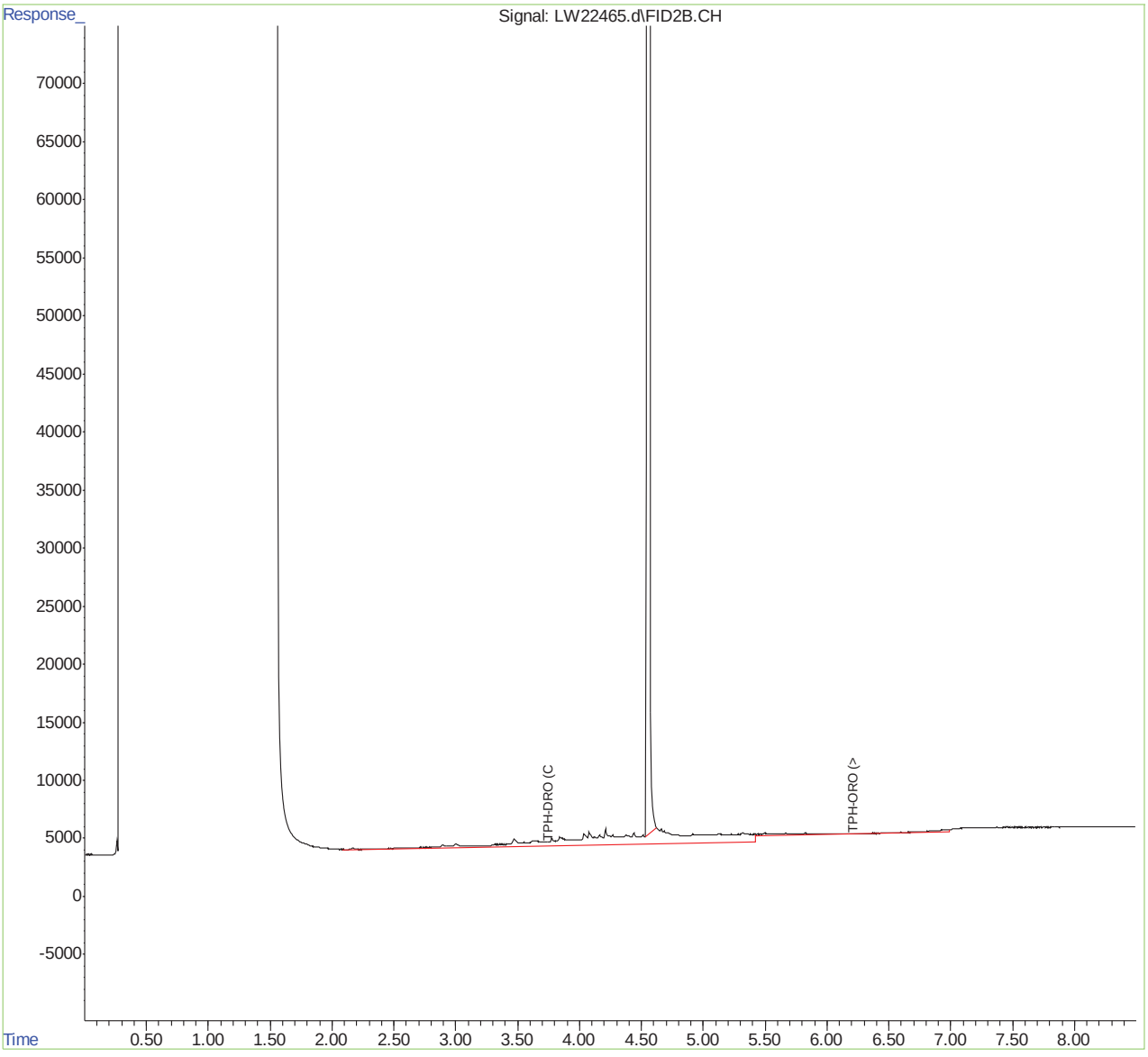
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22465.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 05:15:18
Operator : jackb
Sample : da62324-6 (p)
Misc : OP25220,GLW649,57.2,,,2,1
ALS Vial : 8 Sample Multiplier: 1

D2-TW-0007205-23157-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 09 13:50:21 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-020824.M Sat Mar 09 14:09:22 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067698.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 5:36 am
Operator : jackb
Sample : da58747-13
Misc : OP24370,GFH23714,1050,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 23 15:29:31 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.246	755812910	1461.482	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	54710739	147.296	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	46775588	126.972	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	12988721	74.306	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	20519470	66.048	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.34
11

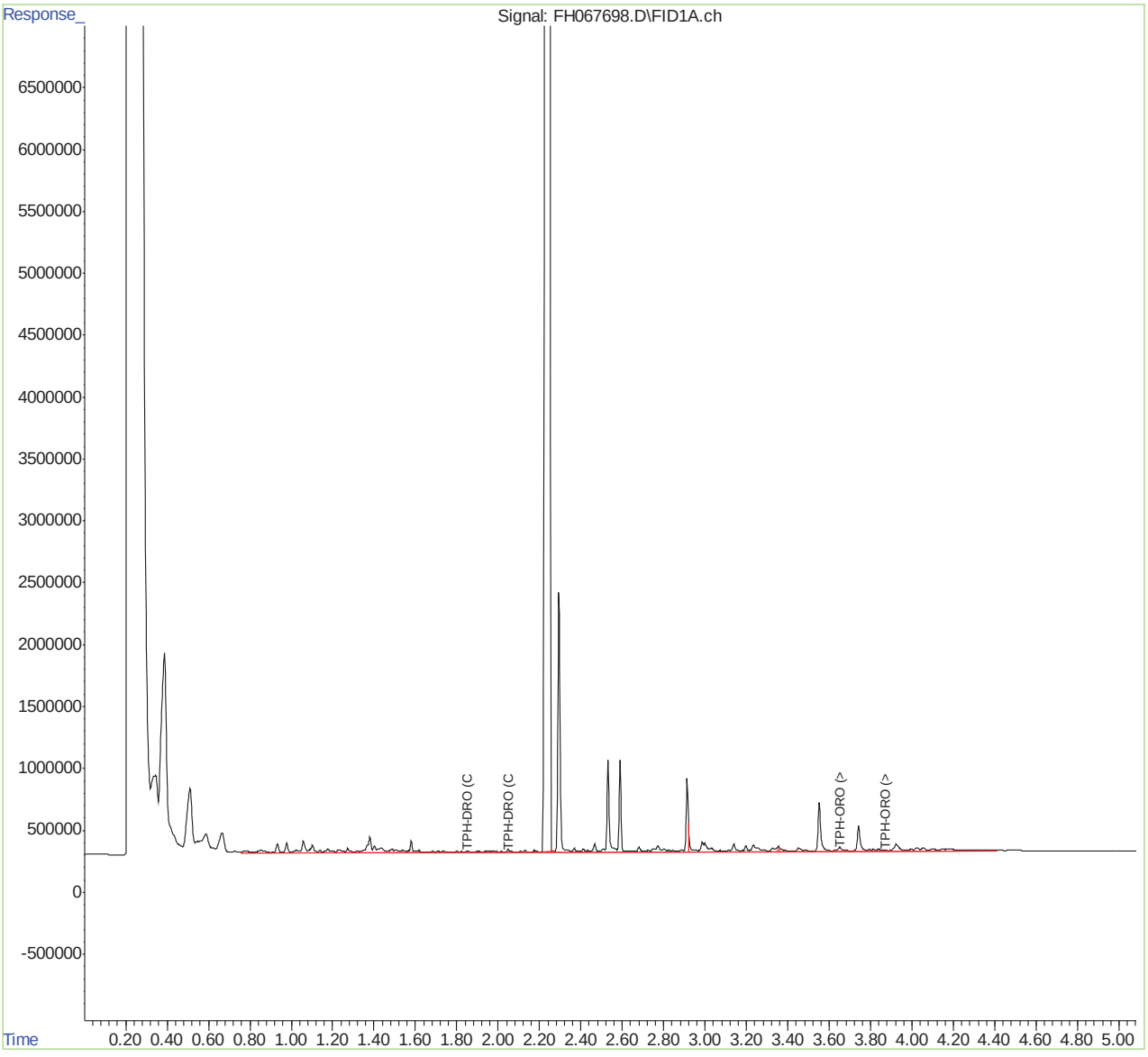
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067698.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 5:36 am
Operator : jackb
Sample : da58747-13
Misc : OP24370,GFH23714,1050,,,1,1
ALS Vial : 28 Sample Multiplier: 1

D2-TW-0007138-23157-N
DRO 121
ORO 62.9 J
Total TPH 183.9

Integration File: autoint1.e
Quant Time: Sep 23 15:29:31 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.34
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074329.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 1:34 am
Operator : jackb
Sample : da62311-3
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 9 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:39:47 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.071	77172897	156.358 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	11953591	37.632 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	11570984	37.481 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	1114541	7.963 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1598507	6.376 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

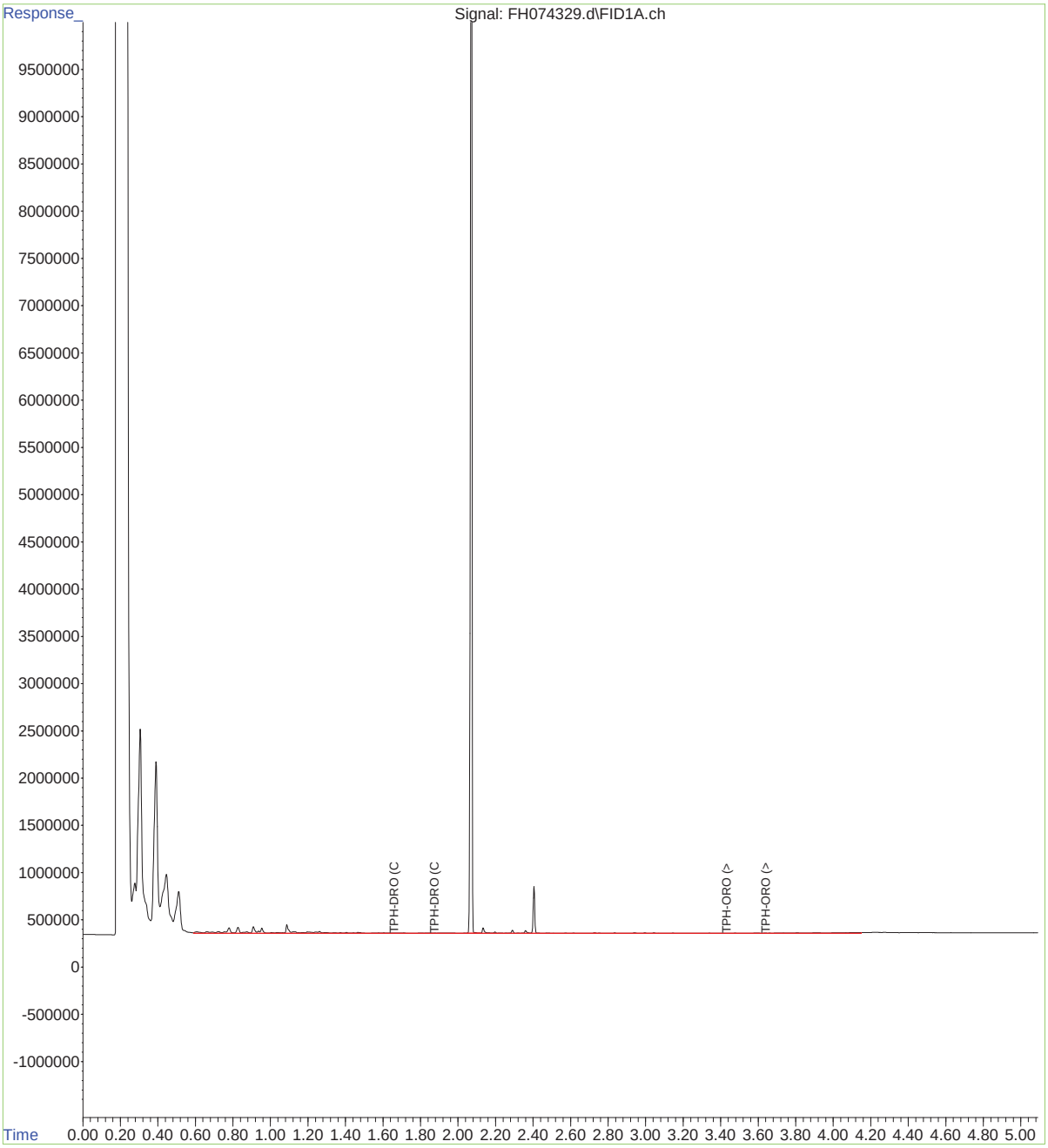
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074329.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 1:34 am
Operator : jackb
Sample : da62311-3
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 9 Sample Multiplier: 1

D2-TW-0007138-23157-N-R1
TPH-DRO 50 U
TPH-ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:39:47 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024b\
Data File : LW23657.d
Signal(s) : FID2B.CH
Acq On : 11-Mar-24, 13:02:20
Operator : jackb
Sample : DA62324-3
Misc : OP25333,GLW664,57.4,,,2.0,1
ALS Vial : 20 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 12 09:27:46 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.224	14450725	7.740 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 77.40%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	400818	0.297 ppm
2) H TPH-ORO (>C28-C40)	4.880	117538	0.279 ppm
3) H TPH-DRO (C10-C24)	2.880	357943	0.262 ppm
4) H TPH-ORO (>C24-C40)	4.680	174294	0.219 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

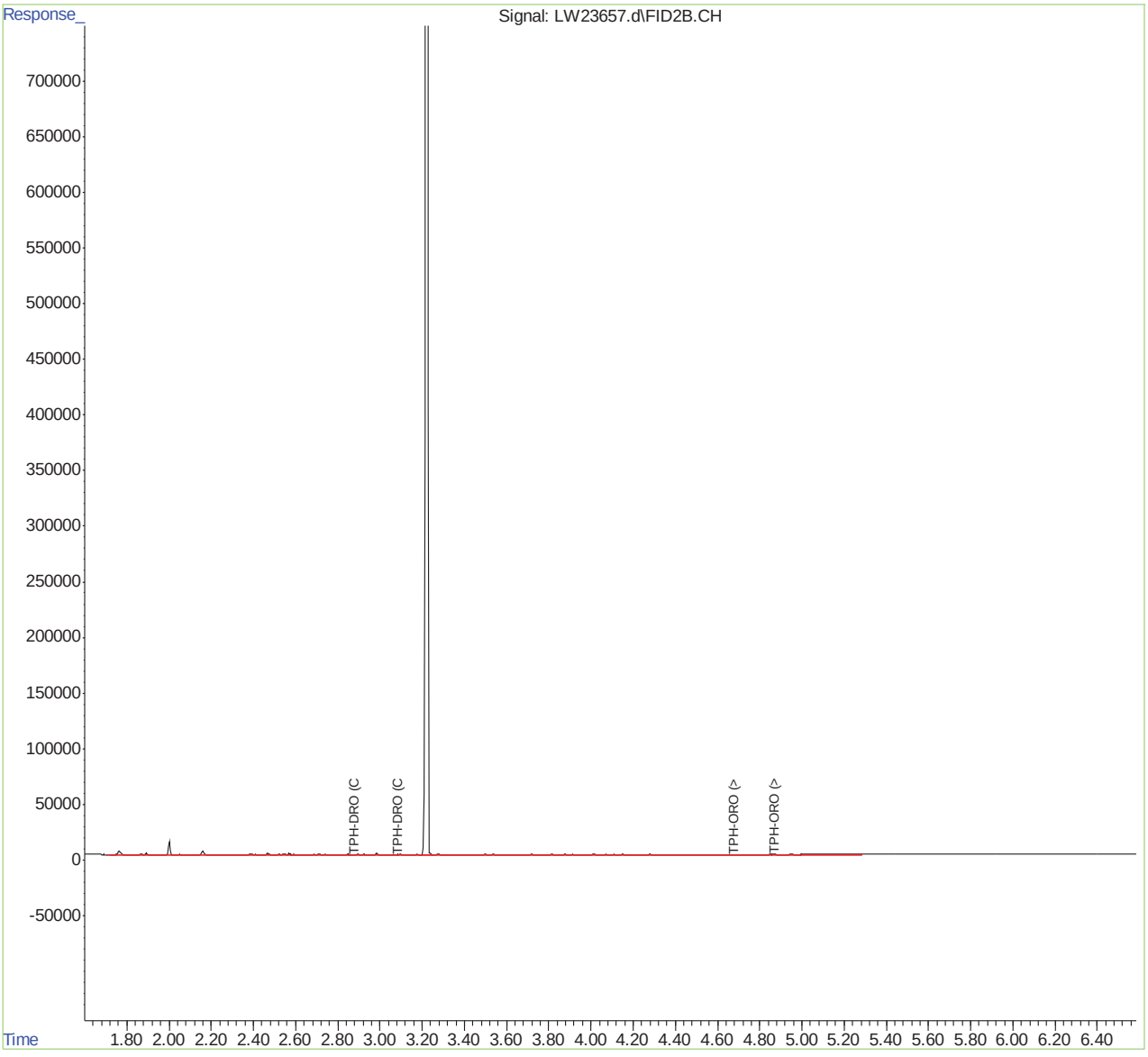
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024b\
Data File : LW23657.d
Signal(s) : FID2B.CH
Acq On : 11-Mar-24, 13:02:20
Operator : jackb
Sample : DA62324-3
Misc : OP25333,GLW664,57.4,,,2.0,1
ALS Vial : 20 Sample Multiplier: 1

D2-TW-0007138-23157-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 12 09:27:46 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Tue Mar 12 20:42:44 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\072823a\
Data File : LW14098.d
Signal(s) : FID1B.CH
Acq On : 29-Jul-23, 01:32:54
Operator : jackb
Sample : da57284-14
Misc : OP24063,GLW503,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jul 29 09:59:24 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.400f	33934658	1840.703 ppm
Spiked Amount 2000.000 Range 10 - 130	Recovery = 92.04%		
Target Compounds			
1) H TPH-DRO (C10-C28)	2.200	2314582	153.024 ppm
2) H TPH-ORO (>C28-C40)	4.100	791187	97.134 ppm
3) H TPH-DRO (C10-C24)	1.980	844568	56.451 ppm
4) H TPH-ORO (>C24-C40)	3.880	2271382	163.966 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.34 11

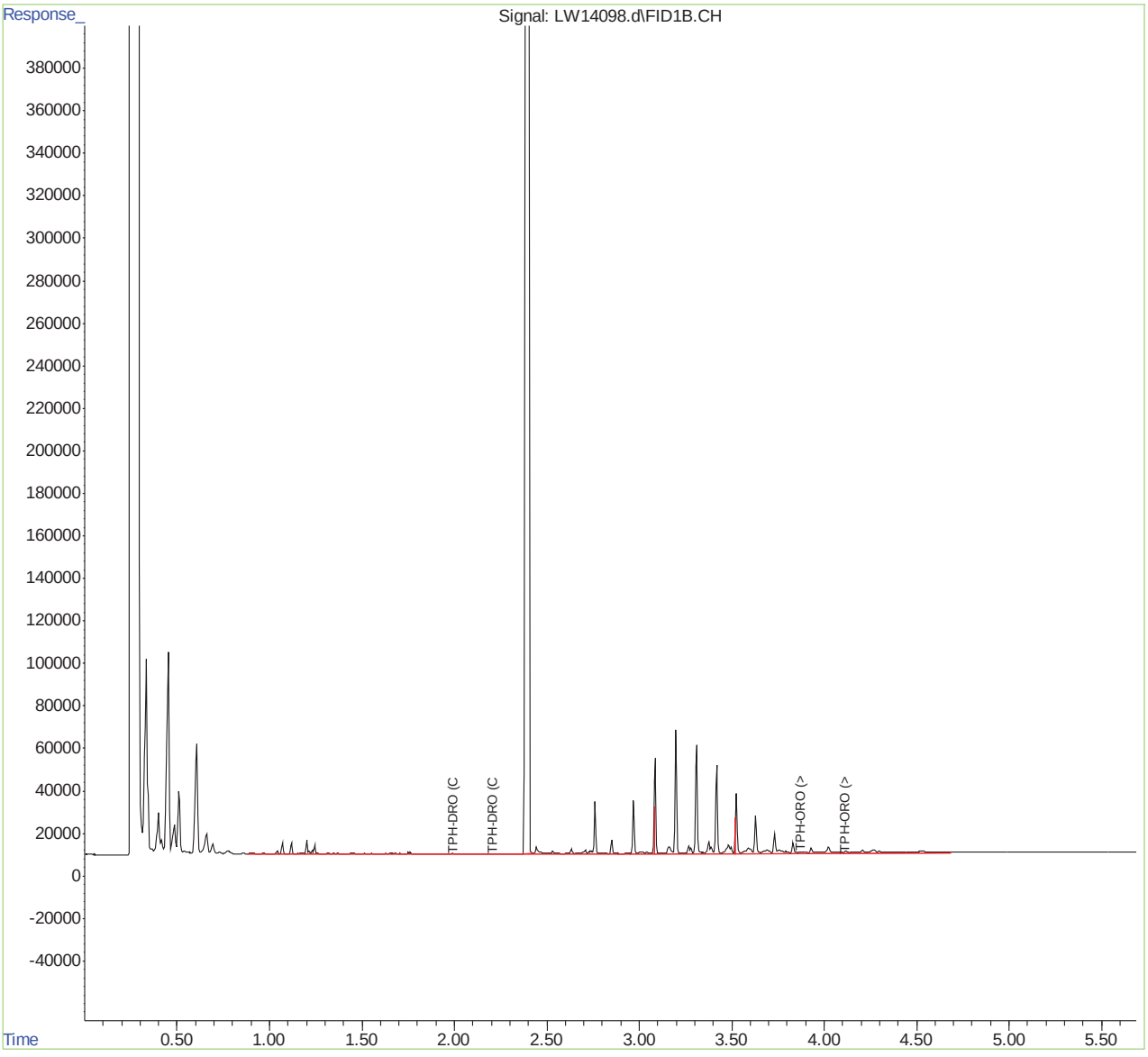
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\072823a\
Data File : LW14098.d
Signal(s) : FID1B.CH
Acq On : 29-Jul-23, 01:32:54
Operator : jackb
Sample : da57284-14
Misc : OP24063,GLW503,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0007523-23157-N
DRO 54.3 J
ORO 158
Total TPH 212.3

Integration File: autoint1.e
Quant Time: Jul 29 09:59:24 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074380.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 8:37 am
Operator : jackb
Sample : da62311-2
Misc : OP25213,GFH23859,1030,,,1,1
ALS Vial : 52 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:41:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.070	69443974	140.698 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	10789802	33.968 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	10494881	33.996 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	827301	5.911 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1140813	4.551 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

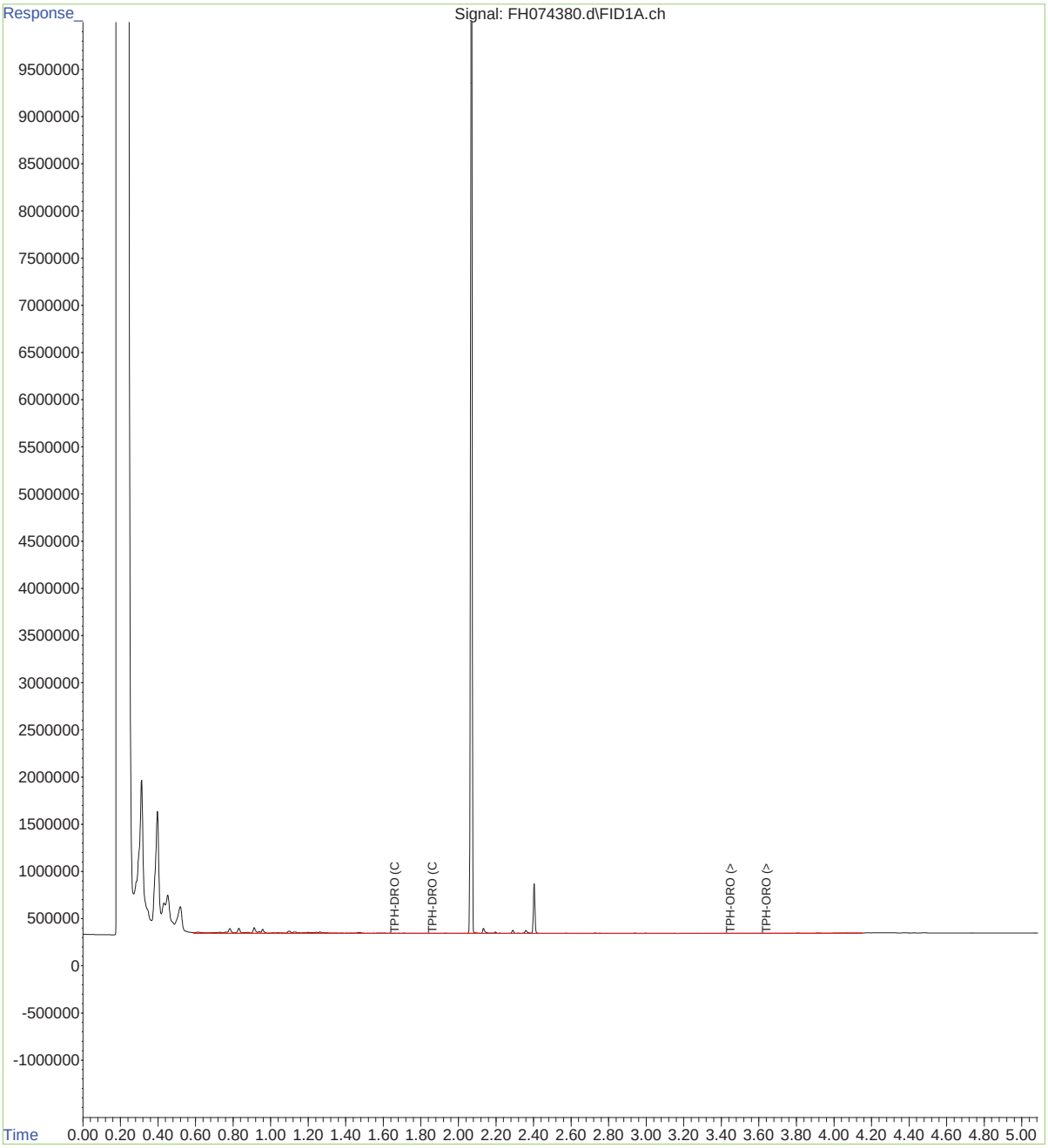
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074380.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 8:37 am
Operator : jackb
Sample : da62311-2
Misc : OP25213,GFH23859,1030,,,1,1
ALS Vial : 52 Sample Multiplier: 1

D2-TW-0007523-23157-N-R1
TPH-DRO 50 U
TPH-ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:41:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23600.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 17:13:48
Operator : jackb
Sample : DA62324-2
Misc : OP25221,GLW663,57.9,,,2.0,1
ALS Vial : 3 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 11 18:42:53 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.220	15711978	8.441 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 84.41%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	352321	0.261 ppm
2) H TPH-ORO (>C28-C40)	4.880	133361	0.316 ppm
3) H TPH-DRO (C10-C24)	2.880	282783	0.207 ppm
4) H TPH-ORO (>C24-C40)	4.680	227210	0.286 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

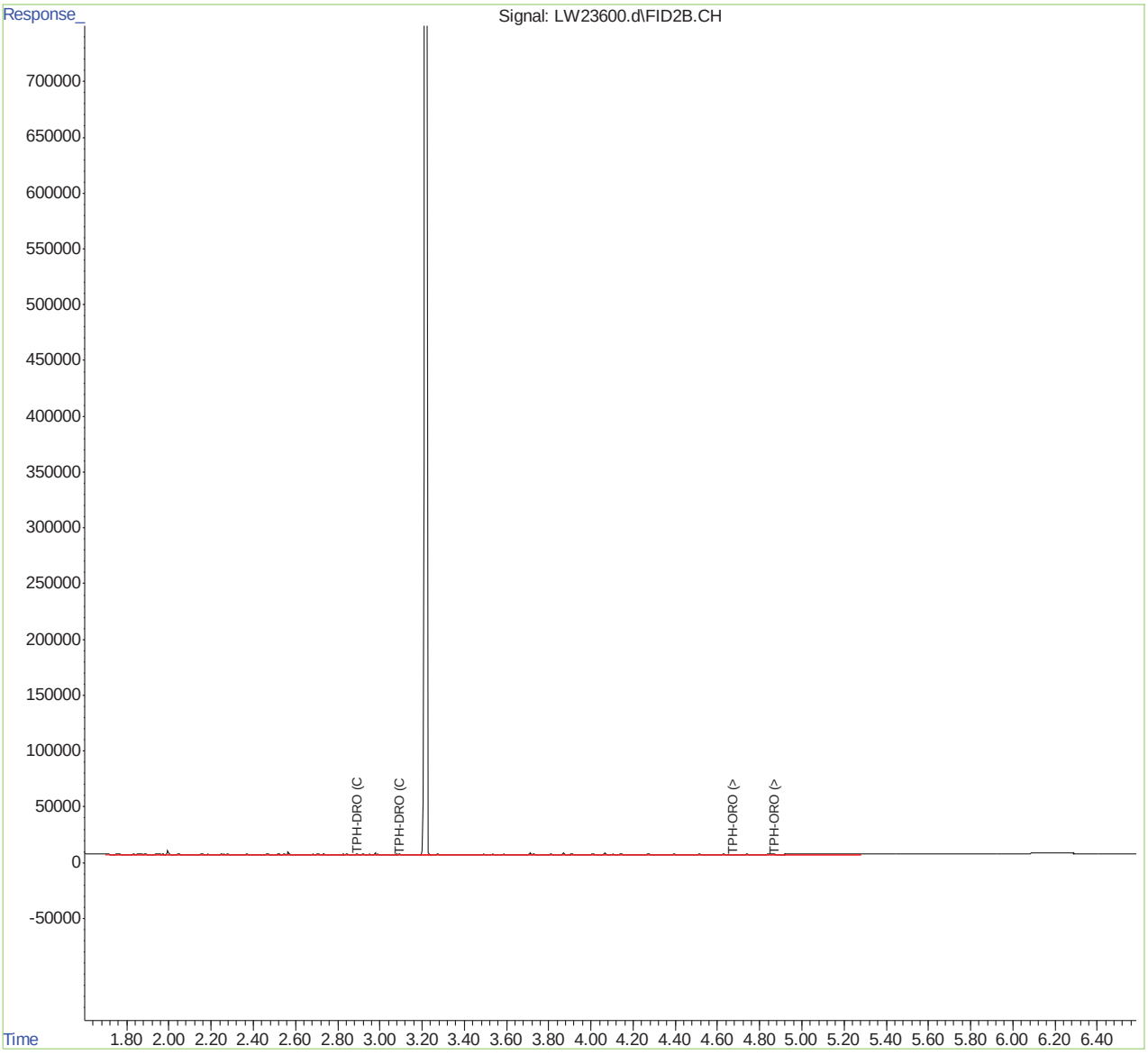
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23600.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 17:13:48
Operator : jackb
Sample : DA62324-2
Misc : OP25221,GLW663,57.9,,,2.0,1
ALS Vial : 3 Sample Multiplier: 1

D2-TW-0007523-23157-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 11 18:42:53 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14276.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:29:23
Operator : jackb
Sample : da57313-7
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 02 09:29:56 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.399	31740458	1721.684	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 86.08%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.200	2776012	183.531	ppm	
2) H TPH-ORO (>C28-C40)	4.100	672450	82.557	ppm	
3) H TPH-DRO (C10-C24)	1.980	1747730	116.819	ppm	
4) H TPH-ORO (>C24-C40)	3.880	1470604	106.160	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

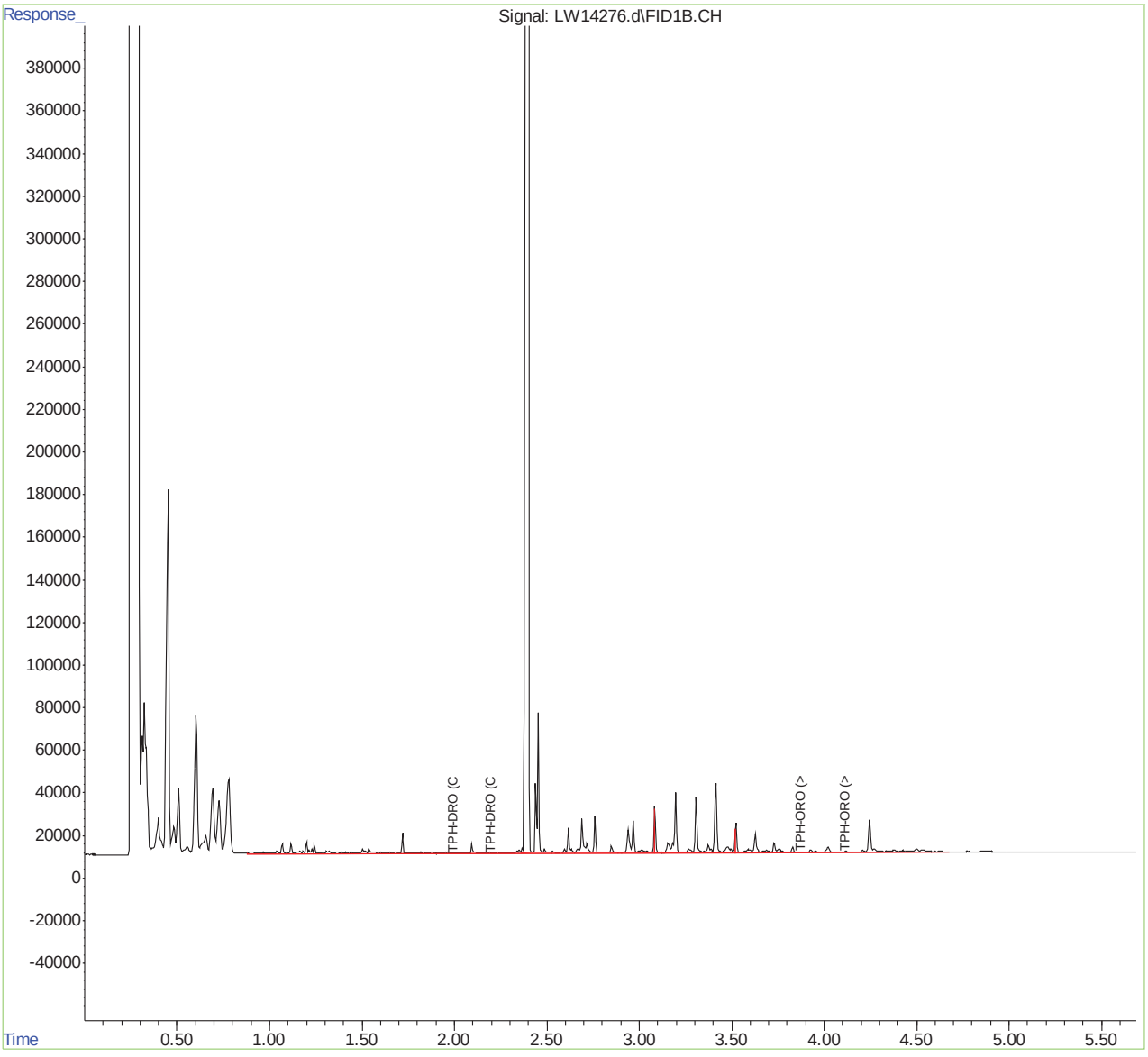
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14276.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:29:23
Operator : jackb
Sample : da57313-7
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0007773-23157-N
DRO 112
ORO 102
Total TPH 214

Integration File: autoint1.e
Quant Time: Aug 02 09:29:56 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO072623a.M Wed Aug 02 10:04:37 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074518.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:13 am
Operator : jackb
Sample : da62396-2
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 29 10:42:14 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.063	32576415	66.002 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	10065002	31.686 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	9683455	31.367 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	986785	7.050 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1298989	5.182 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

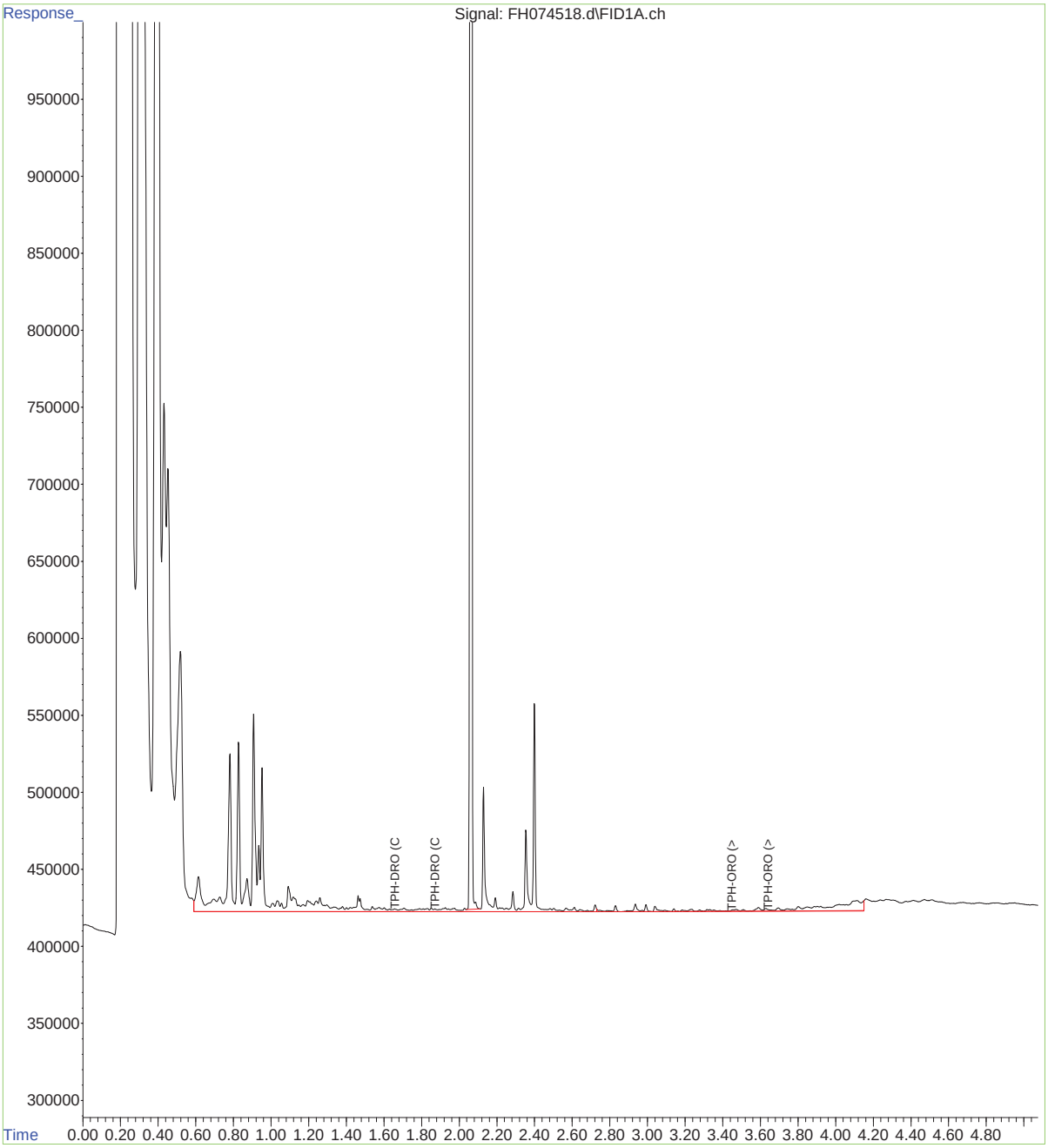
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074518.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:13 am
Operator : jackb
Sample : da62396-2
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

D2-TW-0007773-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 29 10:42:14 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Thu Feb 29 14:39:46 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067686.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 4:00 am
Operator : jackb
Sample : da58747-3
Misc : OP24370,GFH23714,1050,,,1,1
ALS Vial : 16 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 23 15:29:07 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.243	652838662	1262.365	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	39460036	106.237	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	33677797	91.418	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	10113569	57.858	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	15105973	48.623	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.24
11

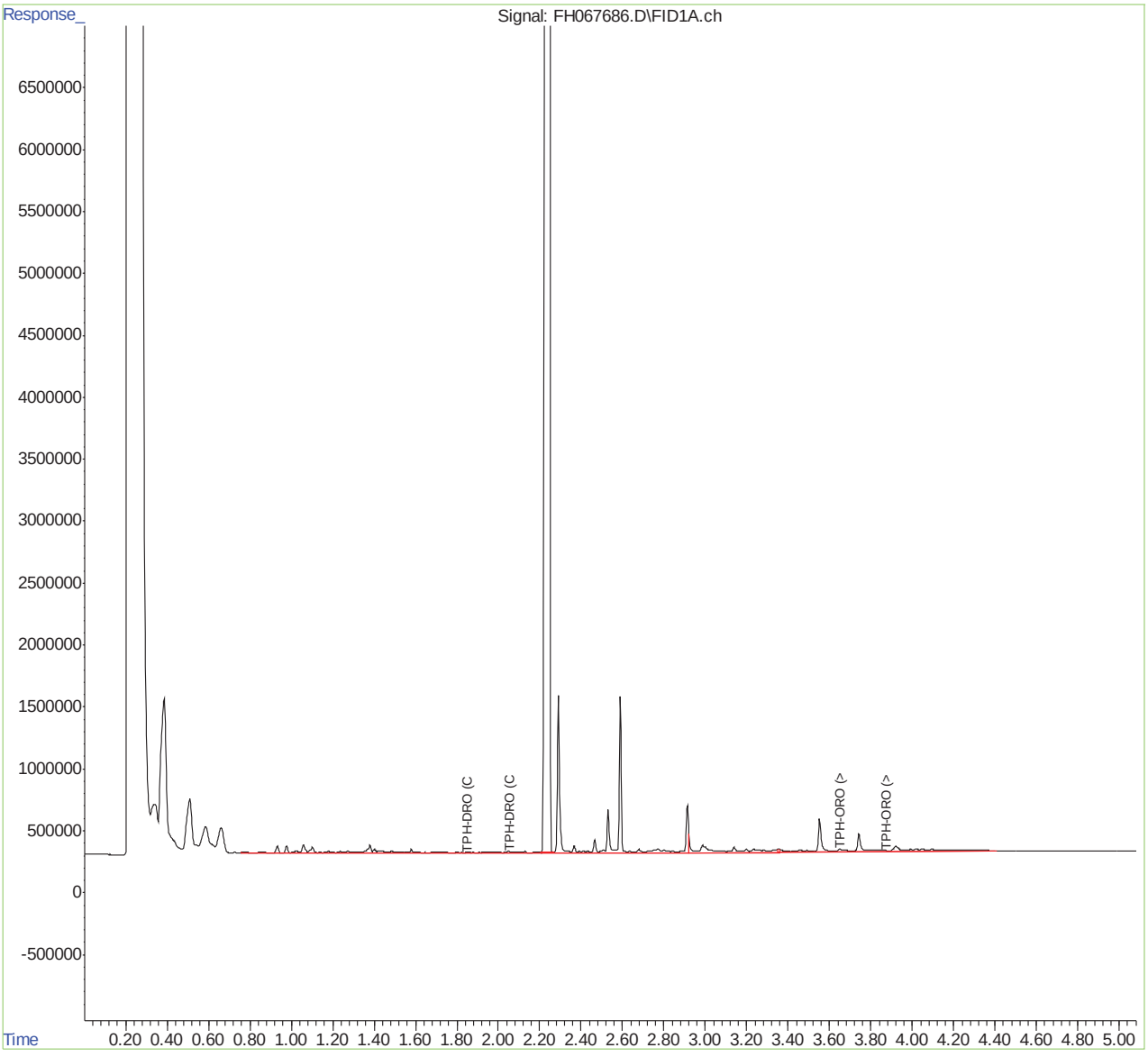
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067686.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 4:00 am
Operator : jackb
Sample : da58747-3
Misc : OP24370,GFH23714,1050,,,1,1
ALS Vial : 16 Sample Multiplier: 1

D2-TW-0007295-23157-N
DRO 87.1
ORO 50 U
Total TPH 87.1

Integration File: autoint1.e
Quant Time: Sep 23 15:29:07 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067689.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 4:24 am
Operator : jackb
Sample : da58747-4
Misc : OP24370,GFH23714,1050,,,1,1
ALS Vial : 19 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 23 15:29:13 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.246	815746337	1577.372	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	68230160	183.694	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	62533118	169.746	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	11991990	68.604	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	17101416	55.046	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

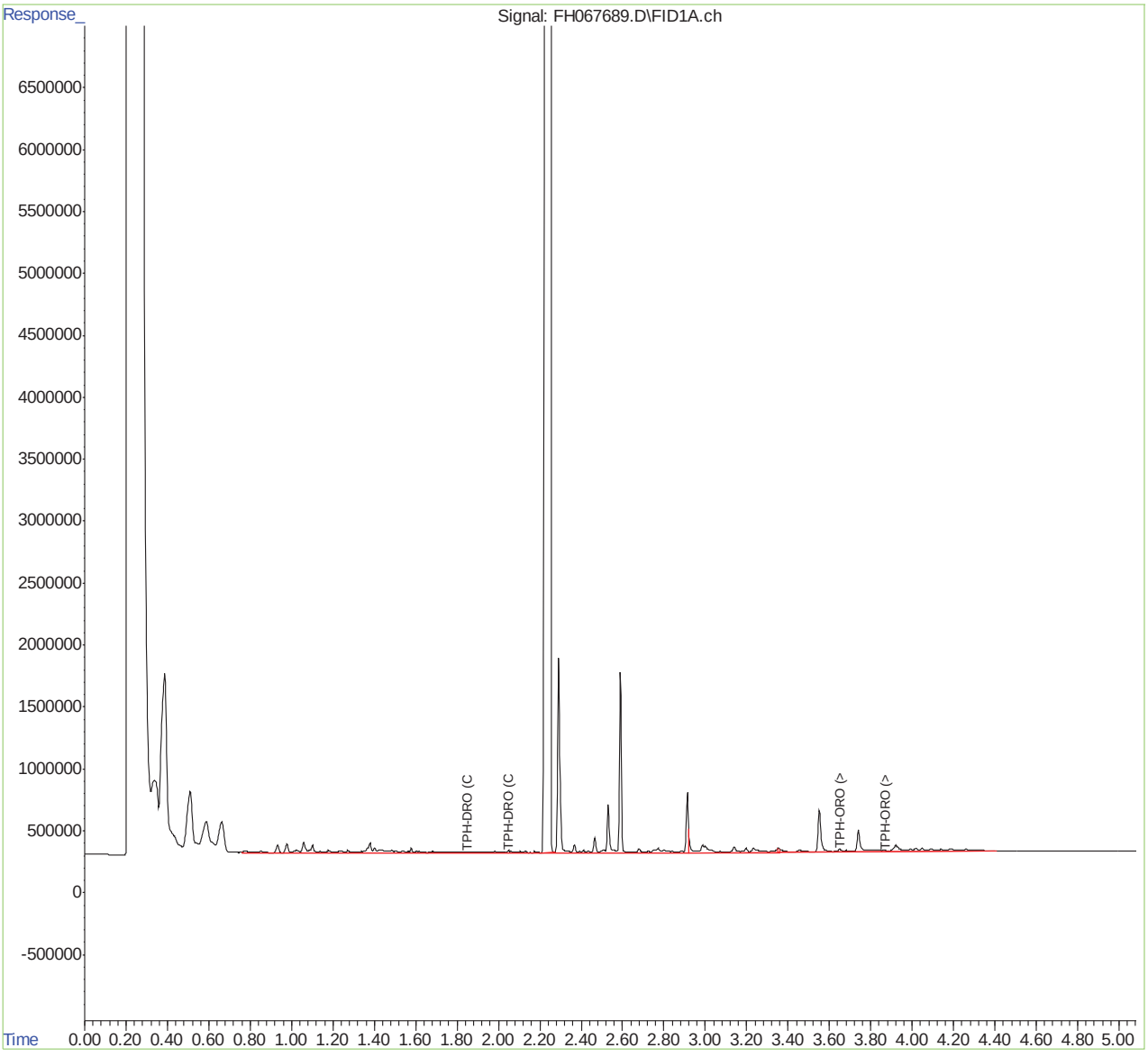
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067689.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 4:24 am
Operator : jackb
Sample : da58747-4
Misc : OP24370,GFH23714,1050,,,1,1
ALS Vial : 19 Sample Multiplier: 1

D2-TW-0007295-23157-3-N
DRO 162
ORO 52.4 J
Total TPH 214.4

Integration File: autoint1.e
Quant Time: Sep 23 15:29:13 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.25
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074333.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:08 am
Operator : jackb
Sample : da62311-7
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 13 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:39:55 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.071	74062631	150.056 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	14444476	45.473 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	14018505	45.409 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	952298	6.804 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1373321	5.478 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

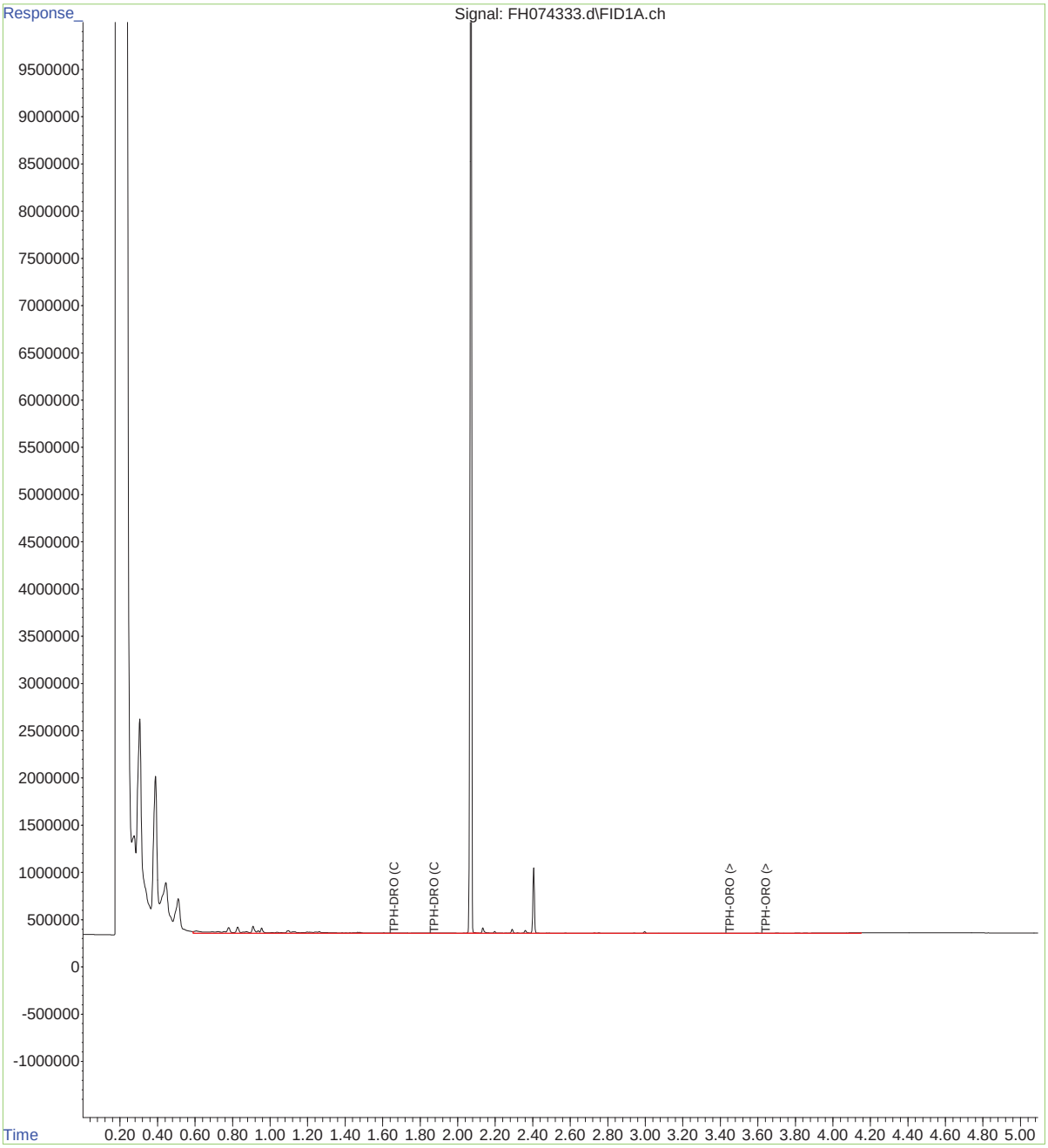
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074333.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:08 am
Operator : jackb
Sample : da62311-7
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 13 Sample Multiplier: 1

D2-TW-0007295-23157-N-R1
TPH-DRO 50 U
TPH-ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:39:55 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23603.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 17:48:57
Operator : jackb
Sample : DA62324-7
Misc : OP25221,GLW663,57.1,,,2.0,1
ALS Vial : 6 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 11 18:42:59 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.216	9309698	4.872 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 48.72%#	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	318275	0.236 ppm
2) H TPH-ORO (>C28-C40)	4.880	130265	0.309 ppm
3) H TPH-DRO (C10-C24)	2.880	274934	0.201 ppm
4) H TPH-ORO (>C24-C40)	4.680	189252	0.238 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

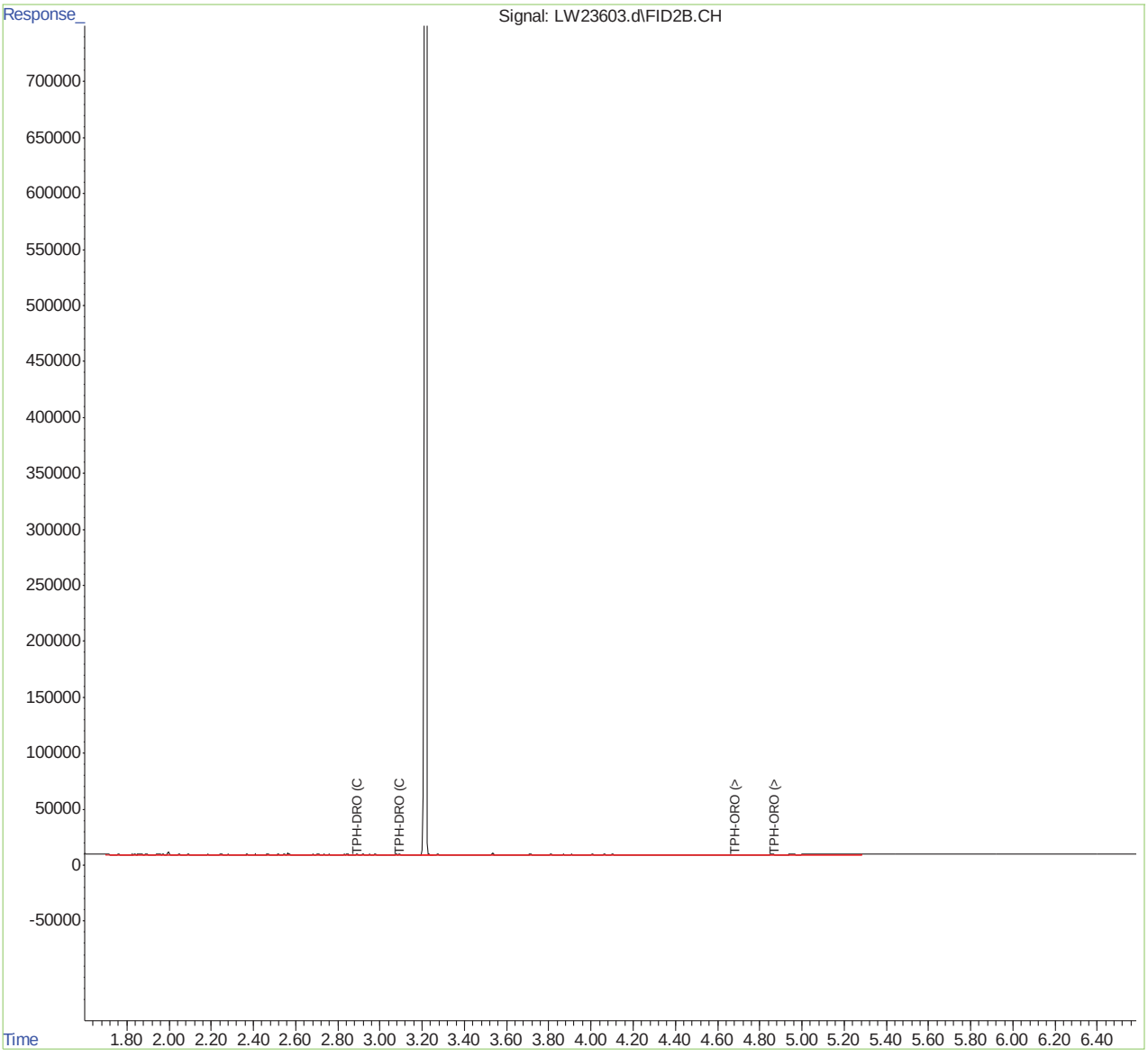
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23603.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 17:48:57
Operator : jackb
Sample : DA62324-7
Misc : OP25221,GLW663,57.1,,,2.0,1
ALS Vial : 6 Sample Multiplier: 1

D2-TW-0007295-23157-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 11 18:42:59 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067706.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 6:41 am
Operator : jackb
Sample : da58747-19
Misc : OP24370,GFH23714,1040,,,1,1
ALS Vial : 36 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 23 15:29:47 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
System Monitoring Compounds					
1) S	o-Terphenyl	2.244	663619421	1283.211	ug/ml
Target Compounds					
2) H	TPH-DRO (C10-C28)	2.060	48672493	131.039	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	40113388	108.888	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	14193210	81.196	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	22398692	72.097	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

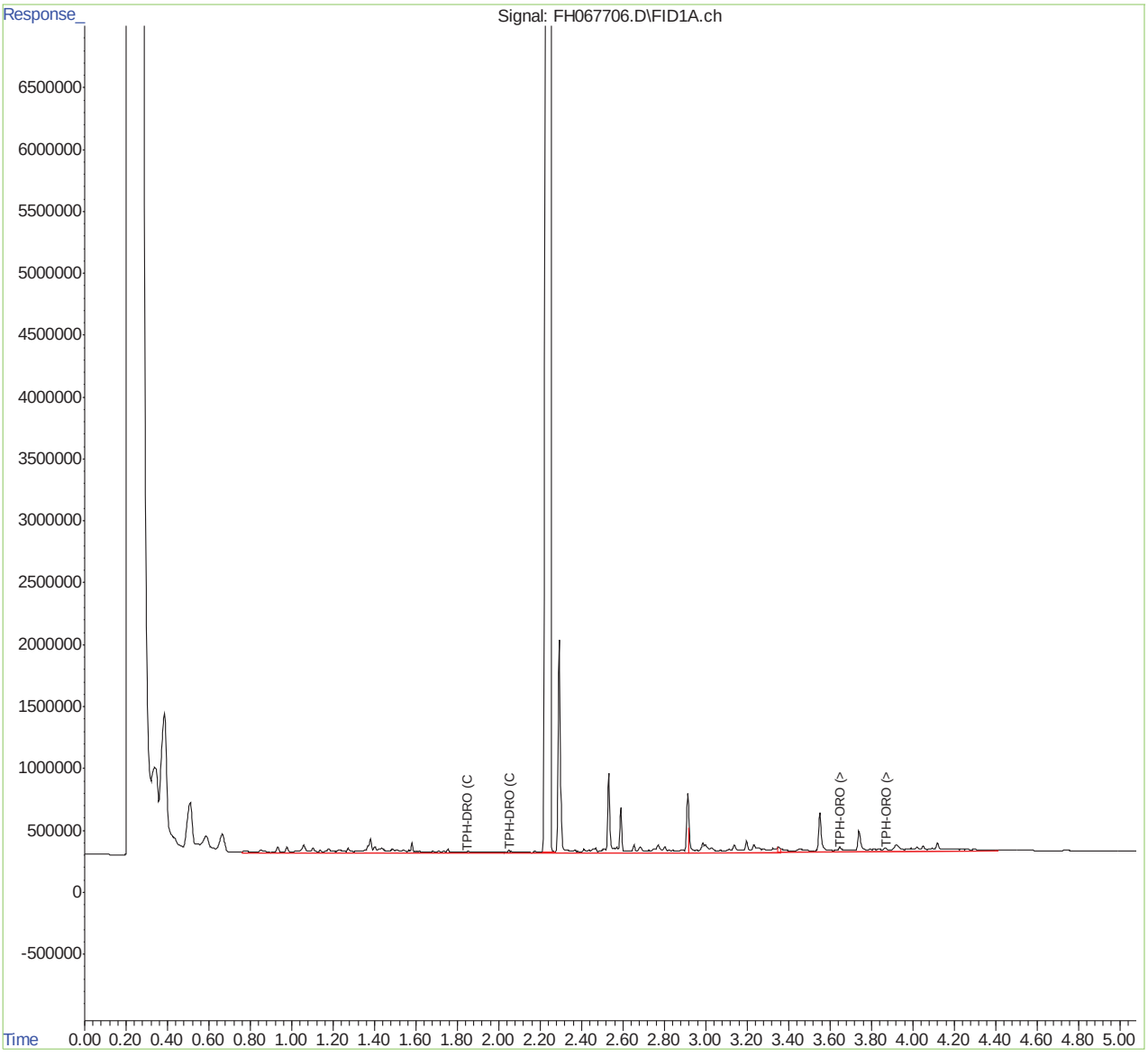
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092223\
Data File : FH067706.D
Signal(s) : FID1A.ch
Acq On : 23 Sep 2023 6:41 am
Operator : jackb
Sample : da58747-19
Misc : OP24370,GFH23714,1040,,,1,1
ALS Vial : 36 Sample Multiplier: 1

D2-TW-0007756-23157-N
DRO 105
ORO 69.3 J
Total TPH 174.3

Integration File: autoint1.e
Quant Time: Sep 23 15:29:47 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.40 11

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/09/24 14:39

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075167.d
Signal(s) : FID1A.ch
Acq On : 8 Mar 2024 5:48 am
Operator : jackb
Sample : da62627-1
Misc : OP25288,GFH23866,1050,,,1,1
ALS Vial : 129 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 23:47:22 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.331	33174412	71.929	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	8854150	29.201	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2851088	11.622	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.1
7

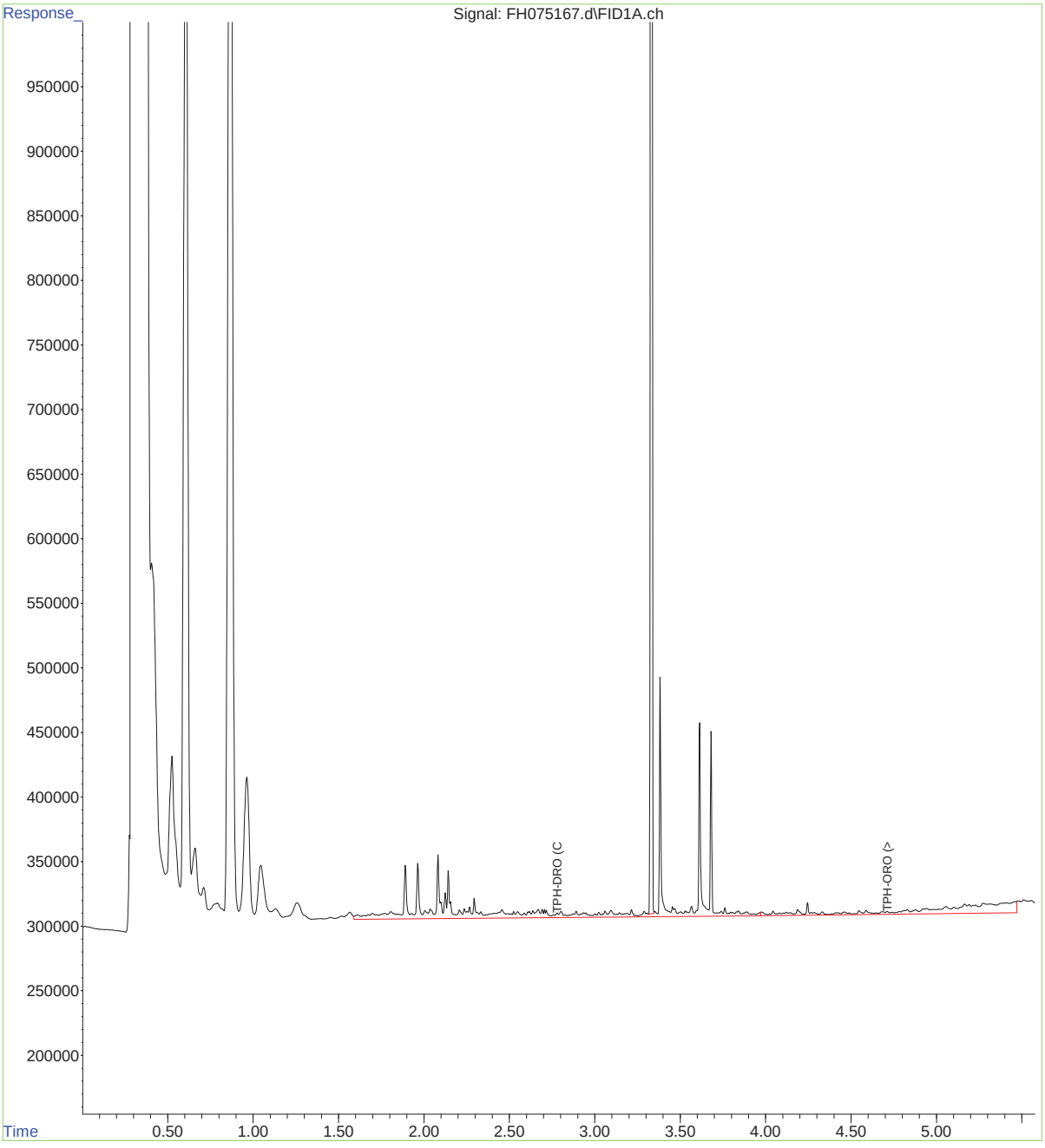
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075167.d
Signal(s) : FID1A.ch
Acq On : 8 Mar 2024 5:48 am
Operator : jackb
Sample : da62627-1
Misc : OP25288,GFH23866,1050,,,1,1
ALS Vial : 129 Sample Multiplier: 1

D2-TW-0007756-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 23:47:22 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031324\
Data File : LW23880.d
Signal(s) : FID2B.CH
Acq On : 13-Mar-24, 20:38:05
Operator : jackb
Sample : da62636-1
Misc : OP25335,GLW667,57.0,,,2,1
ALS Vial : 7 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 14 14:03:50 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.235	15448835	8.295 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 82.95%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	602282	0.447 ppm
2) H TPH-ORO (>C28-C40)	4.880	97519	0.231 ppm
3) H TPH-DRO (C10-C24)	2.880	477155	0.349 ppm
4) H TPH-ORO (>C24-C40)	4.680	229823	0.289 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

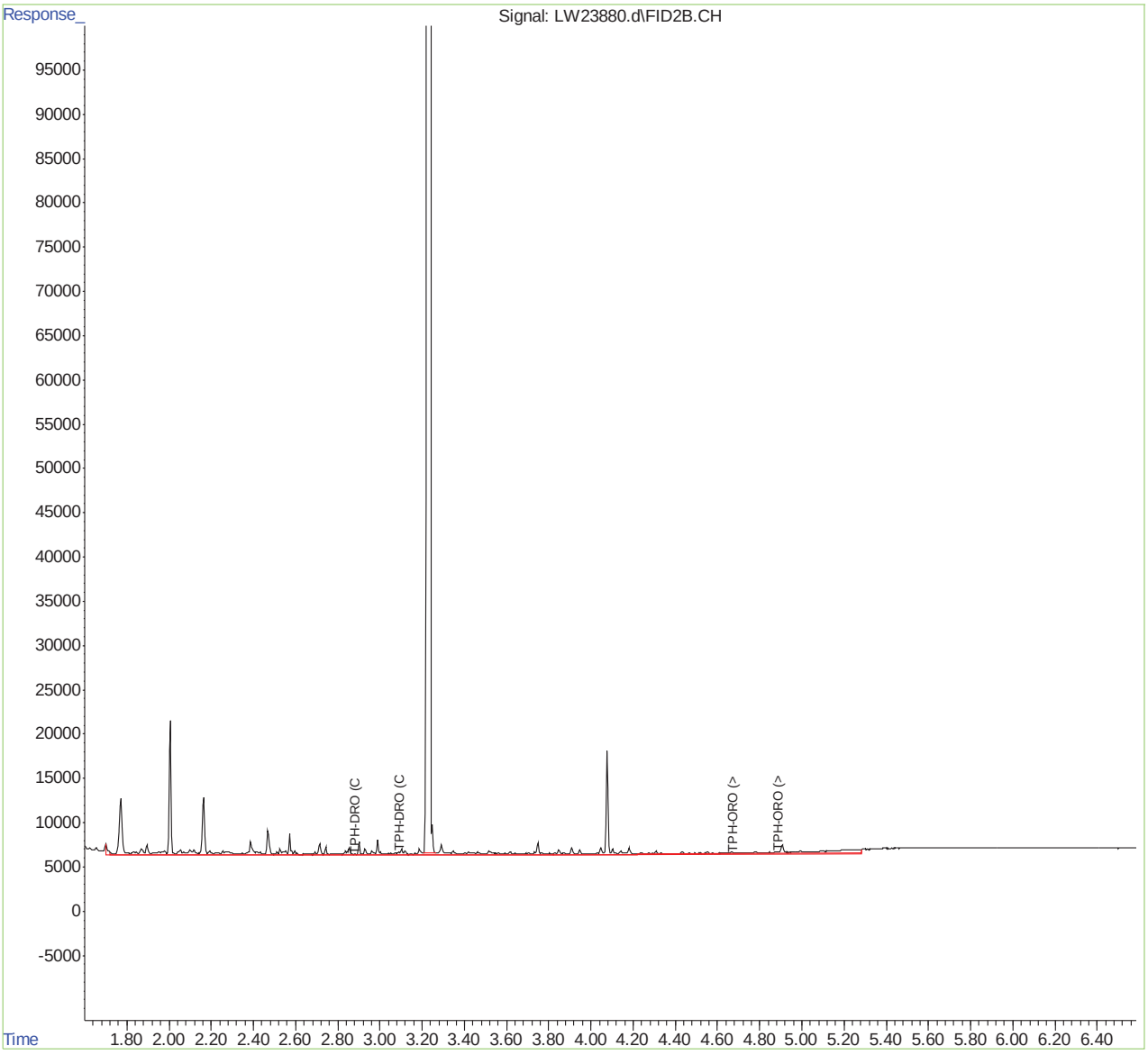
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031324\
Data File : LW23880.d
Signal(s) : FID2B.CH
Acq On : 13-Mar-24, 20:38:05
Operator : jackb
Sample : da62636-1
Misc : OP25335,GLW667,57.0,,,2,1
ALS Vial : 7 Sample Multiplier: 1

D2-TW-0007756-23157-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 14 14:03:50 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092923\
Data File : FH068180.D
Signal(s) : FID1A.ch
Acq On : 30 Sep 2023 1:21 am
Operator : jackb
Sample : da58974-9
Misc : OP24417,GFH23724,1030,,,1,1
ALS Vial : 30 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 30 18:23:27 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.243	781287438	1510.741	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.060	53467835	143.950	ug/ml
3) H	TPH-DRO (C10-C24)	1.840	41812503	113.500	ug/ml
4) H	TPH-ORO (>C28-C40)	3.880	15358272	87.861	ug/ml
5) H	TPH-ORO (>C24-C40)	3.660	26115566	84.061	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.27 11

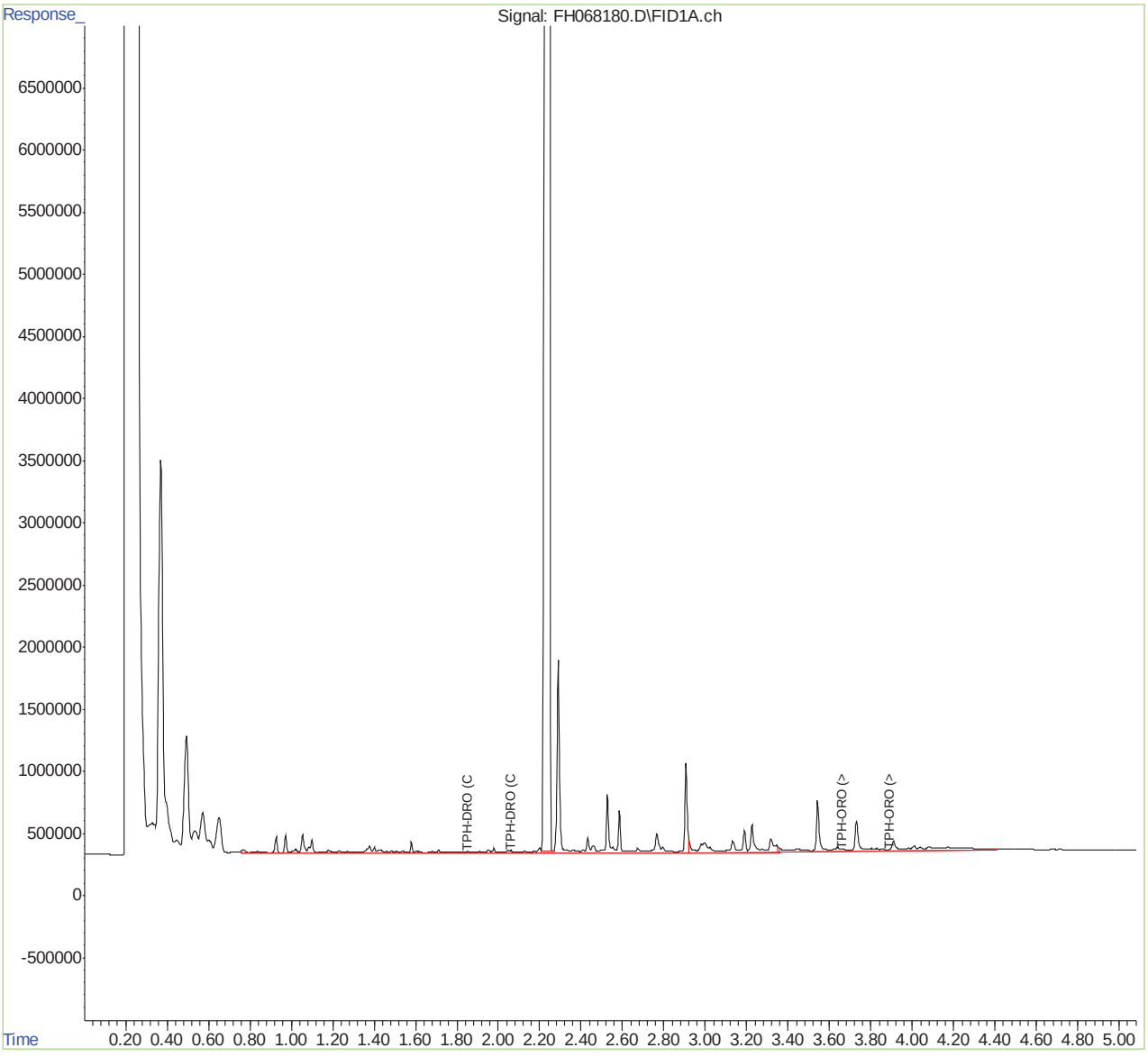
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\August\FH092923\
Data File : FH068180.D
Signal(s) : FID1A.ch
Acq On : 30 Sep 2023 1:21 am
Operator : jackb
Sample : da58974-9
Misc : OP24417,GFH23724,1030,,,1,1
ALS Vial : 30 Sample Multiplier: 1

D3-TW-0009500-23162-N
DRO 110
ORO 81.6
Total TPH 191.6

Integration File: autoint1.e
Quant Time: Sep 30 18:23:27 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.27

11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074343.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:31 am
Operator : jackb
Sample : da62314-2
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 21 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:40:15 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.068	36886079	74.734 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	9445594	29.736 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	9154184	29.653 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	895119	6.395 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1134182	4.524 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

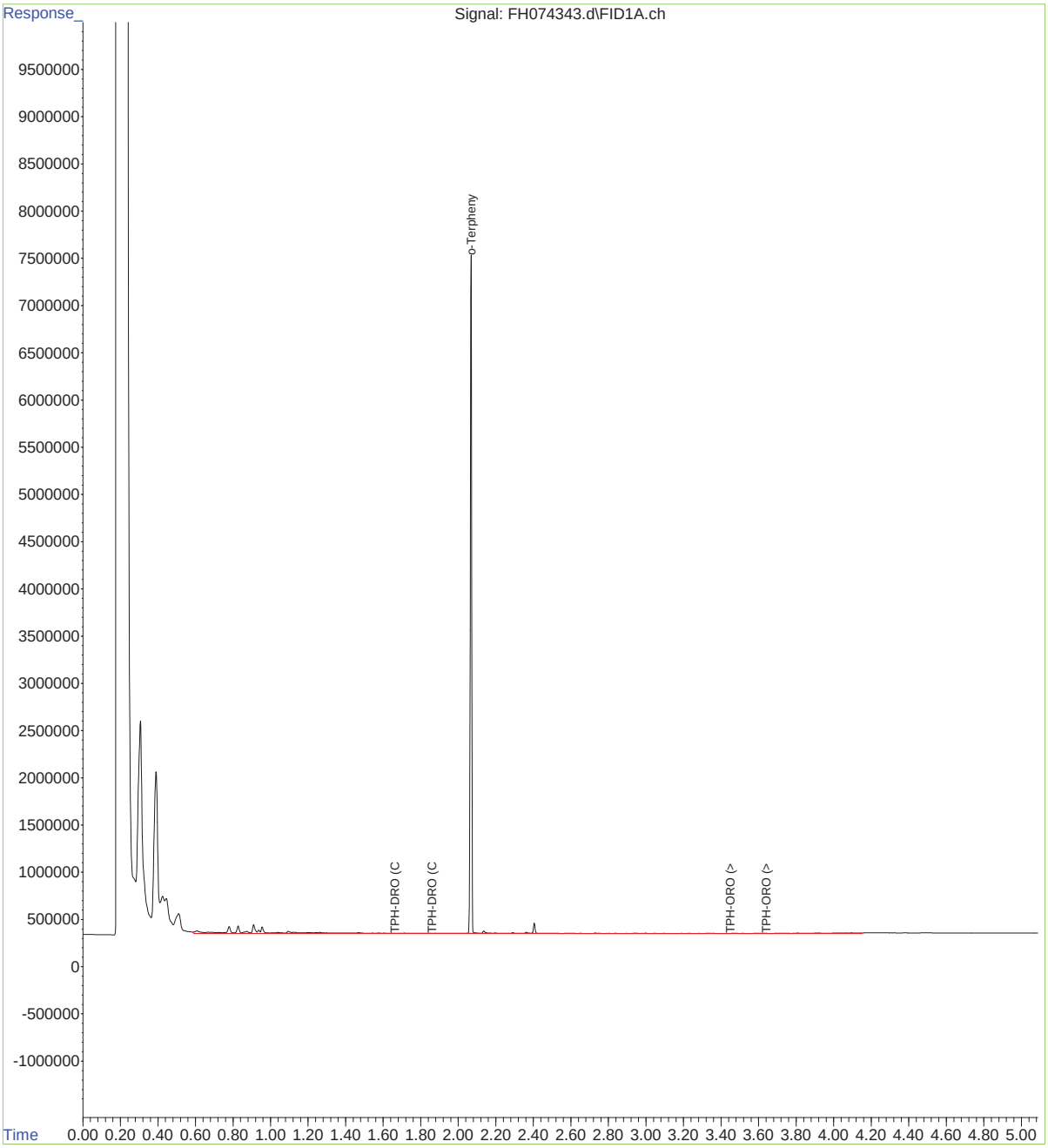
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074343.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:31 am
Operator : jackb
Sample : da62314-2
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 21 Sample Multiplier: 1

D3-TW-0009500-23162-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:40:15 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22467.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 05:42:52
Operator : jackb
Sample : da62327-2
Misc : OP25220,GLW649,57.4,,,2,1
ALS Vial : 10 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 09 13:51:08 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	4.563	20882375	8.785	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 87.85%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	3.750	845236	0.510	ppm	
4) H TPH-ORO (>C24-C40)	6.210	56228	0.044	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

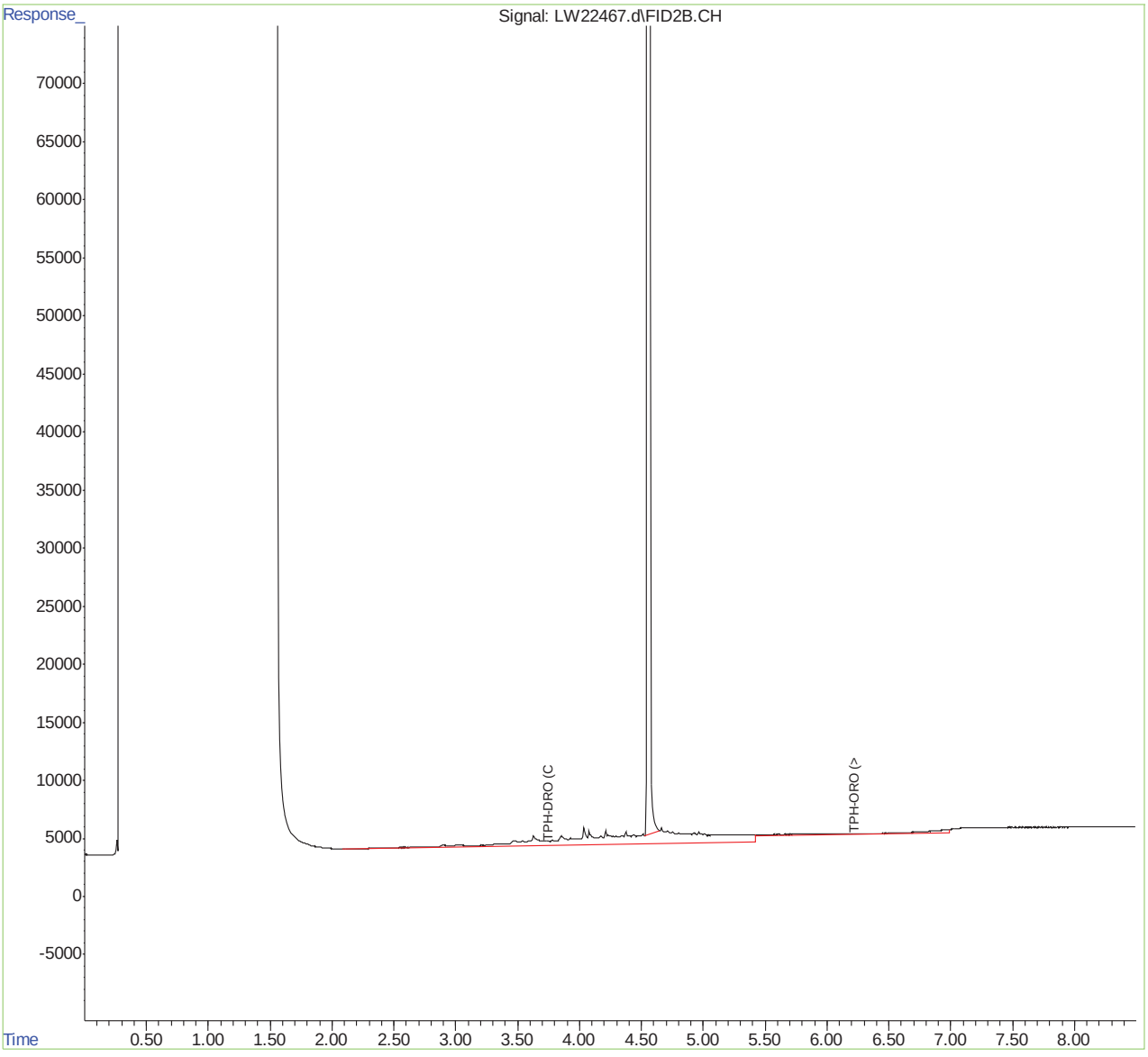
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22467.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 05:42:52
Operator : jackb
Sample : da62327-2
Misc : OP25220,GLW649,57.4,,,2,1
ALS Vial : 10 Sample Multiplier: 1

D3-TW-0009500-23162-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 09 13:51:08 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16083.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 22:21:52
Operator : jackb
Sample : DA58265-9
Misc : OP24261,GLW543,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 02 15:16:34 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.345	30164435	1394.446 ppm
Spiked Amount 2000.000 Range 10 - 130		Recovery = 69.72%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	1793145	109.036 ppm
2) H TPH-ORO (>C28-C40)	3.970	2020355	222.353 ppm
3) H TPH-DRO (C10-C24)	1.920	1169285	74.247 ppm
4) H TPH-ORO (>C24-C40)	3.750	2656281	171.757 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.22
11

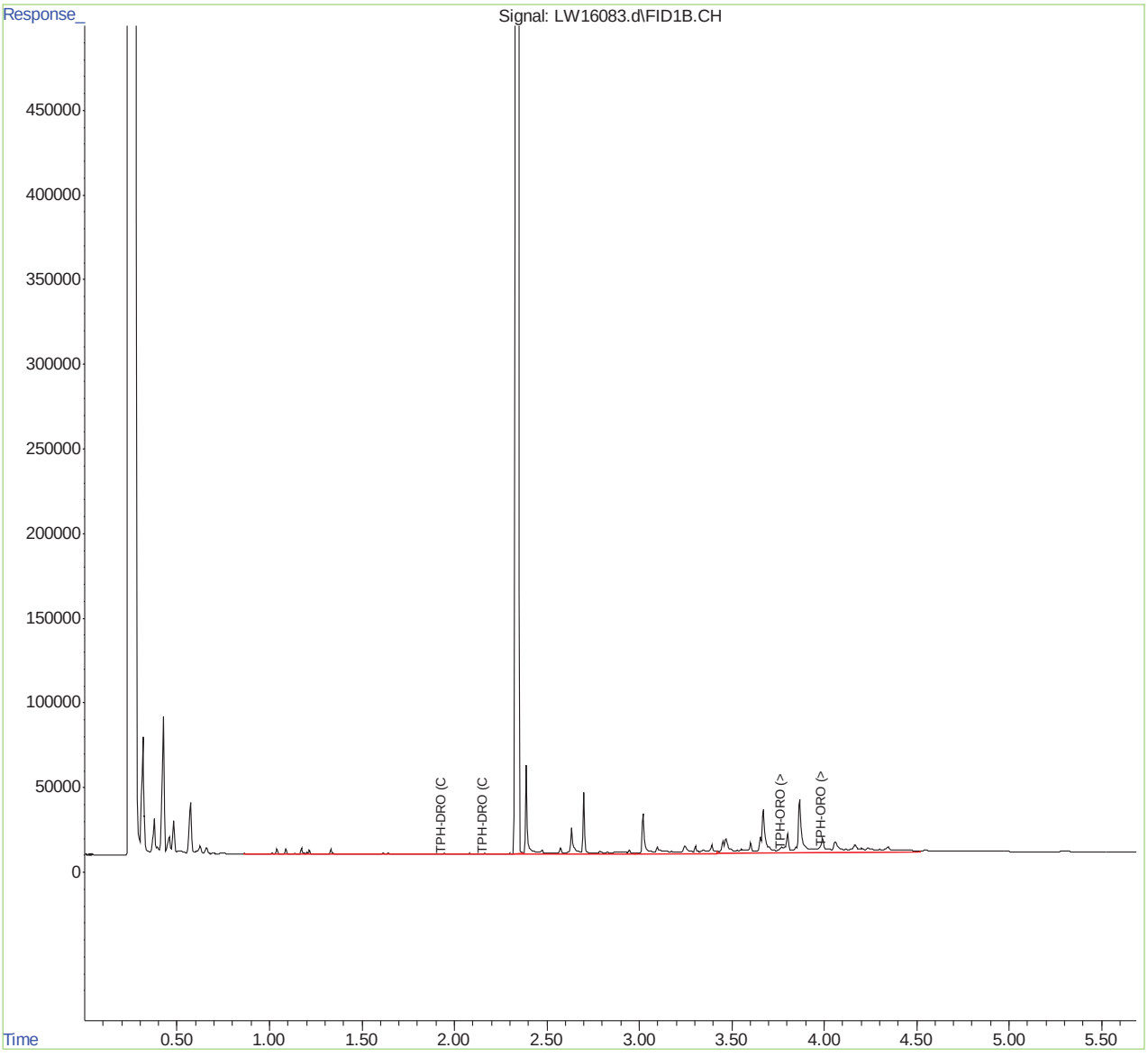
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16083.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 22:21:52
Operator : jackb
Sample : DA58265-9
Misc : OP24261,GLW543,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0011092-23155-N
DRO 72.1 J
ORO 167
Total TPH 239.1

Integration File: autoint1.e
Quant Time: Sep 02 15:16:34 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.22
11

DRO082123.M Sat Sep 02 16:41:12 2023 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/06/24 05:13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074774.d
Signal(s) : FID1A.ch
Acq On : 2 Mar 2024 8:56 pm
Operator : jackb
Sample : da62398-6
Misc : OP25248,GFH23864,1050,,,1,1
ALS Vial : 12 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 16:23:18 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	3.333	32314505	70.064 ug/mlm
	Target Compounds			
2) H	TPH-DRO (C10-C28)	2.990	17468073	56.641 ug/ml
3) H	TPH-DRO (C10-C24)	2.780	14778492	48.740 ug/ml
4) H	TPH-ORO (>C28-C40)	4.910	4478621	32.931 ug/ml
5) H	TPH-ORO (>C24-C40)	4.700	8247654	33.621 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.7
11

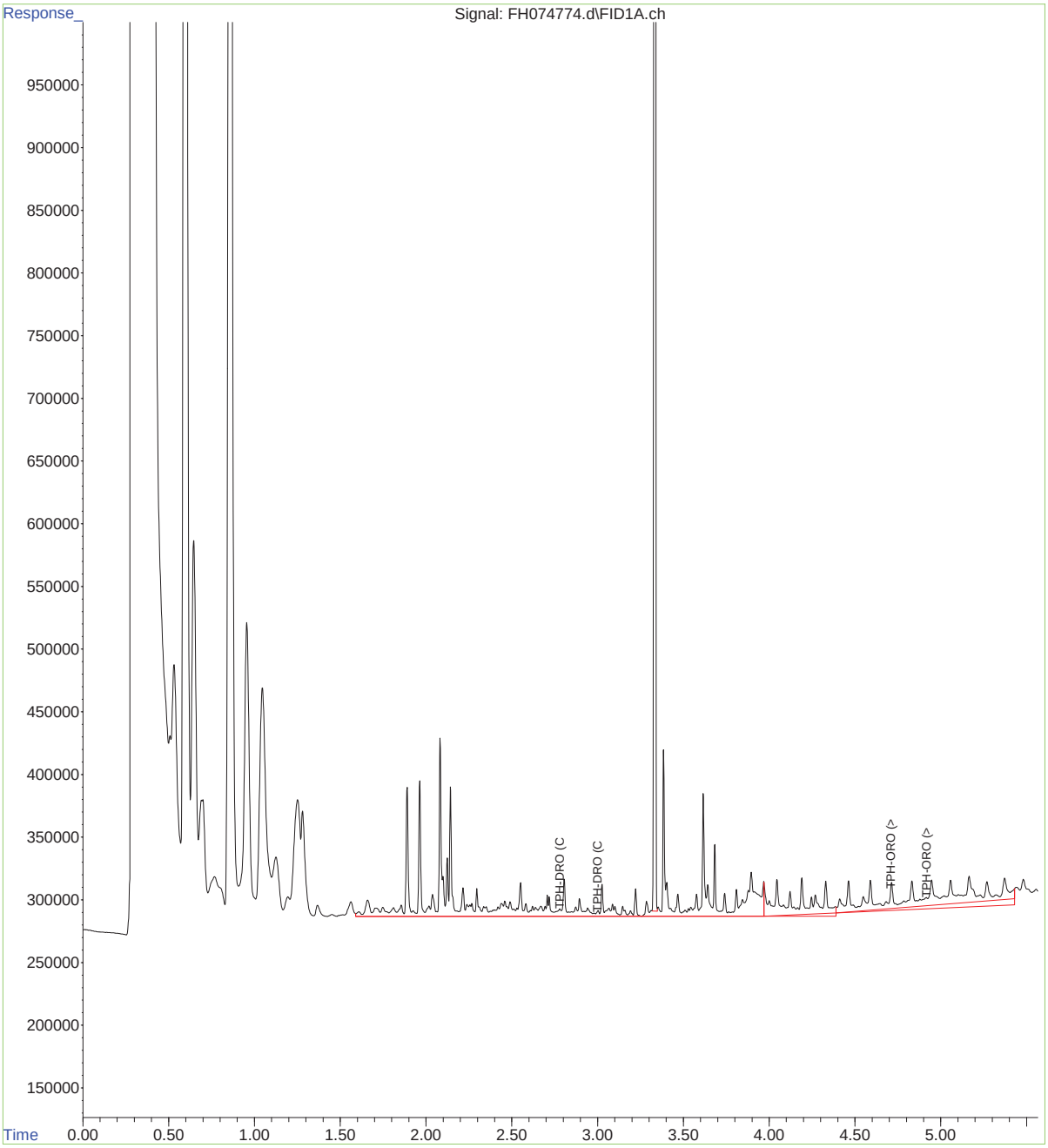
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074774.d
Signal(s) : FID1A.ch
Acq On : 2 Mar 2024 8:56 pm
Operator : jackb
Sample : da62398-6
Misc : OP25248,GFH23864,1050,,,1,1
ALS Vial : 12 Sample Multiplier: 1

F2-TW-0011092-23155-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 16:23:18 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23039.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 01:19:18
Operator : jackb
Sample : DA62408-6
Misc : OP25266,GLW655,57.8,,,2,1
ALS Vial : 44 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 14:56:46 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.274	15528683	8.339 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 83.39%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	390294	0.289 ppm
2) H TPH-ORO (>C28-C40)	4.880	185593	0.440 ppm
3) H TPH-DRO (C10-C24)	2.880	331874	0.243 ppm
4) H TPH-ORO (>C24-C40)	4.680	269900	0.340 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

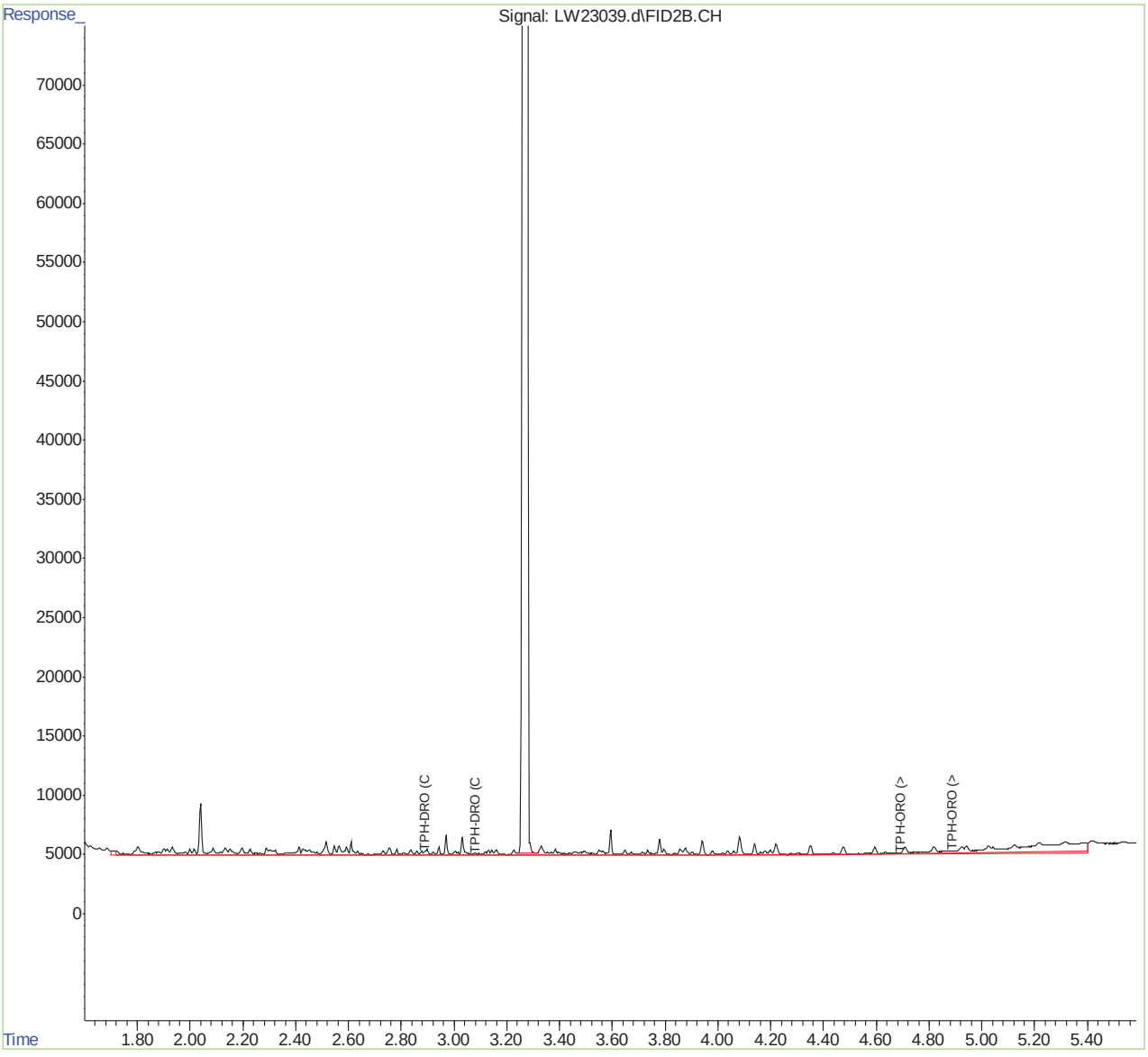
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23039.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 01:19:18
Operator : jackb
Sample : DA62408-6
Misc : OP25266,GLW655,57.8,,,2,1
ALS Vial : 44 Sample Multiplier: 1

F2-TW-0011092-23155-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 14:56:46 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080423\
Data File : LW14458.d
Signal(s) : FID1B.CH
Acq On : 04-Aug-23, 19:39:52
Operator : jackb
Sample : da57431-8
Misc : OP24103,GLW510,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 06 10:26:25 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.400f	41554635	2254.030 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery = 112.70%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.200	1205345	79.689 ppm
2) H TPH-ORO (>C28-C40)	4.100	324032	39.781 ppm
3) H TPH-DRO (C10-C24)	1.980	875536	58.521 ppm
4) H TPH-ORO (>C24-C40)	3.880	701729	50.656 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

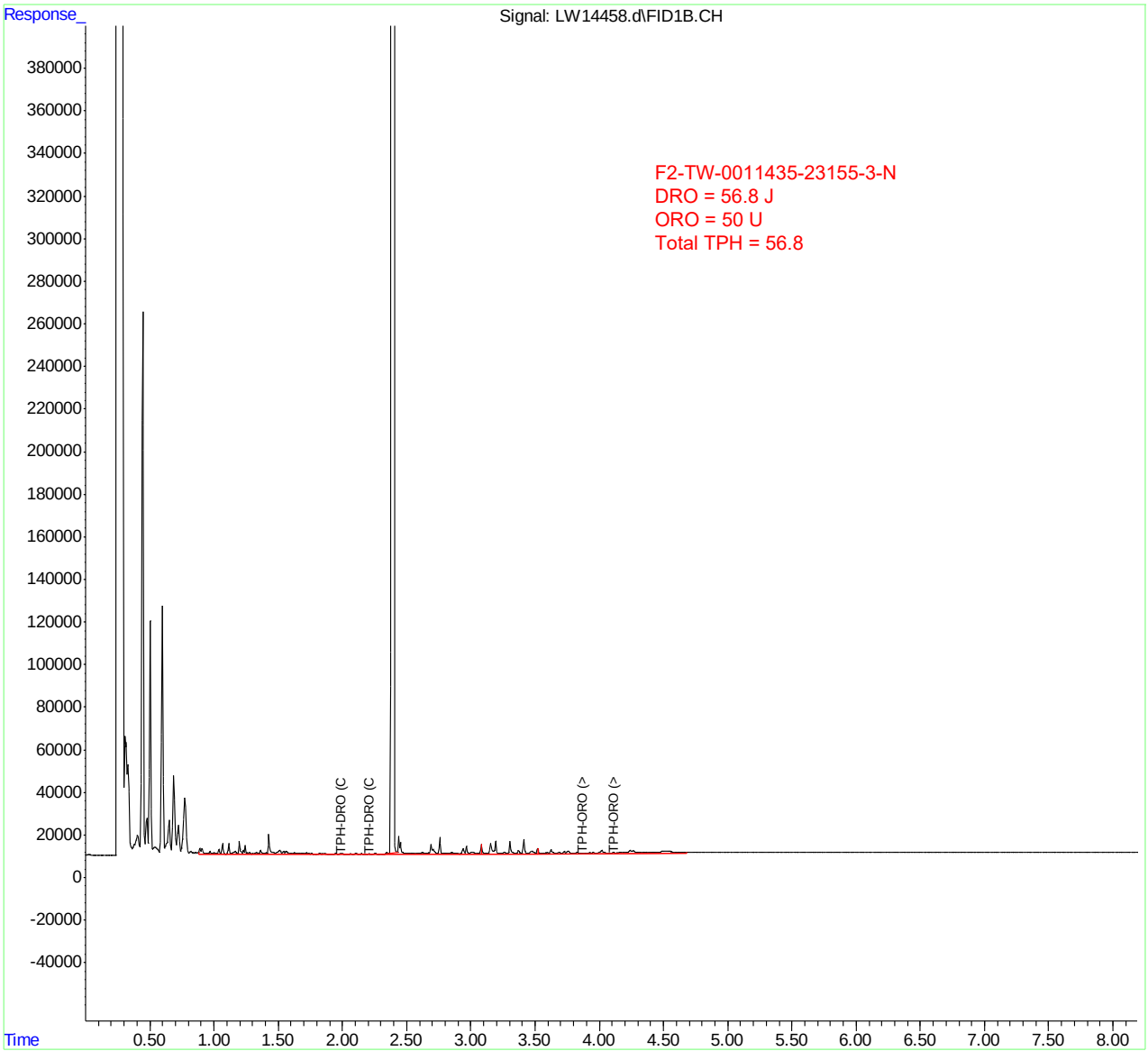
11.1.29

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080423\
Data File : LW14458.d
Signal(s) : FID1B.CH
Acq On : 04-Aug-23, 19:39:52
Operator : jackb
Sample : da57431-8
Misc : OP24103,GLW510,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 06 10:26:25 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080423\
Data File : LW14457.d
Signal(s) : FID1B.CH
Acq On : 04-Aug-23, 19:27:17
Operator : jackb
Sample : da57431-7
Misc : OP24103,GLW510,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 06 10:26:23 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.400	41396183	2245.435 ppm
Spiked Amount 2000.000 Range 10 - 130		Recovery = 112.27%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.200	1633056	107.967 ppm
2) H TPH-ORO (>C28-C40)	4.100	843308	103.533 ppm
3) H TPH-DRO (C10-C24)	1.980	1088881	72.781 ppm
4) H TPH-ORO (>C24-C40)	3.880	1430468	103.262 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.28 11

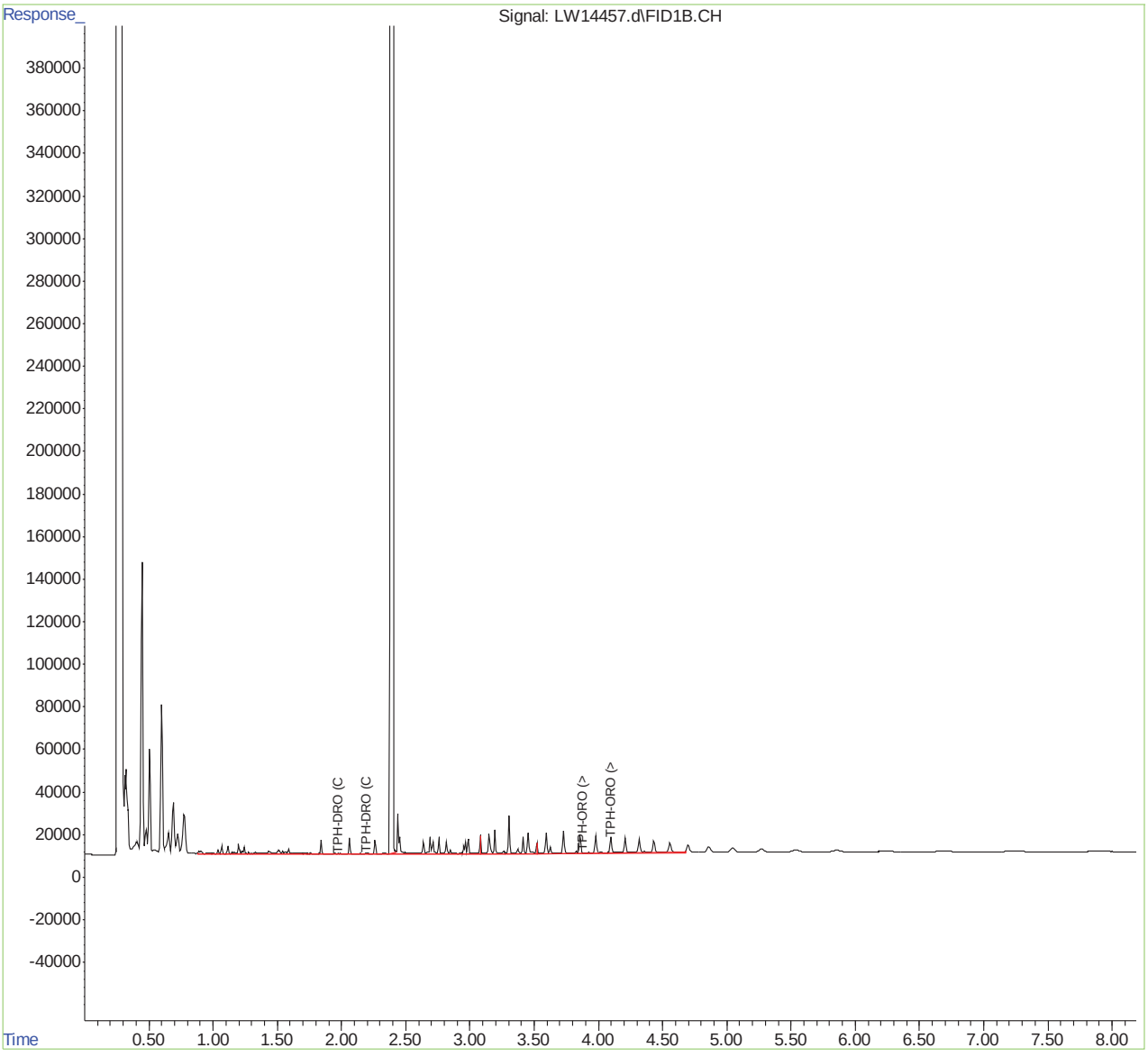
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080423\
Data File : LW14457.d
Signal(s) : FID1B.CH
Acq On : 04-Aug-23, 19:27:17
Operator : jackb
Sample : da57431-7
Misc : OP24103,GLW510,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0011435-23155-N
DRO 70.7 J
ORO 100
Total TPH 170.7

Integration File: autoint1.e
Quant Time: Aug 06 10:26:23 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.28
11

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074908.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:13 pm
Operator : jackb
Sample : da62453-1
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 16 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:06:38 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.339	36946142	80.106	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	8713379	28.737	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2863877	11.674	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.1
7

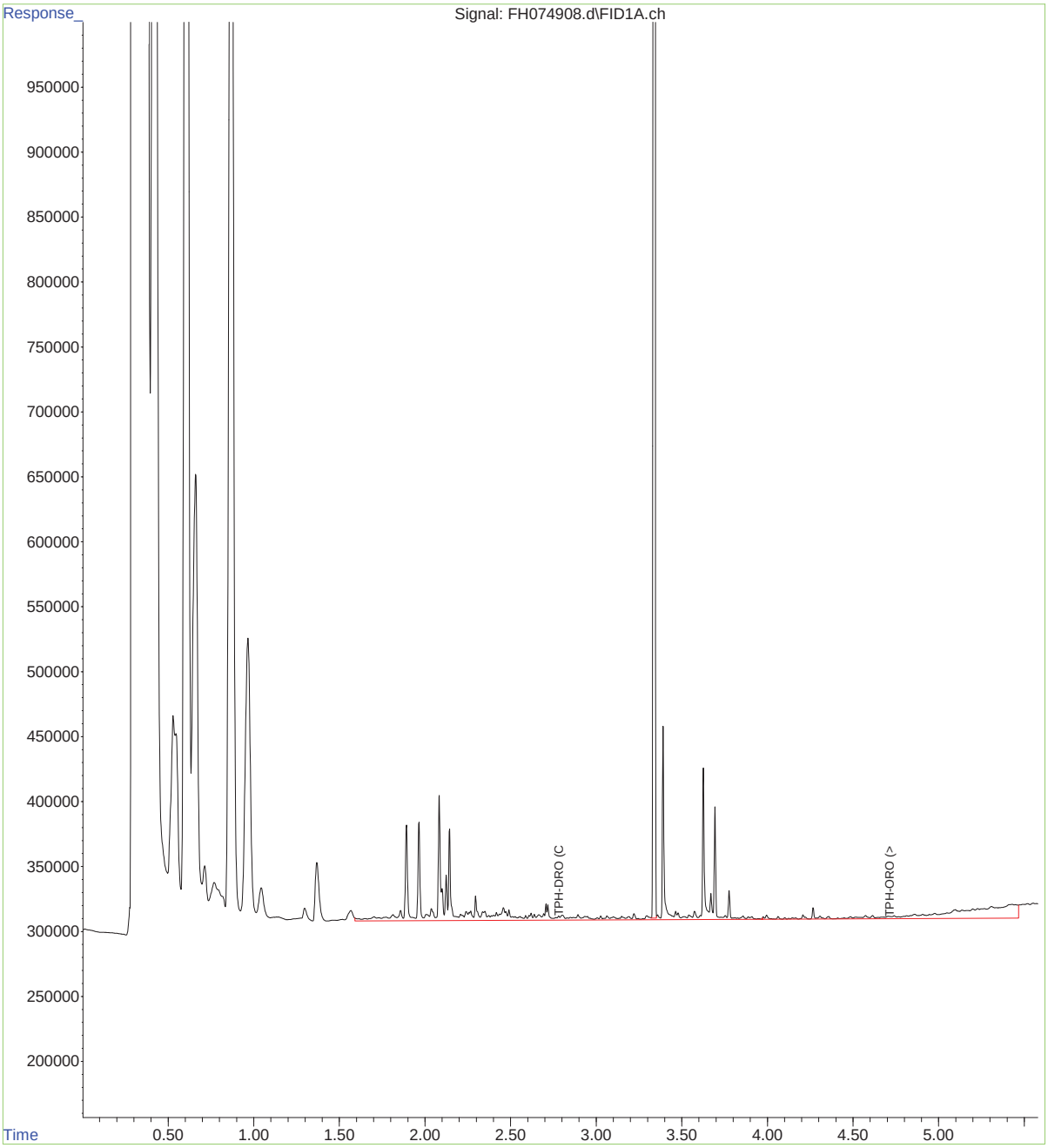
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074908.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:13 pm
Operator : jackb
Sample : da62453-1
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 16 Sample Multiplier: 1

F2-TW-0011435-23155-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:06:38 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23263.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 20:19:09
Operator : jackb
Sample : DA62465-1
Misc : OP25294,GLW659,55.6,,,2.0,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 07:26:32 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.280	14549794	7.795 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 77.95%	
Target Compounds			
1) H TPH-DRO (C10-C28)	0.000	0	N.D. ppm d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D. ppm d
3) H TPH-DRO (C10-C24)	2.880	374972	0.274 ppm
4) H TPH-ORO (>C24-C40)	4.680	271006	0.341 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

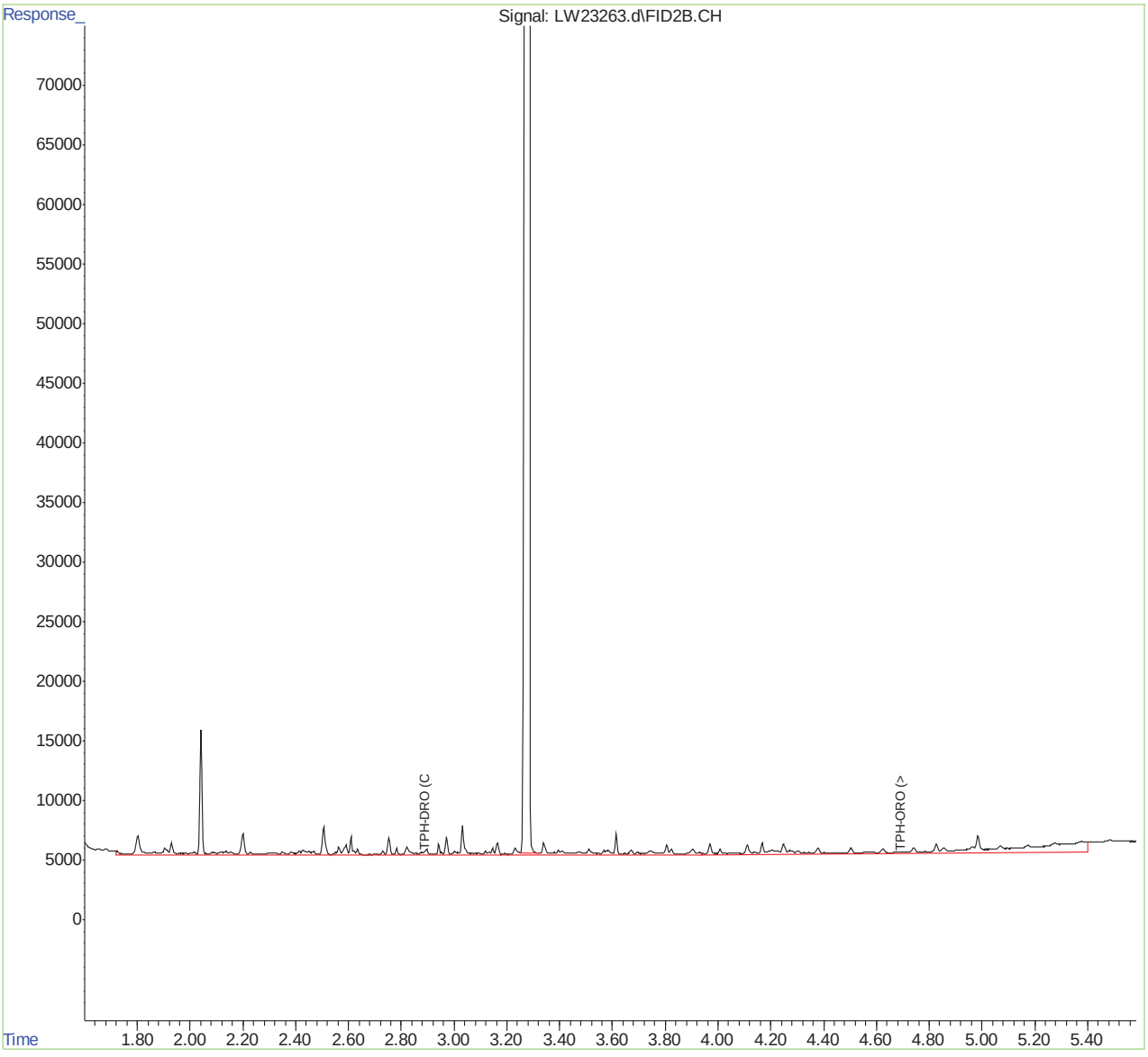
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23263.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 20:19:09
Operator : jackb
Sample : DA62465-1
Misc : OP25294,GLW659,55.6,,,2.0,1
ALS Vial : 15 Sample Multiplier: 1

F2-TW-0011435-23155-N-R1-MEQ
DRO 49 U
ORO 49 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 07:26:32 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Fri Mar 08 07:47:47 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090223\
Data File : LW16139.d
Signal(s) : FID1B.CH
Acq On : 03-Sep-23, 14:29:55
Operator : jackb
Sample : da58292-2
Misc : OP24267,GLW544,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 03 16:15:55 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.347	35920382	1660.532 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery = 83.03%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	1779511	108.207 ppm
2) H TPH-ORO (>C28-C40)	3.970	586927	64.595 ppm
3) H TPH-DRO (C10-C24)	1.920	1358584	86.267 ppm
4) H TPH-ORO (>C24-C40)	3.750	1076222	69.589 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.12

11

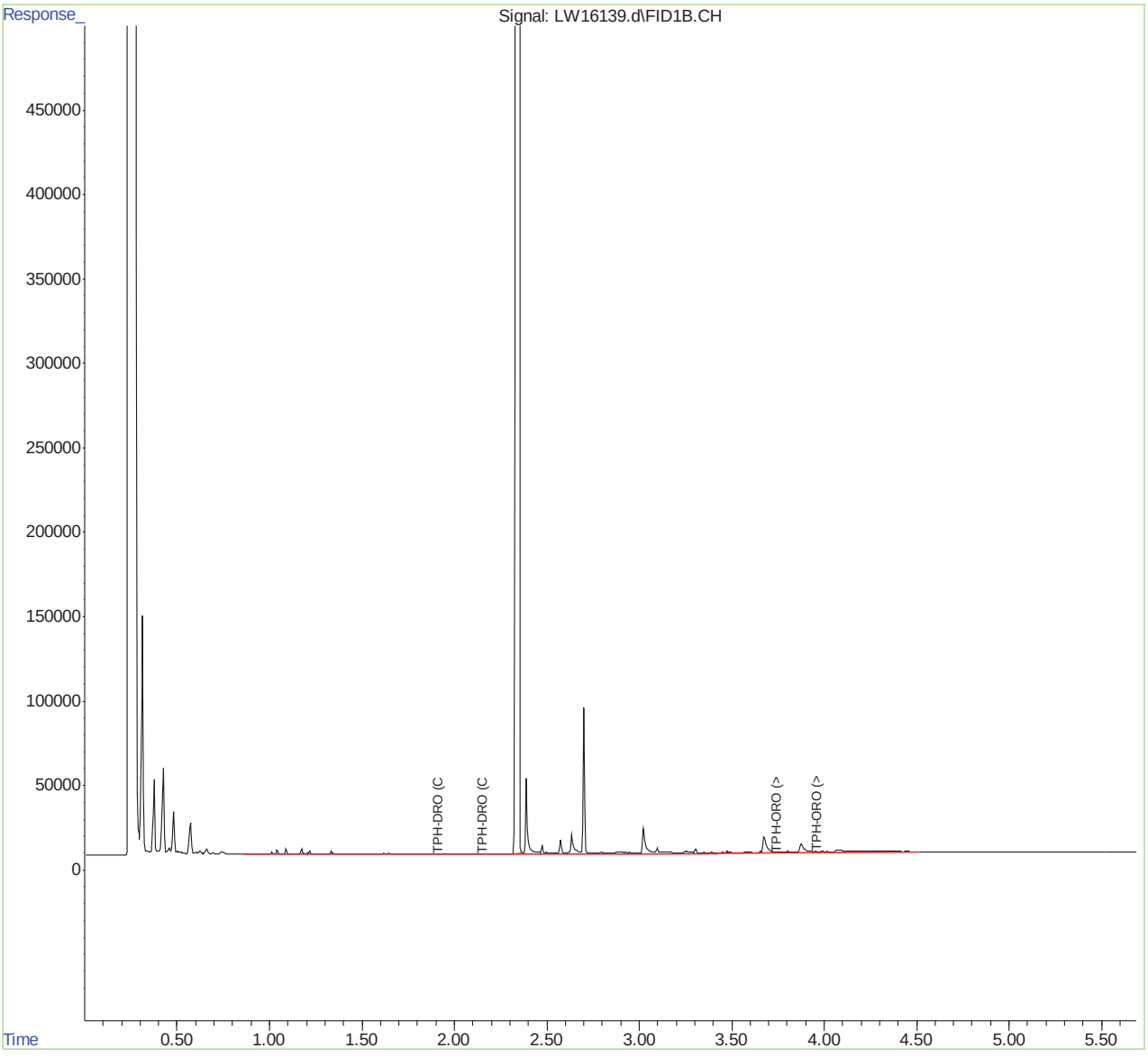
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090223\
Data File : LW16139.d
Signal(s) : FID1B.CH
Acq On : 03-Sep-23, 14:29:55
Operator : jackb
Sample : da58292-2
Misc : OP24267,GLW544,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0011547-23155-N
DRO 86.3
ORO 69.6 J
Total TPH 155.9

Integration File: autoint1.e
Quant Time: Sep 03 16:15:55 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO082123.M Sun Sep 03 17:09:58 2023 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/09/24 14:37

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075088.d
Signal(s) : FID1A.ch
Acq On : 7 Mar 2024 10:32 am
Operator : jackb
Sample : da62578-2
Misc : OP25281,GFH23866,1050,,,1,1
ALS Vial : 78 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 21:43:00 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.332	40779932	88.419	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	9314084	30.718	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2548525	10.389	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.2
7

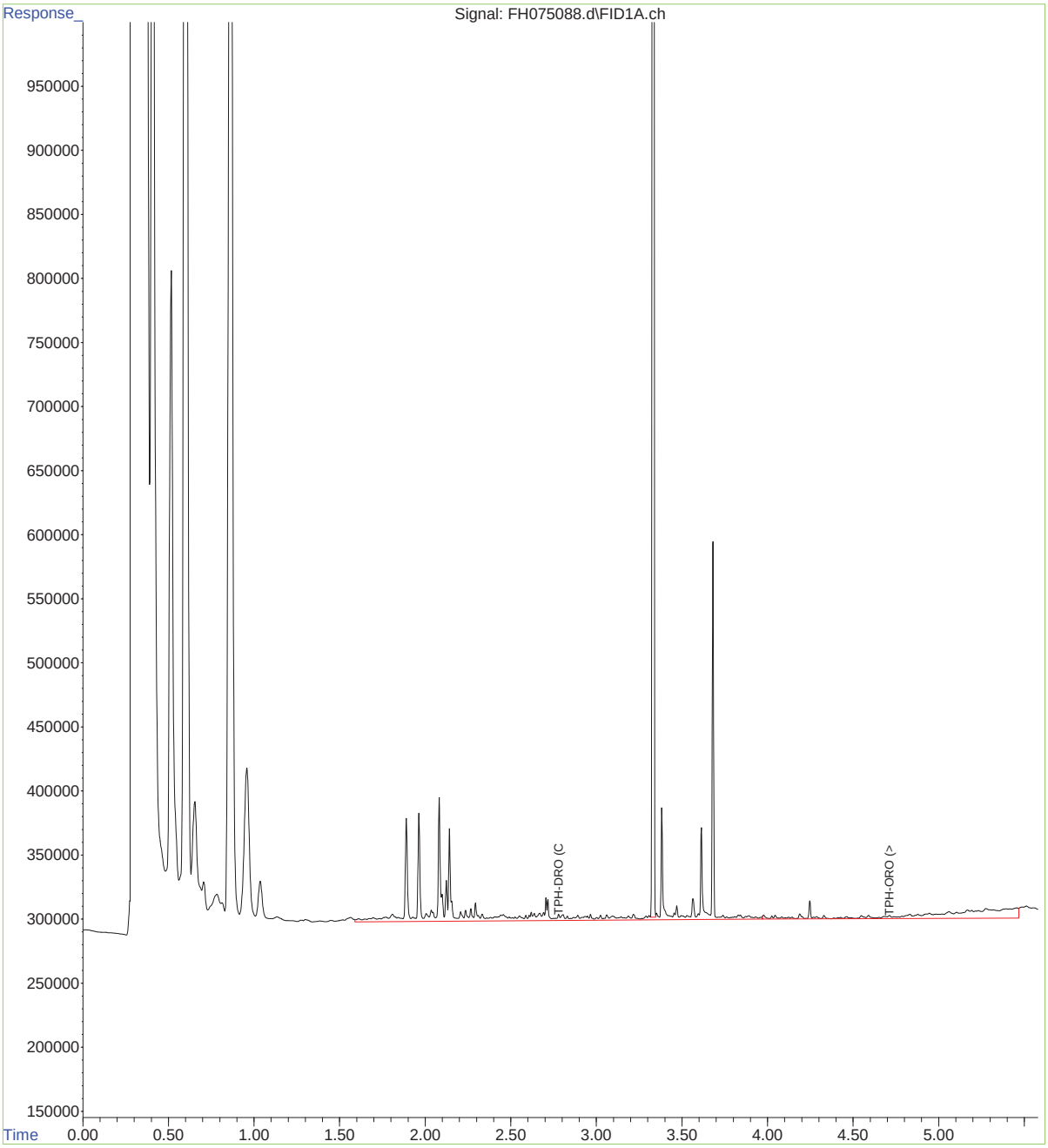
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075088.d
Signal(s) : FID1A.ch
Acq On : 7 Mar 2024 10:32 am
Operator : jackb
Sample : da62578-2
Misc : OP25281,GFH23866,1050,,,1,1
ALS Vial : 78 Sample Multiplier: 1

F2-TW-0011547-23155-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 21:43:00 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23863.M Fri Mar 08 21:47:36 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031424\
Data File : LW24054.d
Signal(s) : FID2B.CH
Acq On : 15-Mar-24, 06:45:29
Operator : jackb
Sample : da62583-2
Misc : OP25358,GLW668,57.2,,,2,1
ALS Vial : 59 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 15 11:22:56 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
3) S O-TERPHENYL	3.223	15881549	8.536 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 85.36%	
Target Compounds			
1) H TPH-DRO (C10-C24)	2.880	772963	0.565 ppm
2) H TPH-ORO (>C24-C40)	4.680	313042	0.394 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

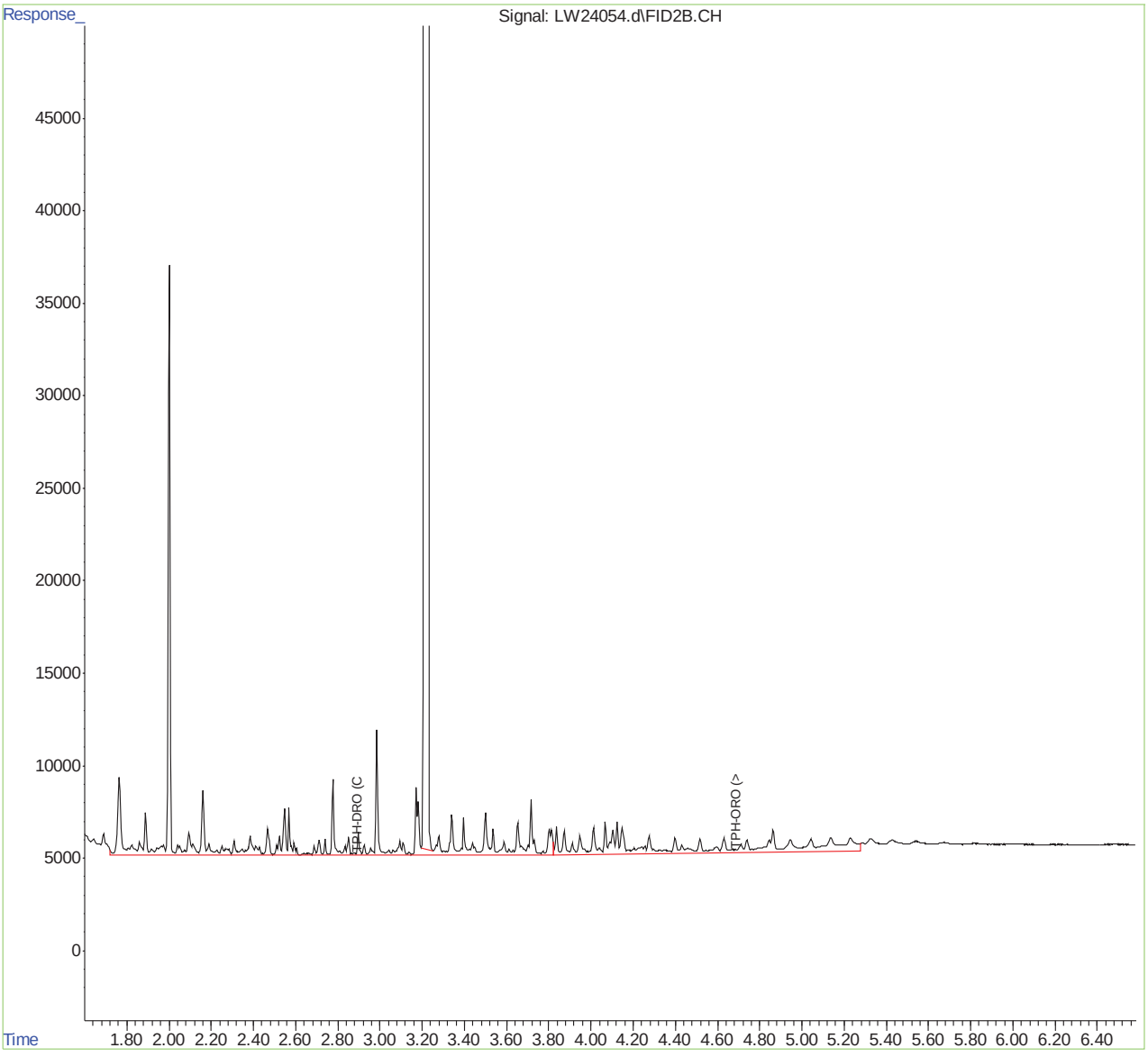
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031424\
Data File : LW24054.d
Signal(s) : FID2B.CH
Acq On : 15-Mar-24, 06:45:29
Operator : jackb
Sample : da62583-2
Misc : OP25358,GLW668,57.2,,,2,1
ALS Vial : 59 Sample Multiplier: 1

F2-TW-0011547-23155-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 15 11:22:56 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090523\
Data File : LW16228.d
Signal(s) : FID1B.CH
Acq On : 05-Sep-23, 17:32:34
Operator : jackb
Sample : da58292-4
Misc : OP24272,GLW546,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 06 10:01:02 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.346	35830792	1656.391	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 82.82%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.140	2871806	174.626	ppm	
2) H TPH-ORO (>C28-C40)	3.970	739976	81.439	ppm	
3) H TPH-DRO (C10-C24)	1.920	1768115	112.272	ppm	m
4) H TPH-ORO (>C24-C40)	3.750	1171752	75.766	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.14 11

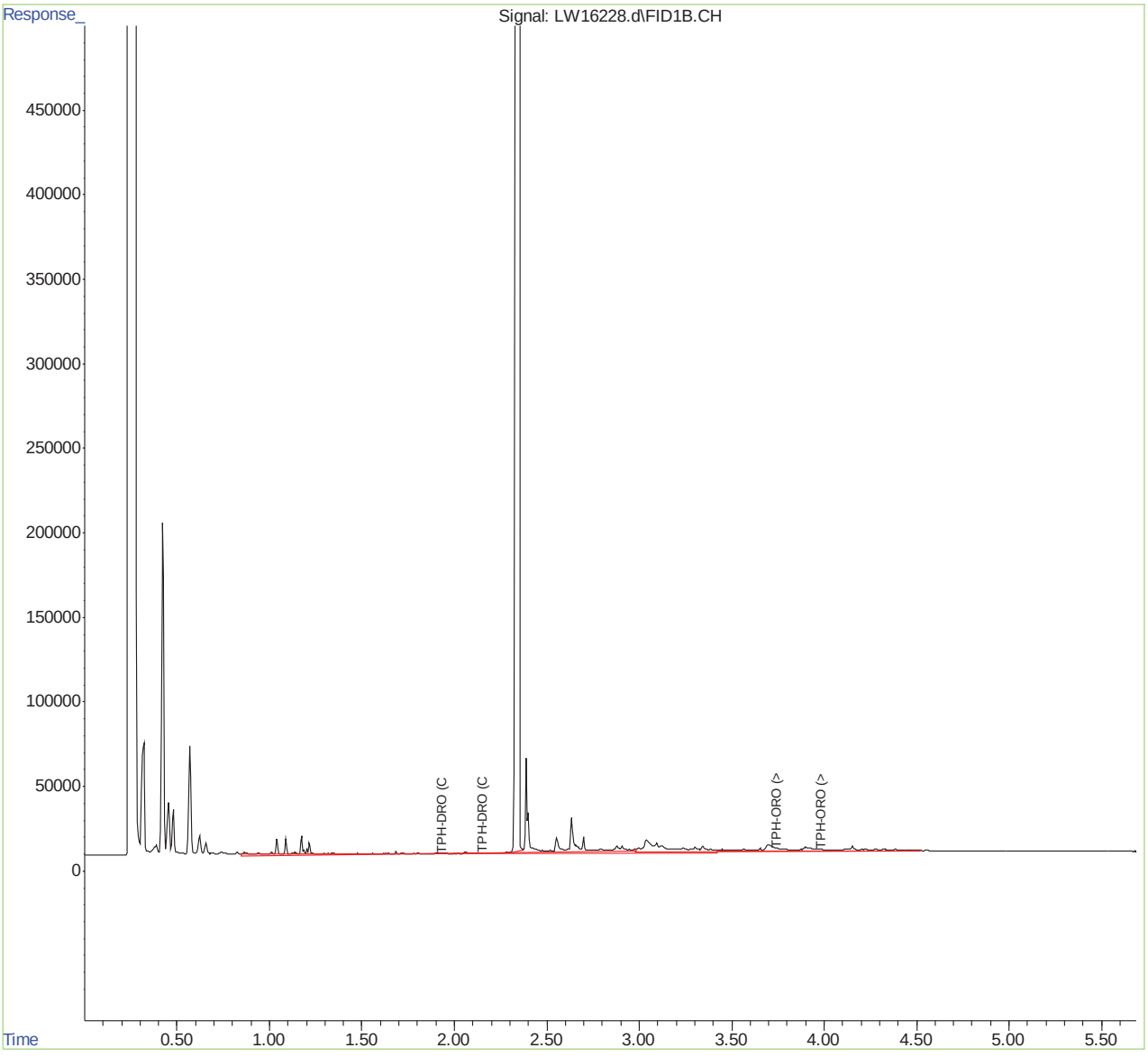
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090523\
Data File : LW16228.d
Signal(s) : FID1B.CH
Acq On : 05-Sep-23, 17:32:34
Operator : jackb
Sample : da58292-4
Misc : OP24272,GLW546,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0011621-23155-N
DRO 107 J
ORO 72.2 J
Total TPH 179.2

Integration File: autoint1.e
Quant Time: Sep 06 10:01:02 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.14
11

DRO082123.M Wed Sep 06 10:10:04 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074337.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:41 am
Operator : jackb
Sample : da62312-2
Misc : OP25214,GFH23859,1040,,,1,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:40:03 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.070	70914253	143.677 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	14071988	44.301 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	13200330	42.759 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	1100176	7.860 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	2128176	8.489 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

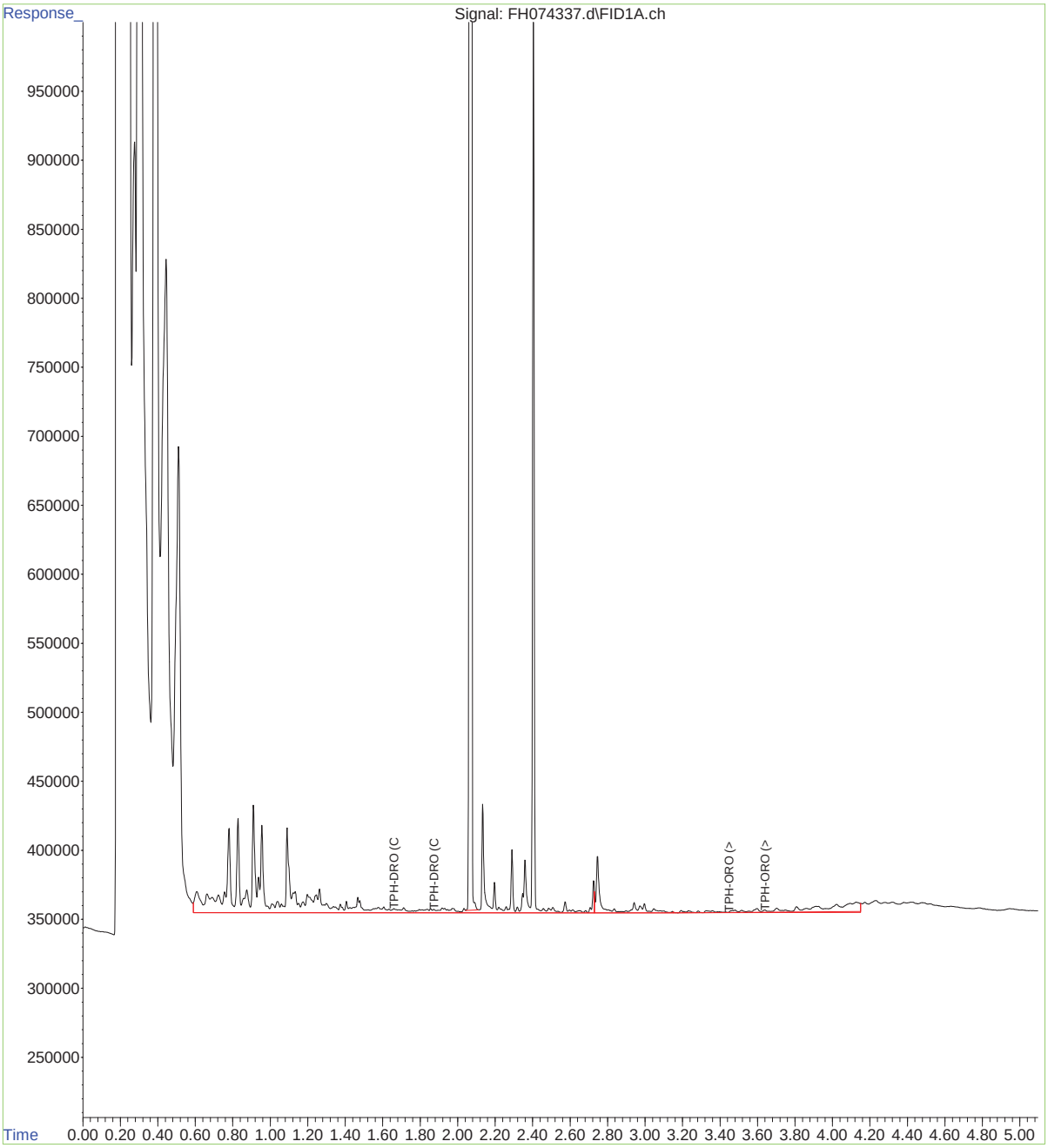
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074337.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:41 am
Operator : jackb
Sample : da62312-2
Misc : OP25214,GFH23859,1040,,,1,1
ALS Vial : 15 Sample Multiplier: 1

F2-TW-0011621-23155-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:40:03 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Mon Feb 26 14:41:53 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23605.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:12:26
Operator : jackb
Sample : DA62325-2
Misc : OP25221,GLW663,57.8,,,2.0,1
ALS Vial : 8 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 11 18:43:03 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.218	14176910	7.587 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 75.87%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	332044	0.246 ppm
2) H TPH-ORO (>C28-C40)	4.880	117078	0.278 ppm
3) H TPH-DRO (C10-C24)	2.880	275020	0.201 ppm
4) H TPH-ORO (>C24-C40)	4.680	191274	0.241 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

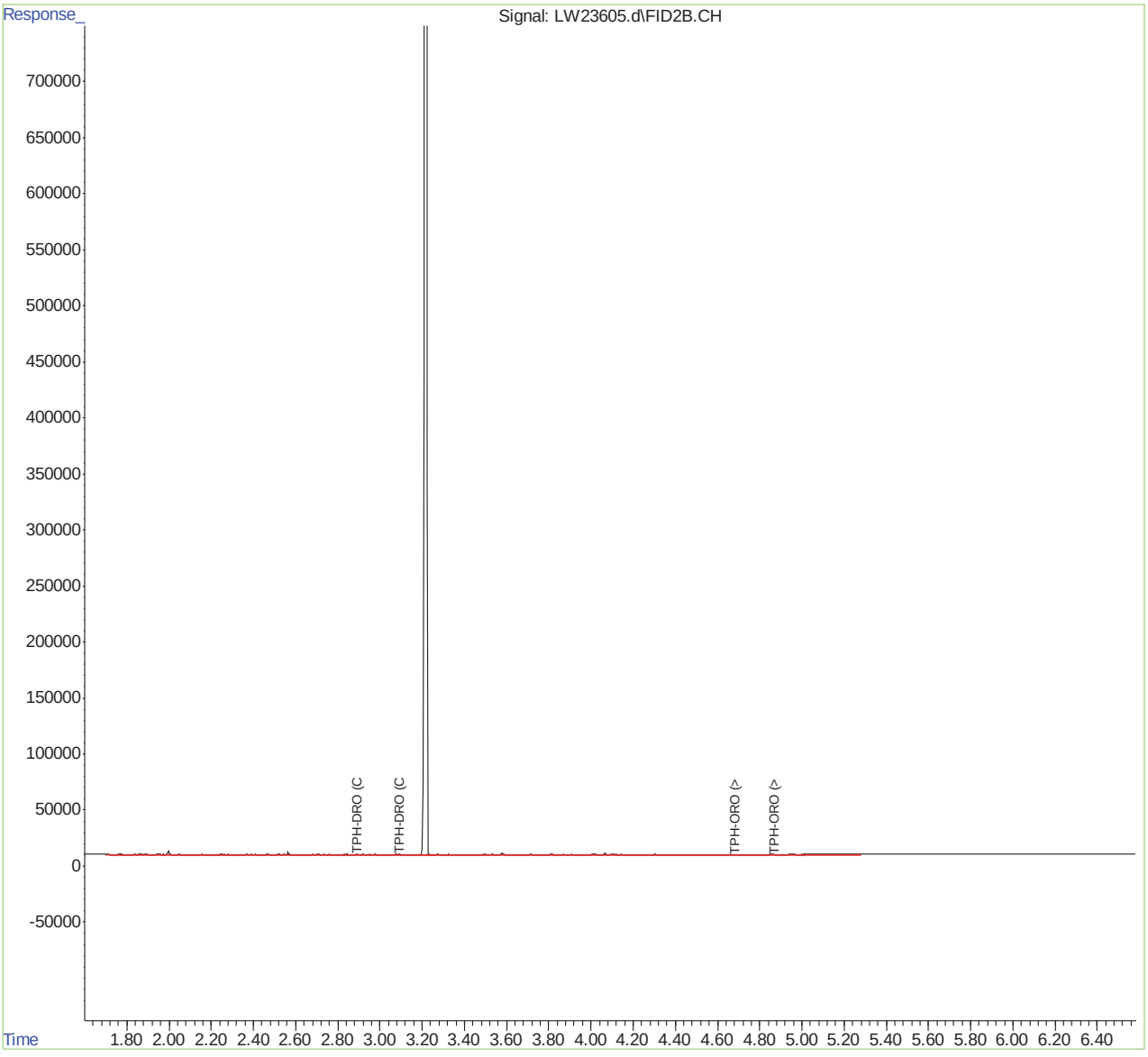
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23605.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:12:26
Operator : jackb
Sample : DA62325-2
Misc : OP25221,GLW663,57.8,,,2.0,1
ALS Vial : 8 Sample Multiplier: 1

F2-TW-0011621-23155-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 11 18:43:03 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16075.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 21:01:10
Operator : jackb
Sample : DA58265-3
Misc : OP24261,GLW543,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 02 15:16:17 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.347	40236055	1860.038 ppm
Spiked Amount 2000.000 Range 10 - 130 Recovery = 93.00%			
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	2004177	121.868 ppm
2) H TPH-ORO (>C28-C40)	3.970	935141	102.918 ppm
3) H TPH-DRO (C10-C24)	1.920	1354803	86.027 ppm
4) H TPH-ORO (>C24-C40)	3.750	1589035	102.748 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.16 11

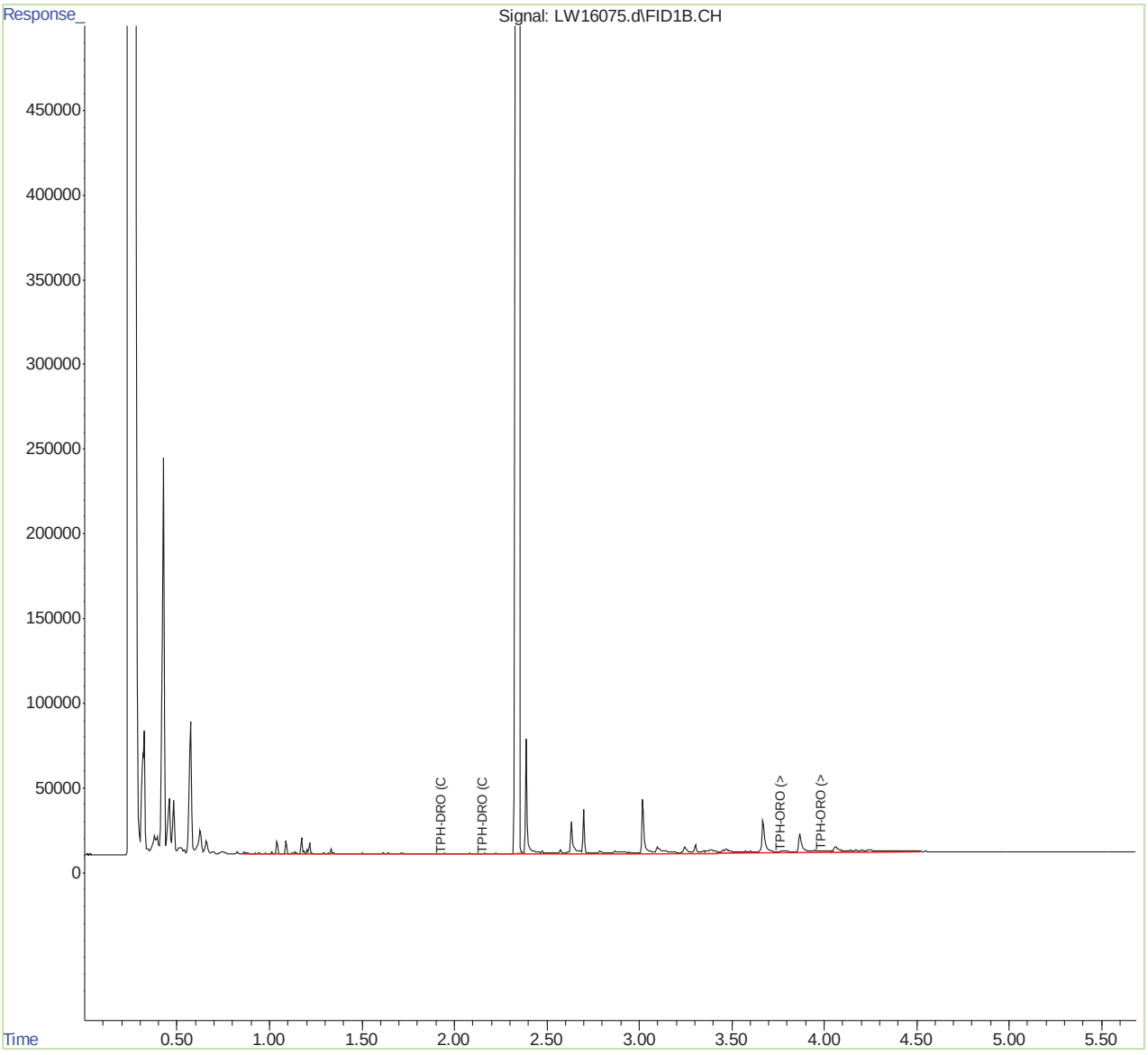
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16075.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 21:01:10
Operator : jackb
Sample : DA58265-3
Misc : OP24261,GLW543,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0010080-23155-N
DRO 81.9
ORO 97.9
Total TPH 179.8

Integration File: autoint1.e
Quant Time: Sep 02 15:16:17 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO082123.M Sat Sep 02 16:40:48 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074336.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:33 am
Operator : jackb
Sample : da62312-1
Misc : OP25214,GFH23859,1040,,,1,1
ALS Vial : 14 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:40:01 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.070	65869995	133.457 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	12168930	38.310 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	11655668	37.756 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	1208366	8.633 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1723709	6.876 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

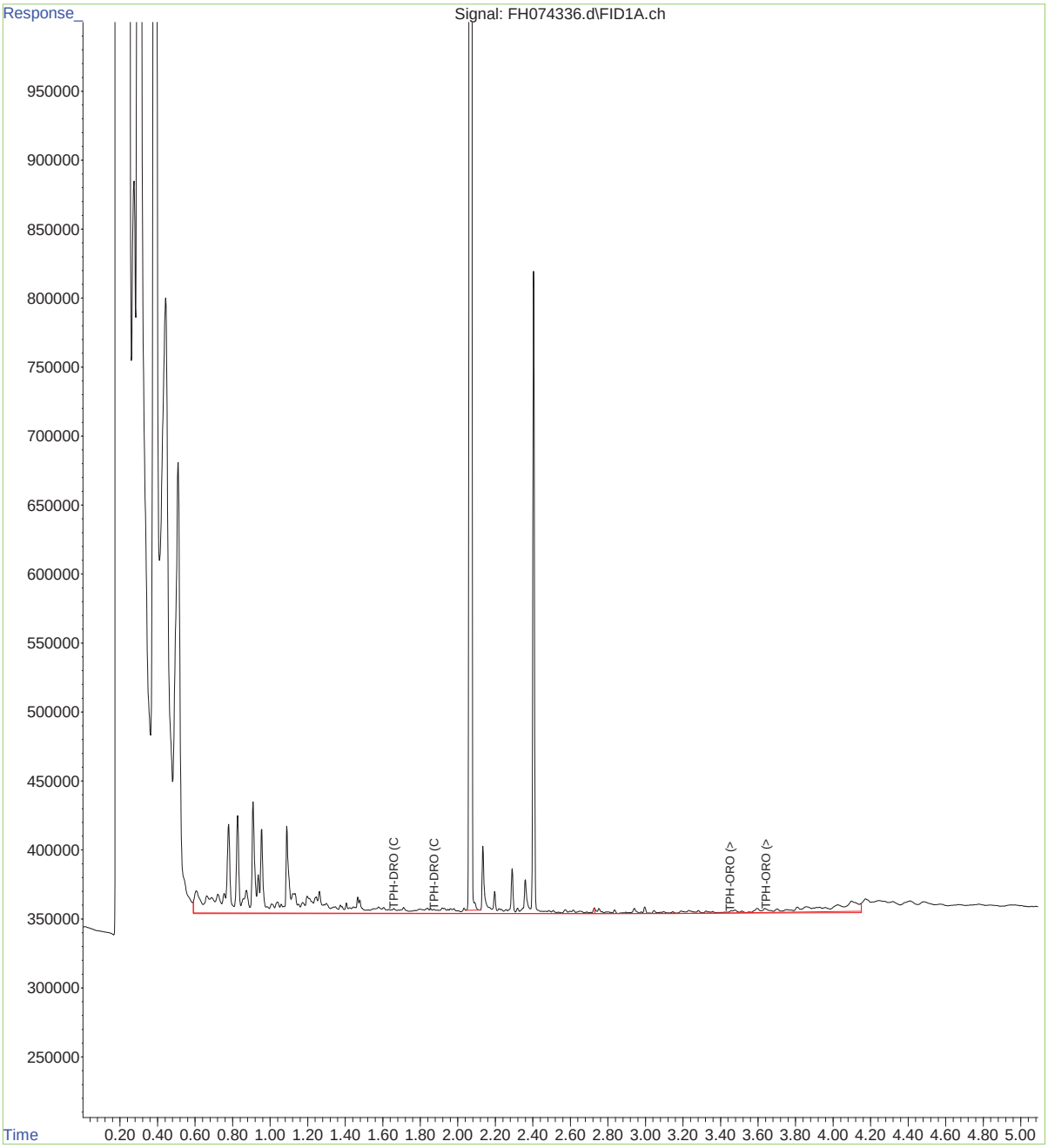
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074336.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:33 am
Operator : jackb
Sample : da62312-1
Misc : OP25214,GFH23859,1040,,,1,1
ALS Vial : 14 Sample Multiplier: 1

F2-TW-0010080-23155-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:40:01 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23604.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:00:42
Operator : jackb
Sample : DA62325-1
Misc : OP25221,GLW663,57.5,,,2.0,1
ALS Vial : 7 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 11 18:43:01 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.218	13803158	7.379 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 73.79%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	406261	0.301 ppm
2) H TPH-ORO (>C28-C40)	4.880	188776	0.448 ppm
3) H TPH-DRO (C10-C24)	2.880	296466	0.217 ppm
4) H TPH-ORO (>C24-C40)	4.680	303865	0.382 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

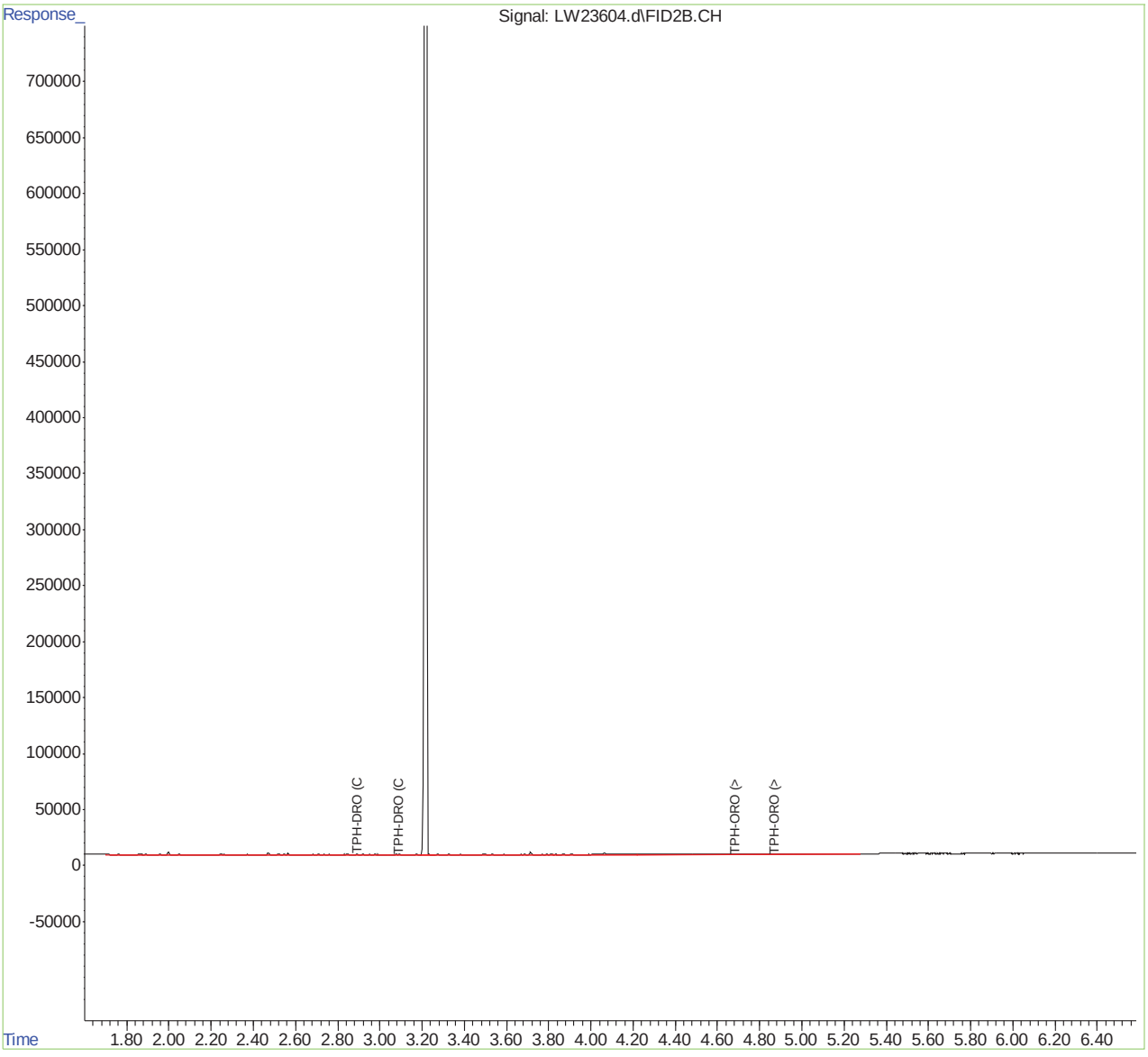
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23604.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:00:42
Operator : jackb
Sample : DA62325-1
Misc : OP25221,GLW663,57.5,,,2.0,1
ALS Vial : 7 Sample Multiplier: 1

F2-TW-0010080-23155-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 11 18:43:01 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090223\
Data File : LW16112.d
Signal(s) : FID1B.CH
Acq On : 02-Sep-23, 20:16:28
Operator : jackb
Sample : da58265-13
Misc : OP24267,GLW544,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 03 16:15:15 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.342	24611153	1137.728 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery = 56.89%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	1892351	115.068 ppm
2) H TPH-ORO (>C28-C40)	3.970	635645	69.957 ppm
3) H TPH-DRO (C10-C24)	1.920	1423186	90.369 ppm
4) H TPH-ORO (>C24-C40)	3.750	1090268	70.497 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.26 11

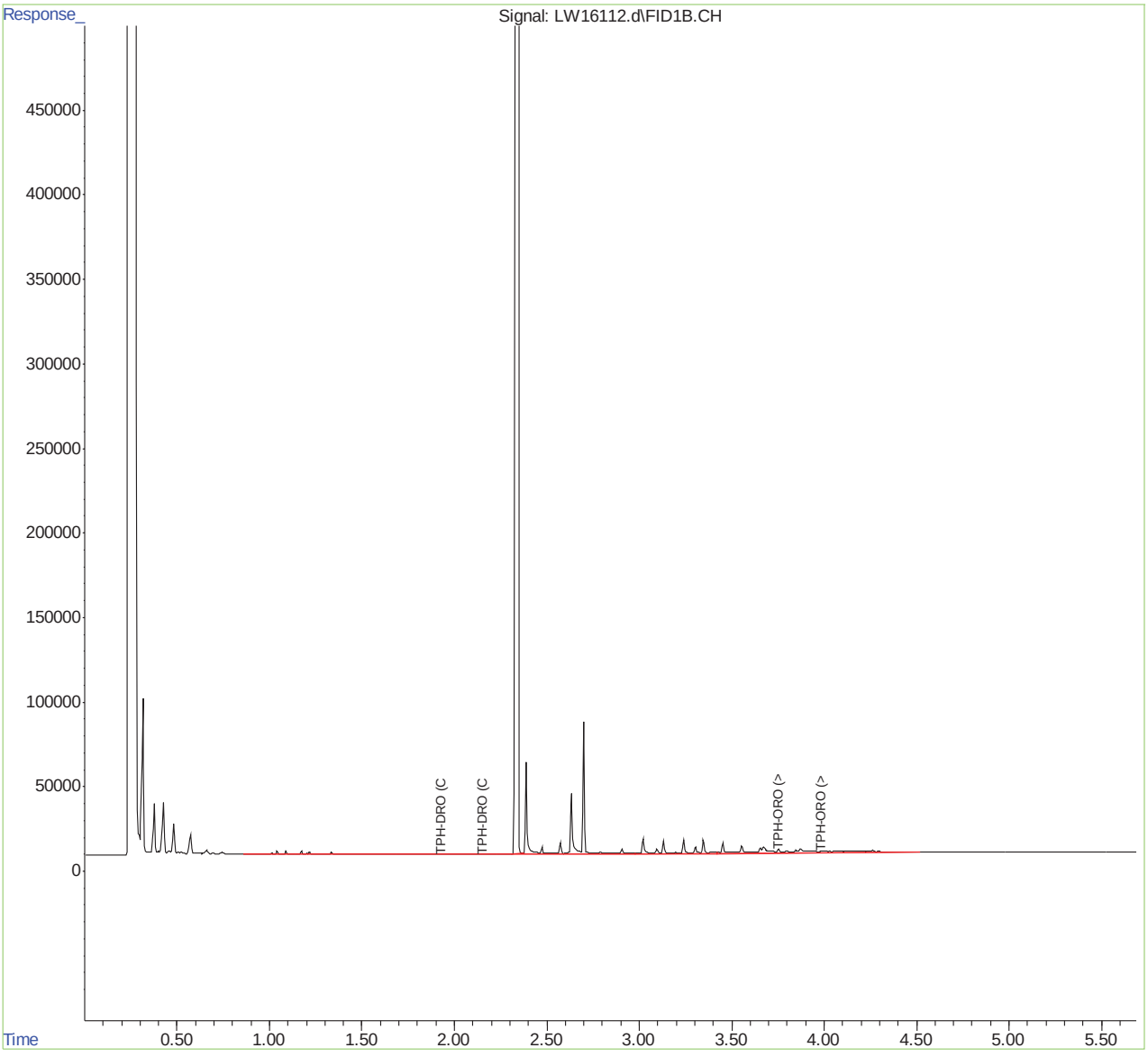
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090223\
Data File : LW16112.d
Signal(s) : FID1B.CH
Acq On : 02-Sep-23, 20:16:28
Operator : jackb
Sample : da58265-13
Misc : OP24267,GLW544,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0010437-23155-N
DRO 90.4
ORO 70.5 J
Total TPH 160.9

Integration File: autoint1.e
Quant Time: Sep 03 16:15:15 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.26

11

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:26

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074901.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 7:58 pm
Operator : jackb
Sample : da62398-2
Misc : OP25244,GFH23865,1050,,,1,1
ALS Vial : 121 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 13:43:19 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.283f	44493931	96.471	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	16454752	54.268	ug/mlm
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	3125882	12.742	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.3
11

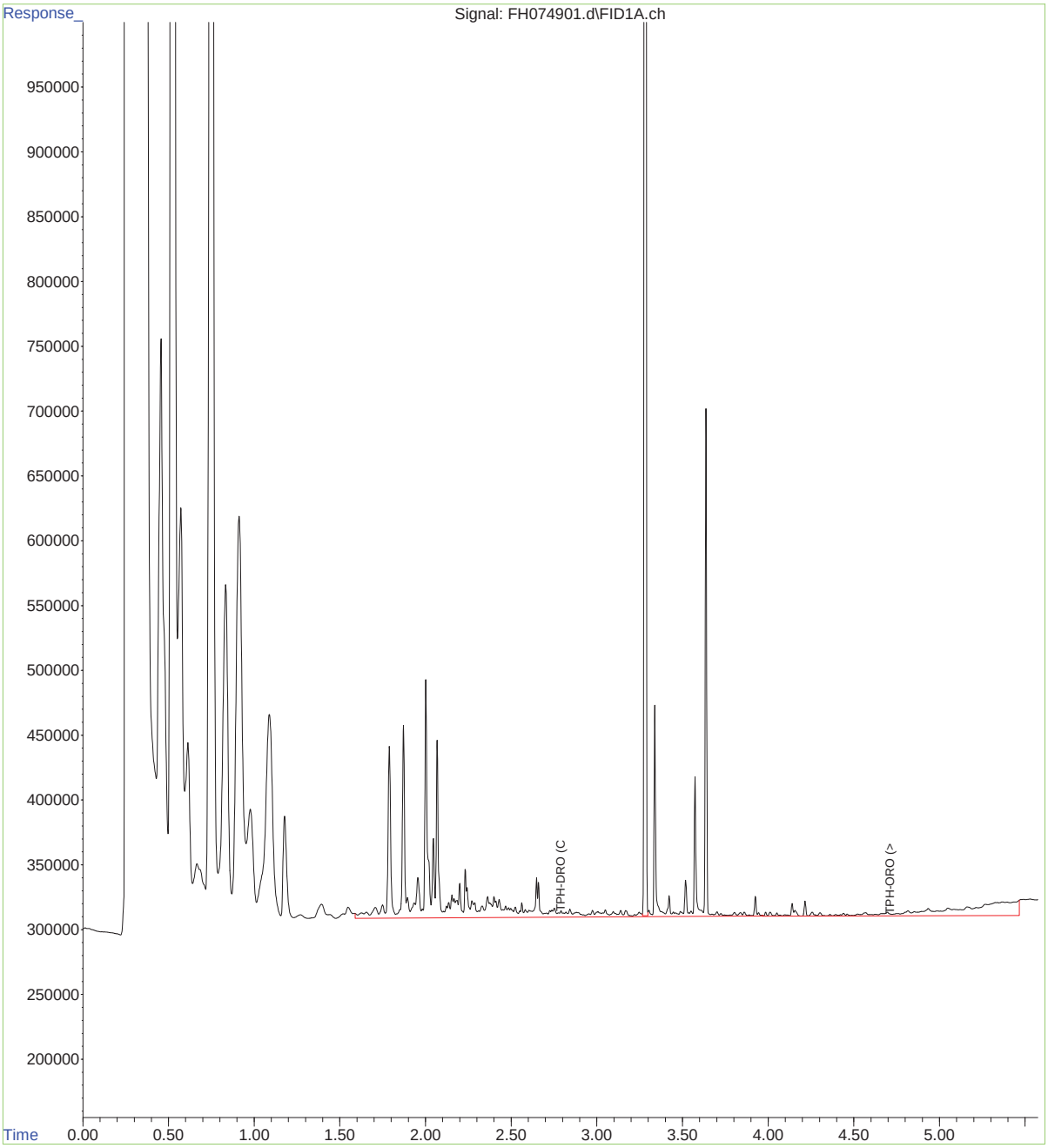
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074901.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 7:58 pm
Operator : jackb
Sample : da62398-2
Misc : OP25244,GFH23865,1050,,,1,1
ALS Vial : 121 Sample Multiplier: 1

F2-TW-0010437-23155-N-R1
DRO 51.8 J
ORO 50 U
Total TPH 51.8

Integration File: autoint1.e
Quant Time: Mar 08 13:43:19 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23035.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 00:36:36
Operator : jackb
Sample : DA62408-2
Misc : OP25266,GLW655,57.5,,,2,1
ALS Vial : 40 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 14:55:19 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.274	15333857	8.231 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 82.31%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	313019	0.232 ppm
2) H TPH-ORO (>C28-C40)	4.880	117806	0.280 ppm m
3) H TPH-DRO (C10-C24)	2.880	275575	0.202 ppm
4) H TPH-ORO (>C24-C40)	4.680	234804	0.295 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

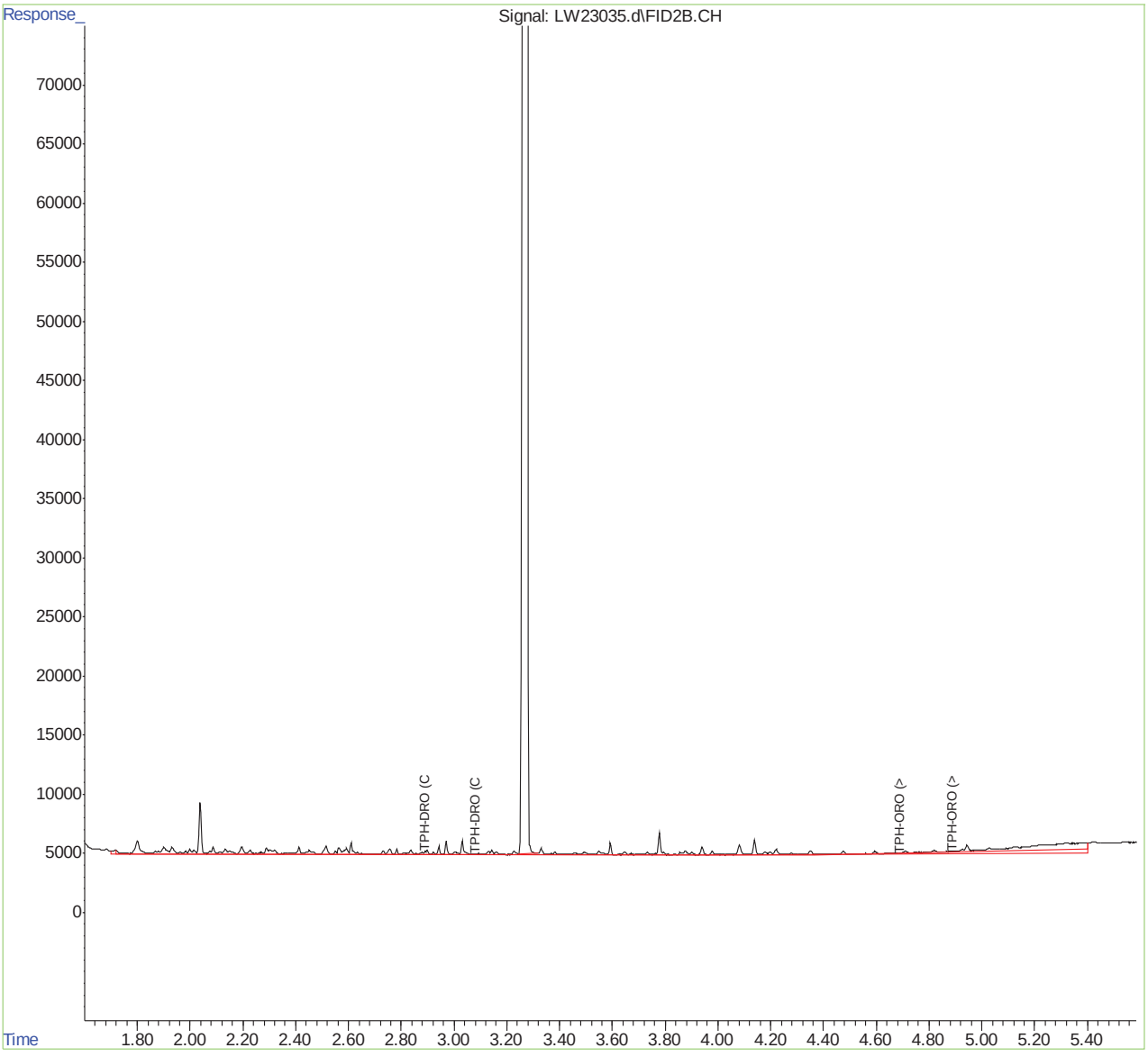
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23035.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 00:36:36
Operator : jackb
Sample : DA62408-2
Misc : OP25266,GLW655,57.5,,,2,1
ALS Vial : 40 Sample Multiplier: 1

F2-TW-0010437-23155-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 14:55:19 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16073.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 20:41:02
Operator : jackb
Sample : DA58265-1
Misc : OP24261,GLW543,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 02 15:16:13 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.344	30199107	1396.049 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery =	69.80%
Target Compounds			
1) H TPH-DRO (C10-C28)	2.140	1660374	100.962 ppm
2) H TPH-ORO (>C28-C40)	3.970	785737	86.475 ppm
3) H TPH-DRO (C10-C24)	1.920	1095304	69.549 ppm
4) H TPH-ORO (>C24-C40)	3.750	1405632	90.889 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.14 11

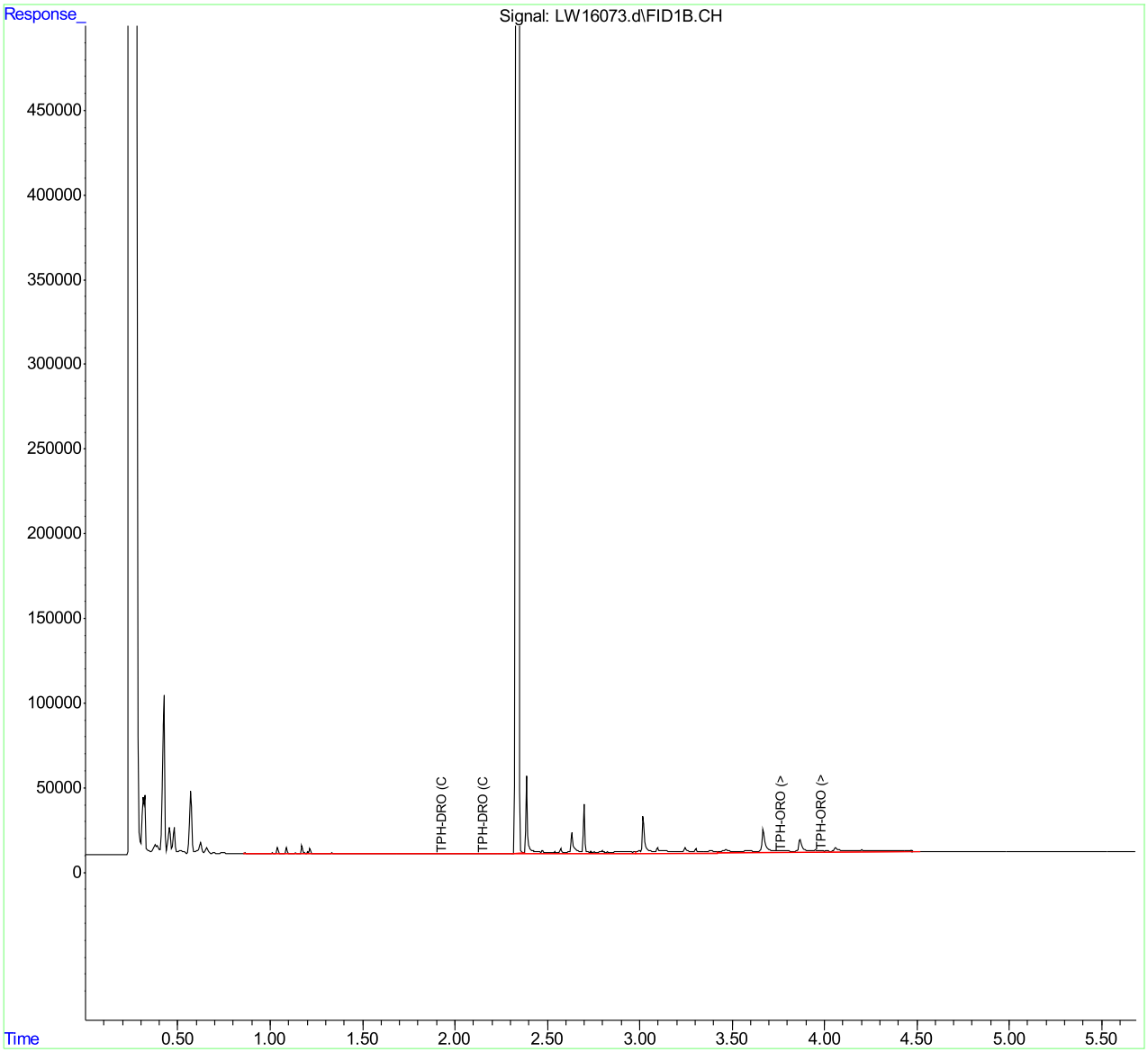
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\090123\
Data File : LW16073.d
Signal(s) : FID1B.CH
Acq On : 01-Sep-23, 20:41:02
Operator : jackb
Sample : DA58265-1
Misc : OP24261,GLW543,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0010579-23155-N
DRO 67.5 J
ORO 88.2
Total TPH 155.7

Integration File: autoint1.e
Quant Time: Sep 02 15:16:13 2023
Quant Method : C:\msdchem\1\methods\DRO082123.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Aug 21 10:56:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.14 11

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074910.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:35 pm
Operator : jackb
Sample : da62453-3
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 18 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:08:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.339	36492899	79.124	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	8916619	29.407	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2861169	11.663	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.3
7

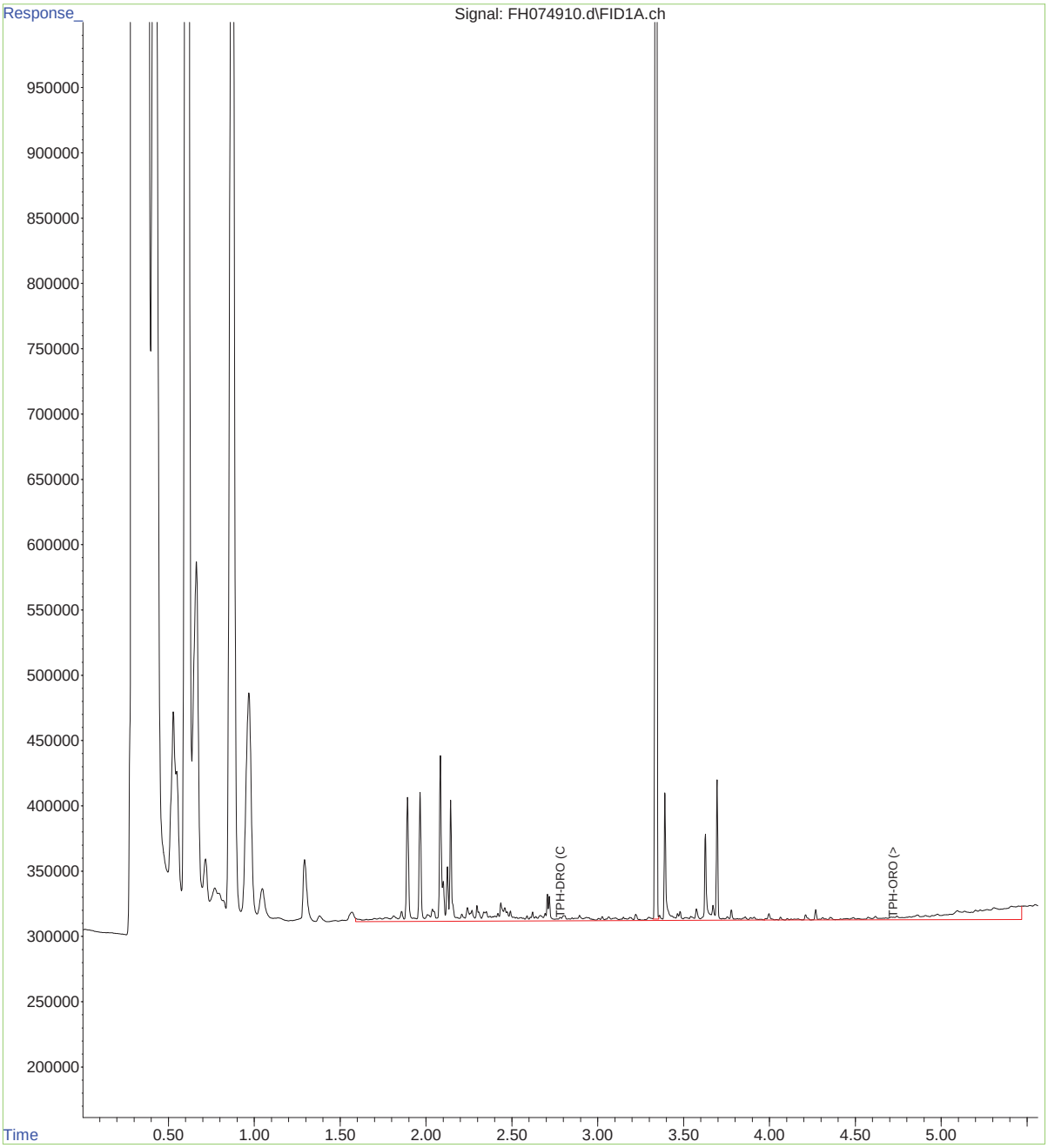
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074910.d
Signal(s) : FID1A.ch
Acq On : 5 Mar 2024 9:35 pm
Operator : jackb
Sample : da62453-3
Misc : OP25253,GFH23865,1050,,,1,1
ALS Vial : 18 Sample Multiplier: 1

F2-TW-0010579-23155-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:08:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23265.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 20:40:20
Operator : jackb
Sample : DA62465-3
Misc : OP25294,GLW659,55.2,,,2.0,1
ALS Vial : 17 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 07:27:27 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	3.281	14765819	7.915	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 79.15%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	2.880	422575	0.309	ppm	
4) H TPH-ORO (>C24-C40)	4.680	705274	0.887	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

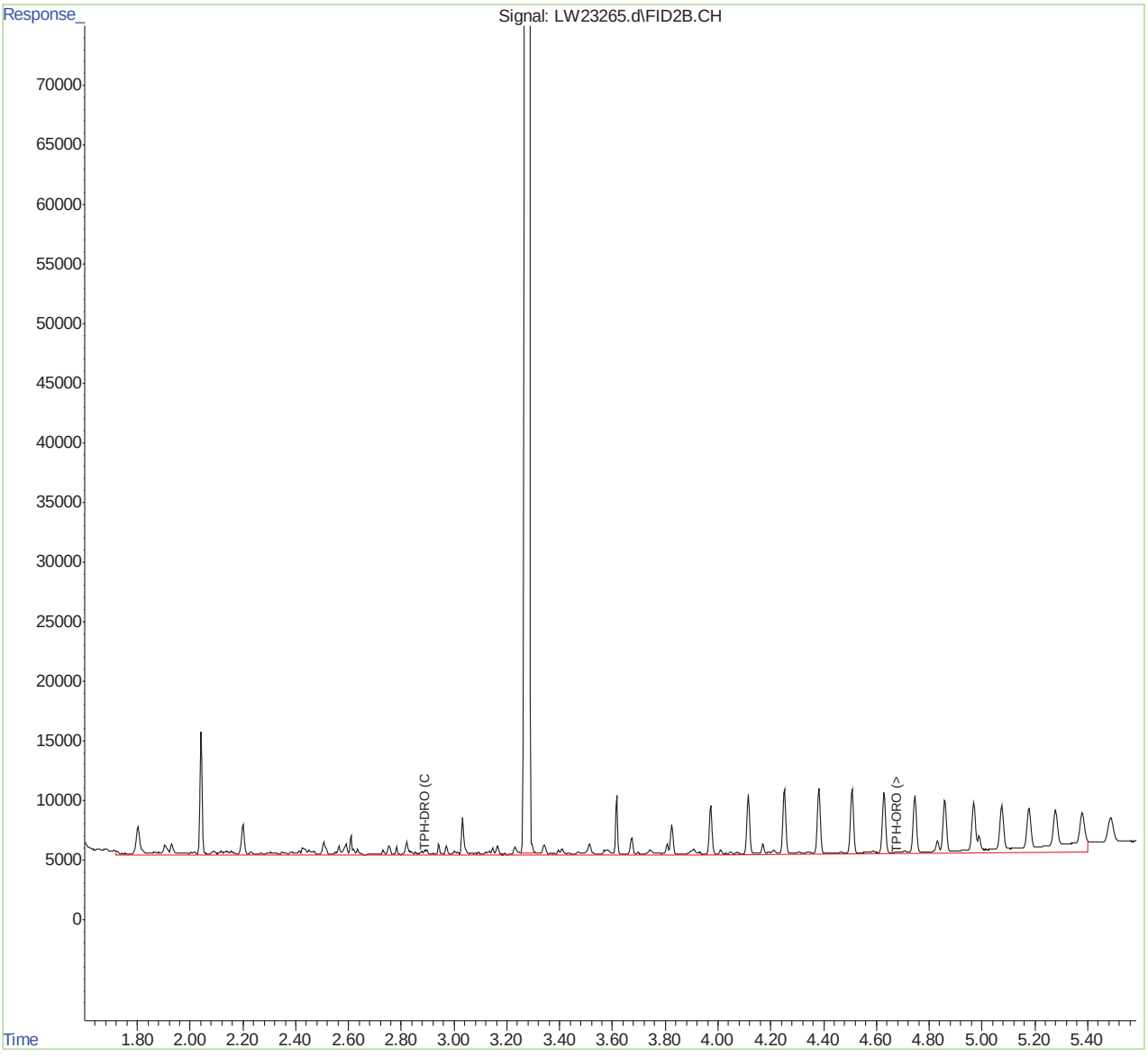
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030724\
Data File : LW23265.d
Signal(s) : FID2B.CH
Acq On : 07-Mar-24, 20:40:20
Operator : jackb
Sample : DA62465-3
Misc : OP25294,GLW659,55.2,,,2.0,1
ALS Vial : 17 Sample Multiplier: 1

F2-TW-0010579-23155-N-R1-MEQ
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 07:27:27 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Fri Mar 08 07:47:54 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080423\
Data File : LW14453.d
Signal(s) : FID1B.CH
Acq On : 04-Aug-23, 18:48:02
Operator : jackb
Sample : da57431-3
Misc : OP24103,GLW510,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 06 10:26:15 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.398	35612225	1931.698 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery =	96.58%
Target Compounds			
1) H TPH-DRO (C10-C28)	2.200	1800127	119.012 ppm
2) H TPH-ORO (>C28-C40)	4.100	620030	76.121 ppm
3) H TPH-DRO (C10-C24)	1.980	784726	52.451 ppm
4) H TPH-ORO (>C24-C40)	3.880	1671475	120.660 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.24

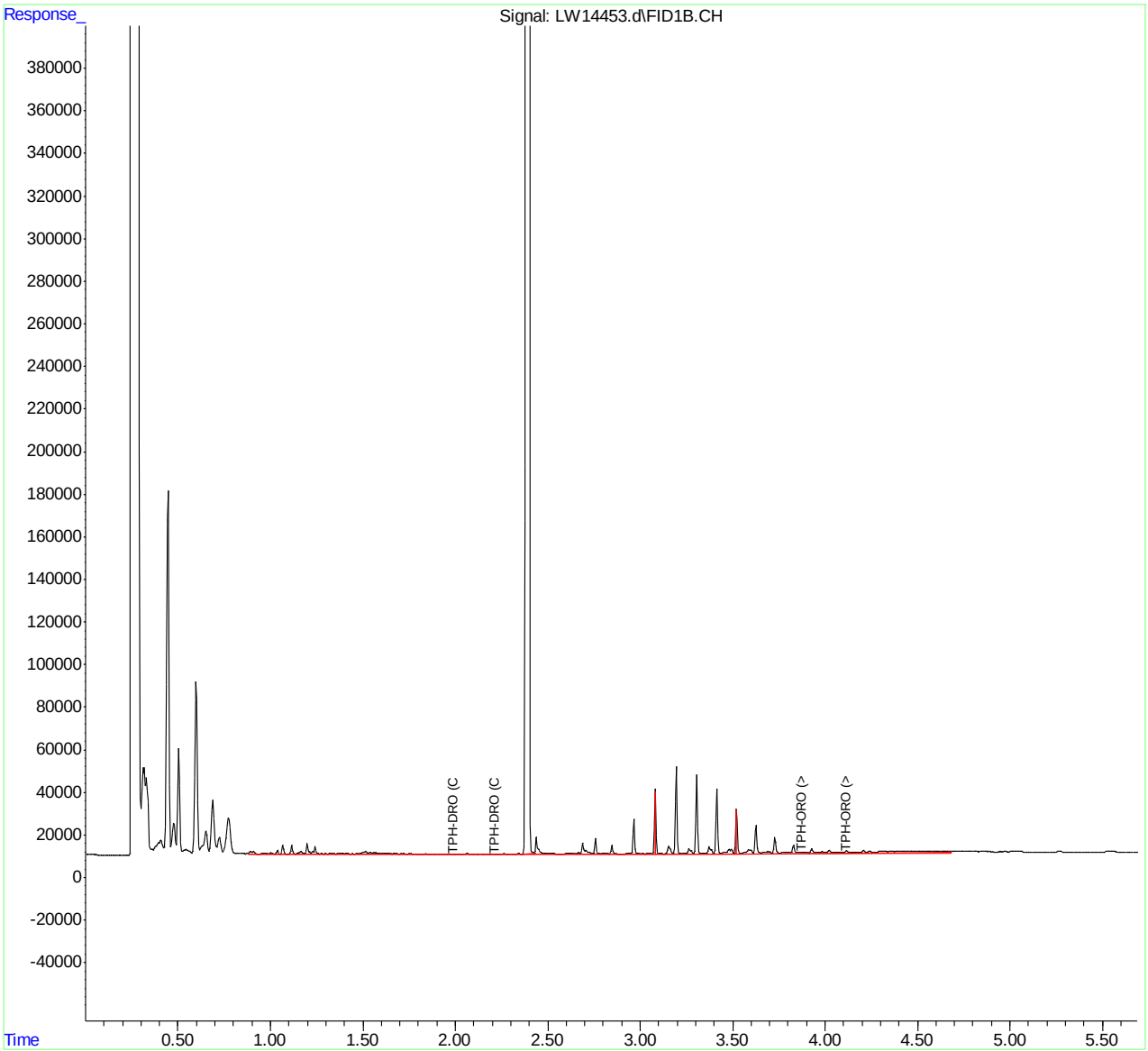
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080423\
Data File : LW14453.d
Signal(s) : FID1B.CH
Acq On : 04-Aug-23, 18:48:02
Operator : jackb
Sample : da57431-3
Misc : OP24103,GLW510,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0009269-23155-N
DRO 50.4 J
ORO 116
Total TPH 166.4

Integration File: autoint1.e
Quant Time: Aug 06 10:26:15 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/09/24 14:37

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075087.d
Signal(s) : FID1A.ch
Acq On : 7 Mar 2024 10:22 am
Operator : jackb
Sample : da62578-1
Misc : OP25281,GFH23866,1050,,,1,1
ALS Vial : 77 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 21:42:23 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.333	28746768	62.329	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	8669613	28.593	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	7435971	30.312	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.1
7

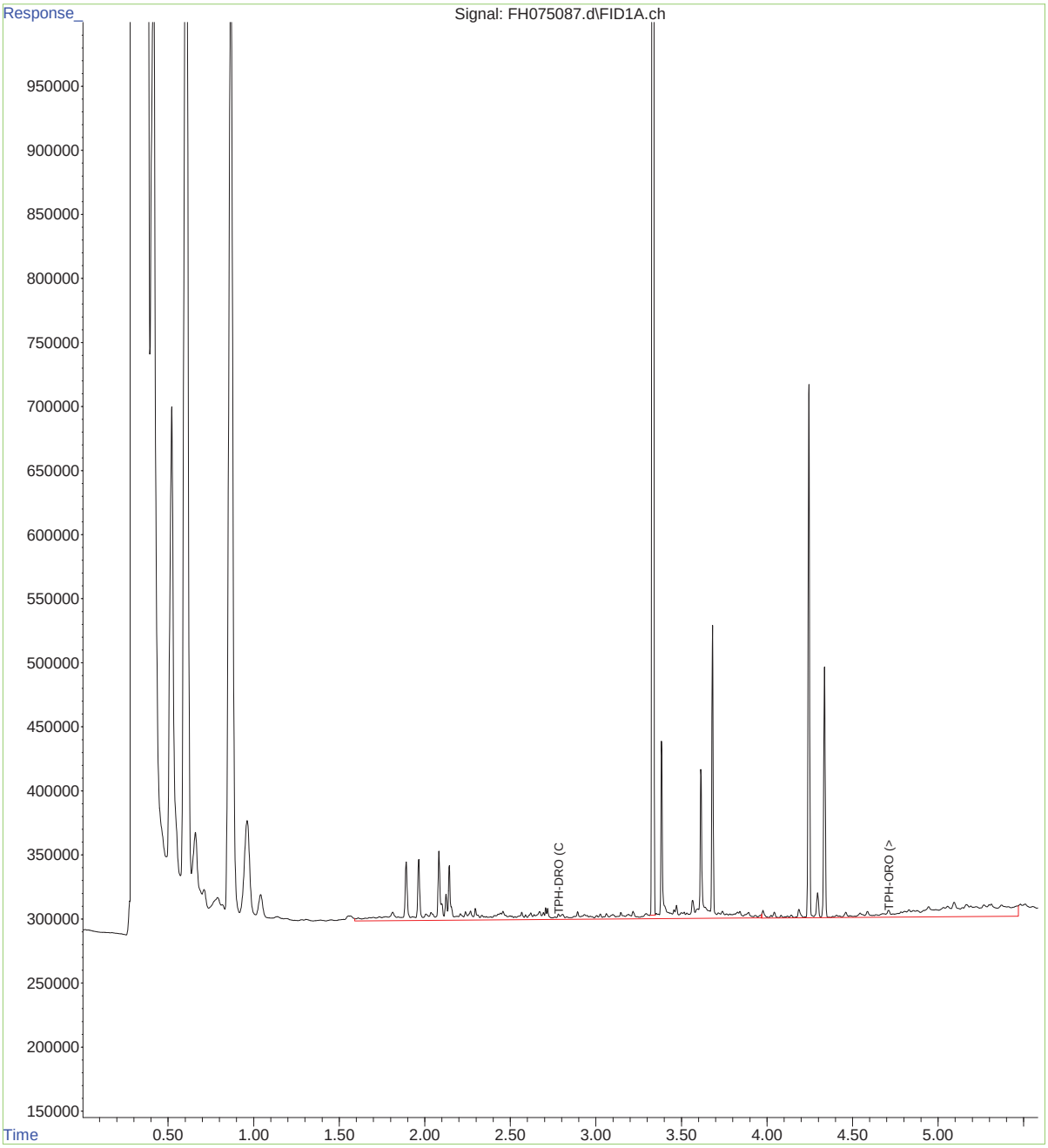
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030624\
Data File : FH075087.d
Signal(s) : FID1A.ch
Acq On : 7 Mar 2024 10:22 am
Operator : jackb
Sample : da62578-1
Misc : OP25281,GFH23866,1050,,,1,1
ALS Vial : 77 Sample Multiplier: 1

F2-TW-0009269-23155-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 21:42:23 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031424\
Data File : LW24053.d
Signal(s) : FID2B.CH
Acq On : 15-Mar-24, 06:33:39
Operator : jackb
Sample : da62583-1
Misc : OP25358,GLW668,58.5,,,2,1
ALS Vial : 58 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 15 11:22:54 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
3) S O-TERPHENYL	3.221	15521391	8.335 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 83.35%	
Target Compounds			
1) H TPH-DRO (C10-C24)	2.880	626027	0.458 ppm
2) H TPH-ORO (>C24-C40)	4.680	290909	0.366 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

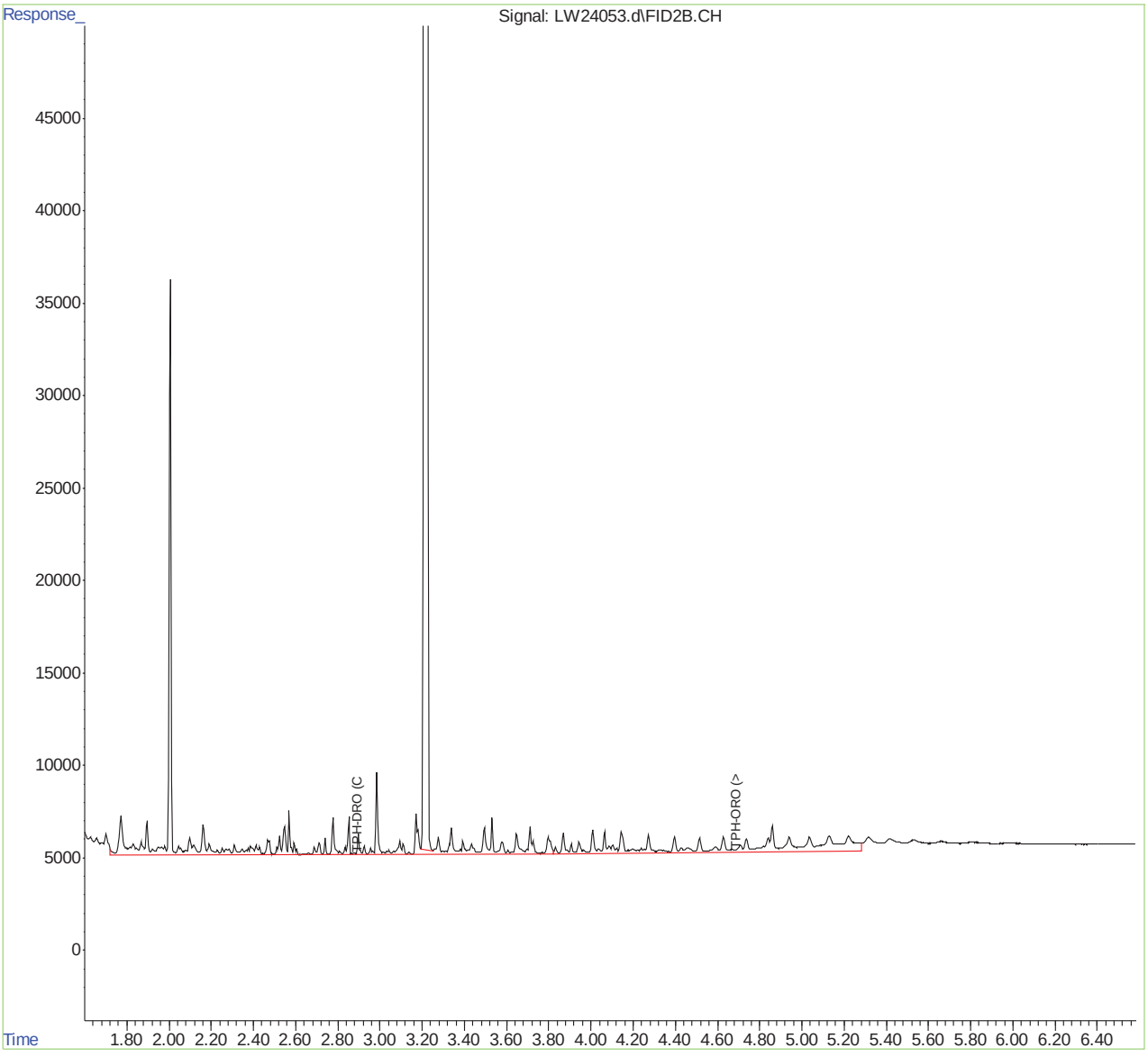
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031424\
Data File : LW24053.d
Signal(s) : FID2B.CH
Acq On : 15-Mar-24, 06:33:39
Operator : jackb
Sample : da62583-1
Misc : OP25358,GLW668,58.5,,,2,1
ALS Vial : 58 Sample Multiplier: 1

F2-TW-0009269-23155-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 15 11:22:54 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091423\
Data File : LW16736.d
Signal(s) : FID1B.CH
Acq On : 14-Sep-23, 21:10:22
Operator : jackb
Sample : da58544-4
Misc : OP24330,GLW558,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 15 11:40:22 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.298	14763505	737.501 ppm
Spiked Amount 2000.000 Range 10 - 130		Recovery = 36.88%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.120	5639045	414.422 ppm m
2) H TPH-ORO (>C28-C40)	3.940	7451120	818.230 ppm m
3) H TPH-DRO (C10-C24)	1.900	2830094	211.471 ppm m
4) H TPH-ORO (>C24-C40)	3.720	9952843	640.526 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.12 11

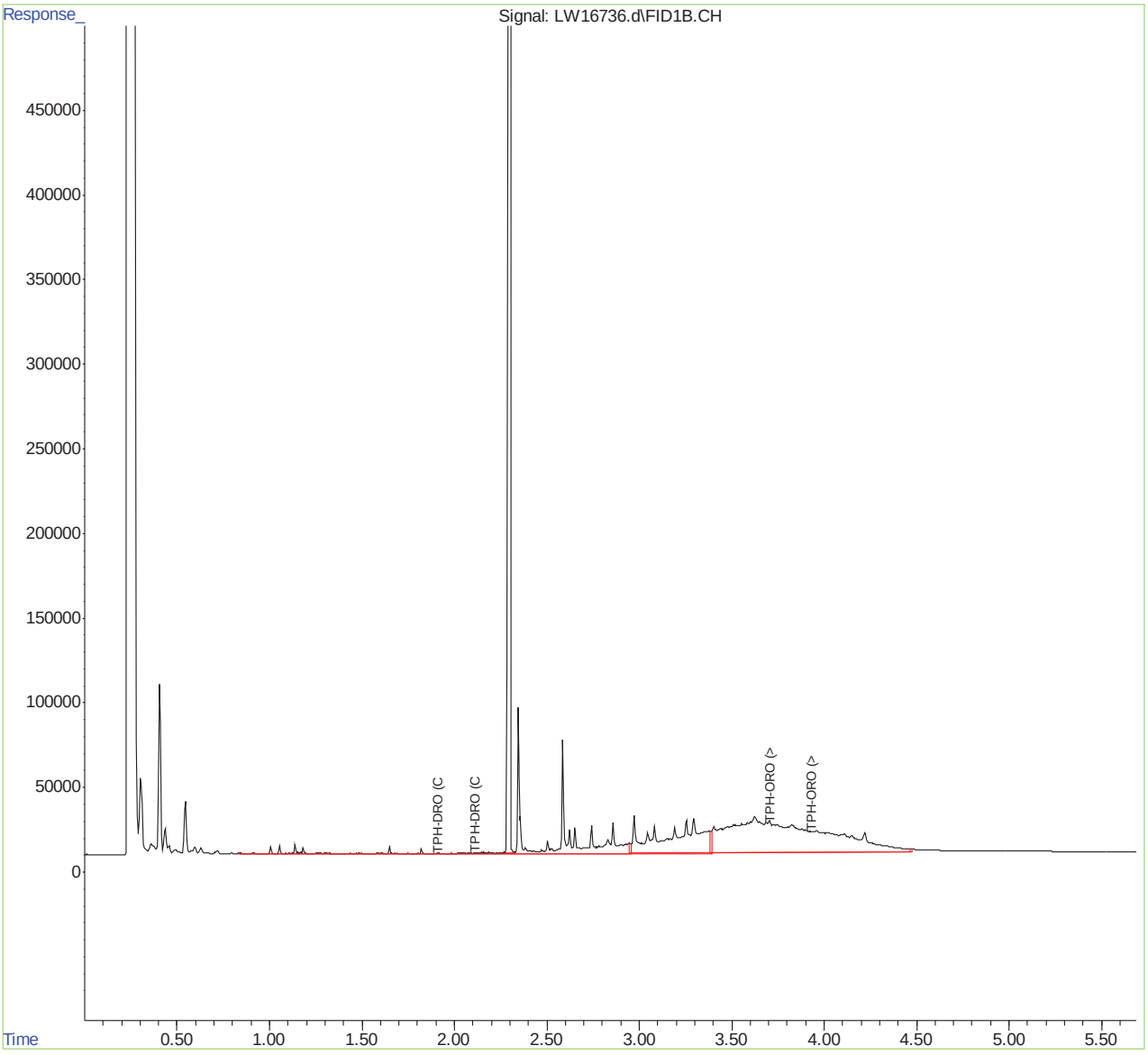
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091423\
Data File : LW16736.d
Signal(s) : FID1B.CH
Acq On : 14-Sep-23, 21:10:22
Operator : jackb
Sample : da58544-4
Misc : OP24330,GLW558,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

H1-TW-0013425-23147-A
DRO 166
ORO 74.3 J
Total TPH 240.3

Integration File: autoint1.e
Quant Time: Sep 15 11:40:22 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO090923.M Fri Sep 15 11:50:20 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091423\
Data File : LW16737.d
Signal(s) : FID1B.CH
Acq On : 14-Sep-23, 21:20:26
Operator : jackb
Sample : da58544-5
Misc : OP24330,GLW558,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 15 11:40:39 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.303	26147478	1306.179 ppm
Spiked Amount 2000.000 Range 10 - 130	Recovery = 65.31%		
Target Compounds			
1) H TPH-DRO (C10-C28)	2.120	996473	73.232 ppm
2) H TPH-ORO (>C28-C40)	3.940	332111	36.470 ppm
3) H TPH-DRO (C10-C24)	1.900	783350	58.534 ppm
4) H TPH-ORO (>C24-C40)	3.720	350198	22.537 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

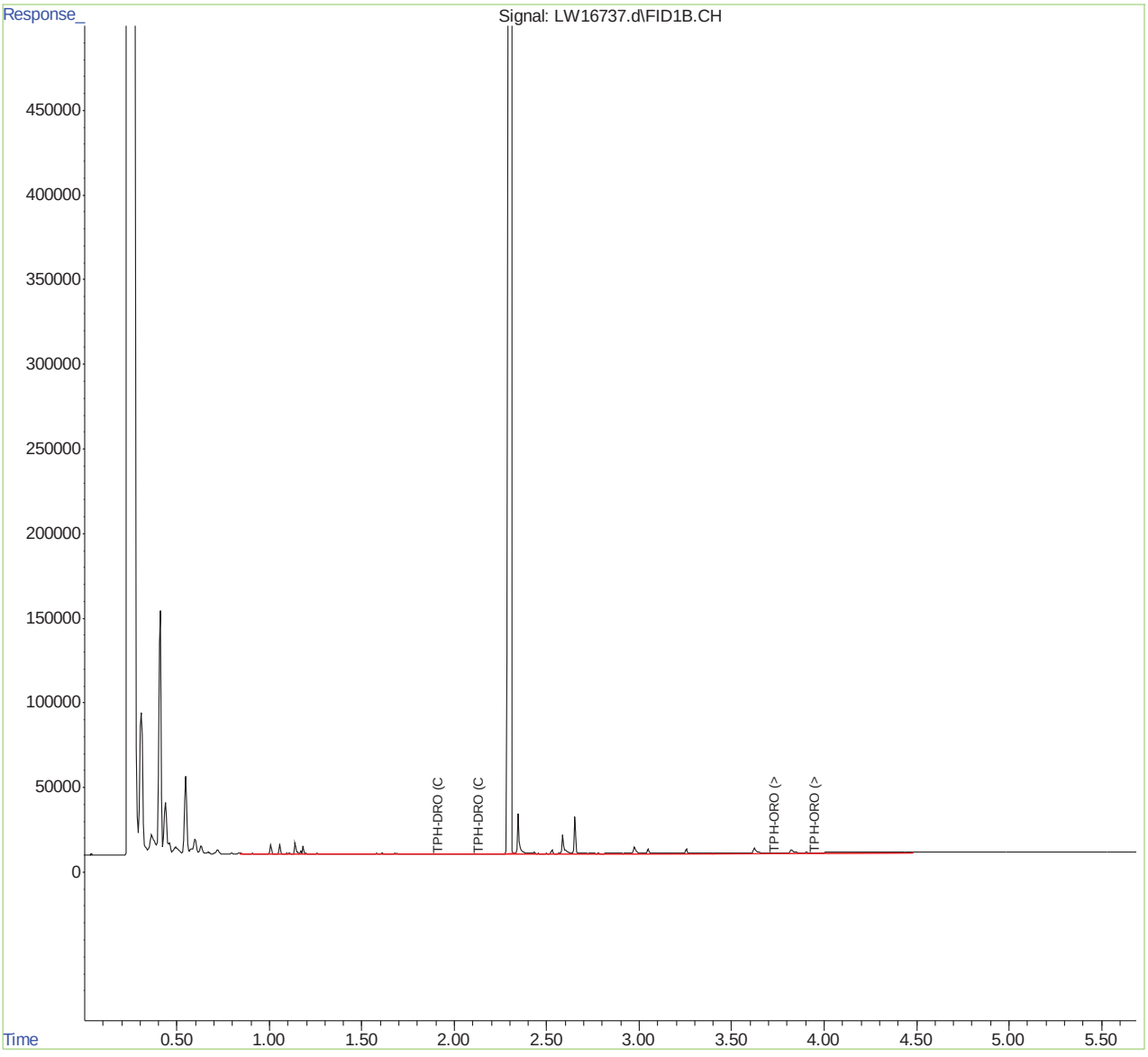
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091423\
Data File : LW16737.d
Signal(s) : FID1B.CH
Acq On : 14-Sep-23, 21:20:26
Operator : jackb
Sample : da58544-5
Misc : OP24330,GLW558,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

H1-TW-0013425-23147-3-A
DRO 58.5 J
ORO 52 U
Total TPH 58.5

Integration File: autoint1.e
Quant Time: Sep 15 11:40:39 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO090923.M Fri Sep 15 11:50:23 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021424\
Data File : FH073215.d
Signal(s) : FID1A.ch
Acq On : 14 Feb 2024 6:52 pm
Operator : jackb
Sample : da61943-1
Misc : OP25112,GFH23838,1050,,,1,1
ALS Vial : 10 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 15 10:25:06 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
System Monitoring Compounds				
1) S	o-Terphenyl	2.102	37763285	63.204 ug/ml
Target Compounds				
2) H	TPH-DRO (C10-C28)	1.920	12224906	31.669 ug/ml
3) H	TPH-DRO (C10-C24)	1.700	11477806	30.086 ug/ml
4) H	TPH-ORO (>C28-C40)	3.740	1661812	8.672 ug/ml
5) H	TPH-ORO (>C24-C40)	3.520	2757296	7.939 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.2
11

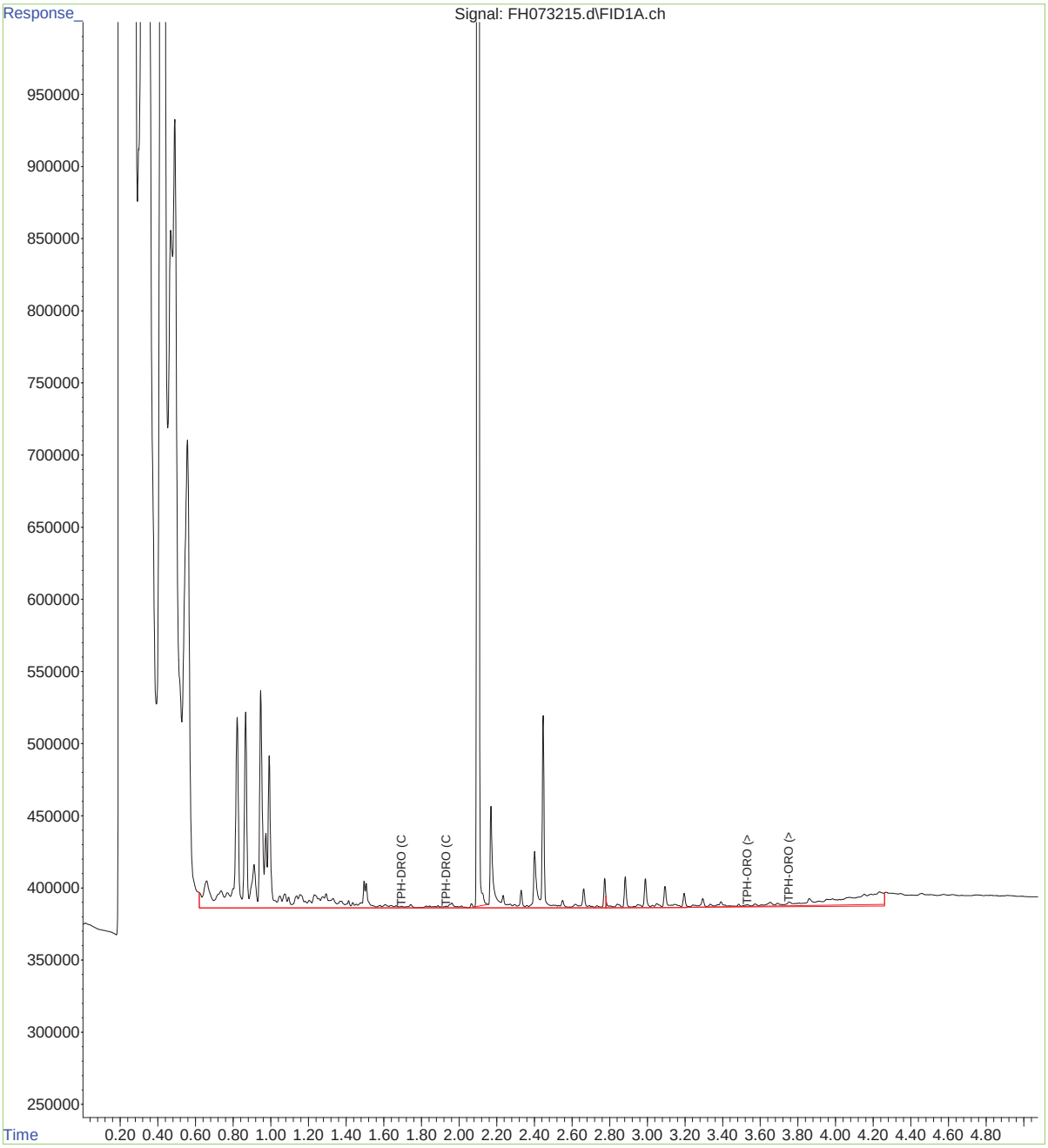
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021424\
Data File : FH073215.d
Signal(s) : FID1A.ch
Acq On : 14 Feb 2024 6:52 pm
Operator : jackb
Sample : da61943-1
Misc : OP25112,GFH23838,1050,,,1,1
ALS Vial : 10 Sample Multiplier: 1

H1-TW-0013425-23327-A
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 15 10:25:06 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.2
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021424\
Data File : FH073232.d
Signal(s) : FID1A.ch
Acq On : 14 Feb 2024 10:04 pm
Operator : jackb
Sample : da61943-1Q
Misc : OP25113,GFH23838,1040,,,1,1
ALS Vial : 25 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 15 10:25:40 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
System Monitoring Compounds				
1) S	o-Terphenyl	2.102	40521967	67.774 ug/ml
Target Compounds				
2) H	TPH-DRO (C10-C28)	1.920	8378973	21.706 ug/ml
3) H	TPH-DRO (C10-C24)	1.700	5508791	14.440 ug/ml
4) H	TPH-ORO (>C28-C40)	3.740	1702849	8.886 ug/ml
5) H	TPH-ORO (>C24-C40)	3.520	4784982	13.777 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

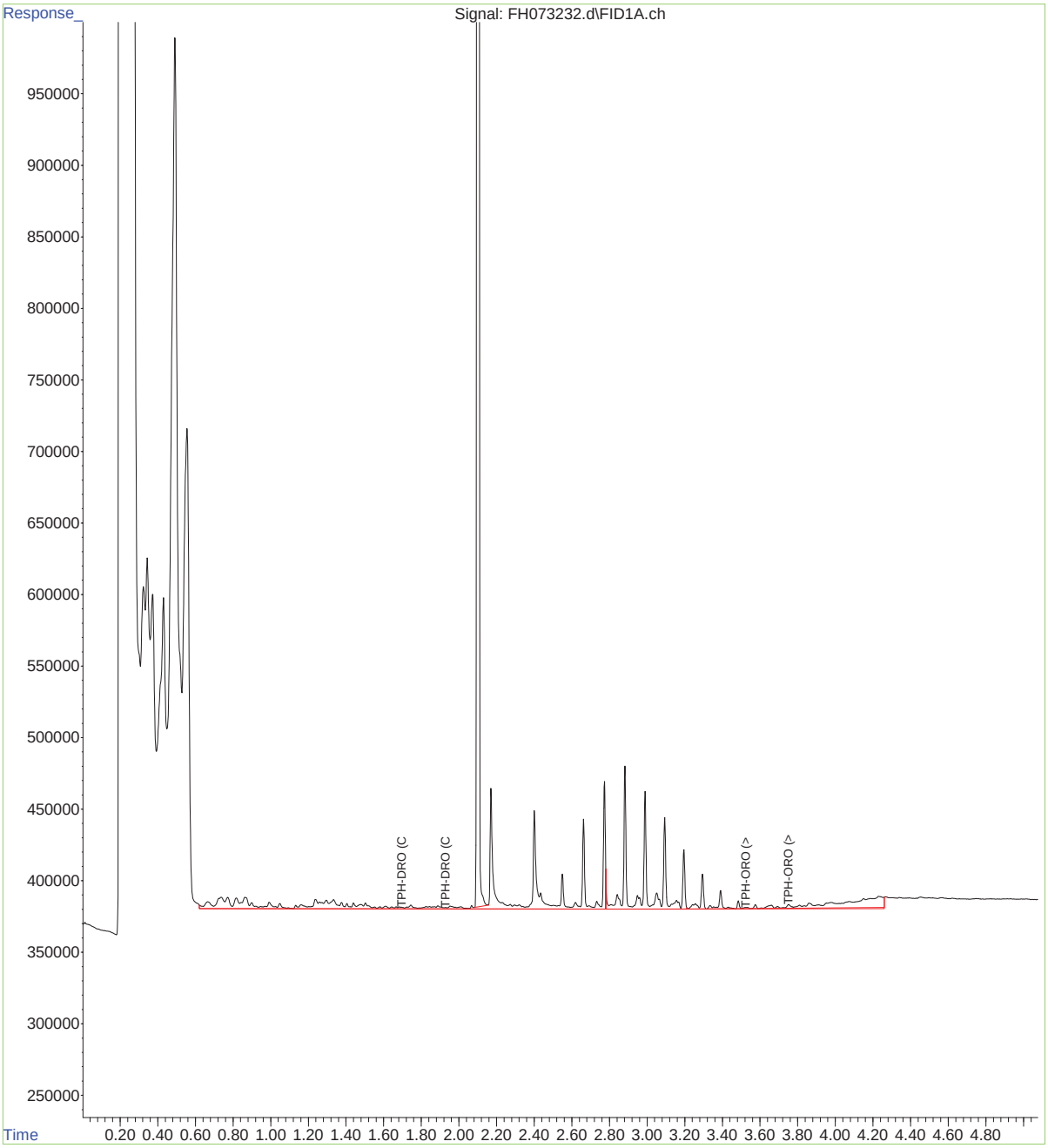
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021424\
Data File : FH073232.d
Signal(s) : FID1A.ch
Acq On : 14 Feb 2024 10:04 pm
Operator : jackb
Sample : da61943-1Q
Misc : OP25113,GFH23838,1040,,,1,1
ALS Vial : 25 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 15 10:25:40 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

H1-TW-0013425-23327-A-Q
TPH-DRO 0.050 U
TPH-ORO 0.050 U
Total TPH ND



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021324\
Data File : LW21677.d
Signal(s) : FID2B.CH
Acq On : 14-Feb-24, 00:51:14
Operator : jackb
Sample : da61955-1
Misc : OP25105,GLW637,61.0,,,2,1
ALS Vial : 36 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 14 10:06:27 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.564	20856249	8.774 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery =	87.74%
Target Compounds			
1) H TPH-DRO (C10-C28)	4.000	1053567	0.625 ppm
2) H TPH-ORO (>C28-C40)	6.460	151432	0.223 ppm
3) H TPH-DRO (C10-C24)	3.750	887804	0.536 ppm
4) H TPH-ORO (>C24-C40)	6.210	295785	0.234 ppm

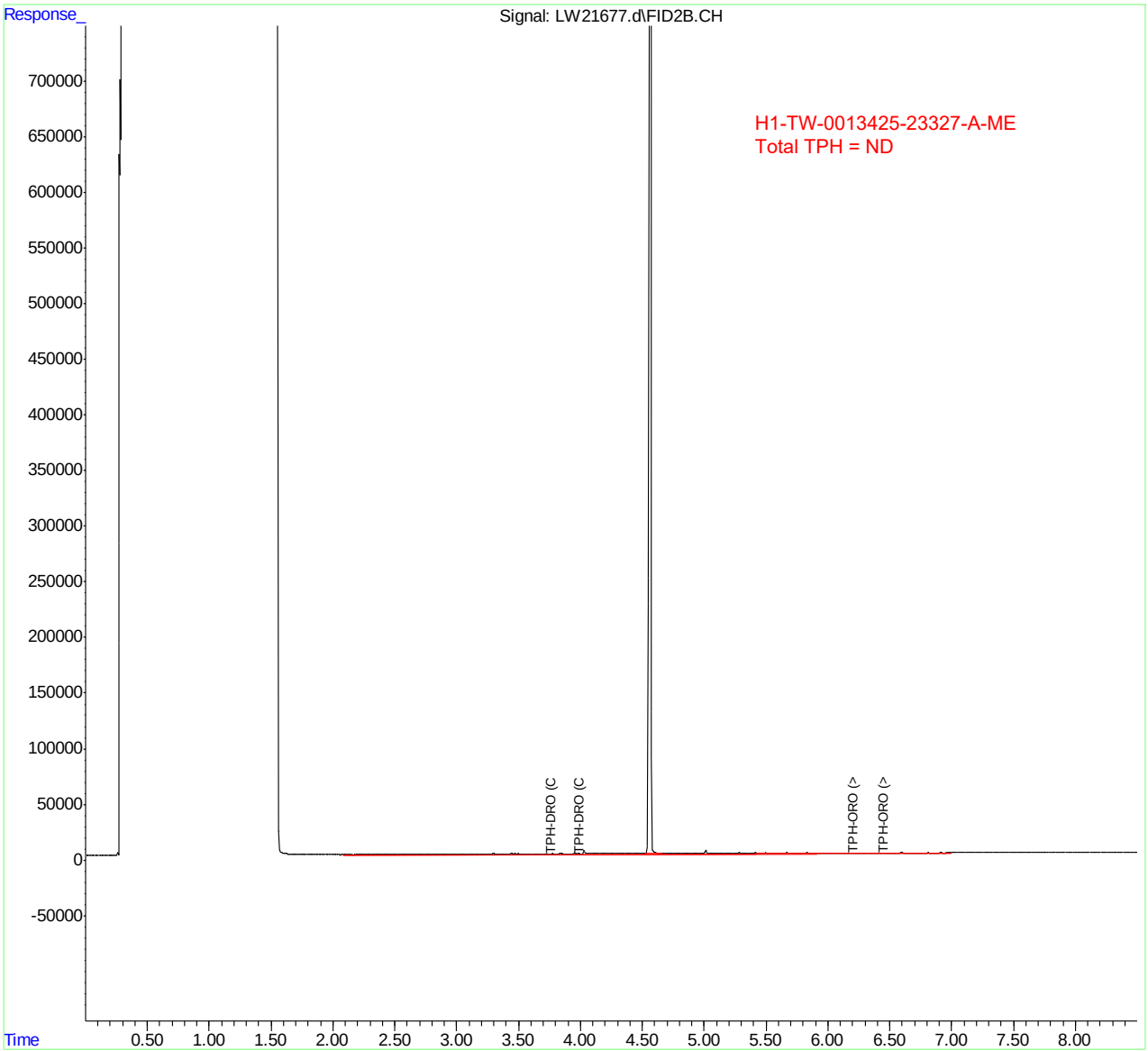
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021324\
Data File : LW21677.d
Signal(s) : FID2B.CH
Acq On : 14-Feb-24, 00:51:14
Operator : jackb
Sample : da61955-1
Misc : OP25105,GLW637,61.0,,,2,1
ALS Vial : 36 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 14 10:06:27 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16795.d
Signal(s) : FID1B.CH
Acq On : 16-Sep-23, 00:32:26
Operator : jackb
Sample : da58575-7
Misc : OP24335,GLW559,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 16 13:00:15 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.307	40219040	2009.114 ppm
Spiked Amount 2000.000 Range 10 - 130 Recovery = 100.46%			
Target Compounds			
1) H TPH-DRO (C10-C28)	2.120	2129513	156.501 ppm
2) H TPH-ORO (>C28-C40)	3.940	809440	88.887 ppm
3) H TPH-DRO (C10-C24)	1.900	1568793	117.224 ppm
4) H TPH-ORO (>C24-C40)	3.720	1164254	74.927 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.14 11

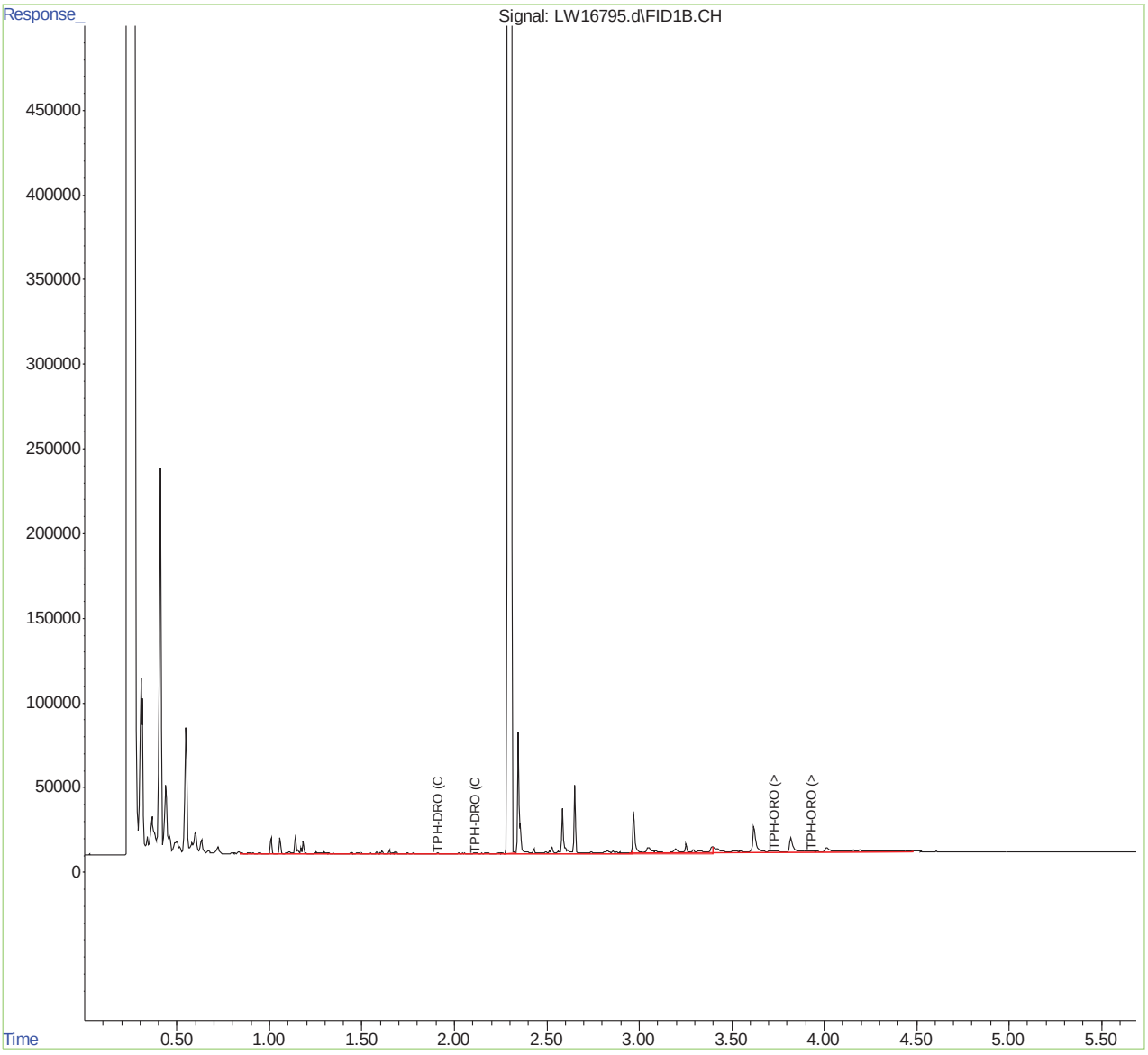
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16795.d
Signal(s) : FID1B.CH
Acq On : 16-Sep-23, 00:32:26
Operator : jackb
Sample : da58575-7
Misc : OP24335,GLW559,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

H3-TW-0013809-23155-A
DRO 117
ORO 74.9 J
Total TPH 191.9

Integration File: autoint1.e
Quant Time: Sep 16 13:00:15 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO090923.M Sat Sep 16 13:03:48 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074341.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:14 am
Operator : jackb
Sample : da62313-3
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 19 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:40:11 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.068	39419920	79.867 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	12245344	38.550 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	11483134	37.197 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	894731	6.393 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1289917	5.145 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

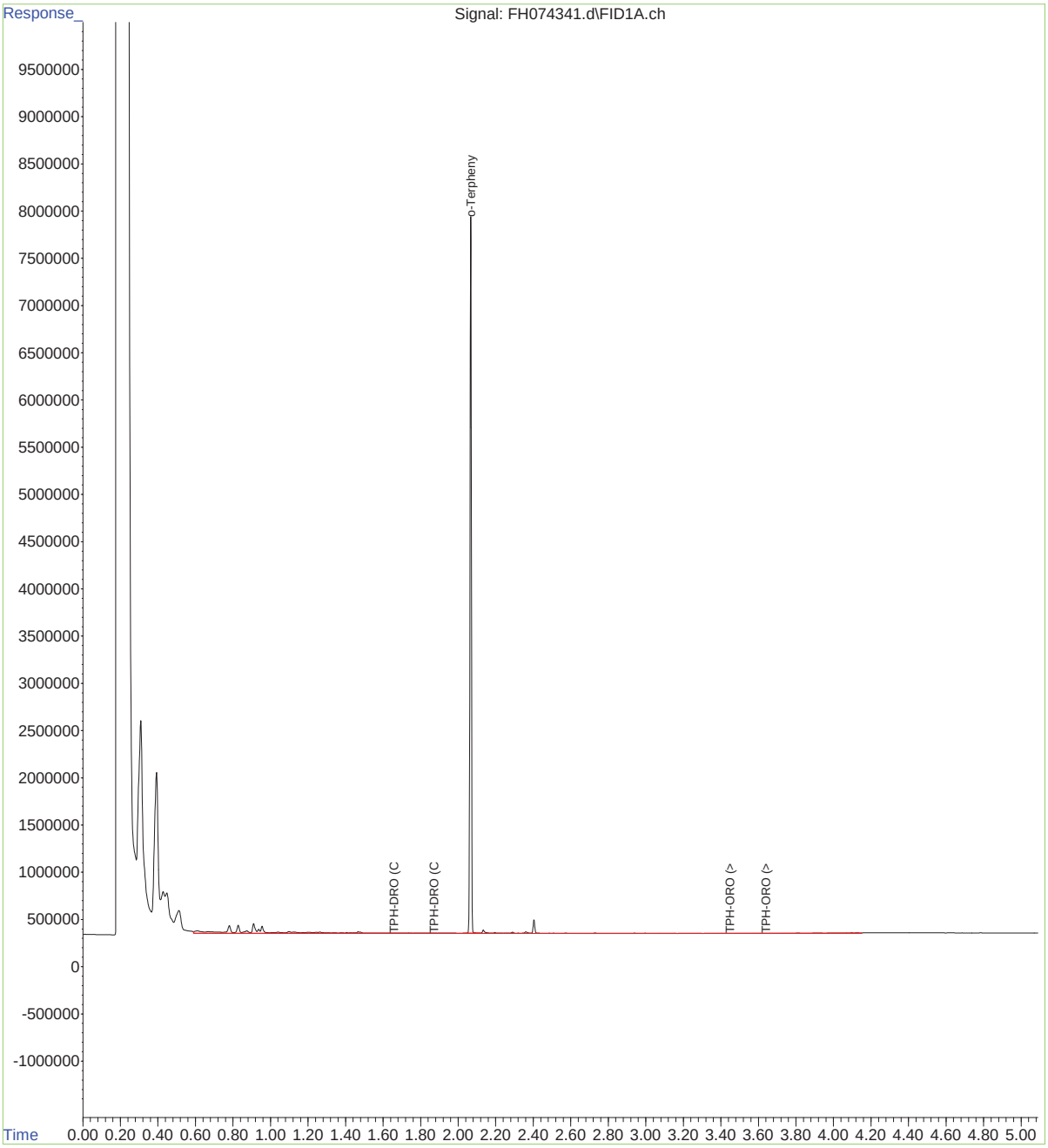
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074341.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:14 am
Operator : jackb
Sample : da62313-3
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 19 Sample Multiplier: 1

H3-TW-0013809-23155-A-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:40:11 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Tue Feb 27 12:18:40 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23609.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:59:17
Operator : jackb
Sample : DA62326-3
Misc : OP25221,GLW663,57.8,,,2.0,1
ALS Vial : 12 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 11 18:43:11 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
5) S	O-TERPHENYL	3.218	15303832	8.214 ppm
Spiked Amount	10.000	Range 70 - 130	Recovery =	82.14%
	Target Compounds			
1) H	TPH-DRO (C10-C28)	3.080	386552	0.287 ppm
2) H	TPH-ORO (>C28-C40)	4.880	150557	0.357 ppm
3) H	TPH-DRO (C10-C24)	2.880	330521	0.242 ppm
4) H	TPH-ORO (>C24-C40)	4.680	213272	0.268 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

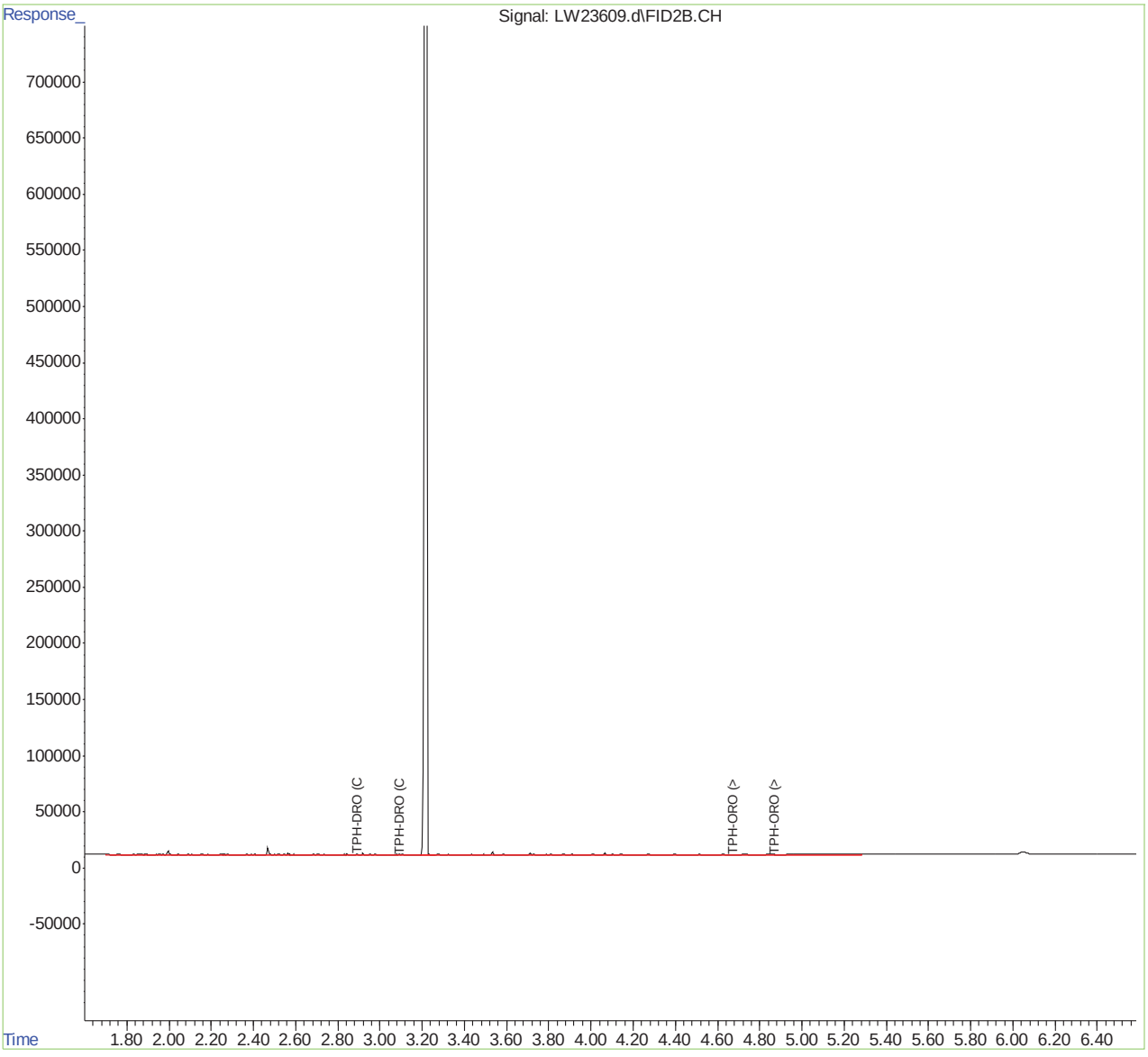
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23609.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:59:17
Operator : jackb
Sample : DA62326-3
Misc : OP25221,GLW663,57.8,,,2.0,1
ALS Vial : 12 Sample Multiplier: 1

H3-TW-0013809-23155-A-R1-MEQ
TPH-DRO 0.047 U
TPH-ORO 0.047 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 11 18:43:11 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Mon Mar 11 18:57:03 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16792.d
Signal(s) : FID1B.CH
Acq On : 16-Sep-23, 00:02:15
Operator : jackb
Sample : da58575-4
Misc : OP24335,GLW559,1020,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 16 12:59:51 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.304	31477811	1572.452	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 78.62%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.120	1593136	117.082	ppm	
2) H TPH-ORO (>C28-C40)	3.940	645503	70.885	ppm	
3) H TPH-DRO (C10-C24)	1.900	1150319	85.954	ppm	
4) H TPH-ORO (>C24-C40)	3.720	797283	51.310	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

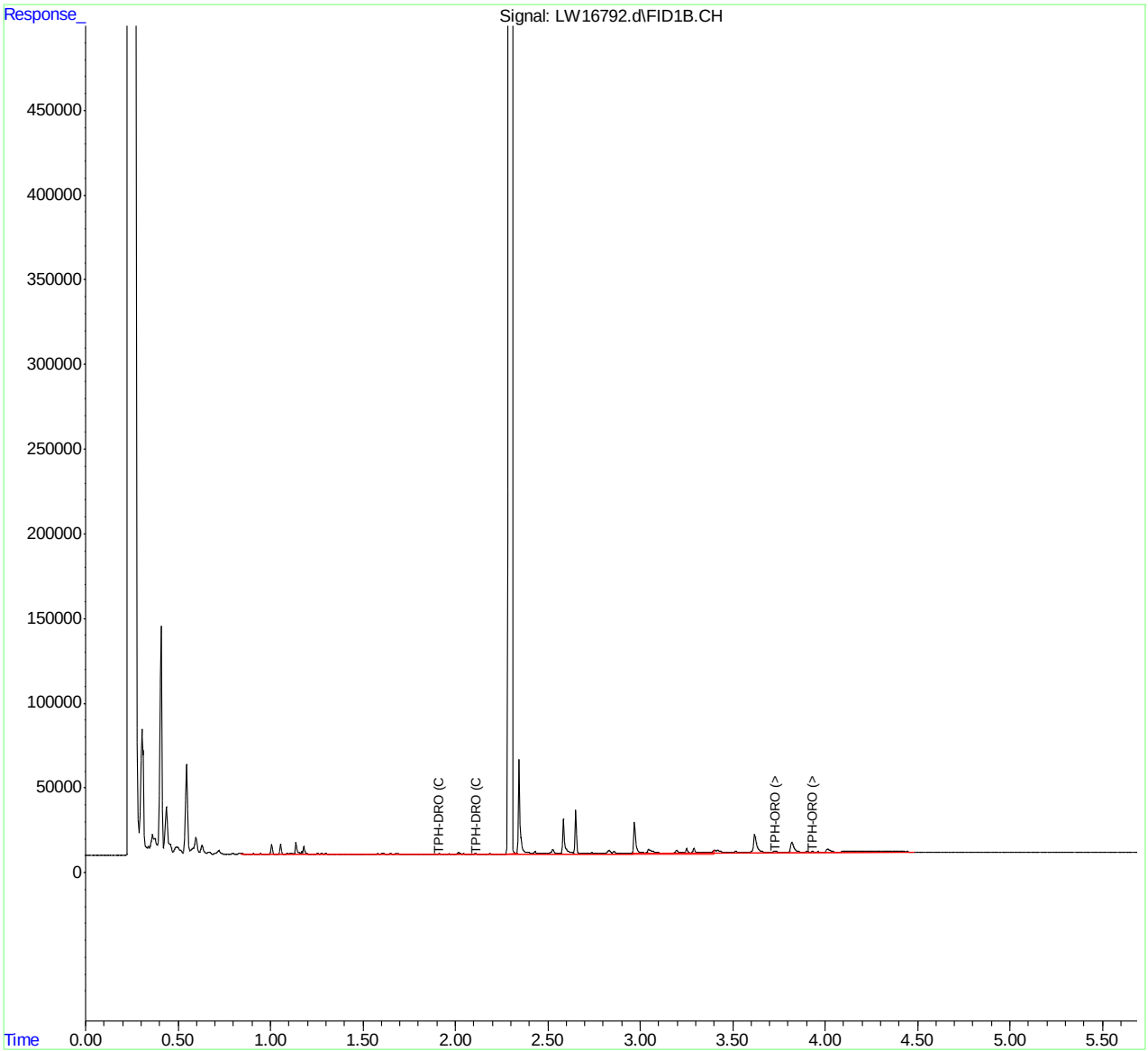
11.1.11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16792.d
Signal(s) : FID1B.CH
Acq On : 16-Sep-23, 00:02:15
Operator : jackb
Sample : da58575-4
Misc : OP24335,GLW559,1020,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 16 12:59:51 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16794.d
Signal(s) : FID1B.CH
Acq On : 16-Sep-23, 00:22:20
Operator : jackb
Sample : da58575-6
Misc : OP24335,GLW559,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 16 13:00:07 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.305	30334061	1515.317	ppm	
Spiked Amount 2000.000 Range 10 - 130 Recovery = 75.77%					
Target Compounds					
1) H TPH-DRO (C10-C28)	2.120	2216084	162.863	ppm	
2) H TPH-ORO (>C28-C40)	3.940	929032	102.020	ppm	
3) H TPH-DRO (C10-C24)	1.900	1555210	116.209	ppm	
4) H TPH-ORO (>C24-C40)	3.720	1379256	88.764	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.13 11

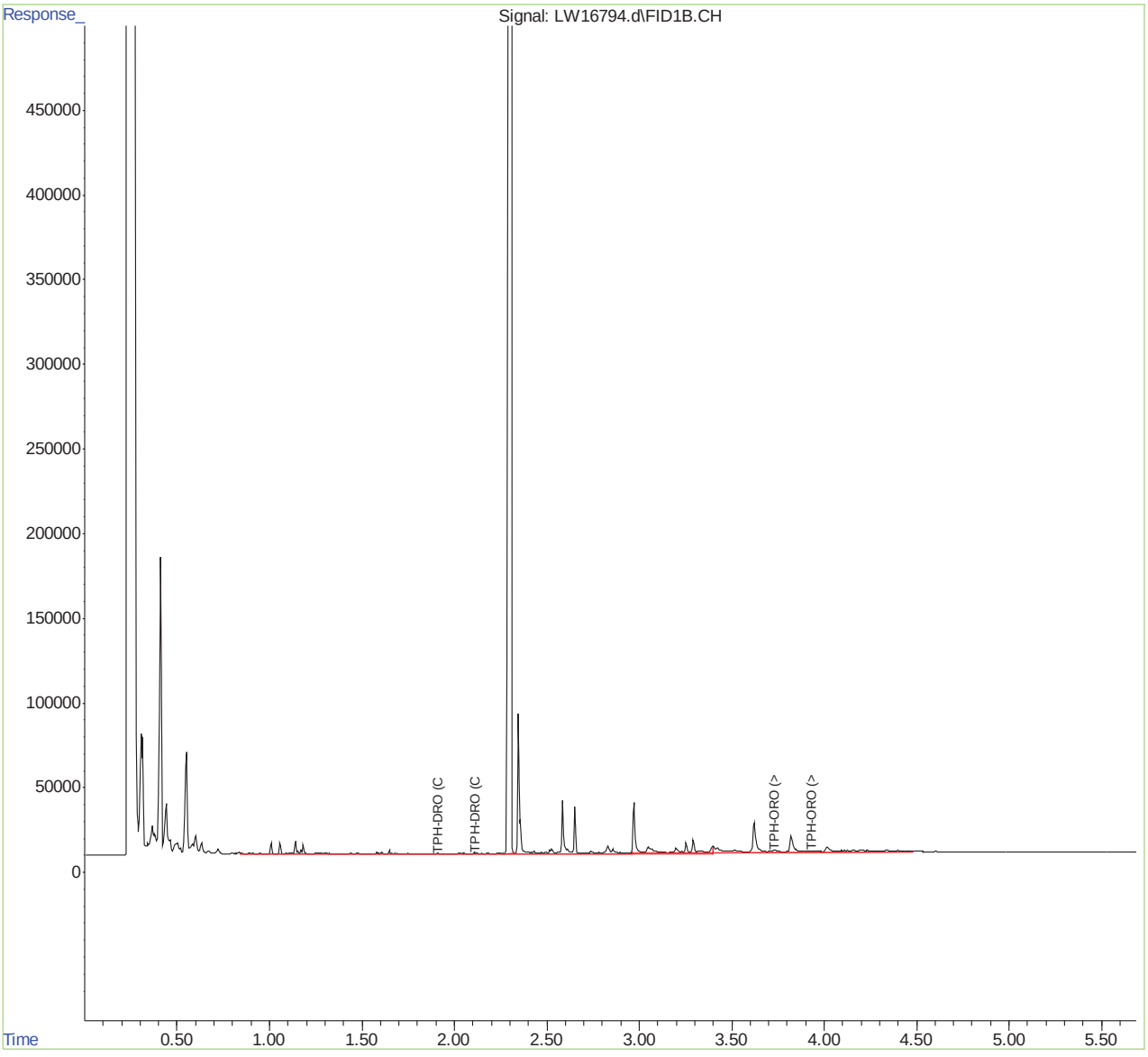
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16794.d
Signal(s) : FID1B.CH
Acq On : 16-Sep-23, 00:22:20
Operator : jackb
Sample : da58575-6
Misc : OP24335,GLW559,1030,,,1,1
ALS Vial : 0 Sample Multiplier: 1

H3-TW-0013834-23155-3-A
DRO 113
ORO 86.2
Total TPH 199.2

Integration File: autoint1.e
Quant Time: Sep 16 13:00:07 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO090923.M Sat Sep 16 13:03:45 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021524\
Data File : FH073341.d
Signal(s) : FID1A.ch
Acq On : 15 Feb 2024 2:12 pm
Operator : jackb
Sample : da61992-1
Misc : OP25123,GFH23840,1050,,,1,1
ALS Vial : 18 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 19 11:46:20 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
System Monitoring Compounds				
1) S	o-Terphenyl	2.101	25107076	42.239 ug/ml
Target Compounds				
2) H	TPH-DRO (C10-C28)	1.920	11775598	30.505 ug/ml
3) H	TPH-DRO (C10-C24)	1.700	9802858	25.696 ug/ml
4) H	TPH-ORO (>C28-C40)	3.740	1406462	7.340 ug/ml
5) H	TPH-ORO (>C24-C40)	3.520	3561812	10.255 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

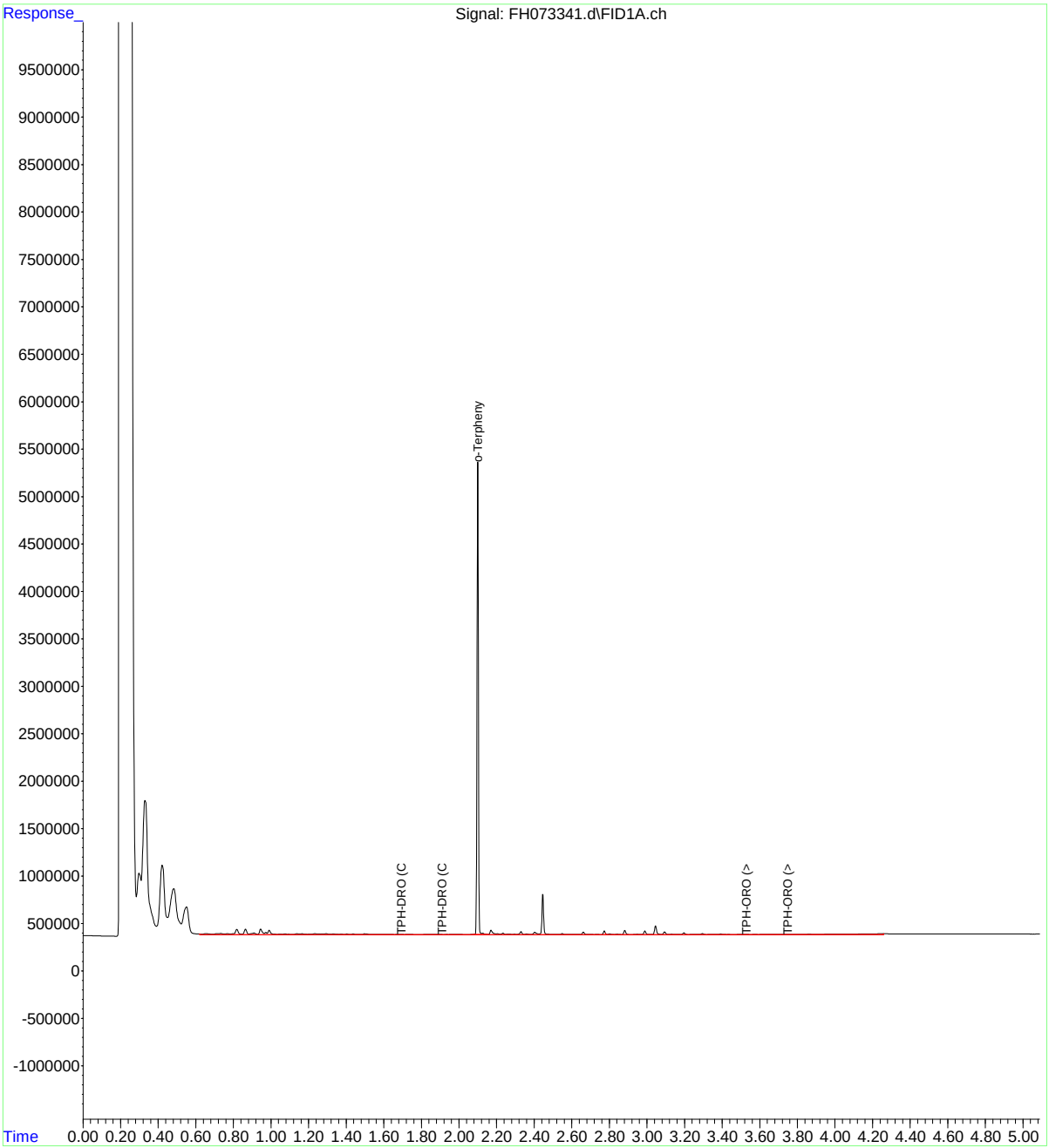
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021524\
Data File : FH073341.d
Signal(s) : FID1A.ch
Acq On : 15 Feb 2024 2:12 pm
Operator : jackb
Sample : da61992-1
Misc : OP25123,GFH23840,1050,,,1,1
ALS Vial : 18 Sample Multiplier: 1

H3-TW-0013834-23335-A
Total TPH = ND

Integration File: autoint1.e
Quant Time: Feb 19 11:46:20 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021424\
Data File : LW21749.d
Signal(s) : FID2B.CH
Acq On : 15-Feb-24, 06:46:46
Operator : jackb
Sample : da61994-1
Misc : OP25122,GLW638,60.7,,,2,1
ALS Vial : 46 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 15 12:16:56 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.564	22096810	9.296 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 92.96%	
Target Compounds			
1) H TPH-DRO (C10-C28)	4.000	1129328	0.670 ppm
2) H TPH-ORO (>C28-C40)	6.460	146775	0.216 ppm
3) H TPH-DRO (C10-C24)	3.750	790799	0.478 ppm m
4) H TPH-ORO (>C24-C40)	6.210	141310	0.112 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

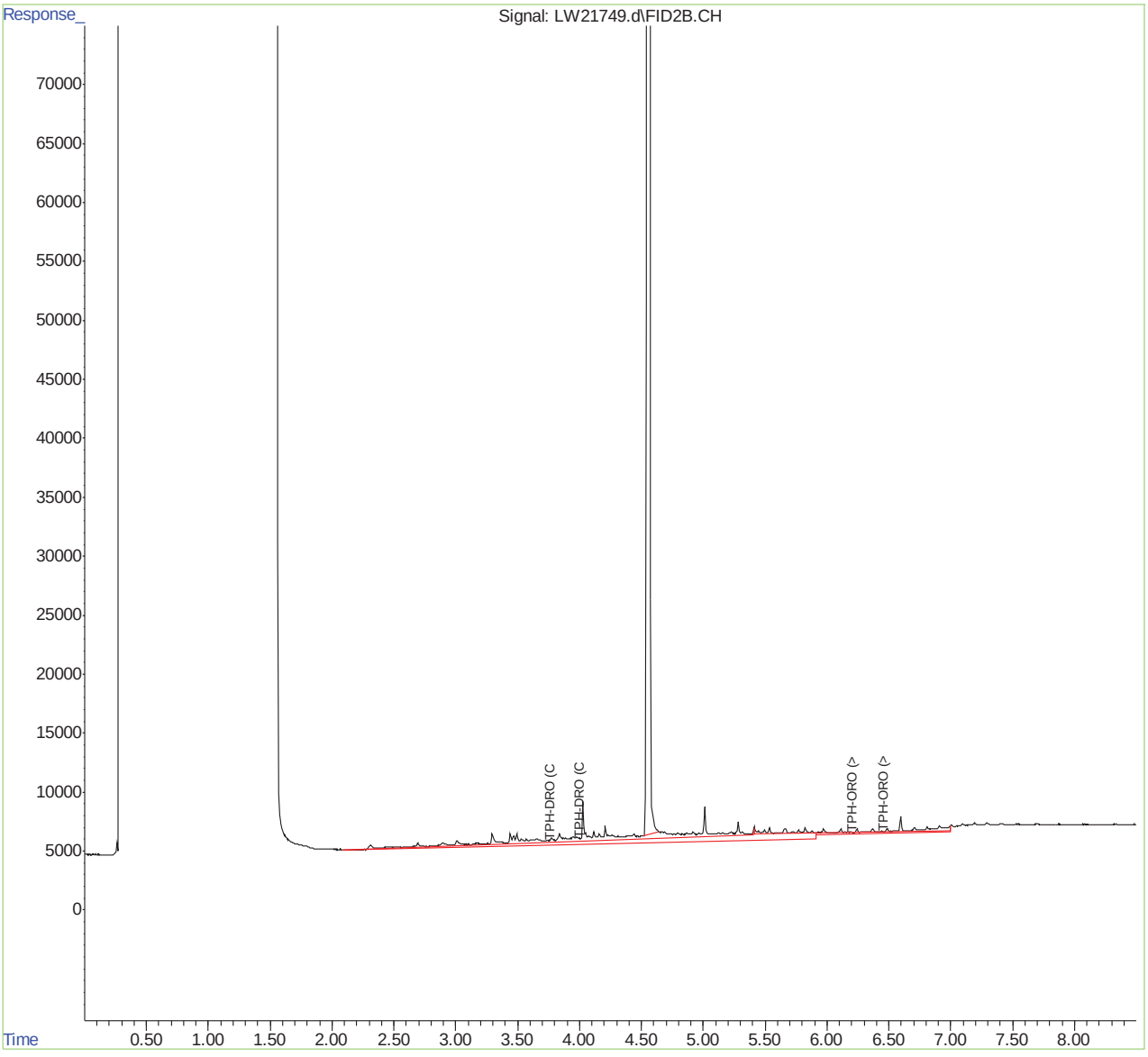
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\021424\
Data File : LW21749.d
Signal(s) : FID2B.CH
Acq On : 15-Feb-24, 06:46:46
Operator : jackb
Sample : da61994-1
Misc : OP25122,GLW638,60.7,,,2,1
ALS Vial : 46 Sample Multiplier: 1

H3-TW-0013834-23335-A-ME
TPH-DRO 0.045 U
TPH-ORO 0.045 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 15 12:16:56 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074344.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:39 am
Operator : jackb
Sample : da62315-1
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 22 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:40:17 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.068	37394068	75.763 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	8184294	25.765 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	7783421	25.212 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	944571	6.749 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1268488	5.060 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

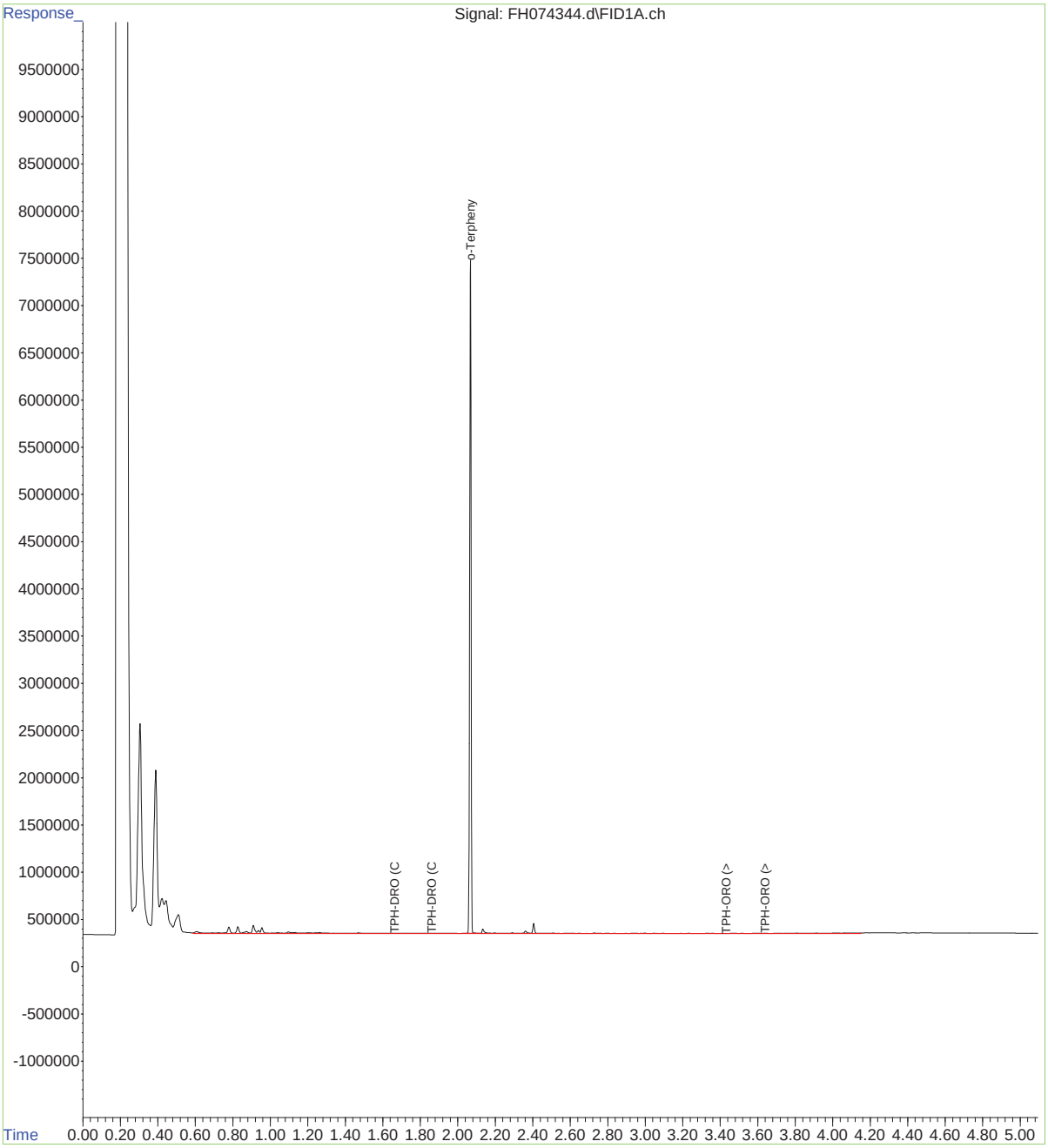
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074344.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:39 am
Operator : jackb
Sample : da62315-1
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 22 Sample Multiplier: 1

H3-TW-0013834-23155-A-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:40:17 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Tue Feb 27 12:18:49 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22468.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 05:56:37
Operator : jackb
Sample : da62328-1
Misc : OP25220,GLW649,57.4,,,2,1
ALS Vial : 11 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 09 13:51:26 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	4.566	24946770	10.495	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 104.95%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	3.750	921377	0.556	ppm	
4) H TPH-ORO (>C24-C40)	6.210	67650	0.053	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

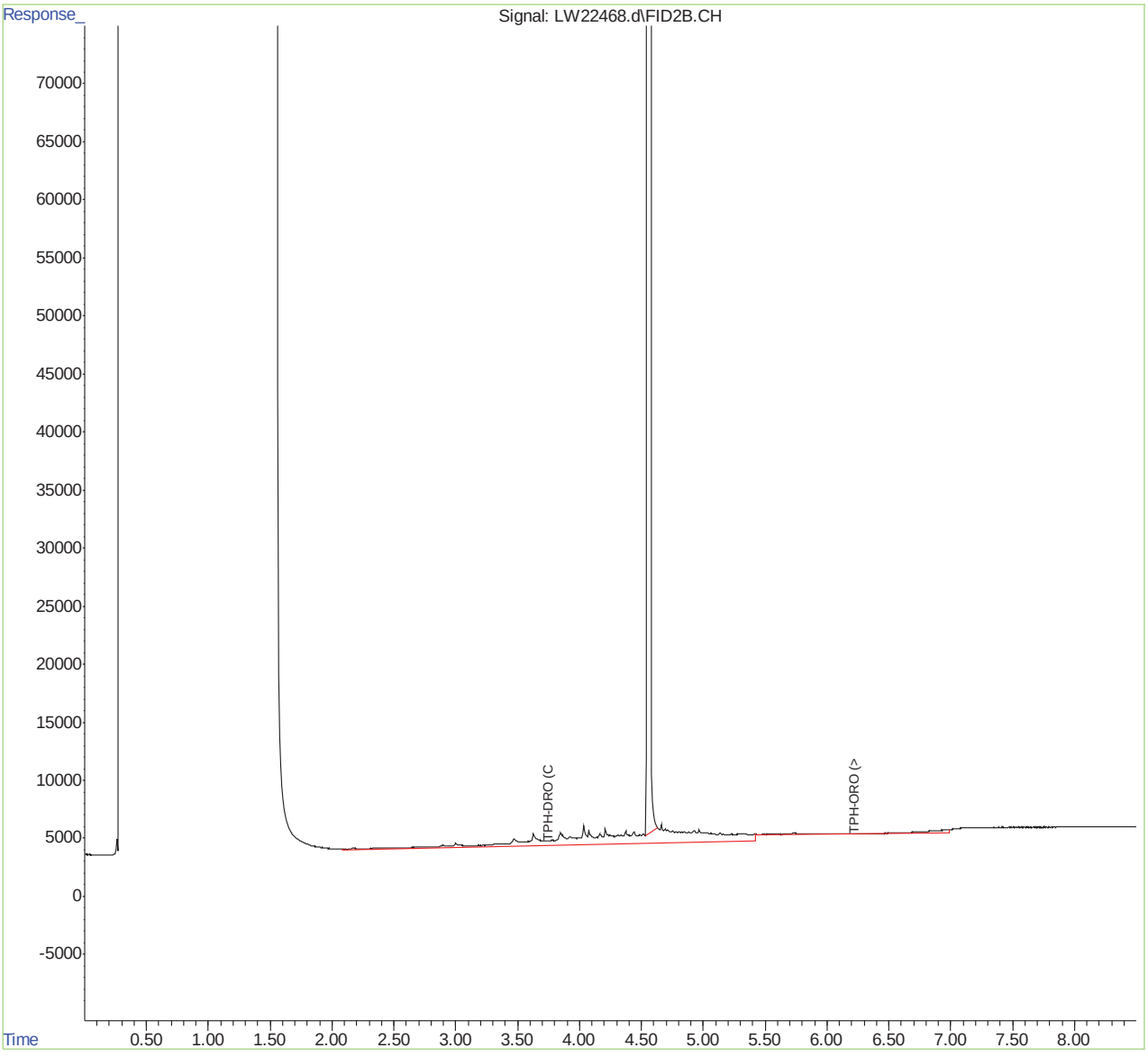
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22468.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 05:56:37
Operator : jackb
Sample : da62328-1
Misc : OP25220,GLW649,57.4,,,2,1
ALS Vial : 11 Sample Multiplier: 1

H3-TW-0013834-23155-A-R1-MEQ
TPH-DRO 0.048 U
TPH-ORO 0.048 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 09 13:51:26 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-020824.M Sat Mar 09 14:09:35 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16791.d
Signal(s) : FID1B.CH
Acq On : 15-Sep-23, 23:52:06
Operator : jackb
Sample : da58575-3
Misc : OP24335,GLW559,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 16 12:59:36 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.305	35740112	1785.373	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 89.27%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.120	1793589	131.814	ppm	
2) H TPH-ORO (>C28-C40)	3.940	807316	88.654	ppm	
3) H TPH-DRO (C10-C24)	1.900	1280594	95.689	ppm	
4) H TPH-ORO (>C24-C40)	3.720	1058904	68.147	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.10 11

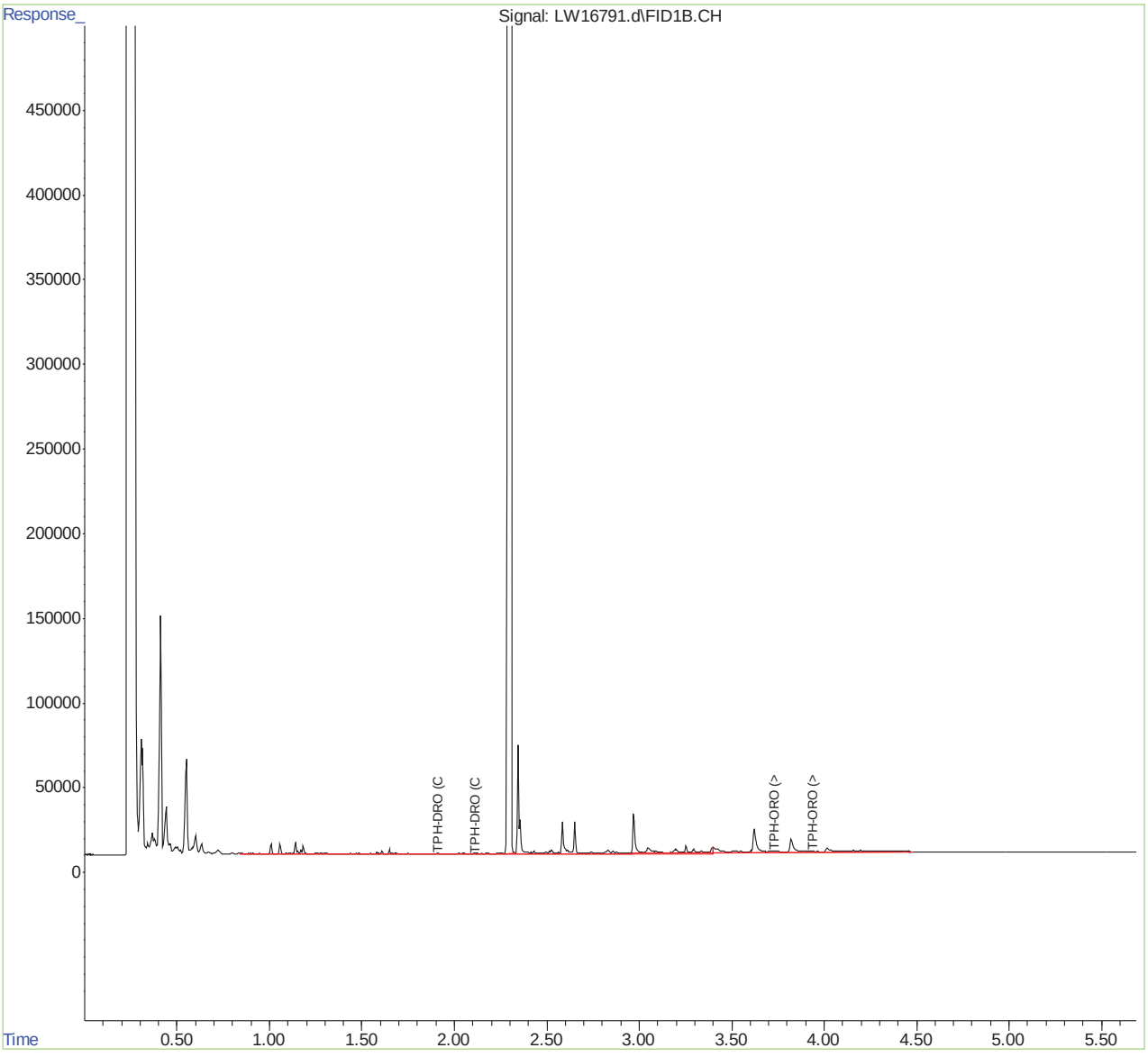
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\091523\
Data File : LW16791.d
Signal(s) : FID1B.CH
Acq On : 15-Sep-23, 23:52:06
Operator : jackb
Sample : da58575-3
Misc : OP24335,GLW559,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

H3-TW-0013866-23155-A
DRO 95.7
ORO 68.1 J
Total TPH 163.8

Integration File: autoint1.e
Quant Time: Sep 16 12:59:36 2023
Quant Method : C:\msdchem\1\methods\DRO090923.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Sep 09 15:29:59 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074339.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:57 am
Operator : jackb
Sample : da62313-1
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 17 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:40:07 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
System Monitoring Compounds				
1) S	o-Terphenyl	2.069	31993557	64.821 ug/ml
Target Compounds				
2) H	TPH-DRO (C10-C28)	1.870	7546580	23.758 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	7030982	22.775 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	913349	6.526 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1276854	5.093 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

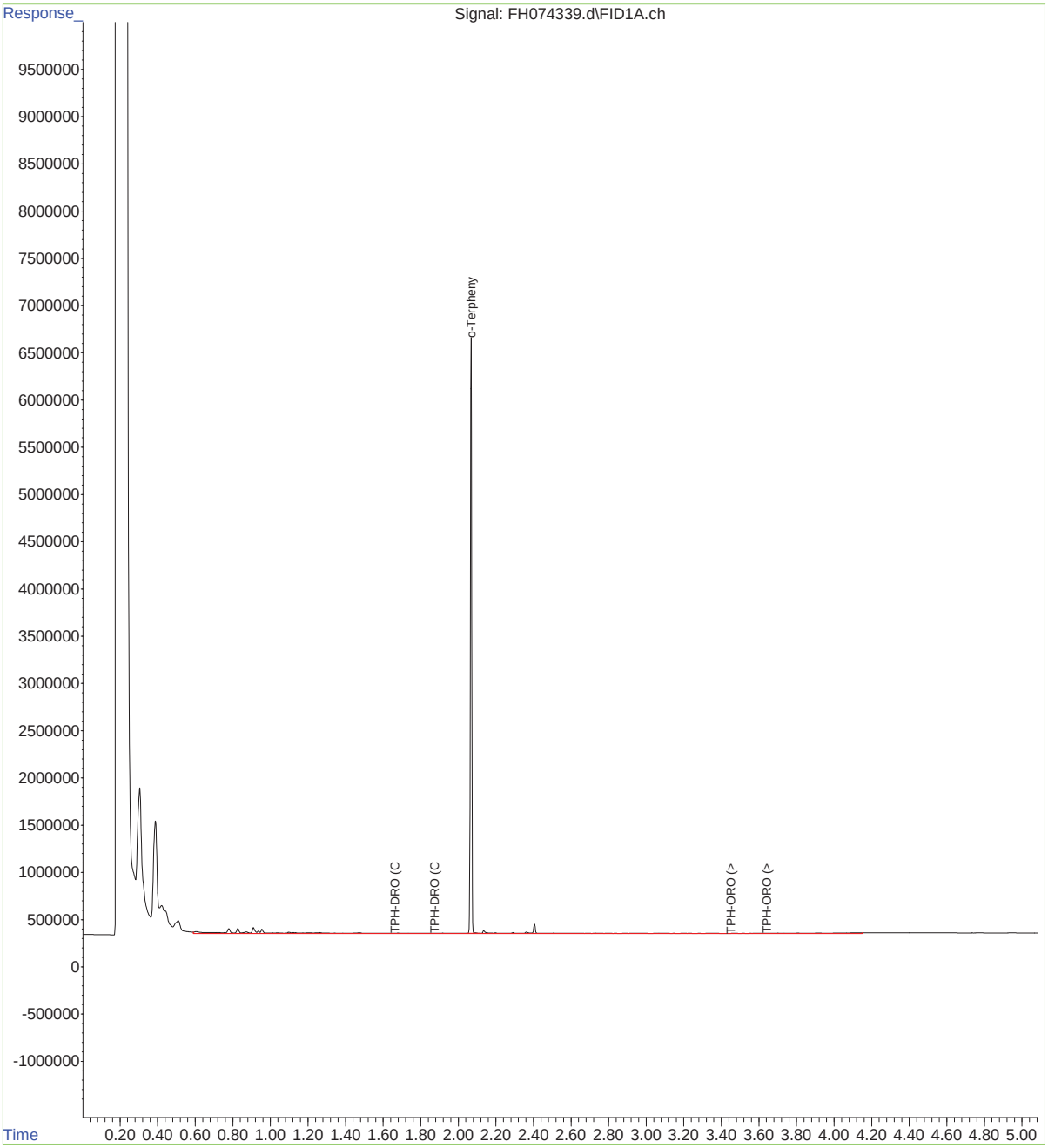
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074339.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 2:57 am
Operator : jackb
Sample : da62313-1
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 17 Sample Multiplier: 1

H3-TW-0013866-23155-A-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:40:07 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Tue Feb 27 12:18:34 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23607.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:35:52
Operator : jackb
Sample : DA62326-1
Misc : OP25221,GLW663,58.0,,,2.0,1
ALS Vial : 10 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 11 18:43:07 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.220	15031688	8.063 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 80.63%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	359416	0.267 ppm
2) H TPH-ORO (>C28-C40)	4.880	163591	0.388 ppm
3) H TPH-DRO (C10-C24)	2.880	291018	0.213 ppm
4) H TPH-ORO (>C24-C40)	4.680	232914	0.293 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

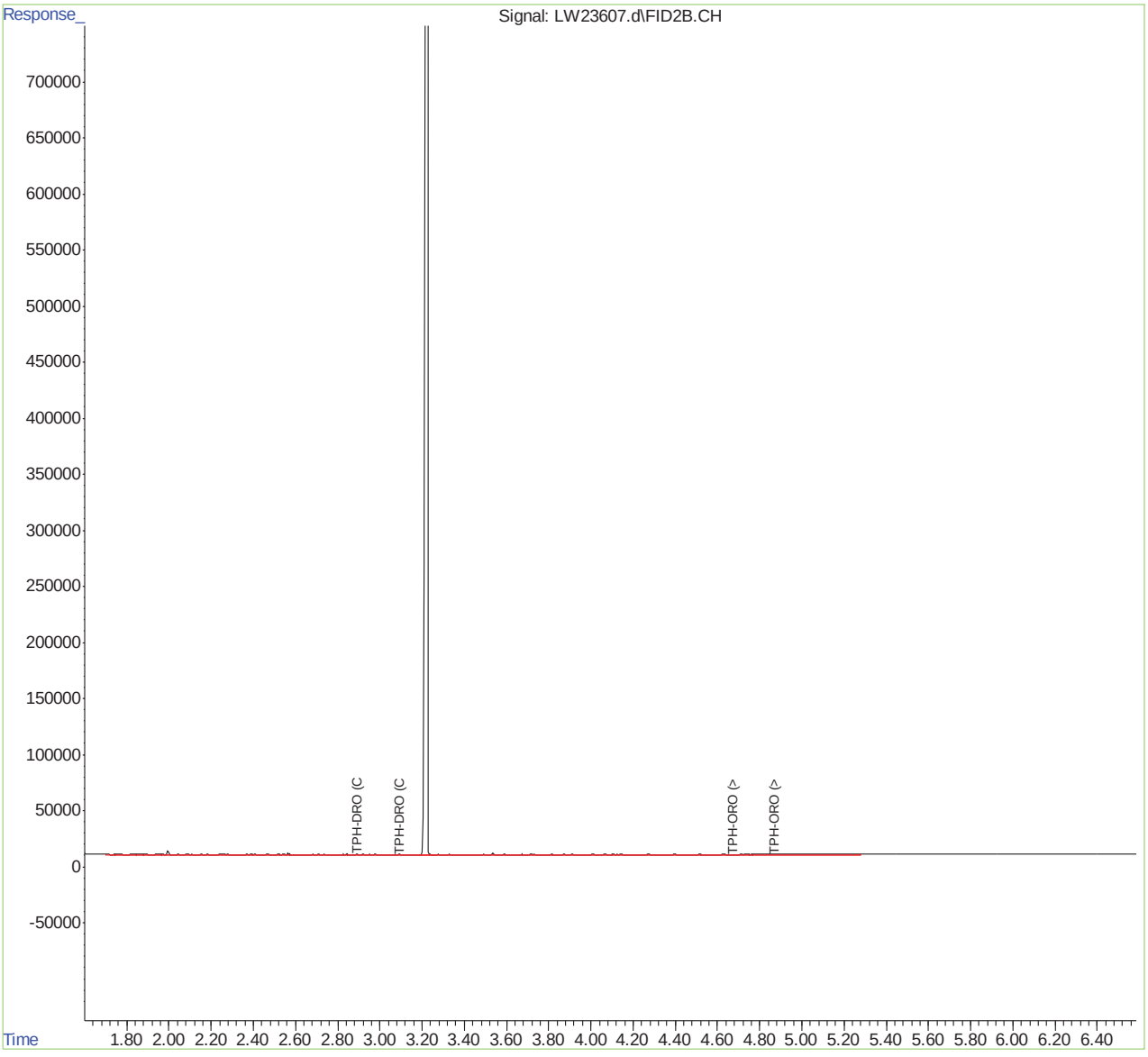
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : LW23607.d
Signal(s) : FID2B.CH
Acq On : 10-Mar-24, 18:35:52
Operator : jackb
Sample : DA62326-1
Misc : OP25221,GLW663,58.0,,,2.0,1
ALS Vial : 10 Sample Multiplier: 1

H3-TW-0013866-23155-A-R1-MEQ
TPH-DRO 0.047 U
TPH-ORO 0.047 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 11 18:43:07 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Mon Mar 11 18:56:55 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh1012923\
Data File : FH069425.D
Signal(s) : FID1A.ch
Acq On : 29 Oct 2023 10:38 pm
Operator : jackb
Sample : da59670-1
Misc : OP24566,GFH23749,1040,,,1,1
ALS Vial : 20 Sample Multiplier: 1

I1-TW-0014063-23130-A
DRO 83.8
ORO 68.7 J
Total TPH 152.5

Integration File: autoint1.e
Quant Time: Oct 30 13:13:26 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.230f	649657817	1256.214	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	2.020	46692923	125.710	ug/ml
3) H	TPH-DRO (C10-C24)	1.800	32087101	87.100	ug/ml
4) H	TPH-ORO (>C28-C40)	3.830	15074694	86.239	ug/ml
5) H	TPH-ORO (>C24-C40)	3.610	22191757	71.431	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

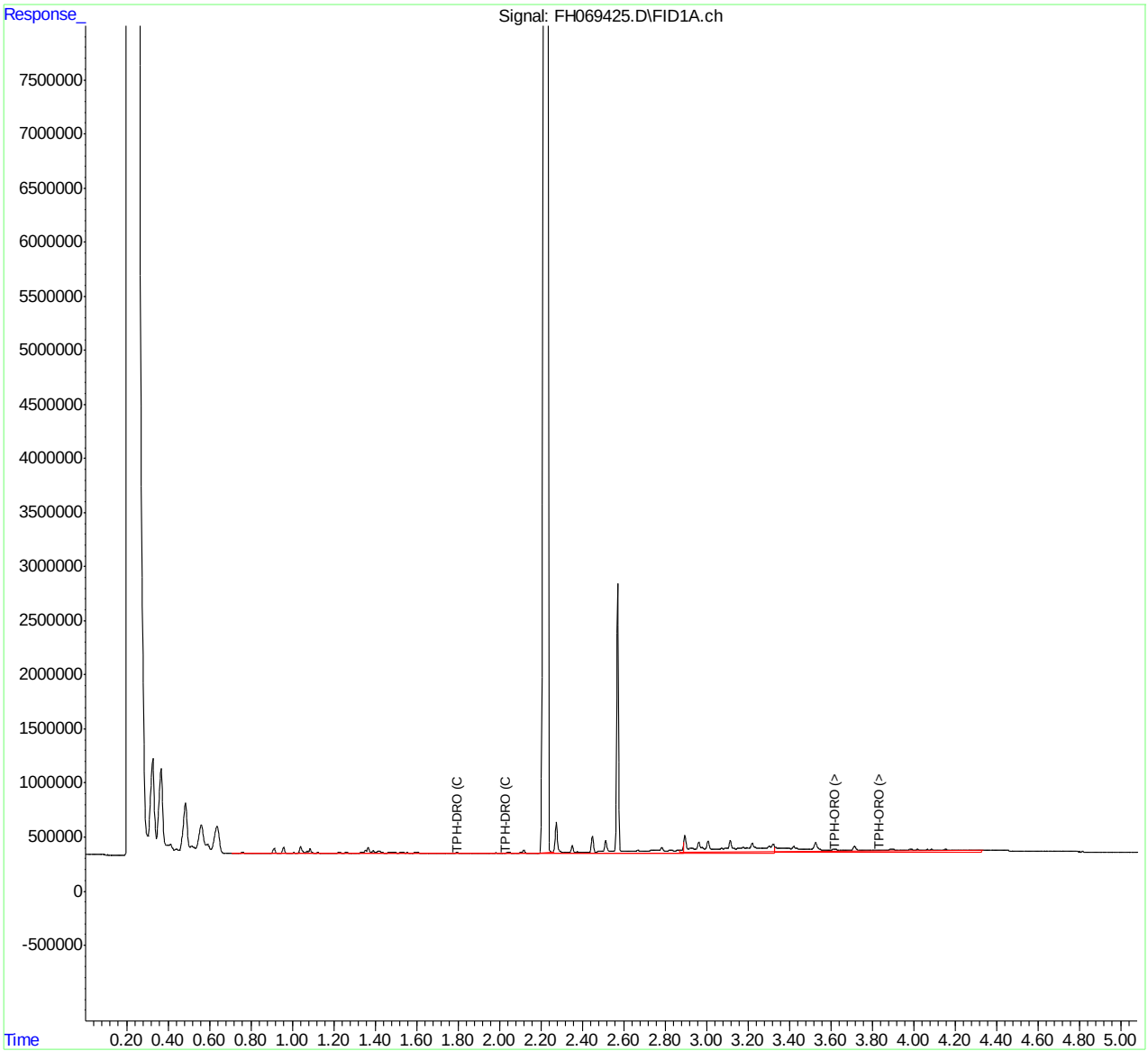
11.1.4

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2023\10.23\fh1012923\
Data File : FH069425.D
Signal(s) : FID1A.ch
Acq On : 29 Oct 2023 10:38 pm
Operator : jackb
Sample : da59670-1
Misc : OP24566,GFH23749,1040,,,1,1
ALS Vial : 20 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 30 13:13:26 2023
Quant Method : C:\msdchem\1\METHODS\DRO-092023.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Sep 20 16:12:50 2023
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074346.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:55 am
Operator : jackb
Sample : da62317-1
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 24 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 21:40:21 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.069	41934202	84.962 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	10518677	33.114 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	10013201	32.435 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	900336	6.433 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1195762	4.770 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.1

7

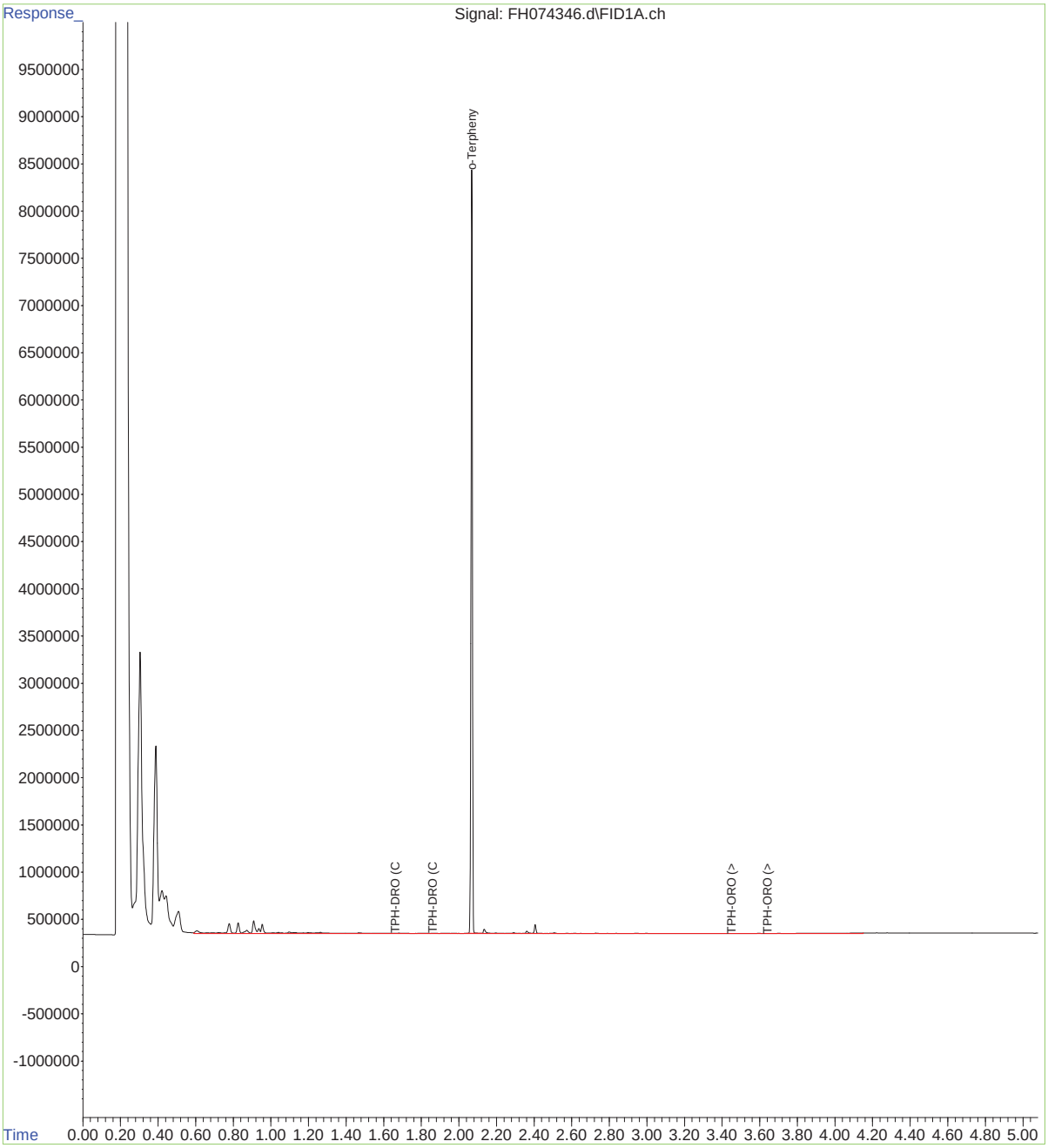
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : FH074346.d
Signal(s) : FID1A.ch
Acq On : 25 Feb 2024 3:55 am
Operator : jackb
Sample : da62317-1
Misc : OP25214,GFH23859,1050,,,1,1
ALS Vial : 24 Sample Multiplier: 1

I1-TW-0014063-23130-A-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 25 21:40:21 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22472.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 06:51:43
Operator : jackb
Sample : da62330-1
Misc : OP25220,GLW649,57.5,,,2,1
ALS Vial : 13 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 09 13:53:15 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	4.562	19882566	8.365	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 83.65%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	3.750	1118827	0.676	ppm	m
4) H TPH-ORO (>C24-C40)	6.210	233898	0.185	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

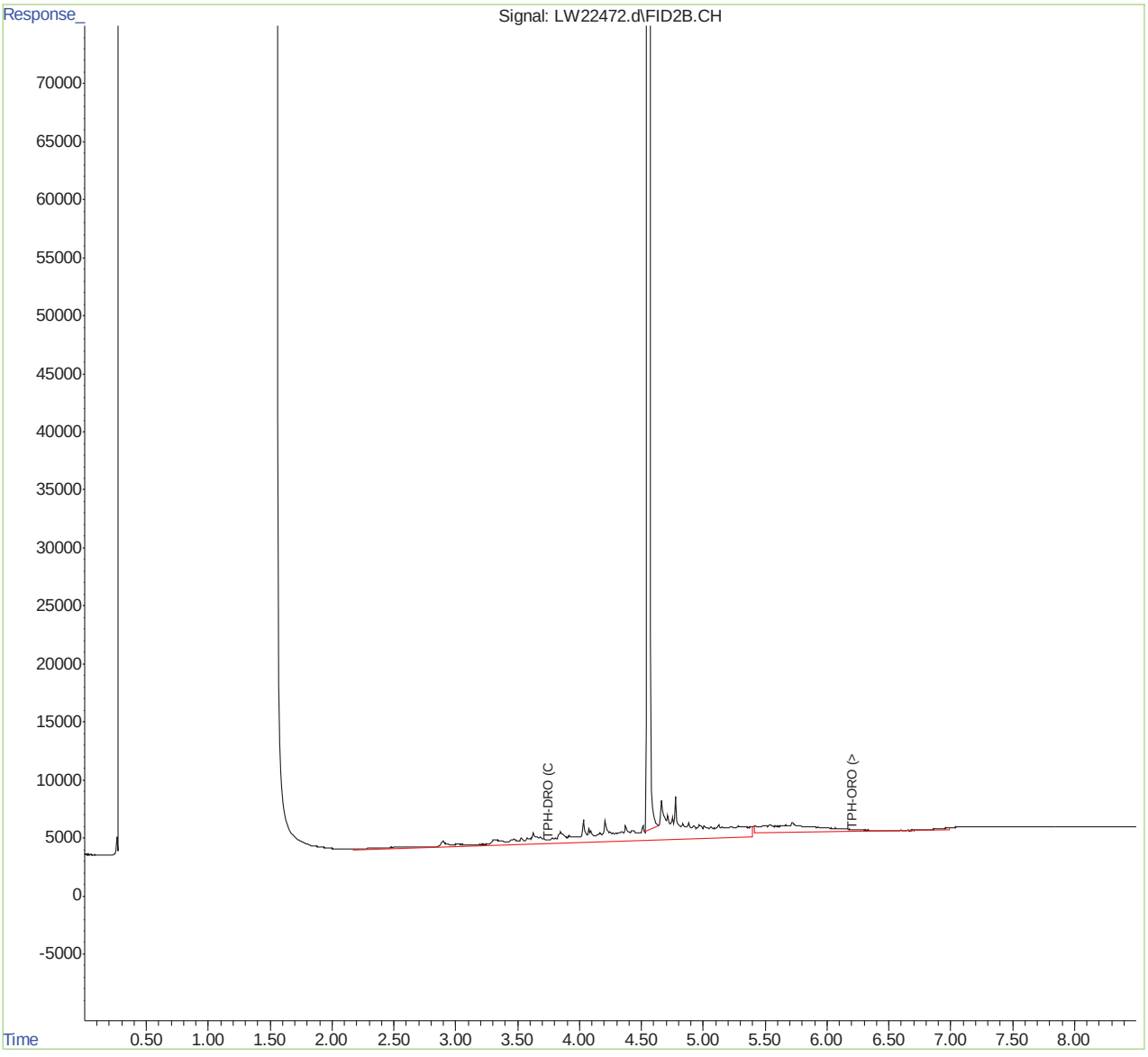
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022424\
Data File : LW22472.d
Signal(s) : FID2B.CH
Acq On : 26-Feb-24, 06:51:43
Operator : jackb
Sample : da62330-1
Misc : OP25220,GLW649,57.5,,,2,1
ALS Vial : 13 Sample Multiplier: 1

I1-TW-0014063-23130-A-R1-MEQ
TPH-DRO 0.048 U
TPH-ORO 0.048 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 09 13:53:15 2024
Quant Method : C:\msdchem\1\methods\DROLVI-020824.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Feb 08 17:58:28 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010524\
Data File : FH070362.d
Signal(s) : FID1A.ch
Acq On : 5 Jan 2024 9:50 pm
Operator : michaelb
Sample : da61100-5
Misc : OP24817,GFH23788,1010,,,1,1
ALS Vial : 16 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 07 14:05:24 2024
Quant Method : C:\msdchem\1\methods\DRO-122823.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 04 16:49:54 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.171	852767192	1518.665	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.980	47901347	123.167	ug/ml
3) H	TPH-DRO (C10-C24)	1.760	29276697	76.283	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	12873860	52.974	ug/mlm
5) H	TPH-ORO (>C24-C40)	3.570	31705691	75.961	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.17 11

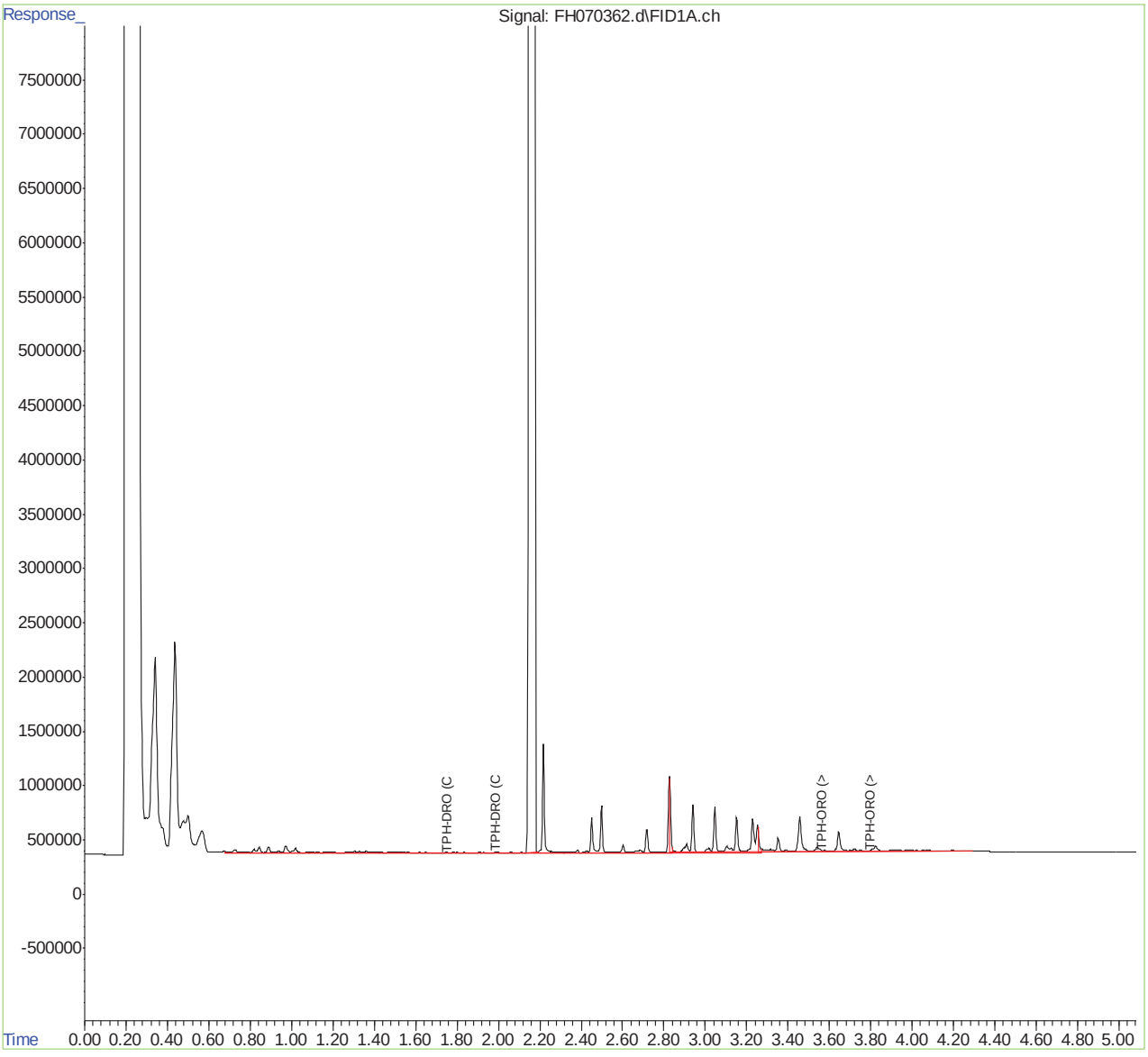
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010524\
Data File : FH070362.d
Signal(s) : FID1A.ch
Acq On : 5 Jan 2024 9:50 pm
Operator : michaelb
Sample : da61100-5
Misc : OP24817,GFH23788,1010,,,1,1
ALS Vial : 16 Sample Multiplier: 1

D2-TW-0008281-23337-N
DRO 75.5 J
ORO 75.2 J
Total TPH 150.7

Integration File: autoint1.e
Quant Time: Jan 07 14:05:24 2024
Quant Method : C:\msdchem\1\methods\DRO-122823.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 04 16:49:54 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.17
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010524\
Data File : LW19121.d
Signal(s) : FID2B.CH
Acq On : 05-Jan-24, 23:12:42
Operator : jackb
Sample : da61102-5
Misc : OP24815,GLW601,57.4,,,2,1
ALS Vial : 13 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 07 15:57:03 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.652	18353050	8.899 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 88.99%	
Target Compounds			
1) H TPH-DRO (C10-C28)	4.160	913446	0.585 ppm
2) H TPH-ORO (>C28-C40)	6.510	260384	0.353 ppm
3) H TPH-DRO (C10-C24)	3.920	677286	0.457 ppm
4) H TPH-ORO (>C24-C40)	6.270	509785	0.391 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

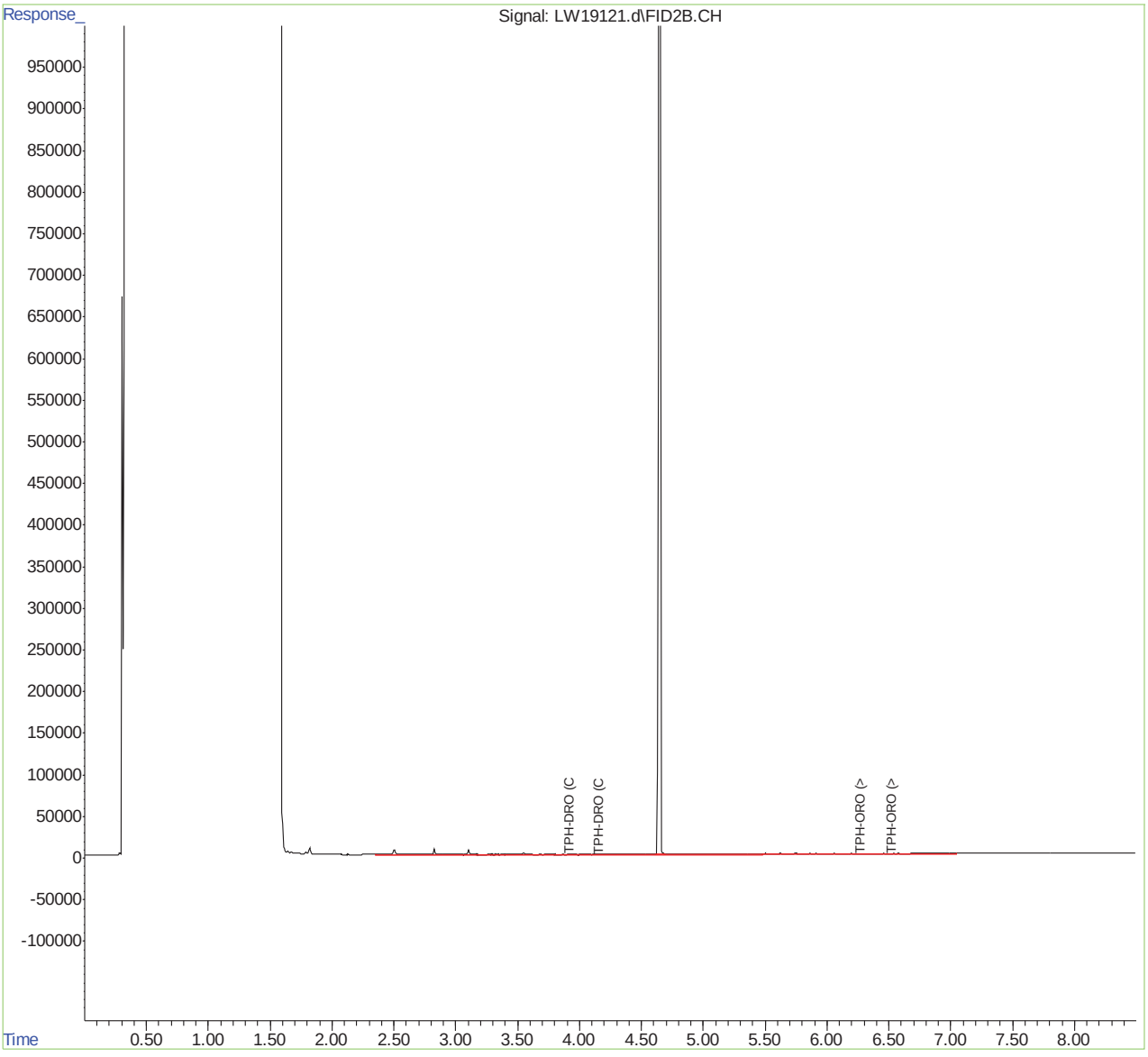
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010524\
Data File : LW19121.d
Signal(s) : FID2B.CH
Acq On : 05-Jan-24, 23:12:42
Operator : jackb
Sample : da61102-5
Misc : OP24815,GLW601,57.4,,,2,1
ALS Vial : 13 Sample Multiplier: 1

D2-TW-0008281-23337-N-ME
DRO 48 U
ORO 48 U
Total TPH 48 U

Integration File: autoint1.e
Quant Time: Jan 07 15:57:03 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-102523.M Sun Jan 07 16:47:25 2024 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074944.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 3:43 am
Operator : jackb
Sample : da62504-13
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 46 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:36:23 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.337	44166794	95.762	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	14889768	49.107	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2717743	11.079	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.13
7

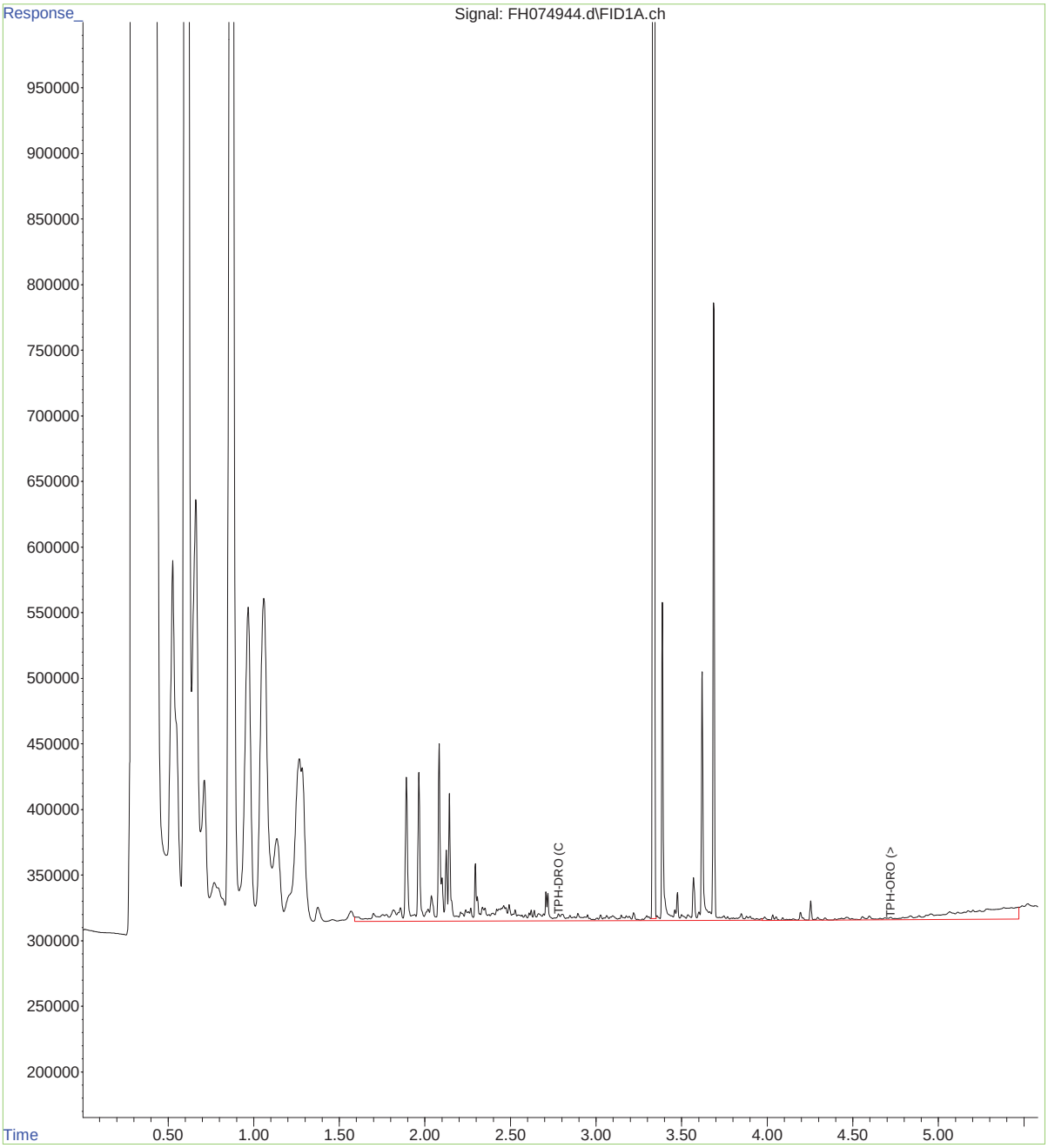
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074944.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 3:43 am
Operator : jackb
Sample : da62504-13
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 46 Sample Multiplier: 1

D2-TW-0008281-23337-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:36:23 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22930.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 03:37:29
Operator : jackb
Sample : DA62515-13
Misc : OP25270,GLW655,57.9,,,2,1
ALS Vial : 27 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 08:29:51 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.288	16879064	9.090 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 90.90%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	371242	0.275 ppm
2) H TPH-ORO (>C28-C40)	4.880	125632	0.298 ppm m
3) H TPH-DRO (C10-C24)	2.880	306291	0.224 ppm
4) H TPH-ORO (>C24-C40)	4.680	354483	0.446 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

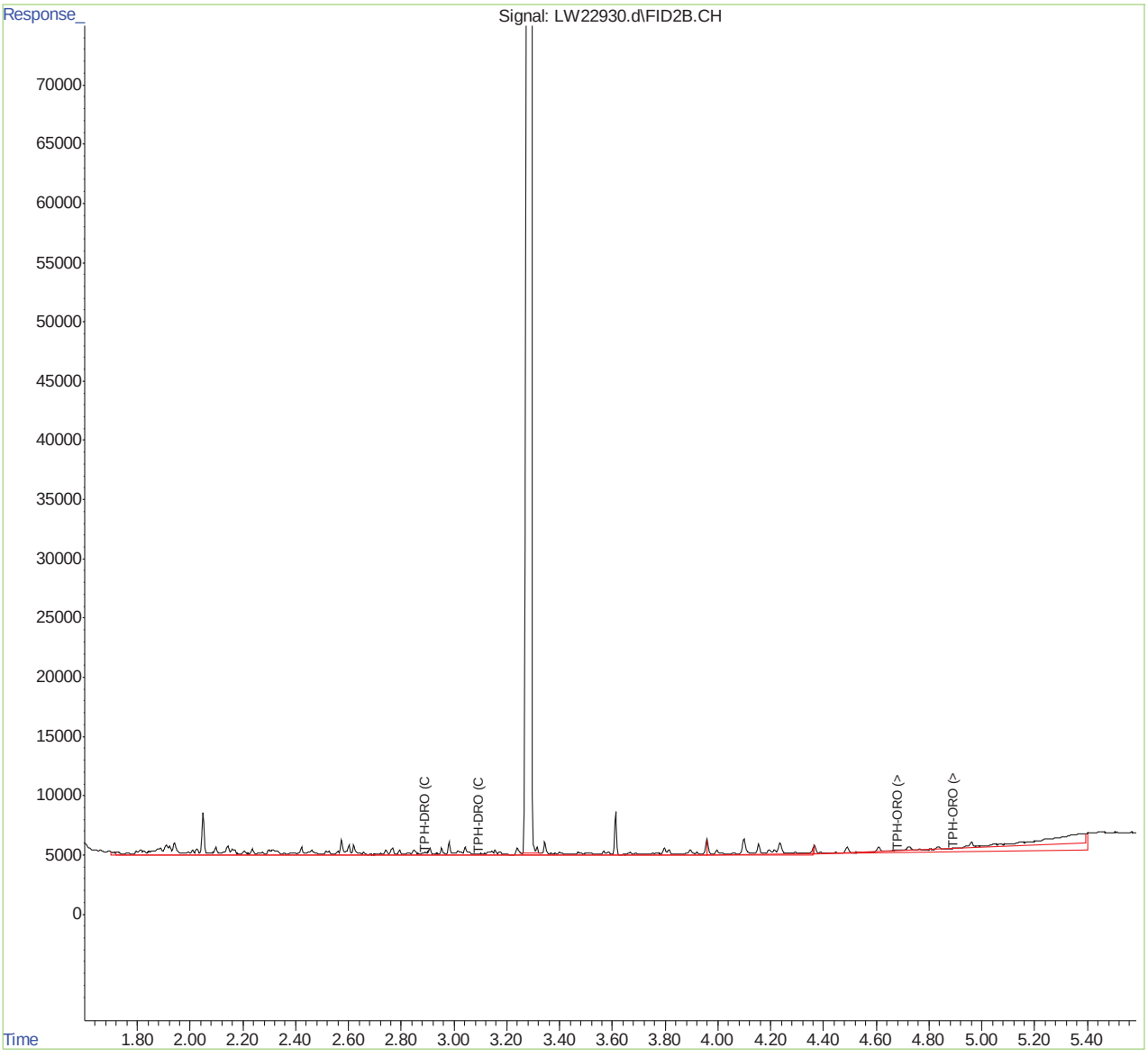
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22930.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 03:37:29
Operator : jackb
Sample : DA62515-13
Misc : OP25270,GLW655,57.9,,,2,1
ALS Vial : 27 Sample Multiplier: 1

D2-TW-0008281-23337-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 04 08:29:51 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010924\
Data File : FH070674.d
Signal(s) : FID1A.ch
Acq On : 10 Jan 2024 8:55 am
Operator : jackb
Sample : da61143-13
Misc : OP24839,GFH23800,1050,,,1,1
ALS Vial : 67 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 11 12:45:17 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.167	622945807	1032.588	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.940	40461718	104.817	ug/ml
3) H	TPH-DRO (C10-C24)	1.720	33448464	87.678	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	16715656	87.232	ug/mlm
5) H	TPH-ORO (>C24-C40)	3.570	26238354	75.544	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.32

11

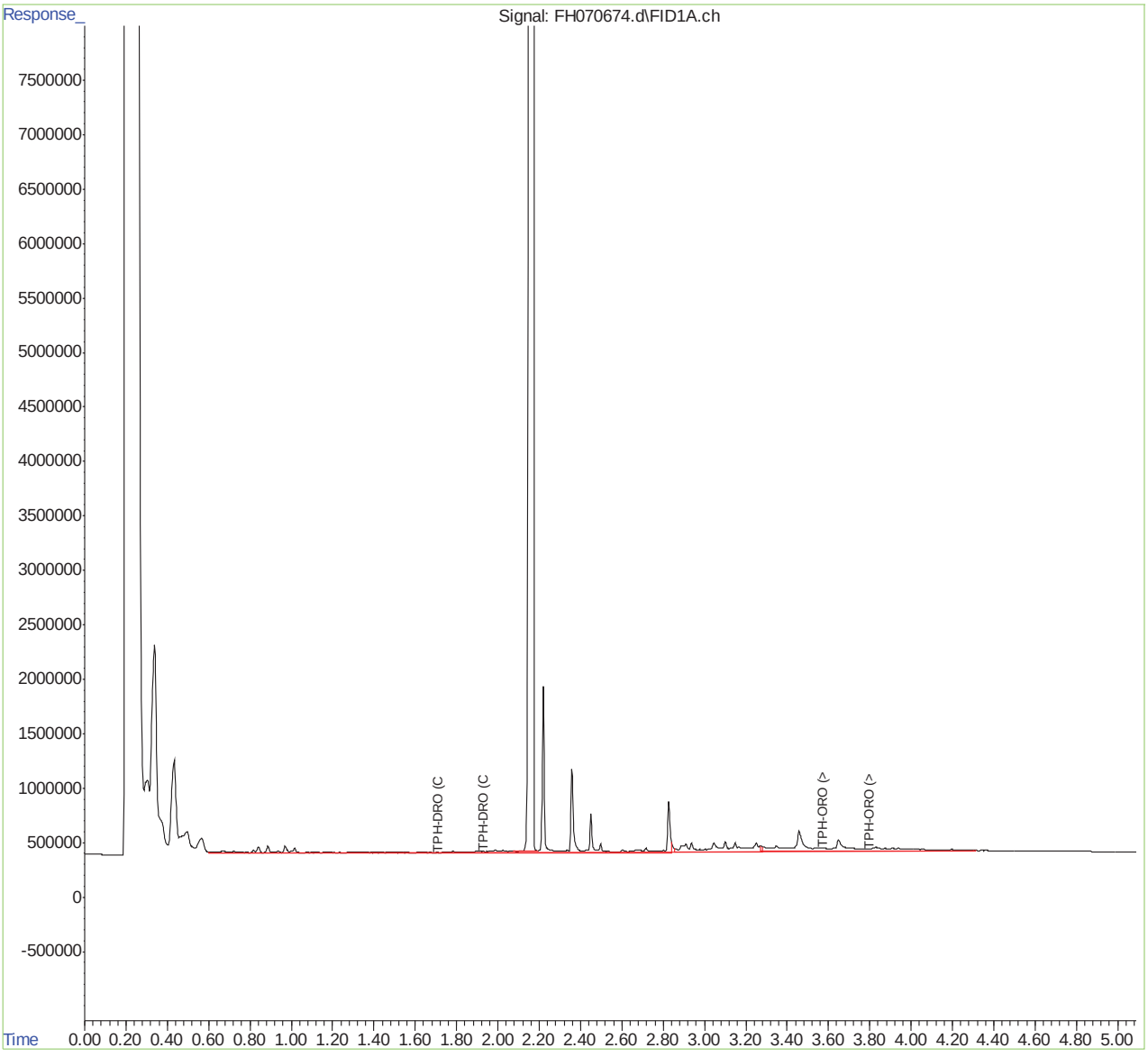
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010924\
Data File : FH070674.d
Signal(s) : FID1A.ch
Acq On : 10 Jan 2024 8:55 am
Operator : jackb
Sample : da61143-13
Misc : OP24839,GFH23800,1050,,,1,1
ALS Vial : 67 Sample Multiplier: 1

D2-TW-0007189-23337-N
DRO 83.5 J
ORO 71.9 J
Total TPH 155.4

Integration File: autoint1.e
Quant Time: Jan 11 12:45:17 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



DRO-010923.M Thu Jan 11 12:50:42 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010924\
Data File : LW19360.d
Signal(s) : FID2B.CH
Acq On : 10-Jan-24, 14:07:55
Operator : jackb
Sample : da61146-13
Misc : OP24836,GLW604,55.2,,,2,1
ALS Vial : 52 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 11 10:25:25 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.596f	19169999	9.295 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 92.95%	
Target Compounds			
1) H TPH-DRO (C10-C28)	4.000	788805	0.505 ppm
2) H TPH-ORO (>C28-C40)	6.460	76798	0.104 ppm
3) H TPH-DRO (C10-C24)	3.750	679283	0.459 ppm
4) H TPH-ORO (>C24-C40)	6.210	173677	0.133 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

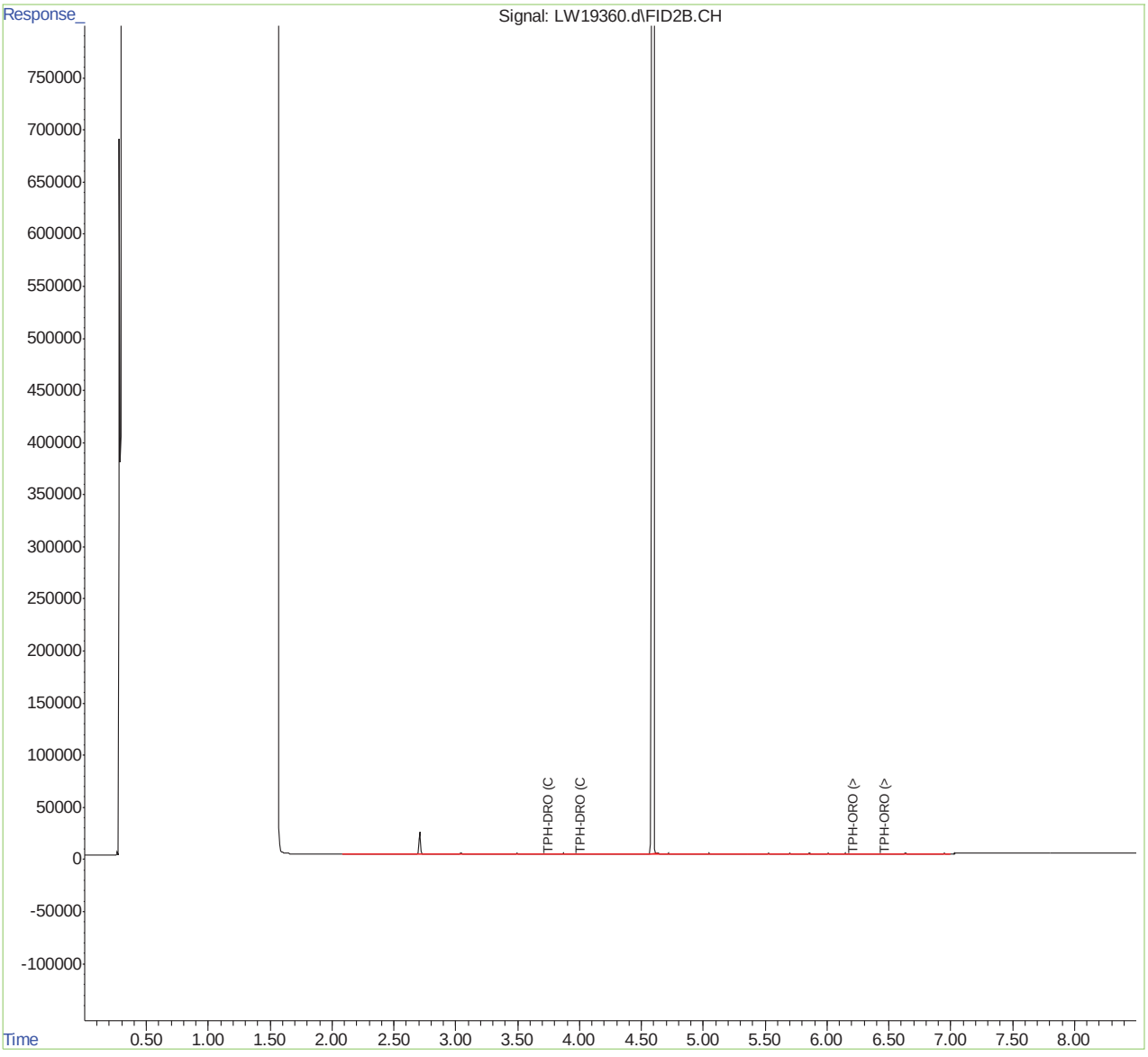
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010924\
Data File : LW19360.d
Signal(s) : FID2B.CH
Acq On : 10-Jan-24, 14:07:55
Operator : jackb
Sample : da61146-13
Misc : OP24836,GLW604,55.2,,,2,1
ALS Vial : 52 Sample Multiplier: 1

D2-TW-0007189-23337-N-ME
DRO 50 U
ORO 50 U
Total TPH 50 U

Integration File: autoint1.e
Quant Time: Jan 11 10:25:25 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-102523.M Thu Jan 11 11:58:26 2024 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074934.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 1:55 am
Operator : jackb
Sample : da62504-7
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 40 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:28:25 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.338	35344921	76.635	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	7577466	24.991	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2541601	10.361	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.7
7

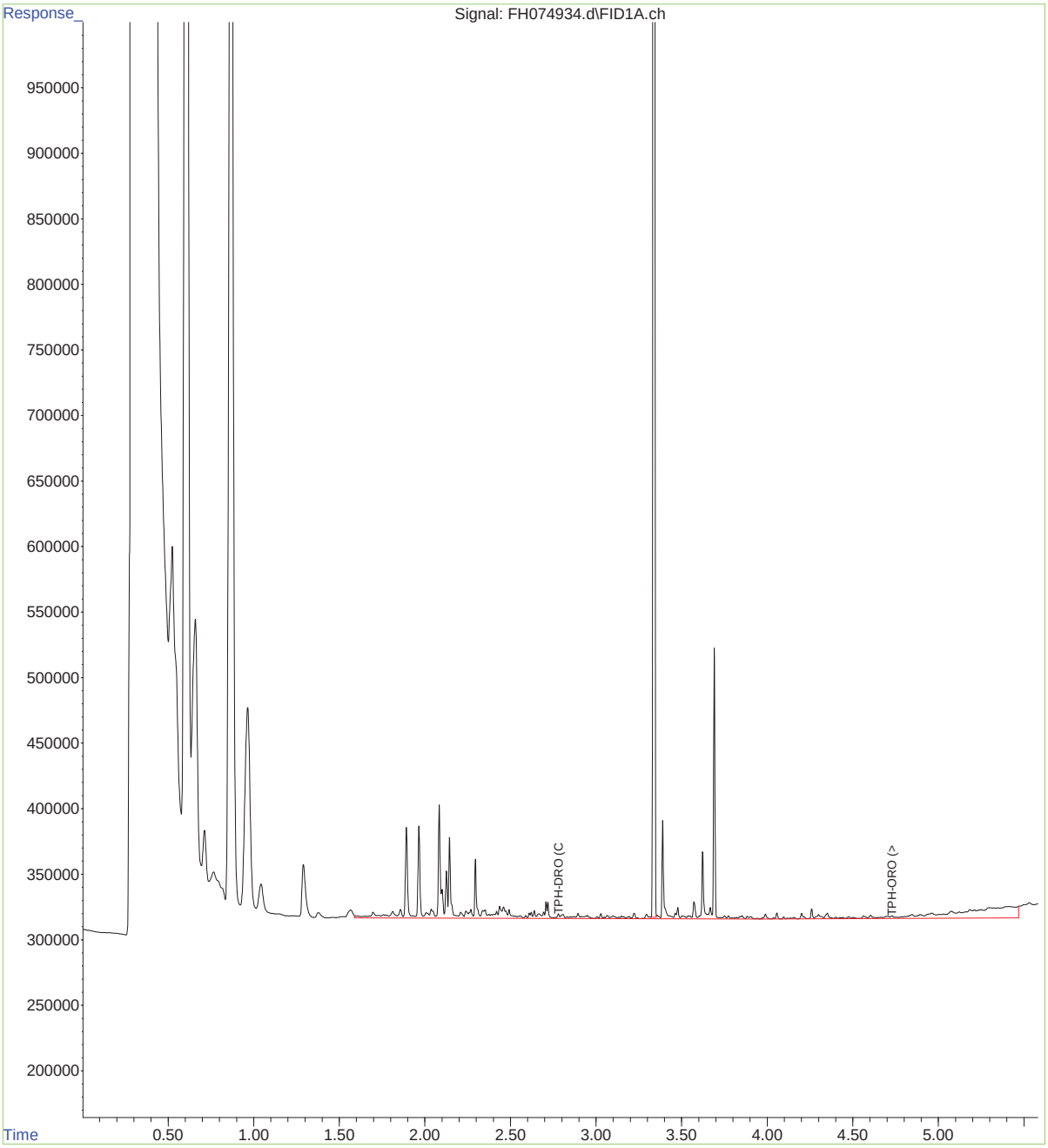
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074934.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 1:55 am
Operator : jackb
Sample : da62504-7
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 40 Sample Multiplier: 1

D2-TW-0007189-23337-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:28:25 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22962.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 09:18:54
Operator : jackb
Sample : DA62515-7
Misc : OP25271,GLW655,58.1,,,2,1
ALS Vial : 59 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 10:55:16 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.287	16319262	8.779 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 87.79%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	516877	0.383 ppm
2) H TPH-ORO (>C28-C40)	4.880	155884	0.370 ppm
3) H TPH-DRO (C10-C24)	2.880	408027	0.298 ppm
4) H TPH-ORO (>C24-C40)	4.680	297665	0.374 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

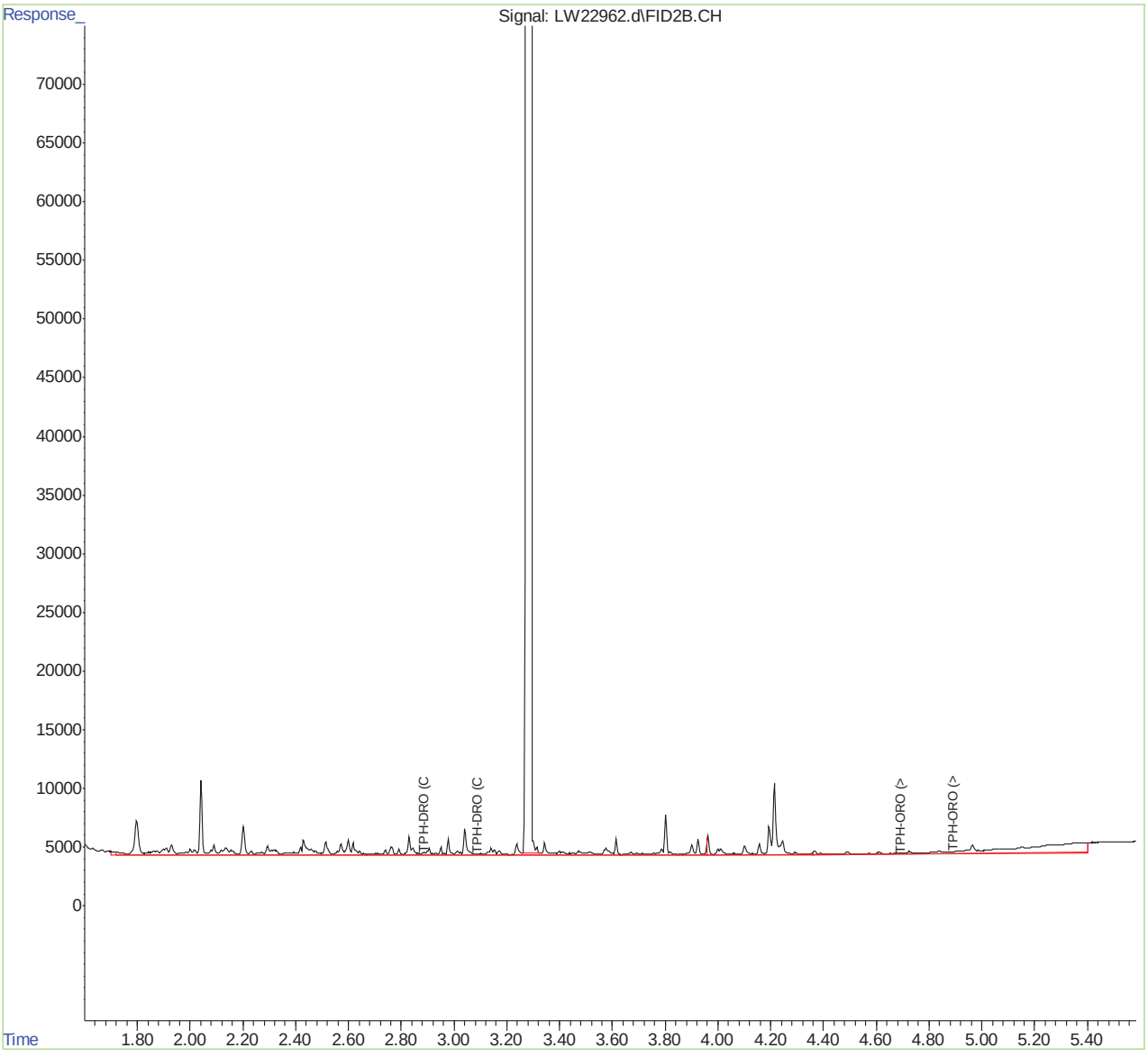
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22962.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 09:18:54
Operator : jackb
Sample : DA62515-7
Misc : OP25271,GLW655,58.1,,,2,1
ALS Vial : 59 Sample Multiplier: 1

D2-TW-0007189-23337-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 04 10:55:16 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Mon Mar 04 11:04:54 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010524\
Data File : FH070391.d
Signal(s) : FID1A.ch
Acq On : 6 Jan 2024 1:50 am
Operator : michaelb
Sample : da61101-10
Misc : OP24818,GFH23788,1050,,,1,1
ALS Vial : 41 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 07 14:27:21 2024
Quant Method : C:\msdchem\1\methods\DRO-122823.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 04 16:49:54 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.182	1579836255	2814.753	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.980	68473918	176.065	ug/ml
3) H	TPH-DRO (C10-C24)	1.760	52075272	135.687	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	11075088	42.555	ug/mlm
5) H	TPH-ORO (>C24-C40)	3.570	27131503	60.973	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.22
11

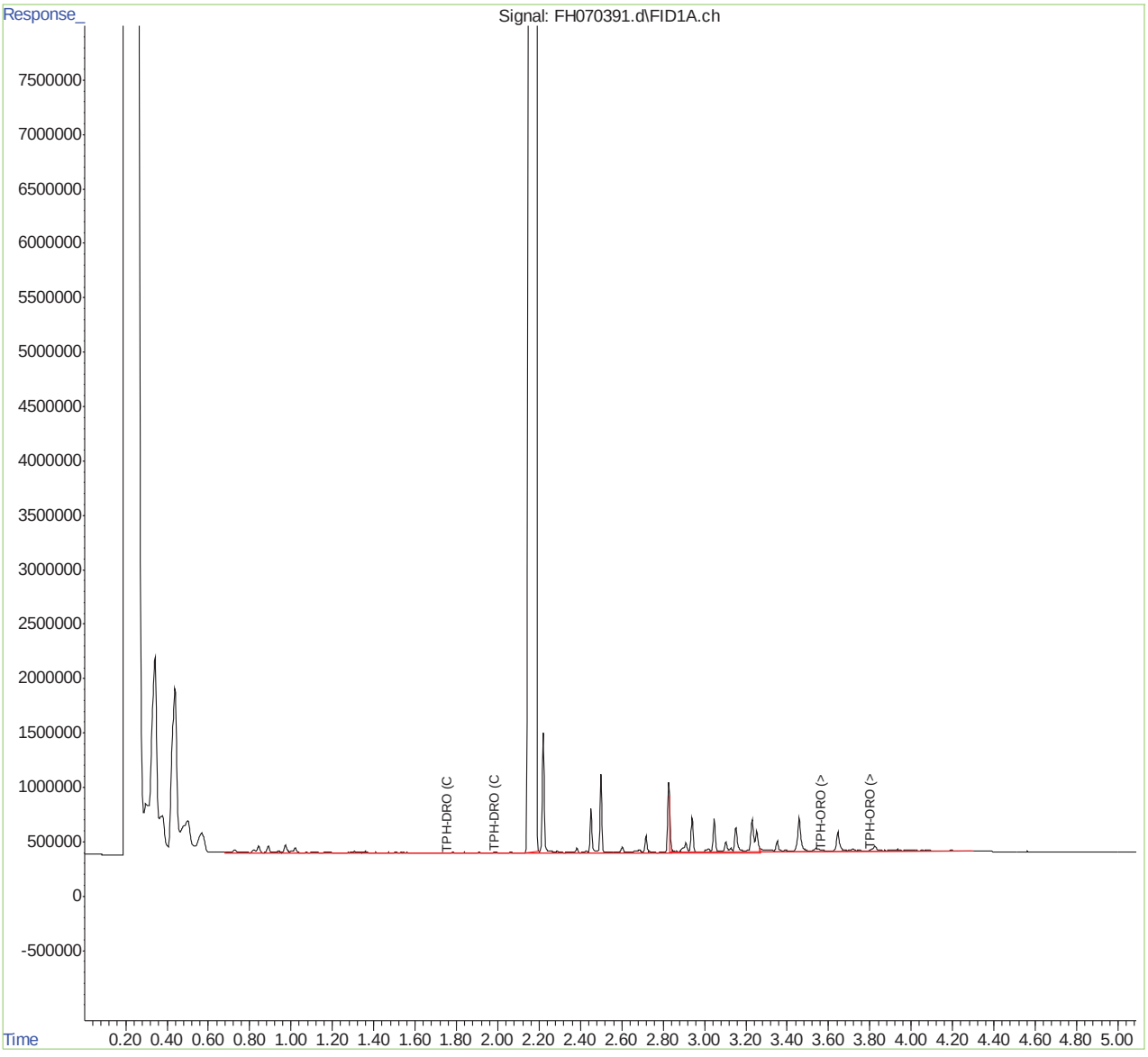
Quantitation Report (QT Reviewed)

D2-TW-0008147-23337-N
TPH-DRO 129
TPH-ORO 58.1
Total TPH 187.10

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010524\
Data File : FH070391.d
Signal(s) : FID1A.ch
Acq On : 6 Jan 2024 1:50 am
Operator : michaelb
Sample : da61101-10
Misc : OP24818,GFH23788,1050,,,1,1
ALS Vial : 41 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 07 14:27:21 2024
Quant Method : C:\msdchem\1\methods\DRO-122823.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 04 16:49:54 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.22
11

DRO-122823.M Sun Jan 07 14:40:02 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010724\
Data File : LW19172.d
Signal(s) : FID2B.CH
Acq On : 07-Jan-24, 18:51:04
Operator : jackb
Sample : da61103-10
Misc : OP24816,GLW602,57.7,,,2,1
ALS Vial : 14 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 08 10:50:58 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.658	28886841	14.006 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 140.06%#	
Target Compounds			
1) H TPH-DRO (C10-C28)	4.160	914262	0.585 ppm
2) H TPH-ORO (>C28-C40)	6.510	276264	0.375 ppm
3) H TPH-DRO (C10-C24)	3.920	725447	0.490 ppm
4) H TPH-ORO (>C24-C40)	6.270	523629	0.402 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

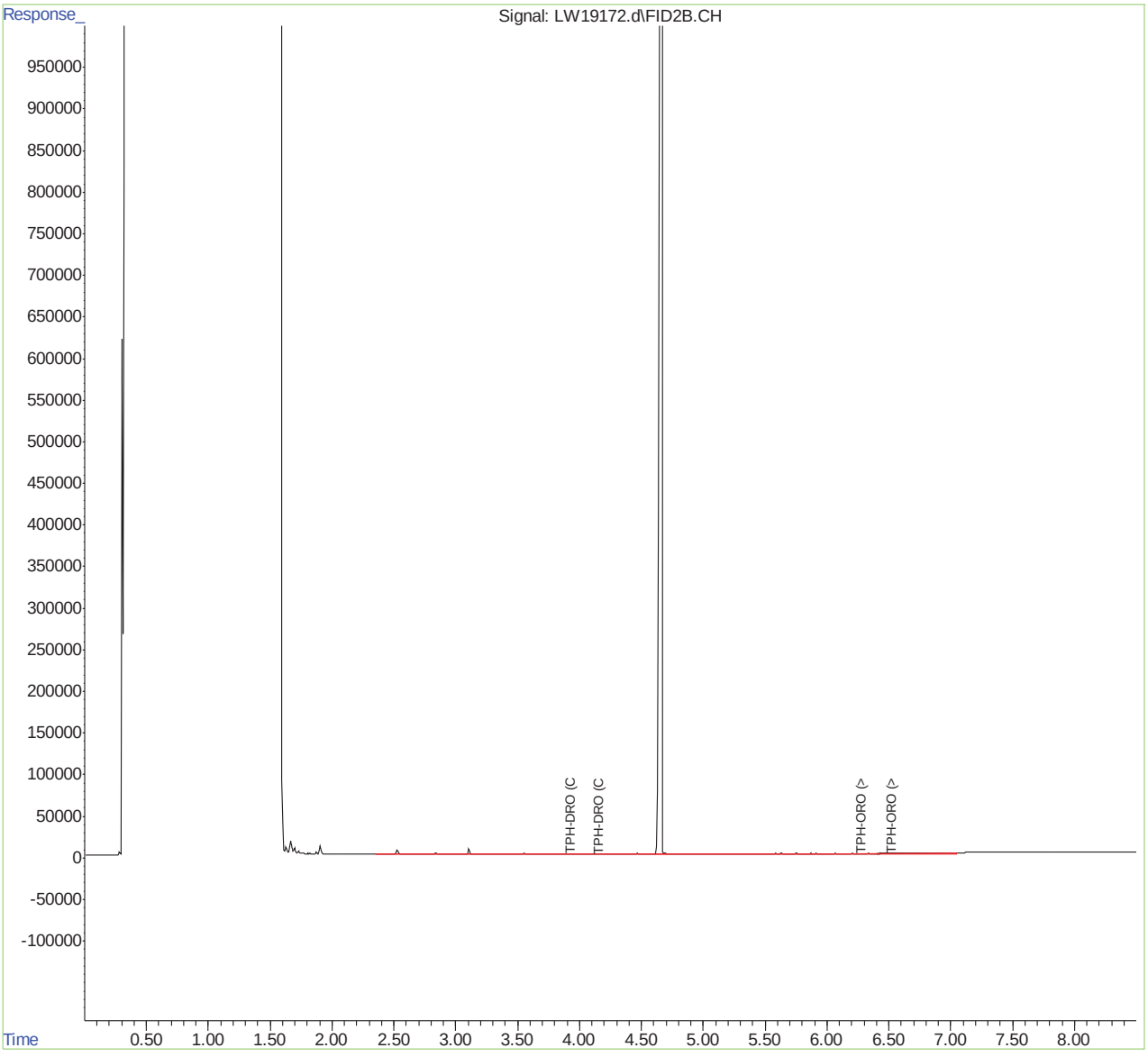
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010724\
Data File : LW19172.d
Signal(s) : FID2B.CH
Acq On : 07-Jan-24, 18:51:04
Operator : jackb
Sample : da61103-10
Misc : OP24816,GLW602,57.7,,,2,1
ALS Vial : 14 Sample Multiplier: 1

D2-TW-0008147-23337-N-ME
DRO 47 U
ORO 47 U
Total TPH 47 U

Integration File: autoint1.e
Quant Time: Jan 08 10:50:58 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010924\
Data File : FH070639.d
Signal(s) : FID1A.ch
Acq On : 10 Jan 2024 4:05 am
Operator : jackb
Sample : da61142-9
Misc : OP24838,GFH23800,1040,,,1,1
ALS Vial : 38 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 11 12:07:18 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.167	616072517	1021.202	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.940	17267642	44.732	ug/ml
3) H	TPH-DRO (C10-C24)	1.720	14204845	37.235	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	2995958	15.635	ug/ml
5) H	TPH-ORO (>C24-C40)	3.570	6419435	18.482	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.26 11

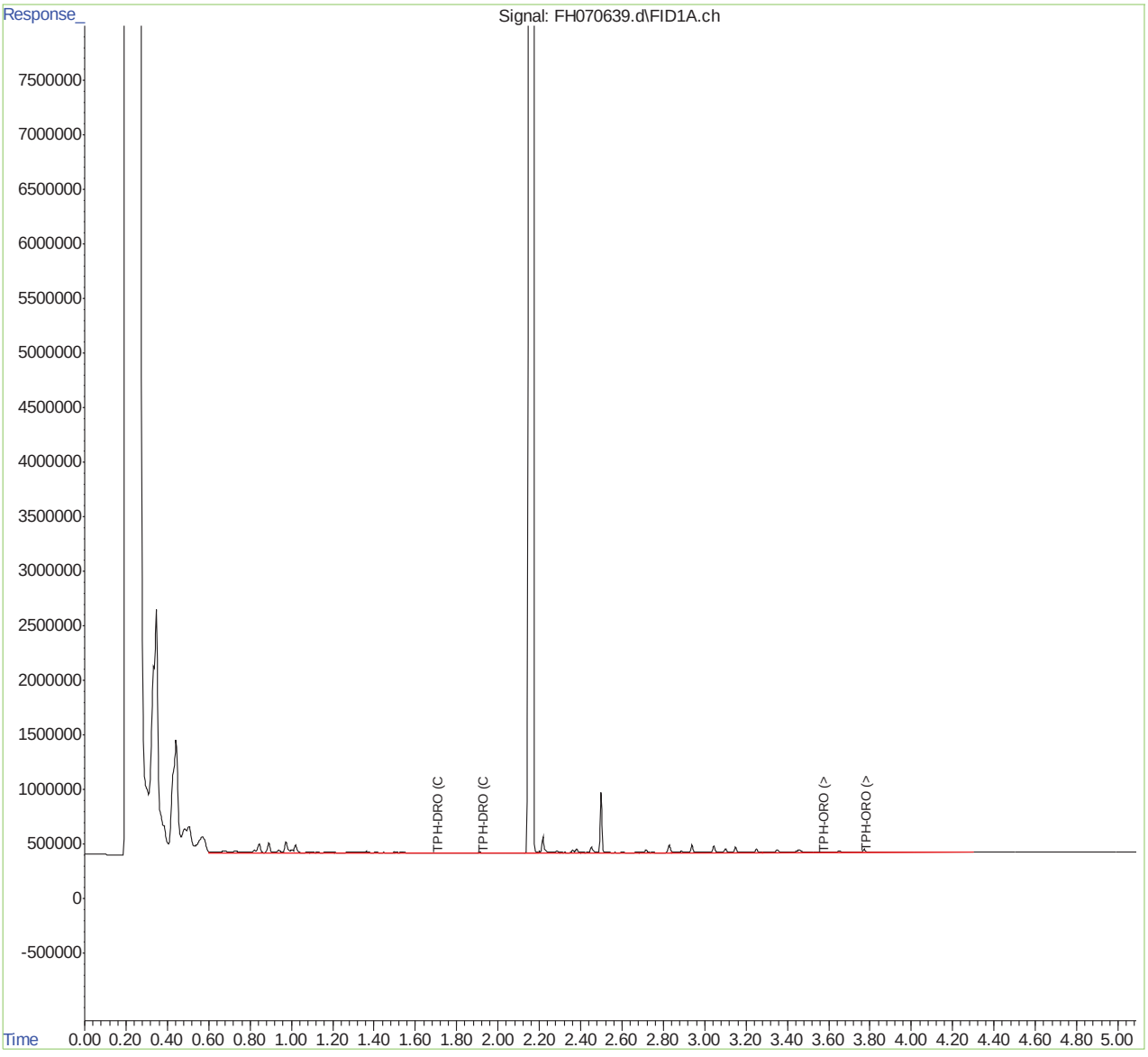
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010924\
Data File : FH070639.d
Signal(s) : FID1A.ch
Acq On : 10 Jan 2024 4:05 am
Operator : jackb
Sample : da61142-9
Misc : OP24838,GFH23800,1040,,,1,1
ALS Vial : 38 Sample Multiplier: 1

D2-TW-0007330-23337-N
TPH-DRO 50.0 UJ
TPH-ORO 50.0 UJ
Total TPH ND

Integration File: autoint1.e
Quant Time: Jan 11 12:07:18 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.26
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010924\
Data File : LW19324.d
Signal(s) : FID2B.CH
Acq On : 10-Jan-24, 05:48:57
Operator : jackb
Sample : da61145-9
Misc : OP24835,GLW604,57.2,,,2,1
ALS Vial : 23 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 10 09:39:48 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.596f	17936832	8.697 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 86.97%	
Target Compounds			
1) H TPH-DRO (C10-C28)	4.000	855525	0.547 ppm
2) H TPH-ORO (>C28-C40)	6.460	73922	0.100 ppm
3) H TPH-DRO (C10-C24)	3.750	720394	0.487 ppm
4) H TPH-ORO (>C24-C40)	6.210	194283	0.149 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

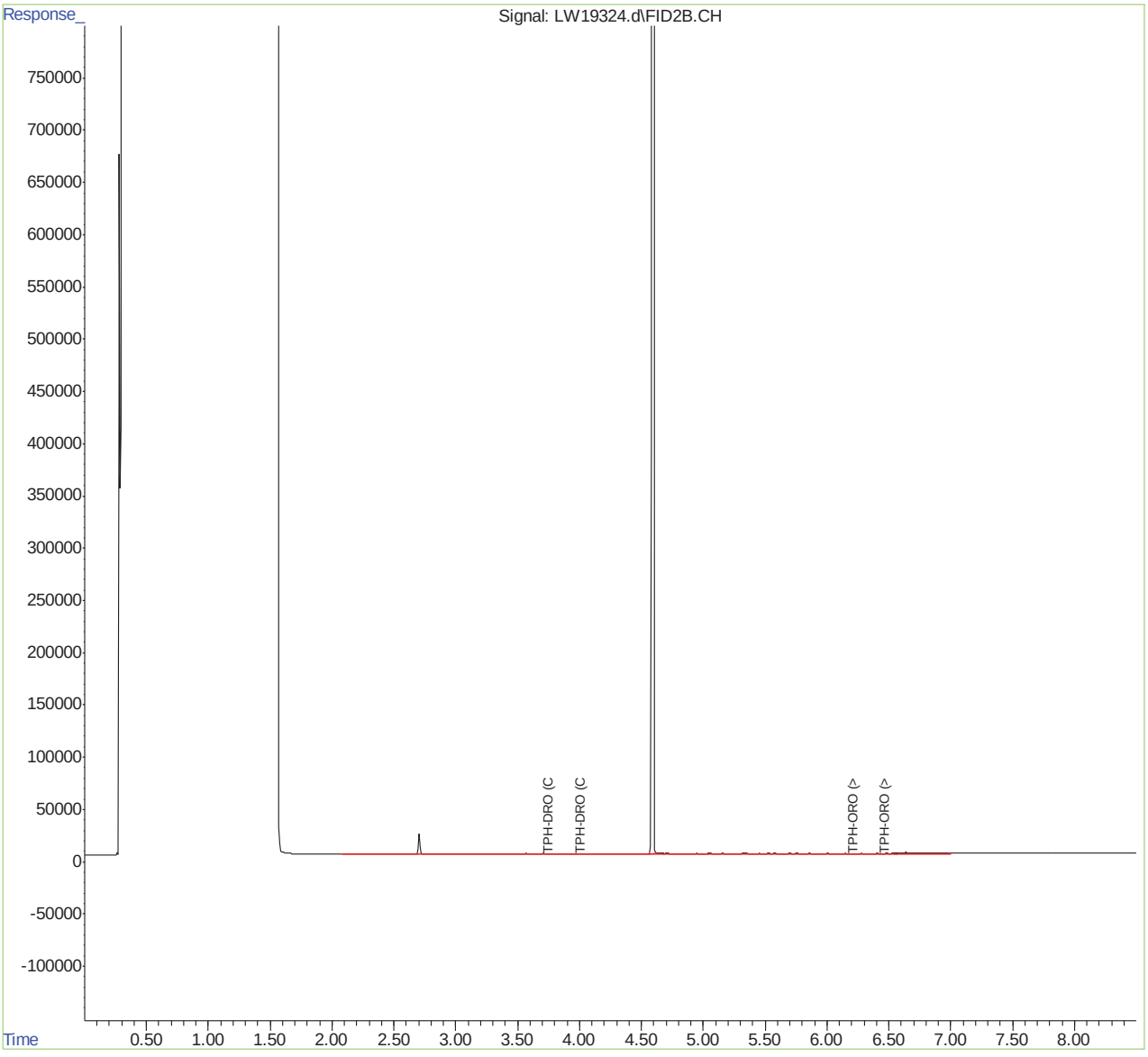
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010924\
Data File : LW19324.d
Signal(s) : FID2B.CH
Acq On : 10-Jan-24, 05:48:57
Operator : jackb
Sample : da61145-9
Misc : OP24835,GLW604,57.2,,,2,1
ALS Vial : 23 Sample Multiplier: 1

D2-TW-0007330-23337-N-ME
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Jan 10 09:39:48 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010924\
Data File : FH070672.d
Signal(s) : FID1A.ch
Acq On : 10 Jan 2024 8:38 am
Operator : jackb
Sample : da61143-11
Misc : OP24839,GFH23800,1050,,,1,1
ALS Vial : 65 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 11 12:44:40 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.169	722618041	1197.700	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.940	49171572	127.380	ug/ml
3) H	TPH-DRO (C10-C24)	1.720	40756756	106.835	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	13114863	68.441	ug/mlm
5) H	TPH-ORO (>C24-C40)	3.570	23467608	67.566	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.29 11

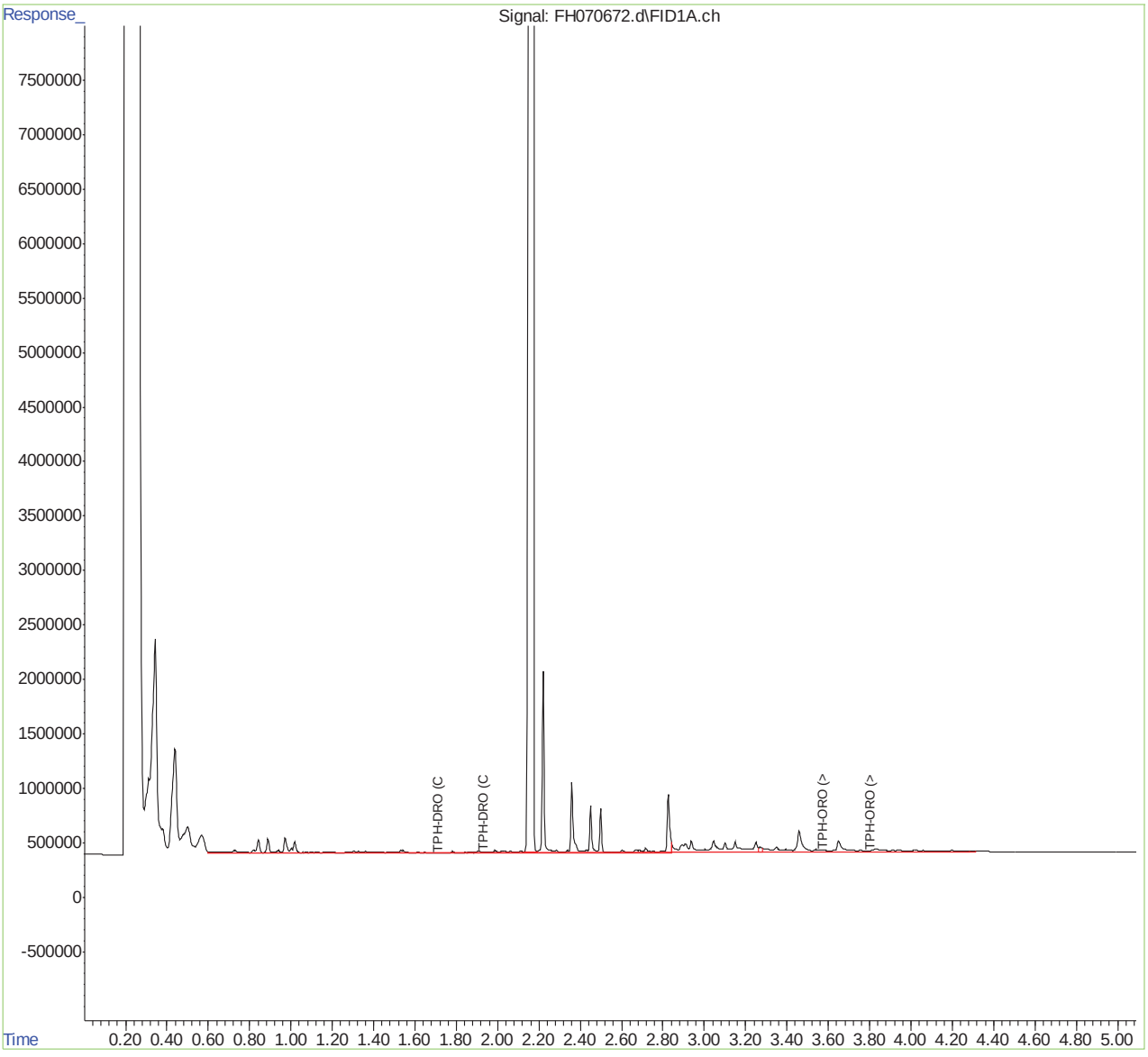
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\010924\
Data File : FH070672.d
Signal(s) : FID1A.ch
Acq On : 10 Jan 2024 8:38 am
Operator : jackb
Sample : da61143-11
Misc : OP24839,GFH23800,1050,,,1,1
ALS Vial : 65 Sample Multiplier: 1

D2-TW-0007330-23337-3-N
DRO 102
ORO 64.3
Total TPH 166.3

Integration File: autoint1.e
Quant Time: Jan 11 12:44:40 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010924\
Data File : LW19358.d
Signal(s) : FID2B.CH
Acq On : 10-Jan-24, 13:40:21
Operator : jackb
Sample : da61146-11
Misc : OP24836,GLW604,55.0,,,2,1
ALS Vial : 50 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 11 10:25:21 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.597f	20191595	9.790 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 97.90%	
Target Compounds			
1) H TPH-DRO (C10-C28)	4.000	1426760	0.913 ppm
2) H TPH-ORO (>C28-C40)	6.460	97260	0.132 ppm
3) H TPH-DRO (C10-C24)	3.750	1313499	0.887 ppm
4) H TPH-ORO (>C24-C40)	6.210	210774	0.162 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

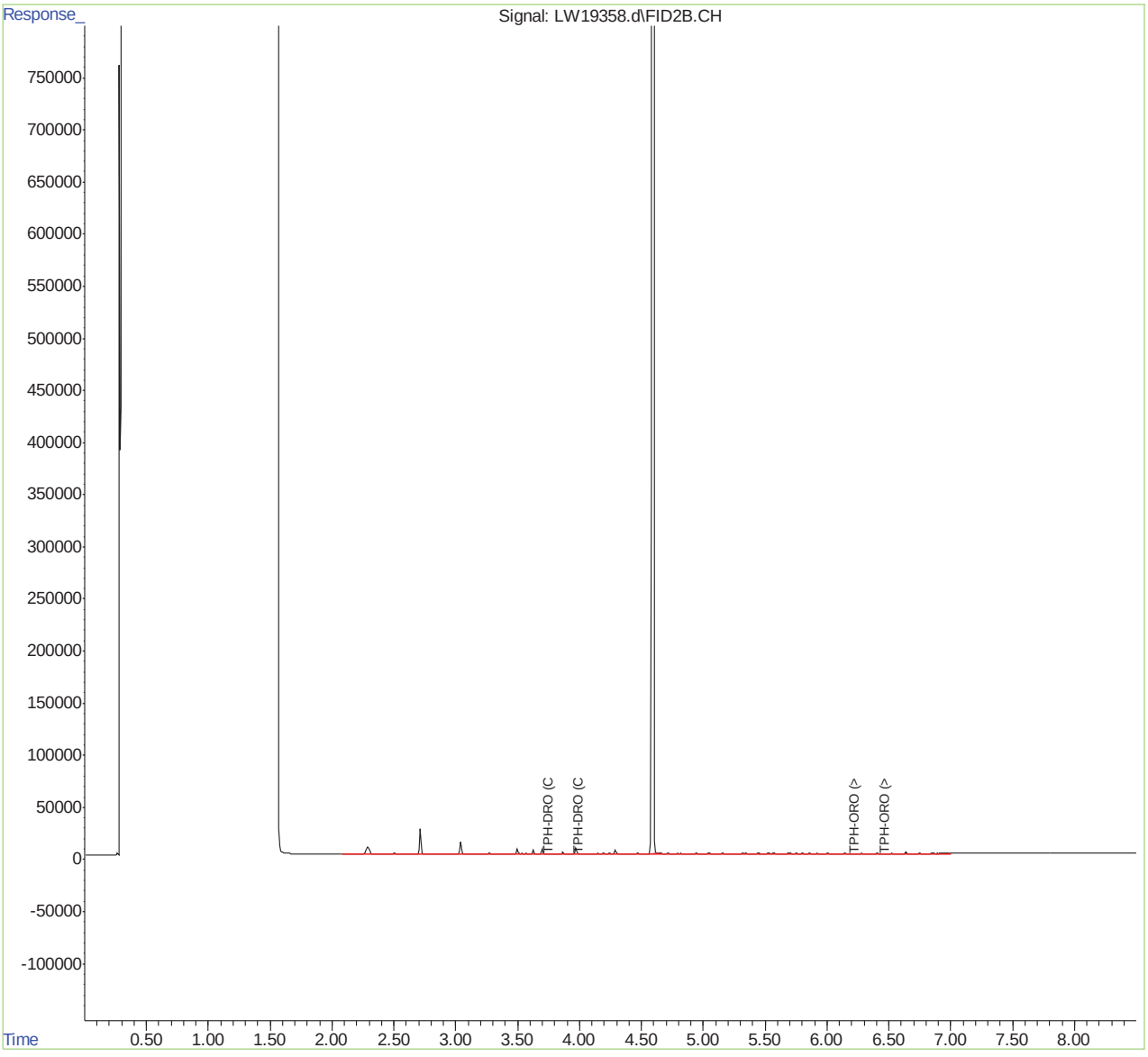
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010924\
Data File : LW19358.d
Signal(s) : FID2B.CH
Acq On : 10-Jan-24, 13:40:21
Operator : jackb
Sample : da61146-11
Misc : OP24836,GLW604,55.0,,,2,1
ALS Vial : 50 Sample Multiplier: 1

D2-TW-0007330-23337-3-N-ME
DRO 50 U
ORO 50 U
Total TPH 50 U

Integration File: autoint1.e
Quant Time: Jan 11 10:25:21 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074942.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 3:21 am
Operator : jackb
Sample : da62504-11
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:34:05 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.337	32326092	70.089	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	7464789	24.619	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	3204641	13.063	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.11
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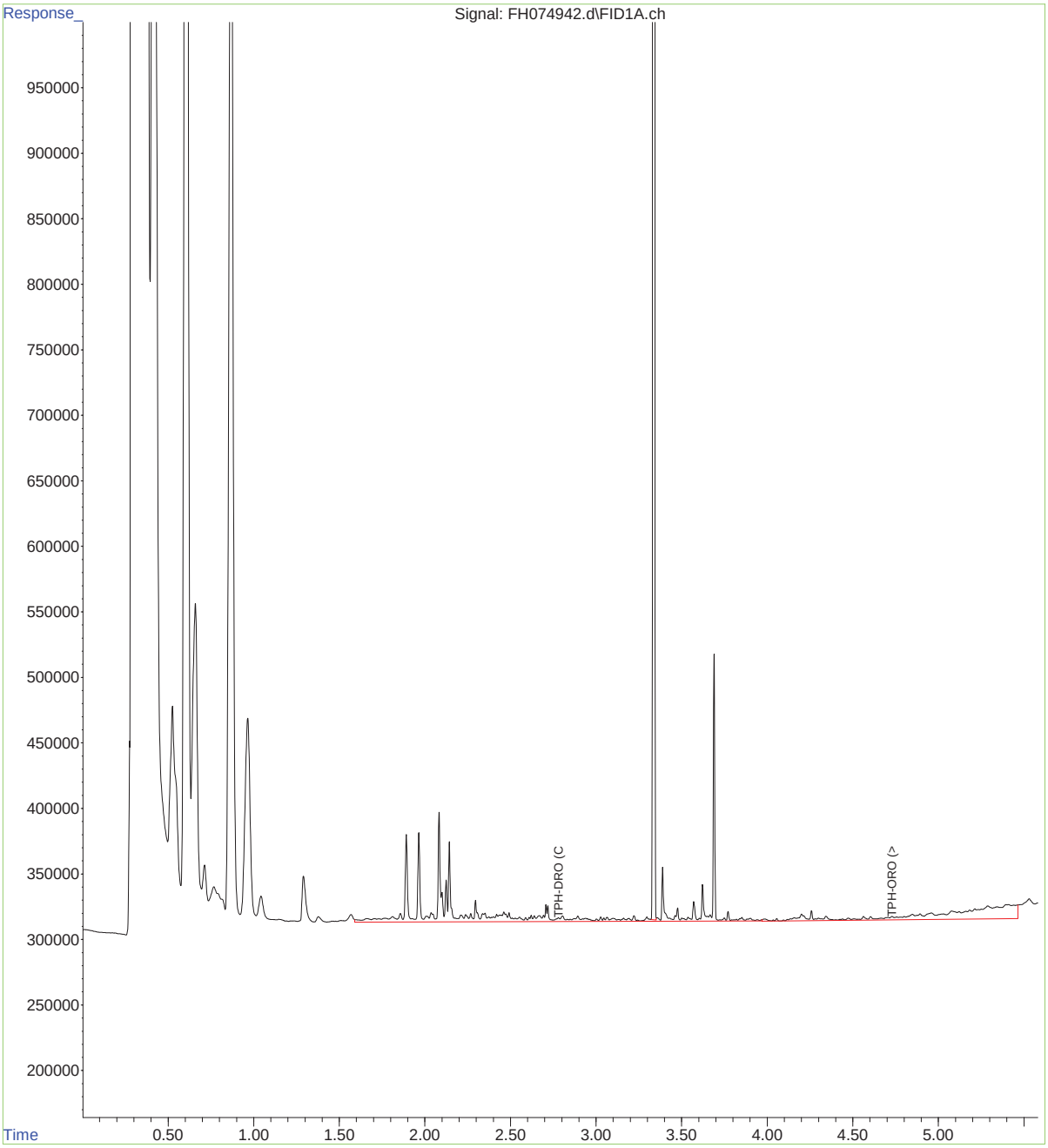
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074942.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 3:21 am
Operator : jackb
Sample : da62504-11
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

D2-TW-0007330-23337-N-R1
DRO 50.0 U
ORO 50.0 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:34:05 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22966.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 10:01:34
Operator : jackb
Sample : DA62515-11
Misc : OP25271,GLW655,57.8,,,2,1
ALS Vial : 63 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 10:55:24 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.285	17283601	9.315 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 93.15%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	712245	0.528 ppm
2) H TPH-ORO (>C28-C40)	4.880	186841	0.443 ppm
3) H TPH-DRO (C10-C24)	2.880	585519	0.428 ppm
4) H TPH-ORO (>C24-C40)	4.680	346768	0.436 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

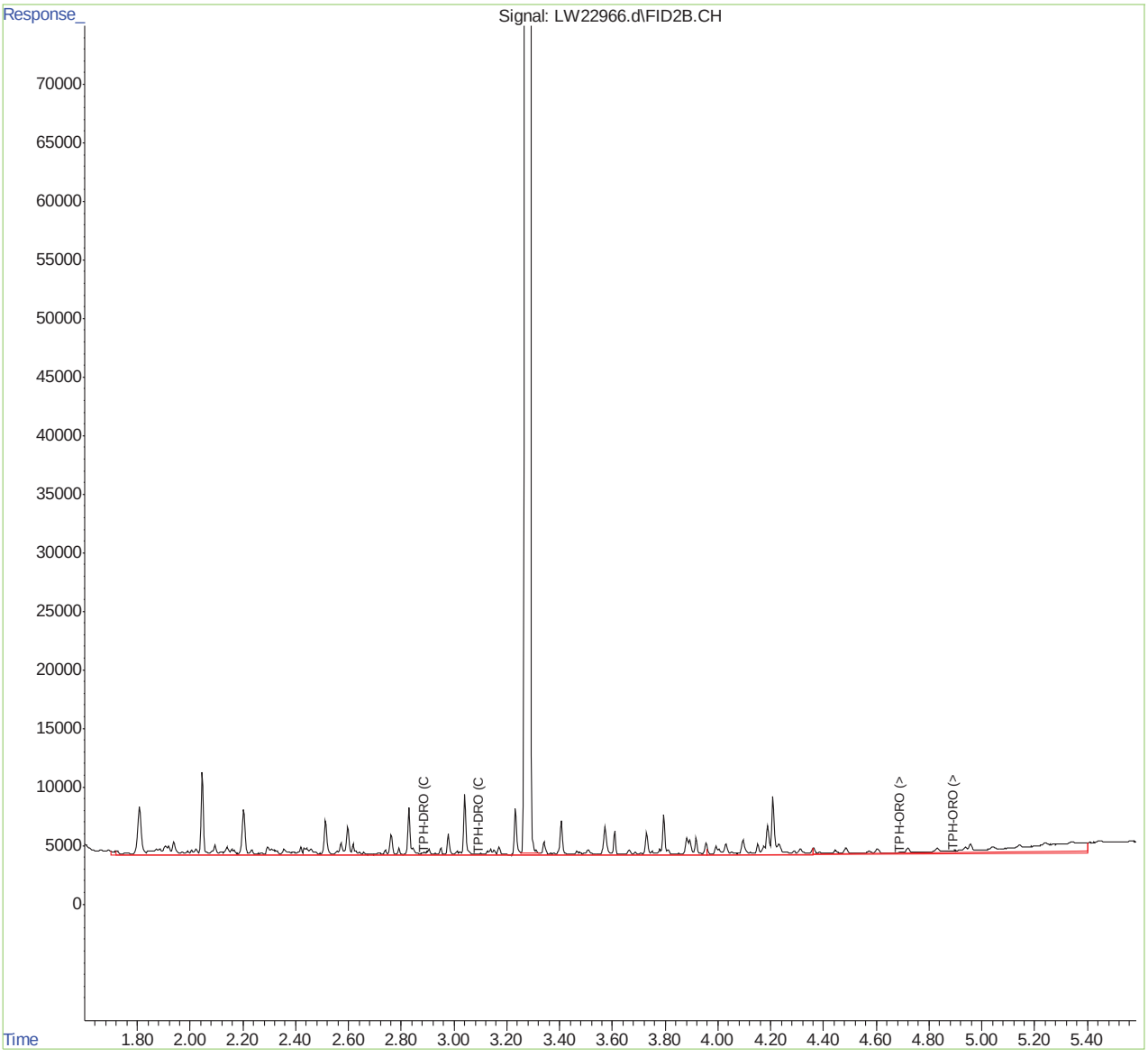
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22966.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 10:01:34
Operator : jackb
Sample : DA62515-11
Misc : OP25271,GLW655,57.8,,,2,1
ALS Vial : 63 Sample Multiplier: 1

D2-TW-0007330-23337-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 04 10:55:24 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070977.d
Signal(s) : FID1A.ch
Acq On : 15 Jan 2024 5:28 am
Operator : jackb
Sample : da61253-1
Misc : OP24874,GFH23805,1000,,,1,1
ALS Vial : 51 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 15 13:33:37 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.166	688586428	1141.325	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.940	59973335	155.362	ug/ml
3) H	TPH-DRO (C10-C24)	1.720	48033731	125.910	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	6395261	33.374	ug/ml
5) H	TPH-ORO (>C24-C40)	3.570	19454475	56.012	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.18 11

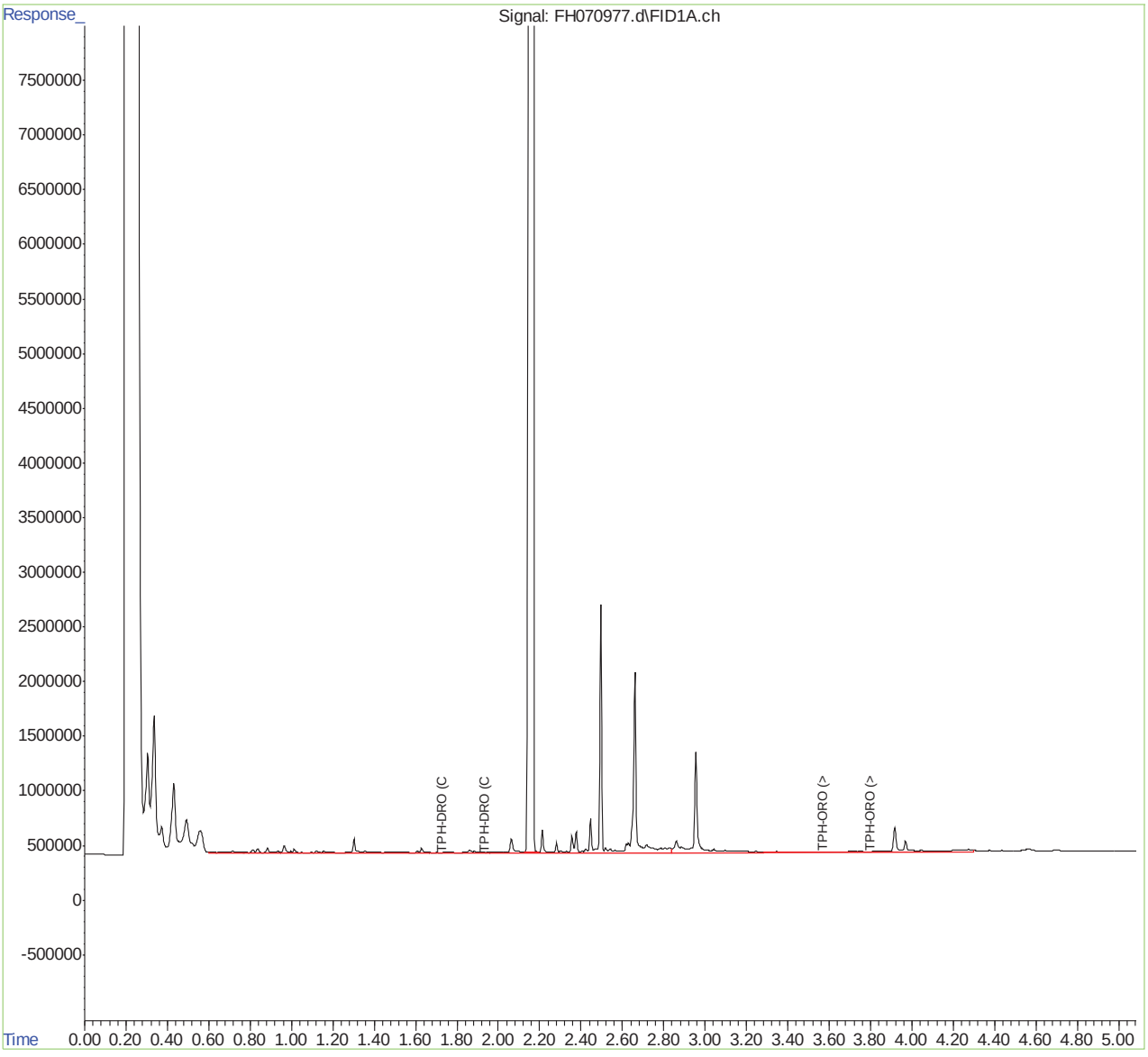
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070977.d
Signal(s) : FID1A.ch
Acq On : 15 Jan 2024 5:28 am
Operator : jackb
Sample : da61253-1
Misc : OP24874,GFH23805,1000,,,1,1
ALS Vial : 51 Sample Multiplier: 1

F2-TW-0009616-23335-N
DRO 126
ORO 56.0 J
Total TPH 182

Integration File: autoint1.e
Quant Time: Jan 15 13:33:37 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.18
11

DRO-010923.M Mon Jan 15 15:09:18 2024 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/08/24 14:16

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074948.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 4:26 am
Operator : jackb
Sample : da62505-3
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 50 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 06 21:38:55 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.337	38786568	84.097	ug/mlm
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	10945229	36.098	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2416818	9.852	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.3
7

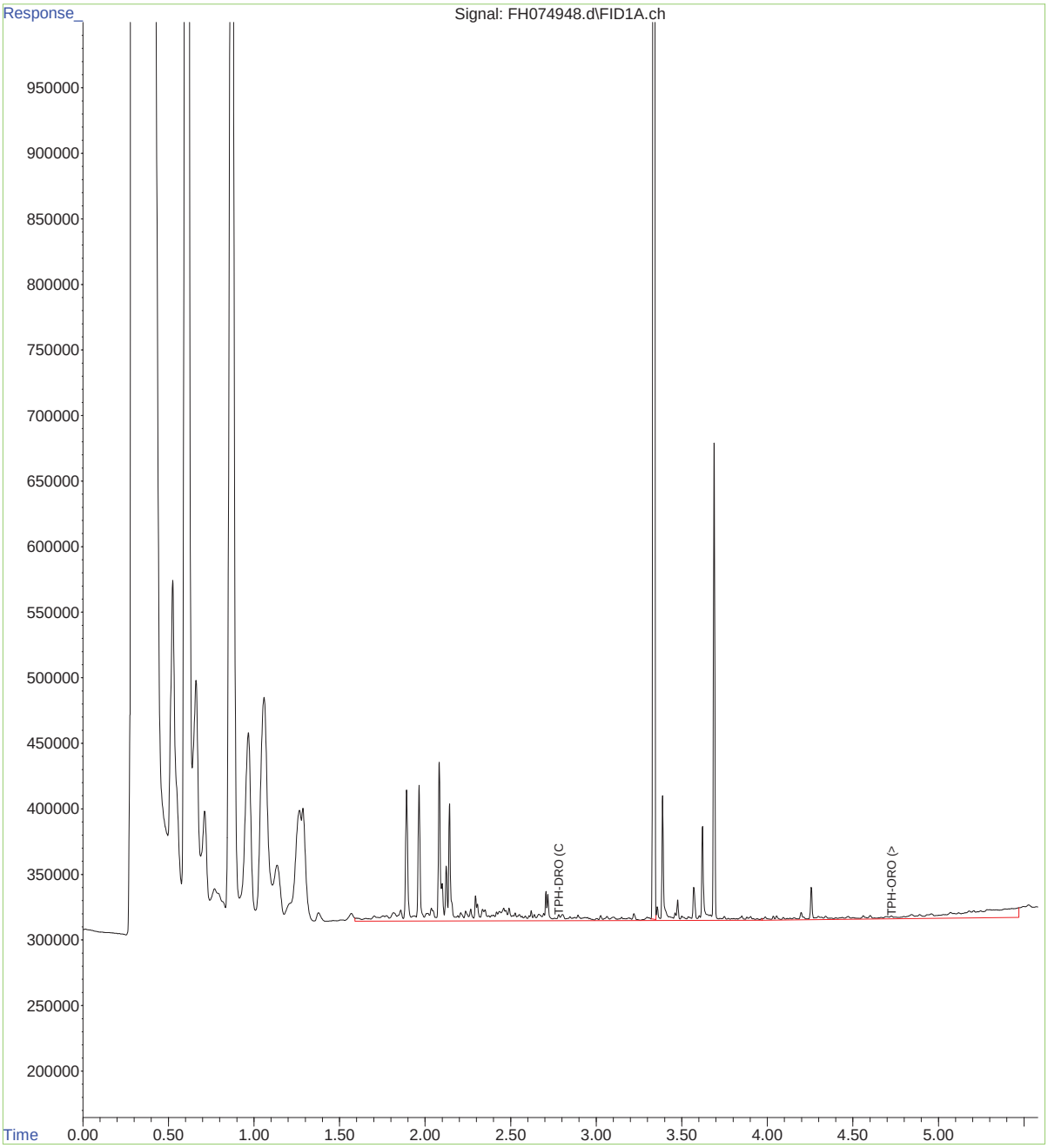
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074948.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 4:26 am
Operator : jackb
Sample : da62505-3
Misc : OP25254,GFH23865,1050,,,1,1
ALS Vial : 50 Sample Multiplier: 1

F2-TW-0009616-23335-N-R1
TPH-DRO 50 U
TPH-ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 06 21:38:55 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23863.M Wed Mar 06 21:57:33 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22933.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 04:09:29
Operator : jackb
Sample : DA62516-3
Misc : OP25270,GLW655,57.1,,,2,1
ALS Vial : 30 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 08:30:32 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.285	15845435	8.515 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 85.15%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	414624	0.307 ppm
2) H TPH-ORO (>C28-C40)	4.880	127819	0.303 ppm m
3) H TPH-DRO (C10-C24)	2.880	364933	0.267 ppm
4) H TPH-ORO (>C24-C40)	4.680	234317	0.295 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

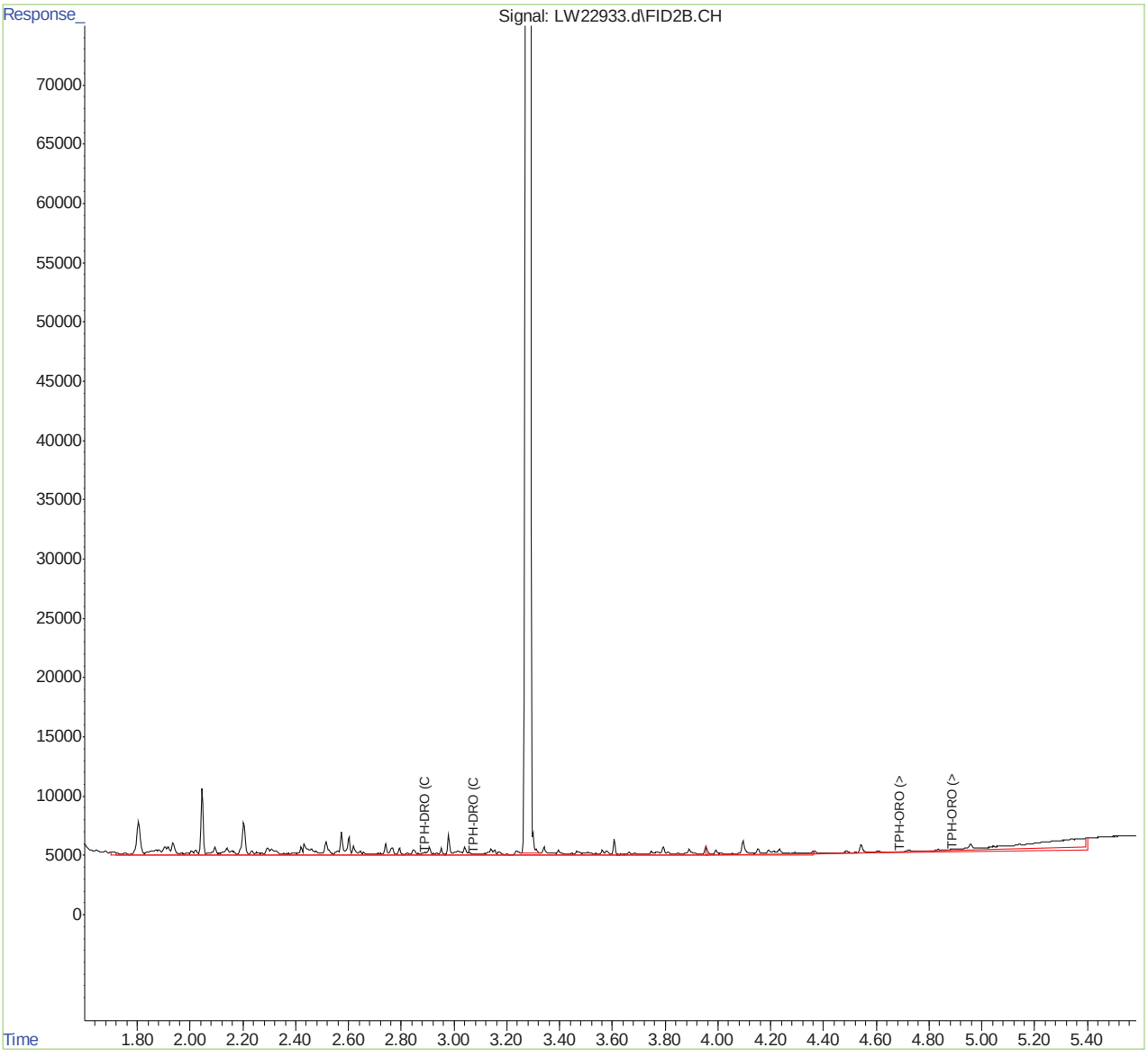
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22933.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 04:09:29
Operator : jackb
Sample : DA62516-3
Misc : OP25270,GLW655,57.1,,,2,1
ALS Vial : 30 Sample Multiplier: 1

F2-TW-0009616-23335-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH 48 U

Integration File: autoint1.e
Quant Time: Mar 04 08:30:32 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Mon Mar 04 09:37:35 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070938.d
Signal(s) : FID1A.ch
Acq On : 14 Jan 2024 11:59 pm
Operator : jackb
Sample : da611231-1
Misc : OP24873,GFH23804,1000,,,1,1
ALS Vial : 25 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 15 11:30:17 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.167	779530214	1291.978	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.940	70390152	182.347	ug/ml
3) H	TPH-DRO (C10-C24)	1.720	52531924	137.701	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	2003951	10.458	ug/ml
5) H	TPH-ORO (>C24-C40)	3.570	20843806	60.012	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.16 11

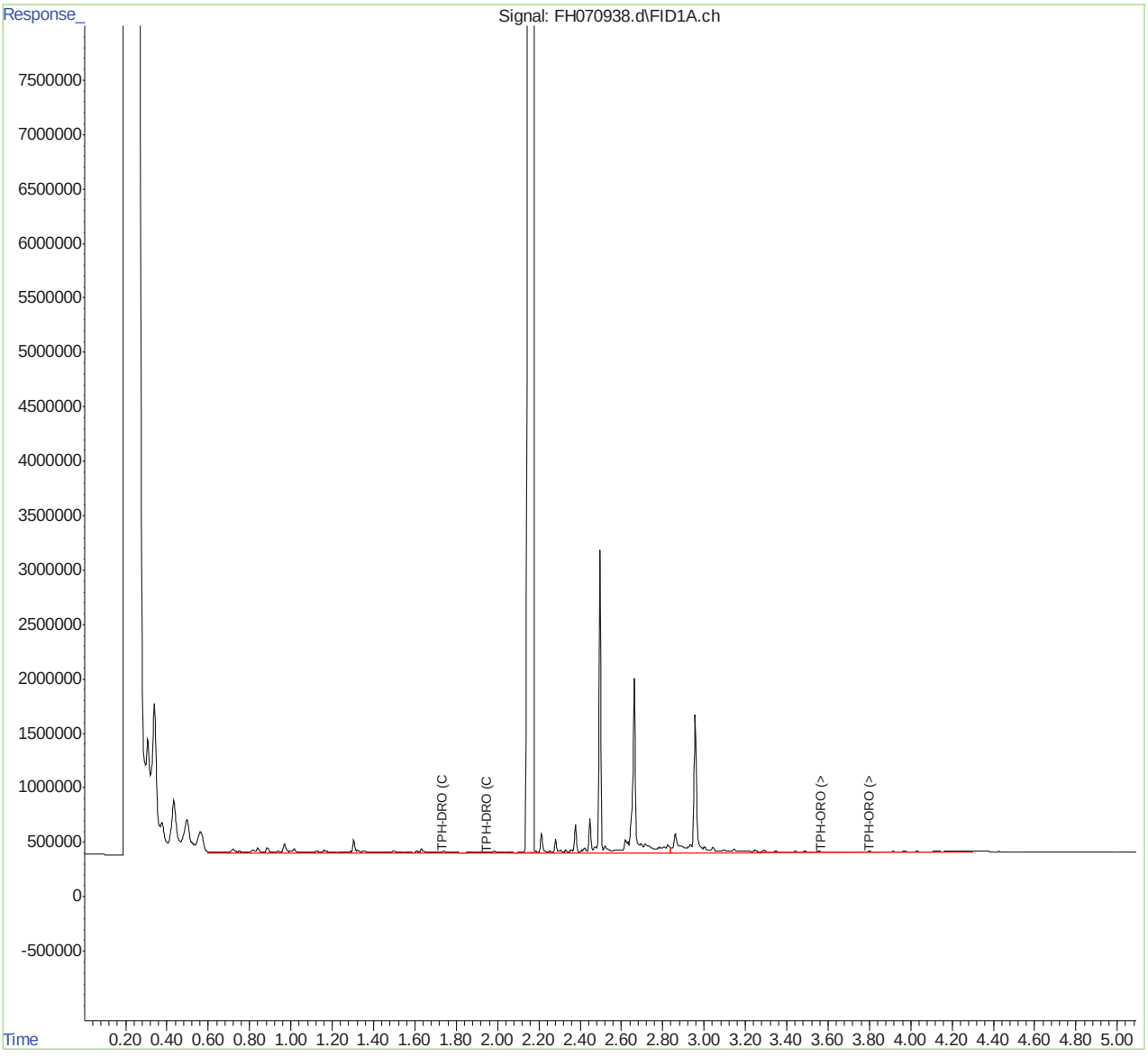
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070938.d
Signal(s) : FID1A.ch
Acq On : 14 Jan 2024 11:59 pm
Operator : jackb
Sample : da611231-1
Misc : OP24873,GFH23804,1000,,,1,1
ALS Vial : 25 Sample Multiplier: 1

F2-TW-0010927-23335-N
DRO 138
ORO 60 J
Total TPH 198

Integration File: autoint1.e
Quant Time: Jan 15 11:30:17 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.16
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : FH075336.d
Signal(s) : FID1A.ch
Acq On : 10 Mar 2024 7:09 am
Operator : jackb
Sample : da62548-2
Misc : OP25274,GFH23868,1050,,,1,1
ALS Vial : 16 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 10 22:23:40 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.337	37224712	80.710	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	18577953	61.270	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2567219	10.465	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

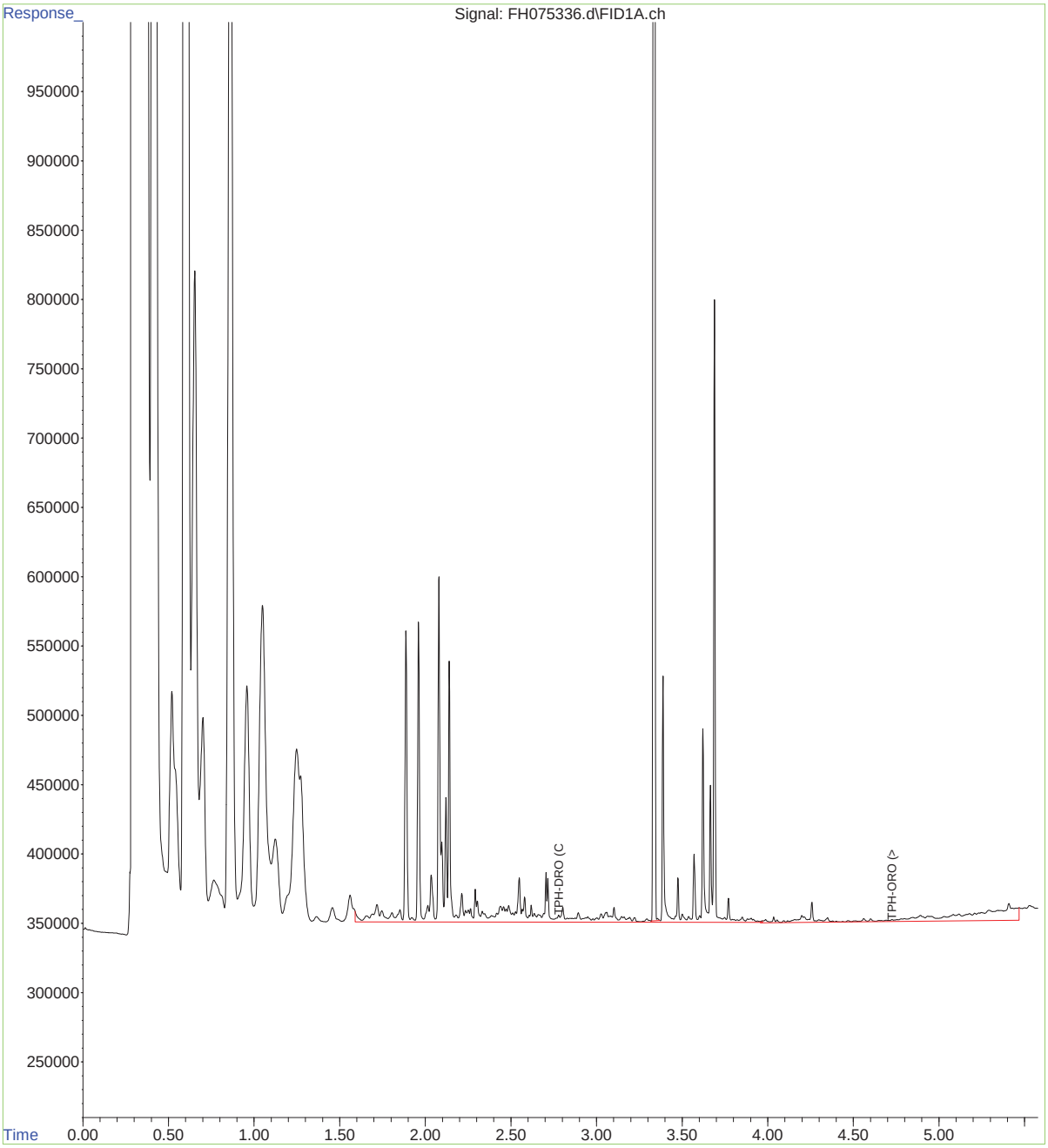
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031024\
Data File : FH075336.d
Signal(s) : FID1A.ch
Acq On : 10 Mar 2024 7:09 am
Operator : jackb
Sample : da62548-2
Misc : OP25274,GFH23868,1050,,,1,1
ALS Vial : 16 Sample Multiplier: 1

F2-TW-0010927-23335-N-R1
DRO 58.4 J
ORO 50 U
Total TPH 58.4

Integration File: autoint1.e
Quant Time: Mar 10 22:23:40 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030924\
Data File : LW23527.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 22:05:21
Operator : jackb
Sample : DA62556-2
Misc : OP25316,GLW662,55.9,,,2.0,1
ALS Vial : 23 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 10 08:52:22 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	3.222	15508548	8.328	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 83.28%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	2.880	828098	0.606	ppm	
4) H TPH-ORO (>C24-C40)	4.680	385851	0.485	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

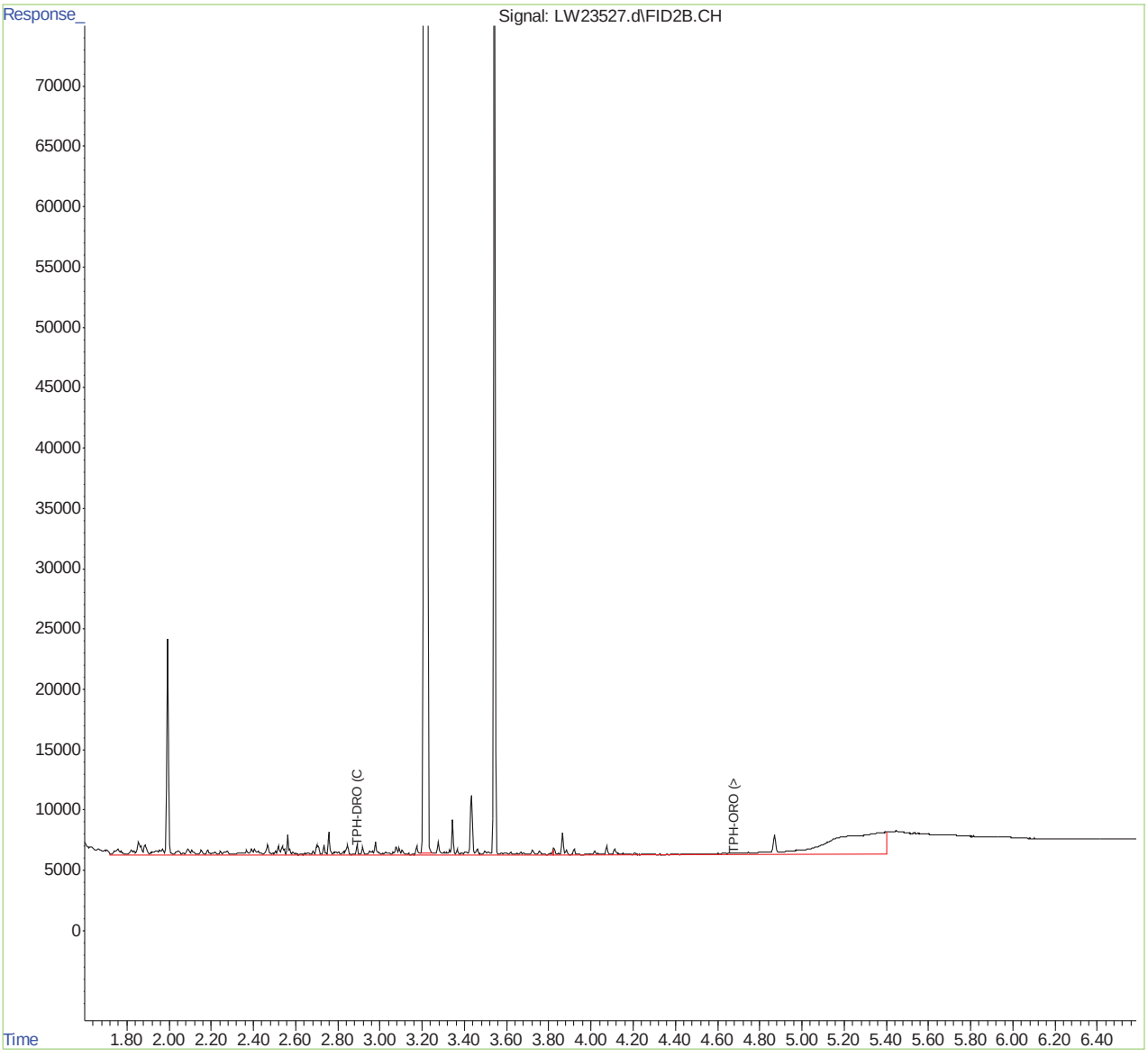
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030924\
Data File : LW23527.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 22:05:21
Operator : jackb
Sample : DA62556-2
Misc : OP25316,GLW662,55.9,,,2.0,1
ALS Vial : 23 Sample Multiplier: 1

F2-TW-0010927-23335-N-R1-MEQ
DRO 49 U
ORO 49 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 10 08:52:22 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070926.d
Signal(s) : FID1A.ch
Acq On : 14 Jan 2024 10:19 pm
Operator : jackb
Sample : da611230-7
Misc : OP24873,GFH23804,1000,,,1,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 15 11:29:53 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.168	842118824	1395.659	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.940	79880319	206.931	ug/ml
3) H	TPH-DRO (C10-C24)	1.720	56322987	147.638	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	2269861	11.845	ug/ml
5) H	TPH-ORO (>C24-C40)	3.570	26029660	74.943	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.23 11

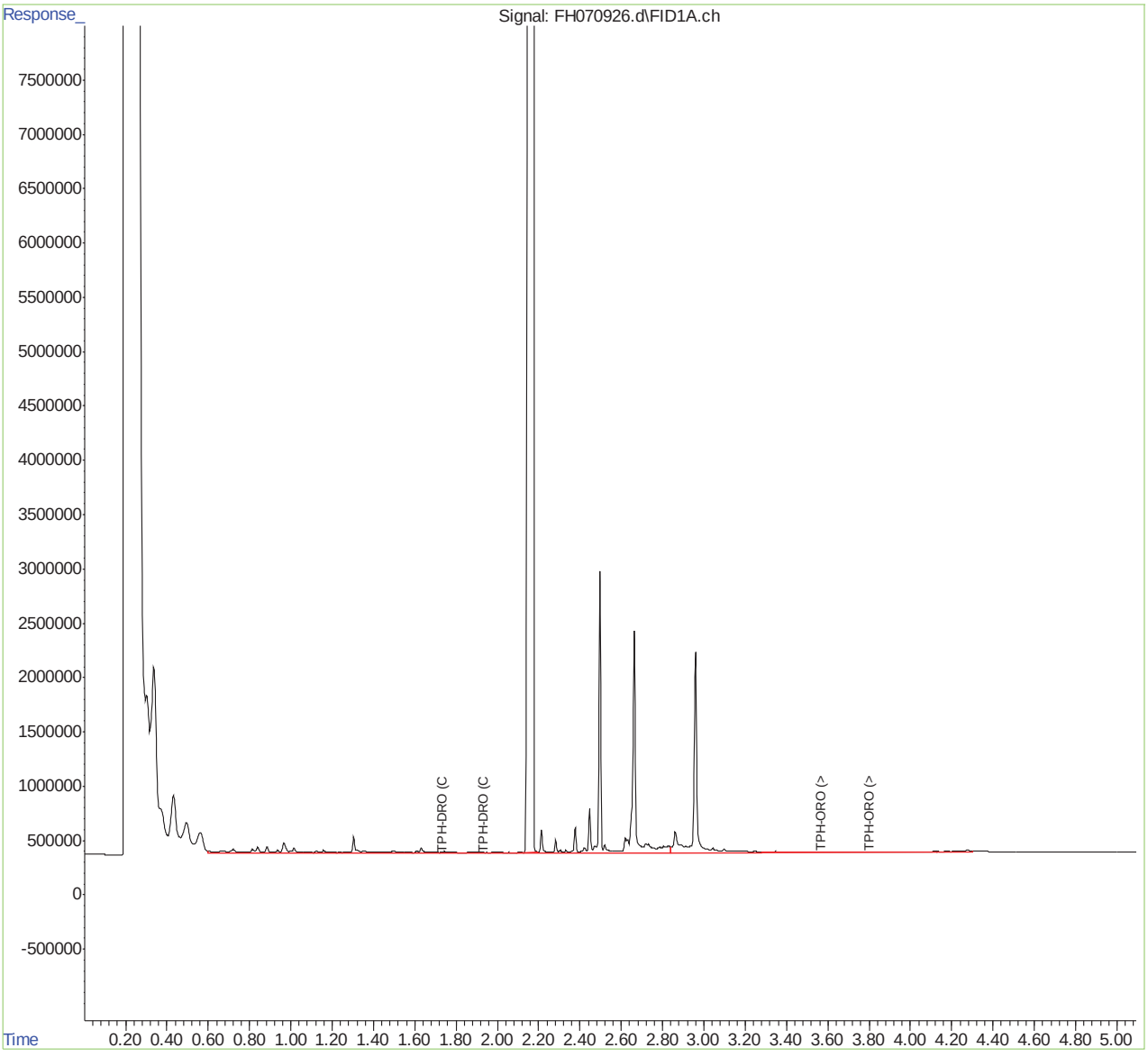
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070926.d
Signal(s) : FID1A.ch
Acq On : 14 Jan 2024 10:19 pm
Operator : jackb
Sample : da611230-7
Misc : OP24873,GFH23804,1000,,,1,1
ALS Vial : 15 Sample Multiplier: 1

F2-TW-0010961-23335-N
DRO 148
ORO 74.9 J
Total TPH 222.9

Integration File: autoint1.e
Quant Time: Jan 15 11:29:53 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.23
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074963.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 7:08 am
Operator : jackb
Sample : da62505-8
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 63 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 14:20:32 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.339	41106794	89.127	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	15900813	52.441	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	4583602	18.684	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

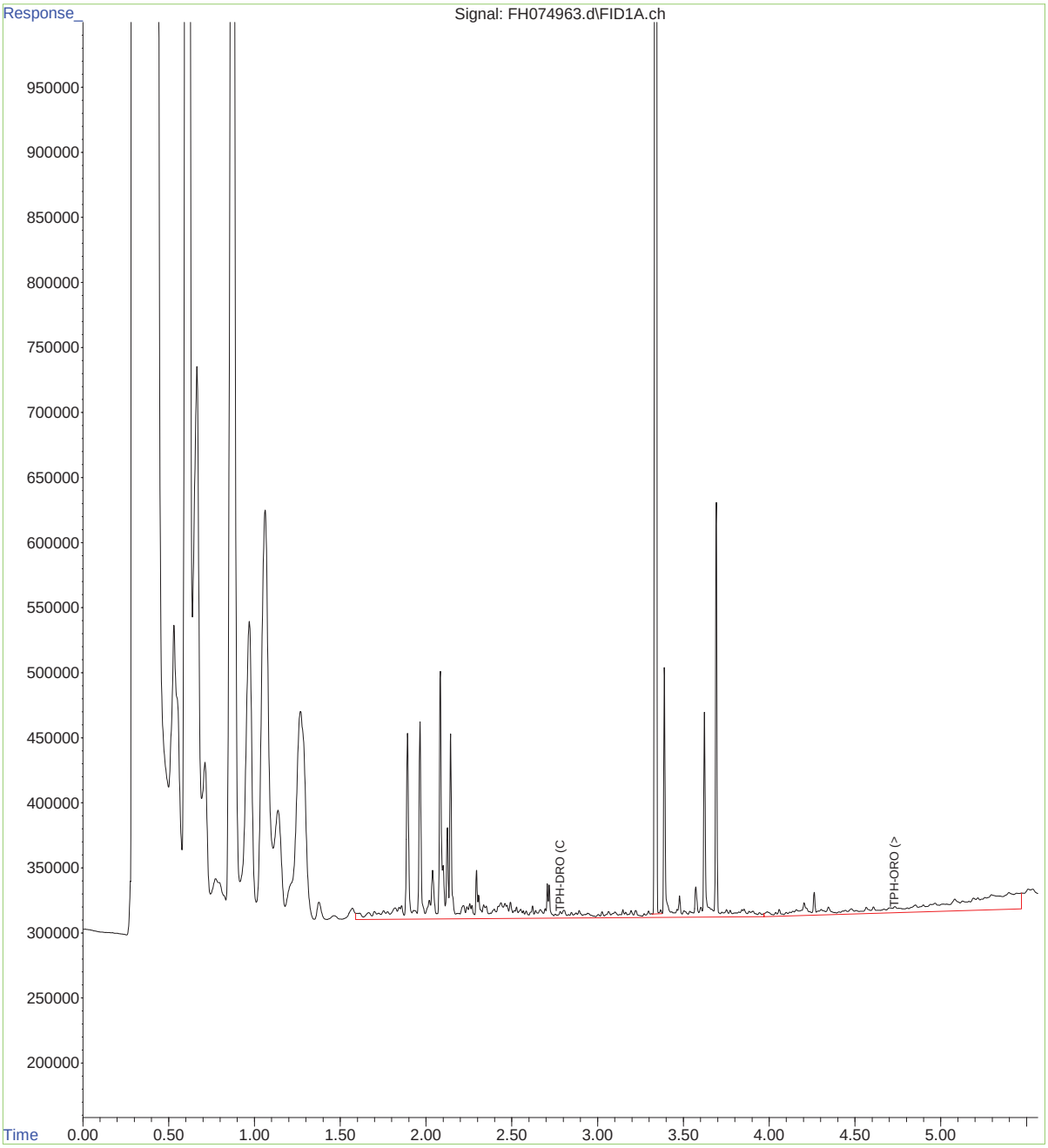
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074963.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 7:08 am
Operator : jackb
Sample : da62505-8
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 63 Sample Multiplier: 1

F2-TW-0010961-23335-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 14:20:32 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22938.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 05:02:53
Operator : jackb
Sample : DA62516-8
Misc : OP25270,GLW655,56.7,,,2,1
ALS Vial : 35 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 04 08:31:46 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.285	15734920	8.454 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 84.54%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	425266	0.315 ppm
2) H TPH-ORO (>C28-C40)	4.880	129356	0.307 ppm m
3) H TPH-DRO (C10-C24)	2.880	363509	0.266 ppm
4) H TPH-ORO (>C24-C40)	4.680	244467	0.308 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW22938.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 05:02:53
Operator : jackb
Sample : DA62516-8
Misc : OP25270,GLW655,56.7,,,2,1
ALS Vial : 35 Sample Multiplier: 1

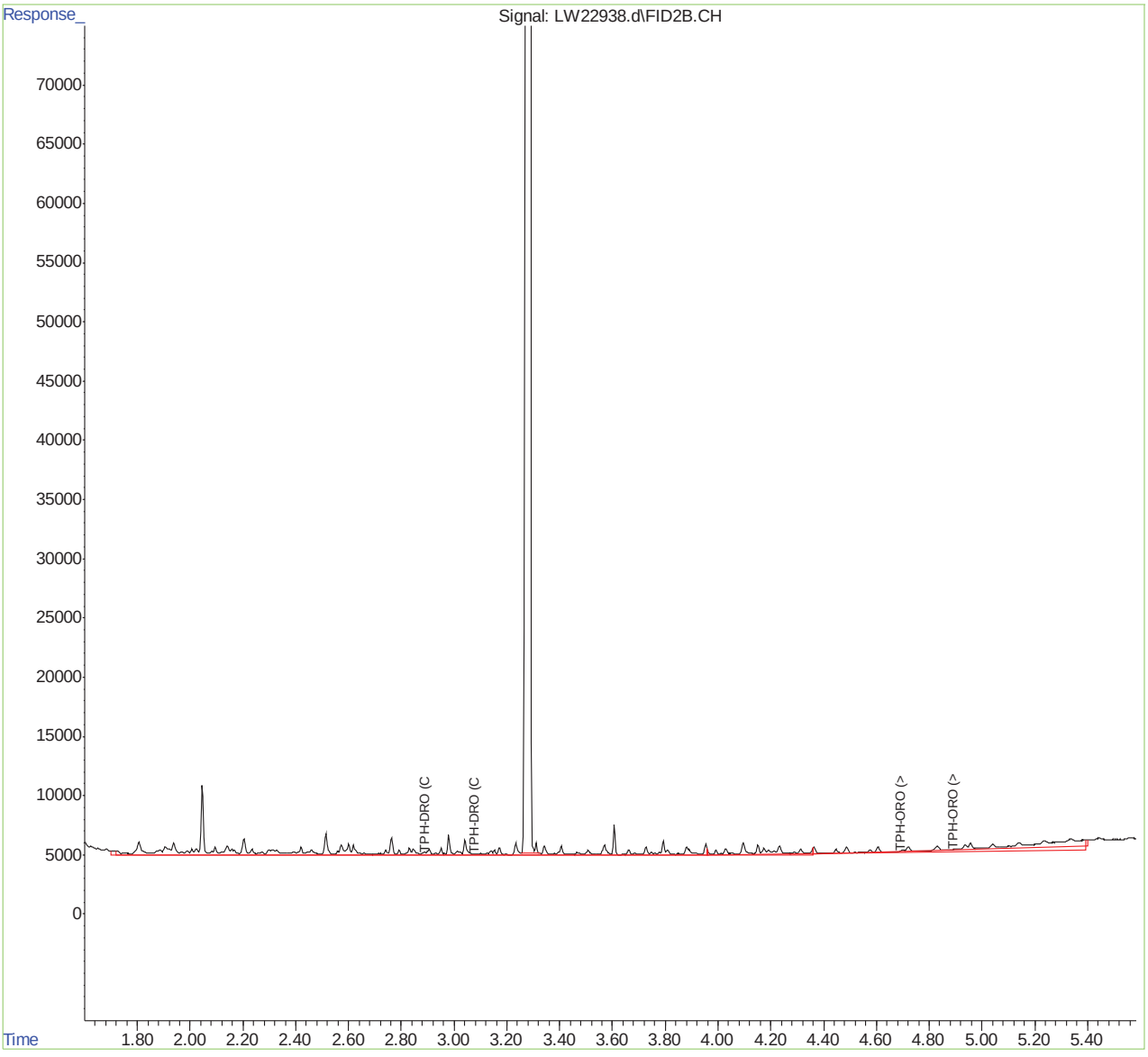
F2-TW-0010961-23335-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH 48 U

Integration File: autoint1.e
Quant Time: Mar 04 08:31:46 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

7.1.8

7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\DRO\010724\
Data File : FH070539.d
Signal(s) : FID1A.ch
Acq On : 7 Jan 2024 8:33 pm
Operator : jackb
Sample : da61128-1
Misc : OP24826,GFH23790,1040,,,1,1
ALS Vial : 20 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 09 09:36:07 2024
Quant Method : C:\msdchem\1\methods\DRO-122823.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 04 16:49:54 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.170	746206647	1328.708	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.980	62620704	161.014	ug/ml
3) H	TPH-DRO (C10-C24)	1.760	41589873	108.367	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	11747466	46.449	ug/mlm
5) H	TPH-ORO (>C24-C40)	3.570	30237460	71.150	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

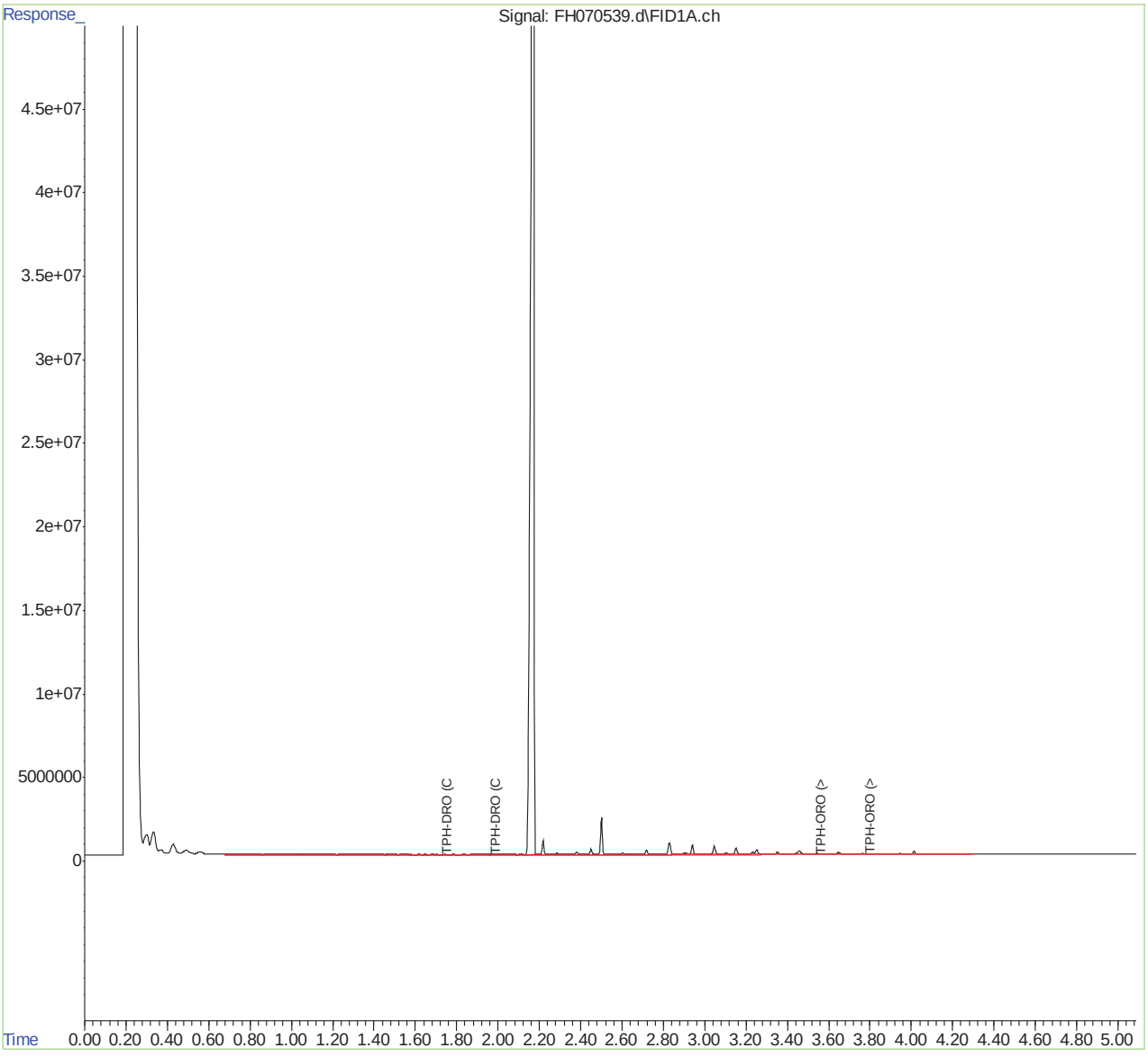
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\DRO\010724\
Data File : FH070539.d
Signal(s) : FID1A.ch
Acq On : 7 Jan 2024 8:33 pm
Operator : jackb
Sample : da61128-1
Misc : OP24826,GFH23790,1040,,,1,1
ALS Vial : 20 Sample Multiplier: 1

H2-TW-0013650-23335-A
DRO 104
ORO 68.4
Total TPH 172.4

Integration File: autoint1.e
Quant Time: Jan 09 09:36:07 2024
Quant Method : C:\msdchem\1\methods\DRO-122823.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 04 16:49:54 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010724\
Data File : LW19236.d
Signal(s) : FID2B.CH
Acq On : 08-Jan-24, 11:11:30
Operator : jackb
Sample : da61129-1
Misc : OP24824,GLW602,58.5,,,2,1
ALS Vial : 66 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 08 12:23:16 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	4.652	17931873	8.694 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 86.94%	
Target Compounds			
1) H TPH-DRO (C10-C28)	4.160	1134697	0.726 ppm
2) H TPH-ORO (>C28-C40)	6.510	285182	0.387 ppm
3) H TPH-DRO (C10-C24)	3.920	823344	0.556 ppm
4) H TPH-ORO (>C24-C40)	6.270	571743	0.439 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

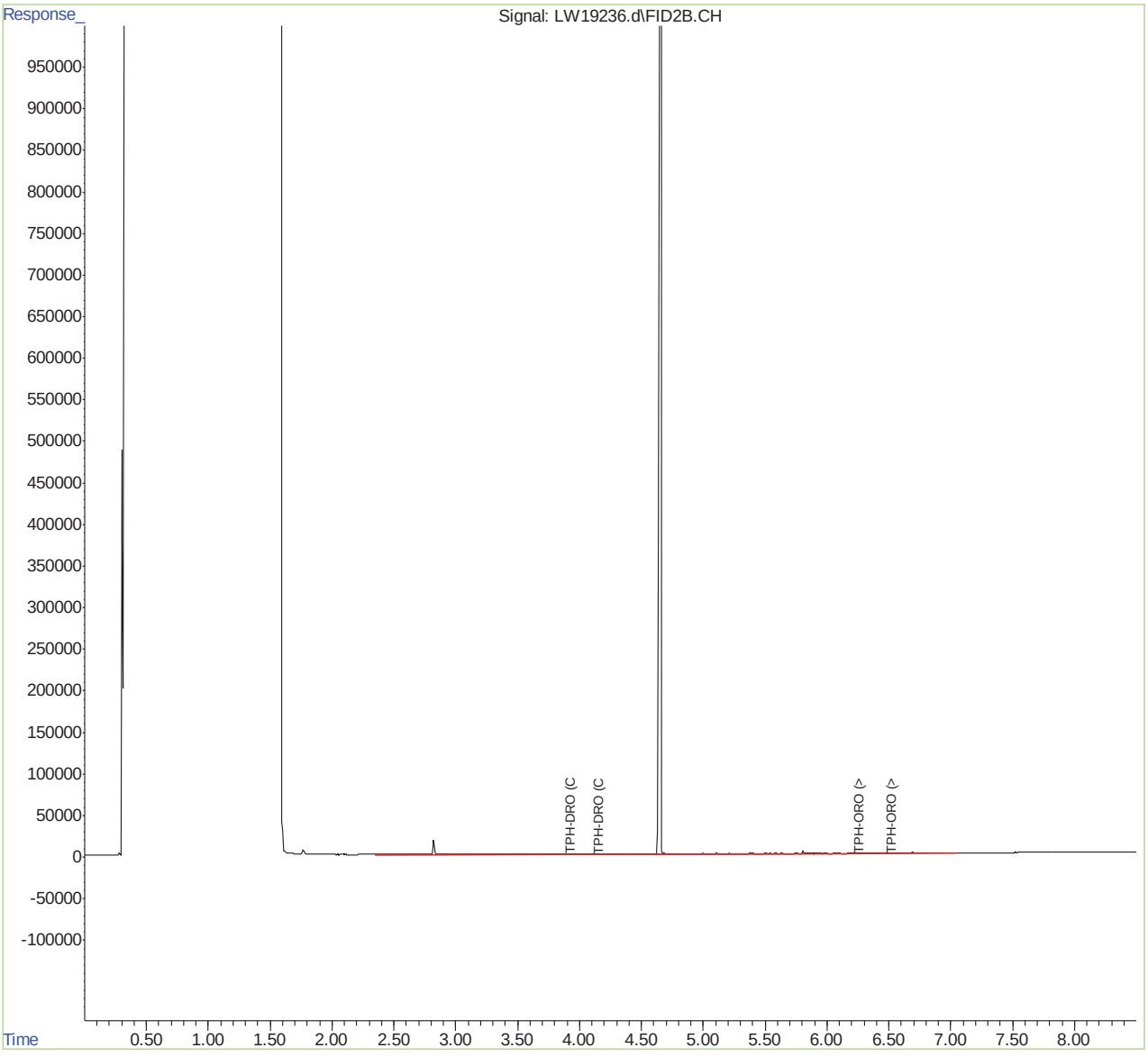
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\010724\
Data File : LW19236.d
Signal(s) : FID2B.CH
Acq On : 08-Jan-24, 11:11:30
Operator : jackb
Sample : da61129-1
Misc : OP24824,GLW602,58.5,,,2,1
ALS Vial : 66 Sample Multiplier: 1

H2-TW-0013650-23335-A-ME
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Jan 08 12:23:16 2024
Quant Method : C:\msdchem\1\methods\DROLVI-102523.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Dec 22 18:25:32 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-102523.M Mon Jan 08 16:39:47 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074975.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 9:18 am
Operator : jackb
Sample : da62508-2
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 73 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 08 14:29:30 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	3.339	33902198	73.507	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	0.000	0	N.D.	ug/mld
3) H	TPH-DRO (C10-C24)	2.780	12130876	40.008	ug/ml
4) H	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/mld
5) H	TPH-ORO (>C24-C40)	4.720	2478619	10.104	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

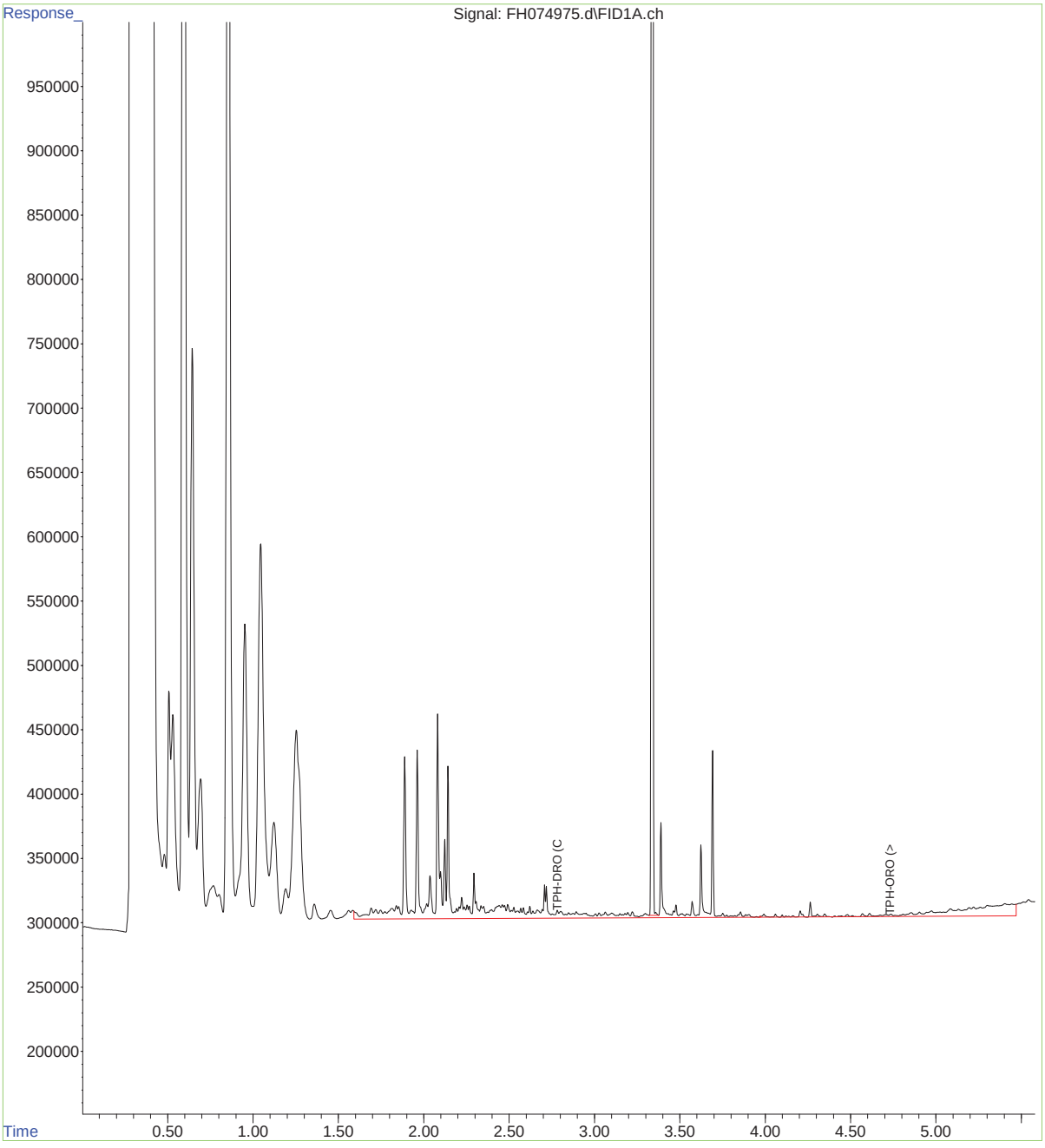
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030524\
Data File : FH074975.d
Signal(s) : FID1A.ch
Acq On : 6 Mar 2024 9:18 am
Operator : jackb
Sample : da62508-2
Misc : OP25259,GFH23865,1050,,,1,1
ALS Vial : 73 Sample Multiplier: 1

H2-TW-0013650-23335-A-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 08 14:29:30 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030824\
Data File : LW23461.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 10:08:59
Operator : jackb
Sample : DA62519-2
Misc : OP25309,GLW661,57.1,,,2.0,1
ALS Vial : 49 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 09 10:24:05 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	3.273	14668577	7.861	ppm	
Spiked Amount 10.000	Range 70 - 130	Recovery = 78.61%			
Target Compounds					
1) H TPH-DRO (C10-C28)	0.000	0	N.D.	ppm	d
2) H TPH-ORO (>C28-C40)	0.000	0	N.D.	ppm	d
3) H TPH-DRO (C10-C24)	2.880	368755	0.270	ppm	
4) H TPH-ORO (>C24-C40)	4.680	194074	0.244	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030824\
Data File : LW23461.d
Signal(s) : FID2B.CH
Acq On : 09-Mar-24, 10:08:59
Operator : jackb
Sample : DA62519-2
Misc : OP25309,GLW661,57.1,,,2.0,1
ALS Vial : 49 Sample Multiplier: 1

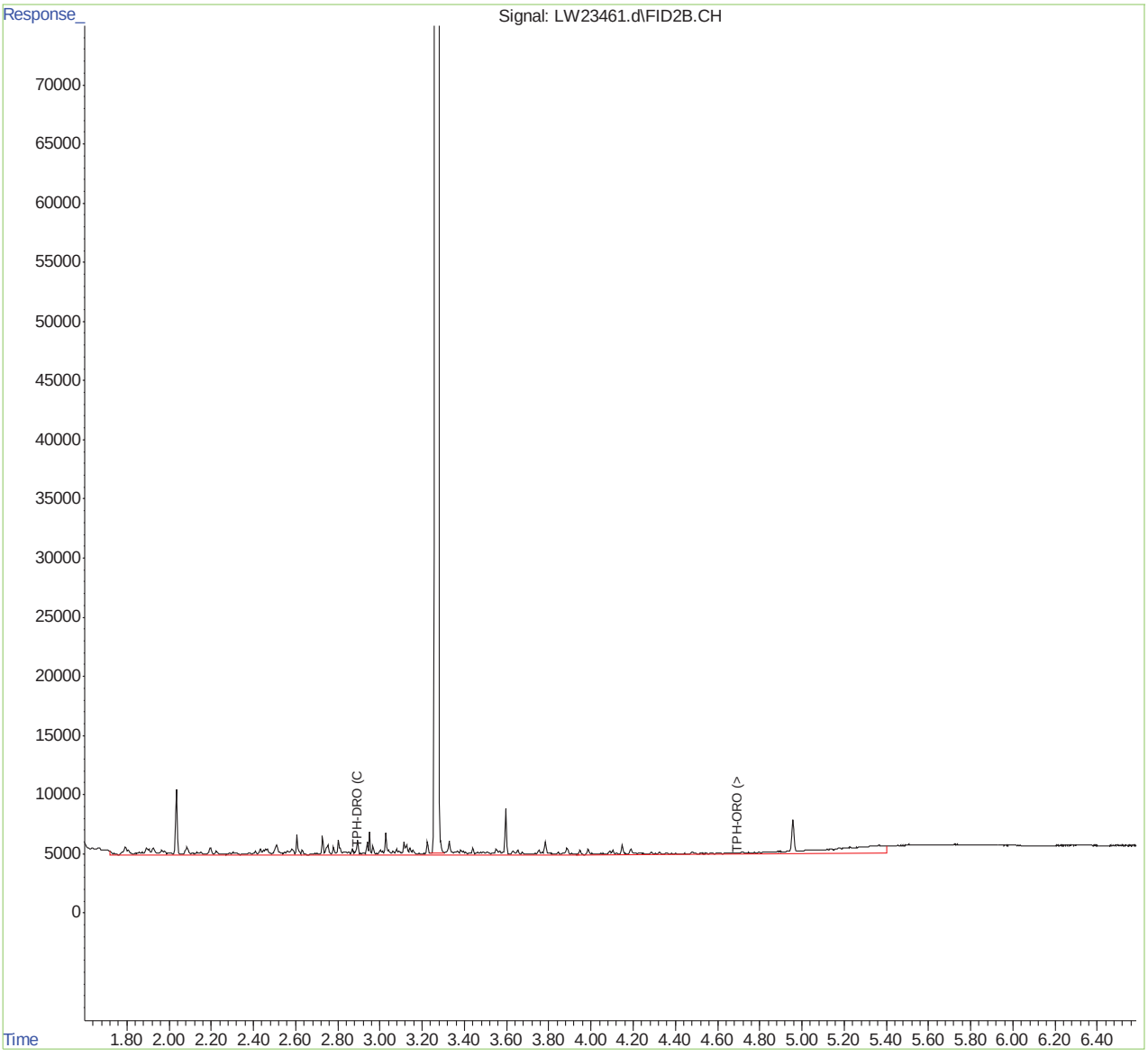
H2-TW-0013650-23335-A-R1-MEQ
TPH-DRO 0.048U
TPH-ORO 0.048 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 09 10:24:05 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

7.1.2

7



DROLVI-030324.M Sat Mar 09 13:17:45 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14285.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 21:57:46
Operator : jackb
Sample : da57313-14
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 02 09:36:04 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.399	33786915	1832.689	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 91.63%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.200	2551625	168.696	ppm	
2) H TPH-ORO (>C28-C40)	4.100	567885	69.719	ppm	
3) H TPH-DRO (C10-C24)	1.980	1867682	124.836	ppm	
4) H TPH-ORO (>C24-C40)	3.880	1058950	76.443	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.34 11

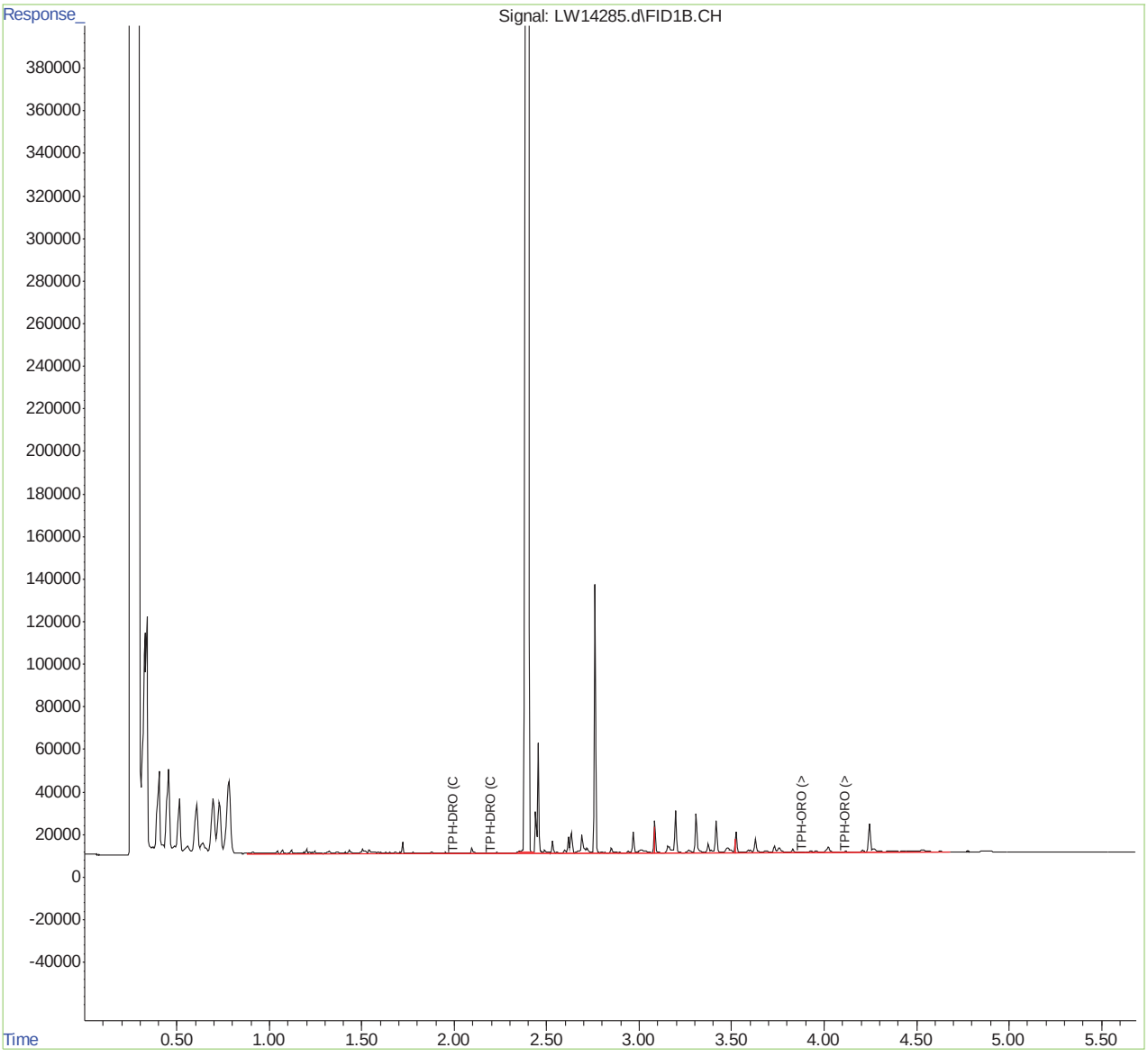
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14285.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 21:57:46
Operator : jackb
Sample : da57313-14
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0008352-23157-N
DRO 120
ORO 73.5 J
Total TPH 193.5

Integration File: autoint1.e
Quant Time: Aug 02 09:36:04 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.34

11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074527.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 6:27 am
Operator : jackb
Sample : da62396-11
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 29 10:42:32 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.062	28729464	58.208 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	16696625	52.563 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	16092730	52.128 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	808838	5.779 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1292208	5.155 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

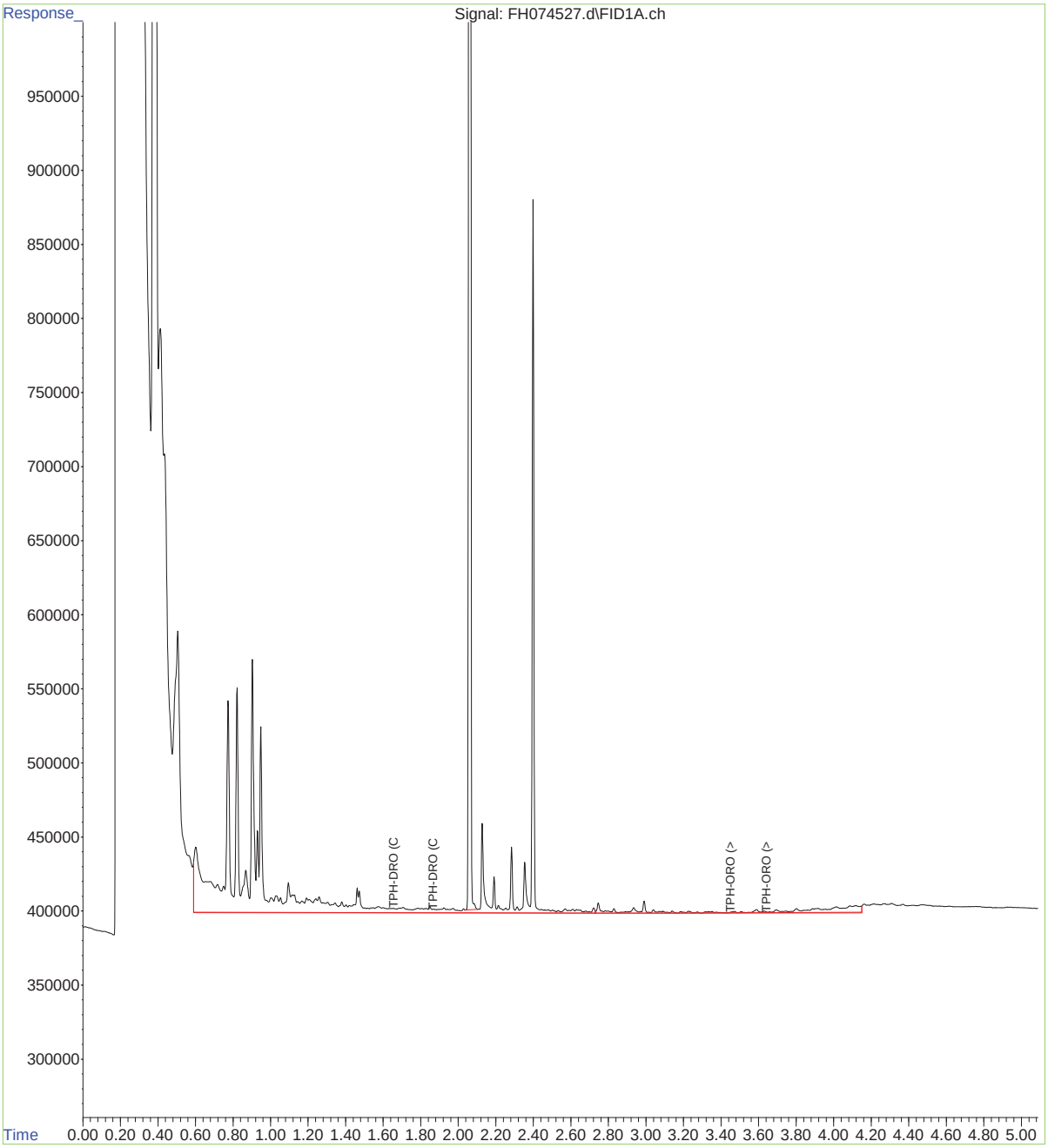
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074527.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 6:27 am
Operator : jackb
Sample : da62396-11
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 53 Sample Multiplier: 1

D2-TW-0008352-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 29 10:42:32 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Thu Feb 29 14:40:13 2024 Page: 2

7.1.11
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031624\
Data File : LW24184.d
Signal(s) : FID2B.CH
Acq On : 16-Mar-24, 16:48:14
Operator : jackb
Sample : da62406-11
Misc : OP25367,GLW670,55.3,,,2,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 17 15:27:48 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
3) S O-TERPHENYL	3.225	13768478	7.360 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 73.60%	
Target Compounds			
1) H TPH-DRO (C10-C24)	2.880	308901	0.226 ppm
2) H TPH-ORO (>C24-C40)	4.680	232160	0.292 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

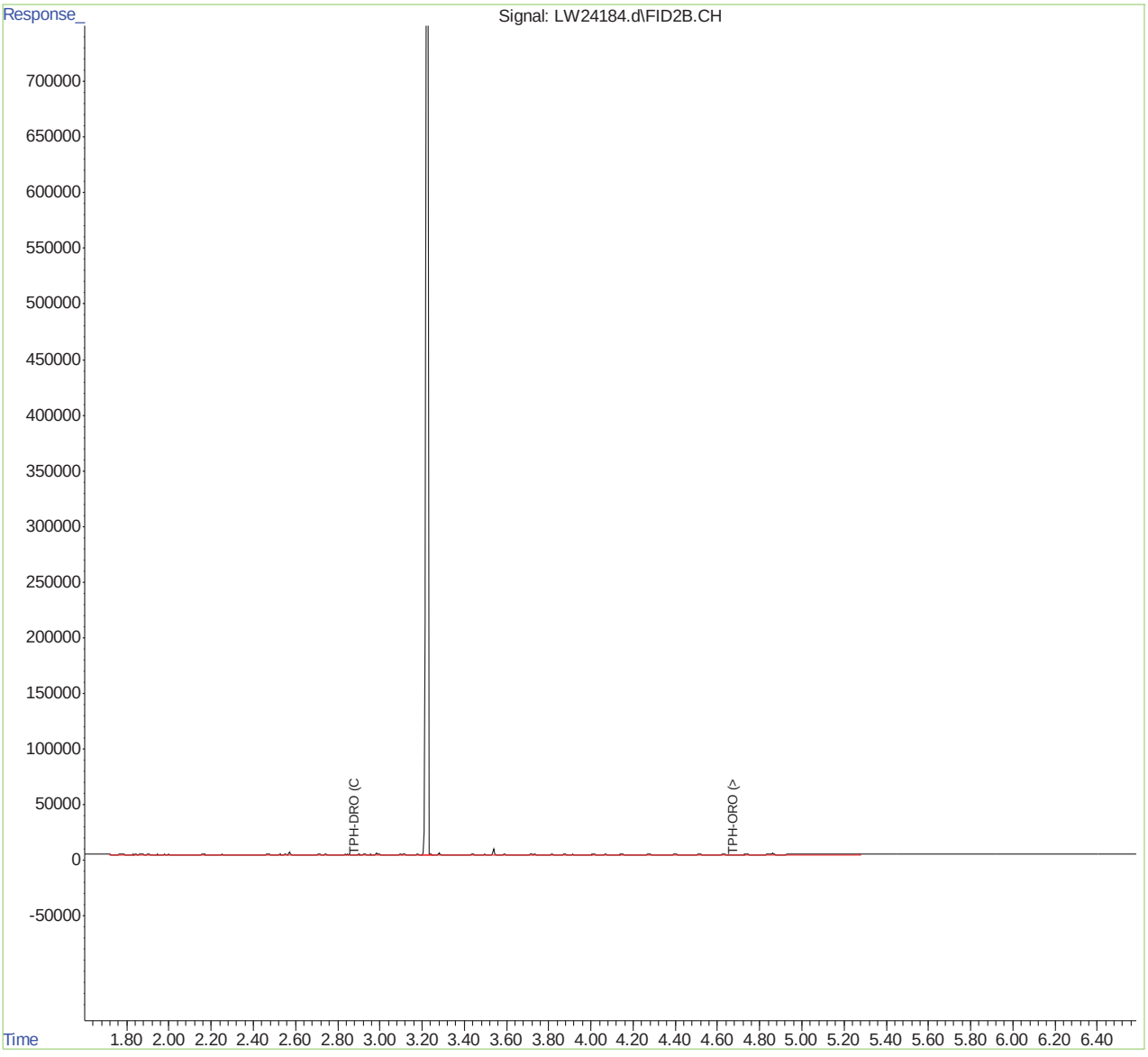
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\031624\
Data File : LW24184.d
Signal(s) : FID2B.CH
Acq On : 16-Mar-24, 16:48:14
Operator : jackb
Sample : da62406-11
Misc : OP25367,GLW670,55.3,,,2,1
ALS Vial : 15 Sample Multiplier: 1

D2-TW-0008352-23157-N-R1-MEQ
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 17 15:27:48 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14278.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:48:57
Operator : jackb
Sample : da57313-9
Misc : OP24080,GLW507,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 02 09:30:36 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
5) S	O-TERPHENYL	2.396	24984582	1355.228	ppm	
Spiked Amount	2000.000	Range 10 - 130	Recovery =	67.76%		
	Target Compounds					
1) H	TPH-DRO (C10-C28)	2.200	2419538	159.963	ppm	
2) H	TPH-ORO (>C28-C40)	4.100	613707	75.345	ppm	
3) H	TPH-DRO (C10-C24)	1.980	1562668	104.449	ppm	
4) H	TPH-ORO (>C24-C40)	3.880	1321010	95.361	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.29 11

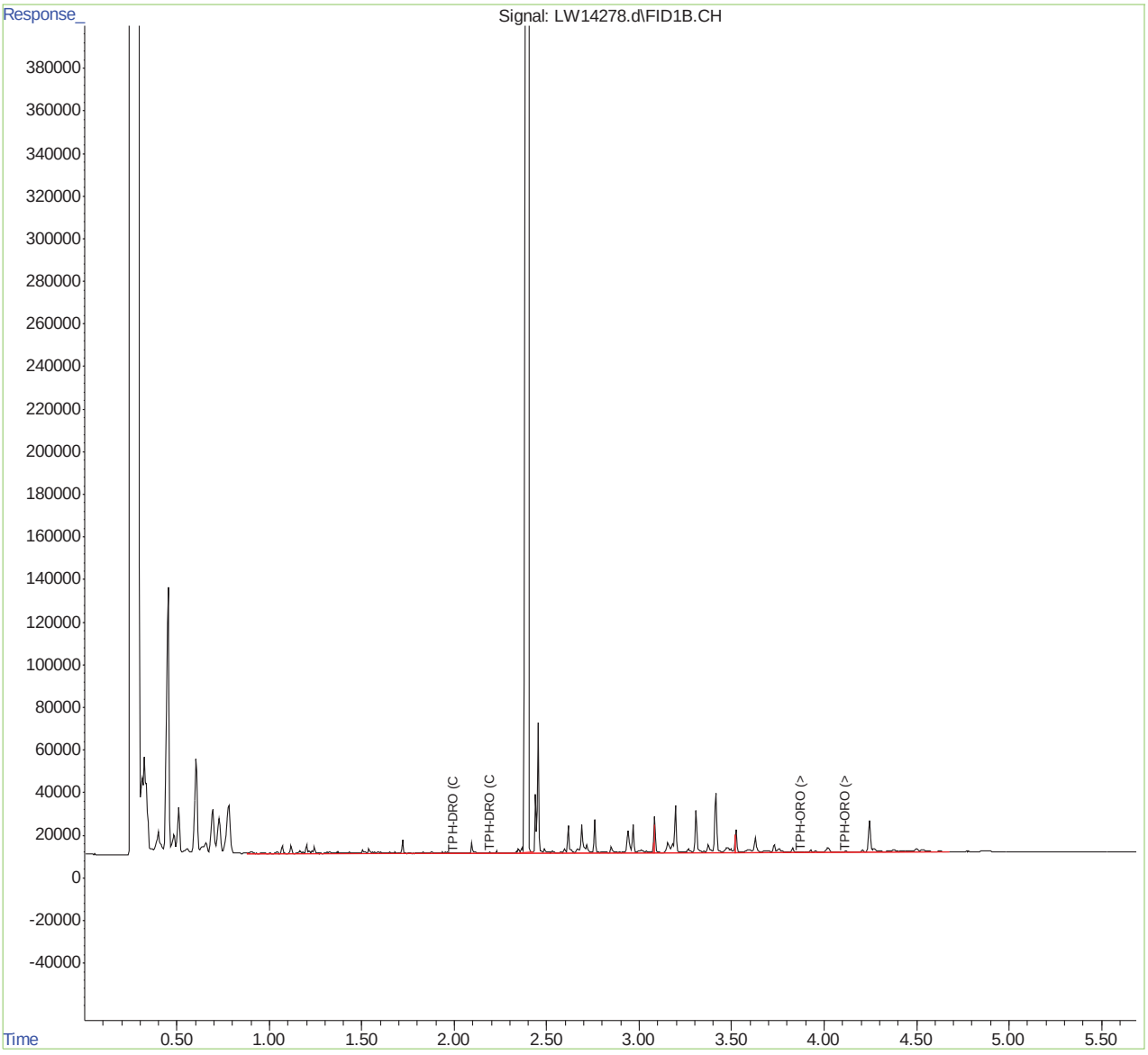
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14278.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:48:57
Operator : jackb
Sample : da57313-9
Misc : OP24080,GLW507,1050,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0008325-23157-N
DRO 99.5
ORO 90.8
Total TPH 190.3

Integration File: autoint1.e
Quant Time: Aug 02 09:30:36 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074517.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:04 am
Operator : jackb
Sample : da62396-1
Misc : OP25243,GFH23861,1040,,,1,1
ALS Vial : 43 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 29 10:42:12 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	2.063	30926154	62.659 ug/ml
	Target Compounds			
2) H	TPH-DRO (C10-C28)	1.870	9498176	29.902 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	7422289	24.043 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	3294544	23.539 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	5301335	21.147 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

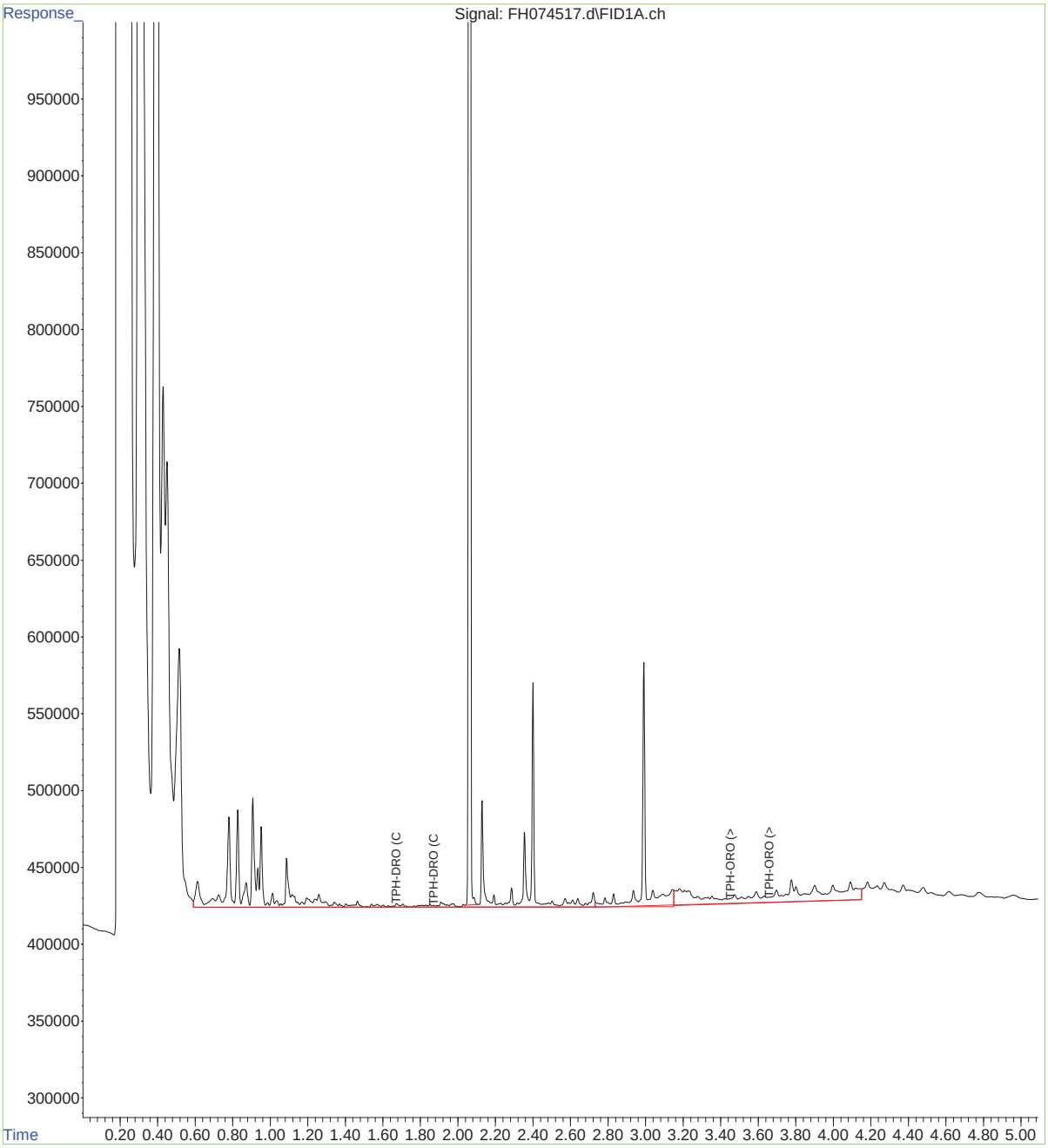
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074517.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:04 am
Operator : jackb
Sample : da62396-1
Misc : OP25243,GFH23861,1040,,,1,1
ALS Vial : 43 Sample Multiplier: 1

D2-TW-0008325-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 29 10:42:12 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Q_DRO+_GFH23853.M Thu Feb 29 14:39:43 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23013.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 19:48:07
Operator : jackb
Sample : DA62406-1
Misc : OP25264,GLW655,57.7,,,2,1
ALS Vial : 18 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 14:40:00 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.283	14490488	7.762 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 77.62%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	387660	0.287 ppm
2) H TPH-ORO (>C28-C40)	4.880	136103	0.323 ppm m
3) H TPH-DRO (C10-C24)	2.880	325715	0.238 ppm
4) H TPH-ORO (>C24-C40)	4.680	274132	0.345 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

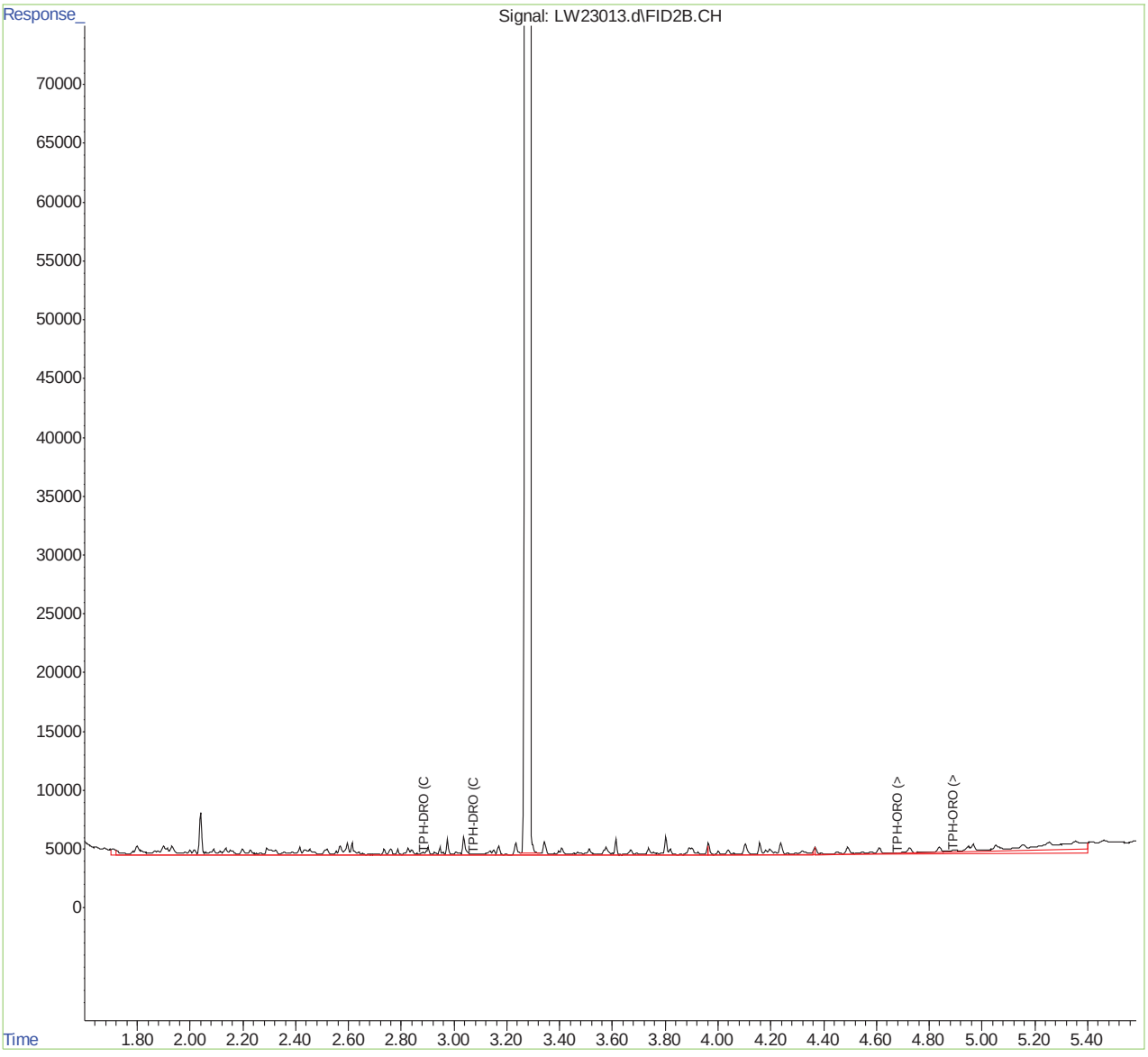
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23013.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 19:48:07
Operator : jackb
Sample : DA62406-1
Misc : OP25264,GLW655,57.7,,,2,1
ALS Vial : 18 Sample Multiplier: 1

D2-TW-0008325-23157-N-R1-MEQ
DRO 47 U
ORO 47 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 14:40:00 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\Jan-Feb 2023\020623a\
Data File : LW7283.d
Signal(s) : FID1B.CH
Acq On : 06-Feb-23, 22:03:59
Operator : jackb
Sample : da53064-13
Misc : OP23170,GLW342,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 07 11:16:20 2023
Quant Method : C:\msdchem\1\methods\DRO010423.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Jan 06 13:22:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.381	29967379	1388.181	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 69.41%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.160	1522063	95.430	ppm	
2) H TPH-ORO (>C28-C40)	4.040	398528	55.099	ppm	m
3) H TPH-DRO (C10-C24)	1.940	1177055	73.722	ppm	
4) H TPH-ORO (>C24-C40)	3.820	953786	86.762	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

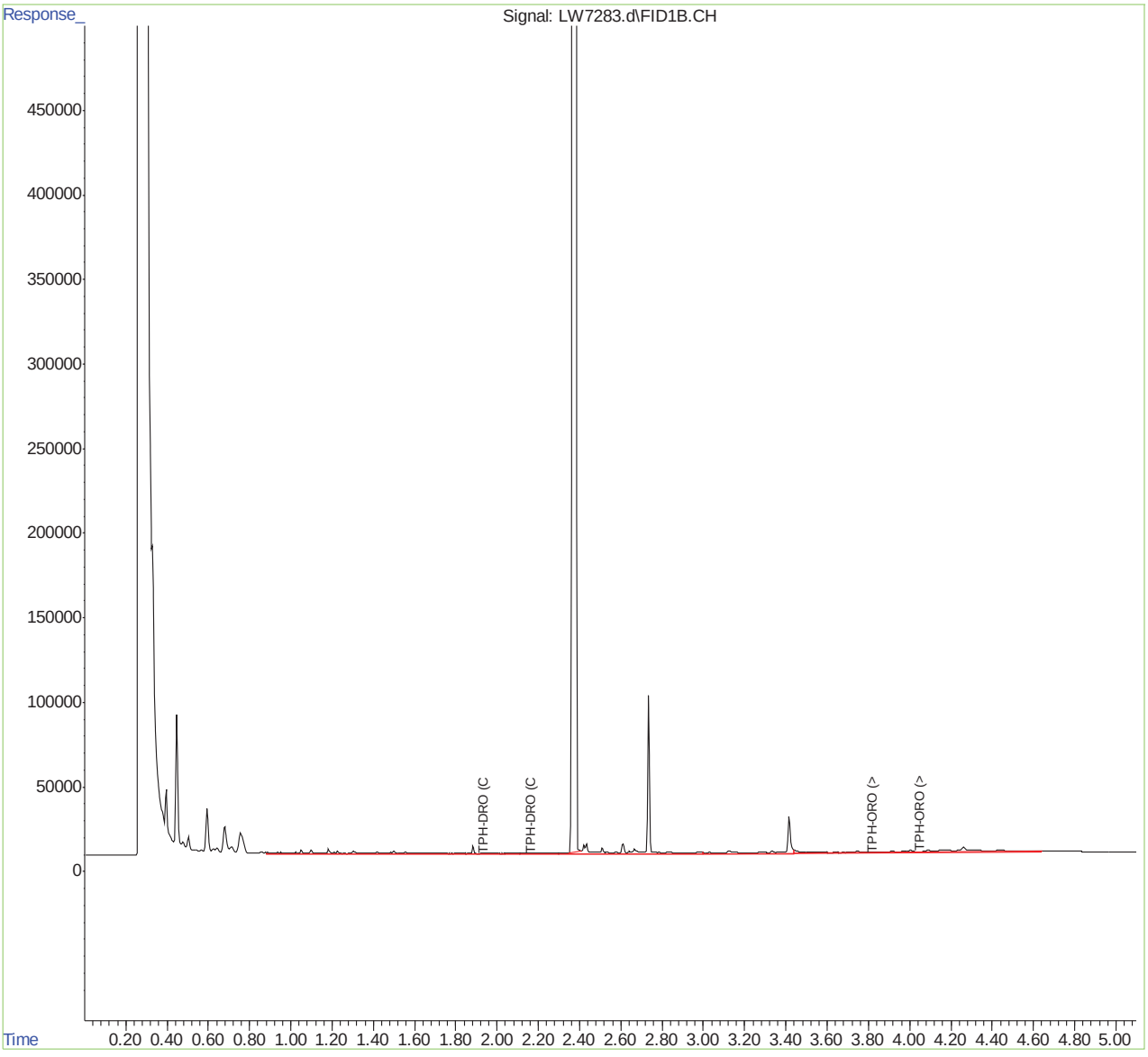
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\Jan-Feb 2023\020623a\
Data File : LW7283.d
Signal(s) : FID1B.CH
Acq On : 06-Feb-23, 22:03:59
Operator : jackb
Sample : da53064-13
Misc : OP23170,GLW342,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D3-TW-0010603-22347-N
DRO 73.7 J
ORO 86.8 J
Total TPH 160.5

Integration File: autoint1.e
Quant Time: Feb 07 11:16:20 2023
Quant Method : C:\msdchem\1\methods\DRO010423.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Fri Jan 06 13:22:48 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO010423.M Tue Feb 07 11:22:09 2023 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\070723\
Data File : LW12944.d
Signal(s) : FID1B.CH
Acq On : 08-Jul-23, 18:30:28
Operator : jackb
Sample : da56615-1
Misc : OP23954,GLW481,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jul 09 13:10:55 2023
Quant Method : C:\msdchem\1\methods\DRO070823.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sun Jul 09 12:32:29 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	2.402	47496262	1985.609 ppm
Spiked Amount 2000.000	Range 10 - 130	Recovery = 99.28%	
Target Compounds			
1) H TPH-DRO (C10-C28)	2.160	1431213	79.664 ppm
2) H TPH-ORO (>C28-C40)	4.090	180645	17.872 ppm
3) H TPH-DRO (C10-C24)	1.940	1244925	70.784 ppm
4) H TPH-ORO (>C24-C40)	3.870	416965	23.621 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

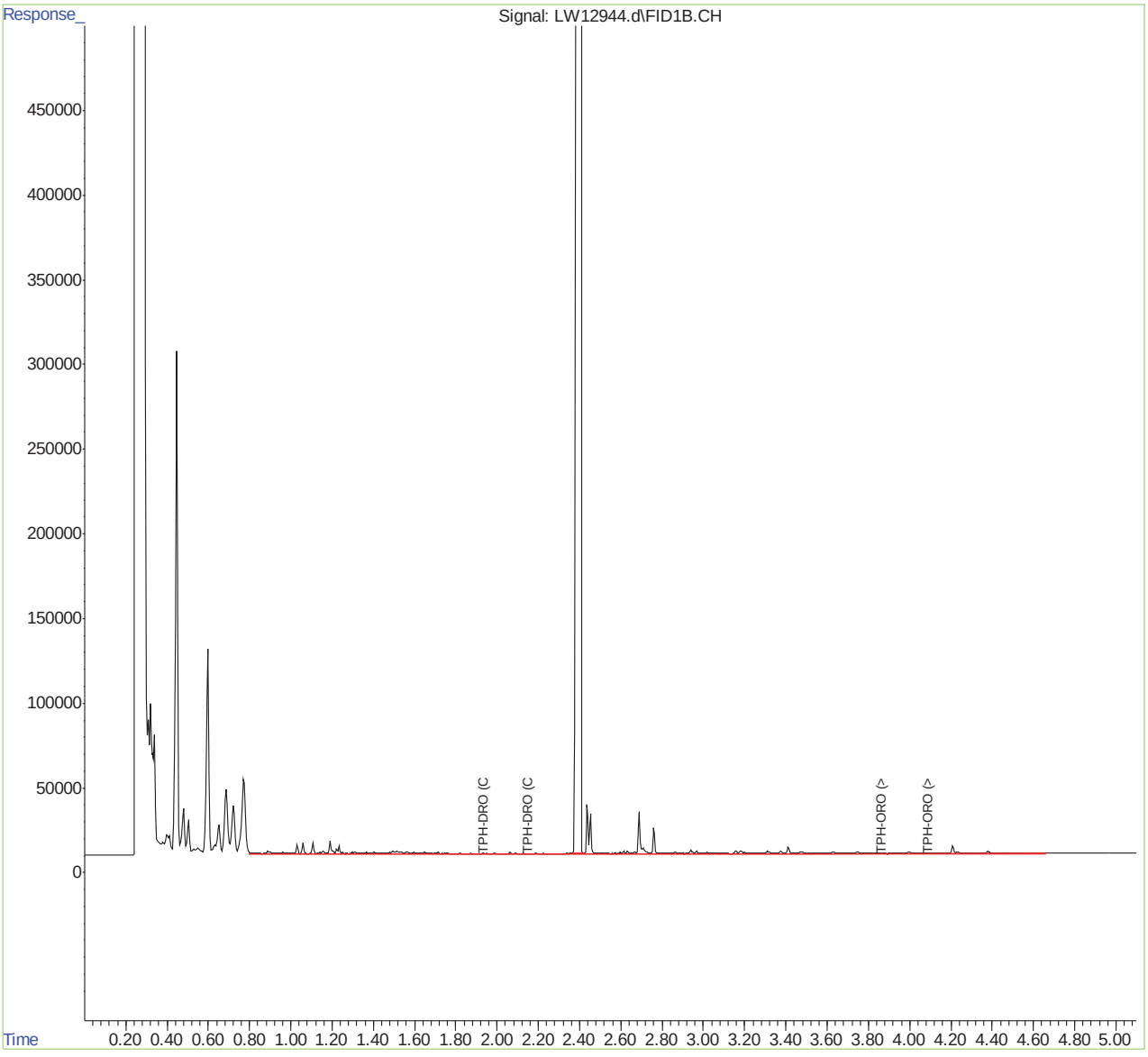
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\070723\
Data File : LW12944.d
Signal(s) : FID1B.CH
Acq On : 08-Jul-23, 18:30:28
Operator : jackb
Sample : da56615-1
Misc : OP23954,GLW481,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D3-TW-0010603-23162-N-T
DRO 70.8 J
ORO 52 U
Total TPH 70.8

Integration File: autoint1.e
Quant Time: Jul 09 13:10:55 2023
Quant Method : C:\msdchem\1\methods\DRO070823.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sun Jul 09 12:32:29 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/06/24 12:51

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074842.d
Signal(s) : FID1A.ch
Acq On : 3 Mar 2024 7:25 am
Operator : jackb
Sample : da62446-19
Misc : OP25250,GFH23864,1050,,,1,1
ALS Vial : 70 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 18:47:12 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	3.334	52823084	114.531 ug/mlm
	Target Compounds			
2) H	TPH-DRO (C10-C28)	2.990	28884006	93.658 ug/mlm
3) H	TPH-DRO (C10-C24)	2.780	24198748	79.808 ug/mlm
4) H	TPH-ORO (>C28-C40)	4.910	8193094	60.243 ug/mlm
5) H	TPH-ORO (>C24-C40)	4.700	13414138	54.681 ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.31
11

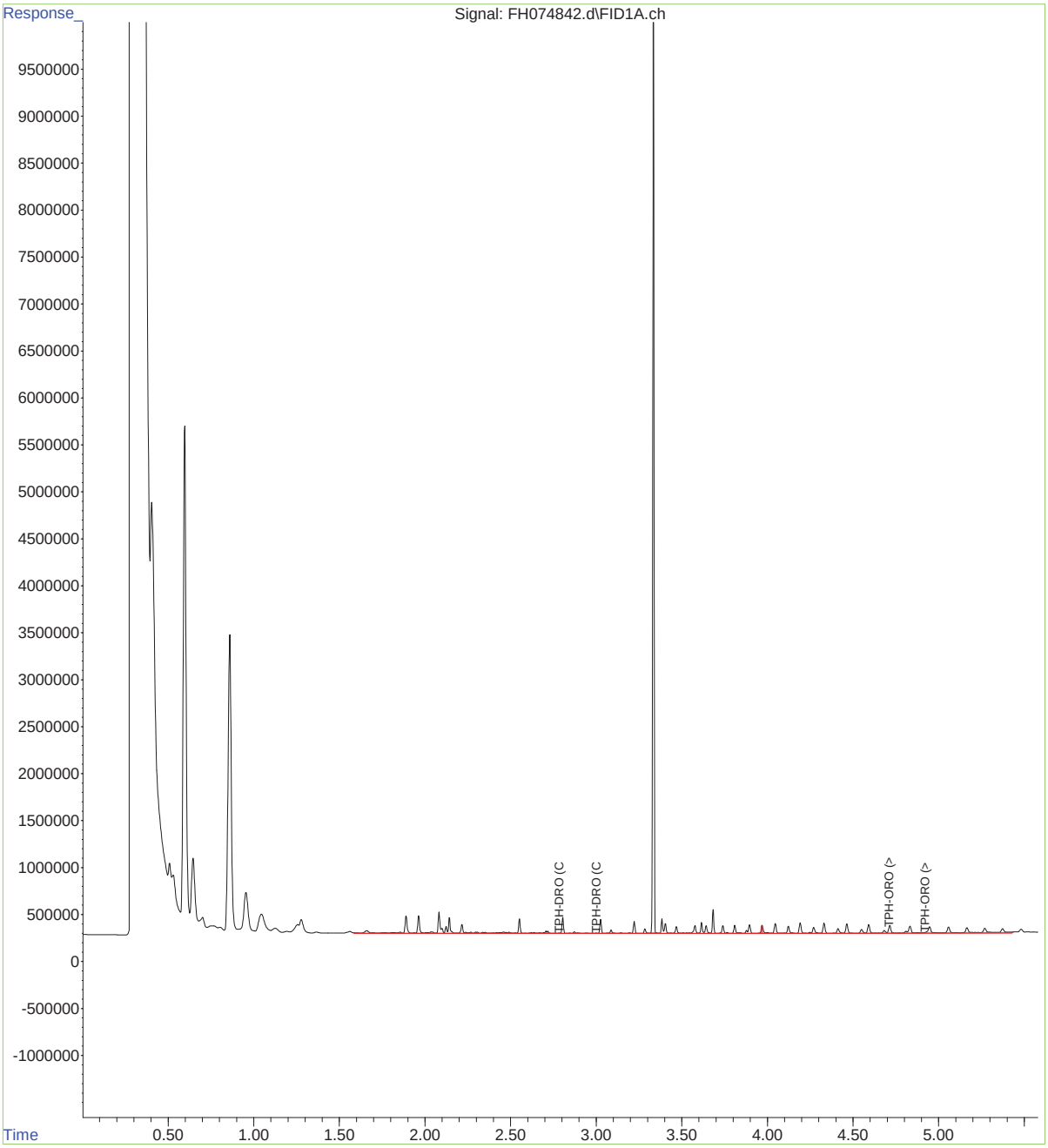
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074842.d
Signal(s) : FID1A.ch
Acq On : 3 Mar 2024 7:25 am
Operator : jackb
Sample : da62446-19
Misc : OP25250,GFH23864,1050,,,1,1
ALS Vial : 70 Sample Multiplier: 1

D3-TW-0010603-22347-N-R1
DRO 76.0
ORO 52.1 J
Total TPH 128.1

Integration File: autoint1.e
Quant Time: Mar 05 18:47:12 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



11.1.31 11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23090.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 14:08:08
Operator : jackb
Sample : DA62458-19
Misc : OP25269,GLW656,57,,,2,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 16:31:36 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.274	14986395	8.038 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 80.38%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	333862	0.248 ppm
2) H TPH-ORO (>C28-C40)	4.880	197882	0.470 ppm
3) H TPH-DRO (C10-C24)	2.880	300352	0.220 ppm
4) H TPH-ORO (>C24-C40)	4.680	291693	0.367 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

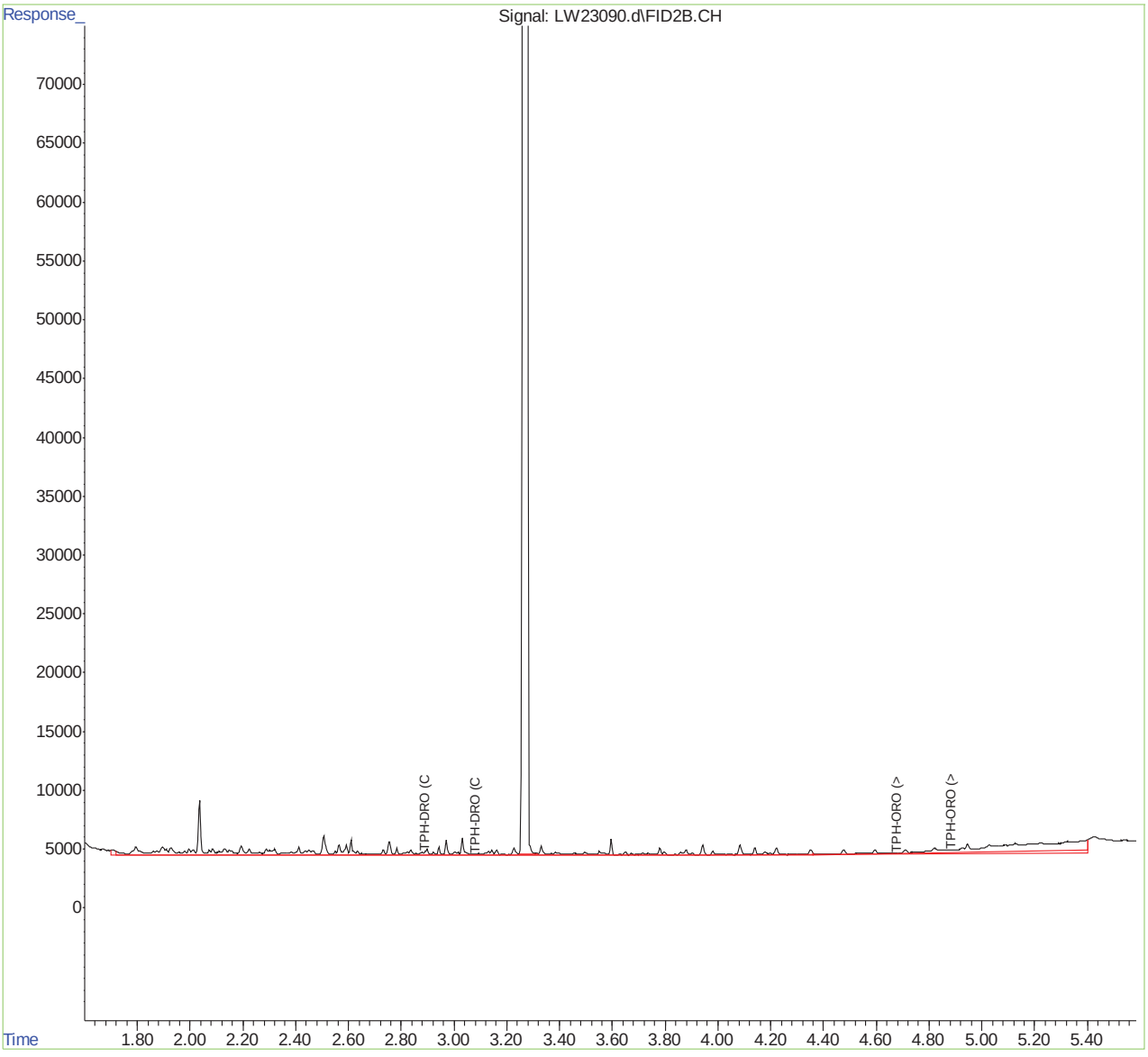
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23090.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 14:08:08
Operator : jackb
Sample : DA62458-19
Misc : OP25269,GLW656,57,,,2,1
ALS Vial : 15 Sample Multiplier: 1

D3-TW-0010603-22347-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 16:31:36 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Tue Mar 05 16:46:57 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14276.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:29:23
Operator : jackb
Sample : da57313-7
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Aug 02 09:29:56 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.399	31740458	1721.684	ppm	
Spiked Amount 2000.000 Range 10 - 130	Recovery = 86.08%				
Target Compounds					
1) H TPH-DRO (C10-C28)	2.200	2776012	183.531	ppm	
2) H TPH-ORO (>C28-C40)	4.100	672450	82.557	ppm	
3) H TPH-DRO (C10-C24)	1.980	1747730	116.819	ppm	
4) H TPH-ORO (>C24-C40)	3.880	1470604	106.160	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

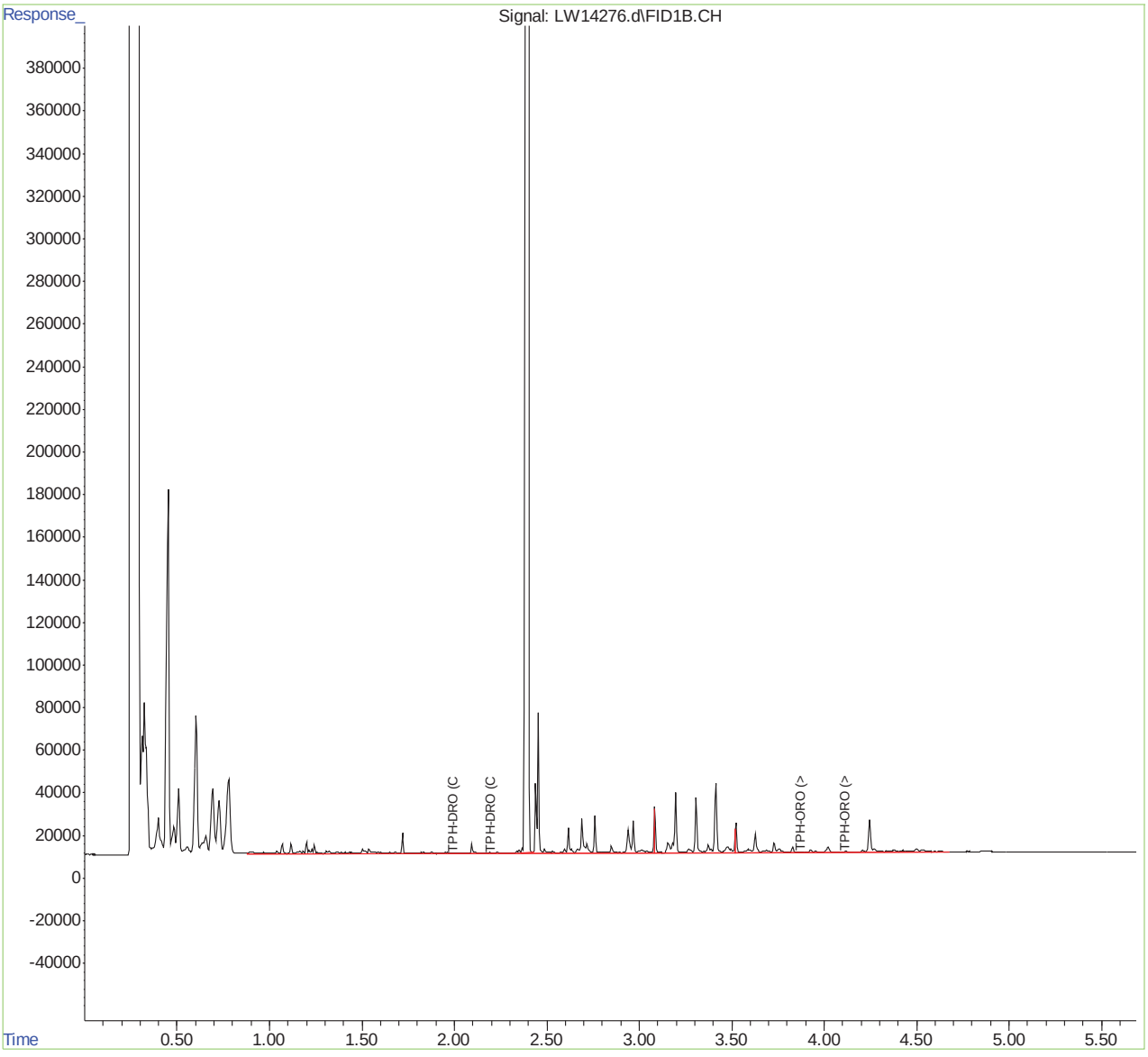
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\08.23\080123\
Data File : LW14276.d
Signal(s) : FID1B.CH
Acq On : 01-Aug-23, 20:29:23
Operator : jackb
Sample : da57313-7
Misc : OP24080,GLW507,1040,,,1,1
ALS Vial : 0 Sample Multiplier: 1

D2-TW-0007773-23157-N
DRO 112
ORO 102
Total TPH 214

Integration File: autoint1.e
Quant Time: Aug 02 09:29:56 2023
Quant Method : C:\msdchem\1\methods\DRO072623a.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Thu Jul 27 13:09:16 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.27
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074518.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:13 am
Operator : jackb
Sample : da62396-2
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 29 10:42:14 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
System Monitoring Compounds				
1) S	o-Terphenyl	2.063	32576415	66.002 ug/ml
Target Compounds				
2) H	TPH-DRO (C10-C28)	1.870	10065002	31.686 ug/ml
3) H	TPH-DRO (C10-C24)	1.660	9683455	31.367 ug/ml
4) H	TPH-ORO (>C28-C40)	3.650	986785	7.050 ug/ml
5) H	TPH-ORO (>C24-C40)	3.440	1298989	5.182 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

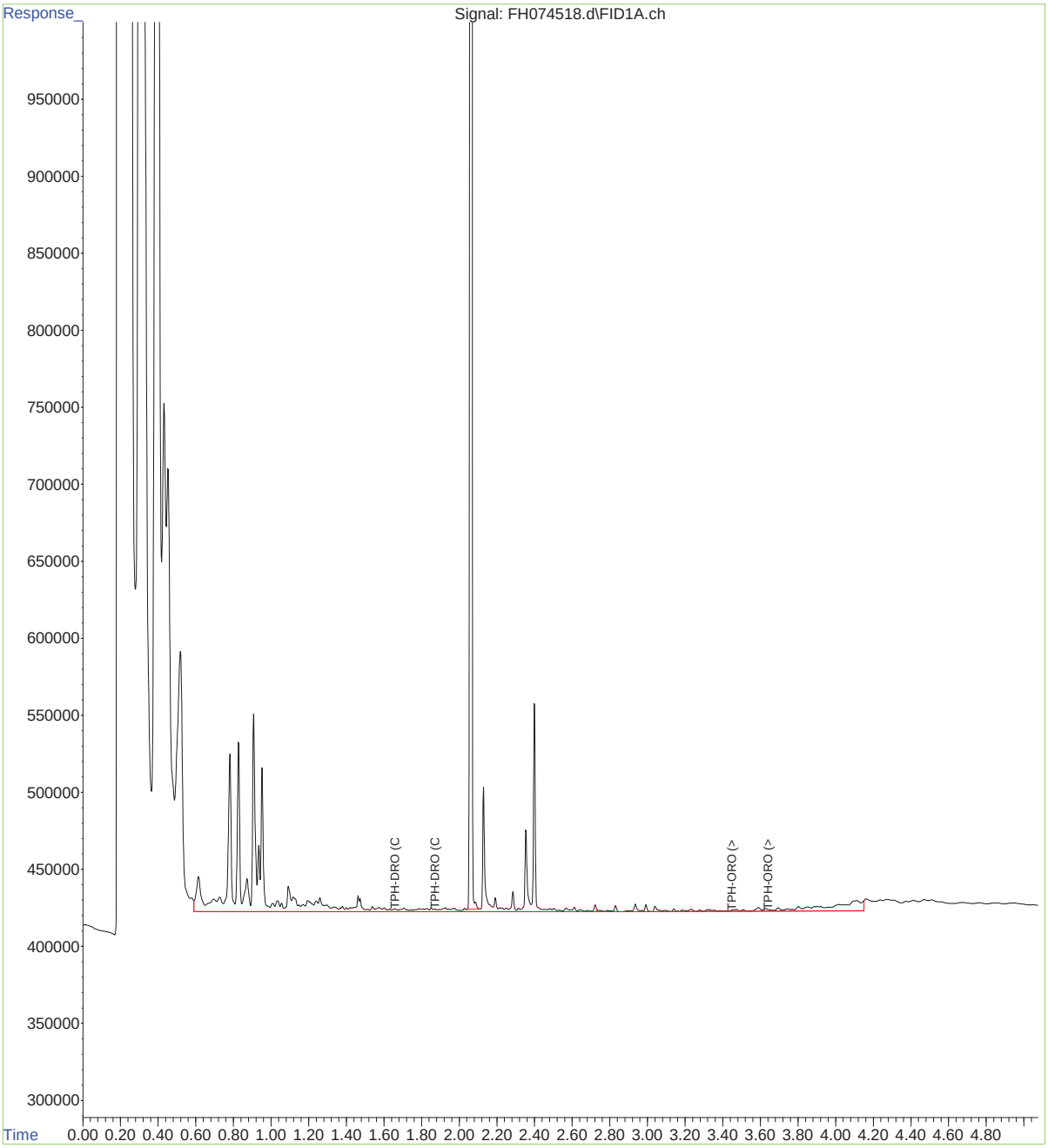
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\02.24\022724\
Data File : FH074518.d
Signal(s) : FID1A.ch
Acq On : 29 Feb 2024 5:13 am
Operator : jackb
Sample : da62396-2
Misc : OP25243,GFH23861,1050,,,1,1
ALS Vial : 44 Sample Multiplier: 1

D2-TW-0007773-23157-N-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Feb 29 10:42:14 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23853.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Feb 22 11:04:04 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23014.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 19:58:49
Operator : jackb
Sample : DA62406-2
Misc : OP25264,GLW655,57.5,,,2,1
ALS Vial : 19 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 14:40:15 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.283	14795455	7.931 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 79.31%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	378248	0.280 ppm
2) H TPH-ORO (>C28-C40)	4.880	121430	0.288 ppm m
3) H TPH-DRO (C10-C24)	2.880	326430	0.239 ppm
4) H TPH-ORO (>C24-C40)	4.680	270600	0.340 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23014.d
Signal(s) : FID2B.CH
Acq On : 04-Mar-24, 19:58:49
Operator : jackb
Sample : DA62406-2
Misc : OP25264,GLW655,57.5,,,2,1
ALS Vial : 19 Sample Multiplier: 1

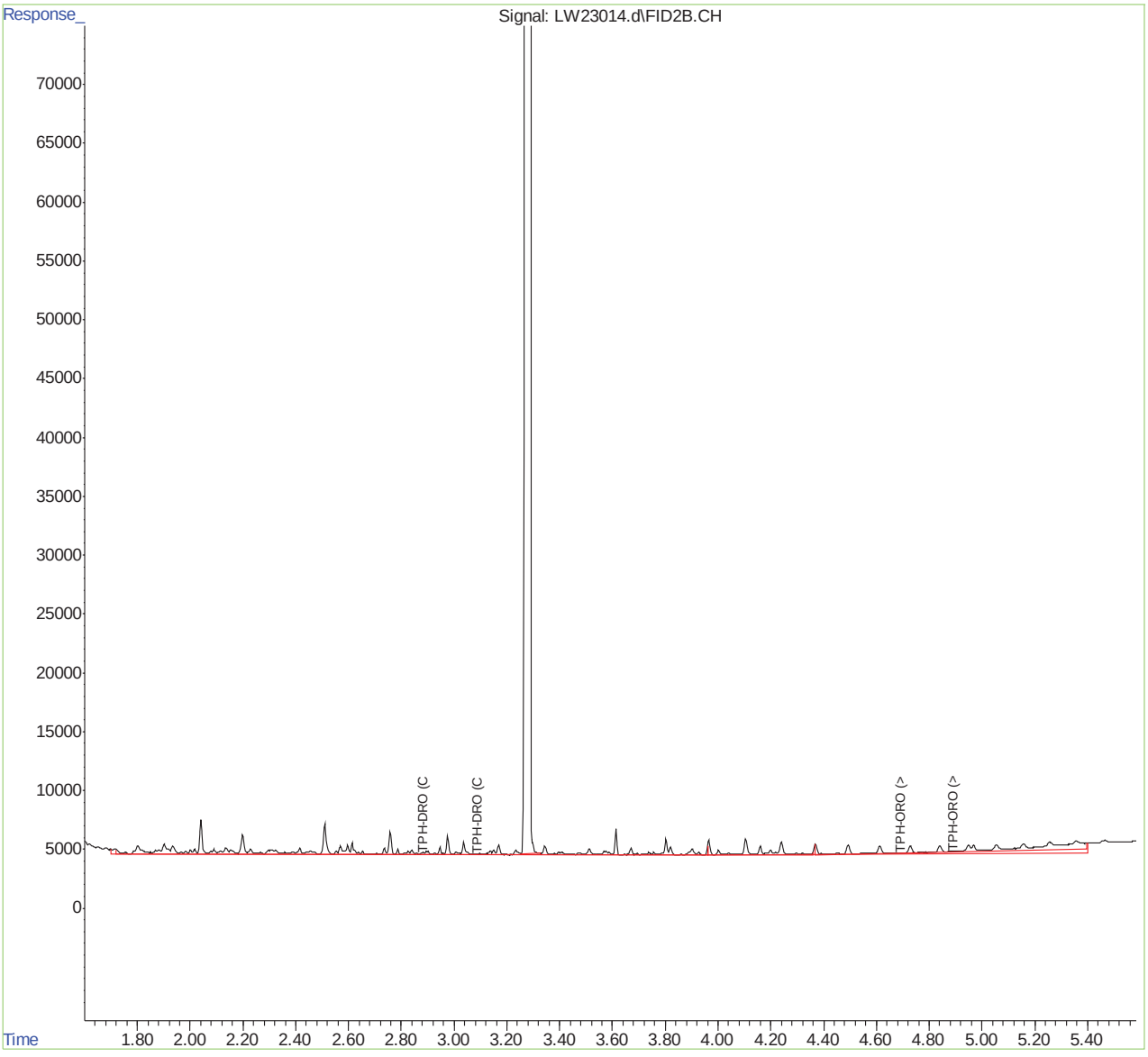
D2-TW-0007773-23157-N-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 14:40:15 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

7.1.2

7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070974.d
Signal(s) : FID1A.ch
Acq On : 15 Jan 2024 5:02 am
Operator : jackb
Sample : da61231-15
Misc : OP24874,GFH23805,1000,,,1,1
ALS Vial : 50 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jan 15 13:33:31 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
1) S	o-Terphenyl	2.170	920089121	1524.821	ug/ml
	Target Compounds				
2) H	TPH-DRO (C10-C28)	1.940	78889003	204.363	ug/ml
3) H	TPH-DRO (C10-C24)	1.720	58989991	154.629	ug/ml
4) H	TPH-ORO (>C28-C40)	3.790	5862741	30.595	ug/ml
5) H	TPH-ORO (>C24-C40)	3.570	24963309	71.873	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.30

11

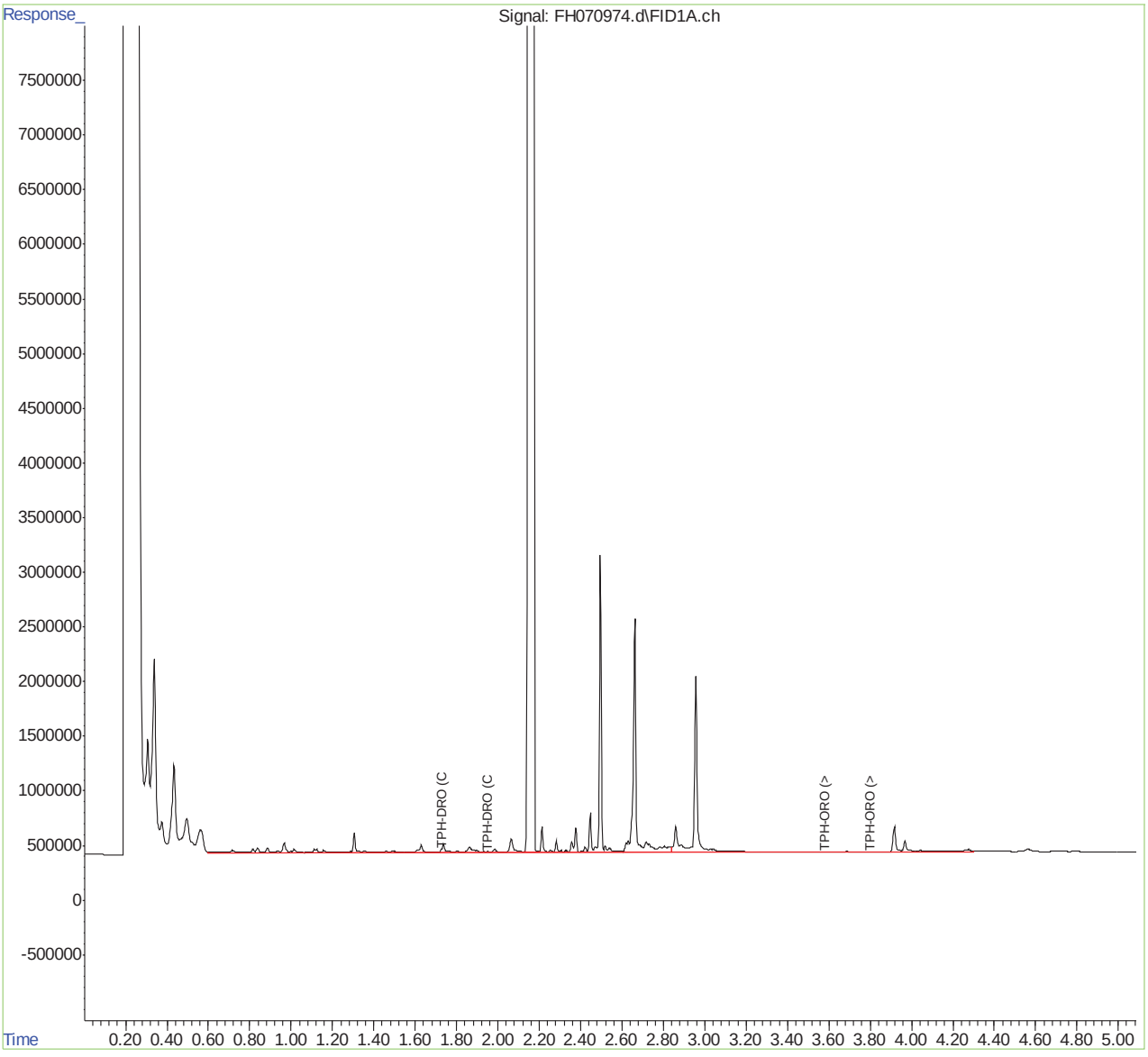
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\01.24\GFH\011424\
Data File : FH070974.d
Signal(s) : FID1A.ch
Acq On : 15 Jan 2024 5:02 am
Operator : jackb
Sample : da61231-15
Misc : OP24874,GFH23805,1000,,,1,1
ALS Vial : 50 Sample Multiplier: 1

F2-TW-0010751-23335-N
DRO 155
ORO 71.9 J
Total TPH 226.9

Integration File: autoint1.e
Quant Time: Jan 15 13:33:31 2024
Quant Method : C:\msdchem\1\methods\DRO-010923.M
Quant Title : DRO-ORO FRONT
QLast Update : Thu Jan 11 11:18:47 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



DRO-010923.M Mon Jan 15 13:59:37 2024 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/06/24 05:13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074805.d
Signal(s) : FID1A.ch
Acq On : 3 Mar 2024 1:43 am
Operator : jackb
Sample : da62405-1
Misc : OP25249,GFH23864,1050,,,1,1
ALS Vial : 41 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 17:54:18 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	3.331	40919224	88.721 ug/mlm
	Target Compounds			
2) H	TPH-DRO (C10-C28)	2.990	16929046	54.893 ug/ml
3) H	TPH-DRO (C10-C24)	2.780	14523576	47.899 ug/ml
4) H	TPH-ORO (>C28-C40)	4.910	5605697	41.218 ug/ml
5) H	TPH-ORO (>C24-C40)	4.700	8760529	35.711 ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.3
11

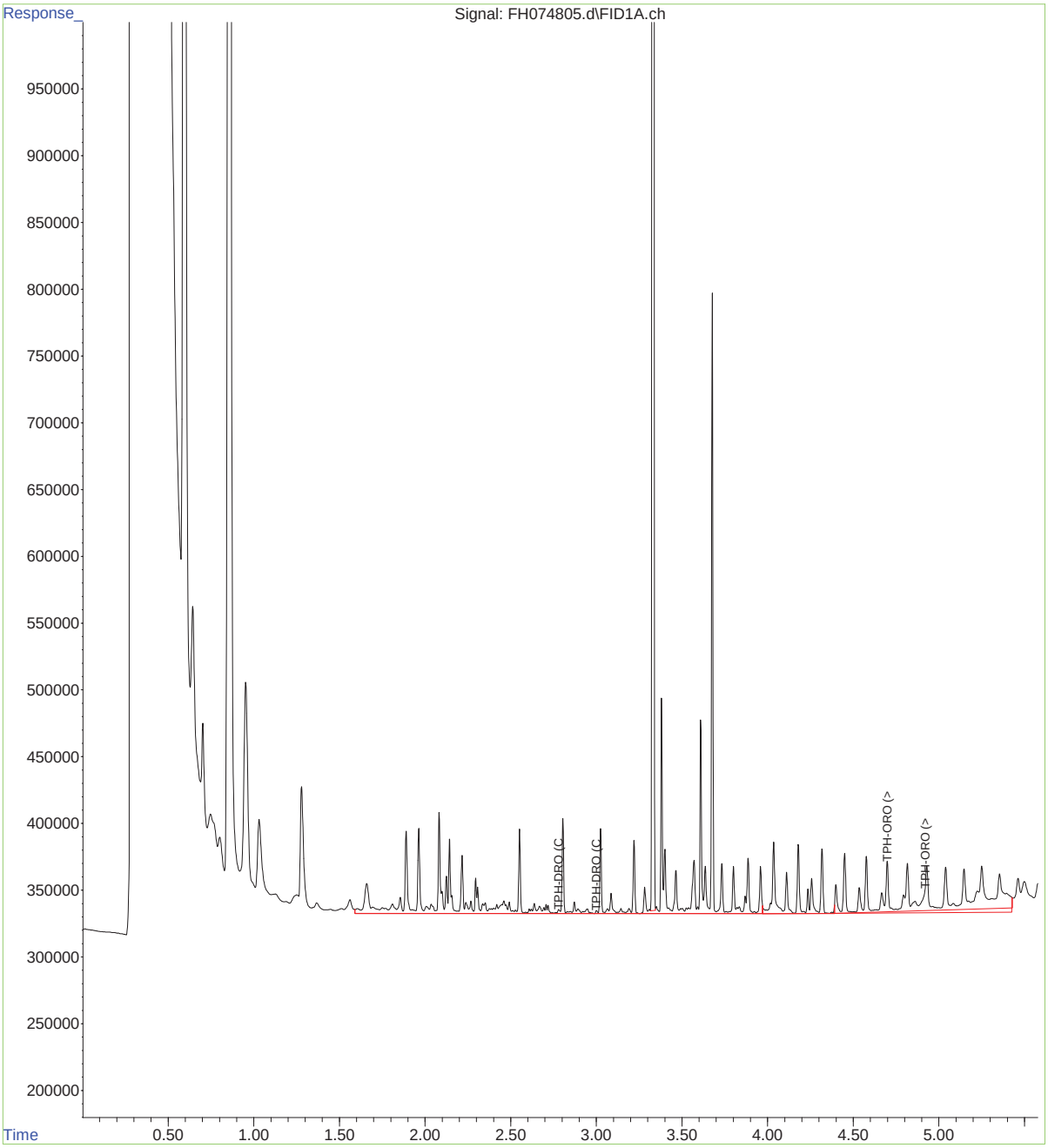
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074805.d
Signal(s) : FID1A.ch
Acq On : 3 Mar 2024 1:43 am
Operator : jackb
Sample : da62405-1
Misc : OP25249,GFH23864,1050,,,1,1
ALS Vial : 41 Sample Multiplier: 1

F2-TW-0010751-23335-N-1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 17:54:18 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23058.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 06:07:35
Operator : jackb
Sample : DA62415-1
Misc : OP25268,GLW656,56.9,,,2,1
ALS Vial : 60 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 15:11:06 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.277	16292839	8.764 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 87.64%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	454280	0.337 ppm
2) H TPH-ORO (>C28-C40)	4.880	279070	0.662 ppm m
3) H TPH-DRO (C10-C24)	2.880	353085	0.258 ppm
4) H TPH-ORO (>C24-C40)	4.680	432569	0.544 ppm m

(f)=RT Delta > 1/2 Window (m)=manual int.

7.1.1

7

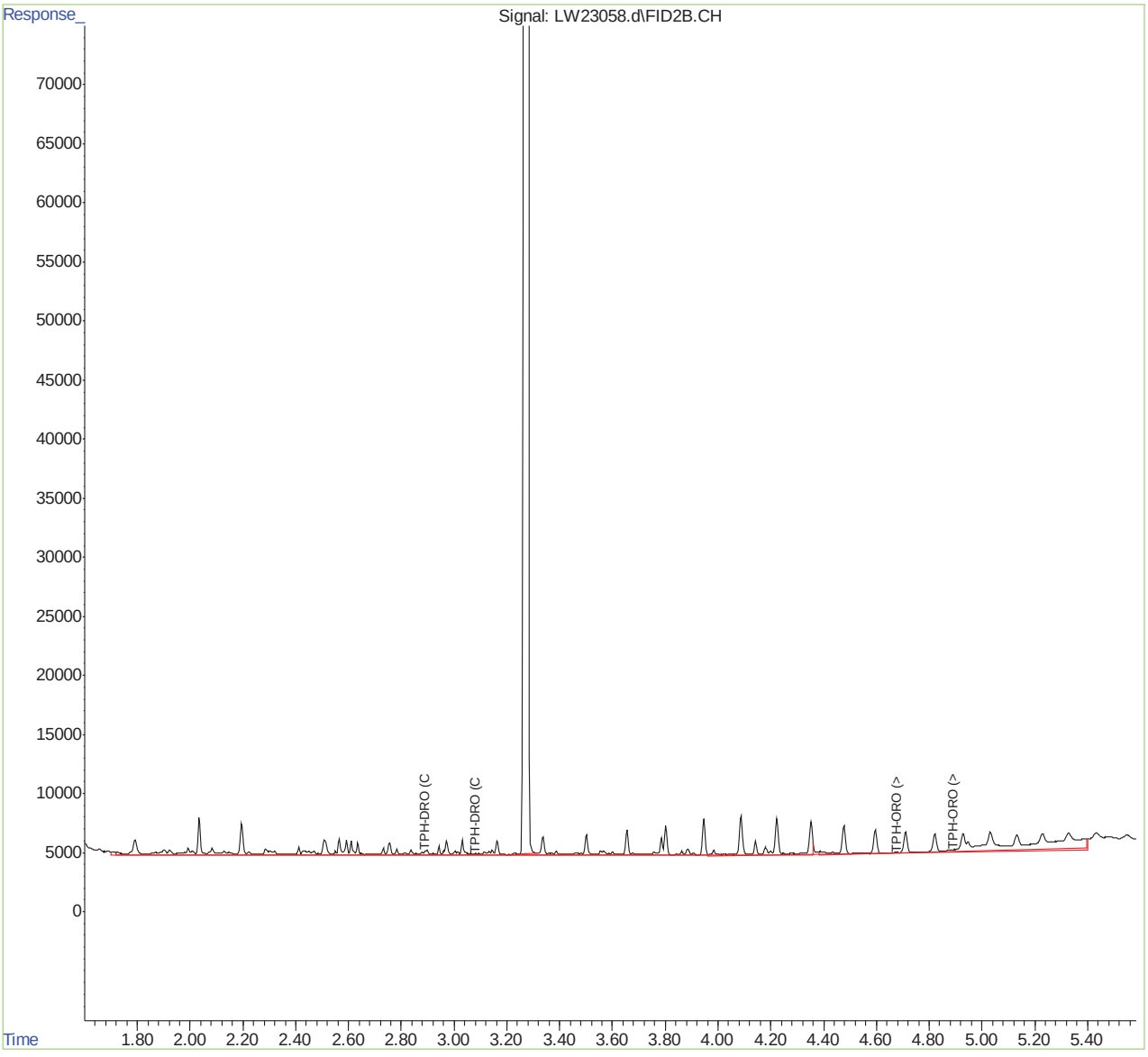
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23058.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 06:07:35
Operator : jackb
Sample : DA62415-1
Misc : OP25268,GLW656,56.9,,,2,1
ALS Vial : 60 Sample Multiplier: 1

F2-TW-0010751-23335-N-1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 15:11:06 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Tue Mar 05 17:09:23 2024 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/06/24 05:13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074806.d
Signal(s) : FID1A.ch
Acq On : 3 Mar 2024 1:52 am
Operator : jackb
Sample : da62405-2
Misc : OP25249,GFH23864,1050,,,1,1
ALS Vial : 42 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 17:54:57 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	3.330	48091888	104.273 ug/mlm
	Target Compounds			
2) H	TPH-DRO (C10-C28)	2.990	16858174	54.663 ug/ml
3) H	TPH-DRO (C10-C24)	2.780	15599380	51.447 ug/ml
4) H	TPH-ORO (>C28-C40)	4.910	3433971	25.250 ug/ml
5) H	TPH-ORO (>C24-C40)	4.700	5287608	21.554 ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.4
11

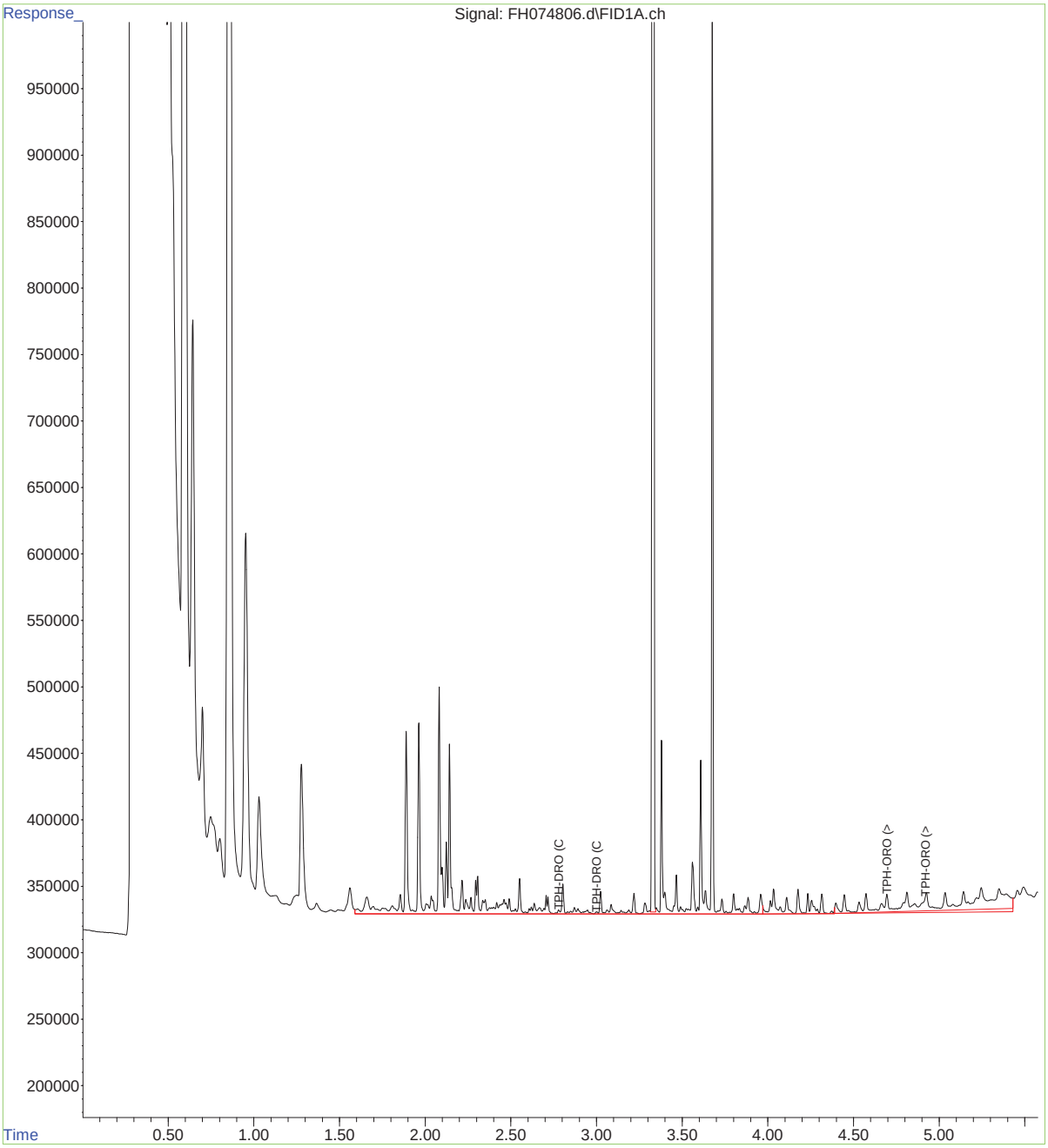
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074806.d
Signal(s) : FID1A.ch
Acq On : 3 Mar 2024 1:52 am
Operator : jackb
Sample : da62405-2
Misc : OP25249,GFH23864,1050,,,1,1
ALS Vial : 42 Sample Multiplier: 1

F2-TW-0010751-23335-N-1-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 17:54:57 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23059.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 06:18:15
Operator : jackb
Sample : DA62415-2
Misc : OP25268,GLW656,57,,,2,1
ALS Vial : 61 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 15:11:21 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.284	17091401	9.208 ppm
Spiked Amount 10.000	Range 70 - 130	Recovery = 92.08%	
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	438654	0.325 ppm
2) H TPH-ORO (>C28-C40)	4.880	258985	0.615 ppm
3) H TPH-DRO (C10-C24)	2.880	377104	0.276 ppm
4) H TPH-ORO (>C24-C40)	4.680	355807	0.448 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

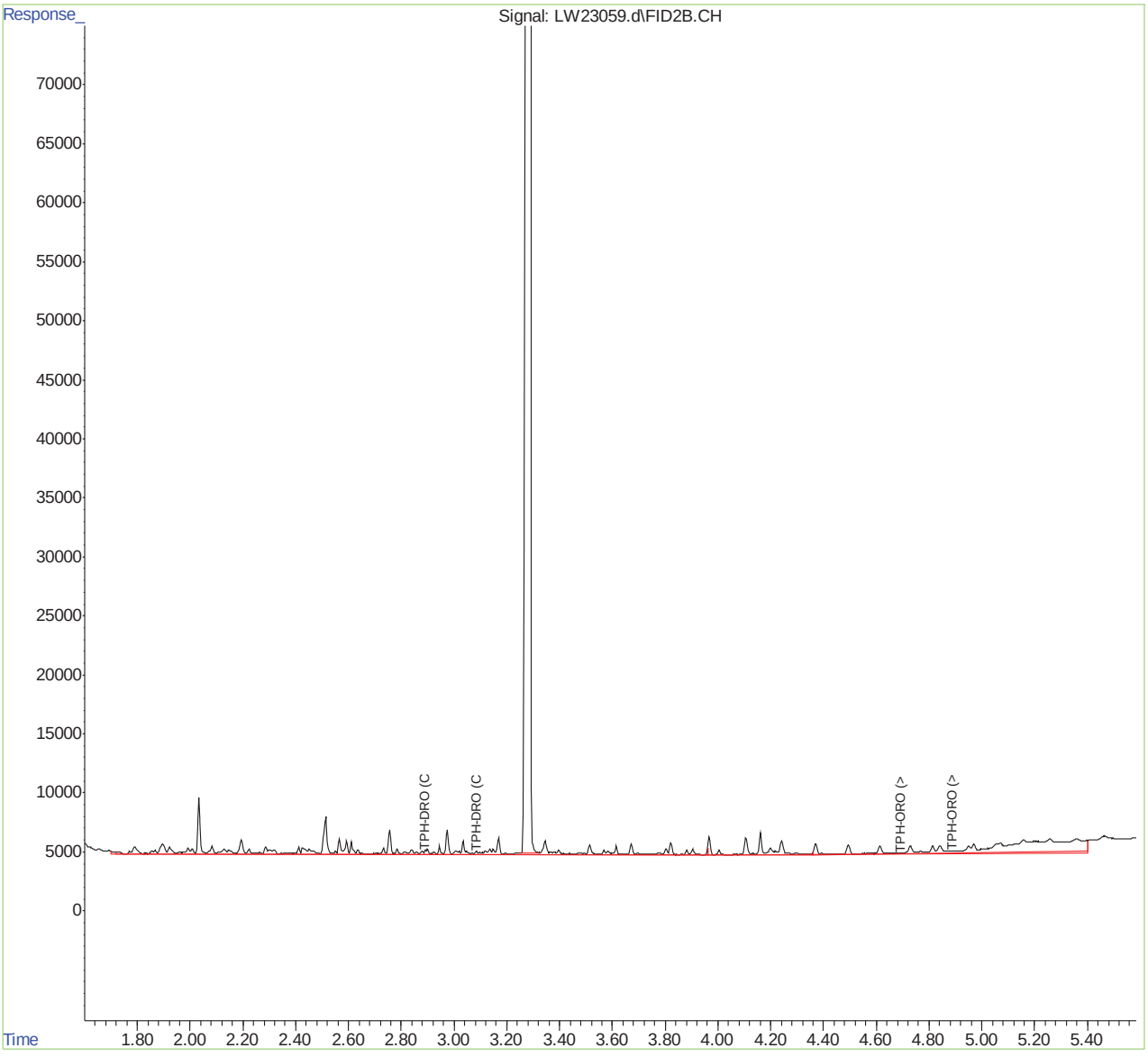
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23059.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 06:18:15
Operator : jackb
Sample : DA62415-2
Misc : OP25268,GLW656,57,,,2,1
ALS Vial : 61 Sample Multiplier: 1

F2-TW-0010751-23335-N-1-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 15:11:21 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DROLVI-030324.M Tue Mar 05 17:09:26 2024 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\220327\
Data File : LW002770.D
Signal(s) : FID2B.CH
Acq On : 28-Mar-22, 00:02:29
Operator : IANV
Sample : DA43252-4
Misc : OP21424,GLW61,1055,,1.0,1
ALS Vial : 71 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 28 08:56:48 2022
Quant Method : C:\msdchem\1\METHODS\DRO220318.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Mar 19 14:10:31 2022
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.407f	20948398	1429.130	ppm	
Spiked Amount 2000.000	Range 10 - 130	Recovery = 71.46%			
Target Compounds					
1) H TPH-DRO (C10-C28)	2.179	1393198	126.317	ppm	
2) H TPH-ORO (>C28-C40)	4.066	179032	27.887	ppm	
3) H TPH-DRO (C10-C24)	1.947	1168596	107.369	ppm	
4) H TPH-ORO (>C24-C40)	3.834	295804	25.522	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.69

11

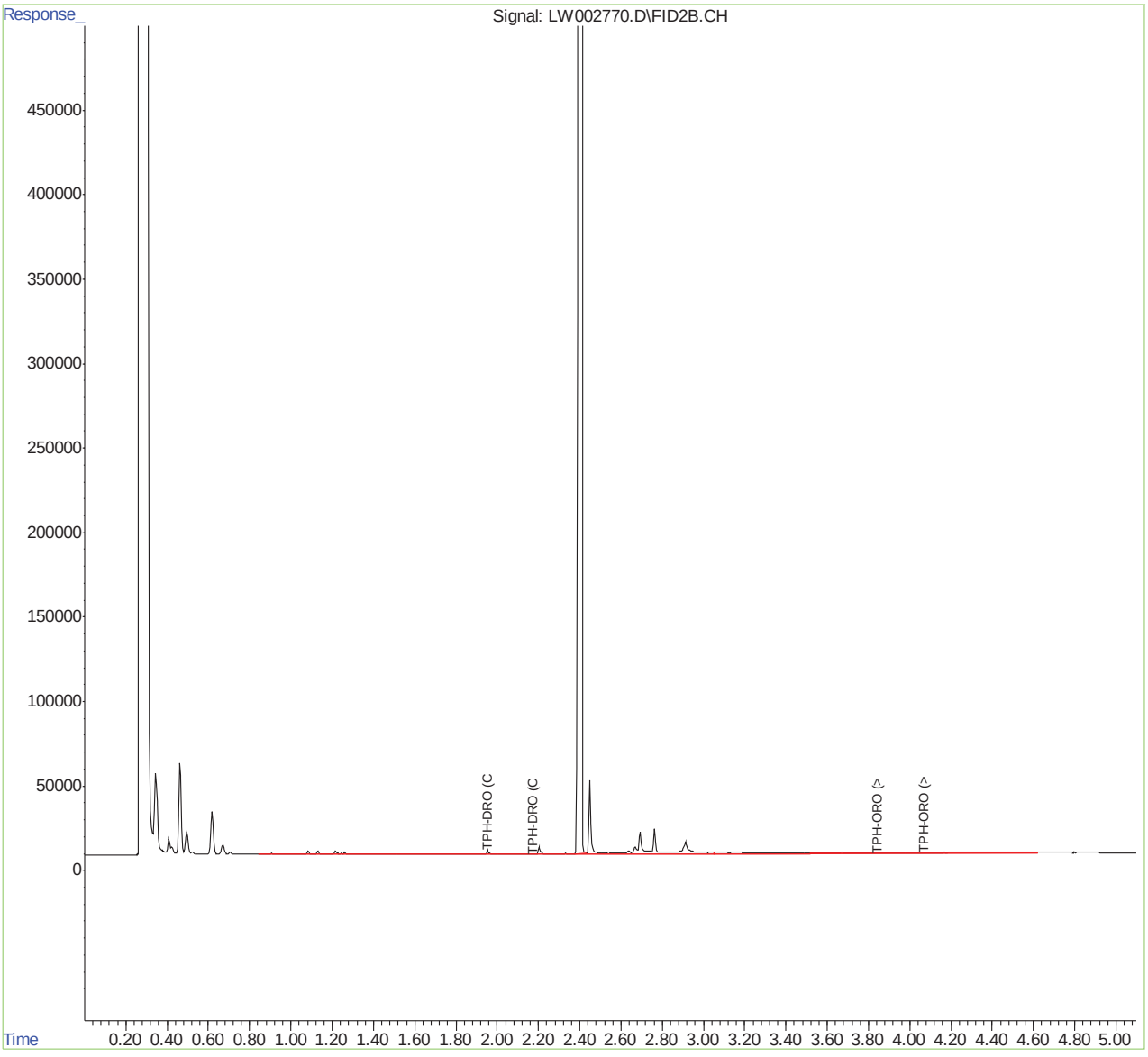
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\220327\
Data File : LW002770.D
Signal(s) : FID2B.CH
Acq On : 28-Mar-22, 00:02:29
Operator : IANV
Sample : DA43252-4
Misc : OP21424,GLW61,1055,,1.0,1
ALS Vial : 71 Sample Multiplier: 1

F2-TW-0009957-22070-N
DRO 102
ORO 49 U
Total TPH 102

Integration File: autoint1.e
Quant Time: Mar 28 08:56:48 2022
Quant Method : C:\msdchem\1\METHODS\DRO220318.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sat Mar 19 14:10:31 2022
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



11.1.69
11

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\070723\
Data File : LW12987.d
Signal(s) : FID1B.CH
Acq On : 09-Jul-23, 01:05:41
Operator : jackb
Sample : da56570-3A
Misc : OP23958,GLW481,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Jul 10 12:53:29 2023
Quant Method : C:\msdchem\1\methods\DRO070823.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sun Jul 09 12:32:29 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
5) S O-TERPHENYL	2.401	43850904	1833.213	ppm	
Spiked Amount 2000.000 Range 10 - 130 Recovery = 91.66%					
Target Compounds					
1) H TPH-DRO (C10-C28)	2.160	2024726	112.700	ppm	
2) H TPH-ORO (>C28-C40)	4.090	1034777	102.374	ppm	m
3) H TPH-DRO (C10-C24)	1.940	1533723	87.205	ppm	
4) H TPH-ORO (>C24-C40)	3.870	1419610	80.422	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

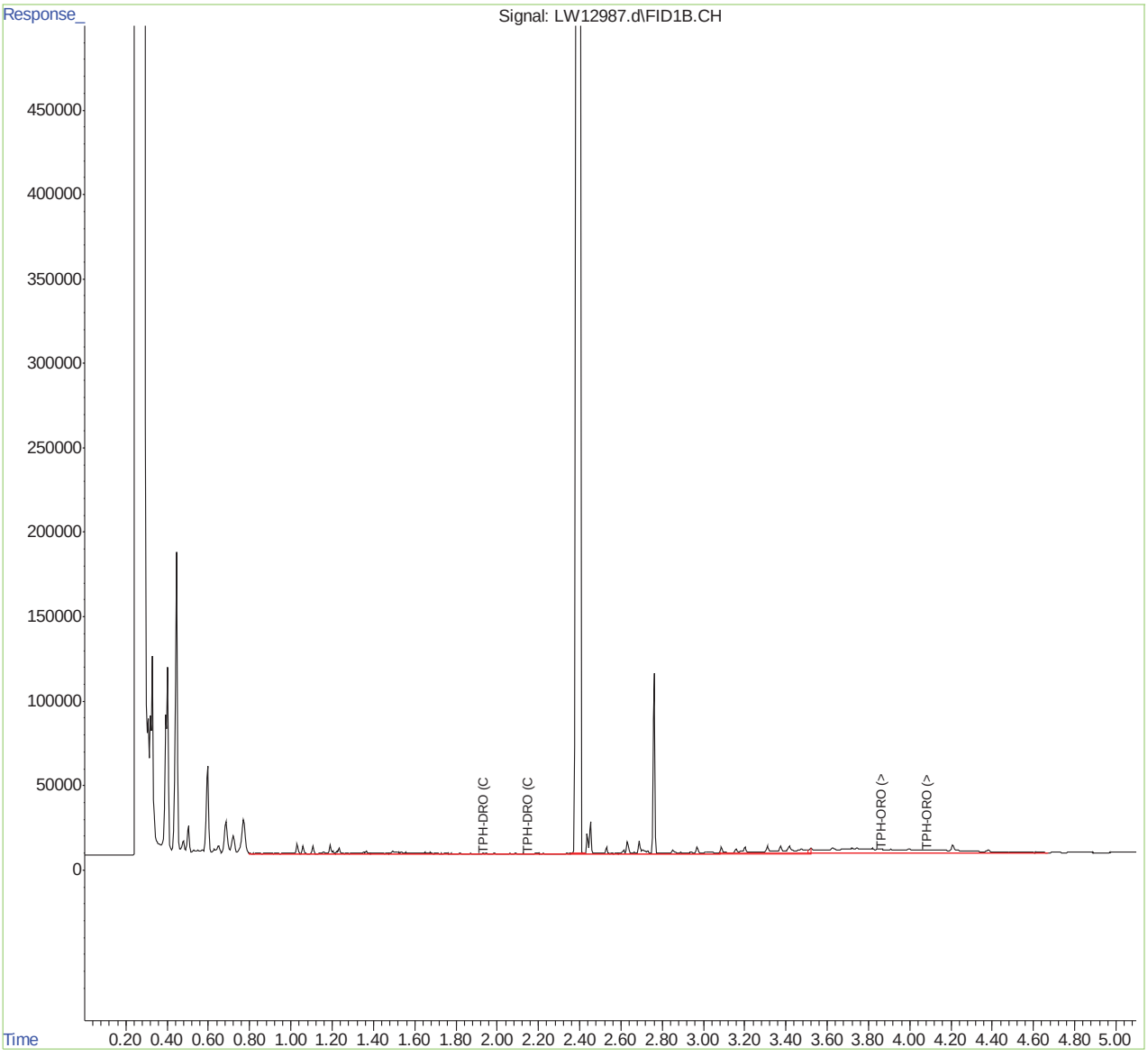
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2023\07.23\070723\
Data File : LW12987.d
Signal(s) : FID1B.CH
Acq On : 09-Jul-23, 01:05:41
Operator : jackb
Sample : da56570-3A
Misc : OP23958,GLW481,1000,,,1,1
ALS Vial : 0 Sample Multiplier: 1

F2-TW-0009957-23155-N-T
DRO 87.2
ORO 80.4
Total TPH 167.6

Integration File: autoint1.e
Quant Time: Jul 10 12:53:29 2023
Quant Method : C:\msdchem\1\methods\DRO070823.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Sun Jul 09 12:32:29 2023
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1 ul
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df



DRO070823.M Mon Jul 10 12:54:12 2023 Page: 2

Manual Integrations APPROVED (compounds with "m" flag)
[redacted]
03/06/24 05:13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074771.d
Signal(s) : FID1A.ch
Acq On : 2 Mar 2024 8:29 pm
Operator : jackb
Sample : da62398-5
Misc : OP25248,GFH23864,1050,,,1,1
ALS Vial : 11 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 16:20:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
1) S	o-Terphenyl	3.333	35740743	77.493 ug/mlm
	Target Compounds			
2) H	TPH-DRO (C10-C28)	2.990	13726182	44.508 ug/ml
3) H	TPH-DRO (C10-C24)	2.780	12167729	40.129 ug/ml
4) H	TPH-ORO (>C28-C40)	4.910	3205043	23.566 ug/ml
5) H	TPH-ORO (>C24-C40)	4.700	5709819	23.275 ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

11.1.6
11

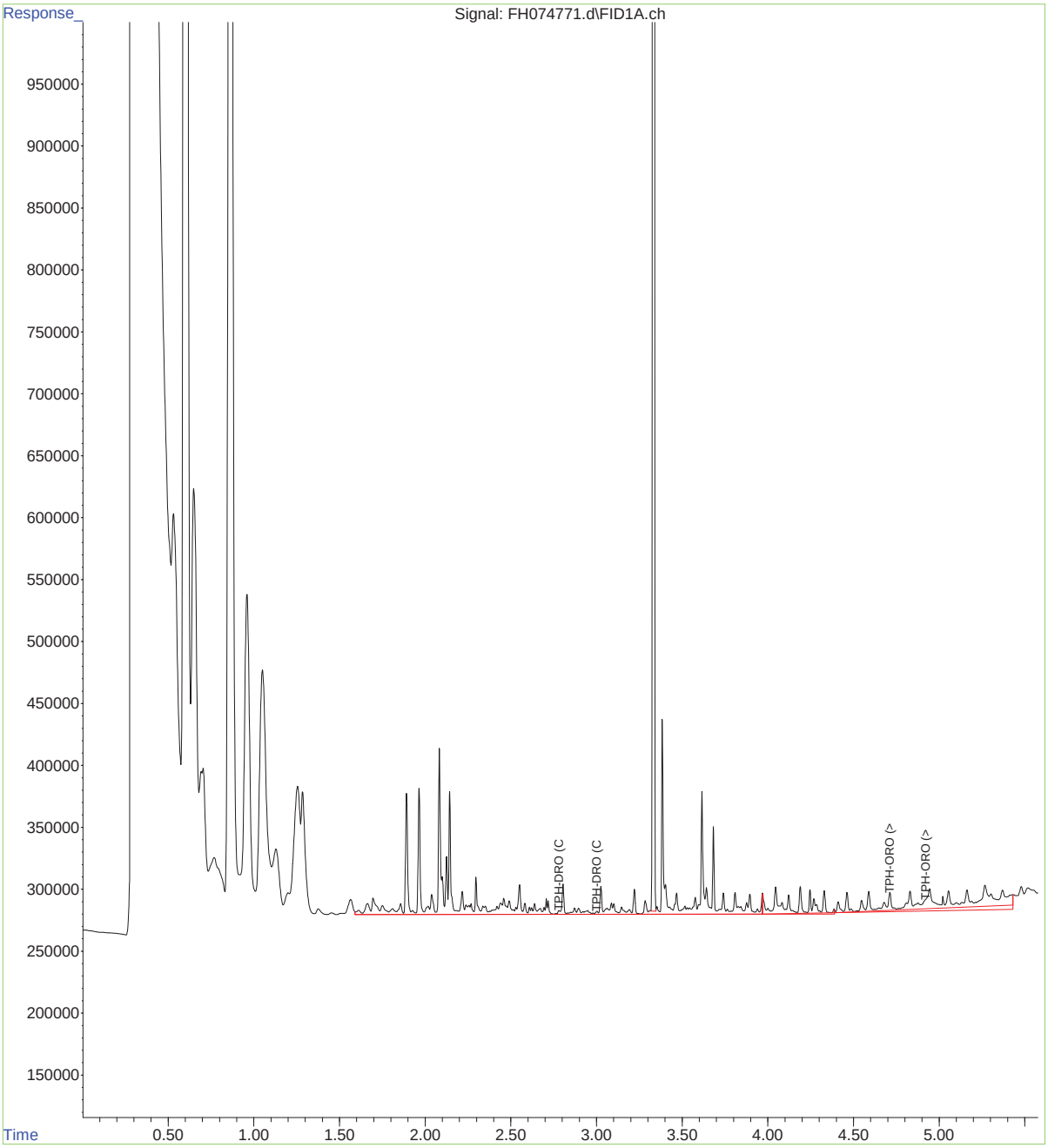
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030224\
Data File : FH074771.d
Signal(s) : FID1A.ch
Acq On : 2 Mar 2024 8:29 pm
Operator : jackb
Sample : da62398-5
Misc : OP25248,GFH23864,1050,,,1,1
ALS Vial : 11 Sample Multiplier: 1

F2-TW-0009957-23155-N-T-R1
DRO 50 U
ORO 50 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 16:20:29 2024
Quant Method : C:\msdchem\1\methods\Q_DRO+_GFH23863.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Mar 04 23:12:12 2024
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23038.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 01:08:38
Operator : jackb
Sample : DA62408-5
Misc : OP25266,GLW655,57.2,,,2,1
ALS Vial : 43 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 05 14:56:33 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
5) S O-TERPHENYL	3.274	14845088	7.959 ppm
Spiked Amount 10.000 Range 70 - 130 Recovery = 79.59%			
Target Compounds			
1) H TPH-DRO (C10-C28)	3.080	403184	0.299 ppm
2) H TPH-ORO (>C28-C40)	4.880	194943	0.463 ppm
3) H TPH-DRO (C10-C24)	2.880	351589	0.257 ppm
4) H TPH-ORO (>C24-C40)	4.680	268120	0.337 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2024\03.24\030324\
Data File : LW23038.d
Signal(s) : FID2B.CH
Acq On : 05-Mar-24, 01:08:38
Operator : jackb
Sample : DA62408-5
Misc : OP25266,GLW655,57.2,,,2,1
ALS Vial : 43 Sample Multiplier: 1

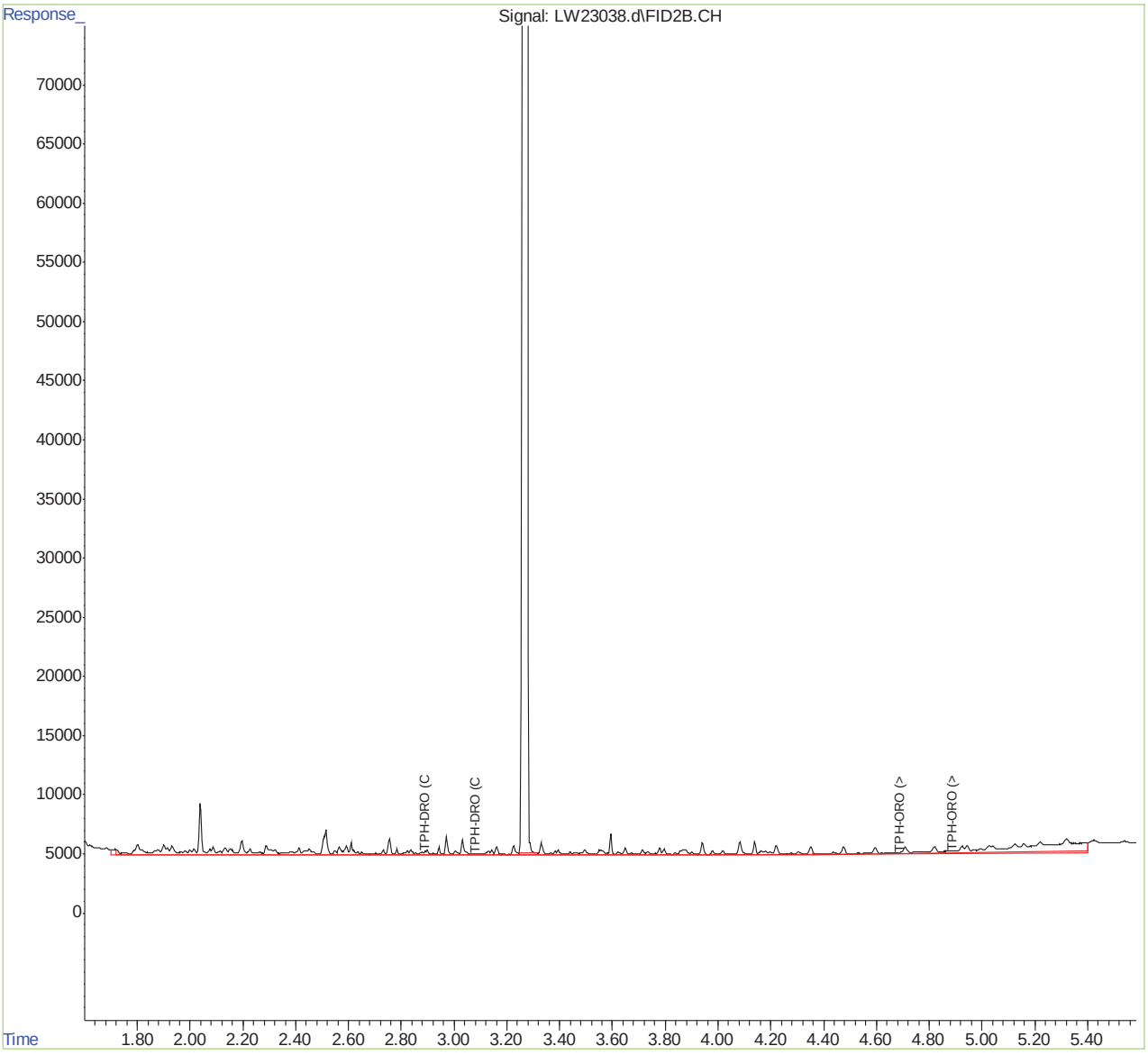
F2-TW-0009957-23155-N-T-R1-MEQ
DRO 48 U
ORO 48 U
Total TPH ND

Integration File: autoint1.e
Quant Time: Mar 05 14:56:33 2024
Quant Method : C:\msdchem\1\methods\DROLVI-030324.M
Quant Title : Diesel range organics by method 8015.
QLast Update : Mon Mar 04 08:16:39 2024
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 25 ul - LVI
Signal Phase : MXT-5 5% Diphenyl / 95% Dimethyl Polysiloxane
Signal Info : 15M , 0.25 mmID, 0.25 um df

7.1.5

7



DROLVI-030324.M Tue Mar 05 16:45:43 2024 Page: 2

the MEQ method is acceptable. In other words, the MS results demonstrate that the MEQ method does not prevent accurate and precise determination of TPH in field samples that contain JP-5, and by extension, other fuels.

Background

In accordance with the Drinking Water Long-Term Monitoring Plan (DW LTM Plan) dated June 2022, TPH drinking water samples collected during LTM (Period 1 through Period 7) were analyzed using EPA Method 3510 + EPA Method 8015 (with no quenching for chlorine). Low-level detections of TPH of less than 100 µg/L were observed in 20 to 30% of the collected samples throughout the JBPHH System. However, TPH detections increased to 60% during LTM Period 6 in July 2023. On 29 January 2024, the Navy convened an interagency team of subject matter experts (SMEs) from across the Navy, EPA, DOH, DHA, and the consulting industry, to determine the root cause of the increased frequency of low-level TPH detections. The interagency team of SMEs determined that, based on current information, the causes of the low-level TPH detections observed during LTM were associated with the following:

- Laboratory challenges to quantify TPH near the Method Detection Limit (MDL), including effects of method blank contamination and laboratory cross-contamination; and
- Method interferences due to the interaction of residual chlorine in the drinking water samples with reagents required by the method to analyze the samples.

Based on the results of the root cause analysis, the interagency team recommended analyzing drinking water samples for TPH using the following steps:

- Add of sodium thiosulfate to drinking water samples to remove residual chlorine (this process is referred to as quenching)
- Revise the laboratory sample preparation method to use micro-extraction via EPA Method 3511
- Analyze the drinking water samples using EPA Method 8015

Based on the recommendations of the interagency team, the Extended Drinking Water Monitoring (EDWM) Plan, which is currently being developed, will use sodium thiosulfate (quenching) to remove residual chlorine, micro-extraction via EPA Method 3511, and analysis via EPA Method 8015.

Purpose

This memo summarizes the TPH results from drinking water samples collected from the JBPHH System and prepared and analyzed using following methods:

- **SF Method**: Separatory funnel extraction (EPA Method 3510) and analysis by GC/FID (EPA Method 8015) without quenching.

- **MEQ Method**: Addition of sodium thiosulfate (quenching) to remove residual chlorine, micro-extraction via EPA Method 3511, and analysis via GC/FID (EPA Method 8015).

A side-by-side evaluation was done to compare the TPH results using the two methods. This document also includes a summary of matrix spike results, which are field samples from the JBPHH System that were spiked by the laboratory with a known concentration of JP-5 prior to sample preparation and analysis. The samples are then analyzed along with normal, un-spiked field samples. Matrix spike samples are analyzed for QA/QC purposes and are used to assess the accuracy and precision of the method for that specific sample. Control charts are maintained that are indicative of typical matrix spike recoveries of real samples rather than laboratory-controlled samples. Matrix spike data serves as an indication of the problems that may be associated with a specific sample or sample site. For example, if a known concentration of JP-5 is added to a sample, but only 20% is recovered, it may be an indication of matrix interference resulting in suppressed recovery of the analyte. In general, matrix spike recoveries between 50 and 150% are considered acceptable. However, matrix spike recoveries may need to be evaluated on a case-by-case basis.

Six hundred and fifty-eight (658) drinking water samples have been collected from the JBPHH System for the side-by-side comparison through 29 March 2024. The sample locations were selected based on two criteria: (1) the location had a detected TPH concentration above 100 µg/L during prior sampling (e.g., LTM Periods 1 through 6), and (2) residences located in various zones throughout the JBPHH System to ensure spatial representation in the side-by-side comparison. An additional 30 samples were collected in the field and spiked with 70 µg/L of JP-5 prior to preparation and analysis. Drinking water results evaluated in the side-by-side comparison are discussed in the following sections and are grouped as follows:

- Locations where TPH was detected at a concentration above 150 µg/L during a prior sampling event (see Table G-1);
- Locations where TPH was detected at a concentration between 100 µg/L and 150 µg/L during a prior sampling event (see Table G-2);
- Matrix spike sample results using the MEQ Method (see Table G-3); and
- TPH results for all 658 drinking water samples evaluated in the side-by-side comparison (see Table G-5).

The included tables present the following information:

- General sample information including sampling event, distribution system zone, sample location address and type, client and laboratory sample identification (ID), sample collection, preparation, and analysis dates, sample type (N = Normal, FD = Field

Duplicate, MS = Matrix Spike), and sample delivery group (SDG) to facilitate independent review and QA/QC of the information. [11]

- **SF Method Results**: TPH concentrations without quenching, with separatory funnel extraction (Method 3510), and analysis with GC/FID (EPA Method 8015). The data include the prior sample results (e.g., TPH results collected during LTM at that location). The re-sampling results are indicated by the suffix "-R1" appended to client sample identification number.
- **MEQ Method Results**: TPH concentrations with quenching, micro-extraction (EPA Method 3511), and analysis with GC/FID (EPA Method 8015).

Samples where the analysis yielded a TPH detection for the SF method are shown in **bold red**. "ND" indicates TPH was non-detect for the identified sample.

Side-by-Side Comparison for Locations with Prior TPH Detections Above 150 µg/L

From 23 February to 28 March 2024, side-by-side samples were collected from 45 residences with prior TPH concentrations above 150 µg/L. The results are presented in Table G-1, and they are summarized below:

- **SF Method Results**: TPH was detected at four out of 45 locations using the SF Method with detected concentrations ranging between 51.8 µg/L and 128.1 µg/L.
- **MEQ Method Results**: TPH was not detected at any of the 45 locations using the MEQ Method, including the four locations where TPH was detected using the SF Method.

The chromatograms and the corresponding quantitation report for each analysis are included as Attachment 1 to Appendix G.[12] The document has been bookmarked with each address, with sublevel bookmarks for each of the individual samples. The quantitation reports provide the on-column concentrations rather than the final, volume adjusted, concentrations. The final results have been manually added to the chromatograms to facilitate review.

[11] Not all tables include all items enumerated here. Refer to the individual tables for details.
[12] Chromatograms are included in Attachment 1 to Appendix G for all locations except:
- Sample ID: D2-TW-0008352-23157-N-R1, Address: 106 11th Street
- Sample ID: D2-TW-0008325-23157-N-R1, Address: 128 Apollo Avenue
- Sample ID: D2-TW-0007773-23157-N-R1, Address: 731 Kawehiweki Street
- Sample ID: D3-TW-0010603-22347-N-R1, Address: 217 Puapilo Court
- Sample ID: F2-TW-0010751-23335-N-R1, Address: 2851 Anderson Avenue
- Sample ID: F2-TW-0009957-22070-N-T-R1, Address: 614 Meyerkord Loop

Table G-1. Side-by-Side Comparison for Locations with Prior TPH Detections Above 150 µg/L

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
A1	1600 Aloha Avenue	A1-TW-0001561-23139-N	N	10-17-23	DA59404	162	-	-
A1		A1-TW-0001561-23139-3-N	FD	10-17-23	DA59404	96.8	-	-
A1		A1-TW-0001561-23139-N-R1	N	2-28-24	DA62452	**53.6**	**ND**	DA62464
A1	501 Lehua Avenue	A1-TW-0001673-23139-N	N	9-29-23	DA58996	248.4	-	-
A1		A1-TW-0001673-23139-N-R1	N	2-28-24	DA62452	ND	ND	DA62464
A3	4858B East Eha Way	A3-TW-0017354-23157-N	N	10-19-23	DA59475	186.4	-	-
A3		A3-TW-0017354-23157-N-R1	N	3-5-24	DA62626	ND	ND	DA62635
D1	308 Christopher Court	D1-TW-0000774-23145-N	N	8-30-23	DA58233	190.7	-	-
D1		D1-TW-0000774-23145-N-R1	N	2-26-24	DA62350	ND	ND	DA62363
D1	1811 Fisler Court	D1-TW-0000997-23145-N	N	8-30-23	DA58233	227	-	-
D1		D1-TW-0000997-23145-N-R1	N	2-28-24	DA62455	ND	ND	DA62467
D1	1512 Kaufman Court	D1-TW-0000946-22060-N	N	3-16-22	DA43043	157.8	-	-
D1		D1-TW-0000946-23145-N-T	N	7-12-23	DA56861	60.4	-	-
D1		D1-TW-0000946-22060-N-R1	N	2-29-24	DA62512	ND	ND	DA62523
D2	106 11th Street	D2-TW-0008352-23157-N	N	7-28-23	DA57313	193.5	-	-
D2		D2-TW-0008352-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	211B 13th Street	D2-TW-0008402-23157-N	N	7-27-23	DA57284	201.6	-	-
D2		D2-TW-0008402-23157-N-R1	N	3-1-24	DA62547	ND	ND	DA62555
D2	126 18th Street	D2-TW-0008275-23157-N	N	9-20-23	DA58747	155.5	-	-
D2		D2-TW-0008275-23157-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	132 18th Street	D2-TW-0008281-23337-N	N	1-4-24	DA61100	150.7	-	-
D2		D2-TW-0008281-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	105 21st Street	D2-TW-0007189-23337-N	N	1-8-24	DA61143	155.4	-	-
D2		D2-TW-0007189-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	123 3rd Street	D2-TW-0007572-23157-N	N	8-7-23	DA57534	175.8	-	-
D2		D2-TW-0007572-23157-N-R1	N	2-28-24	DA62454	ND	ND	DA62466
D2	128 Apollo Avenue	D2-TW-0008325-23157-N	N	7-28-23	DA57313	190.3	-	-
D2		D2-TW-0008325-23157-N-R1	N	2-27/24	DA62396	ND	ND	DA62466
D2	822 Apollo Avenue	D2-TW-0007205-23157-N	N	7-28-23	DA57313	174.5	-	-
D2		D2-TW-0007205-23157-N-R1	N	2-23-24	DA62311	ND	ND	DA62324
D2	301 Gemini Avenue	D2-TW-0007138-23157-N	N	9-20-23	DA58747	183.9	-	-
D2		D2-TW-0007138-23157-N-R1	N	2-23-24	DA62311	ND	ND	DA62324
D2	705 Hoolaulima Alley	D2-TW-0008147-23337-N	N	1-4-24	DA61101	187.1	-	-
D2		D2-TW-0008147-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	508 Julian Avenue	D2-TW-0007523-23157-N	N	7-27-23	DA57284	212.3	-	-
D2		D2-TW-0007523-23157-N-R1	N	2-23-24	DA62311	ND	ND	DA62324
D2	731 Kawehiweki Street	D2-TW-0007773-23157-N	N	7-28-23	DA57313	214	-	
D2		D2-TW-0007773-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
D2	214 Mercury Street	D2-TW-0007295-23157-N	N	9-20-23	DA58747	87.1	-	-
D2		D2-TW-0007295-23157-3-N	FD	9-20-23	DA58747	214.4	-	-
D2		D2-TW-0007295-23157-N-R1	N	2-23-24	DA62311	ND	ND	DA62324
D2	402 Signer Boulevard	D2-TW-0007756-23157-N	N	9-20-23	DA58747	174.3	-	-
D2		D2-TW-0007756-23157-N-R1	N	3-5-24	DA62627	ND	ND	DA62636
D2	701 Signer Boulevard	D2-TW-0007762-23157-N	N	7-28-23	DA57313	51.1	-	-
D2		D2-TW-0007762-23157-3-N	FD	7-28-23	DA57313	181.7	-	-
D2		D2-TW-0007762-23157-N-R1	N	2-23-24	DA62311	ND	ND	DA62324
D2	1744 Tinker Avenue	D2-TW-0007330-23337-N	N	1-8-24	DA61142	ND	-	-
D2		D2-TW-0007330-23337-3-N	FD	1-8-24	DA61143	166.3	-	-
D2		D2-TW-0007330-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D3	795 Ohana Nui Circle	D3-TW-0009500-23162-N	N	9-28-23	DA58974	191.6	-	-
D3		D3-TW-0009500-23162-N-R1	N	2-23-24	DA62314	ND	ND	DA62327
D3	217 Puapilo Court	D3-TW-0010603-22347-N	N	2-2-23	DA53064	160.5	-	-
D3		D3-TW-0010603-22347-N-R1	N	2-28-24	DA62446	**128.1**	**ND**	DA62458
F1	5514 Bennion Drive	F1-TW-0008971-22160-N	N	9-14-22	DA49138A	158.8	-	-
F1		F1-TW-0008971-23155-N-T	N	8-25-23	DA58149	70	-	-
F1		F1-TW-0008971-22160-N-1	N	2-29-24	DA62509	ND	ND	DA62520
F2	2851 Anderson Avenue	F2-TW-0010751-23335-N	N	1-11-24	DA61231	226.9	-	-
F2		F2-TW-0010751-23335-N-R1	N	2-27-24	DA62405	ND	ND	DA62415
F2	3024 Anderson Avenue	F2-TW-0009616-23335-N	N	1-12-24	DA61253	182	-	-
F2		F2-TW-0009616-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	5226 Catlin Lane	F2-TW-0011092-23155-N	N	8-31-23	DA58265	239.1	-	-
F2		F2-TW-0011092-23155-N-R1	N	2-27-24	DA62398	ND	ND	DA62408
F2	2276D Doris Miller Loop	F2-TW-0011435-23155-N	N	8-2-23	DA57431	170.7	-	-
F2		F2-TW-0011435-23155-3-N	FD	8-2-23	DA57431	56.8	-	-
F2		F2-TW-0011435-23155-N-R1	N	2-28-24	DA62453	ND	ND	DA62465
F2	2629 Gordon Street	F2-TW-0011547-23155-N	N	9-1-23	DA58292	155.9	-	-
F2		F2-TW-0011547-23155-N-R1	N	3-4-24	DA62578	ND	ND	DA62583
F2	2860 Gordon Street	F2-TW-0011621-23155-N	N	9-1-23	DA58292	179.2	-	-
F2		F2-TW-0011621-23155-N-R1	N	2-23-24	DA62312	ND	ND	DA62325
F2	688 Murray Drive	F2-TW-0010080-23155-N	N	8-31-23	DA58265	179.8	-	-
F2		F2-TW-0010080-23155-N-R1	N	2-23-24	DA62312	ND	ND	DA62325
F2	614 Meyerkord Loop	F2-TW-0009957-22070-N	N	3-25-22	DA43252	102	-	-
F2		F2-TW-0009957-22070-N-T	N	6-30-23	DA56570	167.6	-	-
F2		F2-TW-0009957-22070-N-T-R1	N	2-27-24	DA62398	ND	ND	DA62408
F2	1726 Nye Circle	F2-TW-0010437-23155-N	N	8-31-23	DA58265	160.9	-	-
F2		F2-TW-0010437-23155-N-R1	N	2-27-24	DA62398	**51.8**	**ND**	DA62408
F2	5320 Shields Street	F2-TW-0010927-23335-N	N	1-11-24	DA61231	198	-	-
F2		F2-TW-0010927-23335-N-R1	N	3-1-24	DA62548	**58.4**	**ND**	DA62556

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
F2	744 Sibley Street	F2-TW-0010961-23335-N	N	1-11-24	DA61230	222.9	-	-
F2		F2-TW-0010961-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	3156 Snyder Court	F2-TW-0010579-23155-N	N	8-31-23	DA58265	155.7	-	-
F2		F2-TW-0010579-23155-N-R1	N	2-28-24	DA62453	ND	ND	DA62465
F2	2706 Stowell Circle	F2-TW-0009269-23155-N	N	8-2-23	DA57431	166.4	-	-
F2		F2-TW-0009269-23155-N-R1	N	3-4-24	DA62578	ND	ND	DA62583
H1	3339 Ama Drive	H1-TW-0013190-23147-A	N	9-15-23	DA58613	113	-	-
H1		H1-TW-0013190-23147-3-A	FD	9-15-23	DA58613	121	-	-
H1		H1-TW-0013190-23147-A-R1	N	2-28-24	DA62451	ND	ND	DA62463
H2	5110 Sandalwood Lane	H2-TW-0013650-23335-A	N	1-5-24	DA61128	172.4	-	-
H2		H2-TW-0013650-23335-A-R1	N	2-29-24	DA62508	ND	ND	DA62519
H3	391 Hibiscus Street	H3-TW-0013691-22160-A	N	10-28-22	DA50551	101	-	-
H3		H3-TW-0013691-23155-A-T	N	7-5-23	DA56614	52.4	-	-
H3		H3-TW-0013691-22160-A-R1	N	2-29-24	DA62513	ND	ND	DA62524
H3	180 Shower Place	H3-TW-0013809-23155-A	N	9-14-23	DA58575	191.9	-	-
H3		H3-TW-0013809-23155-A-R1	N	2-23-24	DA62313	ND	ND	DA62326
H3	417 Valley View Loop	H3-TW-0013834-23155-A	N	9-14-23	DA58575	84.3	-	-
H3		H3-TW-0013834-23155-3-A	FD	9-14-23	DA58575	199.2	-	-
H3		H3-TW-0013834-23335-A	N	2-13-24	DA61992	ND	-	-
H3		H3-TW-0013834-23155-A-R1	N	2-23-24	DA62315	ND	ND	DA62328
H3	583 Valley View Loop	H3-TW-0013866-23155-A	N	9-14-23	DA58575	163.8	-	-
H3		H3-TW-0013866-23155-A-R1	N	2-23-24	DA62313	ND	ND	DA62326
I1	1726 Conifer Place	I1-TW-0014063-23130-A	N	10-27-23	DA59670	152.5	-	-
I1		I1-TW-0014063-23130-A-R1	N	2-23-24	DA62317	ND	ND	DA62330

Side-by-Side Comparison for Locations with Prior TPH concentrations between 100 µg/L and 150 µg/L

From 23 Feb to 12 March 2024, side-by-side samples were collected from 76 residences with prior TPH concentrations of between 100 µg/L and 150 µg/L. The results are presented in Table G-2 and are summarized below:

- **SF Method Results**: TPH was detected at 10 of the 76 locations using the SF Method with detected concentrations ranging between 50.6 µg/L and 68.9 µg/L. The reported TPH concentration at 4445 Kobashigawa Street was 359 µg/L using the SF Method. However, this result is believed to be an anomaly because the laboratory noted the presence of a foreign object in the sample, which was suspected to be a leaf fragment, and the extract was brown. The corresponding MEQ resample was non-detect. The location was re-sampled. TPH was non-detect in the re-samples using both methods.
- **MEQ Method Results**: TPH was not detected at any of the 76 locations using the MEQ Method, including the 10 locations where TPH was detected using the SF Method.

Table G-2. Side-by-Side Comparison for Locations with Prior TPH Detections Between 100 and 150 µg/L

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
A1	2200 Kirkbride Avenue	A1-TW-0001631-22324-N	N	3-27-23	DA54277	127.3	-	-
A1		A1-TW-0001631-23139-N-T	N	7-3-23	DA56590	63.4	-	-
A1		A1-TW-0001631-22324-N-R1	N	2-28-24	DA62452	ND	ND	DA62464
A1	1406 Laniwai Avenue	A1-TW-0000439-23139-N	N	9-29-23	DA58996	100	-	-
A1		A1-TW-0000439-23139-N-R1	N	2-28-24	DA62452	ND	ND	DA62464
A1	2275 Waikahe Court	A1-TW-0001466-22114-N	N	5-9-22	DA44775	121.1	-	-
A1		A1-TW-0001466-23139-N-T	N	7-3-23	DA56590	ND	-	-
A1		A1-TW-0001466-22114-N-R1	N	3-1-24	DA62549	ND	ND	DA62557
A2	4678 Lexington Boulevard	A2-TW-0001985-22150-N	N	6-21-22	DA46354	133	-	-
A2		A2-TW-0001985-22150-N-R1	N	2-29-24	DA62510	ND	ND	DA62521
A3	6724 107th Street	A3-TW-0016171-22162-N	N	7-14-22	DA47101	100	-	-
A3		A3-TW-0016171-23157-N-T	N	8-14-23	DA57760	70	-	-
A3		A3-TW-0016171-22162-N-R1	N	3-1-24	DA62550	ND	ND	DA62558
B1	837 McGrew Loop	B1-TW-0009432-23147-N	N	9-13-23	DA58545	120	-	-
B1		B1-TW-0009432-23147-N-R1	N	11-2-23	DA59781	61.9	-	-
B1		B1-TW-0009432-23147-N-R2	N	2-29-24	DA62511	**68.9**	**ND**	DA62522
D1	923 Huttenberg Court	D1-TW-0000815-23145-N	N	10-13-23	DA59349	121	-	-
D1		D1-TW-0000815-23145-3-N	FD	10-13-23	DA59349	59.6	-	-
D1		D1-TW-0000815-23145-N-R1	N	2-28-24	DA62455	ND	ND	DA62467
D2	212B 11th Street	D2-TW-0008371-22342-N	N	1-20-23	DA52754	133.8	-	-
D2		D2-TW-0008371-23157-N-T	N	8-30-23	DA58231	58.1	-	-
D2		D2-TW-0008371-22342-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	214 13th Street	D2-TW-0008400-23337-N	N	1-4-24	DA61100	136.6	-	-
D2		D2-TW-0008400-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	203B 15th Street	D2-TW-0007485-23157-N	N	8-29-23	DA58208	121	-	-
D2		D2-TW-0007485-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	127 18th Street	D2-TW-0008276-23157-N	N	7-27-23	DA57284	104	-	-
D2		D2-TW-0008276-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	133 18th Street	D2-TW-0008282-23157-N	N	8-7-23	DA57534	115.5	-	-
D2		D2-TW-0008282-23157-N-R1	N	2-28-24	DA62454	ND	ND	DA62466
D2	204B 2nd Street	D2-TW-0007562-22342-N	N	1-20-23	DA52754	104.1	-	-
D2		D2-TW-0007562-23157-N-T	N	6-29-23	DA56545A	ND	-	-
D2		D2-TW-0007562-22342-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	112 20th Street	D2-TW-0006940-23157-N	N	9-7-23	DA58414	121	-	-
D2		D2-TW-0006940-23157-3-N	FD	9-7-23	DA58414	76.7	-	-
D2		D2-TW-0006940-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	117 4th Street	D2-TW-0008218-23337-N	N	1-4-24	DA61100	135.5	-	-
D2		D2-TW-0008218-23337-N-1	N	2-29-24	DA62504	ND	ND	DA62515

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
D2	136 Aimokulani Alley	D2-TW-0006905-23157-N	N	8-30-23	DA58231	133.7	-	-
D2		D2-TW-0006905-23157-N-R1	N	2-23-24	DA62311	ND	ND	DA62324
D2	2402D Challenger Loop	D2-TW-0008042-22132-N-R1	N	6-15-22	DA46188	118	-	-
D2		D2-TW-0008042-23157-N-T	N	8-24-23	DA58107	ND	-	-
D2		D2-TW-0008042-22132-N-R2	N	3-4-24	DA62577	ND	ND	DA62582
D2	2434D Challenger Loop	D2-TW-0008342-23337-N	N	1-4-24	DA61100	113.8	-	-
D2		D2-TW-0008342-23337-N-R1	N	3-1-24	DA62547	ND	ND	DA62555
D2	2436B Challenger Loop	D2-TW-0007987-23337-N	N	1-4-24	DA61100	129.7	-	-
D2		D2-TW-0007987-23337-N-R1	N	2-29-24	DA62504	**52.8**	**ND**	DA62515
D2	1205 Cornet Avenue	D2-TW-0007820-22342-N	N	2-23-23	DA53562	ND	-	-
D2		D2-TW-0007820-22342-3-N	FD	2-23-23	DA53562	119.8	-	-
D2		D2-TW-0007820-23157-N-T	N	6-29-23	DA56545	71.8	-	-
D2		D2-TW-0007820-22342-N-R1	N	3-4-24	DA62577	ND	ND	DA62582
D2	1114 Fox Boulevard	D2-TW-0008468-23337-N	N	1-4-24	DA61112	138.8	-	-
D2		D2-TW-0008468-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	1202 Fox Boulevard	D2-TW-0008474-23337-N	N	1-4-24	DA61112	129.7	-	-
D2		D2-TW-0008474-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	1912 Fox Boulevard	D2-TW-0007436-23337-N	N	1-8-24	DA61143	144	-	-
D2		D2-TW-0007436-23337-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	1925 Fox Boulevard	D2-TW-0007999-23157-N	N	9-19-23	DA58694	101	-	-
D2		D2-TW-0007999-23157-3-N	FD	9-19-23	DA58694	73.3	-	-
D2		D2-TW-0007999-23157-N-R1	N	3-1-24	DA62547	**55.6**	**ND**	DA62555
D2	1937 Fox Boulevard	D2-TW-0007028-23157-N	N	8-30-23	DA58231	112.9	-	-
D2		D2-TW-0007028-23157-N-R1	N	2-29-24	DA62504	ND	ND	DA62515
D2	316 Gemini Avenue	D2-TW-0007148-23157-N	N	8-30-23	DA58231	115.1	-	-
D2		D2-TW-0007148-23157-3-N	FD	8-30-23	DA58231	54.5	-	-
D2		D2-TW-0007148-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	111 Julian Avenue	D2-TW-0007255-23157-N	N	9-20-23	DA58747	102	-	-
D2		D2-TW-0007148-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	202 Julian Avenue	D2-TW-0007261-23157-N	N	8-22-23	DA58023	134.2	-	-
D2		D2-TW-0007261-23157-N-R1	N	2-23-24	DA62311	ND	ND	DA62324
D2	677 Kawekiweki Street	D2-TW-0007770-23157-N	N	9-7-23	DA58414	126	-	-
D2		D2-TW-0007770-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	605 Kulekia Alley	D2-TW-0007916-23157-N	N	8-22-23	DA58023	146.5	-	-
D2		D2-TW-0007916-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D2	627 Lelemanu Alley	D2-TW-0006994-23157-N	N	7-27-23	DA57284	106.7	-	-
D2		D2-TW-0006994-23157-N-R1	N	8-22-23	DA58026	ND	-	-
D2		D2-TW-0006994-23157-N-R2	N	2-28-24	DA62454	ND	ND	DA62466
D2	391 Lewahana Loop	D2-TW-0007274-23157-N	N	7-27-23	DA57284	107	-	-
D2		D2-TW-0007274-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
D2	1707 Tinker Avenue	D2-TW-0007946-23157-N	N	9-7-23	DA58414	106	-	-
D2		D2-TW-0007946-23157-N-R1	N	2-27-24	DA62396	ND	ND	DA62406
D3	316 Lehua Lane	D3-TW-0011199-22137-N	N	6-7-22	DA45878	111	-	-
D3		D3-TW-0011199-23162-N-T	N	7-25-23	DA57205	90.2	-	-
D3		D3-TW-0011199-22137-N-R1	N	2-29-24	DA62507	ND	ND	DA62518
D3	226 Melia Street	D3-TW-0011271-23342-N	N	1-9-24	DA61170	121	-	-
D3		D3-TW-0011271-23342-3-N	FD	1-9-24	DA61170	84.7	-	-
D3		D3-TW-0011271-23342-N-R1	N	3-5-24	DA62628	ND	ND	DA62637
D3	357 Melia Street	D3-TW-0011316-22347-N	N	2-27-23	DA53614	149.2	-	-
D3		D3-TW-0011316-22347-N-R1	N	2-28-24	DA62446	**59.9**	**ND**	DA62458
D3	358 Melia Street	D3-TW-0011317-23342-N	N	1-9-24	DA61170	141	-	-
D3		D3-TW-0011317-23342-N-R1	N	2-29-24	DA62507	ND	ND	DA62518
D3	765 Ohana Nui Circle	D3-TW-0009484-22347-N	N	2-2-23	DA53064	131.8	-	-
D3		D3-TW-0009484-23162-N-T	N	6-29-23	DA56544	64.3	-	-
D3		D3-TW-0009484-22347-N-R1	N	2-29-24	DA62507	ND	ND	DA62518
D3	406 Pakalana Street	D3-TW-0010325-23162-N	N	9-27-23	DA58944	134.9	-	-
D3		D3-TW-0010325-23162-3-N	FD	9-27-23	DA58944	69.9	-	-
D3		D3-TW-0010325-23162-N-R1	N	2-23-24	DA62314	ND	ND	DA62327
D3	160 Pilokea Lane	D3-TW-0010336-23162-N	N	7-21-23	DA57165	117	-	-
D3		D3-TW-0010336-23162-N-R1	N	2-28-24	DA62446	ND	ND	DA62458
D3	227 Puapilo Court	D3-TW-0010609-22347-N	N	2-1-23	DA53032	116.6	**-**	-
D3		D3-TW-0010609-22347-N-R1	N	2-28-24	DA62446	ND	ND	DA62458
D3	124 Puuloa Circle	D3-TW-0010623-23342-N	N	1-9-24	DA61170	133	-	-
D3		D3-TW-0010623-23342-N-R1	N	3-1-24	DA62551	**54.8**	**ND**	DA62559
E1	4 Makin Place	E1-TW-0010725-22097-N	N	4-13-22	DA43891	124	-	-
E1		E1-TW-0010725-23152-3-N-T	FD	7-11-23	DA56801	53.7	-	-
E1		E1-TW-0010725-23152-N-T	N	7-11-23	DA56801	50.2	-	-
E1		E1-TW-0010725-22097-N-R1	N	2-28-24	DA62457	ND	ND	DA62469
F1	4901 Kidd Court	F1-TW-0008789-23155-N	N	9-1-23	DA58291	114.1	-	-
F1		F1-TW-0008789-23155-N-R1	N	2-29-24	DA62509	ND	ND	DA62520
F1	4307 Pharris Place	F1-TW-0009045-23155-N	N	9-1-23	DA58291	123.6	-	-
F1		F1-TW-0009045-23155-3-N	FD	9-1-23	DA58291	ND	-	-
F1		F1-TW-0009045-23155-N-R1	N	2-28-24	DA62456	ND	ND	DA62468
F2	2812 Anderson Avenue	F2-TW-0010737-23155-N	N	8-31-23	DA58265	119.8	-	-
F2		F2-TW-0010737-23155-N-R1	N	2-27-24	DA62398	**52.4**	**ND**	DA62408
F2	3041 Anderson Avenue	F2-TW-0009621-23335-N	N	1-12-24	DA61253	108	-	-
F2		F2-TW-0009621-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	3221 Dewert Lane	F2-TW-0011162-23335-N	N	1-11-24	DA61231	112	-	-
F2		F2-TW-0011162-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
F2	2810 Gordon Street	F2-TW-0011607-22070-3-N	FD	3-25-22	DA43252	57.1	-	-
F2		F2-TW-0011607-22070-N	N	3-25-22	DA43252	148.1	-	-
F2		F2-TW-0011607-23155-N-T	N	6-30-23	DA56570A	ND	-	-
F2		F2-TW-0011607-22070-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	3362 Kilmer Street	F2-TW-0011734-23335-N	N	1-11-24	DA61231	137	-	-
F2		F2-TW-0011734-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	5428 Kilmer Lane	F2-TW-0011757-23335-N	N	1-11-24	DA61231	116	-	-
F2		F2-TW-0011757-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	614 Meyerkord Loop	F2-TW-0009957-22070-N	N	3-25-22	DA43252	102	-	-
F2		F2-TW-0009957-23155-N-T	N	6-30-23	DA56570A	ND	-	-
F2		F2-TW-0009957-23155-N-T-R1	N	2-27-24	DA62398	ND	ND	DA62408
F2	760 Murray Drive	F2-TW-0010099-23155-N	N	9-13-23	DA58546	128	-	-
F2		F2-TW-0010099-23155-N-R1	N	2-27-24	DA62398	ND	ND	DA62408
F2	763 Murray Drive	F2-TW-0010102-22130-N	N	5-26-22	DA45513	114.5	-	-
F2		F2-TW-0010102-23155-N-T	N	7-24-23	DA57187	ND	-	-
F2		F2-TW-0010102-22130-N-R1	N	3-1-24	DA62548	ND	ND	DA62556
F2	1672 Nye Circle	F2-TW-0010431-23335-N	N	2-5-24	DA61692	111.8	-	-
F2		F2-TW-0010431-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	1962 O'Callahan Street	F2-TW-0010473-23155-N	N	7-31-23	DA57349B	ND	-	-
F2		F2-TW-0010473-23155-N-R1	N	8-8-23	DA57597	ND	-	-
F2		F2-TW-0010473-23155-N-R2	N	8-9-23	DA57640	64.3	-	-
F2		F2-TW-0010473-23155-N-1	N	8-9-23	DA57640	96	-	-
F2		F2-TW-0010473-23155-N-2	N	8-9-23	DA57640	112	-	-
F2		F2-TW-0010473-23155-N-3	N	8-9-23	DA57640A	ND	-	-
F2		F2-TW-0010473-23155-N-4	N	8-9-23	DA57640	ND	-	-
F2		F2-TW-0010473-23155-N-5	N	8-9-23	DA57640	93.5	-	-
F2		F2-TW-0010473-23155-N-R3	N	2-29-24	DA62505	ND	ND	DA62516
F2	613 Pool Street	F2-TW-0010819-23335-N	N	1-12-24	DA61253	114	-	-
F2		F2-TW-0010819-23335-N-R1	N	2-29-24	DA62505	ND	ND	DA62516
F2	740 Pool Street	F2-TW-0010843-23155-N	N	9-21-23	DA58796	79.7	-	-
F2		F2-TW-0010843-23155-3-N	FD	9-21-23	DA58796	105	-	-
F2		F2-TW-0010843-23155-N-R1	N	2-27-24	DA62398	ND	ND	DA62408
F2	3287 Shields Lane	F2-TW-0010903-23155-N	N	8-31-23	DA58265	140.4	-	-
F2		F2-TW-0010903-23155-N-R1	N	2-23-24	DA62312	ND	ND	DA62325
F2	3020 Vaessen Court	F2-TW-0009324-23155-N	N	9-22-23	DA58832	111	-	-
F2		F2-TW-0009324-23155-N-R1	N	2-28-24	DA62453	ND	ND	DA62465
H1	3520 Albizia Lane	H1-TW-0013157-23147-A	N	9-15-23	DA58613	141.2	-	-
H1		H1-TW-0013157-23147-A-R1	N	2-23-24	DA62316	ND	ND	DA62329

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
H1	3339 Ama Drive	H1-TW-0013190-23147-A	N	9-15-23	DA58613	113	-	-
H1		H1-TW-0013190-23147-3-A	FD	9-15-23	DA58613	121	-	-
H1		H1-TW-0013190-23147-A-R1	N	2-28-24	DA62451	ND	ND	DA62463
H1	3725 Amapa Lane	H1-TW-0013215-23147-A	N	9-25-23	DA58860	110.9	-	-
H1		H1-TW-0013215-23147-A-R1	N	2-28-24	DA62451	**50.6**	**ND**	DA62463
H1	301 Bougainvillea Loop	H1-TW-0013310-23147-A	N	9-15-23	DA58613	113	-	-
H1		H1-TW-0013310-23147-A-R1	N	2-28-24	DA62451	**51.7**	**ND**	DA62463
H1	495 Bougainvillea Loop	H1-TW-0013325-23147-A	N	9-15-23	DA58613	111	-	-
H1		H1-TW-0013325-23147-A-R1	N	2-28-24	DA62451	ND	ND	DA62463
H1	6209 Cigar Lane	H1-TW-0012771-23147-A	N	9-25-23	DA58860	117	-	-
H1		H1-TW-0012771-23147-3-A	FD	9-25-23	DA58860	59.9	-	-
H1		H1-TW-0012771-23147-A-R1	N	2-29-24	DA62506	ND	ND	DA62517
H1	3827 Guava Lane	H1-TW-0012859-23147-A	N	10-10-23	DA59235	ND	-	-
H1		H1-TW-0012859-23147-3-A	FD	10-10-23	DA59235	111	-	-
H1		H1-TW-0012859-23147-A-R1	N	2-29-24	DA62506	ND	ND	DA62517
H1	4445 Kobashigawa Street	H1-TW-0013012-22152-A	N	6-24-22	DA46518	101	-	-
H1		H1-TW-0013012-23147-A-T	N	6-28-23	DA56515	59.9	-	-
H1		H1-TW-0013012-22152-A-R1	N	2-28-24	DA62451	**359**	**ND**	DA62463
H1		H1-TW-0013012-22152-A-R2	N	3-12-24	DA62896	ND	ND	DA62902
H1		H1-TW-0013012-22152-A-1	N	3-12-24	DA62896	ND	ND	DA62902
H1		H1-TW-0013012-22152-A-2	N	3-12-24	DA62896	ND	ND	DA62902
H1		H1-TW-0013012-22152-A-3	N	3-12-24	DA62896	ND	ND	DA62902
H1		H1-TW-0013012-22152-A-4	N	3-12-24	DA62896	ND	ND	DA62902
H1	4647 Kou Lane	H1-TW-0013051-23147-A	N	9-27-23	DA58945	78.4	-	-
H1		H1-TW-0013051-23147-3-A	FD	9-27-23	DA58945	101	-	-
H1		H1-TW-0013051-23147-A-R1	N	2-28-24	DA62451	**51**	**ND**	DA62463
H1	2641 Okamura Street	H1-TW-0013370-23327-A	N	1-24-24	DA61455	131.1	-	-
H1		H1-TW-0013370-23327-A-R1	N	2-29-24	DA62506	ND	ND	DA62517
H1	6667 Plumeria Loop	H1-TW-0013647-23147-A	N	9-27-23	DA58945	108	-	-
H1		H1-TW-0013647-23147-A-R1	N	2-28-24	DA62451	ND	ND	DA62463
H2	6656 Niu Street	H2-TW-0013538-22340-A	N	2-9-23	DA53267	113.5	-	-
H2		H2-TW-0013538-22340-3-A	FD	2-9-23	DA53267	ND	-	-
H2		H2-TW-0013538-22340-A-R1	N	3-5-24	DA62629	ND	ND	DA62638
H2	6665 Plumeria Loop	H2-TW-0013646-22160-A	N	11-8-22	DA50908	103	-	-
H2		H2-TW-0013646-23155-A-T	N	7-7-23	DA56709	ND	-	-
H2		H2-TW-0013646-22160-A-R1	N	2-29-24	DA62508	ND	ND	DA62519
H3	391 Hibiscus Street	H3-TW-0013691-22160-A	N	10-28-22	DA50551	101	-	-
H3		H3-TW-0013691-22160-A-R1	N	2-29-24	DA62513	ND	ND	DA62524
H3	174 Jasmine Place	H3-TW-0013707-23155-A	N	8-22-23	DA58024	145.2	-	-
H3		H3-TW-0013707-23155-A-R1	N	2-23-24	DA62313	ND	ND	DA62326

Zone	Address	Client Sample ID	Sample Type	Sample Date	SF SDG	SF Method: TPH (µg/L)	MEQ Method: TPH (µg/L)	MEQ SDG
I1	1602 Cowslip Lane	I1-TW-0014072-22315-A	N	4-6-23	DA54541	120.9	-	-
I1		I1-TW-0014072-23130-A-T	N	6-30-23	DA56571A	ND	-	-
I1		I1-TW-0014072-22315-A-R1	N	2-29-24	DA62514	ND	ND	DA62525

MEQ Method Matrix Spike Results

From 22 February to 18 March, 30 matrix samples were collected and analyzed using the MEQ method. These samples were spiked with 70 µg/L of JP-5, a value near the method reporting limit (MRL) prior to preparation and analysis. Overall, the percent recoveries for JP-5 were within recommended QA/QC guidelines, which demonstrates the accuracy and precision of analyzing field samples from JPBPHH using the updated method is acceptable. The results are presented in Table G-3 and summarized below:

- The actual spiked JP-5 concentrations ranged from 67 µg/L to 76 µg/L.
- In 26 of the 30 matrix spike samples between 52 and 149% of the added JP-5 was recovered. The average recovery among the 26 samples was 94%.
- One of the 30 MEQ matrix spike samples had a recovery of 44% (Client Sample ID C1-TW-0014751-23342-N-2-R1, collected on 26 February 2024). This indicates that the corresponding (non-spiked) MEQ results for sample C1-TW-0014751-23342-N-2-R1 may be biased slightly low.
- In 3 of the 30 matrix spike samples the JP-5 recovery exceeded 150%:
    - Client Sample ID I1-TW-0014072-22315-A-R1 sampled on 29 February 2024 had a recovery of 274%.
    - Client Sample ID F2-TW-0010102-22130-N-R1 sampled on 1 March 2024 had a recovery of 337%.
    - Client Sample ID H1-TW-0013645-23327-A-MEQ sampled on 5 March 2024 had a recovery of 394%.

  This indicates that the corresponding (non-spiked) MEQ results for these three samples may be biased high. The laboratory noted that the high recoveries were caused by the presence of siloxanes in this particular batch of bottle caps and not due to a matrix effect caused by the field samples.

Table G-3. MEQ Method Matrix Spike Results.

SDG	Client Sample ID	Lab Sample ID	Sample Type	Sampling Date	Test Method	Analysis Date	Preparation Method	Preparation Date	Spike Analyte Name	Amount Spiked	Recovery
DA62266	D2-TW-0007798-23337-N-MEQ	OP25206-MS	MS	2-22-24	M8015D	2-23-24	SW3511	2-23-24	JP-5	69	149%
DA62266	D2-TW-0007193-23337-N-MEQ	OP25207-MS	MS	2-22-24	M8015D	2-24-24	SW3511	2-23-24	JP-5	69	112%
DA62266	D2-TW-0008240-23337-N-MEQ	OP25208-MS	MS	2-22-24	M8015D	2-24-24	SW3511	2-23-24	JP-5	70	101%
DA62324	D2-TW-0007205-23157-N-R1-MEQ	OP25220-MS	MS	2-23-24	M8015D	2-26-24	SW3511	2-25-24	JP-5	69	68%
DA62324	D2-TW-0006905-23157-N-R1-MEQ	OP25221-MS	MS	2-23-24	M8015D	2-26-24	SW3511	2-25-24	JP-5	70	75%
DA62268	A3-TW-0016804-23337-N-MEQ	OP25226-MS	MS	2-22-24	M8015D	2-26-24	SW3511	2-26-24	JP-5	71	85%
DA62370	C1-TW-0014751-23342-N-2-R1-MEQ	OP25264-MS	MS	2-26-24	M8015D	3-4-24	SW3511	3-2-24	JP-5	70	**44%**
DA62407	D3-TW-0017509-23342-N-3-R1-MEQ	OP25266-MS	MS	2-27-24	M8015D	3-4-24	SW3511	3-2-24	JP-5	71	52%
DA62464	A1-TW-0001673-23139-N-R1-MEQ	OP25268-MS	MS	2-28-24	M8015D	3-5-24	SW3511	3-2-24	JP-5	70	53%
DA62464	A1-TW-0001631-22324-N-R1-MEQ	OP25269-MS	MS	2-28-24	M8015D	3-5-24	SW3511	3-2-24	JP-5	69	96%
DA62517	H1-TW-0013370-23327-A-R1-MEQ	OP25270-MS	MS	2-29-24	M8015D	3-4-24	SW3511	3-2-24	JP-5	70	59%
DA62516	F2-TW-0011162-23335-N-R1-MEQ	OP25271-MS	MS	2-29-24	M8015D	3-4-24	SW3511	3-2-24	JP-5	69	71%
DA62464	A1-TW-0001561-23139-N-R1-MEQ	OP25294-MS	MS	2-28-24	M8015D	3-7-24	SW3511	3-6-24	JP-5	70	87%
DA62525	I1-TW-0014072-22315-A-R1-MEQ	OP25309-MS	MS	2-29-24	M8015D	3-9-24	SW3511	3-7-24	JP-5	72	**274%**
DA62556	F2-TW-0010102-22130-N-R1-MEQ	OP25316-MS	MS	3-1-24	M8015D	3-9-24	SW3511	3-8-24	JP-5	71	**337%**
DA62630	H1-TW-0013645-23327-A-MEQ	OP25323-MS	MS	3-5-24	M8015D	3-12-24	SW3511	3-9-24	JP-5	70	**394%**
DA62630	H1-TW-0013265-23327-A-MEQ	OP25333-MS	MS	3-5-24	M8015D	3-11-24	SW3511	3-10-24	JP-5	69	105%
DA62632	H2-TW-0013519-23335-A-MEQ	OP25334-MS	MS	3-5-24	M8015D	3-13-24	SW3511	3-10-24	JP-5	69	107%
DA62635	A3-TW-0017354-23157-N-R1-MEQ	OP25335-MS	MS	3-5-24	M8015D	3-13-24	SW3511	3-10-24	JP-5	71	72%
DA62709	A1-DL-0016026-23319-N-MEQ	OP25336-MS	MS	3-6-24	M8015D	3-14-24	SW3511	3-11-24	JP-5	69	100%
DA62752B	D2-TW-0007743-23337-N-MEQ	OP25337-MS	MS	3-7-24	M8015D	3-14-24	SW3511	3-11-24	JP-5	69	91%
DA62754	H1-TW-0013048-23327-A-MEQ	OP25340-MS	MS	3-7-24	M8015D	3-14-24	SW3511	3-12-24	JP-5	67	123%
DA62793	E1-DL-0017787-23332-N-MEQ	OP25341-MS	MS	3-8-24	M8015D	3-15-24	SW3511	3-12-24	JP-5	70	98%
DA62850	H1-DL-0017754-23327-A-MEQ	OP25356-MS	MS	3-11-24	M8015D	3-15-24	SW3511	3-13-24	JP-5	72	136%
DA62897	F2-DL-0017745-23335-N-MEQ	OP25358-MS	MS	3-12-24	M8015D	3-15-24	SW3511	3-14-24	JP-5	72	110%
DA62897	F2-DL-0017751-23335-N-MEQ	OP25359-MS	MS	3-12-24	M8015D	3-16-24	SW3511	3-14-24	JP-5	70	98%
DA62982	A2-TW-0014274-23325-N-MEQ	OP25367-MS	MS	3-14-24	M8015D	3-16-24	SW3511	3-15-24	JP-5	76	85%
DA63004	A3-TW-0017303-23337-N-MEQ	OP25374-MS	MS	3-15-24	M8015D	3-16-24	SW3511	3-16-24	JP-5	76	87%
DA62406	D2-TW-0007916-23157-N-R1-MEQ	OP25381-MS	MS	2-27-24	M8015D	3-18-24	SW3511	3-18-24	JP-5	69	99%
DA63040	A3-TW-0017090-23337-N-MEQ	OP25386-MS	MS	3-18-24	M8015D	3-19-24	SW3511	3-19-24	JP-5	73	113%

TPH Sample Results from All Side-By-Side Comparisons

TPH results for all 658 drinking water samples collected between 22 February and 29 March 2024 and evaluated as part of this side-by-side comparison are provided in Table G-5. Table G-5 also includes the results from the 121 locations previously presented in Table G-1 and Table G-2. Table G-5 provides summary statistics.

Table G-4. Summary Statistics for Side-By-Side Comparisons

Method	Number of Detects
SF Method	31 of 658 (4.7%)
MEQ Method	6 of 658 (0.91%)

Additional Observations Regarding the Data Presented in Table G-5

The sample result at Hickam Elementary - P1, Building 641H using the SF Method was 320.8 µg/L. However, this result was an anomaly for the following reason:

- TPH was not detected in the corresponding sample analyzed using the MEQ Method.
- A split sample was collected and sent to a different commercial laboratory (Eurofins) and analyzed using the SF Method. TPH was non-detect in the split sample analyzed by Eurofins.
- TPH was non-detect the other four samples collected at the school.
- TPH was non-detect in the drinking water sample collected in January 2024 from the same sink as the original sample. The January 2024 sample was analyzed using the SF Method.
- The chromatogram exhibited a pattern consistent with a lubricating oil, not fuel.

Table G-5. TPH Sample Results from All Side-By-Side Comparisons

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
A1	1600 Aloha Avenue	Residence	A1-TW-0001561-23139-N-R1	N	2/28/2024	Non-LTM Requested Samples	**53.6**	ND
A1	269 Etcell Court	Residence	A1-TW-0001237-23319-N	N	2/12/2024	Non-LTM Requested Samples	ND	ND
A1	SA-DFH 57	Hydrant	A1-DL-0016026-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	SA-AFH 35	Hydrant	A1-DL-0016024-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	FH ID: SA-AFH 7	Hydrant	A1-DL-0000510-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	SA-AFH 60	Hydrant	A1-DL-0016023-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	Hydrant 55B	Hydrant	A1-DL-0016025-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	Hydrant 72	Hydrant	A1-DL-0016027-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	2200 Kirkbride Avenue	Residence	A1-TW-0001631-22324-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
A1	1406 Laniwai Avenue	Residence	A1-TW-0000439-23139-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
A1	501 Lehua Avenue	Residence	A1-TW-0001673-23139-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
A1	130 Ley Court	Residence	A1-TW-0000418-23319-N	N	2/15/2024	Non-LTM Requested Samples	ND	ND
A1	7006 Loch Street	Residence	A1-TW-0001726-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	1103 Lowella Ave (CDH)	Residence	A1-TW-0017808-23319-N-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A1	1315 Robinson Avenue	Residence	A1-TW-0001369-23319-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A1	2275 Waikahe Court	Residence	A1-TW-0001466-22114-N-R1	N	3/1/2024	Non-LTM Requested Samples	ND	ND
A2	Building 39	Non-Residence	A2-TW-0014267-23325-N	N	3/14/2024	Non-LTM Requested Samples	ND	ND
A2	Building 77	Non-Residence	A2-TW-0014274-23325-N	N	3/14/2024	Non-LTM Requested Samples	ND	ND
A2	Building 176	Non-Residence	A2-TW-0014284-23325-N	N	3/11/2024	Non-LTM Requested Samples	ND	ND
A2	Building 570	CDC	A2-TW-0014310-23325-N-1-R1	N	2/12/2024	Non-LTM Requested Samples	ND	ND
A2	Building 570	CDC	A2-TW-0014310-23325-N-1-R2	N	2/27/2024	Non-LTM Requested Samples	**68.2**	ND
A2	Building 570	CDC	A2-TW-0014310-23325-N-2-R1	N	2/27/2024	Non-LTM Requested Samples	**71.2**	ND
A2	FH 214	Hydrant	A2-DL-0017662-23325-3-N	FD	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH 214	Hydrant	A2-DL-0017662-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH 39	Hydrant	A2-DL-0017663-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	**69.4**	ND
A2	FH 5-25	Hydrant	A2-DL-0017659-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH ID: 3-1	Hydrant	A2-DL-0000507-23325-3-N	FD	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH ID: 3-1	Hydrant	A2-DL-0000507-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH 6-2	Hydrant	A2-DL-0017660-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH 7-13	Hydrant	A2-DL-0017655-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	**52.7**	ND
A2	FH 7-4	Hydrant	A2-DL-0017658-23325-3-N	FD	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH 7-4	Hydrant	A2-DL-0017658-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
A2	FH 812	Hydrant	A2-DL-0017661-23325-3-N	FD	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH 812	Hydrant	A2-DL-0017661-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH 84	Hydrant	A2-DL-0017657-23325-N	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	FH Z-16	Hydrant	A2-DL-0017656-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	4987 Kamehameha Loop	Residence	A2-TW-0001912-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	5034 Kamehameha Loop	Residence	A2-TW-0001920-23325-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A2	4678 Lexington Boulevard	Residence	A2-TW-0001985-22150-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
A2	4702 Maryland Street	Residence	A2-TW-0001990-23325-N	N	3/12/2024	Non-LTM Requested Samples	ND	ND
A2	4677 Oklahoma Avenue	Residence	A2-TW-0002022-23325-N	N	3/8/2024	Non-LTM Requested Samples	ND	ND
A2	Pier F10	Service Point	A2-TW-0018007-23325-N	N	3/11/2024	Non-LTM Requested Samples	ND	ND
A2	Pier F9	Service Point	A2-TW-0018006-23325-N	N	3/11/2024	Non-LTM Requested Samples	ND	ND
A2	1014 Tennessee Lane	Residence	A2-TW-0002053-23325-N	N	2/23/2024	Non-LTM Requested Samples	ND	**59.8**
A2	4955 Tomahawk Street	Residence	A2-TW-0002091-23325-N	N	2/23/2024	Non-LTM Requested Samples	ND	ND
A3	6724 107th Street	Residence	A3-TW-0016171-22162-N-R1	N	3/1/2024	Non-LTM Requested Samples	ND	ND
A3	6814A 110th Street	Residence	A3-TW-0017425-23337-N	N	2/19/2024	Non-LTM Requested Samples	ND	ND
A3	5529 Bittern Avenue	Residence	A3-TW-0016192-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	Iroquois Point Elementary	School	A3-TW-0012582-23337-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Elementary	School	A3-TW-0012582-23337-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Elementary	School	A3-TW-0012582-23337-N-3-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Elementary	School	A3-TW-0012582-23337-N-4-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Elementary	School	A3-TW-0012582-23337-N-5-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	4858B East Eha Way	Residence	A3-TW-0017354-23157-N-R1	N	3/5/2024	Non-LTM Requested Samples	ND	ND
A3	5782B Erne Avenue	Residence	A3-TW-0017020-23337-N	N	3/7/2024	Non-LTM Requested Samples	ND	ND
A3	5792A Erne Avenue	Residence	A3-TW-0017025-23337-N	N	2/12/2024	Non-LTM Requested Samples	ND	ND
A3	5856A Fulmar Avenue	Residence	A3-TW-0017303-23337-N	N	3/15/2024	Non-LTM Requested Samples	ND	ND
A3	6013 Gannet Avenue	Residence	A3-TW-0017089-23337-N	N	2/8/2024	Non-LTM Requested Samples	ND	ND
A3	6016 Gannet Avenue	Residence	A3-TW-0017090-23337-N	N	3/18/2024	Non-LTM Requested Samples	ND	ND
A3	A3-SA-JFH-44	Hydrant	A3-DL-0017762-23337-3-N	FD	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	A3-SA-JFH-44	Hydrant	A3-DL-0017762-23337-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	FH752	Hydrant	A3-DL-0017763-23337-3-N	FD	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	FH752	Hydrant	A3-DL-0017763-23337-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	SA-JFH-52	Hydrant	A3-DL-0017764-23337-3-N	FD	3/1/2024	LTM Period 7 (Month 22 - 24)	**60.1**	ND
A3	SA-JFH-52	Hydrant	A3-DL-0017764-23337-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
A3	SA-JFH-4	Hydrant	A3-DL-0017765-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	SA-JFH-28	Hydrant	A3-DL-0017766-23337-3-N	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	SA-JFH-28	Hydrant	A3-DL-0017766-23337-N	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	SA-JFH-72	Hydrant	A3-DL-0017767-23337-3-N	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	SA-JFH-72	Hydrant	A3-DL-0017767-23337-N	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	SA-JFH-7	Hydrant	A3-DL-0017768-23337-3-N	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	SA-JFH-7	Hydrant	A3-DL-0017768-23337-N	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	Iroquois Point Pre-School	School	A3-TW-0012569-23337-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Pre-School	School	A3-TW-0012569-23337-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Pre-School	School	A3-TW-0012569-23337-N-3-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Pre-School	School	A3-TW-0012569-23337-N-4-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	Iroquois Point Pre-School	School	A3-TW-0012569-23337-N-5-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
A3	5157 Iroquois Avenue	Residence	A3-TW-0016282-23337-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	5174 Iroquois Avenue	Residence	A3-TW-0016478-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	5229A Iroquois Avenue	Residence	A3-TW-0016265-23337-N	N	3/27/2024	Non-LTM Requested Samples	ND	ND
A3	5229A Iroquois Avenue	Residence	A3-TW-0016265-23337-N-R1	N	3/27/2024	Non-LTM Requested Samples	ND	ND
A3	5292B Iroquois Avenue	Residence	A3-TW-0017166-23337-N	N	3/19/2024	Non-LTM Requested Samples	ND	ND
A3	5293 Iroquois Avenue	Residence	A3-TW-0016486-23337-N	N	2/14/2024	Non-LTM Requested Samples	ND	ND
A3	5297 Iroquois Avenue	Residence	A3-TW-0012500-23337-N	N	2/7/2024	Non-LTM Requested Samples	ND	ND
A3	4805B West Ekolu Way	Residence	A3-TW-0016804-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
A3	4807B West Ekolu Way	Residence	A3-TW-0016810-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	**174**	ND
A3	4774C West Elua Way	Residence	A3-TW-0016831-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2873D Hapue Loop	Residence	B1-TW-0017612-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	1177 Hekau Street	Residence	B1-TW-0010489-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	FH 6 (B1-HYD545)	Hydrant	B1-DL-0017728-23327-N	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	FH ID: 8	Hydrant	B1-DL-0000512-23327-N	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2853D Kaee Loop	Residence	B1-TW-0017586-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2868C Kokio Loop	Residence	B1-TW-0017602-23327-3-N	FD	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2868C Kokio Loop	Residence	B1-TW-0017602-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2868D Kokio Loop	Residence	B1-TW-0017603-23327-N	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2880F Kupalii Loop	Residence	B1-TW-0017627-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2907F Makuu Loop	Residence	B1-TW-0017649-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	413 McGrew Loop	Residence	B1-TW-0010526-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
B1	442 McGrew Loop	Residence	B1-TW-0009368-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	494 McGrew Loop	Residence	B1-TW-0009374-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	546 McGrew Loop	Residence	B1-TW-0009387-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	736 McGrew Loop	Residence	B1-TW-0009415-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	785 McGrew Loop	Residence	B1-TW-0009421-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	804 McGrew Loop	Residence	B1-TW-0009425-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	812 McGrew Loop	Residence	B1-TW-0009427-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	837 McGrew Loop	Residence	B1-TW-0009432-23147-N-R2	N	2/29/2024	Non-LTM Requested Samples	**68.9**	ND
B1	2915C Oliana Loop	Residence	B1-TW-0017568-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
B1	2931F Oliana Loop	Residence	B1-TW-0017619-23327-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	Building 584	Medical	C1-TW-0014693-23342-3-N	FD	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	Building 584	Medical	C1-TW-0014693-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	Building 1407	Medical	C1-TW-0014730-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	Building 1514	Medical	C1-TW-0014738-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	Building 1535	Medical	C1-TW-0014739-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	Building 1655	CDC	C1-TW-0014751-23342-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
C1	Building 1655	CDC	C1-TW-0014751-23342-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
C1	FH ID: FH 503	Hydrant	C1-DL-0000526-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	FHID: 563	Hydrant	C1-DL-0017789-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	FHID: 479	Hydrant	C1-DL-0017791-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	FHID: 413	Hydrant	C1-DL-0017788-23342-3-N	FD	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	FHID: 413	Hydrant	C1-DL-0017788-23342-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C1	FHID: 530A	Hydrant	C1-DL-0017790-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	Building 1750	Medical	C2-TW-0014833-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	C2-FH209B	Hydrant	C2-DL-0017792-23342-3-N	FD	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	C2-FH209B	Hydrant	C2-DL-0017792-23342-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	C2-FH204	Hydrant	C2-DL-0017795-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	C2-FH246	Hydrant	C2-DL-0017796-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	FH ID: 315	Hydrant	C2-DL-0000534-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	Hydrant 268	Hydrant	C2-DL-0017794-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C2	Hydrant 301	Hydrant	C2-DL-0017793-23342-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C3	FH ID: 177	Hydrant	C3-DL-0017798-23342-3-N	FD	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
C3	FH ID: 177	Hydrant	C3-DL-0017798-23342-N	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D1	Building 204	CDC	D1-TW-0015067-23325-3-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Building 204	CDC	D1-TW-0015067-23325-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Building 204	CDC	D1-TW-0015067-23325-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Building 930	CDC	D1-TW-0015074-23325-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Building 930	CDC	D1-TW-0015074-23325-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Pearl Harbor Kai Elementary	School	D1-TW-0015098-23325-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Pearl Harbor Kai Elementary	School	D1-TW-0015098-23325-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Pearl Harbor Kai Elementary	School	D1-TW-0015098-23325-N-3-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Pearl Harbor Kai Elementary	School	D1-TW-0015098-23325-N-4-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	Pearl Harbor Kai Elementary	School	D1-TW-0015098-23325-N-5-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	407 Bothne Court	Residence	D1-TW-0001013-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	412 Bothne Court	Residence	D1-TW-0001018-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	308 Christopher Court	Residence	D1-TW-0000774-23145-N-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D1	310 Christopher Court	Residence	D1-TW-0000776-23325-3-N	FD	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	310 Christopher Court	Residence	D1-TW-0000776-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	**56.9**	ND
D1	217 Dunlap Court	Residence	D1-TW-0001076-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	223 Dunlap Court	Residence	D1-TW-0001079-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	231 Dunlap Court	Residence	D1-TW-0001083-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1811 Fisler Court	Residence	D1-TW-0000997-23145-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D1	500 Graham Court	Residence	D1-TW-0001020-23325-N	N	3/25/2024	Non-LTM Requested Samples	ND	ND
D1	3325D Hancock Place	Residence	D1-TW-0001207-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	908 Huttenberg Court	Residence	D1-TW-0000800-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	911 Huttenberg Court	Residence	D1-TW-0000803-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	912 Huttenberg Court	Residence	D1-TW-0000804-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	920 Huttenberg Court	Residence	D1-TW-0000812-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	923 Huttenberg Court	Residence	D1-TW-0000815-23145-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D1	926 Huttenberg Court	Residence	D1-TW-0000818-23325-N	N	2/28/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	FH ID: 436	Hydrant	D1-DL-0017564-23325-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	FH ID: 714	Hydrant	D1-DL-0017563-23325-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	FH ID: 731	Hydrant	D1-DL-0017561-23325-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	FH ID: 748	Hydrant	D1-DL-0017565-23325-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	FH ID: 771	Hydrant	D1-DL-0017562-23325-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	FH ID: 768	Hydrant	D1-DL-0000548-23325-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D1	1500 Kaufman Court	Residence	D1-TW-0000934-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1502 Kaufman Court	Residence	D1-TW-0000936-23325-N	N	3/22/2024	Non-LTM Requested Samples	ND	ND
D1	1512 Kaufman Court	Residence	D1-TW-0000946-22060-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D1	1519 Kaufman Court	Residence	D1-TW-0000953-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	**106.6**
D1	3332A Leal Place	Residence	D1-TW-0000732-23325-3-N	FD	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3332A Leal Place	Residence	D1-TW-0000732-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3334D Leal Place	Residence	D1-TW-0000739-23325-3-N	FD	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3334D Leal Place	Residence	D1-TW-0000739-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3311D Mack Place	Residence	D1-TW-0001127-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3312E Mack Place	Residence	D1-TW-0001132-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1322 McMurtry Court	Residence	D1-TW-0000930-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1203 Mead Place	Residence	D1-TW-0000893-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3337D Powell Loop	Residence	D1-TW-0001113-23325-3-N	FD	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3337D Powell Loop	Residence	D1-TW-0001113-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	110 Singleton Court	Residence	D1-TW-0001048-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	116 Singleton Court	Residence	D1-TW-0001054-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	118 Singleton Court	Residence	D1-TW-0001056-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	119 Singleton Court	Residence	D1-TW-0001057-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3341C Smith Circle	Residence	D1-TW-0000752-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3317D Stommes Place	Residence	D1-TW-0001091-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3319D Stommes Place	Residence	D1-TW-0001097-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1606 Taussig Court	Residence	D1-TW-0000962-23325-3-N	FD	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1606 Taussig Court	Residence	D1-TW-0000962-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1610 Taussig Court	Residence	D1-TW-0000965-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3314C Teague Place	Residence	D1-TW-0001140-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3306F Valdez Place	Residence	D1-TW-0001189-23325-3-N	FD	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	3306F Valdez Place	Residence	D1-TW-0001189-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	1700 Wagoner Court	Residence	D1-TW-0000966-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	801 West Teaff Court	Residence	D1-TW-0000843-23325-N	N	3/4/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	807 West Teaff Court	Residence	D1-TW-0000849-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D1	812 West Teaff Court	Residence	D1-TW-0000854-23325-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	209 10th Street	Residence	D2-TW-0008315-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	106 11th Street	Residence	D2-TW-0008352-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D2	212B 11th Street	Residence	D2-TW-0008371-22342-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	206 13th Street	Residence	D2-TW-0008395-23337-N	N	2/8/2024	Non-LTM Requested Samples	ND	ND
D2	211B 13th Street	Residence	D2-TW-0008402-23157-N-R1	N	3/1/2024	Non-LTM Requested Samples	ND	ND
D2	211E 13th Street	Residence	D2-TW-0008405-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	214 13th Street	Residence	D2-TW-0008400-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	203E 14th Street	Residence	D2-TW-0007544-23337-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	203B 15th Street	Residence	D2-TW-0007485-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	214 16th Street	Residence	D2-TW-0007823-23337-N-R1	N	3/13/2024	Non-LTM Requested Samples	ND	ND
D2	214 16th Street	Residence	D2-TW-0007823-23337-N-R2	N	3/13/2024	Non-LTM Requested Samples	ND	ND
D2	126 18th Street	Residence	D2-TW-0008275-23157-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	127 18th Street	Residence	D2-TW-0008276-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	132 18th Street	Residence	D2-TW-0008281-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	133 18th Street	Residence	D2-TW-0008282-23157-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D2	134 18th Street	Residence	D2-TW-0008283-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	162 18th Street	Residence	D2-TW-0007164-23337-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	20 19th Street	Residence	D2-TW-0007248-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	105 19th Street	Residence	D2-TW-0008289-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	130 19th Street	Residence	D2-TW-0008240-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	112 20th Street	Residence	D2-TW-0006940-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	141 20th Street	Residence	D2-TW-0007963-23337-3-N	FD	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	141 20th Street	Residence	D2-TW-0007963-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	**61.4**
D2	105 21st Street	Residence	D2-TW-0007189-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	106 21st Street	Residence	D2-TW-0007190-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	109 21st Street	Residence	D2-TW-0007193-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	130 21st Street	Residence	D2-TW-0007092-23337-3-N	FD	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	130 21st Street	Residence	D2-TW-0007092-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	118 2nd Street	Residence	D2-TW-0008105-23337-3-N	FD	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	118 2nd Street	Residence	D2-TW-0008105-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	123 2nd Street	Residence	D2-TW-0008108-23337-N	N	2/15/2024	Non-LTM Requested Samples	ND	ND
D2	123 2nd Street	Residence	D2-TW-0008108-23337-N-1	N	3/6/2024	Non-LTM Requested Samples	ND	ND
D2	123 2nd Street	Residence	D2-TW-0008108-23337-N-1-R1	N	3/6/2024	Non-LTM Requested Samples	ND	ND
D2	126 2nd Street	Residence	D2-TW-0006953-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	135 2nd Street	Residence	D2-TW-0006959-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D2	204B 2nd Street	Residence	D2-TW-0007562-22342-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	206 2nd Street	Residence	D2-TW-0006963-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	123 3rd Street	Residence	D2-TW-0007572-23157-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D2	104 4th Street	Residence	D2-TW-0007025-23337-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	117 4th Street	Residence	D2-TW-0008218-23337-N-1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	202B 4th Street	Residence	D2-TW-0008032-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	201 8th Street	Residence	D2-TW-0007459-23337-3-N	FD	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	201 8th Street	Residence	D2-TW-0007459-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	136 Aimokulani Alley	Residence	D2-TW-0006905-23157-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D2	128 Apollo Avenue	Residence	D2-TW-0008325-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	533 Apollo Avenue	Residence	D2-TW-0007195-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	822 Apollo Avenue	Residence	D2-TW-0007205-23157-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D2	823 Apollo Avenue	Residence	D2-TW-0007206-23337-3-N	FD	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	823 Apollo Avenue	Residence	D2-TW-0007206-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	202B Beard Avenue	Residence	D2-TW-0007236-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	207 Beard Avenue	Residence	D2-TW-0007075-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	Building 623H	CDC	D2-TW-0015492-23337-3-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D2	Building 623H	CDC	D2-TW-0015492-23337-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D2	Building 623H	CDC	D2-TW-0015492-23337-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	**320.8**	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-1-R2	N	3/8/2024	Non-LTM Requested Samples	ND	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-2-R2	N	3/8/2024	Non-LTM Requested Samples	ND	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-3-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-4-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-5-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D2	Hickam Elementary	School	D2-TW-0015498-23337-N-6	N	3/8/2024	Non-LTM Requested Samples	ND	ND
D2	2402D Challenger Loop	Residence	D2-TW-0008042-22132-N-R2	N	3/4/2024	Non-LTM Requested Samples	ND	ND
D2	2405D Challenger Loop	Residence	D2-TW-0008044-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	2414A Challenger Loop	Residence	D2-TW-0007798-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	2434D Challenger Loop	Residence	D2-TW-0008342-23337-N-R1	N	3/1/2024	Non-LTM Requested Samples	ND	ND
D2	2436B Challenger Loop	Residence	D2-TW-0007987-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	**52.8**	ND
D2	1205 Cornet Avenue	Residence	D2-TW-0007820-22342-N-R1	N	3/4/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D2	1104 Fox Boulevard	Residence	D2-TW-0008343-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1114 Fox Boulevard	Residence	D2-TW-0008468-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	1202 Fox Boulevard	Residence	D2-TW-0008474-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	1701 Fox Boulevard	Residence	D2-TW-0007864-23337-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1701 Fox Boulevard	Residence	D2-TW-0007864-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1827 Fox Boulevard	Residence	D2-TW-0007416-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1833 Fox Boulevard	Residence	D2-TW-0007419-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1906 Fox Boulevard	Residence	D2-TW-0007430-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1912 Fox Boulevard	Residence	D2-TW-0007436-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	1925 Fox Boulevard	Residence	D2-TW-0007999-23157-N-R1	N	3/1/2024	Non-LTM Requested Samples	**55.6**	ND
D2	1935 Fox Boulevard	Residence	D2-TW-0007027-23337-N	N	3/18/2024	Non-LTM Requested Samples	ND	ND
D2	1937 Fox Boulevard	Residence	D2-TW-0007028-23157-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	1937 Fox Boulevard	Residence	D2-TW-0007028-23337-N	N	3/15/2024	Non-LTM Requested Samples	ND	ND
D2	301 Gemini Avenue	Residence	D2-TW-0007138-23157-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D2	316 Gemini Avenue	Residence	D2-TW-0007148-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	705 Hoolaulima Alley	Residence	D2-TW-0008147-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D2	708 Hoolaulima Alley	Residence	D2-TW-0008111-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	**99.6**
D2	15 Julian Avenue	Residence	D2-TW-0008053-23337-N	N	2/12/2024	Non-LTM Requested Samples	ND	ND
D2	111 Julian Avenue	Residence	D2-TW-0007255-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	202 Julian Avenue	Residence	D2-TW-0007261-23157-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D2	508 Julian Avenue	Residence	D2-TW-0007523-23157-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D2	426 Kamakakoa Alley	Residence	D2-TW-0006926-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	677 Kawehiwehi Street	Residence	D2-TW-0007770-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	**70.4**	ND
D2	731 Kawehiwehi Street	Residence	D2-TW-0007773-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	605 Kulekia Alley	Residence	D2-TW-0007916-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	627 Lelemanu Alley	Residence	D2-TW-0006994-23157-N-R2	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D2	391 Lewahana Loop	Residence	D2-TW-0007274-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	214 Mercury Street	Residence	D2-TW-0007295-23157-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D2	1508 Porter Avenue	Residence	D2-TW-0008426-23337-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1508 Porter Avenue	Residence	D2-TW-0008426-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1606 Porter Avenue	Residence	D2-TW-0008429-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1724 Porter Avenue	Residence	D2-TW-0007681-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1824 Porter Avenue	Residence	D2-TW-0007735-23337-N	N	2/28/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D2	1830 Porter Avenue	Residence	D2-TW-0007738-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1908 Porter Avenue	Residence	D2-TW-0007743-23337-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1908 Porter Avenue	Residence	D2-TW-0007743-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	201C Signer Boulevard	Residence	D2-TW-0007934-23337-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	201C Signer Boulevard	Residence	D2-TW-0007934-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	201D Signer Boulevard	Residence	D2-TW-0007935-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	303A Signer Boulevard	Residence	D2-TW-0006972-23337-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	402 Signer Boulevard	Residence	D2-TW-0007756-23157-N-R1	N	3/5/2024	Non-LTM Requested Samples	ND	ND
D2	403C Signer Boulevard	Residence	D2-TW-0008439-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	504E Signer Boulevard	Residence	D2-TW-0008454-23337-N	N	2/23/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	504F Signer Boulevard	Residence	D2-TW-0008455-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	701 Signer Boulevard	Residence	D2-TW-0007762-23157-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D2	1002 Signer Boulevard	Residence	D2-TW-0007926-23337-N	N	3/19/2024	Non-LTM Requested Samples	ND	ND
D2	105 Tinker Drive	Residence	D2-TW-0008462-23337-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D2	1604 Tinker Avenue	Residence	D2-TW-0008253-23337-3-N	FD	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	**49.7**
D2	1604 Tinker Avenue	Residence	D2-TW-0008253-23337-N	N	2/22/2024	LTM Period 7 (Month 22 - 24)	ND	**70.1**
D2	1707 Tinker Avenue	Residence	D2-TW-0007946-23157-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D2	1744 Tinker Avenue	Residence	D2-TW-0007330-23337-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D3	Assets School	School	D3-TW-0017506-23342-3-N-4-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Assets School	School	D3-TW-0017506-23342-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Assets School	School	D3-TW-0017506-23342-N-2-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Assets School	School	D3-TW-0017506-23342-N-3-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Assets School	School	D3-TW-0017506-23342-N-4-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Assets School	School	D3-TW-0017506-23342-N-5-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 515	CDC	D3-TW-0017510-23342-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 515	CDC	D3-TW-0017510-23342-N-2-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Chester Nimitz Elementary	School	D3-TW-0017507-23342-3-N-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Chester Nimitz Elementary	School	D3-TW-0017507-23342-N-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Chester Nimitz Elementary	School	D3-TW-0017507-23342-N-2-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Chester Nimitz Elementary	School	D3-TW-0017507-23342-N-3-R1	N	2/27/2024	Non-LTM Requested Samples	**56.3**	ND
D3	Chester Nimitz Elementary	School	D3-TW-0017507-23342-N-4-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Chester Nimitz Elementary	School	D3-TW-0017507-23342-N-5-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Holy Family Catholic Academy	School	D3-TW-0017509-23342-N-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D3	Holy Family Catholic Academy	School	D3-TW-0017509-23342-N-2-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Holy Family Catholic Academy	School	D3-TW-0017509-23342-N-3-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Holy Family Catholic Academy	School	D3-TW-0017509-23342-N-4-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Holy Family Catholic Academy	School	D3-TW-0017509-23342-N-5-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Mokulele Elementary	School	D3-TW-0015133-23342-3-N-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Mokulele Elementary	School	D3-TW-0015133-23342-N-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Mokulele Elementary	School	D3-TW-0015133-23342-N-2-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Mokulele Elementary	School	D3-TW-0015133-23342-N-3-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Mokulele Elementary	School	D3-TW-0015133-23342-N-4-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Mokulele Elementary	School	D3-TW-0015133-23342-N-5-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1330H	CDC	D3-TW-0015139-23342-3-N-1	FD	2/28/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	Building 1330H	CDC	D3-TW-0015139-23342-N-1	N	2/28/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	Building 1330H	CDC	D3-TW-0015139-23342-N-2	N	2/28/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	Building 1335H	CDC	D3-TW-0015141-23342-3-N-1	FD	2/27/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	Building 1335H	CDC	D3-TW-0015141-23342-N-1	N	2/27/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	Building 1586H	CDC	D3-TW-0015143-22347-3-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1586H	CDC	D3-TW-0015143-22347-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1586H	CDC	D3-TW-0015143-22347-N-2-R1	N	2/28/2024	Non-LTM Requested Samples	**52.1**	ND
D3	Building 1597H	CDC	D3-TW-0015148-22077-3-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1597H	CDC	D3-TW-0015148-22077-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1654H	CDC	D3-TW-0015153-23342-3-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1654H	CDC	D3-TW-0015153-23342-N-1-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1654H	CDC	D3-TW-0015153-23342-N-2-R1	N	2/28/2024	Non-LTM Requested Samples	**50.3**	ND
D3	Building 1859H	CDC	D3-TW-0015186-23342-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D3	Building 1859H	CDC	D3-TW-0015186-23342-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
D3	FH ID: 473	Hydrant	D3-DL-0000547-23342-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	709 Kikanai Loop	Residence	D3-TW-0009730-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	709 Kikanai Loop	Residence	D3-TW-0009730-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	155 Kokomalei Street	Residence	D3-TW-0009801-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	155 Kokomalei Street	Residence	D3-TW-0009801-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	316 Lehua Lane	Residence	D3-TW-0011199-22137-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D3	111 Liliwai Street	Residence	D3-TW-0011202-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	111 Liliwai Street	Residence	D3-TW-0011202-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D3	123 Liliwai Street	Residence	D3-TW-0011207-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	123 Liliwai Street	Residence	D3-TW-0011207-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	133 Liliwai Street	Residence	D3-TW-0011211-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	133 Liliwai Street	Residence	D3-TW-0011211-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	137 Liliwai Street	Residence	D3-TW-0011213-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	137 Liliwai Street	Residence	D3-TW-0011213-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	154 Liliwai Street	Residence	D3-TW-0011219-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	154 Liliwai Street	Residence	D3-TW-0011219-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	1030 Makalika Loop	Residence	D3-TW-0011244-23342-3-N	FD	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	1030 Makalika Loop	Residence	D3-TW-0011244-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	213 Melia Street	Residence	D3-TW-0011260-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	226 Melia Street	Residence	D3-TW-0011271-23342-N-R1	N	3/5/2024	Non-LTM Requested Samples	ND	ND
D3	231 Melia Street	Residence	D3-TW-0011274-23342-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	357 Melia Street	Residence	D3-TW-0011316-22347-N-R1	N	2/28/2024	Non-LTM Requested Samples	**59.9**	ND
D3	358 Melia Street	Residence	D3-TW-0011317-23342-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D3	158 Ohana Nui Circle	Residence	D3-TW-0010213-23342-N	N	3/7/2024	Non-LTM Requested Samples	ND	ND
D3	418 Ohana Nui Circle	Residence	D3-TW-0010267-23342-N	N	2/15/2024	Non-LTM Requested Samples	ND	ND
D3	546 Ohana Nui Circle	Residence	D3-TW-0010308-23342-N	N	2/12/2024	Non-LTM Requested Samples	ND	ND
D3	628 Ohana Nui Circle	Residence	D3-TW-0009455-23342-N	N	3/1/2024	LTM Period 7 (Month 22 - 24)	**51.6**	ND
D3	731 Ohana Nui Circle	Residence	D3-TW-0009464-23342-N	N	2/12/2024	Non-LTM Requested Samples	ND	ND
D3	765 Ohana Nui Circle	Residence	D3-TW-0009484-22347-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
D3	795 Ohana Nui Circle	Residence	D3-TW-0009500-23162-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D3	1057 Ohana Nui Circle	Residence	D3-TW-0010069-23342-N	N	2/6/2024	Non-LTM Requested Samples	ND	ND
D3	406 Pakalana Street	Residence	D3-TW-0010325-23162-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
D3	413 Pakalana Street	Residence	D3-TW-0010330-23342-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	160 Pilokea Lane	Residence	D3-TW-0010336-23162-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	175 Pilokea Court	Residence	D3-TW-0010347-23342-N	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D3	1035 Puakala Street	Residence	D3-TW-0010386-23342-N	N	2/13/2024	Non-LTM Requested Samples	ND	ND
D3	217 Puapilo Court	Residence	D3-TW-0010603-22347-N-R1	N	2/28/2024	Non-LTM Requested Samples	**128.1**	ND
D3	227 Puapilo Court	Residence	D3-TW-0010609-22347-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
D3	124 Puuloa Circle	Residence	D3-TW-0010623-23342-N-R1	N	3/1/2024	Non-LTM Requested Samples	**54.8**	ND
D4	Building 3365H	Medical	D4-TW-0015687-23332-3-N	FD	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
D4	Building 3365H	Medical	D4-TW-0015687-23332-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
D4	FH 1941	Hydrant	D4-DL-0017801-23332-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	Building 81	CDC	E1-TW-0015290-23332-N-1	N	2/27/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	Building 81	CDC	E1-TW-0015290-23332-N-2	N	2/27/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	Navy Hale Keiki School	School	E1-TW-0015244-23332-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
E1	Navy Hale Keiki School	School	E1-TW-0015244-23332-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
E1	Navy Hale Keiki School	School	E1-TW-0015244-23332-N-3-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
E1	Navy Hale Keiki School	School	E1-TW-0015244-23332-N-4-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
E1	Navy Hale Keiki School	School	E1-TW-0015244-23332-N-5-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
E1	Building 398	Non-Residence	E1-TW-0015265-23332-N	N	3/14/2024	Non-LTM Requested Samples	ND	ND
E1	52 Halawa Drive	Residence	E1-TW-0010664-23332-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	Hydrant 920	Hydrant	E1-DL-0017787-23332-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	FH 1216	Hydrant	E1-DL-0017799-23332-3-N-1	FD	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	FH 1216	Hydrant	E1-DL-0017799-23332-N-1	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	FH ID: 933	Hydrant	E1-DL-0000589-23332-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	FH 2250	Hydrant	E1-DL-0017800-23332-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	4785 Kamakani Place	Residence	E1-TW-0010690-23332-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	4792 Kamakani Place	Residence	E1-TW-0010692-23332-3-N	FD	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	4792 Kamakani Place	Residence	E1-TW-0010692-23332-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	20 Makalapa Drive	Residence	E1-TW-0010704-23332-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	33 Makalapa Drive	Residence	E1-TW-0010716-23332-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	4 Makin Place	Residence	E1-TW-0010725-22097-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
E1	3 Midway Drive	Residence	E1-TW-0010662-23332-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
E1	13 Midway Drive	Residence	E1-TW-0010731-23332-N	N	3/5/2024	Non-LTM Requested Samples	ND	ND
F1	5514 Bennion Drive	Residence	F1-TW-0008971-22160-N-1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F1	5529 Bennion Drive	Residence	F1-TW-0008591-23335-3-N	FD	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5529 Bennion Drive	Residence	F1-TW-0008591-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5533 Bennion Drive	Residence	F1-TW-0008594-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5557 Bennion Drive	Residence	F1-TW-0008600-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5606 Bennion Court	Residence	F1-TW-0008702-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5627 Bennion Court	Residence	F1-TW-0008719-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5631 Bennion Court	Residence	F1-TW-0008720-23335-3-N	FD	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5631 Bennion Court	Residence	F1-TW-0008720-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	Moanalua Pre-School	CDC	F1-TW-0014170-23155-N-3-T-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
F1	Moanalua Pre-School	CDC	F1-TW-0014170-23335-N-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F1	Moanalua Pre-School	CDC	F1-TW-0014170-23335-N-2-R1	N	2/27/2024	Non-LTM Requested Samples	**54.5**	ND
F1	Moanalua Pre-School	CDC	F1-TW-0014170-23335-N-1	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	Moanalua Pre-School	CDC	F1-TW-0014170-23335-N-2	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4416 Clarey Boulevard	Residence	F1-TW-0009186-23335-3-N	FD	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4416 Clarey Boulevard	Residence	F1-TW-0009186-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5202 Fuqua Lane	Residence	F1-TW-0009214-23335-N	N	2/28/2024	Non-LTM Requested Samples	**53.3**	ND
F1	5304 Fuqua Street	Residence	F1-TW-0008758-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5309 Fuqua Street	Residence	F1-TW-0000305-23335-N	N	2/7/2024	Non-LTM Requested Samples	ND	ND
F1	5314 Fuqua Street	Residence	F1-TW-0008766-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:9A	Hydrant	F1-DL-0017719-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:14A	Hydrant	F1-DL-0017720-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:17B	Hydrant	F1-DL-0017721-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:28A	Hydrant	F1-DL-0017722-23335-3-N	FD	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:28A	Hydrant	F1-DL-0017722-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:29A	Hydrant	F1-DL-0017723-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:37A	Hydrant	F1-DL-0017724-23335-3-N	FD	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:37A	Hydrant	F1-DL-0017724-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:609	Hydrant	F1-DL-0017725-23335-3-N	FD	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH:609	Hydrant	F1-DL-0017725-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	FH ID: FH-11A	Hydrant	F1-DL-0000595-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4812 Jones Court	Residence	F1-TW-0008782-23335-N	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4901 Kidd Court	Residence	F1-TW-0008789-23155-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F1	5017 Kidd Street	Residence	F1-TW-0008821-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5403 McMorris Drive	Residence	F1-TW-0008835-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5461 McMorris Drive	Residence	F1-TW-0008870-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	Pearl Harbor Elementary School	School	F1-TW-0017726-23335-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F1	Pearl Harbor Elementary School	School	F1-TW-0017726-23335-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F1	Pearl Harbor Elementary School	School	F1-TW-0017726-23335-N-3-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F1	Pearl Harbor Elementary School	School	F1-TW-0017726-23335-N-4-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
F1	Pearl Harbor Elementary School	School	F1-TW-0017726-23335-N-5-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F1	3025 Moreell Circle	Residence	F1-TW-0008992-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	3118 Moreell Drive	Residence	F1-TW-0009005-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	3126 Moreell Drive	Residence	F1-TW-0009009-23335-3-N	FD	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	3126 Moreell Drive	Residence	F1-TW-0009009-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	3144 Moreell Drive	Residence	F1-TW-0009020-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4307 Pharris Place	Residence	F1-TW-0009045-23155-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
F1	4745 Reeves Loop	Residence	F1-TW-0009089-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4757 Reeves Loop	Residence	F1-TW-0009094-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4428 Ross Court	Residence	F1-TW-0009122-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	3413 Taylor Street	Residence	F1-TW-0009156-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	3458 Taylor Street	Residence	F1-TW-0008558-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	4207 Thomas Way	Residence	F1-TW-0008888-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5116 Warden Court	Residence	F1-TW-0008939-23335-N	N	3/6/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F1	5172 Warden Court	Residence	F1-TW-0008677-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	2812 Anderson Avenue	Residence	F2-TW-0010737-23155-N-R1	N	2/27/2024	Non-LTM Requested Samples	**52.4**	ND
F2	2833 Anderson Avenue	Residence	F2-TW-0010745-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	2851 Anderson Avenue	Residence	F2-TW-0010751-23335-N-1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F2	2851 Anderson Avenue	Residence	F2-TW-0010751-23335-N-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F2	3004 Anderson Avenue	Residence	F2-TW-0009608-23335-N	N	3/29/2024	Non-LTM Requested Samples	ND	ND
F2	3004 Anderson Avenue	Residence	F2-TW-0009608-23335-N-R1	N	3/29/2024	Non-LTM Requested Samples	ND	ND
F2	3024 Anderson Avenue	Residence	F2-TW-0009616-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	3041 Anderson Avenue	Residence	F2-TW-0009621-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	2879 Arizona Road	Residence	F2-TW-0011014-23335-N	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F2	2879 Arizona Road	Residence	F2-TW-0011014-23335-N-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F2	2905 Arizona Road	Residence	F2-TW-0011018-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	2997 Arizona Road	Residence	F2-TW-0011025-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	5404 Benfold Lane	Residence	F2-TW-0011050-23335-N	N	3/12/2024	Non-LTM Requested Samples	ND	ND
F2	Building 1928	CDC	F2-TW-0014145-23335-3-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F2	Building 1928	CDC	F2-TW-0014145-23335-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F2	Building 1928	CDC	F2-TW-0014145-23335-N-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F2	Building 4655	CDC	F2-TW-0014156-23335-N-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F2	Building 4655	CDC	F2-TW-0014156-23335-N-2-R1	N	2/12/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
F2	Building 4655	CDC	F2-TW-0014156-23335-N-2-R2	N	2/26/2024	Non-LTM Requested Samples	ND	ND
F2	5226 Catlin Lane	Residence	F2-TW-0011092-23155-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F2	5284 Catlin Lane	Residence	F2-TW-0011107-23335-N	N	2/14/2024	Non-LTM Requested Samples	ND	ND
F2	5315 Catlin Lane	Residence	F2-TW-0011119-23335-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	5320 Catlin Lane	Residence	F2-TW-0011123-23335-N	N	3/13/2024	Non-LTM Requested Samples	ND	ND
F2	3015 Curtis Drive	Residence	F2-TW-0011139-23335-N	N	2/13/2024	Non-LTM Requested Samples	ND	ND
F2	3217 Dewert Lane	Residence	F2-TW-0011159-23335-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	3221 Dewert Lane	Residence	F2-TW-0011162-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	3240 Dewert Lane	Residence	F2-TW-0011177-23335-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	2269D Doris Miller Loop	Residence	F2-TW-0011407-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	2276D Doris Miller Loop	Residence	F2-TW-0011435-23155-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
F2	4076 Enger Street	Residence	F2-TW-0011466-23335-N	N	2/23/2024	Non-LTM Requested Samples	ND	ND
F2	2629 Gordon Street	Residence	F2-TW-0011547-23155-N-R1	N	3/4/2024	Non-LTM Requested Samples	ND	ND
F2	2681 Gordon Street	Residence	F2-TW-0011573-23335-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	2721 Gordon Street	Residence	F2-TW-0011587-23335-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	2810 Gordon Street	Residence	F2-TW-0011607-22070-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	2860 Gordon Street	Residence	F2-TW-0011621-23155-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
F2	3110 Hailey Court	Residence	F2-TW-0011639-23335-N	N	3/12/2024	Non-LTM Requested Samples	ND	ND
F2	FH 11	Hydrant	F2-DL-0017745-23335-3-N	FD	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 11	Hydrant	F2-DL-0017745-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 12	Hydrant	F2-DL-0017776-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 14	Hydrant	F2-DL-0017746-23335-N	N	3/13/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 26	Hydrant	F2-DL-0017771-23335-3-N	FD	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 26	Hydrant	F2-DL-0017771-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 30	Hydrant	F2-DL-0017747-23335-3-N	FD	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 30	Hydrant	F2-DL-0017747-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 31	Hydrant	F2-DL-0017748-23335-3-N	FD	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 31	Hydrant	F2-DL-0017748-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 39	Hydrant	F2-DL-0017749-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 3A	Hydrant	F2-DL-0017773-23335-3-N	FD	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 3A	Hydrant	F2-DL-0017773-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 47	Hydrant	F2-DL-0017750-23335-3-N	FD	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 47	Hydrant	F2-DL-0017750-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
F2	FH 213	Hydrant	F2-DL-0017774-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 520	Hydrant	F2-DL-0017775-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	FH 71A	Hydrant	F2-DL-0017751-23335-N	N	3/12/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	3362 Kilmer Street	Residence	F2-TW-0011734-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	5428 Kilmer Lane	Residence	F2-TW-0011757-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	614 Meyerkord Loop	Residence	F2-TW-0009957-23155-N-T-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F2	658 Meyerkord Loop	Residence	F2-TW-0009974-23335-N	N	2/15/2024	Non-LTM Requested Samples	ND	ND
F2	688 Murray Drive	Residence	F2-TW-0010080-23155-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
F2	730 Murray Drive	Residence	F2-TW-0010087-23335-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	760 Murray Drive	Residence	F2-TW-0010099-23155-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F2	906 Murray Drive	Residence	F2-TW-0010162-23335-N	N	2/9/2024	Non-LTM Requested Samples	ND	ND
F2	1672 Nye Circle	Residence	F2-TW-0010431-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	1726 Nye Circle	Residence	F2-TW-0010437-23155-N-R1	N	2/27/2024	Non-LTM Requested Samples	**51.8**	ND
F2	1938 Nye Place (CDH)	Residence	F2-TW-0010449-23335-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F2	1962 O'Callahan Street	Residence	F2-TW-0010473-23155-N-R3	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	613 Pool Street	Residence	F2-TW-0010819-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	735 Pool Street	Residence	F2-TW-0010841-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	740 Pool Street	Residence	F2-TW-0010843-23155-N-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
F2	2754 Schmitt Parkway	Residence	F2-TW-0010877-23335-N	N	2/9/2024	Non-LTM Requested Samples	ND	ND
F2	2770 Schmitt Parkway	Residence	F2-TW-0010883-23335-N	N	2/20/2024	Non-LTM Requested Samples	ND	ND
F2	3287 Shields Lane	Residence	F2-TW-0010903-23155-N-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
F2	5320 Shields Street	Residence	F2-TW-0010927-23335-N-R1	N	3/1/2024	Non-LTM Requested Samples	**58.4**	ND
F2	744 Sibley Street	Residence	F2-TW-0010961-23335-N-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
F2	767 Sibley Street	Residence	F2-TW-0010566-23335-N	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
F2	3156 Snyder Court	Residence	F2-TW-0010579-23155-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
F2	2581 Stowell Circle	Residence	F2-TW-0010983-23335-N	N	2/6/2024	Non-LTM Requested Samples	ND	ND
F2	2706 Stowell Circle	Residence	F2-TW-0009269-23155-N-R1	N	3/4/2024	Non-LTM Requested Samples	ND	ND
F2	3020 Vaessen Court	Residence	F2-TW-0009324-23155-N-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
F2	3056 Vaessen Court	Residence	F2-TW-0009342-23335-N	N	2/20/2024	LTM Period 7 (Month 22 - 24)	ND	ND
G1	FH ID: 3	Hydrant	G1-DL-0000616-23327-3-N	FD	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
G1	FH ID: 3	Hydrant	G1-DL-0000616-23327-N	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	3520 Albizia Lane	Residence	H1-TW-0013157-23147-A-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
H1	3339 Ama Drive	Residence	H1-TW-0013190-23147-A-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
H1	3349 Ama Drive	Residence	H1-TW-0013194-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	3725 Amapa Lane	Residence	H1-TW-0013215-23147-A-R1	N	2/28/2024	Non-LTM Requested Samples	**50.6**	ND
H1	3751 Amapa Lane	Residence	H1-TW-0013227-23327-A	N	2/6/2024	Non-LTM Requested Samples	ND	ND
H1	3321 Areca Lane	Residence	H1-TW-0013231-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2730 Bauhina Lane	Residence	H1-TW-0013265-23327-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2730 Bauhina Lane	Residence	H1-TW-0013265-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4192 Begonia Loop	Residence	H1-TW-0013293-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	Building 1782	CDC	H1-TW-0017683-23327-3-A-1	FD	2/27/2024	LTM Period 7 (Month 22 - 24)	**56.3**	ND
H1	Building 1782	CDC	H1-TW-0017683-23327-A-1	N	2/27/2024	LTM Period 7 (Month 22 - 24)	**68.3**	ND
H1	Building 1782	CDC	H1-TW-0017683-23327-A-2	N	2/27/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	Building 1783	CDC	H1-TW-0017684-23327-3-A-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1783	CDC	H1-TW-0017684-23327-A-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1783	CDC	H1-TW-0017684-23327-A-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1795	CDC	H1-TW-0017687-23327-3-A-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1795	CDC	H1-TW-0017687-23327-A-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1795	CDC	H1-TW-0017687-23327-A-2-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1875	CDC	H1-TW-0017689-23327-3-A-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1875	CDC	H1-TW-0017689-23327-A-1-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
H1	Building 1875	CDC	H1-TW-0017689-23327-A-2-R1	N	2/27/2024	Non-LTM Requested Samples	ND	ND
H1	142 Bougainvillea Loop	Residence	H1-TW-0013296-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	301 Bougainvillea Loop	Residence	H1-TW-0013310-23147-A-R1	N	2/28/2024	Non-LTM Requested Samples	**51.7**	ND
H1	470 Bougainvillea Loop	Residence	H1-TW-0013324-23327-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	470 Bougainvillea Loop	Residence	H1-TW-0013324-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	495 Bougainvillea Loop	Residence	H1-TW-0013325-23147-A-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
H1	3104 Calamondin Way	Residence	H1-TW-0012687-23327-A-1	N	3/13/2024	Non-LTM Requested Samples	ND	ND
H1	6209 Cigar Lane	Residence	H1-TW-0012771-23147-A-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
H1	2122 Coral Lane	Residence	H1-TW-0012778-23327-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2122 Coral Lane	Residence	H1-TW-0012778-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4239 Croton Street	Residence	H1-TW-0012793-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4630 Durian Lane	Residence	H1-TW-0012814-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	6037 Gold Lane	Residence	H1-TW-0012846-23327-A-R1	N	2/19/2024	Non-LTM Requested Samples	ND	ND
H1	3827 Guava Lane	Residence	H1-TW-0012859-23147-A-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
H1	Hydrant 1396	Hydrant	H1-DL-0017754-23327-A	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
H1	4445 Kobashigawa Street	Residence	H1-TW-0013012-22152-A-1	N	3/12/2024	Non-LTM Requested Samples	ND	ND
H1	4445 Kobashigawa Street	Residence	H1-TW-0013012-22152-A-2	N	3/12/2024	Non-LTM Requested Samples	ND	ND
H1	4445 Kobashigawa Street	Residence	H1-TW-0013012-22152-A-3	N	3/12/2024	Non-LTM Requested Samples	ND	ND
H1	4445 Kobashigawa Street	Residence	H1-TW-0013012-22152-A-4	N	3/12/2024	Non-LTM Requested Samples	ND	ND
H1	4445 Kobashigawa Street	Residence	H1-TW-0013012-22152-A-R1	N	2/28/2024	Non-LTM Requested Samples	359	ND
H1	4445 Kobashigawa Street	Residence	H1-TW-0013012-22152-A-R2	N	3/12/2024	Non-LTM Requested Samples	ND	ND
H1	4468 Kobashigawa Street	Residence	H1-TW-0013017-23327-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4468 Kobashigawa Street	Residence	H1-TW-0013017-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4547 Kobashigawa Street	Residence	H1-TW-0013047-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4548 Kobashigawa Street	Residence	H1-TW-0013048-23327-A	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4647 Kou Lane	Residence	H1-TW-0013051-23147-A-R1	N	2/28/2024	Non-LTM Requested Samples	51	ND
H1	4672 Lilikoi Lane	Residence	H1-TW-0013080-23327-A	N	2/8/2024	Non-LTM Requested Samples	ND	ND
H1	4674 Lilikoi Lane	Residence	H1-TW-0013081-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4717 Naio Lane	Residence	H1-TW-0013146-23327-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4717 Naio Lane	Residence	H1-TW-0013146-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2641 Okamura Street	Residence	H1-TW-0013370-23327-A-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
H1	2678 Okamura Street	Residence	H1-TW-0012387-23327-A	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2687 Okamura Street	Residence	H1-TW-0013381-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	6343 Papaya Lane	Residence	H1-TW-0013414-23327-A	N	2/21/2024	Non-LTM Requested Samples	ND	ND
H1	6369 Papaya Lane	Residence	H1-TW-0013429-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4531 Paperbark Lane	Residence	H1-TW-0013440-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	4545 Paperbark Lane	Residence	H1-TW-0013442-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	6664 Plumeria Loop	Residence	H1-TW-0013645-23327-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	6664 Plumeria Loop	Residence	H1-TW-0013645-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	6667 Plumeria Loop	Residence	H1-TW-0013647-23147-A-R1	N	2/28/2024	Non-LTM Requested Samples	ND	ND
H1	6668 Plumeria Loop	Residence	H1-TW-0013445-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2352 Pomelaiki Street	Residence	H1-TW-0012605-23327-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2356 Pomelaiki Street	Residence	H1-TW-0012606-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	2378 Pomelaiki Lane	Residence	H1-TW-0012611-23327-A	N	2/21/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	6104 Potata Lane	Residence	H1-TW-0012615-23327-A	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H1	6115 Potata Lane	Residence	H1-TW-0012621-23327-A	N	3/7/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	5221 Balsa Lane	Residence	H2-TW-0013575-23335-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	6507 Crossandra Street	Residence	H2-TW-0011883-23335-A	N	2/12/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
H2	Hydrant 377	Hydrant	H2-DL-0017757-23335-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	Hydrant 1331	Hydrant	H2-DL-0017758-23335-A	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	Hydrant 1646	Hydrant	H2-DL-0000688-23335-A	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	6260 Naupaka Street	Residence	H2-TW-0013519-23335-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	6260 Naupaka Street	Residence	H2-TW-0013519-23335-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	6656 Niu Street	Residence	H2-TW-0013538-22340-A-R1	N	3/5/2024	Non-LTM Requested Samples	ND	ND
H2	6629 Plumeria Loop	Residence	H2-TW-0013629-23335-3-A	FD	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	6629 Plumeria Loop	Residence	H2-TW-0013629-23335-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	6642 Plumeria Loop	Residence	H2-TW-0013635-23335-A	N	3/5/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H2	6653 Plumeria Loop	Residence	H2-TW-0013639-23335-A	N	2/12/2024	Non-LTM Requested Samples	ND	ND
H2	6665 Plumeria Loop	Residence	H2-TW-0013646-22160-A-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
H2	5110 Sandalwood Lane	Residence	H2-TW-0013650-23335-A-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
H3	391 Hibiscus Street	Residence	H3-TW-0013691-22160-A-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND
H3	Hydrant 1641	Hydrant	H3-DL-0017760-23335-3-A	FD	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H3	Hydrant 1641	Hydrant	H3-DL-0017760-23335-A	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H3	Hydrant 1651	Hydrant	H3-DL-0017761-23335-3-A	FD	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H3	Hydrant 1651	Hydrant	H3-DL-0017761-23335-A	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H3	Hydrant 1676	Hydrant	H3-DL-0017759-23335-A	N	3/11/2024	LTM Period 7 (Month 22 - 24)	ND	ND
H3	174 Jasmine Place	Residence	H3-TW-0013707-23155-A-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
H3	2009 Point Welcome Place	Residence	H3-TW-0013908-23335-A	N	3/22/2024	Non-LTM Requested Samples	ND	ND
H3	2012 Point Welcome Place	Residence	H3-TW-0011930-23335-A	N	3/21/2024	Non-LTM Requested Samples	ND	ND
H3	180 Shower Place	Residence	H3-TW-0013809-23155-A-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
H3	417 Valley View Loop	Residence	H3-TW-0013834-23155-A-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
H3	417 Valley View Loop	Residence	H3-TW-0013834-23335-A	N	2/13/2024	Non-LTM Requested Samples	ND	ND
H3	419 Valley View Loop	Residence	H3-TW-0013835-23335-A-R1	N	2/12/2024	Non-LTM Requested Samples	ND	ND
H3	583 Valley View Loop	Residence	H3-TW-0013866-23155-A-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
I1	Red Hill Elementary School	School	I1-TW-0011966-23310-A-1-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
I1	Red Hill Elementary School	School	I1-TW-0011966-23310-A-2-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
I1	Red Hill Elementary School	School	I1-TW-0011966-23310-A-3-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
I1	Red Hill Elementary School	School	I1-TW-0011966-23310-A-4-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
I1	Red Hill Elementary School	School	I1-TW-0011966-23310-A-5-R1	N	2/26/2024	Non-LTM Requested Samples	ND	ND
I1	1726 Conifer Place	Residence	I1-TW-0014063-23130-A-R1	N	2/23/2024	Non-LTM Requested Samples	ND	ND
I1	1602 Cowslip Lane	Residence	I1-TW-0014072-22315-A-R1	N	2/29/2024	Non-LTM Requested Samples	ND	ND

Zone	Location	Location Type	Field Sample ID	Sample Type	Sample Date	Event	SF Method: TPH-Total (ug/L)	MEQ Method: TPH-Total (ug/L)
I1	HYD-1324A	Hydrant	I1-DL-0000642-23310-3-A	FD	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND
I1	HYD-1324A	Hydrant	I1-DL-0000642-23310-A	N	3/8/2024	LTM Period 7 (Month 22 - 24)	ND	ND

Appendix H. TPH Root Cause Analysis Summary

Summary

The interagency team of SMEs from EPA, DOH, the Navy, and Navy contractors evaluated potential root causes of the low-level TPH detections that were observed in LTM samples collected during LTM Period 6 (July through December 2023), in addition to LTM as a whole, and determined the highest likelihood root cause is challenges/limitations with the laboratory method used to identify and quantify TPH in drinking water samples (i.e., EPA Method 8015) accurately and precisely. The identified challenges fall into two categories, each of which can be resolved individually or combined into a single action:

1. The first challenge arises from the numerous opportunities for the incidental introduction of contaminants in the laboratory environment due to the use of multiple pieces of reusable glassware and 100-fold concentration of the extraction solvent required by the current extraction method (EPA Method 3510). These laboratory contaminants (which are not TPH) are identified/quantified as TPH when the sample is analyzed via EPA Method 8015.

2. The second challenge arises because EPA Method 8015 was developed for analysis of waste samples rather than chlorinated drinking water samples. Interaction of halogens in samples with other substances present in the drinking water and/or introduced as part of the extraction procedure or method requirements (e.g., addition of internal standards/surrogates by the laboratory) results in ghost peaks (which are not TPH) but are identified/quantified as TPH when the sample is analyzed via EPA Method 8015.

Recommend obtaining regulatory concurrence to:

- Address the first challenge by substituting extraction method (3510) with an alternate extraction method (EPA 3511, referred to as the micro-extraction method), which requires no reusable glassware and uses 100 times less solvent with no concentration step.
- Address the second challenge by modifying EPA Method 8015 to include a residual chlorine “quenching” step (i.e., by adding sodium thiosulfate to the sample) prior to extraction which would bring it in line with traditional drinking water methods and eliminate the formation of halogenated artifacts, which give the appearance of TPH detections.
- Combine both of these solutions so that the sample is quenched, using sodium thiosulfate, then prepared using the micro-extraction technique (Method 3511) prior to analysis.

Background

During LTM Period 6 (July 2023 to December 2023), the frequency of low-level TPH detections in LTM samples increased over the previous six-month period. During that period, there were no exceedances of the incident specific parameters (ISP) of 266 parts per billion (ppb) for TPH. The increase in the frequency of detection of low-levels of TPH were observed in all Zones, including Zones not impacted by the November 2021 JP-5 release from Red Hill because they obtained/obtain 100% of their water from the Navy Aiea/Halawa Shaft/Waiawa Shaft which were not impacted by the release from Red Hill (see Appendix A for more information). An interagency team of experts from (Navy, EPA, DOH, and DHA) was convened during the week of 29 January 2024 to examine potential root causes of the increase in frequency of low-level TPH detections. The team evaluated the following potential root causes:

1. Laboratory Method Challenges
2. TPH in the Waiawa Source Water
3. Regulated Disinfection Byproducts
4. Residual JP-5 in the JBPHH System
5. Residual Fuel Additives in the JBPHH System
6. Biofilm Activity
7. Premise Plumbing
8. Pipe Scale Sloughing
9. Pesticides
10. Change in System Operations
11. Change in Source Water (Waiawa Shaft) Water Quality
12. Contaminant/Debris Introduced During Water Main Break
13. Other

The results of the root cause analysis are summarized in the following section.

Assessed Potential Root Causes

Below, each potential root cause is presented followed by a rating (e.g., high, medium, low) that reflects the interagency team's assessment of how likely it is related to/responsible for the increase in the frequency of low-level TPH detections observed during LTM.

- **Laboratory Method Challenges – *High Likelihood*.** Chromatogram artifacts were observed in drinking water samples and method blanks. The current extraction procedure allows multiple opportunities for contamination in the laboratory to be introduced in the samples throughout the process, and EPA Method 8015 is not intended for analysis of chlorinated drinking water samples, but for wastewater analysis. Halogens/chlorine in the drinking water samples appear to be interacting with other substances, resulting in ghost peaks that appear as TPH detection. Quenching of samples with sodium thiosulfate eliminates the ghost peaks. Potential options identified by the team to address these issues include:
    - Quenching samples analyzed via EPA Method 8015 (TPH) with sodium thiosulfate prior to extraction to prevent residual chlorine in the samples from reacting with other substances present in the sample and substances introduced by the laboratory to analyze the samples in accordance with the method (e.g., solvents, surrogates, internal standards).
    - Using an alternative extraction method (i.e., discontinue use of Method 3510 for extraction) to extract the samples (i.e., use Method 3511 - Micro-extraction), prior to analysis via Method 8015, to minimize potential laboratory contamination of the samples.
- **TPH in the Waiawa Source Water – *Extremely Low Likelihood*.** The Waiawa Shaft is located approximately 6 miles northwest, and upgradient, of the Red Hill Shaft.
- **Regulated Disinfection Byproducts – *Low Likelihood.*** There have been no Total Trihalomethane (TTHM) exceedances and no Haloacetic acids (HAA5) exceedances. Free chlorine levels have consistently been within specifications.
- **Residual JP-5 in the JBPHH System – *Extremely Low Likelihood*.** The spatial distribution of low-level TPH detections is consistent throughout all Zones on the System, even those that did not receive water from Red Hill Shaft (e.g., A1, A2, B1, C1, and G1) which strongly indicates that the cause of low-level TPH detections is not associated with residual JP-5 in the distribution system. In addition, the interagency team reviewed chromatograms for selected TPH detections, and they did not indicate the presence of JP-5, JP-5 degradation chemicals, or weathered JP-5. No TPH results exceeding the ISP have been recorded after the November 2021 incident. The System was systematically flushed before being declared as Fit for Human Consumption. Detection locations are inconsistent with both the areas of initial complaints after the November 2021 incident and the areas of the system previously hydraulically supplied by the Red Hill Shaft.
- **Residual Fuel Additives in the JBPHH System – *Extremely Low Likelihood*.** See previous bullet (Residual JP-5 in the JBPHH System). The typical fuel additives for JP-5 are deicers, and these would not be detected as TPH and it is highly unlikely that, if

present, they would impact/interfere with the TPH analysis – resulting in an increase in low-level TPH detections. The fuel additives typically are present at very low concentrations in fuel (JP-5) and have a short half-life in water. If they were impacting/interfering with the TPH analysis, then the impacts would have been observed earlier in the LTM program which is contrary to what has been observed at Red Hill. A higher frequency of detection of low-level TPHs has been observed during the later periods of LTM.

- **Biofilm Activity – *Medium/Low Likelihood*.** Biofilms occur in drinking water systems and can be a source of non-TPH organic material in the drinking water samples, which can react with residual chlorine and result in halogenated compounds which would be identified as TPH via EPA Method 8015 because the method is not specific to detecting TPH only (i.e., the detected analytes are classified as TPH but may or may not be related to petroleum). However, there have been no temporal changes in source water composition and only very infrequent total organic carbon (TOC) detections near the reporting limit during LTM which indicates that it is unlikely that biofilm is significantly impacting drinking water samples that have been collected.
- **Premise Plumbing – *Low Likelihood*.** JP-5 was released into the distribution system during the Red Hill release incident, and came in contact with premise plumbing (e.g., plumbing systems on premise in the residences such as piping, appliances, and hot water heaters) in some homes. However, contact time was limited to a few days, at most, and water was continually flushed through the system in most homes. Worst-case 24-hour stagnation drinking water samples and 72-hour stagnation drinking water samples were collected in 2022 (after residence flushing was performed during emergency response phase) to evaluate retention of JP-5 within premise plumbing (and subsequent leaching of JP-5 from premise plumbing into drinking water). The results of the stagnation testing demonstrated that premise plumbing (i.e., retention and leaching of JP-5 back into drinking water) was not occurring.
- **Pipe Scale Sloughing – *Low Likelihood*.** Scale can potentially exist in drinking water systems, which could have an unknown chemical interaction causing false positive TPH detections. With limited data available, water composition does not indicate potential for scale formation within piping. Additionally, there have been no known changes in source water composition.
- **Pesticides – *Extremely Low Likelihood*.** No exceedances of pesticides have occurred at the Waiawa source in historical sampling and pesticides would not be identified as TPH if they were present in the system.
- **Change in System Operations – *Extremely Low Likelihood*.** Based on interview with JBPHH Public Works Department (PWD) system operators, there have been no

changes in system operations over the past two years – corresponding with the LTM sampling periods.

- **Change in Source Water (Waiawa Shaft) Water Quality – *Extremely Low Likelihood*.** Based on an interview with JBPHH PWD system operators, no changes (e.g., temporal/seasonal changes, changes after rain events, drought events) in source water quality (Waiawa Shaft) have been observed over the past two years – corresponding with the LTM sampling periods.
- **Contaminant / Debris Introduced During Water Main Breaks – *Extremely Low Likelihood*.** Major water main break occurred in October 2022 (LTM Period 4), after increasing trends in detections had begun. System repairs followed standard protocols. Location of the break would not result in the observed spatial distribution of TPH detections within the system.
- **Other – *Unknown Likelihood*.**

Recommended Path Forward

- Request regulatory concurrence to alter Method 8015 (TPH) by:
  - Quenching samples with sodium thiosulfate prior to extraction to prevent residual chlorine in the samples from reacting with other substances present in the sample and substances introduced by the laboratory to analyze the samples in accordance with the method (e.g., solvents, surrogates, internal standards).
  - Discontinue use of Method 3510 for extraction. Use Method 3511 (micro-extraction) to extract the samples prior to analysis via Method 8015, to minimize potential laboratory contamination of the samples.
- Pending regulatory concurrence, develop an Extended Drinking Water Monitoring (EDWM) Sampling and Analysis Plan with anticipated completion date of mid-March 2024 and execution date of 1 April 2024. The EDWM Plan will replace the LTM Plan.
- Immediately add a professional Water Quality Investigator to the AECOM team and add them to the rapid response team – to be renamed with Water Quality Action Team.
- Work with NAVFAC HI and JBPHH PWD to add a qualified professional Water Quality Investigator as permanent NAVFAC staff.
- Conduct focused microbiological sampling within premise plumbing, following Water Quality Action Team standard operating procedures.
- Consider addition of major ion and bromide analysis to EDWM plan to assess pipe scale sloughing.
- Continue routine Safe Drinking Water Act monitoring, logging of system operations, and review/update of maintenance logs.

- Track and investigate consumer complaints through continuation of the current program of conducting Water Quality Action Team testing.