

SUBJECT
RACER Pontiac North Campus LNAPL Assessment
– MWM32-04 and TW-MD-06

TO
Jennifer Stanhope, USEPA

DATE
January 19, 2024

DEPARTMENT
Environment

PROJECT NUMBER
30167840

COPIES TO
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Brendan Mullen, RACER
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File

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INTRODUCTION

On September 11, 2023, during the annual and supplemental (2nd round) PFAS groundwater monitoring events, two on-site monitoring wells were observed to contain light non-aqueous phase liquid (LNAPL) at monitoring well locations previously not known to contain LNAPL. In area of interest (AOI) M-32 monitoring well MWM32-04 was gauged using an interface probe (IP) and contained approximately 3 feet of LNAPL. In AOI W-1, near the seep area, monitoring well TW-MD-06 was gauged with an IP and contained approximately 0.5 feet of LNAPL. Monitoring well and AOI locations are depicted on **Figures 1 - 3**. Based on the observations of the newly discovered LNAPL in each monitoring well, the following was completed:

- Collected an LNAPL sample from each monitoring well and submitted for whole oil analysis via United States Environmental Protection Agency (USEPA) Method 8015D with chromatograms.
 - This analysis helps to determine the type of LNAPL (i.e., heating oil, fuel oil, hydraulic oil, etc.) and the state of weathering of the LNAPL.
- On a weekly basis, gauged each monitoring well and nearby monitoring wells using an IP to evaluate possible migration, LNAPL thickness, and recovery rates. Following each gauging event, assuming LNAPL was present, a bailer was used to recover LNAPL from each well until it was no longer measurable.
- Liquid from each monitoring well is stored in separate drums and a waste characterization sample from each drum will be collected for disposal purposes.

BACKGROUND

Monitoring well TW-MD-06 is located in AOI W-1, within the Montcalm Street Seep Area, where a system is in place to eliminate groundwater seepage along the southwestern property boundary along Montcalm Street. This area is located just downgradient of LNAPL area #1/7. Currently the property is owned by the United States Postal Service (USPS), who has a distribution center to the northeast of TW-MD-06. TW-MD-06 and the surrounding boring logs were reviewed for indication of LNAPL in the area and the following was noted:

- TW-MD-06 – installed on 7/23/2014 noted a sheen from the saturated soils and strong odor from 5 – 9 feet below ground surface (bgs) and slight odor from 13 – 15 feet bgs.
- MWW1-02 – Installed on 1/8/2002 noted product odor from 0 – 7 feet bgs.

- TW-MD-07 – installed on 7/23/2014 noted a sheen from the saturated soils from 5 – 10.5 feet bgs.

Monitoring well MWM32-04 is located in AOI M-32, the location of former Plant 15 used as part of the Metal Fabrication Division (MFD) that included pressed metal and hydroform operations. Primary materials managed in M-32 included oils/PCBs. Today, the property is owned by U-Pull and Save, a self-pull auto parts business. The site is used for storage of old cars and car parts. MWM32-04 and the surrounding boring logs were reviewed for indication of NAPL in the area and the following was noted:

- MWM32-08 – installed on 5/19/2007 noted a “Petro-like” odor from 2.5 – 6 feet bgs. The highest PID reading from this interval was 151 parts per million.

Historical information and boring log observations indicate that there is residual LNAPL present in the immediate area surrounding monitoring wells TW-MD-06 and MWM32-04 and the observed LNAPL accumulation in each well is not from a new release and there has been no significant migration of LNAPL.

LNAPL MONITORING AND REMOVAL ACTIVITIES

Since the discovery of LNAPL in monitoring wells TW-MD-06 and MWM32-04, the impacted monitoring wells have been gauged with an IP on a weekly basis through January 4, 2024. In addition, LNAPL, when encountered, has been removed from the two impacted wells and placed in drums for future waste disposal. Gauging and LNAPL removal results for TW-MD-06 and MWM32-04 are summarized in the tables below:

TW-MD-06				
Gauging Date	Depth to LNAPL (ft bgs)	Depth to Water (ft bgs)	LNAPL Thickness (ft)	Volume of LNAPL/Water Removed (gal)
9/11/2023	6.10	6.12	0.02	--
9/15/2023	6.09	6.62	0.53	--
9/21/2023	6.18	6.27	0.09	--
9/29/2023	6.20	6.68	0.48	0.06
10/6/2023	6.27	6.28	0.01	0.00
10/10/2023	6.28	6.28	0.00	0.00
10/20/2023	None	5.97	0.00	0.00
10/26/2023	None	6.28	0.00	0.00
11/2/2023	None	6.23	0.00	0.00
11/9/2023	None	6.29	0.00	0.00
11/16/2023	None	6.23	0.00	0.00
11/30/2023	None	6.31	0.00	0.00
12/7/2023	None	6.38	0.00	0.00
12/14/2023	None	6.31	0.00	0.00
12/21/2023	None	6.31	0.00	0.00
12/29/2023	6.38	6.50	0.12	0.02
1/04/2024	6.34	6.46	0.12	0.02

MWM32-04				
Gauging Date	Depth to LNAPL (ft bgs)	Depth to Water (ft bgs)	LNAPL Thickness (ft)	Volume of LNAPL/Water Removed (gal)
9/11/2023	26.97	29.95	2.98	--
9/21/2023	27.02	30.25	3.23	--
9/29/2023	27.02	30.16	3.14	0.26
10/6/2023	26.98	30.36	3.38	0.55
10/10/2023	27.12	29.21	2.09	0.24
10/20/2023	27.06	29.22	2.16	0.75
10/26/2023	27.19	28.41	1.22	1.50
11/2/2023	27.28	28.08	0.80	0.75
11/9/2023	27.12	27.51	0.39	1.00
11/16/2023	27.31	27.62	0.31	0.75
11/30/2023	27.35	28.25	0.90	1.00
12/7/2023	27.35	28.11	0.76	1.00
12/14/23	27.51	28.09	0.58	1.00
12/21/23	27.62	28.19	0.57	1.00
12/29/23	27.52	28.22	0.70	1.00
1/04/24	27.80	28.64	0.84	1.00

Since the initial removal of LNAPL from TW-MD-06, very little to no LNAPL has been detected in the monitoring well. LNAPL thickness in MWM32-04 has decreased overall since the initial removal and continues to decrease with each removal. For LNAPL delineation purposes, existing monitoring wells in the vicinity of TW-MD-06 were gauged on a weekly basis from September 29th through January 4th, 2024 for the presence of LNAPL, including TW-MD-04, TW-MD-05, TW-MD-07, MWW1-02, and MWW01-SEN04. LNAPL has not been detected in any nearby wells and gauging results can be found in **Attachment 1**. Monitoring wells in the vicinity of MWM32-04 were attempted to be located with a GPS to use for gauging purposes, but two were observed to be destroyed or could not be located, including MWM32-02 and MWM32-03. Monitoring wells MWM32-01, MWM32-05 and MWM32-08 were located on November 9th, 2023, and found to have no LNAPL present. Additionally, MWM30-01 and MWM30-02, located downgradient and side gradient of MWM32-04 were found to have no LNAPL present during a recent sampling event (refer to **Attachment 1** for gauging logs).

WHOLE OIL ANALYSIS RESULTS

On September 29th, 2023, a LNAPL sample from each monitoring well was collected and submitted for whole oil analysis via USEPA Method 8015D with chromatograms. Results and interpretations from the sampling are summarized below:

TW-MD-06

- Mid-range to heavier-range product, not consistent with any typical fresh/recent product release
- Possibly a mix of weathered diesel and/or slightly heavier fuel oil

- Large peaks may indicate specific SVOCs
- Based on a review of historical chromatograms from LNAPL Area #7 compared to the chromatogram from TW-MD-06 it appears both LNAPLs are similar to each other.

MWM32-04

- Heavier product without specific peaks
- Could be a variety of different products that are mainly differentiated by end use, including lubricating oil, mineral oil, or cutting oil

Whole oil analysis laboratory results can be found in **Attachment 2**.

RECOMMENDATIONS

Monitoring wells TW-MD-06 and MWM32-04 will continue to be gauged on a monthly basis for 3 months to continue to track occurrence and volume of LNAPL. Nearby wells may also be gauged for the presence of LNAPL if observed LNAPL thickness in the well exceeds the previous maximum observed thickness in that well.

Enclosures:

Figures:

Figure 1 – Site Location and Features

Figure 2 – Site Location and Features – TW-MD-06 Area

Figure 3 – Site Location and Features – MWM32-04 Area

Attachments:

Attachment 1 – Gauging Logs

Attachment 2 – Whole Oil Analysis Laboratory Report

FIGURES



LNAPL #2B

LNAPL #1/7

W-1

MWW01-SEN04

TW-MD-04

TW-MD-05

TW-MD-06

TW-MD-07

MWW1-02

MONTCALM STREET SEEP AREA

PONTIAC SCHOOL BOARD

OFF-SITE GROUNDWATER (MFD)

SWDF



LEGEND

-  EXISTING MONITORING WELL
-  EXISTING TEMPORARY MONITORING WELL
-  LNAPL DETECTED IN MONITORING WELL
-  NO LNAPL DETECTED IN MONITORING WELL
-  DESTROYED OR COULD NOT LOCATE
-  LNAPL AREAS
-  AREAS OF INTEREST (AOIs)
-  CURRENT OR FORMER RACER PROPERTY

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

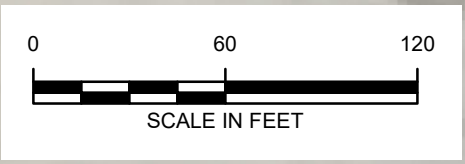
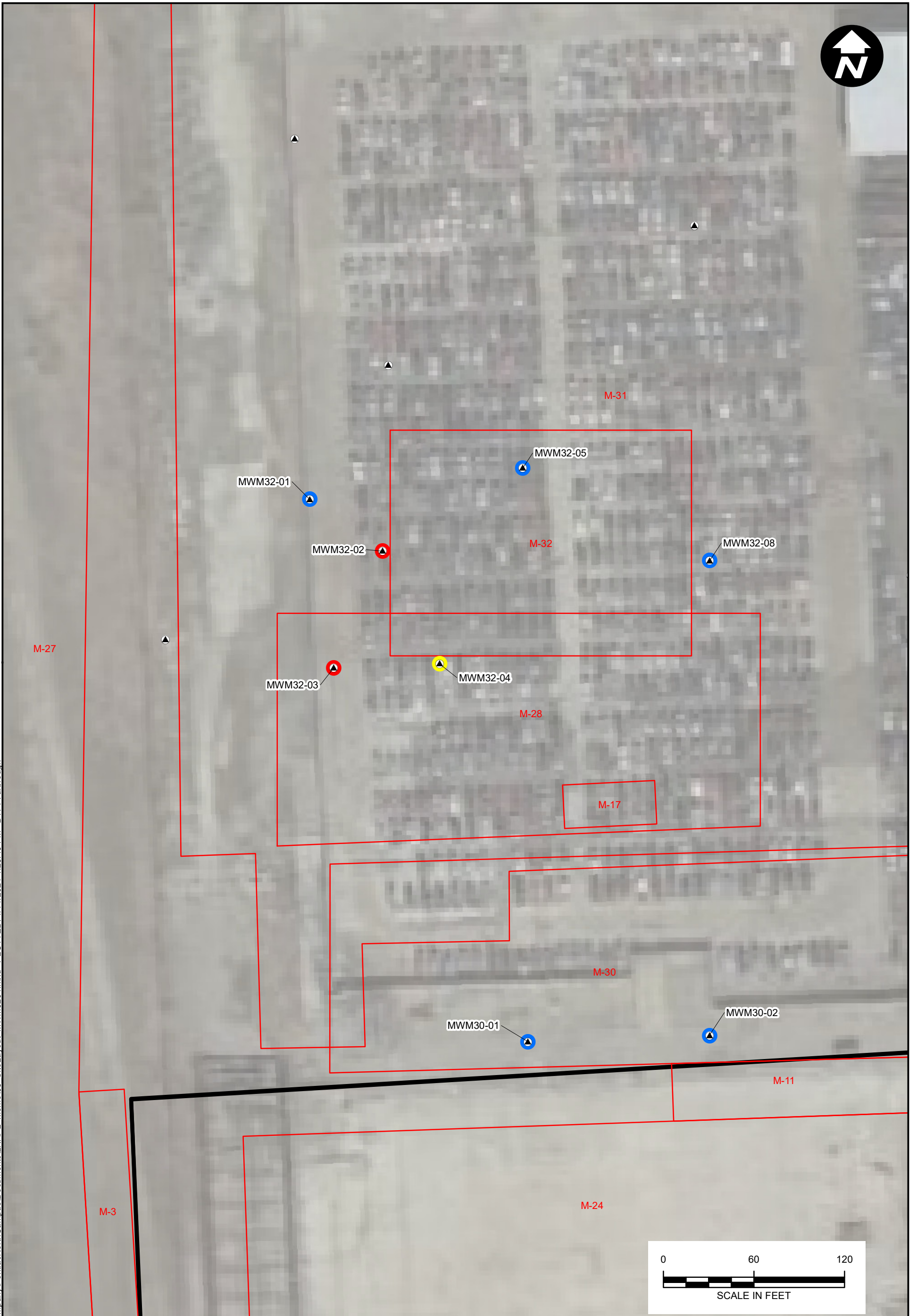
**SITE LAYOUT MAP
TW-MD-06 AREA**



FIGURE









2

CITY: NOVI, MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet
D:\GIS\Project Files\Motors\Liquidation\Company\PontiacNorthCampus\Documents\LNAPL_Memo\02_SiteLayout_TWMD06.mxd PLOTTED: 1/11/2024 4:21:36 PM BY: TYarborough



CITY: NOVI, MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet
D:\GIS\Project Files\Motors\NorthCampus\Documents\LNAPL_Memo\03_SiteLayout_MWM3204.mxd PLOTTED: 1/11/2024 4:28:49 PM BY: TYarborough

LEGEND

-  EXISTING MONITORING WELL
-  EXISTING TEMPORARY MONITORING WELL
-  LNAPL DETECTED IN MONITORING WELL
-  NO LNAPL DETECTED IN MONITORING WELL
-  DESTROYED OR COULD NOT LOCATE
-  LNAPL AREAS
-  AREAS OF INTEREST (AOIs)
-  CURRENT OR FORMER RACER PROPERTY

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

**SITE LAYOUT MAP
MWM32-04 AREA**

Attachment 1

Gauging Logs

Client:		Racer Trust					
Project Name/Location:		RACER Pontiac North Campus 2023					
Date(s):		9/11/23 - 1/04/24					
Sampler(s):		Sierra Sider					
Equipment:		oil/water interface probe					
Well	Date	Time	Depth to Water (ft)	Well Depth (ft)	Depth to LNAPL (ft)	PID (ppmv)	Remarks
TW-MD-05	10/6/2023	10:26:00	5.72	11.29	--	0.00	
TW-MD-05	10/10/2023	09:23:00	5.78	13.33	--	0.00	
TW-MD-05	10/20/2023	09:54:00	5.39	13.40	--	0.00	
TW-MD-05	10/26/2023	14:59:00	5.76	13.35	--	0.00	
TW-MD-05	11/2/2023	15:35:00	5.71	13.34	--	0.00	
TW-MD-05	11/9/2023	09:24:00	5.71	13.34	--	0.00	
TW-MD-05	11/16/2023	09:30:00	5.71	13.34	--	0.00	
TW-MD-05	11/30/2023	09:51:00	5.76	13.34	--	0.00	
TW-MD-05	12/7/2023	13:54:00	5.84	13.37	--	0.00	
TW-MD-05	12/14/2023	10:57:00	5.84	13.36	--	0.00	
TW-MD-05	12/21/2023	9:21:00	5.87	13.32	--	0.00	
TW-MD-05	12/29/2023	10:15:00	5.99	13.32	--	0.00	
TW-MD-05	1/4/2024	10:46:00	5.80	13.35	--	0.00	
TW-MD-06	9/11/2023	9:49:00	6.12	16.83	6.10	0.00	
TW-MD-06	9/29/2023	11:04:00	6.68	--	6.20	0.50	
TW-MD-06	10/6/2023	10:37:00	6.28	--	6.27	1.00	
TW-MW-06	10/10/2023	09:34:00	6.28	--	--	0.90	
TW-MD-06	10/20/2023	10:02:00	5.97	16.70	--	0.40	
TW-MD-06	10/26/2023	15:10:00	6.28	16.87	--	0.60	
TW-MD-06	11/2/2023	15:45:00	6.23	16.89	--	0.10	
TW-MD-06	11/9/2023	09:31:00	6.29	16.87	--	0.20	
TW-MD-06	11/16/2023	09:40:00	6.23	16.84	--	0.90	
TW-MD-06	11/30/2023	10:03:00	6.31	16.87	--	0.20	
TW-MD-06	12/7/2023	14:00:00	6.38	16.69	--	0.50	
TW-MD-06	12/14/2023	11:07:00	6.31	16.84	--	0.60	
TW-MD-06	12/21/2023	9:32:00	6.31	16.87	--	0.40	
TW-MD-06	12/29/2023	10:25:00	6.50	--	6.38	0.10	
TW-MD-06	1/4/2024	10:54:00	6.46	--	6.34	0.70	
TW-MD-07	10/6/2023	10:30:00	5.84	14.57	--	0.00	
TW-MD-07	10/10/2023	09:26:00	6.87	14.79	--	0.00	
TW-MD-07	10/20/2023	09:56:00	5.78	14.69	--	0.00	
TW-MD-07	10/26/2023	15:01:00	5.79	14.80	--	0.00	
TW-MD-07	11/2/2023	15:40:00	5.75	14.81	--	0.00	
TW-MD-07	11/9/2023	09:27:00	5.79	14.92	--	0.00	
TW-MD-07	11/16/2023	09:32:00	5.76	14.79	--	0.00	
TW-MD-07	11/30/2023	09:55:00	5.78	14.81	--	0.00	
TW-MD-07	12/7/2023	13:57:00	5.75	14.72	--	0.00	
TW-MD-07	12/14/2023	11:01:00	5.67	14.79	--	0.00	
TW-MD-07	12/21/2023	9:25:00	5.68	14.70	--	0.00	
TW-MD-07	12/29/2023	10:18:00	5.56	14.80	--	0.00	
TW-MD-07	1/4/2024	10:49:00	5.63	14.80	--	0.00	

Client:	Racer Trust						
Project Name/Location:	RACER Pontiac North Campus 2023						
Date(s):	9/11/23 - 1/04/24						
Sampler(s):	Sierra Sider						
Equipment:	oil/water interface probe						
MWW1-02	10/10/2023	09:31:00	5.20	15.11	--	0.00	
MWW1-02	10/20/2023	09:59:00	5.00	15.10	--	0.00	
MWW1-02	10/26/2023	15:06:00	5.13	15.10	--	0.00	
MWW1-02	11/2/2023	15:41:00	5.16	15.12	--	0.00	
MWW1-02	11/9/2023	09:29:00	5.03	15.06	--	0.00	
MWW1-02	11/16/2023	09:36:00	5.13	15.08	--	0.00	
MWW1-02	11/30/2023	09:58:00	5.14	15.12	--	0.00	
MWW1-02	12/7/2023	13:59:00	5.24	15.11	--	0.00	
MWW1-02	12/14/2023	11:04:00	5.20	15.09	--	0.00	
MWW1-02	12/21/2023	9:29:00	5.22	15.11	--	0.00	
MWW1-02	12/29/2023	10:21:00	5.10	15.09	--	0.00	
MWW1-02	1/4/2024	10:51:00	5.23	15.10	--	0.00	
MWW01-SEN04	10/6/2023	10:13:00	28.34	37.90	--	0.00	
MWW01-SEN04	10/10/2023	09:04:00	28.31	37.91	--	0.00	
MWW01-SEN04	10/20/2023	09:32:00	28.16	37.92	--	0.00	
MWW01-SEN04	10/26/2023	14:50:00	28.28	38.25	--	0.00	
MWW01-SEN04	11/2/2023	15:29:00	28.32	38.38	--	0.00	
MWW01-SEN04	11/9/2023	09:13:00	28.32	38.28	--	0.00	
MWW01-SEN04	11/16/2023	09:22:00	28.36	37.97	--	0.00	
MWW01-SEN04	11/30/2023	09:42:00	28.51	38.31	--	0.00	
MWW01-SEN04	12/7/2023	13:39:00	28.55	38.01	--	0.00	
MWW01-SEN04	12/14/2023	10:50:00	28.57	38.31	--	0.00	
MWW01-SEN04	12/21/2023	9:08:00	28.64	38.16	--	0.00	
MWW01-SEN04	12/29/2023	10:07:00	28.66	37.87	--	0.00	
MWW01-SEN04	1/4/2024	10:38:00	28.69	37.90	--	0.00	
MWM32-04	9/11/2023	15:19:00	29.95	37.40	26.97	0.00	
MWM32-04	9/29/2023	12:40:00	30.16	--	27.02	0.10	
MWM32-04	10/6/2023	12:57:00	30.36	--	26.98	0.10	
MWM32-04	10/10/2023	10:27:00	29.21	--	27.12	0.00	
MWM32-04	10/20/2023	10:57:00	29.22	--	27.06	0.00	
MWM32-04	10/26/2023	14:07:00	28.41	--	27.19	0.00	
MWM32-04	11/2/2023	14:43:00	28.08	--	27.28	0.00	
MWM32-04	11/9/2023	11:48:00	27.51	--	27.12	0.00	
MWM32-04	11/16/2023	10:14:00	27.62	--	27.31	0.30	
MWM32-04	11/30/2023	11:11:00	28.25	--	27.35	0.10	
MWM32-04	12/7/2023	14:45:00	28.11	--	27.35	0.00	
MWM32-04	12/14/2023	11:52:00	28.09	--	27.51	0.00	
MWM32-04	12/21/2023	9:59:00	28.19	--	27.62	0.00	
MWM32-04	12/29/2023	11:28:00	28.22	--	27.52	0.40	
MWM32-04	1/4/2024	11:42:00	28.64	--	27.80	0.10	
MWM32-05	11/9/2023	11:29:00	22.11	24.88	--	0.00	
MWM32-08	11/9/2023	10:41:00	22.15	33.38	--	0.00	

Attachment 2

Whole Oil Analysis Laboratory Report



ANALYTICAL REPORT

Lab Number:	L2357687
Client:	ARCADIS-US 28550 Cabot Dr. Suite 500 Novi, MI 48377-2976
ATTN:	Tiffany Linder
Phone:	(810) 225-1928
Project Name:	RACER TRUST
Project Number:	30167840.00005
Report Date:	10/13/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: RACER TRUST
Project Number: 30167840.00005

Lab Number: L2357687
Report Date: 10/13/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2357687-01	TW-MD-06_NAPL-092923	OIL	RACER PNC	09/29/23 11:15	09/30/23
L2357687-02	MWM32-04_NAPL-092923	OIL	RACER PNC	09/29/23 14:55	09/30/23

Project Name: RACER TRUST
Project Number: 30167840.00005

Lab Number: L2357687
Report Date: 10/13/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: RACER TRUST
Project Number: 30167840.00005

Lab Number: L2357687
Report Date: 10/13/23

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Elizabeth Porta

Title: Technical Director/Representative

Date: 10/13/23

ORGANICS

PETROLEUM HYDROCARBONS

Project Name: RACER TRUST
Project Number: 30167840.00005

Lab Number: L2357687
Report Date: 10/13/23

SAMPLE RESULTS

Lab ID: L2357687-01
 Client ID: TW-MD-06_NAPL-092923
 Sample Location: RACER PNC

Date Collected: 09/29/23 11:15
 Date Received: 09/30/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Oil
 Analytical Method: 1,8015D(M)
 Analytical Date: 10/23/05 00:00
 Analyst: DMP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: NA

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Whole Oil Analysis - Mansfield Lab						
Refer To Case Narrative/Chromatograms			-	-	1.00	1

Project Name: RACER TRUST
Project Number: 30167840.00005

Lab Number: L2357687
Report Date: 10/13/23

SAMPLE RESULTS

Lab ID: L2357687-02
 Client ID: MWM32-04_NAPL-092923
 Sample Location: RACER PNC

Date Collected: 09/29/23 14:55
 Date Received: 09/30/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Oil
 Analytical Method: 1,8015D(M)
 Analytical Date: 10/23/05 00:00
 Analyst: DMP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: NA

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Whole Oil Analysis - Mansfield Lab						
Refer To Case Narrative/Chromatograms			-	-	1.00	1

Project Name: RACER TRUST

Project Number: 30167840.00005

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

N/A Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2357687-01A	Vial unpreserved 20ml hard-cap	N/A	NA			Y	Present/Intact		A2-WHOLEOIL(365)
L2357687-01B	Vial unpreserved 20ml hard-cap	N/A	NA			Y	Present/Intact		A2-WHOLEOIL(365)
L2357687-02A	Vial unpreserved 20ml hard-cap	N/A	NA			Y	Present/Intact		A2-WHOLEOIL(365)
L2357687-02B	Vial unpreserved 20ml hard-cap	N/A	NA			Y	Present/Intact		A2-WHOLEOIL(365)

Project Name: RACER TRUST
Project Number: 30167840.00005

Lab Number: L2357687
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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: RACER TRUST
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Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: RACER TRUST
Project Number: 30167840.00005

Lab Number: L2357687
Report Date: 10/13/23

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

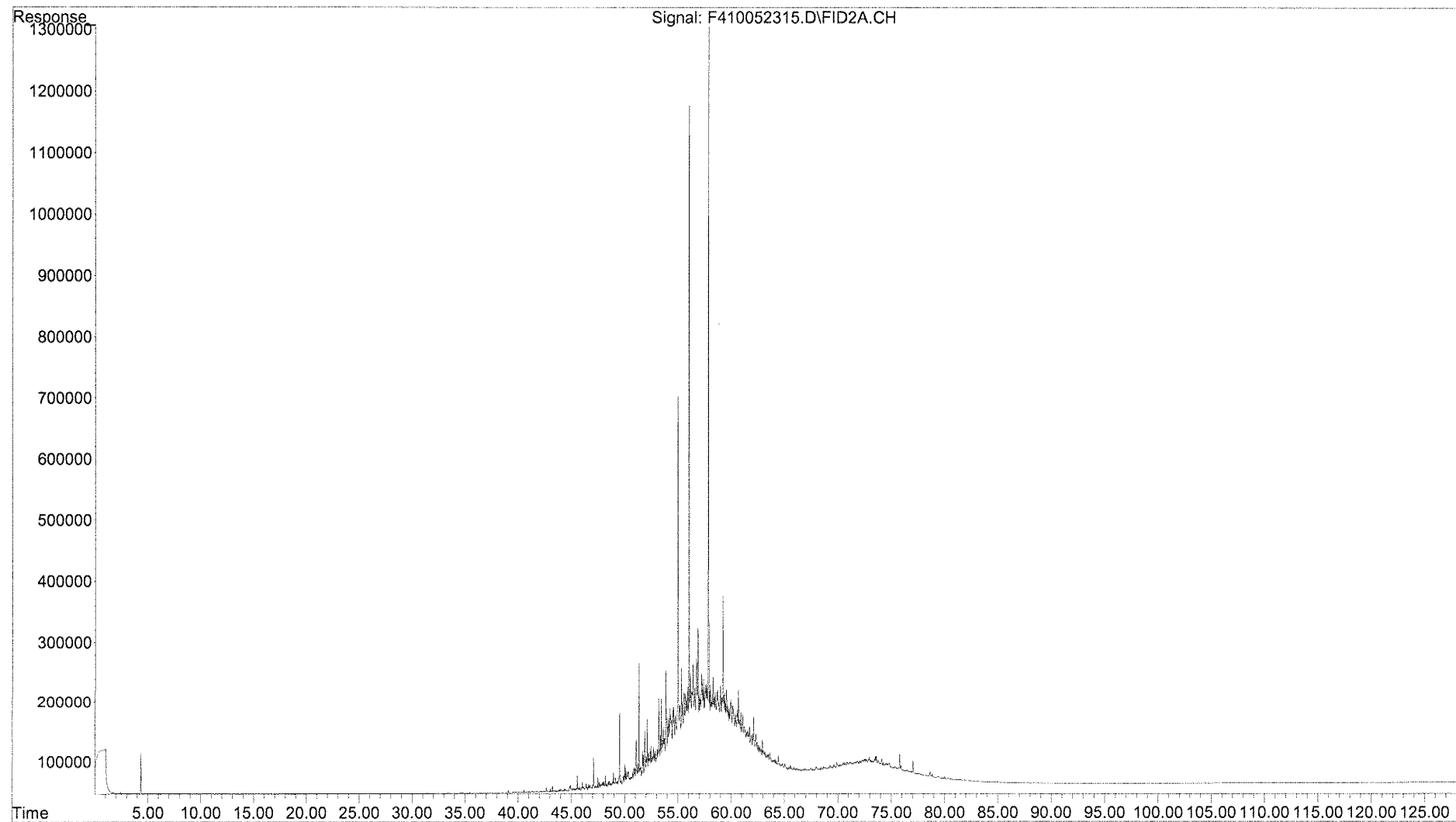
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

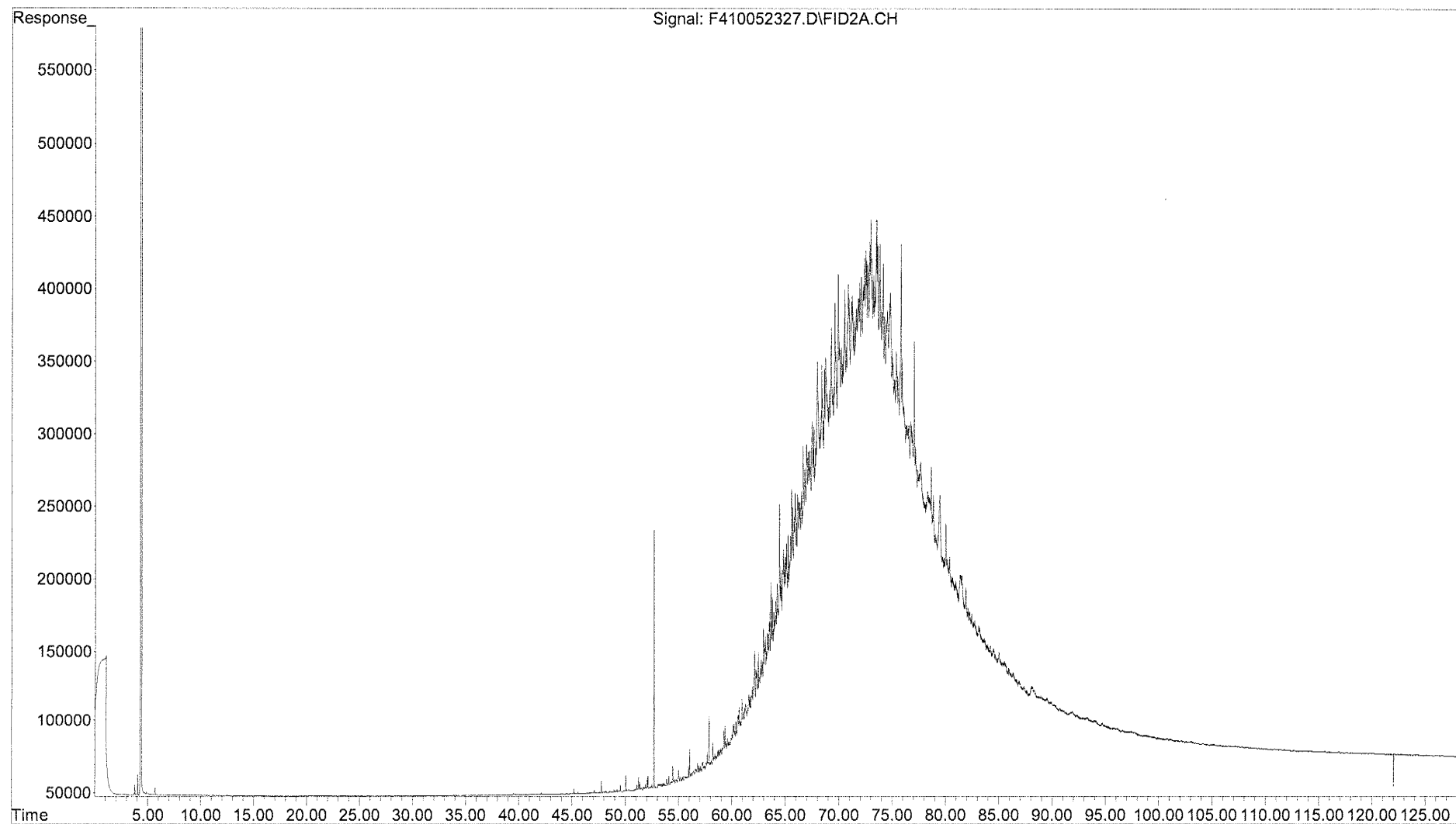
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Whole Oil by GC-FID Chromatograms

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Operator : AC
Acquired : 06 Oct 2023 2:06 pm using AcqMethod WHOIL4A.M
Instrument : PAH 4
Sample Name: L2357687-01
Misc Info : DCM
Vial Number: 57



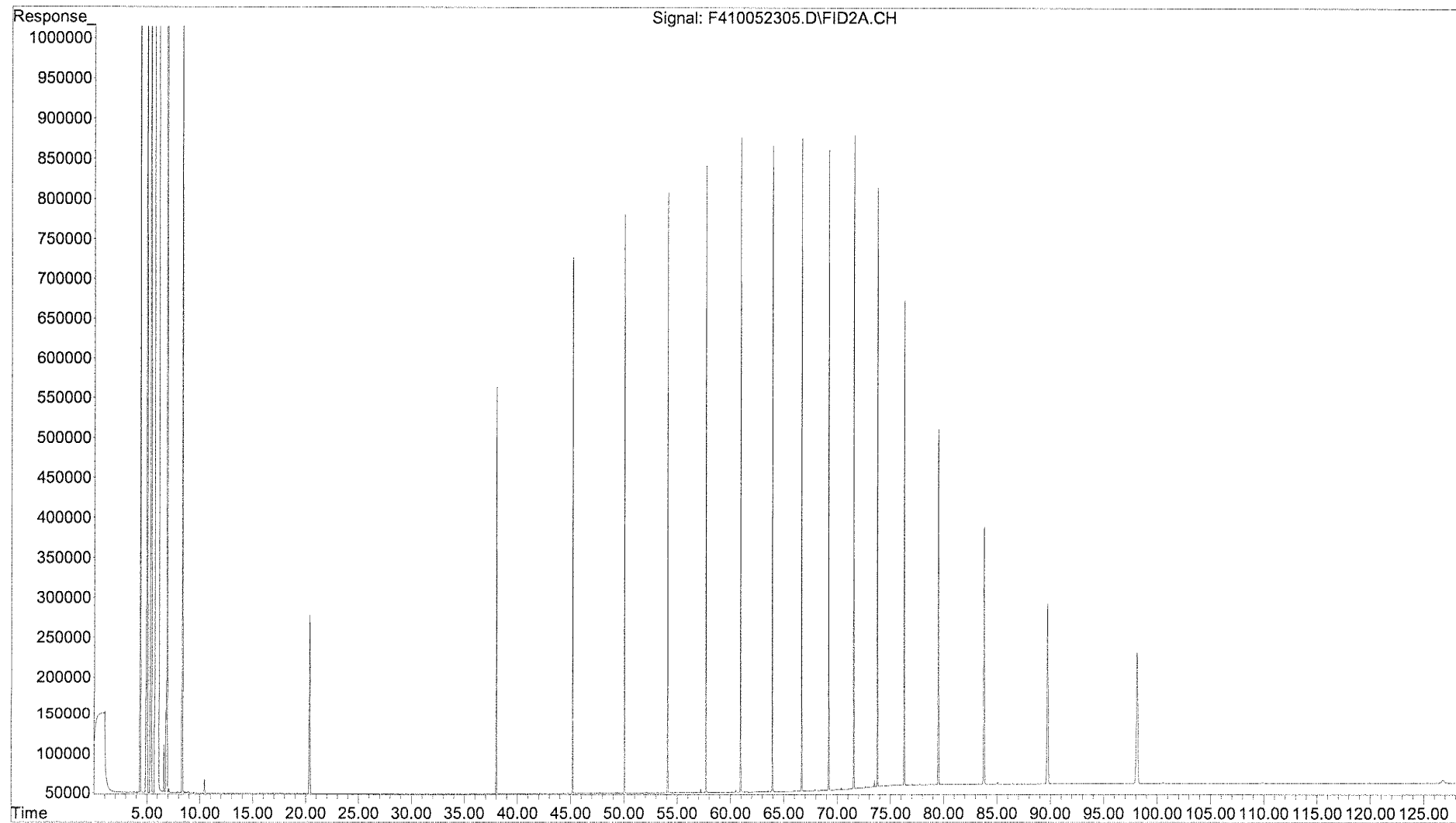
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Operator : AC
Acquired : 11 Oct 2023 10:11 am using AcqMethod WHOIL4A.M
Instrument : PAH 4
Sample Name: L2357687-02
Misc Info : DCM ADDED
Vial Number: 61



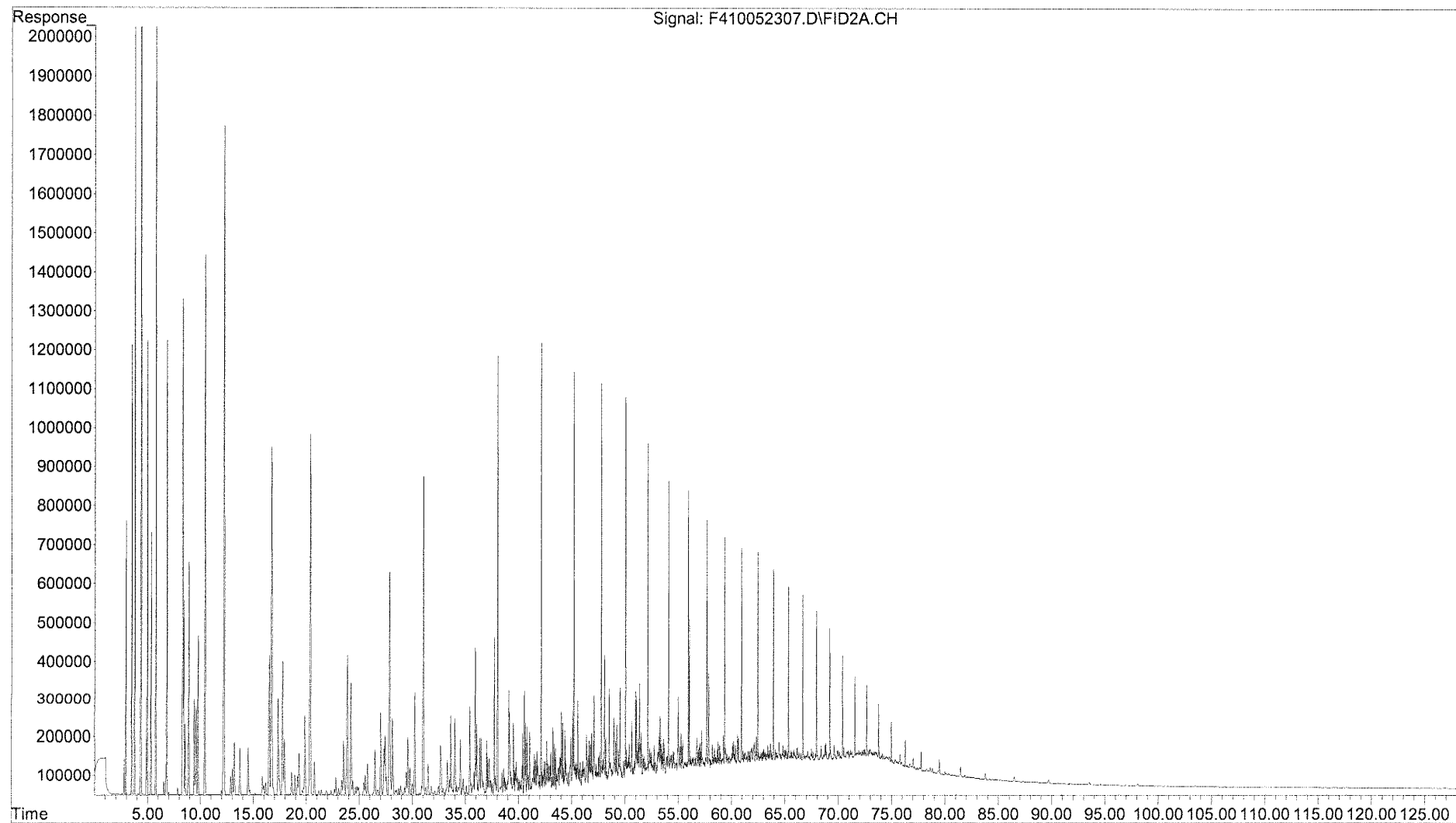
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Whole Oil Reference Oils

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Instrument : PAH 4
Sample Name: C410052301
Misc Info : CC
Vial Number: 52



File :O:\Forensics\Data\PAH4\2023\OCT23\OCT05.SEC\F410052307.D
Operator : AC
Acquired : 05 Oct 2023 5:18 pm using AcqMethod WHOIL4A.M
Instrument : PAH 4
Sample Name: ANS410052301
Misc Info : F021208A
Vial Number: 53



File :O:\Forensics\Data\PAH4\2023\OCT23\OCT05.SEC\F410052309.D
Operator : AC
Acquired : 05 Oct 2023 7:43 pm using AcqMethod WHOIL4A.M
Instrument : PAH 4
Sample Name: LD7410052301
Misc Info : F012605B
Vial Number: 54

