Mr. Michael Squire
NYSDEC
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Albany, New York 12233

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ENVIRONMENT

Subject:
Soil Sampling Results
NYSEG/Clyde Former MGP
Clyde, New York
NYSDEC Site No. 859019

Date:
November 19, 2018

Contact:
Bruce W. Ahrens

Phone:
585.662.4034

Email:
bruce.ahrens@arcadis.com

Our ref:
B0013151.0002

Dear Mr. Squire:

On September 25, 2018 during geotechnical soil testing associated with a planned upgrade of the Clyde, New York substation by NYSEG's Engineering group, a black discoloration was observed on a soil sample collected from within the substation. The discoloration was observed on a sample collected from soil boring C3 from approximately 6 to 8 feet below ground surface (bgs). The location of soil boring C3 is shown on the attached **Figure 1**. Drilling operations were suspended, and NYSEG's Engineering group immediately notified Mr. John Ruspantini of NYSEG's MGP Remediation Group, who subsequently requested that Arcadis perform a site visit to visually inspect the soil sample that was collected and to observe and document soil conditions in several additional soil borings in the area of the initial boring. An Arcadis representative mobilized to the site the following day with the objectives of:

- Observing the potentially impacted material that was encountered at soil boring location C3.
- Observing and documenting soil conditions during the advancement of two additional soil borings (C3A and C3B).
- Collecting soil samples for laboratory analyses.

The locations of soil borings C3A and C3B are also shown on **Figure 1**.

RESULTS

Arcadis observed and documented the material that was collected in driller jars from soil boring C3 and soil from the two additional soil borings advanced on September 26, 2018 (soil borings C3A and C3B). Descriptions of the soil intervals are provided in **Table 1**. Potential impacts were observed from 6 to 8 feet bgs at locations C3 (trace black discoloration) and C3A (trace blebs of oil-like material on outside of sample), and from 8 to 10 feet bgs at location C3B (little to trace sheen). As presented in **Table 1**, measurements of volatile organics in soil headspace using a photoionization detector were low, ranging from 0.0 to 3.9 parts per million.

Based on the observations, one subsurface soil sample from each soil boring advanced on September 26 was collected and sent to TestAmerica Laboratories for analyses to assist with identifying the parent product(s) of the potential impact. Requested soil analyses included total petroleum hydrocarbons (TPH) DRO/GRO by Method 8015D and National Oceanic and Atmospheric Administration (NOAA) 34 polycyclic aromatic hydrocarbons (PAH) by Environmental Protection Agency Method 8270C. Five-day turnaround times for receipt of laboratory reports was requested.

The results from the laboratory analyses are included as **Table 2**. The laboratory could not analyze sample C3B for PAHs because they indicated the sample was mostly stone/gravel and they couldn't perform an extraction and get reliable results.

The data collected was evaluated along with the sample's chromatograms by an Arcadis National Expert. In general, the results indicated:

- A bar chart indicates a petrogenic distribution of 2- and 3-ring PAH and pyrogenic distribution of 4- to 6-ring PAH.
- The ratio of Total NOAA PAHs to TPH-DRO is less than 0.5%, which is not consistent with manufactured gas plant (MGP) material, which typically has ratio much greater than 5%.
- Chromatograms appear to indicate extremely weathered middle distillate petroleum hydrocarbon such as #2 fuel oil or diesel.
- PAH concentrations are consistent with urban background concentrations.

A summary report from the forensic evaluation is included as **Attachment A**.

CONCLUSON

Based on the forensic evaluation, the material encountered in not associated with MGP waste. Therefore, no additional soil investigation associated with the Clyde MGP project is warranted or proposed.

Please feel free to contact either John Ruspantini or me with any questions you may have.

Sincerely,

Arcadis of New York, Inc.

Bruce W. Ahrens
Associate Vice President

Copies:
J. Ruspantini, NYSEG

Enclosures:

Tables

1 Soil Descriptions
2 Soil Analytical Results

Figures

1 Substation Soil Boring Locations

Attachments

A Forensic Summary Report

Tables

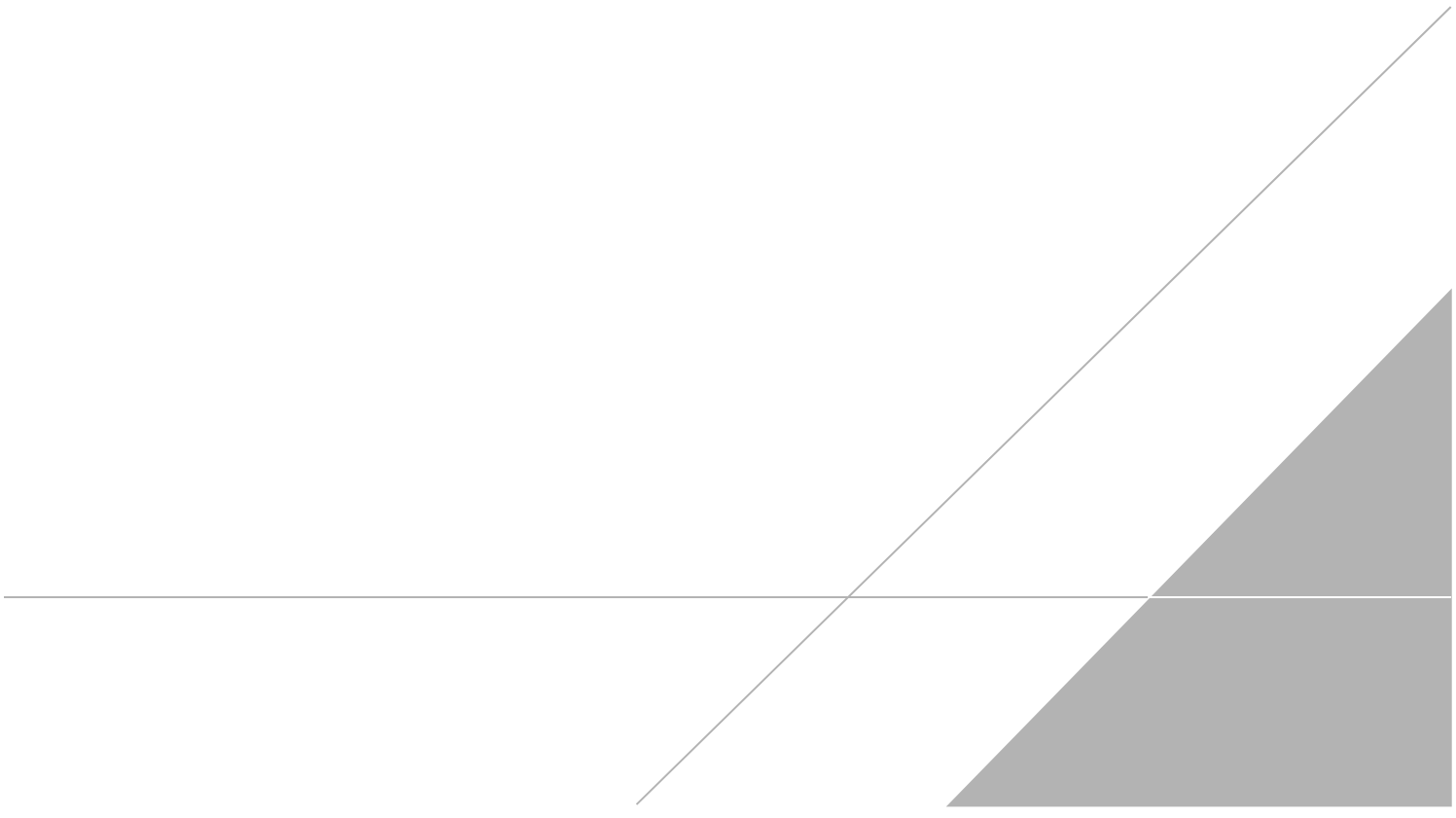


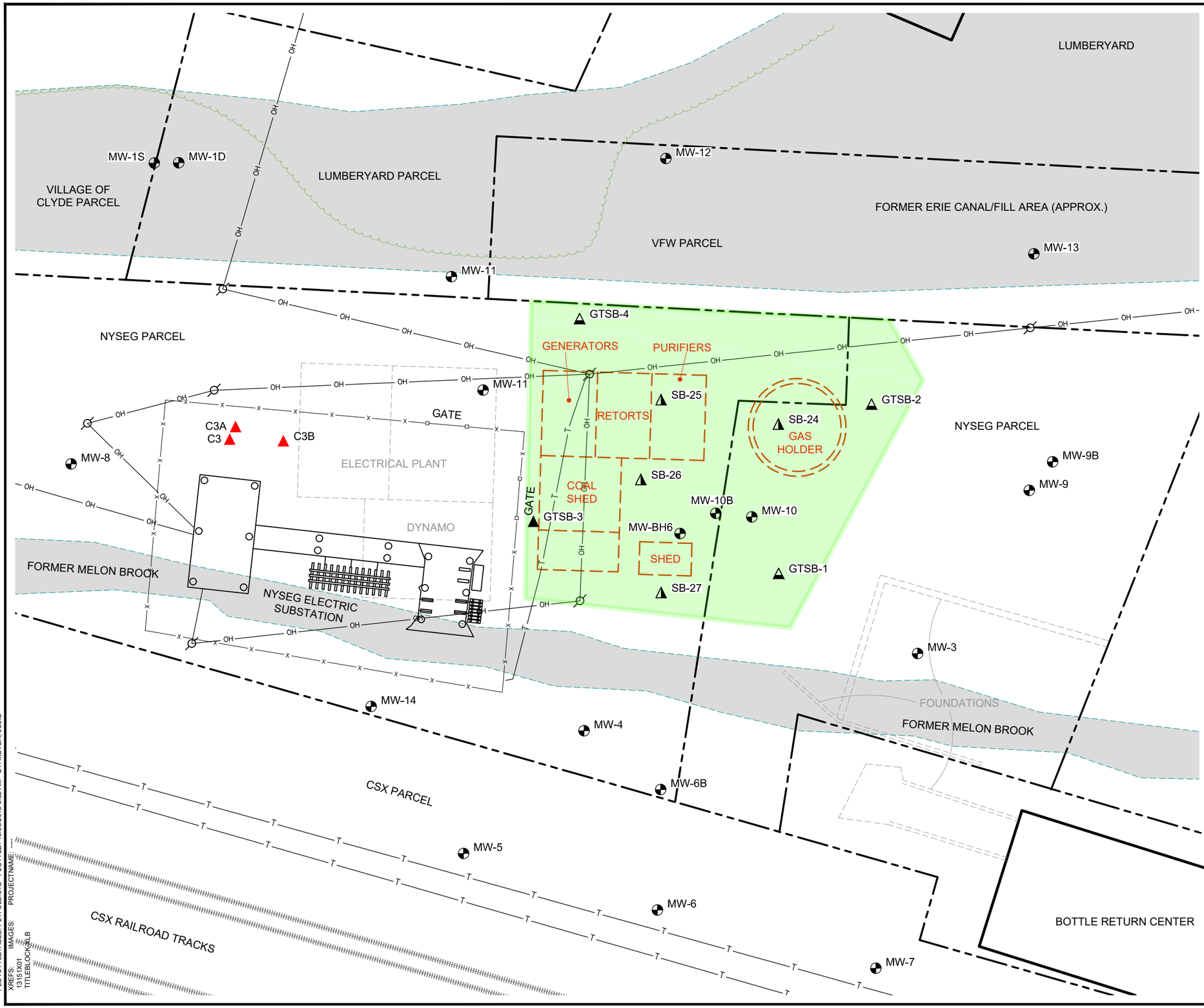
Table 1
Soil Descriptions
NYSEG
Clyde, New York

Depth (ft bgs)	PID (ppm)	Descriptions
Soil Boring C3		
0 – 1	0.0	Crushed stone
1 – 6	0.1, 0.1, 0.8, 0.8	Gray/Black SLAG and fine to coarse SAND, little to trace Silt, moist
6 – 8	0.8	Brown fine SAND and SILT, trace, fine to medium Gravel, trace black discoloration, moist
8 – 10	0.0	Brown fine SAND and SILT, trace fine to medium Gravel, moist to wet
10 – 12	0.0	SAA, Wet
13 – 14.7	0.5	Brown SILT and fine to coarse Gravel, hard
Soil Boring C3A		
0 - 0.65	NA	Crushed stone
0.65 – 1	NA	Brown SAND and SILT, some fine to coarse Gravel and Cobbles, moist
1 – 6	NA	Gray/Black SLAG and fine to coarse SAND, little to trace Silt, moist
6 – 8	3.9	Gray SILT and fine SAND, trace Clay, soft, trace oil-like-material blebs on outside of sample, moderate odor [picture]
8 – 10	3.9	Gray SILT and fine SAND, trace Clay, soft, no visual impacts observed, slight to moderate odor. Brown fine to medium SAND and SILT, little to trace Gravel, moist to wet in the shoe. Sample collected from 6 to 10 ft bgs: C3A (6-10) for analysis of TPH DRG/GRO and NOAH 34 PAH (PAH analytes) 8270C
Soil Boring C3B		
0 - 0.65	NA	Crushed stone
0.65 – 1	NA	Brown SAND and SILT, some fine to coarse Gravel and Cobbles, moist
1 – 4.6	NA	Gray/Black SLAG and fine to coarse SAND, little to trace Silt, trace brick, moist
4.6 – 6	0.0, 0.8	Black coal fragments and Slag, moist
6 – 8	0.5, 3.2	Gray fine SAND and SILT, trace Clay, trace very fine Gravel, soft, medium to high plasticity, moist to wet
8 - 10	1.3, 0.8	Gray fine to coarse SAND, little Silt, little to trace fine to medium Gravel, trace Clay, very loose, saturated, little to trace sheen throughout. Sample collected from 8 – 10 ft bgs: C3B (8-10) for analysis of TPH DRG/GRO and NOAH 34 PAH (PAH analytes) 8270C

Table 2
Soil Analytical Results
NYSEG
Clyde, New York

Location ID: / Sample Depth(Feet): / Date Collected:	Units	C3A 6 - 10 09/26/18	C3B 8 - 10 09/26/18
Petroleum Hydrocarbons			
Gasoline	mg/kg	2.20 B	1.30 B
TPH-DRO (C10-C28)	mg/kg	3,400	1,700
Semivolatile Organics			
1-Methylnaphthalene	µg/kg	91.0 UT	NA
2-Methylnaphthalene	µg/kg	91.0 U	NA
Acenaphthene	µg/kg	73.0 J	NA
Acenaphthylene	µg/kg	350	NA
Anthracene	µg/kg	200	NA
Benzo(a)anthracene	µg/kg	880	NA
Benzo(a)pyrene	µg/kg	830	NA
Benzo(b)fluoranthene	µg/kg	710	NA
Benzo(E)pyrene	µg/kg	420	NA
Benzo(g,h,i)perylene	µg/kg	440	NA
Benzo(k)fluoranthene	µg/kg	610	NA
C1-Chrysenes	µg/kg	800	NA
C1-Fluoranthenes/Pyrenes	µg/kg	800	NA
C1-Fluorenes	µg/kg	91.0 U	NA
C1-Phenanthrenes/Anthracenes	µg/kg	1,300	NA
C2-Chrysenes	µg/kg	350	NA
C2-Fluorenes	µg/kg	1,100	NA
C2-Naphthalene	µg/kg	150	NA
C2-Phenanthrenes/Anthracenes	µg/kg	830	NA
C3-Chrysenes	µg/kg	180	NA
C3-Fluorenes	µg/kg	920	NA
C3-Naphthalene	µg/kg	400	NA
C3-Phenanthrenes/Anthracenes	µg/kg	550	NA
C4-Chrysenes	µg/kg	91.0 U	NA
C4-Naphthalene	µg/kg	91.0 U	NA
C4-Phenanthrenes/Anthracenes	µg/kg	91.0 U	NA
Chrysene	µg/kg	570	NA
Dibenzo(a,h)anthracene	µg/kg	270	NA
Fluoranthene	µg/kg	850 T	NA
Fluorene	µg/kg	64.0 JT	NA
Indeno(1,2,3-cd)pyrene	µg/kg	520	NA
Naphthalene	µg/kg	91.0 U	NA
Perylene	µg/kg	150	NA
Phenanthrene	µg/kg	380 T	NA
Pyrene	µg/kg	500	NA

Figures



LEGEND:

- GEOTECH SOIL BORING LOCATION
- WASTE CHARACTERIZATION SOIL BORING LOCATION
- GEOTECH/WASTE CHARACTERIZATION SOIL BORING LOCATION
- SUBSTATION SOIL BORING LOCATION
- MONITORING WELL LOCATION
- PROPERTY LINE
- FORMER MGP STRUCTURES
- APPROXIMATE LOCATION OF FORMER BROOK/CANAL
- FENCE LINE
- UTILITY POLE
- OVERHEAD ELECTRIC
- UNDERGROUND COMMUNICATION
- APPROXIMATE SOIL REMOVAL AREA

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASE MAP REFERENCES: MAP SHOWING EXISTING CONDITIONS AT THE NYSEG CLYDE FORMER MANUFACTURED GAS PLANT - DRAWN BY THEW ASSOCIATES LAND SURVEYORS AND DATED SEPTEMBER 7, 2011, REVISED ON APRIL 23, 2012. HORIZONTAL DATUM: NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE, NORTH AMERICAN DATUM (NAD83). VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM (NAVD 88).

0 30' 60'

GRAPHIC SCALE

NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
SITE NO. 8-59-019
-

SUBSTATION SOIL BORING LOCATIONS SEPTEMBER 26, 2018

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FIGURE 1

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: R. ALLEN, E. KRAHMER PIC: J. BRIEN PM: J. GOLUBSKI TM: M. HYSELL TR: N. BEYRLE LYR: ON=*;OFF=REF; (FRZ)
C:\Users\jmeyer\OneDrive - ARCADIS\BIM 360 DOCS\New York State Electric & Gas\NYSEG CLYDE SITE VISIT FOR SOI\2018\B0013151.0002\01-DWG\00002-FIG1-SUBSTATION SOIL BORINGS.dwg LAYOUT: 1 SAVED: 10/30/2018 8:47 AM ACADVER: 21.0S (LMS TECH) PAGESETUP: ----
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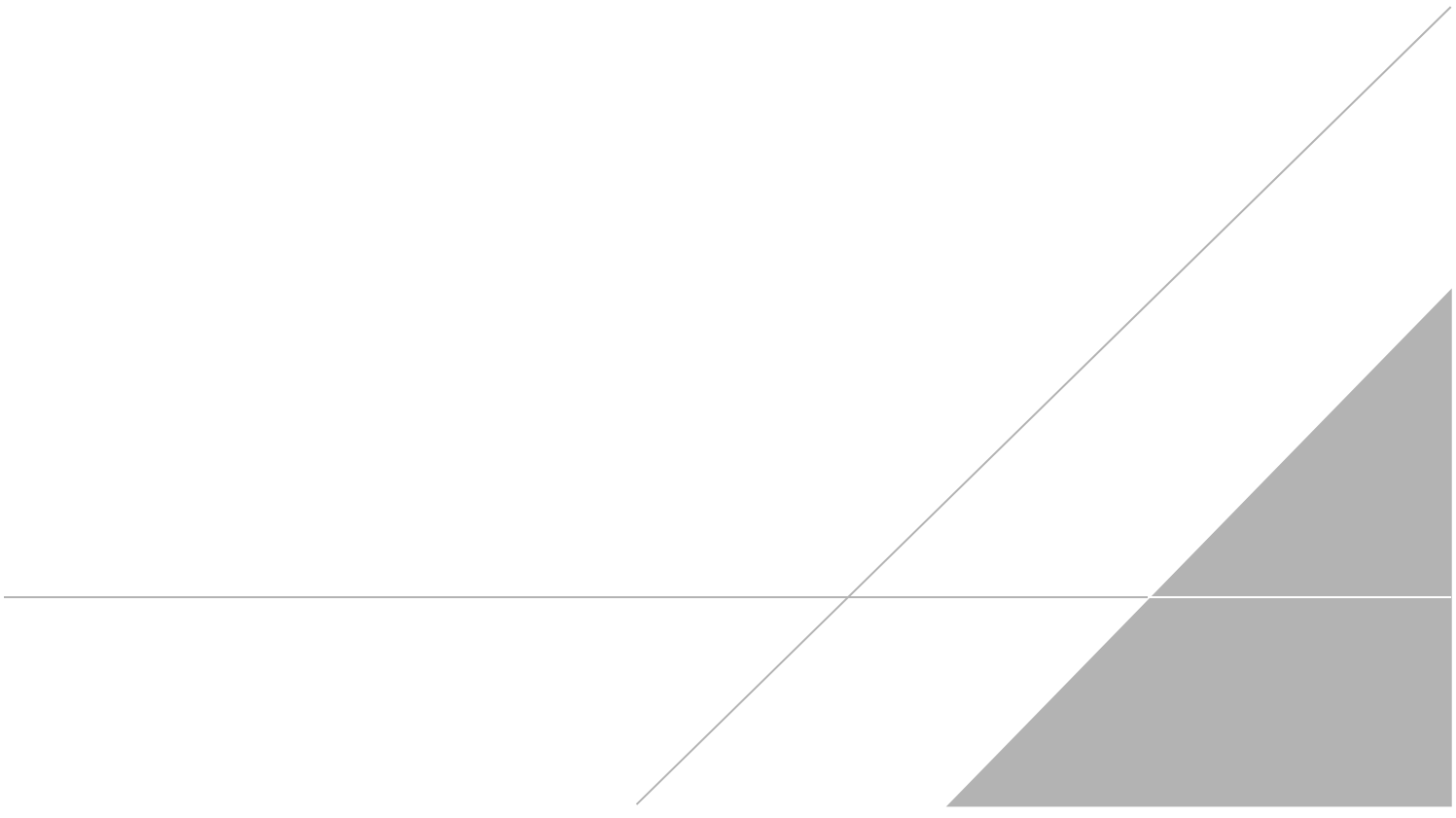
Attachment A

Forensic Summary Report



Summary

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- Forensic evaluation conducted for samples C3A (6-10) and C3A (8-10) based on NOAA 34 PAH analytical results (sample C3A (6-10) only) and TPH-DRO
- PAH double ratio plot of 4-ring PAH indicates presence of pyrogenic PAH
- PAH bar chart indicates petrogenic distributions for 2- and 3-ring PAH and pyrogenic distribution of 4- to 6-ring PAH
- PAH concentrations consistent with urban background
- Total NOAA 34 PAH 15.72 mg/kg, TPH-DRO 3,400 mg/kg – PAH/TPH is <0.5%, not consistent with MGP waste material which typically has PAH/TPH >>5%
- Chromatograms – TPH-DRO appears to be extremely weathered middle distillate petroleum hydrocarbon such as #2 fuel oil or diesel

- **Hydrocarbon material not associated with MGP waste**

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C3A (6-10) PAH Double Ratio Plot

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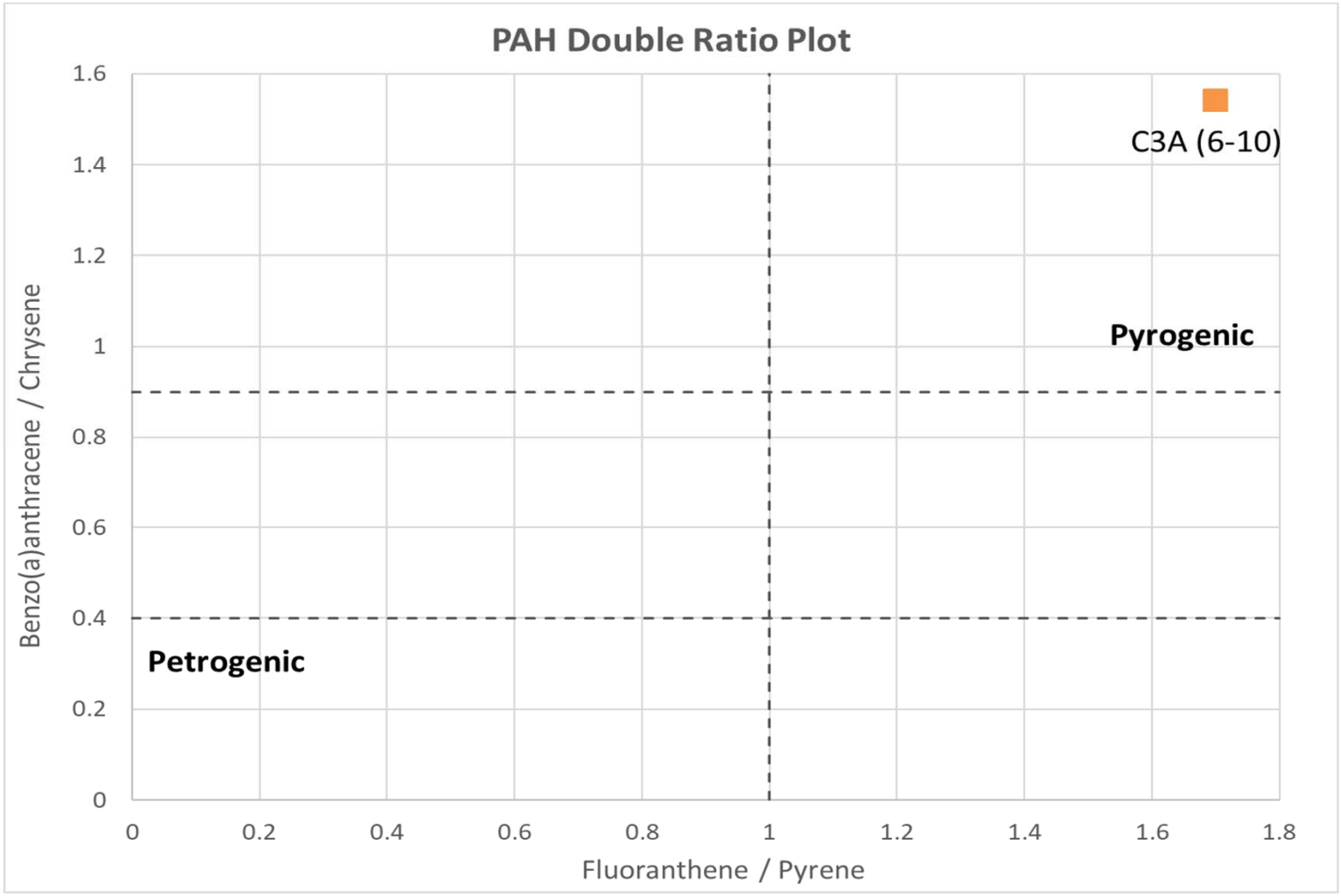
Sample C3A (6-10) 4-ring PAH have a pyrogenic composition



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C3A (6-10) PAH Bar Chart

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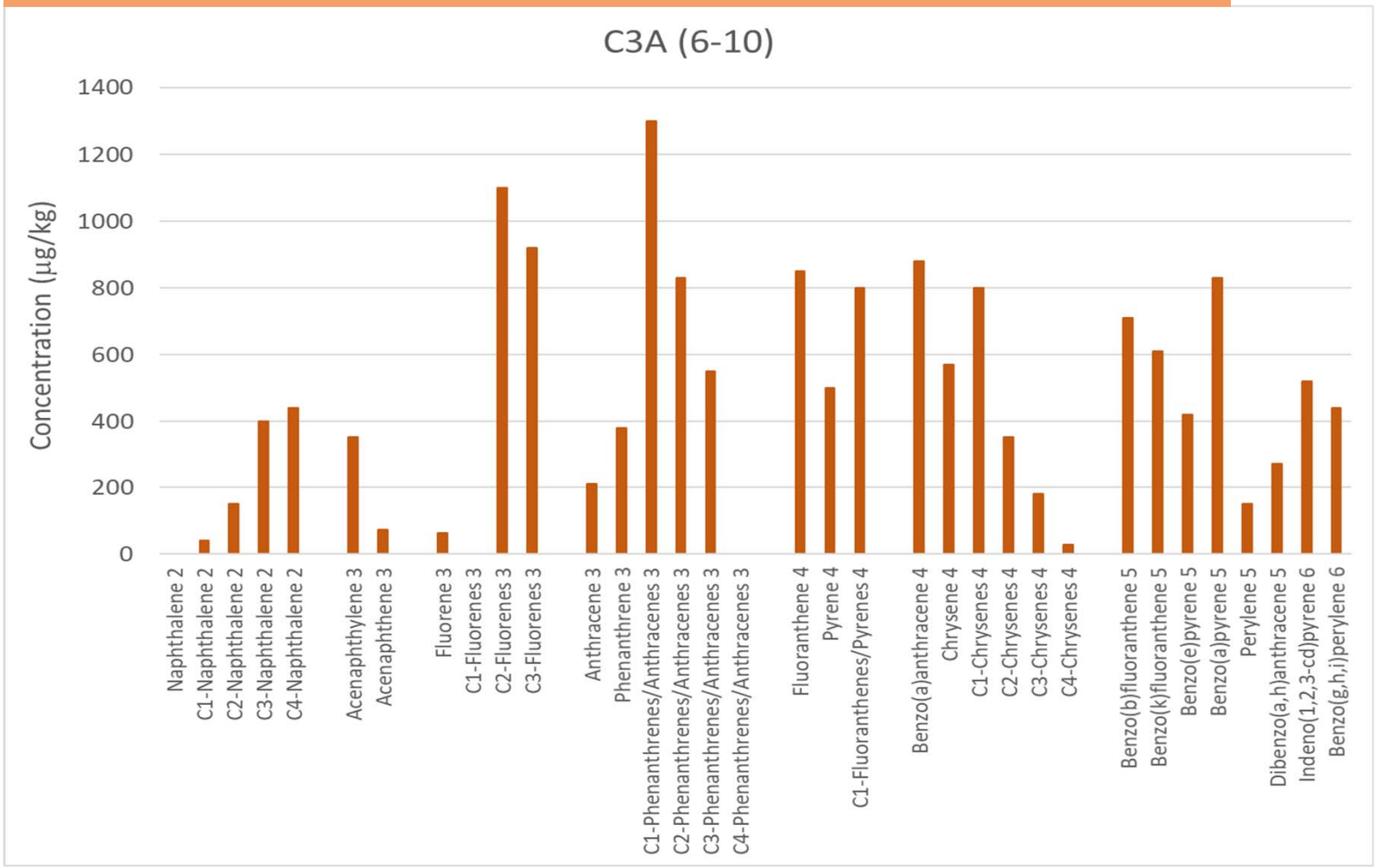
Sample C3A (6-10) 2- and 3-ring PAH have petrogenic signature, 4- to 6-ring PAH have pyrogenic signature



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Number after PAH name indicates number of rings

C3A (6-10) PAH Bar Chart

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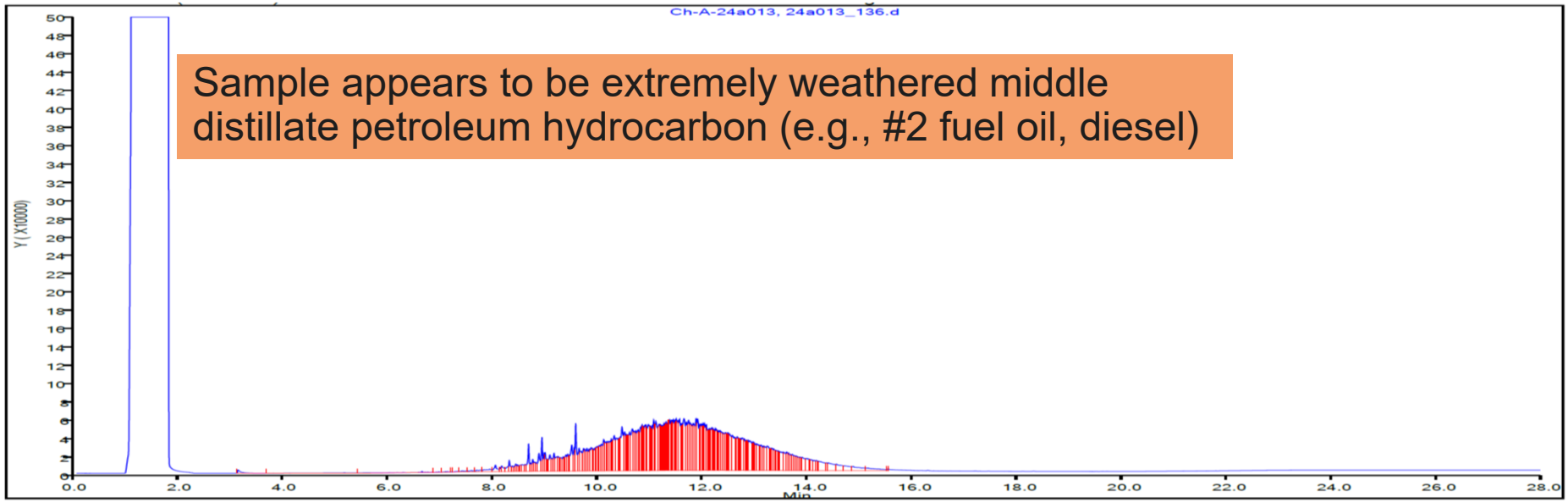
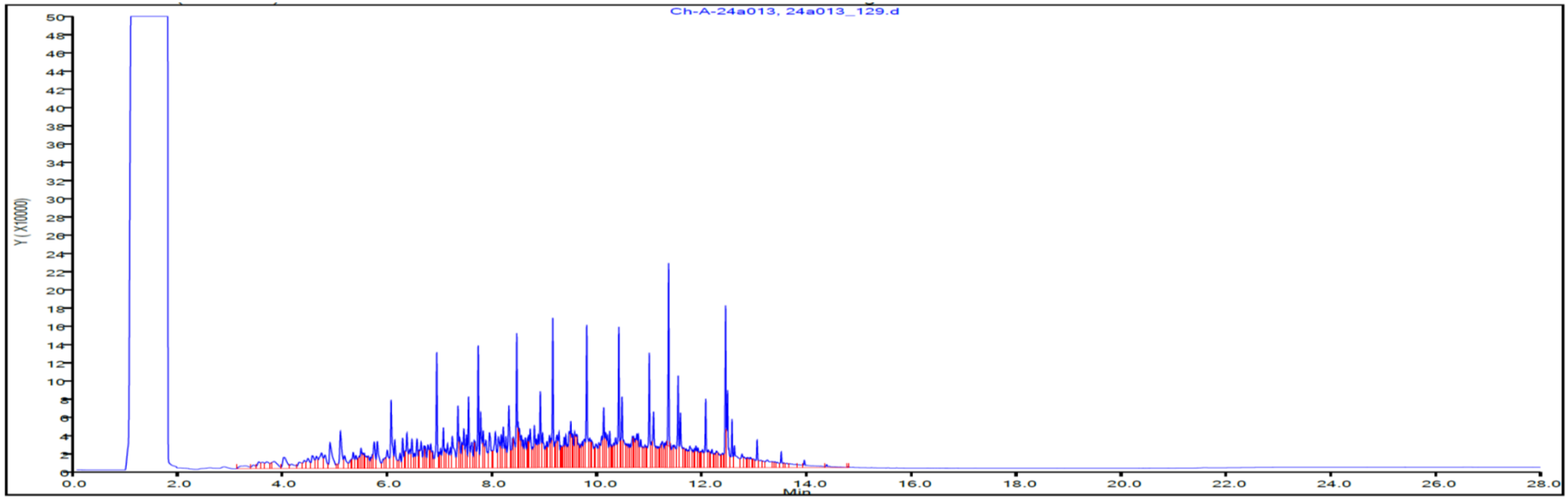


Sample appears to be extremely weathered middle distillate petroleum hydrocarbon (e.g., #2 fuel oil, diesel)



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C3A (8-10) PAH Bar Chart

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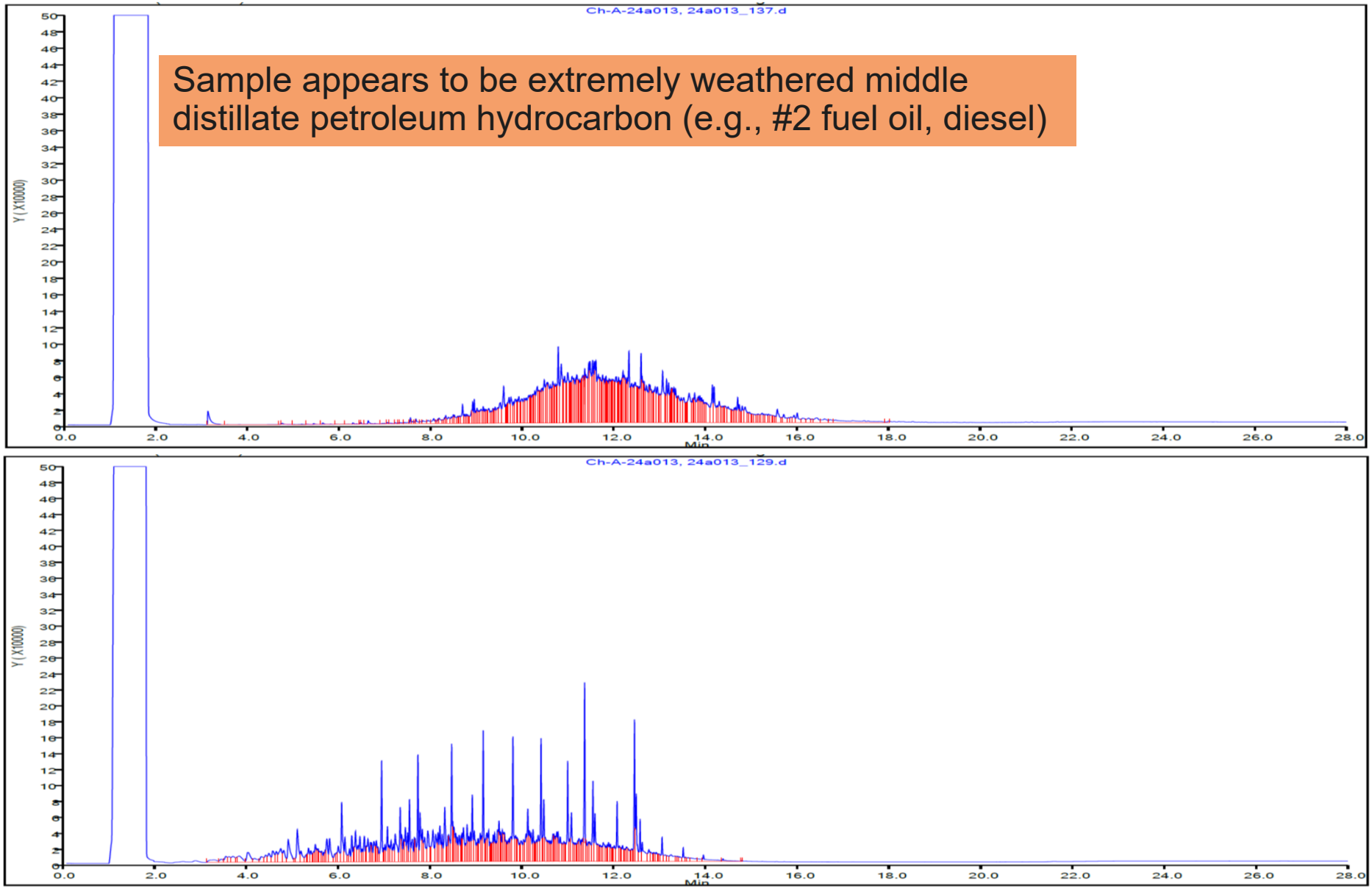

Sample appears to be extremely weathered middle distillate petroleum hydrocarbon (e.g., #2 fuel oil, diesel)

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