

Wellhead Closure Checklist						
COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form						
Additional attachments (optional):		Pit Closure		Tank Battery Closure		Flowline Closure
Site Name & COGCC Facility Number: Pappenheim #2-32		Date: 04/28/23			Remediation Project #: 28062	
Associated Wells: 05-123-11851		Age of Site: Years			Number of Photos Attached: 1	
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple)					40.532940 / -104.680130	
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)					Estimated Facility Size (acres): N/A	
Good Condition						
USCS Soil Type: OL				Estimated Depth to Groundwater: >20'		
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)						
None observed.						
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)						
None observed.						
Wellhead(s)						
Well API	05-123-11851					
Age	Years					
Condition of surface around wellhead	Good - Per Crew					
PID Readings	N/A - Excavated Upon Arrival					
Condition of subsurface (staining present)	Good - No odor/no staining					
PID Readings	0.7	0.0	0.3	0.4	0.6	
Sample taken? Location/Sample ID#	WH-SS-01	WH-SS-02	WH-SS-03	WH-SS-04	WH-FS-01	
Photo Number(s)	See photolog					
Other observations regarding wellheads:						
N/A						
Summary						
Was impacted soil identified?						
No		Yes - less than 10 cubic yards		Yes - more than 10 cubic yards		
Total number of samples field screened: 5				Total number of samples collected: 1		
Highest PID Reading: 0.7				Total number of samples submitted to lab for analysis: 1		
If more than 10 cubic yards of impacted soil were observed:						
Vertical extent:				Estimated spill volume:		
Lateral extent:				Volume of soil removed:		
				N/A		
Is additional investigation required?						
Was groundwater encountered during the investigation?						
No		Yes - not impacted or in contact with impacted soils		Yes - groundwater impacted and/or in contact with impacted soils		
Measured depth to groundwater:				Was remedial groundwater removal conducted? Yes No		
Date Groundwater was encountered:				Commencement date of removal:		
Sheen on groundwater? Yes No				Volume of groundwater removed prior to sampling:		
Free product observed? Yes No				Volume of groundwater removed post sampling:		
Total number of samples collected:				Total Volume of groundwater removed:		
Total number of samples submitted to lab for analysis:						

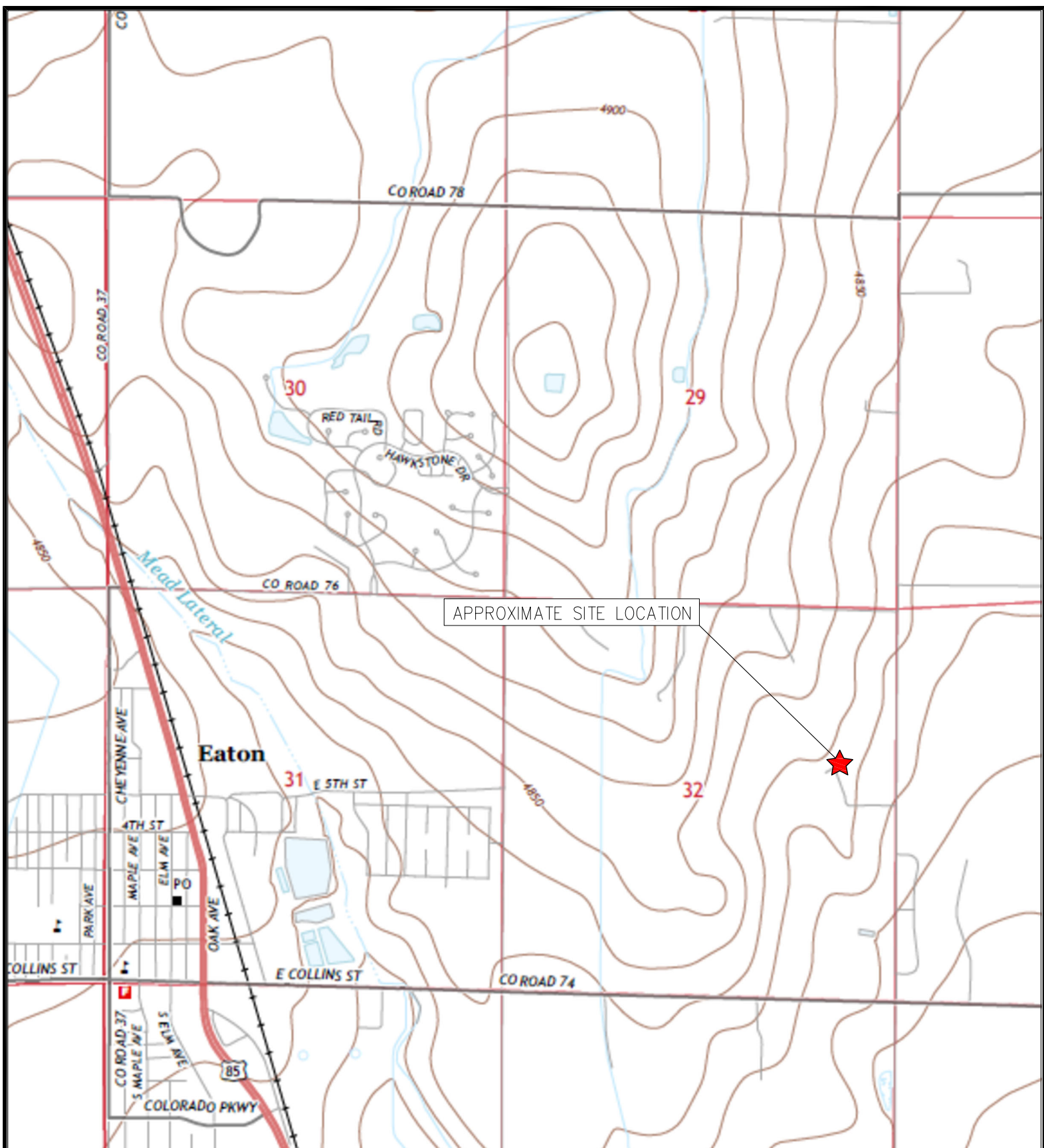


FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map



TOPOGRAPHIC SITE LOCATION MAP
 PAPPENHEIM #2-32
 40.532940 / -104.680130
 SE¼ NE¼ SEC.32 T7N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-11851
 REMEDIATION # 28062

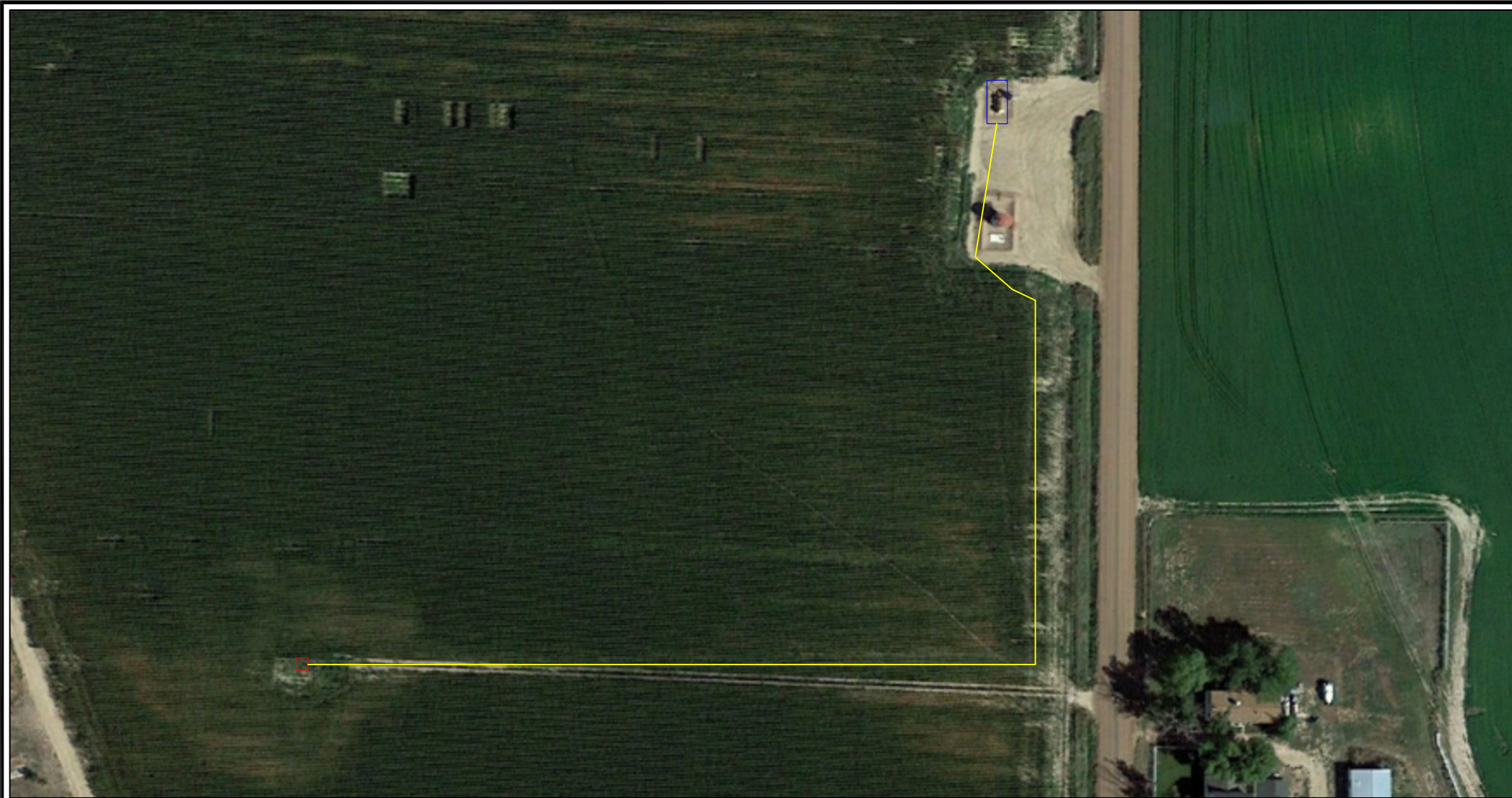
SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP
 EATON, CO QUADRANGLE 2022

FIGURE NO. 1



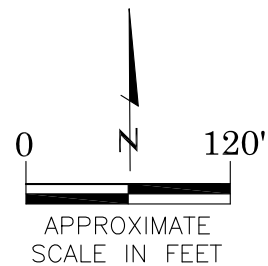
EAGLE
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 CONSULTING, LLC

8000 W 44th Ave, Wheat Ridge, CO 80033
 Ph: 303-433-0479 • F: 303-325-5449



LEGEND

- FORMER PAPPENHEIM #2-32 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



AERIAL SITE LOCATION MAP
 PAPPENHEIM #2-32
 CLOSURE ASSESSMENT
 40.532940 / -104.680130
 SE¼ NE¼ SEC.32 T7N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-11851
 REMEDIATION # 28062

FIGURE NO.
2

DRAWN BY:
GF



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LEGEND

- WELLHEAD ASSESSMENT BOUNDARIES
- SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES FIELD SCREENED, ONLY, WITH PHOTOIONIZATION DETECTOR
- SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

PARAMETERS

SAMPLE LOCATION
DATE
DEPTH (FEET)
B = BENZENE (mg/kg)
T = TOLUENE (mg/kg)
E = ETHYLBENZENE (mg/kg)
X = TOTAL XYLENES (mg/kg)
G = TPH-GRO (mg/kg)
D = TPH-DRO (mg/kg)
R = TPH-RRO (mg/kg)
1,2,4-TMB = 1,2,4 TRIMETHYLBENZENE (mg/kg)
1,3,5-TMB = 1,3,5 TRIMETHYLBENZENE (mg/kg)
Brn= BORON (mg/L)
EC = SPECIFIC CONDUCTANCE (mmhos/cm)
SAR= SODIUM ADSORPTION RATIO
pH = pH (pH UNITS)
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (mg/kg)

mg/kg = MILLIGRAMS PER KILOGRAM
mg/L = MILLIGRAMS PER LITER
mmhos/cm = MILLIMHOS PER CENTIMETER

(BRL) = ALL VALUES BELOW REGULATORY LIMITS

TPH-GRO = TOTAL PETROLEUM HYDROCARBONS – GASOLINE RANGE ORGANICS
TPH-DRO = TOTAL PETROLEUM HYDROCARBONS – DIESEL RANGE ORGANICS
TPH-RRO = TOTAL PETROLEUM HYDROCARBONS – RESIDUAL RANGE ORGANICS

NOTES:
VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY DETECTION LIMITS

VALUES PRESENTED IN **BOLD** EXCEED ECMC TABLE 915-1 REGULATORY LIMITS

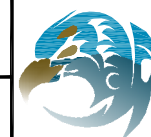
VALUES PRESENTED WITH ASTERISK (*) EXCEED ECMC TABLE 915-1 PROTECTION OF GROUNDWATER SOIL SCREENING LEVELS, ONLY.

ECMC = ENERGY AND CARBON MANAGEMENT COMMISSION

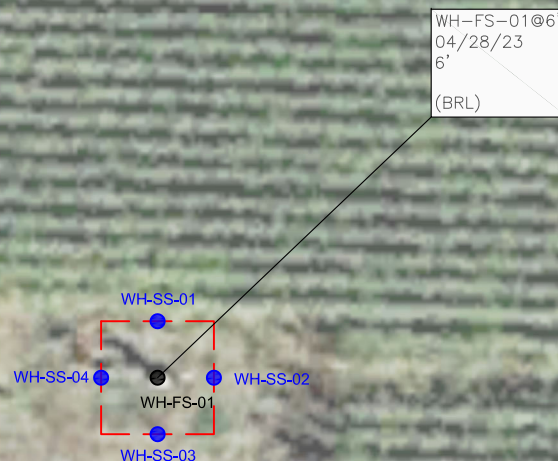
SOIL ANALYTICAL MAP
PAPPENHEIM #2-32
CLOSURE ASSESSMENT
40.532940 / -104.680130
SE¼ NE¼ SEC.32 T7N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-11851
REMEDIAL # 28062

FIGURE NO.
3

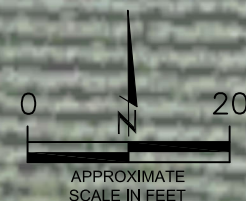
DRAWN BY:
JF



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CONSULTING, LLC
8000 W 44th Ave, Wheat Ridge, CO 80033
Ph: 303-433-0479 • F: 303-325-5449



WH-FS-01@6'
04/28/23
6'
(BRL)





TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
PAPPENHEIM #2-32
CLOSURE ASSESSMENT
40.532940 / -104.680130
SE¼ NE¼ SEC.32 T7N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-11851
REMEDATION # 28062

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-SS-01 @ 5' 40.315858 / -104.404846	04/28/23	5	0.7	N
WH-SS-02 @ 5' 40.315855 / -104.404842	04/28/23	5	0.0	N
WH-SS-03 @ 5' 40.315851 / -104.404846	04/28/23	5	0.3	N
WH-SS-04 @ 5' 40.315855 / -104.404852	04/28/23	5	0.4	N
WH-FS-01 @ 6' 40.315855 / -104.404846	04/28/23	6	0.6	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				

TABLE 2
SOIL ANALYTICAL RESULTS SUMMARY
PAPPENHEIM #2-32
CLOSURE ASSESSMENT
40.532940 / -104.680130
SE¼ NE¼ SEC.32 T7N R6SW 6PM
WELD COUNTY, COLORADO
API # 05-123-11851
REMEDIAION # 28062

Sample Location					WH-FS-01 @ 6'
(Latitude / Longitude)					40.315855 / -104.404846
Sample Date					4/28/2023
Sample Depth					6'
PID Reading (ppm-v)					0.6
Regulatory Limits					
Chemical of Concern	Units	COGCC Table 915-1 RSSLs	COGCC Table 915-1 GSSLs	Local Clean-Up Level	
VOCs					
Benzene	mg/kg	1.2	0.0026	--	<0.00200
Toluene	mg/kg	490	0.69	--	<0.00200
Ethylbenzene	mg/kg	5.8	0.78	--	<0.00200
Total Xylenes	mg/kg	58	9.9	--	<0.00200
1,2,4-Trimethylbenzene	mg/kg	30	0.0081	--	<0.00200
1,3,5-Trimethylbenzene	mg/kg	27	0.0087	--	<0.00200
TOTAL PETROLEUM HYDROCARBONS					
TPH-GRO	mg/kg	500	--	--	<0.200
TPH-DRO	mg/kg	500	--	--	<25.0
TPH-RRO	mg/kg	500	--	--	<100
POLYCYCLIC AROMATIC HYDROCARBONS					
1-Methyl-naphthalene	mg/kg	18	0.006	--	<0.00201
2-Methyl-naphthalene	mg/kg	24	0.019	--	<0.00201
Acenaphthene	mg/kg	360	0.55	--	<0.00067
Anthracene	mg/kg	1800	5.8	--	<0.00067
Benzo(a)-anthracene	mg/kg	1.1	0.011	--	<0.00067
Benzo(a)-pyrene	mg/kg	0.11	0.24	--	<0.00067
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	--	<0.00067
Benzo(k)-fluoranthene	mg/kg	11	2.9	--	<0.00067
Chrysene	mg/kg	110	9	--	0.00125
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	--	0.000891
Fluoranthene	mg/kg	240	8.9	--	<0.00067
Fluorene	mg/kg	240	0.54	--	<0.00067
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	--	<0.00067
Naphthalene	mg/kg	2	0.0038	--	<0.00201
Pyrene	mg/kg	180	1.3	--	<0.00067
SOIL SUITABILITY (Inorganics)					
Boron	mg/L	2	--	--	0.344
pH	standard unit	6-8.3	--	--	8.27
Sodium Adsorption Ratio (SAR)	--	<6	--	--	0.305
Specific Conductance (EC)	mmhos/cm	<4	--	--	0.888
COGCC = Colorado Oil and Gas Conservation Commission NA - Not Analyzed VOCs - Volatile Organic Compounds					
mg/kg = milligrams per kilogram					
mmhos/cm = millimhos per centimeter					
PID = Photoionization Detector					
ppm-v = parts per million by volume					
mg/L = milligrams per liter					
SAR = Sodium Adsorption Ratio					
RSSLs = Residential Soil Screening Levels					
GSSLs = Protection of Groundwater Soil Screening Levels					
TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics					
TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics					
TPH-RRO = Total Petroleum Hydrocarbons - Residual Range Organics					
Notes: Values presented with a less than symbol (<) did not contain concentrations at or above the laboratory reporting limit and/or minimum detection limit					
Values presented in BOLD exceed COGCC Table 915-1 Regulatory Limits. Values presented with asterisk (*) exceed COGCC Table 915-1 GSSLs					
**Achievable practical quantitative limits for Hexavalent Chromium in soils is in the range of 0.1 to 1 mg/kg.					
***Arsenic is naturally occurring in Colorado.					



ATTACHMENT A

Photo Log

Pappenheim #2-32

API # 05-123-11851

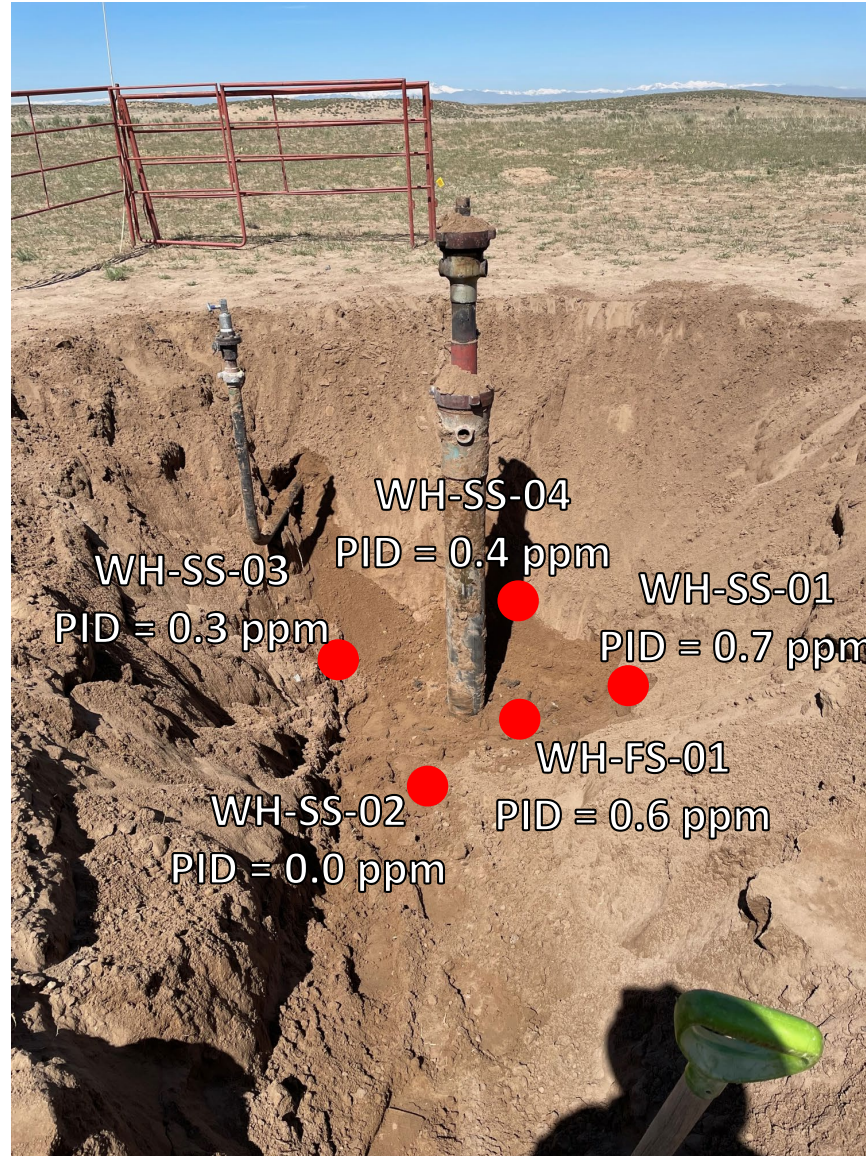
Remediation # 28062

Closure Assessment

April 2023



Wellhead Excavation – 04/28/23



Looking west

No petroleum hydrocarbon staining or odor observed



ATTACHMENT B

Laboratory Analytical Report



May 11, 2023

Eagle Environmental Consulting, LLC

Martin C Eckert III

8000 W 44th Ave

Wheat Ridge CO 80033

Project Name - Noble - Pappenheim #2-32

Project Number - [none]

Attached are your analytical results for Noble - Pappenheim #2-32 received by Origins Laboratory, Inc. April 28, 2023. This project is associated with Origins project number Y305011-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-FS-01@6'	Y305011-01	Soil	April 28, 2023 13:33	04/28/2023 15:50

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: UB05011

Client: Eagle Environ

Client Project ID: Pappenheim #2-32

Checklist Completed by: JH L & H S

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 4/28/23

Airbill #: na

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: L/S °C _____ °C _____ °C (Describe) _____ °C

Thermometer ID: 7003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	/			
Is there ice present (document if blue ice is used)	/			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		/		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		/		
Were all samples received intact ⁽¹⁾ ?	/			
Was adequate sample volume provided ⁽¹⁾ ?	/			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		/		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	/			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	/			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	/			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	/			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			/	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			/	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 5/2/23

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Jordan A. Bynon, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

WH-FS-01@6'
4/28/2023 1:33:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y305011-01 (Soil)

Boron (DTPA Sorbitol)

Boron	0.344	0.0984	mg/L	1	B3E0207	05/02/2023	05/10/2023	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B3E0128	05/01/2023	05/04/2023	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.1 %	50-150			"	"	"	
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GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B3E0123	05/01/2023	05/02/2023	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	ND	0.00200	"	"	"	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Naphthalene	ND	0.00380	"	"	"	"	"	U
Toluene	ND	0.00200	"	"	"	"	"	U
Xylenes, total	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Jordan A. Bynon, Project Manager

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

WH-FS-01@6'

4/28/2023 1:33:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y305011-01 (Soil)

GBTEX+TMBs by 8260D

Surrogate: 1,2-Dichloroethane-d4	106 %		70-130			B3E01 23	05/01/2023	05/02/2023	
Surrogate: Toluene-d8	97.8 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.5 %		70-130			"	"	"	

Metals by Saturated Paste by EPA 6010

Calcium	4.59		0.499	meq/L	10	[CALC]	05/02/2023	05/03/2023	
Magnesium	3.61		0.823	"	"	"	"	"	
Sodium	0.617		0.435	"	"	"	"	"	

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00109	0.00201	mg/Kg	1	L679650	05/03/2023	05/04/2023	
2-Methylnaphthalene	ND	0.00194	0.00201	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	0.00125	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	0.000891	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Jordan A. Bynon, Project Manager

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

WH-FS-01@6'

4/28/2023 1:33:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.
Y305011-01 (Soil)

PAH by 8270D SIM

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L679650	05/03/2023	05/04/2023
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"
Naphthalene	ND	0.00145	0.00201	"	"	"	"	"
Pyrene	ND	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	56.9 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	59 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	51.5 %	29-110	"	"	"

pH in Soil by 9045D

pH	8.27	pH Units	1	B3E0219	05/02/2023	05/03/2023
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SAR by 20B Saturated Paste

SAR	0.305	SAR	1	B3E0215	05/02/2023	05/03/2023
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.888	0.00500 mmhos/cm	1	B3E0219	05/02/2023	05/03/2023
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Origins Laboratory, Inc.



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Jen Pellegrini For Jordan A. Bynon, Project Manager

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3E0123 - EPA 5030 (soil)										
Blank (B3E0123-BLK1)					Prepared: 05/01/2023 Analyzed: 05/02/2023					
1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.0	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.5	70-130			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B3E0123 - EPA 5030 (soil)

LCS (B3E0123-BS1)

Prepared: 05/01/2023 Analyzed: 05/02/2023

1,2,4-Trimethylbenzene	0.0898	0.00200	mg/kg	0.100		89.8	70-130			
1,3,5-Trimethylbenzene	0.0905	0.00200	"	0.100		90.5	70-130			
Benzene	0.102	0.00200	"	0.100		102	70-130			
Ethylbenzene	0.0959	0.00200	"	0.100		95.9	70-130			
Naphthalene	0.0840	0.00380	"	0.100		84.0	70-130			
Toluene	0.102	0.00200	"	0.100		102	70-130			
o-Xylene	0.0925	0.00200	"	0.100		92.5	70-130			
m,p-Xylene	0.198	0.00400	"	0.200		99.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		94.6	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		104	70-130			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3E0123 - EPA 5030 (soil)										
Matrix Spike (B3E0123-MS1)		Source: Y305003-01			Prepared: 05/01/2023 Analyzed: 05/02/2023					
1,2,4-Trimethylbenzene	0.0825	0.00200	mg/kg	0.100	ND	82.5	70-130			
1,3,5-Trimethylbenzene	0.0818	0.00200	"	0.100	ND	81.8	70-130			
Benzene	0.0965	0.00200	"	0.100	ND	96.5	70-130			
Ethylbenzene	0.0888	0.00200	"	0.100	ND	88.8	70-130			
Naphthalene	0.0734	0.00380	"	0.100	ND	73.4	70-130			
Toluene	0.0962	0.00200	"	0.100	ND	96.2	70-130			
o-Xylene	0.0866	0.00200	"	0.100	ND	86.6	70-130			
m,p-Xylene	0.183	0.00400	"	0.200	ND	91.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		100	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		106	70-130			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3E0123 - EPA 5030 (soil)										
Matrix Spike Dup (B3E0123-MSD1)		Source: Y305003-01			Prepared: 05/01/2023 Analyzed: 05/02/2023					
1,2,4-Trimethylbenzene	0.0747	0.00200	mg/kg	0.100	ND	74.7	70-130	9.97	20	
1,3,5-Trimethylbenzene	0.0726	0.00200	"	0.100	ND	72.6	70-130	12.0	20	
Benzene	0.0882	0.00200	"	0.100	ND	88.2	70-130	9.03	20	
Ethylbenzene	0.0812	0.00200	"	0.100	ND	81.2	70-130	8.89	20	
Naphthalene	0.0712	0.00380	"	0.100	ND	71.2	70-130	2.96	20	
Toluene	0.0869	0.00200	"	0.100	ND	86.9	70-130	10.2	20	
o-Xylene	0.0799	0.00200	"	0.100	ND	79.9	70-130	7.98	20	
m,p-Xylene	0.168	0.00400	"	0.200	ND	83.9	70-130	8.72	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		107	70-130			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B3E0128 - EPA 3550B

Blank (B3E0128-BLK1)

Prepared: 05/01/2023 Analyzed: 05/04/2023

Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	26		"	24.9		104	50-150			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3E0128 - EPA 3550B										
LCS (B3E0128-BS1)					Prepared: 05/01/2023 Analyzed: 05/04/2023					
Diesel (C10-C28)	930	50.0	mg/kg	1000		93.0	70-130			
Residual Range Organics (C28-C40)	987	200	"	1000		98.7	70-130			
Surrogate: o-Terphenyl	48		"	49.8		97.0	50-150			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Extractable Petroleum Hydrocarbons by 8015D - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B3E0128 - EPA 3550B

Matrix Spike (B3E0128-MS1)		Source: Y305004-01			Prepared: 05/01/2023 Analyzed: 05/04/2023					
Diesel (C10-C28)	913	50.0	mg/kg	1000	ND	91.3	70-130			
Residual Range Organics (C28-C40)	984	200	"	1000	ND	98.4	70-130			
Surrogate: o-Terphenyl	46		"	49.8		91.9	50-150			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3E0128 - EPA 3550B										
Matrix Spike Dup (B3E0128-MSD1)		Source: Y305004-01			Prepared: 05/01/2023 Analyzed: 05/04/2023					
Diesel (C10-C28)	1090	50.0	mg/kg	1000	ND	109	70-130	18.1	35	
Residual Range Organics (C28-C40)	1170	200	"	1000	ND	117	70-130	17.3	35	
Surrogate: o-Terphenyl	51		"	49.8		103	50-150			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Classical Chemistry Parameters - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B3E0207 - DTPA Sorbitol Preparation

Blank (B3E0207-BLK1)

Prepared: 05/02/2023 Analyzed: 05/03/2023

Boron	ND	0.100	mg/L							U
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Duplicate (B3E0207-DUP1)

Source: Y304640-03

Prepared: 05/02/2023 Analyzed: 05/03/2023

Boron	0.813	0.102	mg/L		0.718			12.4	50	
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Batch B3E0215 - Saturated Paste Metals

Blank (B3E0215-BLK1)

Prepared: 05/02/2023 Analyzed: 05/03/2023

Calcium PPM	ND	10.0	mg/L							U
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SAR	0.00		SAR							U
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Magnesium PPM	ND	10.0	mg/L							U
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Sodium PPM	ND	10.0	"							U
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Duplicate (B3E0215-DUP1)

Source: Y305011-01

Prepared: 05/02/2023 Analyzed: 05/03/2023

SAR	0.00		SAR		0.305			200	200	U
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Calcium PPM	108	10.0	mg/L		92.0			16.1	50	
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Magnesium PPM	51.6	10.0	"		43.8			16.3	50	
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Sodium PPM	15.6	10.0	"		14.2			9.30	50	
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Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Saturated Paste - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3E0219 - Saturated Paste pH/EC										
Blank (B3E0219-BLK1)					Prepared: 05/02/2023 Analyzed: 05/03/2023					
Specific Conductance (EC)	ND	0.00500	mmhos/cm							U
Duplicate (B3E0219-DUP1)					Source: Y305011-01 Prepared: 05/02/2023 Analyzed: 05/03/2023					
pH	8.23		pH Units		8.27			0.485	25	
Specific Conductance (EC)	1.01	0.00500	mmhos/cm		0.888			13.2	25	

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L679650 - 3550B

MSD (L 85889-MSD-L679650)		Source: Y305011-01			Prepared: 05/03/2023 Analyzed: 05/04/2023					
2-Methylnaphthalene	0.112	0.00201	mg/Kg	0.166	<0.00194	67.4	30-130	20.1	30	
Fluorene	0.125	0.00067	"	0.166	<0.000286	75.3	30-130	20.2	30	
Pyrene	0.118	0.00067	"	0.166	<0.000643	71	30-130	19.8	30	
Indeno(1,2,3-cd)pyrene	0.139	0.00067	"	0.166	<0.000627	83.7	30-130	21.5	30	
Fluoranthene	0.123	0.00067	"	0.166	<0.000394	74	30-130	17.6	30	
Dibenz(a,h)anthracene	0.163	0.00067	"	0.166	0.000891	97.6	30-130	21	30	
Chrysene	0.131	0.00067	"	0.166	0.00125	78.1	30-130	23.9	30	
Naphthalene	0.103	0.00201	"	0.166	<0.00145	62	30-130	20.2	30	
1-Methylnaphthalene	0.117	0.00201	"	0.166	<0.00109	70.4	30-130	18.8	30	
Benzo(k)fluoranthene	0.0694	0.00067	"	0.166	<0.000437	41.8	30-130	22	30	
Acenaphthene	0.122	0.00067	"	0.166	<0.000304	73.4	30-130	18.8	30	
Anthracene	0.127	0.00067	"	0.166	<0.000334	76.5	30-130	19.9	30	
Benzo(a)anthracene	0.125	0.00067	"	0.166	<0.000493	75.3	30-130	10.9	30	
Benzo(a)pyrene	0.126	0.00067	"	0.166	<0.000468	75.9	30-130	15.3	30	
Benzo(b)fluoranthene	0.0761	0.00067	"	0.166	<0.000585	45.8	30-130	21.7	30	
Surrogate: 2-Fluorobiphenyl	65.3		"	0.332	189	65.3	33-115			
Surrogate: Nitrobenzene-d5	60.8		"	0.332	171	60.8	29-110			
Surrogate: 4-Terphenyl-d14	65		"	0.332	196	65	33-122			

MS (L 85889-MS-L679650)		Source: Y305011-01			Prepared: 05/03/2023 Analyzed: 05/04/2023					
Benzo(k)fluoranthene	0.0556	0.00067	mg/Kg	0.166	<0.000437	33.4	30-130			
Acenaphthene	0.101	0.00067	"	0.166	<0.000304	60.8	30-130			
Naphthalene	0.0841	0.00201	"	0.166	<0.00145	50.6	30-130			
Indeno(1,2,3-cd)pyrene	0.112	0.00067	"	0.166	<0.000627	67.4	30-130			
Fluorene	0.102	0.00067	"	0.166	<0.000286	61.4	30-130			
Fluoranthene	0.103	0.00067	"	0.166	<0.000394	62	30-130			
Dibenz(a,h)anthracene	0.132	0.00067	"	0.166	0.000891	78.9	30-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Jordan A. Bynon, Project Manager

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L679650 - 3550B

MS (L 85889-MS-L679650)		Source: Y305011-01			Prepared: 05/03/2023 Analyzed: 05/04/2023					
Chrysene	0.103	0.00067	mg/Kg	0.166	0.00125	61.2	30-130			
1-Methylnaphthalene	0.0968	0.00201	"	0.166	<0.00109	58.3	30-130			
Benzo(a)pyrene	0.108	0.00067	"	0.166	<0.000468	65	30-130			
Anthracene	0.104	0.00067	"	0.166	<0.000334	62.6	30-130			
Pyrene	0.0967	0.00067	"	0.166	<0.000643	58.2	30-130			
2-Methylnaphthalene	0.0915	0.00201	"	0.166	<0.00194	55.1	30-130			
Benzo(b)fluoranthene	0.0612	0.00067	"	0.166	<0.000585	36.8	30-130			
Benzo(a)anthracene	0.112	0.00067	"	0.166	<0.000493	67.4	30-130			
Surrogate: Nitrobenzene-d5	52.5		"	0.331	171	52.5	29-110			
Surrogate: 4-Terphenyl-d14	54		"	0.331	196	54	33-122			
Surrogate: 2-Fluorobiphenyl	54.6		"	0.331	189	54.6	33-115			

LCS (LCS-L679650)		Prepared: 05/03/2023 Analyzed: 05/04/2023								
Chrysene	0.128	0.00067	mg/Kg	0.167		76.6	30-130			
Dibenz(a,h)anthracene	0.136	0.00067	"	0.167		81.4	30-130			
Fluoranthene	0.128	0.00067	"	0.167		76.6	30-130			
Fluorene	0.127	0.00067	"	0.167		76	30-130			
Indeno(1,2,3-cd)pyrene	0.114	0.00067	"	0.167		68.2	30-130			
Naphthalene	0.101	0.00201	"	0.167		60.4	30-130			
Benzo(k)fluoranthene	0.12	0.00067	"	0.167		71.8	30-130			
Pyrene	0.127	0.00067	"	0.167		76	30-130			
Benzo(a)pyrene	0.131	0.00067	"	0.167		78.4	30-130			
Benzo(a)anthracene	0.126	0.00067	"	0.167		75.4	30-130			
Anthracene	0.132	0.00067	"	0.167		79	30-130			
Acenaphthene	0.12	0.00067	"	0.167		71.8	30-130			
2-Methylnaphthalene	0.105	0.00201	"	0.167		62.8	30-130			
1-Methylnaphthalene	0.113	0.00201	"	0.167		67.6	30-130			

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

PAH by 8270D SIM - Quality Control Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch L679650 - 3550B										
LCS (LCS-L679650)					Prepared: 05/03/2023 Analyzed: 05/04/2023					
Benzo(b)fluoranthene	0.082	0.00067	mg/Kg	0.167		49.1	30-130			
Surrogate: Nitrobenzene-d5	61.5		"	0.333		61.5	29-110			
Surrogate: 4-Terphenyl-d14	74.7		"	0.333		74.7	33-122			
Surrogate: 2-Fluorobiphenyl	66.3		"	0.333		66.3	33-115			
LRB (LRB-L679650)					Prepared: 05/03/2023 Analyzed: 05/04/2023					
Chrysene	ND	0.00067	mg/Kg				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Naphthalene	ND	0.00201	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00201	"				-			
1-Methylnaphthalene	ND	0.00201	"				-			
Pyrene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Surrogate: Nitrobenzene-d5	54		"	0.333		54	29-110			
Surrogate: 4-Terphenyl-d14	60.6		"	0.333		60.6	33-122			
Surrogate: 2-Fluorobiphenyl	57.6		"	0.333		57.6	33-115			

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Eagle Environmental Consulting, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Pappenheim #2-32

Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



Jen Pellegrini For Jordan A. Bynon, Project Manager

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