

FREMONT ENVIRONMENTAL INC.

September 21, 2023

Mr. James Hix
Colorado Energy and Carbon Management Commission (OWP)
1120 Lincoln Street, Suite 801
Denver, CO 80203

Subject: **Facility Closure Data Submittal**
(UPRR) Wagner 12-19 (OWP) (Wellhead, Flowline and Facility)
API # 05-001-08361
SWNW Sec. 19 T1S R64W Meridian 6
Adams County, Colorado
Facility #479190, Remediation #26162

Dear Mr. Hix:

As you requested, Fremont Environmental Inc. (Fremont) personnel conducted facility closure sampling activities for the Petrosshare (UPRR) Wagner #12-19 Orphaned Well Program (OWP) facility. Sampling activities were completed on May 8, 2023 at the wellhead, flowline, and associated tank battery as discussed on the attached closure checklists.

Contamination was observed as discussed below.

- Petroleum contamination was observed in excess of Colorado's Energy and Carbon Management Commission (ECMC) Table 915-1 standards along the dump line adjacent to the separator extending to the tank battery, DLS1-5. Contamination observed includes benzene, toluene, ethylbenzene, xylenes, 1,2,4 trimethylbenzene, 1,3,5, trimethylbenzene (TMBs), naphthalene, total petroleum hydrocarbon (TPH) and 1 & 2 methylnaphthalene which were all observed in excess of their respective Table 915-1 standards.
- Petroleum contamination was also observed in excess of ECMC Table 915-1 standards in the dump line adjacent to the tank battery, DLSE1-4, for benzene, toluene, xylenes, TMBs, naphthalene and 1&2 methylnaphthalene.
- Acidic soil was observed at the tank battery and in the background sample. Therefore, these impacts can be attributed to native concentrations and possibly be disregarded.
- Arsenic, barium, cadmium and lead were observed excess of ECMC Table 915-1 standards in the background sample. Therefore, concentrations observed for arsenic and barium in the facility samples can be attributed to native conditions and be disregarded.

1759 REDWING LANE, BROOMFIELD, CO 80020
(720)-252-7191 (DIRECT)

Please contact us at (720) 252-7191 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

FREMONT ENVIRONMENTAL INC.



Nick Larimer
Project Manager

Attachments:

- Facility Closure Checklist
- Tables
- Figures
- Photos
- Laboratory Reports

Wellhead Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional):		Pit Closure	<input checked="" type="checkbox"/>	Tank Battery Closure	<input checked="" type="checkbox"/>	Flowline Closure	<input checked="" type="checkbox"/>	Partially Buried Vault Closure	
Site Name & COGCC Facility Number: (UPRR)Wagner 12-19 (OWP), 202956		Date: May 8, 2023						Remediation Project #: 26162	
Associated Wells: 05-001-08361		Age of Site: March 10, 1984						Number of Photos Attached: 4	
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) (39.951662, -104.599280)							Estimated Facility Size (acres):		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Site in fair condition, concrete spillage from plugging operations, misc. trash on site									
USCS Soil Type: ML				Estimated Depth to Groundwater: DWR estimate 69' BGS					
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed at wellhead									
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	05-001-08361								
Age	Spud 1984								
Condition of surface around wellhead	excavated prior to arrival								
PID Readings	nm								
Condition of subsurface (staining present)	None observed								
PID Readings	0.0								
Sample taken? Location/Sample ID#	Y/2305236-07 & 2305236-08								
Photo Number(s)	WH1-WH4								
Other observations regarding wellheads: Misc. trash at location									
Summary									
Was impacted soil identified? <input checked="" type="checkbox"/> 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: 2					
Highest PID Reading: 0.0				Total number of samples submitted to lab for analysis: 2					
If more than 10 cubic yards of impacted soil were observed: None at wellhead									
Vertical extent: NA				Estimated spill volume: NA					
Lateral extent: NA				Volume of soil removed: NA					
Is additional investigation required? Not at wellhead									
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater: NA				Was remedial groundwater removal conducted? Yes <input checked="" type="checkbox"/> No					
Date Groundwater was encountered: NA				Commencement date of removal: NA					
Sheen on groundwater? Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed prior to sampling: NA					
Free product observed? Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed post sampling: NA					
Total number of samples collected: NA				Total Volume of groundwater removed: NA					
Total number of samples submitted to lab for analysis: NA									

Third Party Removal Date									
Sample taken? Location/ Sample									
PID Readings									
Photo Number(s)									
Other Facility Equipment									
Equipment type									
Equipment Condition Age									
Soil impacts									
PID Readings									
Sample taken? Location/ Sample									
Photo Number(s)									
Other observations regarding other facility or third party equipment:									
Summary									
Was impacted soil identified? No Yes - less than 10 cubic yards <input checked="" type="checkbox"/> Yes - more than 10 cubic yards									
Total number of samples field screened: 17					Total number of samples collected: 5				
Highest PID Reading: DLS1-5 - PID - 1519					Total number of samples submitted to lab for analysis: 5				
If more than 10 cubic yards of impacted soil were observed: Dump line south of separator									
Vertical extent: Greater than 5'					Estimated spill volume: Historical- unknown				
Lateral extent: unknown					Volume of soil removed: Left in place				
Is additional investigation required? Yes									
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater: NA					Was remedial groundwater removal conducted? Yes <input checked="" type="checkbox"/> No				
Date Groundwater was encountered: NA					Commencement date of removal: NA				
Sheen on groundwater? Yes <input checked="" type="checkbox"/> No					Volume of groundwater removed prior to sampling: NA				
Free product observed? Yes <input checked="" type="checkbox"/> No					Volume of groundwater removed post sampling: NA				
Total number of samples collected: NA					Total Volume of groundwater removed: NA				
Total number of samples submitted to lab for analysis: NA									

Buried or Partially Buried Vessel Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional):		Pit Closure	<input checked="" type="checkbox"/>	Wellhead Closure	<input checked="" type="checkbox"/>	Flowline Closure	<input checked="" type="checkbox"/>	Tank Battery Closure
Site Name & COGCC Facility Number: (UPRR) Wagner 12-19, 4791		Date: 910 May 8, 2023		Remediation Project #: 26162				
Associated Wells: 05-001-08361		Age of Site: Spud 1984		Number of Photos Attached: 2				
Location: (GPS coordinates of vault or southeastern tank berm for multiple) Latitude: 39.951140 Longitude: -104.602510				Estimated Facility Size (acres):				
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Site in fair condition, weeds growing in containment prior to decommissioning								
USCS Soil Type: ML			Estimated Depth to Groundwater: DWR- Estimated 69' BGS					
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None at PWV								
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None at PWV								
Buried or Partially Buried Vessels								
Tank Contents	Produce water							
Size (barrels)	140 BBL							
Age	Spud 1984							
Construction Material	Fiberglass							
Visual Integrity of Tank	Removed prior							
Condition of tank	Fair							
PID Readings	0.0							
Condition of Access Line	Failure near SEP							
PID Readings	0.0 @ PWV							
Sample taken? Location/Sample ID#	Y2305236-03							
Photo Number(s)	PWV1-PWV2							
Other observations regarding partially buried vessels:								
Summary								
Was impacted soil identified? <input checked="" type="checkbox"/> 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: 0.0			Total number of samples submitted to lab for analysis: 1					
If more than 10 cubic yards of impacted soil were observed: None at PWV								
Vertical extent: NA			Estimated spill volume: NA					
Lateral extent: NA			Volume of soil removed: NA					
Is additional investigation required? Not at PWV								
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils								
Measured depth to groundwater: NA			Was remedial groundwater removal conducted? Yes <input checked="" type="checkbox"/> No					
Date Groundwater was encountered: NA			Commencement date of removal: NA					
Sheen on groundwater? Yes <input checked="" type="checkbox"/> No			Volume of groundwater removed prior to sampling: NA					
Free product observed? Yes <input checked="" type="checkbox"/> No			Volume of groundwater removed post sampling: NA					
Total number of samples collected: NA			Total Volume of groundwater removed: NA					
Total number of samples submitted to lab for analysis: NA								

Flowline Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional Attachments:		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
Site Name & COGCC Facility Number: (UPRR) Wagner 12-19		Date: May 8, 2023			Remediation Project #: 26162			
Associated Wells: 05-001-08361		Age of Site: Spud March 1984			Number of Photos Attached: 3			
Starting point: (GPS coordinates and descriptions) wellhead (Latitude: 39.951662 Longitude: -104.599280)								
End point: (GPS coordinates and descriptions) Separator-(39.9515517°, -104.6025191°)								
USCS Soil Type: ML				Estimated Depth to Groundwater: Estimate 69' BGS DWR				
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) No impacts observed along flowline								
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed								
Flowlines								
Flowline type	Production Line							
Depth	4-5' bgs							
Age	Spud 1984							
Length	Approx 890'							
Construction Material	Steel							
Were flowlines pulled?	Yes							
Visual Integrity of lines	fair							
Visual impacts if trenched	none observed							
PID Readings if trenched	0.0							
Sample taken? Location/Sample ID#	Y/2305236-05 & 2305236-06							
Photo Number(s)	FL1-FL3							
Other observations regarding on location flowlines: None observed								
Summary								
Was impacted soil identified? <input checked="" type="checkbox"/> No Yes - less than 10 cubic yards Yes - more than 10 cubic yards								
Total number of samples field screened: 9				Total number of samples collected: 2				
Highest PID Reading: 0.0				Total number of samples submitted to lab for analysis: 2				
If more than 10 cubic yards of impacted soil were observed: NA								
Vertical extent: NA				Estimated spill volume: NA				
Lateral extent: NA				Volume of soil removed: NA				
Is additional investigation required? NO								
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils								
Measured depth to groundwater: NA				Was remedial groundwater removal conducted? Yes <input checked="" type="checkbox"/> No				
Date Groundwater was encountered: NA				Commencement date of removal: NA				
Sheen on groundwater? Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed prior to sampling: NA				
Free product observed? Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed post sampling: NA				
Total number of samples collected: NA				Total Volume of groundwater removed: NA				
Total number of samples submitted to lab for analysis: NA								

TABLE 1
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
COLORADO ENERGY AND CARBON MANAGEMENT COMMISSION (OWP)
UPRR WAGNER 12-19 (OWP), ADAMS COUNTY, COLORADO
FREMONT PROJECT NO. C023-048

Sample ID	Sample Date	Depth (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	1,2,4-Trimethyl-Benzene (mg/kg)	1,3,5-Trimethyl-Benzene (mg/kg)	Naphthalene (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500**		
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500**		
NASTC-0.5	5/8/2023	0.5	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SASTC-0.5	5/8/2023	0.5	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
PWVC-4	5/8/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SEP-0.5	5/8/2023	0.5	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
FL9-4	5/8/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
DLS1-5	5/8/2023	5	18	260	30	370	64	34	2.5	5200	220	62
WHF-6.5	5/8/2023	6.5	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
WHS-4	5/8/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
DLSE1-4	5/8/2023	4	0.12	3.2	0.62	14	2.5	2.4	0.12	150	110	<50

Bold faced values exceed the ECOM Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

* Indicates laboratory minimum detection limit in excess of SSL

** Summation of GRO+DRO+ORO must be less than 500 mg/kg

NA - Not analyzed

TABLE 2
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
COLORADO ENERGY AND CARBON MANAGEMENT COMMISSION (OWP)
UPRR WAGNER 12-19 (OWP), ADAMS COUNTY, COLORADO
FREMONT PROJECT NO. C023-048

Sample ID	Sample Date	Depth (ft)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (a) Anthracene (mg/kg)	Benzo (a) Pyrene (mg/kg)	Benzo (b) Fluoranthene (mg/kg)	Benzo (k) Fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo (a,h) Anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3-cd) Pyrene (mg/kg)	Pyrene (mg/kg)	1-Methyl - Naphthalene (mg/kg)	2-Methyl - Naphthalene (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
NASTC-0.5	5/8/2023	0.5	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SASTC-0.5	5/8/2023	0.5	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
PWVC-4	5/8/2023	4	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SEP-0.5	5/8/2023	0.5	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FL9-4	5/8/2023	4	<0.00500	<0.00500	<0.00500	0.00718	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
DLS1-5	5/8/2023	5	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0425	<0.00500	<0.00500	0.746	0.532
WHF-6.5	5/8/2023	6.5	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
WHS-4	5/8/2023	4	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
DLSE1-4	5/8/2023	4	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0154	<0.00500	<0.00500	0.103	0.205

Bold faced values exceed the ECMC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

* Indicates laboratory minimum detection limit in excess of SSL

NA - Not analyzed

TABLE 3
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
COLORADO ENERGY AND CARBON MANAGEMENT COMMISSION (OWP)
UPRR WAGNER 12-19 (OWP), ADAMS COUNTY, COLORADO
FREMONT PROJECT NO. C023-048

Sample ID	Sample Date	Depth (ft)	pH	EC (mmhos/cm)	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			6 - 8.3	<4	<6	2
ASTC-0.5	5/8/2023	0.5	4.17	0.689	0.280	0.153
SASTC-0.5	5/8/2023	0.5	3.83	0.826	0.194	0.221
PWVC-4	5/8/2023	4	8.06	0.368	0.385	0.852
SEP-0.5	5/8/2023	0.5	6.74	0.337	0.212	0.352
FL9-4	5/8/2023	4	7.38	0.380	0.273	0.279
DLS1-5	5/8/2023	5	7.14	0.876	2.14	0.366
WHF-6.5	5/8/2023	6.5	8.13	0.268	0.180	0.288
WHS-4	5/8/2023	4	7.67	0.175	0.0312	0.238
DLSE1-4	5/8/2023	4	7.84	0.836	4.03	0.516
BKG-1	5/8/2023	1	5.86	0.381	0.165	0.301

Bold faced values exceed the ECMC Table 915-1 concentrations

Yellow highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

NA - Not analyzed

TABLE 4
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
COLORADO ENERGY AND CARBON MANAGEMENT COMMISSION (OWP)
UPRR WAGNER 12-19 (OWP), ADAMS COUNTY, COLORADO
FREMONT PROJECT NO. C023-048

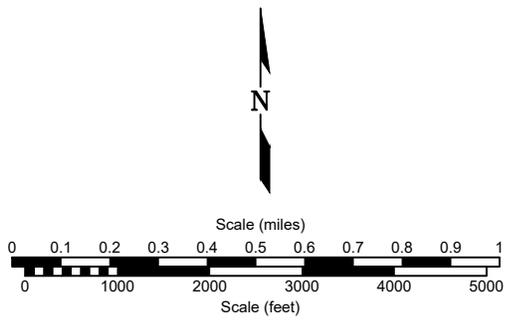
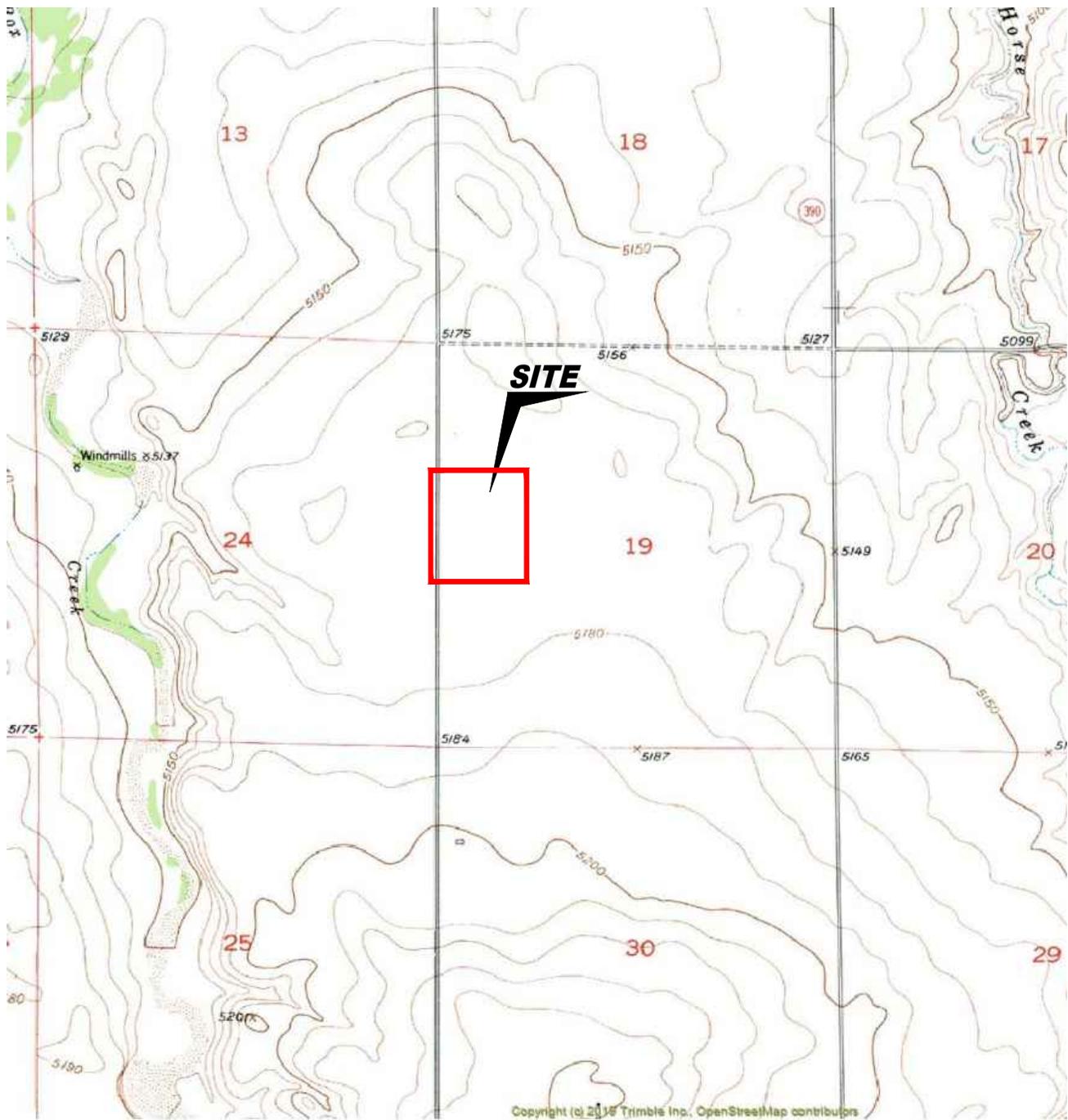
Sample ID	Sample Date	Depth (ft)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
NASTC-0.5	5/8/2023	0.5	2.14	79.0	<0.235	*<0.30	5.79	11.9	4.05	<0.260	0.0353	19.7
SASTC-0.5	5/8/2023	0.5	2.24	78.1	<0.231	*<0.30	5.92	13.0	4.25	<0.260	0.0351	19.9
PWVC-4	5/8/2023	4	4.12	302	0.346	*<0.30	7.42	12.2	7.88	<0.260	0.0549	24.1
SEP-0.5	5/8/2023	0.5	3.56	98	0.254	*<0.30	6.07	11.0	7.41	<0.260	0.0525	21.6
FL9-4	5/8/2023	4	3.37	138	0.304	*<0.30	6.26	11.5	6.91	<0.260	0.0635	20.8
DLS1-5	5/8/2023	5	3.17	153	0.263	*<0.30	6.61	11.0	6.46	<0.260	0.0451	21.9
WHF-6.5	5/8/2023	6.5	3.37	186	0.294	*<0.30	6.98	11.0	7.46	<0.260	0.0491	23.2
WHS-4	5/8/2023	4	2.77	146	0.271	*<0.30	6.65	11.1	6.7	<0.260	0.0511	23.2
DLSE1-4	5/8/2023	4	4.46	134	0.309	*<0.30	7.43	11.9	7.67	<0.260	0.0538	25.2
BKG-1	5/8/2023	1	3.66	107	0.384	*<0.30	6.87	15.8	7.1	<0.260	0.06	24.3

Bold faced values exceed the ECMC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

* Indicates laboratory minimum detection limit in excess of SSL

NA - Not analyzed



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP
Energy & Carbon Management Commission
Petroshare Corporation ~ UPRR Wagner (OWP)12-19
 SWNW Sec. 19, T1S, R64W, 6th PM
 Adams County, Colorado
 39.951662°, -104.599280%D

Project No. C023-048	API # 05-001-08361	Facility #	
Date 9/15/23	Remediation # 26162	Filename 23048TW	



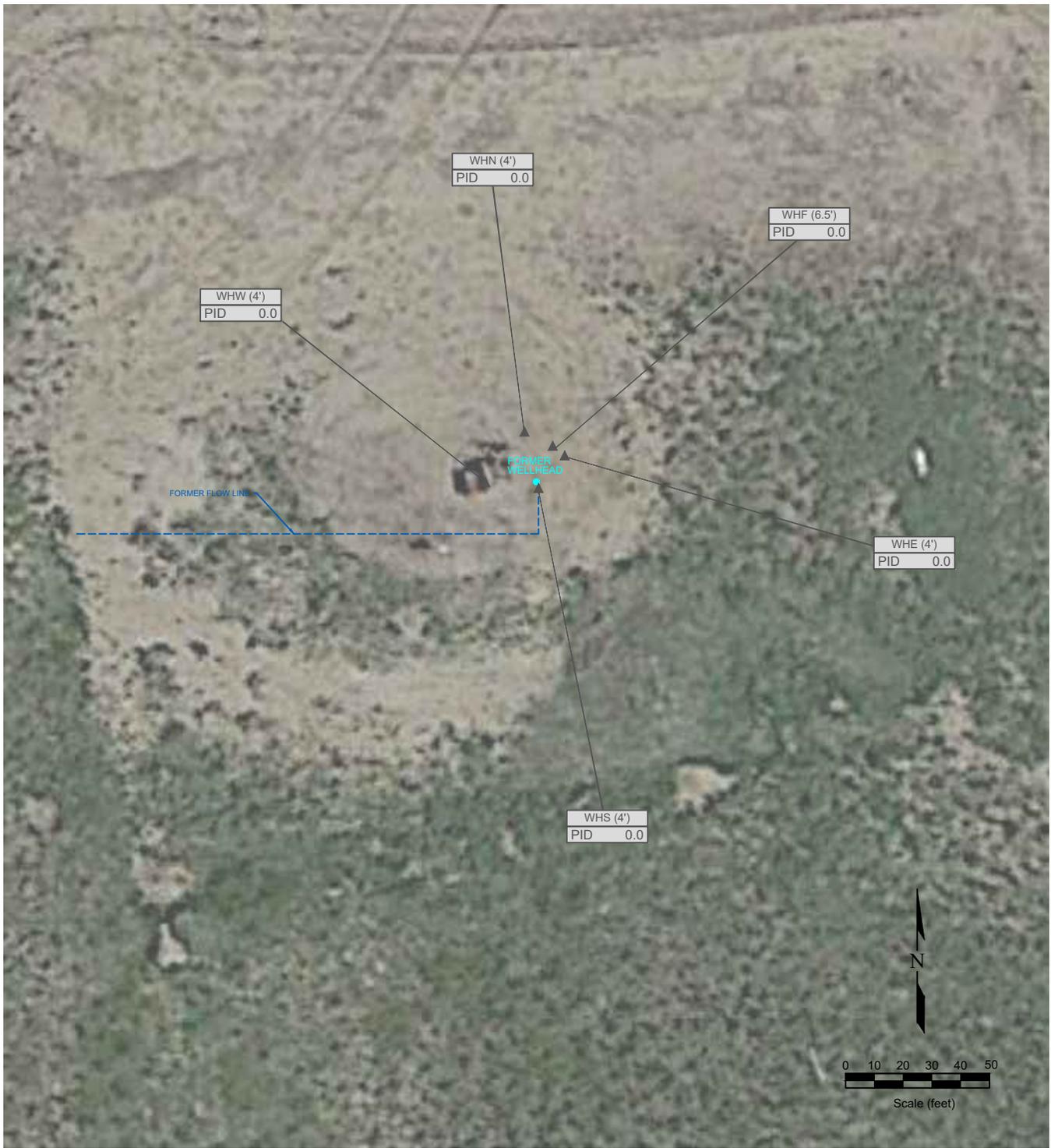
LEGEND

- WELLHEAD LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- BUILDING
- CONTAINMENT BERM
- EXTENT OF EXCAVATION
- FENCE LINE
- FORMER FLOW LINE

Figure 2
SITE MAP

Energy & Carbon Management Commission
Petroshare Corporation ~ UPRR Wagner (OWP)12-19
 SWNW Sec. 19, T1S, R64W, 6th PM
 Adams County, Colorado
 39.951662°, -104.599280%D

Project No. C023-048	API # 05-001-08361	Drawn By	
Date 9/15/23	Remediation # 26162	Filename 23048QW	



LEGEND

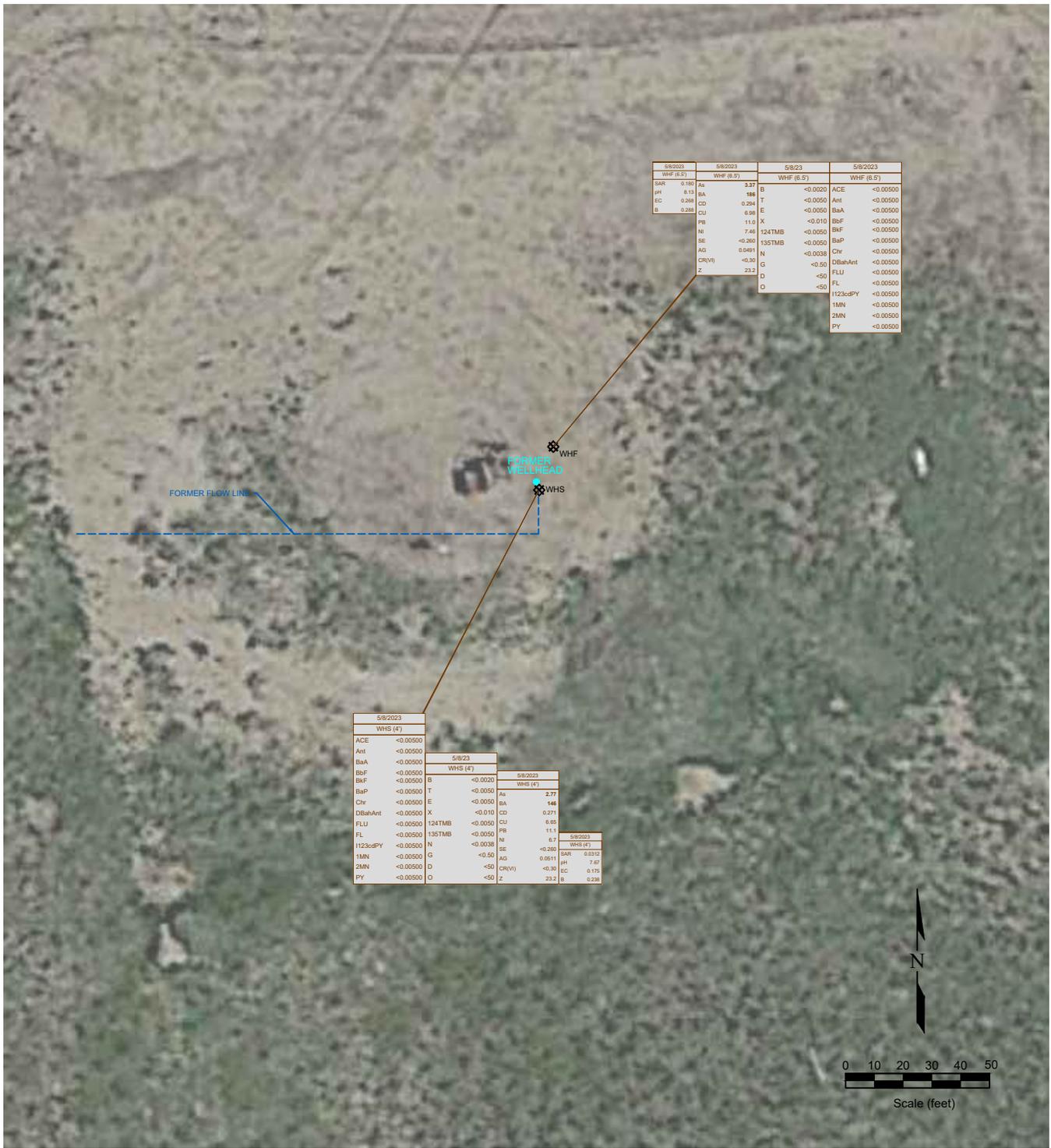
- WELLHEAD LOCATION
- ▲ PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- BUILDING BUILDING
- CONTAINMENT WALL
- EXTENT OF EXCAVATION
- FENCE LINE
- FORMER FLOW LINE
- WHN & PL (3')
PID: 0.0 SAMPLE IDENTIFICATION AND DEPTH (ft)
PHOTO IONIZATION DETECTION / PARTS PER MILLION

**Figure 3
SITE MAP**

**Energy & Carbon Management Commission
Petroshare Corporation ~ UPRR Wagner (OWP)12-19**
SWNW Sec. 19, T1S, R64W, 6th PM
Adams County, Colorado
39.951662°, -104.599280%D

Project No. C023-048	API # 05-001-08361	Drawn By
Date 9/15/23	Remediation # 26162	Filename 23048QW.WH





5/8/2023		5/8/2023		5/8/23		5/8/2023	
WHF (6.5')		WHF (6.5')		WHF (6.5')		WHF (6.5')	
SAR	0.110	Ba	3.37	B	<0.0020	ACE	<0.00500
pH	8.13	BaA	186	T	<0.0050	Ant	<0.00500
EC	0.268	CD	0.294	E	<0.0050	BaA	<0.00500
B	0.233	CU	6.65	X	<0.010	BaF	<0.00500
		FB	11.0	Ni	<0.0050	BaP	<0.00500
		Ni	7.46	124TMB	<0.0050	Chr	<0.00500
		SE	<0.260	135TMB	<0.0050	DBaAnt	<0.00500
		AG	0.0491	N	<0.0038	FLU	<0.00500
		CR(V)	<0.38	G	<0.50	FL	<0.00500
		Z	23.2	D	<50	1123cdPY	<0.00500
				O	<50	1MN	<0.00500
						2MN	<0.00500
						PY	<0.00500

5/8/2023		5/8/23		5/8/2023	
WHS (4')		WHS (4')		WHS (4')	
ACE	<0.00500	BaA	<0.00500	BaF	<0.00500
Ant	<0.00500	BaP	<0.00500	Chr	<0.00500
BaA	<0.00500	DBaAnt	<0.00500	FLU	<0.00500
BaF	<0.00500	FL	<0.00500	FLU	<0.00500
BaP	<0.00500	1123cdPY	<0.00500	1MN	<0.00500
Chr	<0.00500	1MN	<0.00500	2MN	<0.00500
DBaAnt	<0.00500	2MN	<0.00500	PY	<0.00500
FLU	<0.00500	PY	<0.00500		

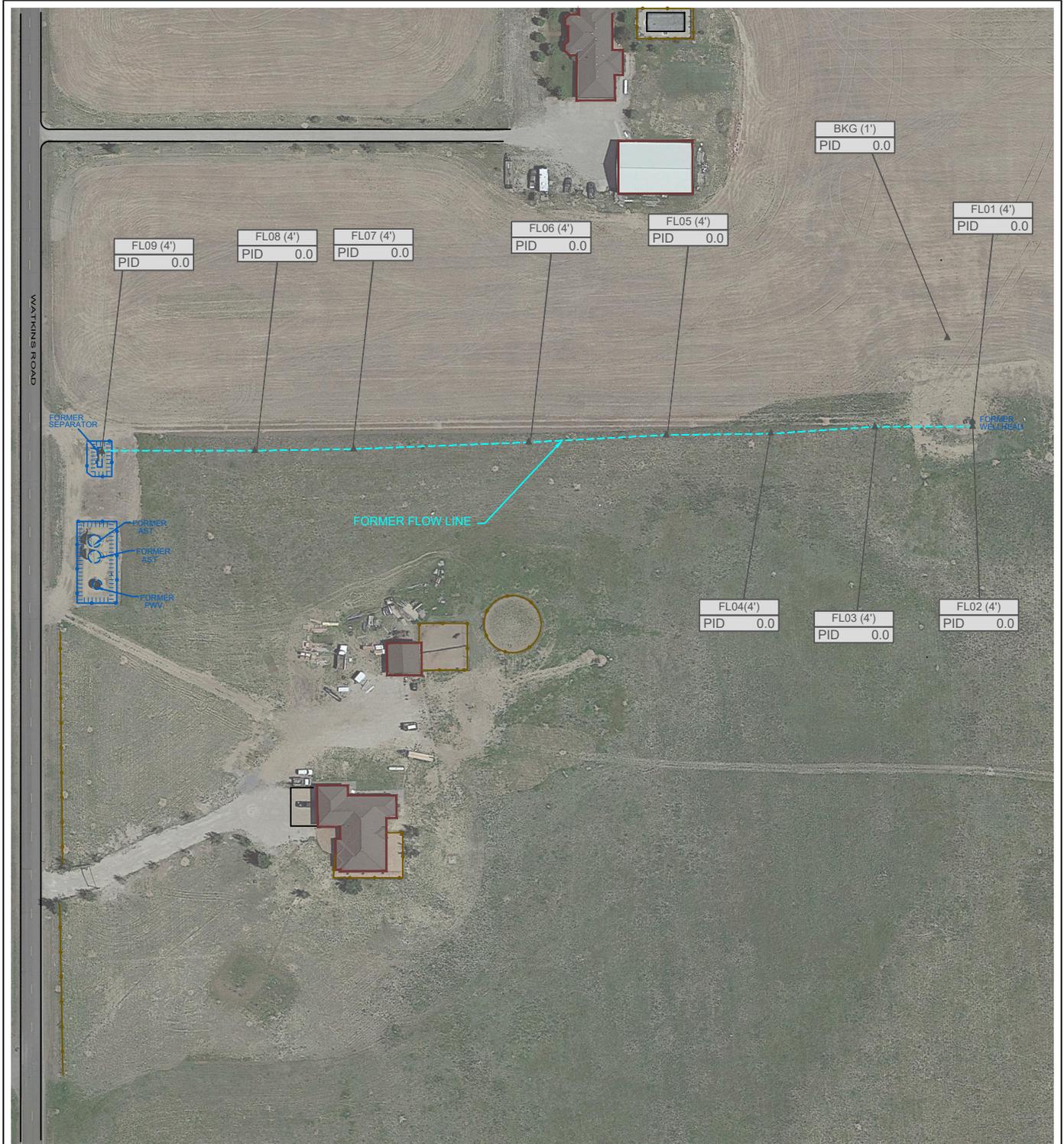
LEGEND

5/8/2023	DATE SAMPLED	5/8/23	DATE SAMPLED
WHS (4')	SAMPLE ID and DEPTH (ft)	WHS (4')	SAMPLE ID and DEPTH (ft)
ACE	<0.00500	B	<0.0020
Ant	<0.00500	T	<0.0050
BaA	<0.00500	E	<0.0050
BaF	<0.00500	124TMB	<0.0050
BaP	<0.00500	135TMB	<0.0050
Chr	<0.00500	N	<0.0038
DBaAnt	<0.00500	D	<50
FLU	<0.00500	O	<50
FL	<0.00500		
1123cdPY	<0.00500		
1MN	<0.00500		
2MN	<0.00500		
PY	<0.00500		

Figure 4
SOIL CHEMISTRY MAP

Energy & Carbon Management Commission
Petroshare Corporation ~ UPRR Wagner (OWP)12-19
SWNW Sec. 19, T1S, R64W, 6th PM
Adams County, Colorado
39.951662°, -104.599280°D

Project No. C023-048	API # 05-001-08361	Drawn By REMONTE ENVIRONMENTAL
Date 9/15/23	Remediation # 26162	Filename 23048QW.WH



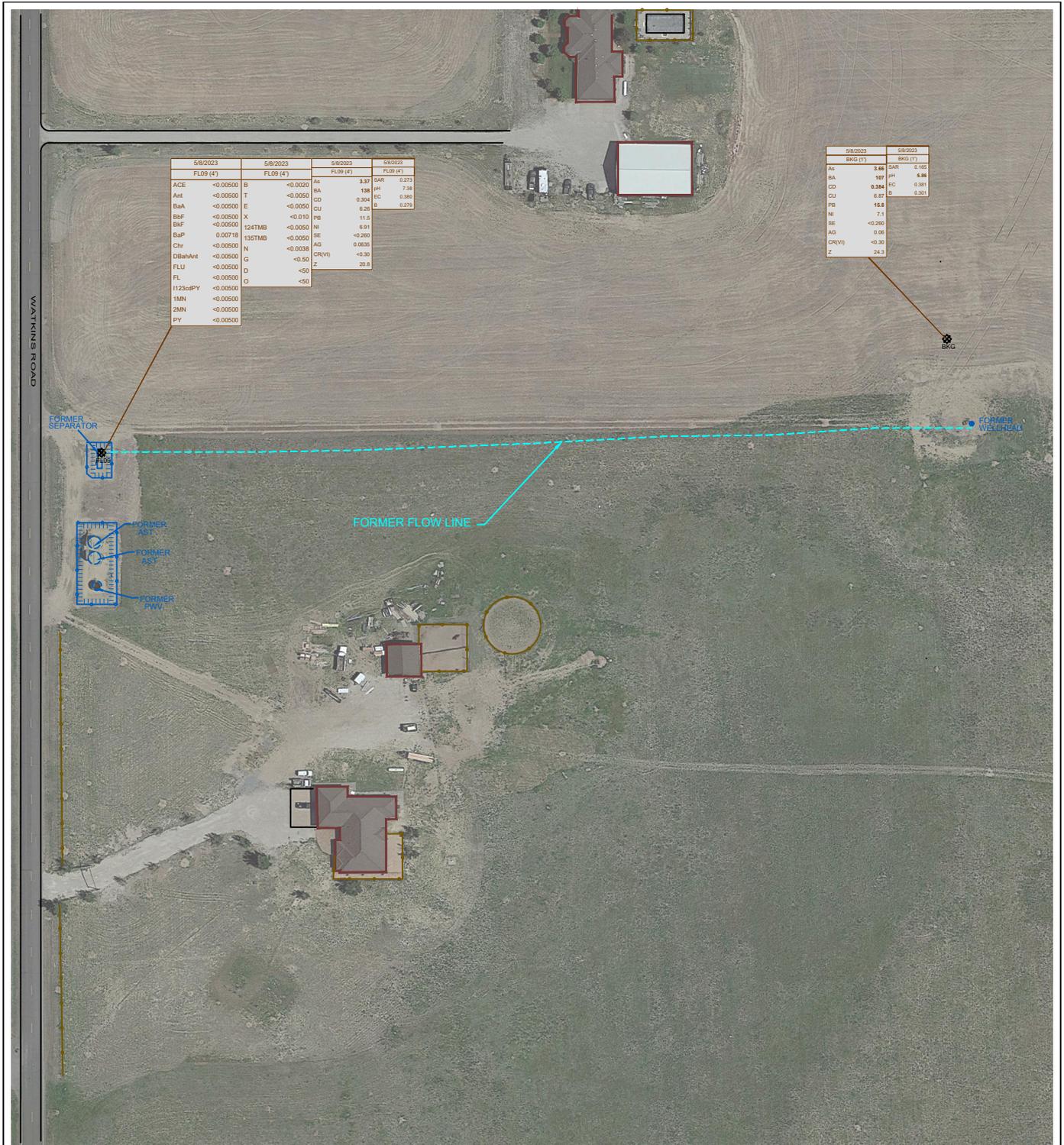
LEGEND

- WELLHEAD LOCATION
- ▲ PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- BUILDING BUILDING
- CONTAINMENT BERM
- EXTENT OF EXCAVATION
- FENCE LINE
- FORMER FLOW LINE
- W9N & FL (3') SAMPLE IDENTIFICATION AND DEPTH (ft)
PID 0.0 PHOTO IONIZATION DETECTION / PARTS PER MILLION

Figure 5
SITE MAP

Energy & Carbon Management Commission
Petroshare Corporation ~ UPRR Wagner (OWP)12-19
 SWNW Sec. 19, T1S, R64W, 6th PM
 Adams County, Colorado
 39.951662°, -104.599280%D

Project No. C023-048	API # 05-001-08361	Drawn By	
Date 9/15/23	Remediation # 26162	Filename 23048QW_FL	



5/8/2023		5/8/2023		5/8/2023		5/8/2023	
FL09 (4')		FL09 (4')		FL09 (4')		FL09 (4')	
ACE	<0.00500	B	<0.0020	As	3.37	SAR	0.273
AmI	<0.00500	T	<0.0050	BA	138	pH	7.38
BaA	<0.00500	E	<0.0050	CD	0.304	EC	0.388
BbF	<0.00500	X	<0.010	CU	6.26	B	0.279
BkF	<0.00500		<0.010	Pb	11.5		
BaP	0.00718	124TMB	<0.0050	Ni	6.91		
Ch	<0.00500	135TMB	<0.0050	SE	<0.200		
DBaAnt	<0.00500	N	<0.0038	AD	0.888		
FLU	<0.00500	G	<0.50	CR(VI)	<0.30		
FL	<0.00500	D	<50	Z	20.8		
1123cdPY	<0.00500	O	<50				
1MN	<0.00500						
2MN	<0.00500						
PY	<0.00500						

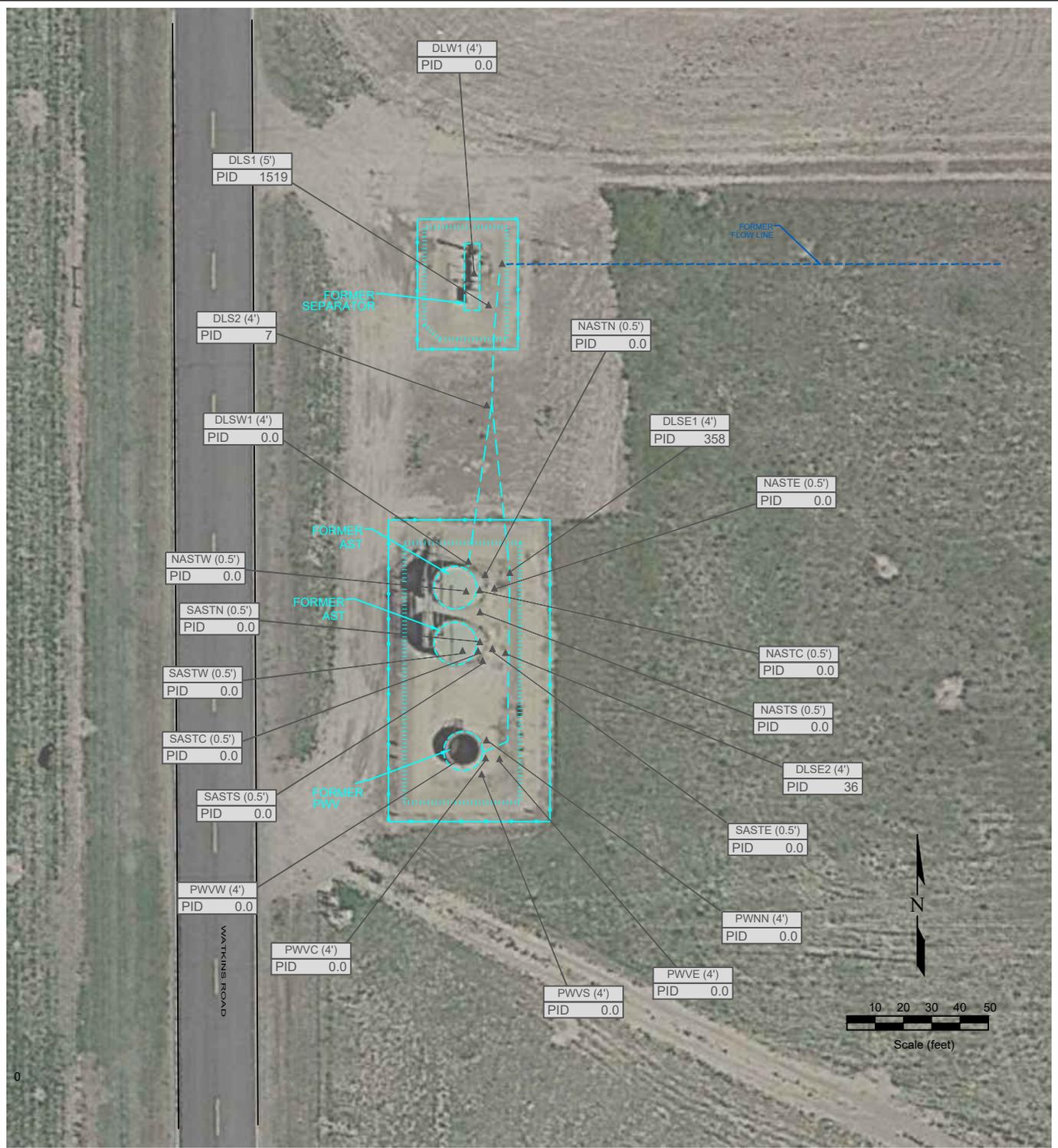
5/8/2023		5/8/2023	
BKG (1')		BKG (1')	
As	3.86	SAR	0.165
BA	167	pH	5.98
CD	0.384	EC	0.381
CU	6.97	B	0.301
Pb	16.8		
Ni	7.1		
SE	<0.200		
AD	0.08		
CR(VI)	<0.30		
Z	24.3		

LEGEND

5/8/2023	DATE SAMPLED	5/8/2023	DATE SAMPLED	5/8/2023	DATE SAMPLED
FL09 (4')	SAMPLE ID and DEPTH (ft)	FL09 (4')	SAMPLE ID and DEPTH (ft)	FL09 (4')	SAMPLE ID and DEPTH (ft)
ACE	<0.00500	B	<0.0020	As	3.37
AmI	<0.00500	T	<0.0050	BA	138
BaA	<0.00500	E	<0.0050	CD	0.304
BbF	<0.00500	X	<0.010	CU	6.26
BkF	<0.00500	124TMB	<0.0050	Pb	11.5
BaP	<0.00500	135TMB	<0.0050	Ni	6.91
Ch	<0.00500	N	<0.0038	SE	<0.200
DBaAnt	<0.00500	G	<0.50	AD	0.888
FLU	<0.00500	D	<50	CR(VI)	<0.30
FL	<0.00500	O	<50	Z	20.8
1123cdPY	<0.00500				
1MN	<0.00500				
2MN	<0.00500				
PY	<0.00500				

Figure 6
SOIL CHEMISTRY MAP
Energy & Carbon Management Commission
Petroshare Corporation ~ UPRR Wagner (OWP)12-19
SWNW Sec. 19, T1S, R64W, 6th PM
Adams County, Colorado
39.951662°, -104.599280%D

Project No. C023-048	API # 05-001-08361	Drawn By
Date 9/15/23	Remediation # 26162	Filename 23048QW_FL



LEGEND

- WELLHEAD LOCATION
- ▲ PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- FORMER BUILDING
- ▬ CONTAINMENT BERM
- ▬ EXTENT OF EXCAVATION
- ▬ FENCE LINE
- ▬ FORMER FLOW LINE
- WVW & PL (B) SAMPLE IDENTIFICATION AND DEPTH (ft)
- PID (0.0) PHOTO IONIZATION DETECTION / PARTS PER MILLION

**Figure 7
SITE MAP**

**Energy & Carbon Management Commission
Petroshare Corporation ~ UPRR Wagner (OWP)12-19
SWNW Sec. 19, T1S, R64W, 6th PM
Adams County, Colorado
39.951662°, -104.599280%D**

Project No. C023-048	API # 05-001-08361	Drawn By	
Date 9/15/23	Remediation # 26162	Filename 23048QW_TB	

WH1) Wellhead excavation, prior to C&C, no staining or failures observed- facing east



WH2) wellhead excavation with flowline rise, with concrete spillage in foreground - facing west



WH3) wellhead excavation with south wall sample location beneath flowline riser. – facing south



WH4) wellhead excavation wall with south wall sample location – facing southwest



AST1) – Tank battery signage prior to decommissioning- Facing east



AST2) ASTs prior to decommissioning vegetation growth – facing east



AST3) northern AST sample location, no signs of failure or contamination with removed tanks in background- facing southeast



AST4) Southern AST sample locations, no signs of failure or contamination with removed tanks in background – Facing southeast



SEP1) Separator pre-decommissioning – facing northeast



SEP2)- Separator sample location with AST and dump lines in the distance – facing south



Photo Documentation - Petroshare ADCO – UPRR Wagner 12-19 (OWP) – API- 05-001-08361
Remediation No. – 26162 Fremont Project No. C023-048

SEP3) Dump lines south of separator (DLS1-5) staining and odor present PID- 1519 – Facing north



PWV1) PWV excavation with sample locations, no signs of failure or contamination- facing northeast



Photo Documentation - Petroshare ADCO – UPRR Wagner 12-19 (OWP) – API- 05-001-08361
Remediation No. – 26162 Fremont Project No. C023-048

PWV2) PWV excavation with AST footprint and separator to the north, removed tanks off to the east –
facing north



FL1 – Flowline sample location (FL2-4) south of wellhead, no staining observed – facing south



FL2) Flowline trench with former facility in the distance- facing west



FL3) Flowline trench, no obvious signs of failure or contamination- facing west



Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80401

303.277.9310

May 23, 2023

Paul Henehan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Petroshare ADCO-Wagner 12-19

Work Order # 2305236

Enclosed are the results of analyses for samples received by Summit Scientific on 05/09/23 10:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NASTC-0.5	2305236-01	Soil	05/08/23 00:00	05/09/23 10:05
SASTC-0.5	2305236-02	Soil	05/08/23 00:00	05/09/23 10:05
PWVC-4	2305236-03	Soil	05/08/23 00:00	05/09/23 10:05
SEP-0.5	2305236-04	Soil	05/08/23 00:00	05/09/23 10:05
FL9-4	2305236-05	Soil	05/08/23 00:00	05/09/23 10:05
DLSI-5	2305236-06	Soil	05/08/23 00:00	05/09/23 10:05
WHF-6.5	2305236-07	Soil	05/08/23 00:00	05/09/23 10:05
WHS-4	2305236-08	Soil	05/08/23 00:00	05/09/23 10:05
DLSE1-4	2305236-09	Soil	05/08/23 00:00	05/09/23 10:05
BKG-1	2305236-10	Soil	05/08/23 00:00	05/09/23 10:05

Summit Scientific

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.

SUMMIT SCIENTIFIC

4653 Table Mountain Drive
Golden, CO 80403
303-277-9310

Lab ID	Page 1 of 1
2305236	

Client: Fremont Environmental	Send Data To: Project Manager: Paul Henehan	Send Invoice To: Company: Fremont Environmental
Address:	E-Mail: Fremont Distribution List	Project Name/Location: <i>Petroleum ADCO - WAGNER 12-19</i>
City/State/Zip:	NickL, PaulH, EthanB, @fremontenv.com	AFE#:
Phone: (720)-252-7191	Project Name: <i>Petroleum ADCO - WAGNER 12-19</i>	PO/Billing Codes:
Sampler Name: Nick	Project Number: <i>1023-008</i>	Contact: NickL and PaulH @ Fremontenv.com

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested					Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	GBETX + TMBs	TPH	PAH	915 Metals	Boron, EC, pH, SAR		TDS, Chloride, Sulfate
1	NASTC-0.5	5/8		2			X				X			X	X	X	X		
2	SASTC-0.5	↓		2			X				X			X	X	X	X		
3	PWVC-4	↓		2			X				X			X	X	X	X		
4	SEP-0.5	↓		2			X				X			X	X	X	X		
5	FL9-4	↓		2			X				X			X	X	X	X		
6	OLSI-5	↓		2			X				X			X	X	X	X		
7	WHF-6.5	5/8		2			X				X			X	X	X	X		
8	WHS-4	↓		2			X				X			X	X	X	X		
9	DLSE1-4	↓		1			X				X	X	X	X	X	X	X		
10	BK01-1	↓		1			X				X			X	X	X	X		
11																			
12																			
13																			
14																			
15																			

Relinquished by: <i>[Signature]</i>	Date/Time: <i>10:05 5/9/23</i>	Received by: <i>[Signature]</i>	Date/Time: <i>5/9/23 10:05</i>	TAT Business Days	Field DO	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
Relinquished by:	Date/Time:	Received by:	Date/Time:	2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: <i>4.0</i>	Corrected Temperature	IR gun #: <i>2</i>	HNO3 lot #:	Standard	X Field Turb.	

S₂

Sample Receipt Checklist

S2 Work Order# 2305236

Client: Fremont Client Project ID: Petro Share ADCG - Wagner 12-11

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #:

Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C) Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On ice
If custody seals are present, are they intact? ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

MM
Custodian Printed Name

5/9/23 10:05
Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

NASTC-0.5
2305236-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		137 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		98.5 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		60.3 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

NASTC-0.5
2305236-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	"
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Chrysene	ND	0.00500		"	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	"
Fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Fluorene	ND	0.00500		"	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	"
Pyrene	ND	0.00500		"	"	"	"	"	"	"
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	"
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	"

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		63.5 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		57.1 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.153	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

NASTC-0.5
2305236-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.14	0.235		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	79.0	0.471		"	"	"	"	"	"	
Cadmium	ND	0.235		"	"	"	"	"	"	
Copper	5.79	0.471		"	"	"	"	"	"	
Lead	11.9	0.235		"	"	"	"	"	"	
Nickel	4.05	0.471		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0353	0.0235		"	"	"	"	"	"	
Zinc	19.7	0.471		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	41.6	0.0589		mg/L dry	1	BGE0504	05/15/23	05/19/23	EPA 6020B	
Magnesium	13.9	0.0589		"	"	"	"	"	"	
Sodium	8.16	0.0589		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.280	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

NASTC-0.5
2305236-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	84.9			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.689	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	4.17			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

SASTC-0.5
2305236-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		138 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		97.4 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		60.7 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
 PO Box 1289
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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

SASTC-0.5
2305236-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	"
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Chrysene	ND	0.00500		"	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	"
Fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Fluorene	ND	0.00500		"	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	"
Pyrene	ND	0.00500		"	"	"	"	"	"	"
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	"
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	"

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		58.5 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		49.5 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.221	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

SASTC-0.5
2305236-02 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.24	0.231		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	78.1	0.462		"	"	"	"	"	"	
Cadmium	ND	0.231		"	"	"	"	"	"	
Copper	5.92	0.462		"	"	"	"	"	"	
Lead	13.0	0.231		"	"	"	"	"	"	
Nickel	4.25	0.462		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0351	0.0231		"	"	"	"	"	"	
Zinc	19.9	0.462		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	78.7	0.0578		mg/L dry	1	BGE0504	05/15/23	05/19/23	EPA 6020B	
Magnesium	21.1	0.0578		"	"	"	"	"	"	
Sodium	7.50	0.0578		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.194	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

SASTC-0.5
2305236-02 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	86.6			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.826	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	3.83			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

PWVC-4
2305236-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		133 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		97.3 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		61.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

PWVC-4
2305236-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		65.1 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.5 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.852	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

PWVC-4
2305236-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.12	0.247		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	302	0.494		"	"	"	"	"	"	
Cadmium	0.346	0.247		"	"	"	"	"	"	
Copper	7.42	0.494		"	"	"	"	"	"	
Lead	12.2	0.247		"	"	"	"	"	"	
Nickel	7.88	0.494		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0549	0.0247		"	"	"	"	"	"	
Zinc	24.1	0.494		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	3160	0.0618		mg/L dry	1	BGE0504	05/15/23	05/19/23	EPA 6020B	
Magnesium	82.3	0.0618		"	"	"	"	"	"	
Sodium	80.3	0.0618		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.385	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

PWVC-4
2305236-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	80.9			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.368	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	8.06			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

Summit Scientific

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

SEP-0.5
2305236-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		140 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		76.7 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

SEP-0.5
2305236-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		51.0 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		47.3 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.352	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

SEP-0.5
2305236-04 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.56	0.245		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	98.0	0.491		"	"	"	"	"	"	
Cadmium	0.254	0.245		"	"	"	"	"	"	
Copper	6.07	0.491		"	"	"	"	"	"	
Lead	11.0	0.245		"	"	"	"	"	"	
Nickel	7.41	0.491		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0525	0.0245		"	"	"	"	"	"	
Zinc	21.6	0.491		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	39.7	0.0614		mg/L dry	1	BGE0504	05/15/23	05/19/23	EPA 6020B	
Magnesium	8.99	0.0614		"	"	"	"	"	"	
Sodium	5.69	0.0614		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.212	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

SEP-0.5
2305236-04 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	81.5			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.337	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.74			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

FL9-4
2305236-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		133 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		96.8 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		83.8 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

FL9-4
2305236-05 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) pyrene	0.00718	0.00500		"	"	"	"	"	"	"
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Chrysene	ND	0.00500		"	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	"
Fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Fluorene	ND	0.00500		"	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	"
Pyrene	ND	0.00500		"	"	"	"	"	"	"
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	"
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	"

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		62.4 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		58.4 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.279	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

FL9-4
2305236-05 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.37	0.230		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	138	0.460		"	"	"	"	"	"	
Cadmium	0.304	0.230		"	"	"	"	"	"	
Copper	6.26	0.460		"	"	"	"	"	"	
Lead	11.5	0.230		"	"	"	"	"	"	
Nickel	6.91	0.460		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0635	0.0230		"	"	"	"	"	"	
Zinc	20.8	0.460		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	46.6	0.0575		mg/L dry	1	BGE0504	05/15/23	05/19/23	EPA 6020B	
Magnesium	15.4	0.0575		"	"	"	"	"	"	
Sodium	8.41	0.0575		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.273	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

FL9-4
2305236-05 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	87.0			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.380	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.38			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

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05/23/23 11:25

DLSI-5
2305236-06 (Soil)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	18	0.20		mg/kg	100	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	260	0.50		"	"	"	"	"	"	E
Ethylbenzene	30	0.50		"	"	"	"	"	"	
Xylenes (total)	370	1.0		"	"	"	"	"	"	E
1,2,4-Trimethylbenzene	64	0.50		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	34	0.50		"	"	"	"	"	"	
Naphthalene	2.5	0.38		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	5200	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		119 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		164 %		50-150		"	"	"	"	S-02
Surrogate: 4-Bromofluorobenzene		146 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	220	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	62	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		81.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Reported:
05/23/23 11:25

DLSI-5
2305236-06 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	0.0425	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	0.746	0.00500		"	"	"	"	"	"	E
2-Methylnaphthalene	0.532	0.00500		"	"	"	"	"	"	E

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		119 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		57.2 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.366	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

DLSI-5
2305236-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.17	0.240		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	153	0.480		"	"	"	"	"	"	
Cadmium	0.263	0.240		"	"	"	"	"	"	
Copper	6.61	0.480		"	"	"	"	"	"	
Lead	11.0	0.240		"	"	"	"	"	"	
Nickel	6.46	0.480		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0451	0.0240		"	"	"	"	"	"	
Zinc	21.9	0.480		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	59.0	0.0600		mg/L dry	1	BGE0504	05/15/23	05/19/23	EPA 6020B	
Magnesium	23.2	0.0600		"	"	"	"	"	"	
Sodium	76.5	0.0600		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.14	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

DLSI-5
2305236-06 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	83.3			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.876	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.14			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

WHF-6.5
2305236-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		111 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		99.9 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		88.2 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Fremont Environmental
PO Box 1289
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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

WHF-6.5
2305236-07 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		50.9 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		46.2 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.288	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

WHF-6.5
2305236-07 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.37	0.246		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	186	0.491		"	"	"	"	"	"	
Cadmium	0.294	0.246		"	"	"	"	"	"	
Copper	6.98	0.491		"	"	"	"	"	"	
Lead	11.0	0.246		"	"	"	"	"	"	
Nickel	7.46	0.491		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0491	0.0246		"	"	"	"	"	"	
Zinc	23.2	0.491		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	123	0.0614		mg/L dry	1	BGE0504	05/15/23	05/19/23	EPA 6020B	
Magnesium	10.5	0.0614		"	"	"	"	"	"	
Sodium	7.75	0.0614		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.180	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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WHF-6.5
2305236-07 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	81.4			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.268	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	8.13			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

WHS-4
2305236-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		111 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		99.8 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		83.9 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

WHS-4
2305236-08 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		60.0 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		59.1 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.238	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

WHS-4
2305236-08 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.77	0.239		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	146	0.478		"	"	"	"	"	"	
Cadmium	0.271	0.239		"	"	"	"	"	"	
Copper	6.65	0.478		"	"	"	"	"	"	
Lead	11.1	0.239		"	"	"	"	"	"	
Nickel	6.70	0.478		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0511	0.0239		"	"	"	"	"	"	
Zinc	23.2	0.478		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	61.7	0.0597		mg/L dry	1	BGE0504	05/15/23	05/20/23	EPA 6020B	
Magnesium	11.7	0.0597		"	"	"	"	"	"	
Sodium	1.02	0.0597		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0312	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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WHS-4
2305236-08 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	83.8			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.175	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.67			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

DLSE1-4
2305236-09 (Soil)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	0.12	0.020		mg/kg	10	BGE0361	05/11/23	05/12/23	EPA 8260B	
Toluene	3.2	0.050		"	"	"	"	"	"	
Ethylbenzene	0.62	0.050		"	"	"	"	"	"	
Xylenes (total)	14	0.10		"	"	"	"	"	"	E
1,2,4-Trimethylbenzene	2.5	0.050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	2.4	0.050		"	"	"	"	"	"	
Naphthalene	0.12	0.038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	150	5.0		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		114 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		147 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		121 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	110	50		mg/kg	1	BGE0365	05/11/23	05/12/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		84.0 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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05/23/23 11:25

DLSE1-4
2305236-09 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGE0414	05/12/23	05/13/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	0.0154	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	0.103	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	0.205	0.00500		"	"	"	"	"	"	E

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		71.8 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		58.1 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.516	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

DLSE1-4
2305236-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.46	0.228		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	134	0.456		"	"	"	"	"	"	
Cadmium	0.309	0.228		"	"	"	"	"	"	
Copper	7.43	0.456		"	"	"	"	"	"	
Lead	11.9	0.228		"	"	"	"	"	"	
Nickel	7.67	0.456		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0538	0.0228		"	"	"	"	"	"	
Zinc	25.2	0.456		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	39.7	0.0570		mg/L dry	1	BGE0504	05/15/23	05/20/23	EPA 6020B	
Magnesium	16.1	0.0570		"	"	"	"	"	"	
Sodium	119	0.0570		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.03	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

DLSE1-4
2305236-09 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	87.7			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.836	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.84			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

BKG-1
2305236-10 (Soil)

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Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.301	0.0100		mg/L	1	BGE0564	05/16/23	05/20/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Arsenic	3.66	0.236		mg/kg dry	1	BGE0543	05/16/23	05/19/23	EPA 6020B	
Barium	107	0.473		"	"	"	"	"	"	
Cadmium	0.384	0.236		"	"	"	"	"	"	
Copper	6.87	0.473		"	"	"	"	"	"	
Lead	15.8	0.236		"	"	"	"	"	"	
Nickel	7.10	0.473		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0600	0.0236		"	"	"	"	"	"	
Zinc	24.3	0.473		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0559	05/16/23	05/16/23	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Calcium	446	0.0591		mg/L dry	1	BGE0504	05/15/23	05/20/23	EPA 6020B	
Magnesium	155	0.0591		"	"	"	"	"	"	
Sodium	15.9	0.0591		"	"	"	"	"	"	

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Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

BKG-1
2305236-10 (Soil)

Summit Scientific

Calculated Analysis

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.165	0.00100		units	1	BGE0730	05/21/23	05/21/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.6			%	1	BGE0514	05/15/23	05/15/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.381	0.0100		mmhos/cm	1	BGE0548	05/16/23	05/16/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **05/08/23 00:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	5.86			pH Units	1	BGE0549	05/16/23	05/16/23	EPA 9045D	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BGE0361 - EPA 5030 Soil MS

Blank (BGE0361-BLK1)

Prepared: 05/11/23 Analyzed: 05/12/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0506		"	0.0400		127	50-150			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.5	50-150			
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400		104	50-150			

LCS (BGE0361-BS1)

Prepared: 05/11/23 Analyzed: 05/12/23

Benzene	0.0727	0.0020	mg/kg	0.100		72.7	70-130			
Toluene	0.0870	0.0050	"	0.100		87.0	70-130			
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130			
m,p-Xylene	0.213	0.010	"	0.200		106	70-130			
o-Xylene	0.0981	0.0050	"	0.100		98.1	70-130			
1,2,4-Trimethylbenzene	0.116	0.0050	"	0.100		116	70-130			
1,3,5-Trimethylbenzene	0.118	0.0050	"	0.100		118	70-130			
Naphthalene	0.102	0.0038	"	0.100		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0426		"	0.0400		106	50-150			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.4	50-150			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.2	50-150			

Matrix Spike (BGE0361-MS1)

Source: 2305233-01

Prepared: 05/11/23 Analyzed: 05/12/23

Benzene	0.0728	0.0020	mg/kg	0.100	ND	72.8	70-130			
Toluene	0.0857	0.0050	"	0.100	ND	85.7	70-130			
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130			
m,p-Xylene	0.208	0.010	"	0.200	ND	104	70-130			
o-Xylene	0.0992	0.0050	"	0.100	ND	99.2	70-130			
1,2,4-Trimethylbenzene	0.113	0.0050	"	0.100	ND	113	70-130			
1,3,5-Trimethylbenzene	0.117	0.0050	"	0.100	ND	117	70-130			
Naphthalene	0.103	0.0038	"	0.100	ND	103	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0400		106	50-150			
Surrogate: Toluene-d8	0.0380		"	0.0400		95.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		97.9	50-150			

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD		

Batch BGE0361 - EPA 5030 Soil MS

Matrix Spike Dup (BGE0361-MSD1)	Source: 2305233-01			Prepared: 05/11/23 Analyzed: 05/12/23						
Benzene	0.0729	0.0020	mg/kg	0.100	ND	72.9	70-130	0.124	30	
Toluene	0.0885	0.0050	"	0.100	ND	88.5	70-130	3.24	30	
Ethylbenzene	0.104	0.0050	"	0.100	ND	104	70-130	1.01	30	
m,p-Xylene	0.214	0.010	"	0.200	ND	107	70-130	2.52	30	
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130	2.04	30	
1,2,4-Trimethylbenzene	0.116	0.0050	"	0.100	ND	116	70-130	2.58	30	
1,3,5-Trimethylbenzene	0.119	0.0050	"	0.100	ND	119	70-130	2.19	30	
Naphthalene	0.112	0.0038	"	0.100	ND	112	70-130	8.44	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0448</i>		<i>"</i>	<i>0.0400</i>		<i>112</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0378</i>		<i>"</i>	<i>0.0400</i>		<i>94.6</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.5</i>	<i>50-150</i>			

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch BGE0365 - EPA 3550A

Blank (BGE0365-BLK1)

Prepared & Analyzed: 05/11/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	10.7		"	12.5		85.9		30-150			

LCS (BGE0365-BS1)

Prepared & Analyzed: 05/11/23

C10-C28 (DRO)	581	50	mg/kg	500		116		70-130			
Surrogate: <i>o</i> -Terphenyl	10.5		"	12.5		83.8		30-150			

Matrix Spike (BGE0365-MS1)

Source: 2305233-01

Prepared & Analyzed: 05/11/23

C10-C28 (DRO)	569	50	mg/kg	500	23.4	109		70-130			
Surrogate: <i>o</i> -Terphenyl	10.6		"	12.5		84.8		30-150			

Matrix Spike Dup (BGE0365-MSD1)

Source: 2305233-01

Prepared: 05/11/23 Analyzed: 05/12/23

C10-C28 (DRO)	582	50	mg/kg	500	23.4	112		70-130	2.34	20	
Surrogate: <i>o</i> -Terphenyl	9.45		"	12.5		75.6		30-150			

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BGE0414 - EPA 5030 Soil MS

Blank (BGE0414-BLK1)

Prepared: 05/12/23 Analyzed: 05/13/23

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0251</i>		"	<i>0.0333</i>		<i>75.2</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0291</i>		"	<i>0.0333</i>		<i>87.4</i>	<i>40-150</i>			

LCS (BGE0414-BS1)

Prepared: 05/12/23 Analyzed: 05/13/23

Acenaphthene	0.0288	0.00500	mg/kg	0.0333		86.3	31-137			
Anthracene	0.0295	0.00500	"	0.0333		88.4	30-120			
Benzo (a) anthracene	0.0313	0.00500	"	0.0333		93.8	30-120			
Benzo (a) pyrene	0.0297	0.00500	"	0.0333		89.1	30-120			
Benzo (b) fluoranthene	0.0317	0.00500	"	0.0333		95.2	30-120			
Benzo (k) fluoranthene	0.0292	0.00500	"	0.0333		87.7	30-120			
Chrysene	0.0285	0.00500	"	0.0333		85.5	30-120			
Dibenz (a,h) anthracene	0.0166	0.00500	"	0.0333		49.9	30-120			
Fluoranthene	0.0302	0.00500	"	0.0333		90.7	30-120			
Fluorene	0.0281	0.00500	"	0.0333		84.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0173	0.00500	"	0.0333		51.9	30-120			
Pyrene	0.0284	0.00500	"	0.0333		85.3	35-142			
1-Methylnaphthalene	0.0295	0.00500	"	0.0333		88.5	35-142			
2-Methylnaphthalene	0.0330	0.00500	"	0.0333		98.9	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0314</i>		"	<i>0.0333</i>		<i>94.1</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0318</i>		"	<i>0.0333</i>		<i>95.5</i>	<i>40-150</i>			

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Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BGE0414 - EPA 5030 Soil MS

Matrix Spike (BGE0414-MS1)	Source: 2305233-01			Prepared: 05/12/23 Analyzed: 05/13/23						
Acenaphthene	0.0194	0.00500	mg/kg	0.0333	ND	58.3	31-137			
Anthracene	0.0206	0.00500	"	0.0333	ND	61.8	30-120			
Benzo (a) anthracene	0.0239	0.00500	"	0.0333	0.00246	64.3	30-120			
Benzo (a) pyrene	0.0238	0.00500	"	0.0333	ND	71.5	30-120			
Benzo (b) fluoranthene	0.0246	0.00500	"	0.0333	ND	73.8	30-120			
Benzo (k) fluoranthene	0.0203	0.00500	"	0.0333	ND	60.8	30-120			
Chrysene	0.0197	0.00500	"	0.0333	ND	59.2	30-120			
Dibenz (a,h) anthracene	0.0142	0.00500	"	0.0333	ND	42.5	30-120			
Fluoranthene	0.0205	0.00500	"	0.0333	ND	61.4	30-120			
Fluorene	0.0204	0.00500	"	0.0333	ND	61.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0156	0.00500	"	0.0333	ND	46.9	30-120			
Pyrene	0.0209	0.00500	"	0.0333	ND	62.8	35-142			
1-Methylnaphthalene	0.0201	0.00500	"	0.0333	ND	60.2	15-130			
2-Methylnaphthalene	0.0204	0.00500	"	0.0333	ND	61.2	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0207</i>		<i>"</i>	<i>0.0333</i>		<i>62.1</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0230</i>		<i>"</i>	<i>0.0333</i>		<i>69.0</i>	<i>40-150</i>			

Matrix Spike Dup (BGE0414-MSD1)	Source: 2305233-01			Prepared: 05/12/23 Analyzed: 05/13/23						
Acenaphthene	0.0172	0.00500	mg/kg	0.0333	ND	51.6	31-137	12.2	30	
Anthracene	0.0178	0.00500	"	0.0333	ND	53.5	30-120	14.3	30	
Benzo (a) anthracene	0.0208	0.00500	"	0.0333	0.00246	55.0	30-120	13.8	30	
Benzo (a) pyrene	0.0220	0.00500	"	0.0333	ND	66.1	30-120	7.86	30	
Benzo (b) fluoranthene	0.0223	0.00500	"	0.0333	ND	66.9	30-120	9.71	30	
Benzo (k) fluoranthene	0.0175	0.00500	"	0.0333	ND	52.5	30-120	14.7	30	
Chrysene	0.0168	0.00500	"	0.0333	ND	50.4	30-120	16.2	30	
Dibenz (a,h) anthracene	0.0142	0.00500	"	0.0333	ND	42.5	30-120	0.0164	30	
Fluoranthene	0.0181	0.00500	"	0.0333	ND	54.2	30-120	12.5	30	
Fluorene	0.0176	0.00500	"	0.0333	ND	52.8	30-120	14.7	30	
Indeno (1,2,3-cd) pyrene	0.0159	0.00500	"	0.0333	ND	47.7	30-120	1.52	30	
Pyrene	0.0181	0.00500	"	0.0333	ND	54.2	35-142	14.7	30	
1-Methylnaphthalene	0.0172	0.00500	"	0.0333	ND	51.5	15-130	15.6	50	
2-Methylnaphthalene	0.0170	0.00500	"	0.0333	ND	50.9	15-130	18.3	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0182</i>		<i>"</i>	<i>0.0333</i>		<i>54.7</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0203</i>		<i>"</i>	<i>0.0333</i>		<i>60.9</i>	<i>40-150</i>			

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch BGE0564 - EPA 3050B

Blank (BGE0564-BLK1)

Prepared: 05/16/23 Analyzed: 05/20/23

Boron ND 0.0100 mg/L

LCS (BGE0564-BS1)

Prepared: 05/16/23 Analyzed: 05/20/23

Boron 5.67 0.0100 mg/L 5.00 113 80-120

Duplicate (BGE0564-DUP1)

Source: 2305236-01

Prepared: 05/16/23 Analyzed: 05/20/23

Boron 0.142 0.0100 mg/L 0.153 7.74 20

Matrix Spike (BGE0564-MS1)

Source: 2305236-01

Prepared: 05/16/23 Analyzed: 05/20/23

Boron 5.41 0.0100 mg/L 5.00 0.153 105 75-125

Matrix Spike Dup (BGE0564-MSD1)

Source: 2305236-01

Prepared: 05/16/23 Analyzed: 05/20/23

Boron 6.09 0.0100 mg/L 5.00 0.153 119 75-125 11.8 25

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Total Metals by EPA 6020B - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch BGE0543 - EPA 3050B

Blank (BGE0543-BLK1)

Prepared: 05/16/23 Analyzed: 05/19/23

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

LCS (BGE0543-BS1)

Prepared: 05/16/23 Analyzed: 05/20/23

Arsenic	45.0	0.200	mg/kg wet	40.0		112	80-120			
Barium	41.8	0.400	"	40.0		104	80-120			
Cadmium	2.17	0.200	"	2.00		109	80-120			
Copper	34.1	0.400	"	40.0		85.4	80-120			
Lead	21.1	0.200	"	20.0		105	80-120			
Nickel	40.3	0.400	"	40.0		101	80-120			
Selenium	4.61	0.260	"	4.00		115	80-120			
Silver	2.02	0.0200	"	2.00		101	80-120			
Zinc	38.0	0.400	"	40.0		95.0	80-120			

Duplicate (BGE0543-DUP1)

Source: 2305193-01

Prepared: 05/16/23 Analyzed: 05/19/23

Arsenic	0.707	0.208	mg/kg dry	0.617		13.7	20			
Barium	36.7	0.415	"	31.3		15.8	20			
Cadmium	0.0523	0.208	"	0.0420		22.0	20			QR-03
Copper	1.99	0.415	"	1.69		16.5	20			
Lead	2.69	0.208	"	2.54		5.73	20			
Nickel	2.00	0.415	"	1.70		16.1	20			
Selenium	ND	0.260	"	ND			20			
Silver	0.00665	0.0208	"	0.00498		28.6	20			QR-03
Zinc	9.08	0.415	"	7.82		14.8	20			

Summit Scientific

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Total Metals by EPA 6020B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

Batch BGE0543 - EPA 3050B

Matrix Spike (BGE0543-MS1)

Source: 2305193-01

Prepared: 05/16/23 Analyzed: 05/20/23

Arsenic	45.0	0.208	mg/kg dry	41.5	0.617	107	75-125			
Barium	90.8	0.415	"	41.5	31.3	143	75-125			QM-07
Cadmium	2.07	0.208	"	2.08	0.0420	97.8	75-125			
Copper	30.2	0.415	"	41.5	1.69	68.7	75-125			QM-07
Lead	23.9	0.208	"	20.8	2.54	103	75-125			
Nickel	30.6	0.415	"	41.5	1.70	69.6	75-125			QM-07
Selenium	5.32	0.260	"	4.15	ND	128	75-125			QM-07
Silver	1.97	0.0208	"	2.08	0.00498	94.5	75-125			
Zinc	38.7	0.415	"	41.5	7.82	74.3	75-125			QM-07

Matrix Spike Dup (BGE0543-MSD1)

Source: 2305193-01

Prepared: 05/16/23 Analyzed: 05/20/23

Arsenic	44.9	0.208	mg/kg dry	41.5	0.617	107	75-125	0.186	25	
Barium	98.3	0.415	"	41.5	31.3	161	75-125	8.00	25	QM-07
Cadmium	2.22	0.208	"	2.08	0.0420	105	75-125	6.90	25	
Copper	30.6	0.415	"	41.5	1.69	69.7	75-125	1.35	25	QM-07
Lead	25.2	0.208	"	20.8	2.54	109	75-125	5.25	25	
Nickel	31.0	0.415	"	41.5	1.70	70.6	75-125	1.34	25	QM-07
Selenium	5.52	0.260	"	4.15	ND	133	75-125	3.66	25	QM-07
Silver	2.05	0.0208	"	2.08	0.00498	98.5	75-125	4.22	25	
Zinc	38.0	0.415	"	41.5	7.82	72.7	75-125	1.64	25	QM-07

Summit Scientific

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 Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BGE0559 - 3060A Mod

Blank (BGE0559-BLK1)

Prepared & Analyzed: 05/16/23

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BGE0559-BS1)

Prepared & Analyzed: 05/16/23

Chromium, Hexavalent 22.4 0.30 mg/kg wet 25.0 89.4 80-120

Duplicate (BGE0559-DUP1)

Source: 2305236-01

Prepared & Analyzed: 05/16/23

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BGE0559-MS1)

Source: 2305236-01

Prepared & Analyzed: 05/16/23

Chromium, Hexavalent 24.0 0.30 mg/kg dry 29.4 ND 81.4 75-125

Matrix Spike Dup (BGE0559-MSD1)

Source: 2305236-01

Prepared & Analyzed: 05/16/23

Chromium, Hexavalent 24.1 0.30 mg/kg dry 29.4 ND 81.8 75-125 0.490 20

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch BGE0504 - General Preparation

Blank (BGE0504-BLK1)

Prepared: 05/15/23 Analyzed: 05/19/23

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

LCS (BGE0504-BS1)

Prepared: 05/15/23 Analyzed: 05/19/23

Calcium	4.93	0.0500	mg/L wet	5.00	98.6	70-130
Magnesium	5.14	0.0500	"	5.00	103	70-130
Sodium	5.26	0.0500	"	5.00	105	70-130

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike	Source		%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

Batch BGE0514 - General Preparation

Duplicate (BGE0514-DUP1)		Source: 2305233-01			Prepared & Analyzed: 05/15/23					
% Solids	93.3		%		93.8			0.532	20	

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Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch BGE0548 - General Preparation

Blank (BGE0548-BLK1)

Prepared & Analyzed: 05/16/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGE0548-BS1)

Prepared & Analyzed: 05/16/23

Specific Conductance (EC) 0.150 0.0100 mmhos/cm 0.150 100 95-105

Duplicate (BGE0548-DUP1)

Source: 2305228-01

Prepared & Analyzed: 05/16/23

Specific Conductance (EC) 0.543 0.0100 mmhos/cm 0.546 0.404 20

Summit Scientific

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 Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
 Project Manager: Paul Henehan

Reported:
 05/23/23 11:25

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BGE0549 - General Preparation

LCS (BGE0549-BS1)

Prepared & Analyzed: 05/16/23

pH 9.00 pH Units 9.18 98.0 95-105

Duplicate (BGE0549-DUP1)

Source: 2305228-01

Prepared & Analyzed: 05/16/23

pH 7.36 pH Units 7.51 2.02 20

Summit Scientific

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PO Box 1289
Wellington CO, 80549

Project: Petroshare ADCO-Wagner 12-19

Project Number: CO23-048
Project Manager: Paul Henehan

Reported:
05/23/23 11:25

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference