



Facility Closure Investigation and Environmental Summary

HSR-Bott 3-23 Wellhead

ECMC Remediation Project #39039

Weld County, Colorado

Attachments:

Figure 1 – General Location Map

Figure 2 – Wellhead Soil Sample and Field Screening Locations

Table 1 – Soil Sample and Field Screening Location Information

Table 2 – Soil Analytical Results Summary Table – Volatile Organics

Table 3 – Soil Analytical Results Summary Table – PAHs

Table 4 – Soil Analytical Results Summary Table – Soil Suitability

Table 5 – Soil Analytical Results Summary Table – Metals

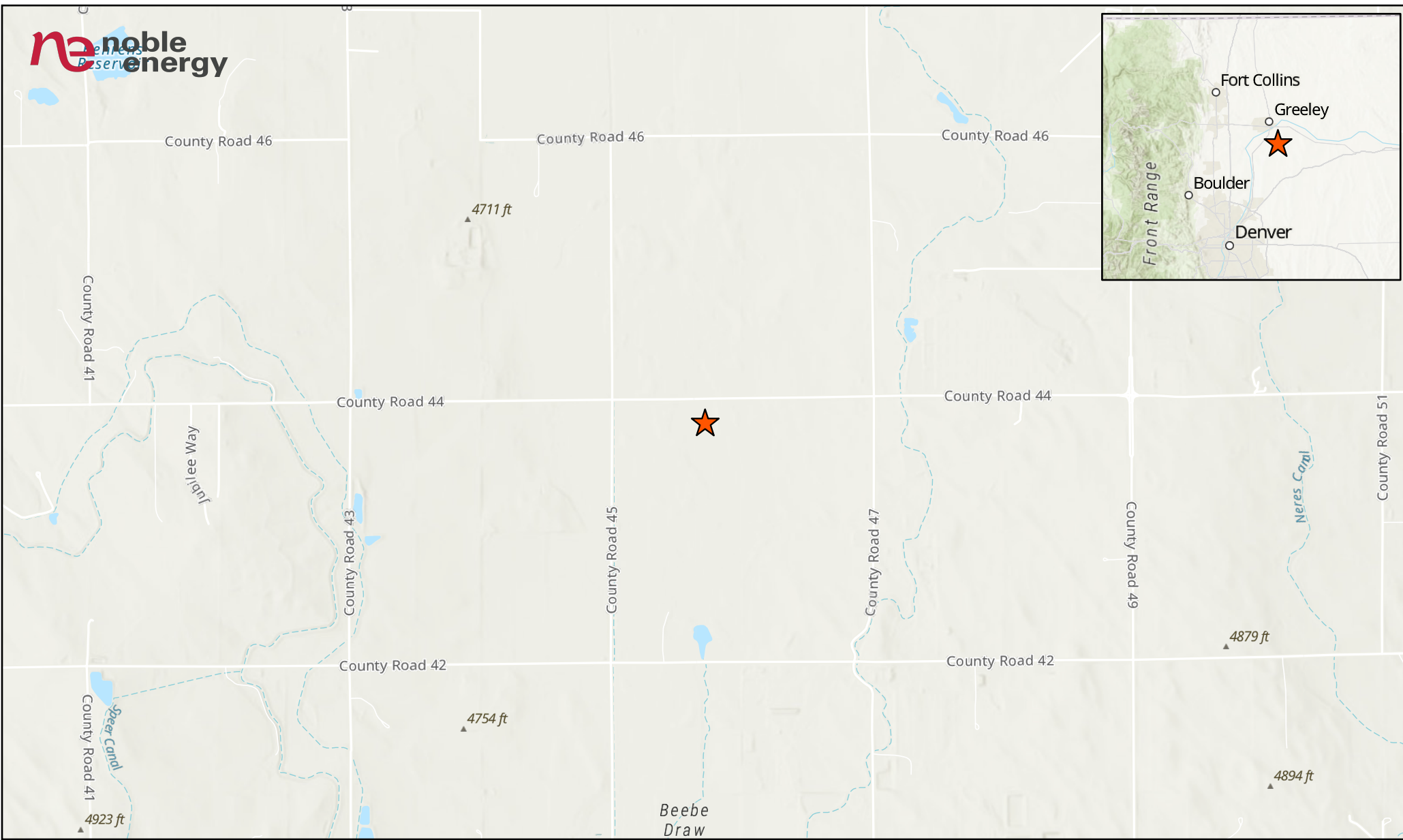
Table 6 – Groundwater Analytical Results Summary Table – Organics

Table 7 – Groundwater Analytical Results Summary Table – Inorganics

Attachment A: Photographic Log

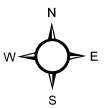
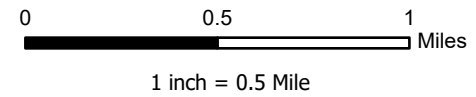
Attachment B: Facility Closure Checklists

FIGURES



LEGEND

 Site Location



Project No: 025-177

Map By: JW

Date: 05/13/2025

**HSR-BOTT 3-23 WELLHEAD
 GENERAL LOCATION MAP**
 NOBLE ENERGY
 NE 1/4 NW 1/4 SECTION 23
 T4N R65W, 6TH PM
 WELD COUNTY, COLORADO



610 Garrison St., Unit T
 Lakewood, CO 80215
 303.378.4036

Figure

1

GW01	
3/19/2025	
Chloride Ion (mg/L):	608
Sulfate Ion (mg/L):	1,610
TDS (mg/L):	3,600

WH01@6	
3/19/2025	
pH:	8.57
SAR:	10.1
Arsenic (mg/kg):	2.96
Barium (mg/kg):	86.2

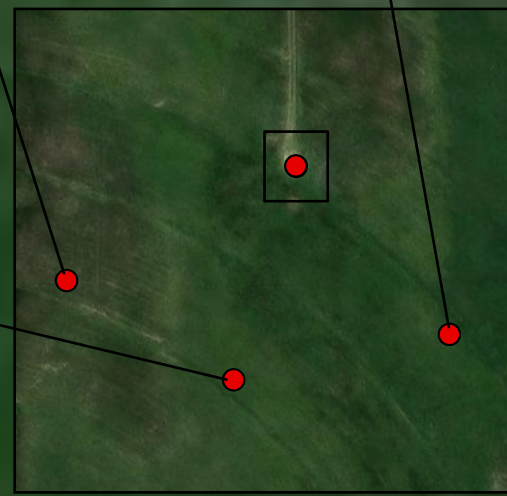
● WH01-N@4 (1.0)
● WH01-E@4 (1.1)
▲ WH01-W@4 (1.8)
● WH01-S@4 (0.9)

BKG03@4	
3/19/2025	
pH:	8.52
EC (mmhos/cm):	4.12
SAR:	15.3
Arsenic (mg/kg):	3.04
Barium (mg/kg):	131
Selenium (mg/kg):	0.423

BKG01@4	
3/19/2025	
Arsenic (mg/kg):	3.88
Selenium (mg/kg):	0.965
BKG01@6	
3/19/2025	
Arsenic (mg/kg):	4.39
Selenium (mg/kg):	0.788

BKG03@6	
3/19/2025	
pH:	8.62
SAR:	10.3
Arsenic (mg/kg):	2.14

BKG02@4	
3/19/2025	
pH:	8.64
EC (mmhos/cm):	4.79
SAR:	14.9
Boron (mg/L):	2.25
Arsenic (mg/kg):	3.34
Barium (mg/kg):	109
Selenium (mg/kg):	0.790
BKG02@6	
3/19/2025	
pH:	8.51
SAR:	9.25
Arsenic (mg/kg):	2.87



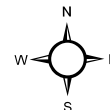
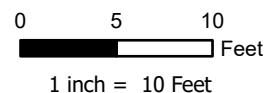
LABEL LEGEND	
XXXX@X: SAMPLE NAME @ DEPTH IN FEET	
WH: WELLHEAD SAMPLE	
GW: GROUNDWATER SAMPLE	
BKG: BACKGROUND SAMPLE	
EC: ELECTRICAL CONDUCTIVITY	
SAR: SODIUM ADSORPTION RATIO	
TDS: TOTAL DISSOLVED SOLIDS	
BOLD: ABOVE ECMC TABLE 915-1 STANDARDS	
BOLD: ABOVE ECMC TABLE 915-1 GWSSL, REPRESENTATIVE OF BACKGROUND LEVELS	

Legend

- Soil Sample
- Screening Location
- ▲ Groundwater Sample

NOTES:

- Sample Label (PID Result in ppm)
- ppm = parts per million
- PID = photoionization detector



Project No: 025-177
Map By: JW
Date: 06/12/2025

HSR-BOTT 3-23 WELLHEAD
SOIL SAMPLE AND FIELD SCREENING LOCATIONS
 NOBLE ENERGY
 NE 1/4 NW 1/4 SECTION 23
 T4N R65W, 6TH PM
 WELD COUNTY, COLORADO



610 Garrison St., Unit T
Lakewood, CO 80215
303.378.4036

Figure
2

Cherov, Figure 2 - Template Noble Wellhead - Soil Sample and Field Screening Locations

TABLES

TABLE 1
FIELD DATA SUMMARY TABLE
NOBLE 100322
HSR BOTT 3 -23 WELLHEAD, WELD COUNTY, COLORADO
REM # 39039

Sample ID	Sample Date	Depth (ft-bgs)	GPS Data Latitude/Longitude		VOC Concentration (ppm)
WH01@6	3/19/2025	6	40.303860	-104.632990	6.4
WH01-N@4	3/19/2025	4	40.303866	-104.632993	1.0
WH01-E@4	3/19/2025	4	40.303861	-104.632983	1.1
WH01-W@4	3/19/2025	4	40.303858	-104.633000	1.8
WH01-S@4	3/19/2025	4	40.303854	-104.632988	0.9
GW01	3/19/2025	6	40.303862	-104.632992	NM
BKG01@4	3/19/2025	4	40.303460	-104.634068	1.4
BKG01@6	3/19/2025	6	40.303460	-104.634068	0.0
BKG02@4	3/19/2025	4	40.303099	-104.633293	0.1
BKG02@6	3/19/2025	6	40.303099	-104.633293	1.6
BKG03@4	3/19/2025	4	40.303254	-104.632283	0.1
BKG03@6	3/19/2025	6	40.303254	-104.632283	0.1

1. Global Positioning System (GPS) data is provided in decimal degrees using North American Datum (NAD) 83 UTMZone 13 North.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

ppm - Parts per million

ft-bgs - feet below ground surface

NM - Not measured

TABLE 2
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE 100322
HSR BOTT 3 -23 WELLHEAD, WELD COUNTY, COLORADO
REM # 39039

Sample ID	Sample Date	Depth (ft-bgs)	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 (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500	500**		
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	500**		
WH01@6	3/19/2025	6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00201	0.736	0.736	<25.0	<100

1. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit

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

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

ft-bgs - feet below ground surface

mg/kg - milligrams per kilogram

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE 100322
HSR BOTT 3 -23 WELLHEAD, WELD COUNTY, COLORADO
REM # 39039

Sample ID	Sample Date	Depth (ft-bgs)	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)
ECMC 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
ECMC 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
WH01@6	3/19/2025	6	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00201	<0.00201

1. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit
ft-bgs - feet below ground surface
mg/kg - milligrams per kilogram

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE 100322
HSR BOTT 3 -23 WELLHEAD, WELD COUNTY, COLORADO
REM # 39039

Sample ID	Sample Date	Depth (ft-bgs)	pH (Standard Units)	EC (mmhos/cm)	SAR (Standard Units)	Boron (mg/L)
ECMC Table 915-1 Soil Suitability Limits			6 - 8.3	<4	<6	2
WH01@6	3/19/2025	6	8.57	1.74	10.1	0.660
BKG01@4	3/19/2025	4	8.27	2.15	5.31	1.10
BKG01@6	3/19/2025	6	8.27	0.718	3.34	0.245
BKG02@4	3/19/2025	4	8.64	4.79	14.9	2.25
BKG02@6	3/19/2025	6	8.51	2.30	9.25	0.445
BKG03@4	3/19/2025	4	8.52	4.12	15.3	1.63
BKG03@6	3/19/2025	6	8.62	2.84	10.3	0.821
Maximum Background Concentration			8.64	4.79	15.3	2.25

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within background concentrations.

2. **Brown highlighted** soil analytical values indicate a regulatory exceedance.

ft-bgs - feet below ground surface

EC - Electrical Conductivity

SAR - Sodium adsorption ratio

mmhos/cm - millimhos per centimeter

mg/L - milligrams per liter

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE 100322
HSR BOTT 3 -23 WELLHEAD, WELD COUNTY, COLORADO
REM # 39039

Sample ID	Sample Date	Depth (ft-bgs)	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)
ECMC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
WH01@6	3/19/2025	6	2.96	86.2	0.158	<0.517*	<8.80	6.74	7.78	<0.229	<0.0880	<32.6
BKG01@4	3/19/2025	4	3.88	79.5	0.165	<0.5*	<9.49	6.54	10.2	0.965	<0.0949	<35.1
BKG01@6	3/19/2025	6	4.39	70.4	0.107	<0.5*	11.3	10.5	11.2	0.788	<0.0941	40.2
BKG02@4	3/19/2025	4	3.34	109	0.216	<0.5*	<9.33	7.46	10.4	0.790	<0.0933	38.1
BKG02@6	3/19/2025	6	2.87	68.0	<0.0907	<0.5*	<9.07	5.03	6.65	<0.236	<0.0907	<33.6
BKG03@4	3/19/2025	4	3.04	131	0.140	<0.5*	<9.34	5.53	7.70	0.423	<0.0934	<34.5
BKG03@6	3/19/2025	6	2.14	71.0	0.133	<0.5*	<9.93	5.96	7.25	<0.258	<0.0993	<36.7
Maximum Background Concentration X 1.25			5.49	164	0.270	-	14.1	13.1	14.0	1.21	-	50.3

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
 2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
 3. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit
- * Indicates laboratory reporting or minimum detection limit in excess of SSL
- ft-bgs - feet below ground surface
mg/kg - milligrams per kilogram

TABLE 6
SUMMARY OF ORGANIC GROUNDWATER CHEMISTRY DATA
NOBLE 100322
HSR BOTT 3-23 WELLHEAD, WELD COUNTY, COLORADO
REM # 39039

Sample ID	Sample Date	Depth (ft-bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-Trimethyl-Benzene (µg/L)	1,3,5-Trimethyl-Benzene (µg/L)
ECMC Table 915-1 Limits			5.0	560	700	1400	140	67	67
GW01	3/19/2025	6	<2	<5	<1	<1	<5	1.32	<1

1. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit
 ft-bgs - feet below ground surface
 µg/L - micrograms per liter

TABLE 7
SUMMARY OF INORGANIC GROUNDWATER CHEMISTRY DATA
NOBLE 100322
HSR BOTT 3-23 WELLHEAD, WELD COUNTY, COLORADO
REM # 39039

Sample ID	Sample Date	Depth (ft-bgs)	Total Dissolved Solids (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
ECMC Table 915-1 Limits			<1.25 x local background	250 or <1.25 x local background	250 or <1.25 x local background
GW01	3/19/2025	6	3600	608	1610

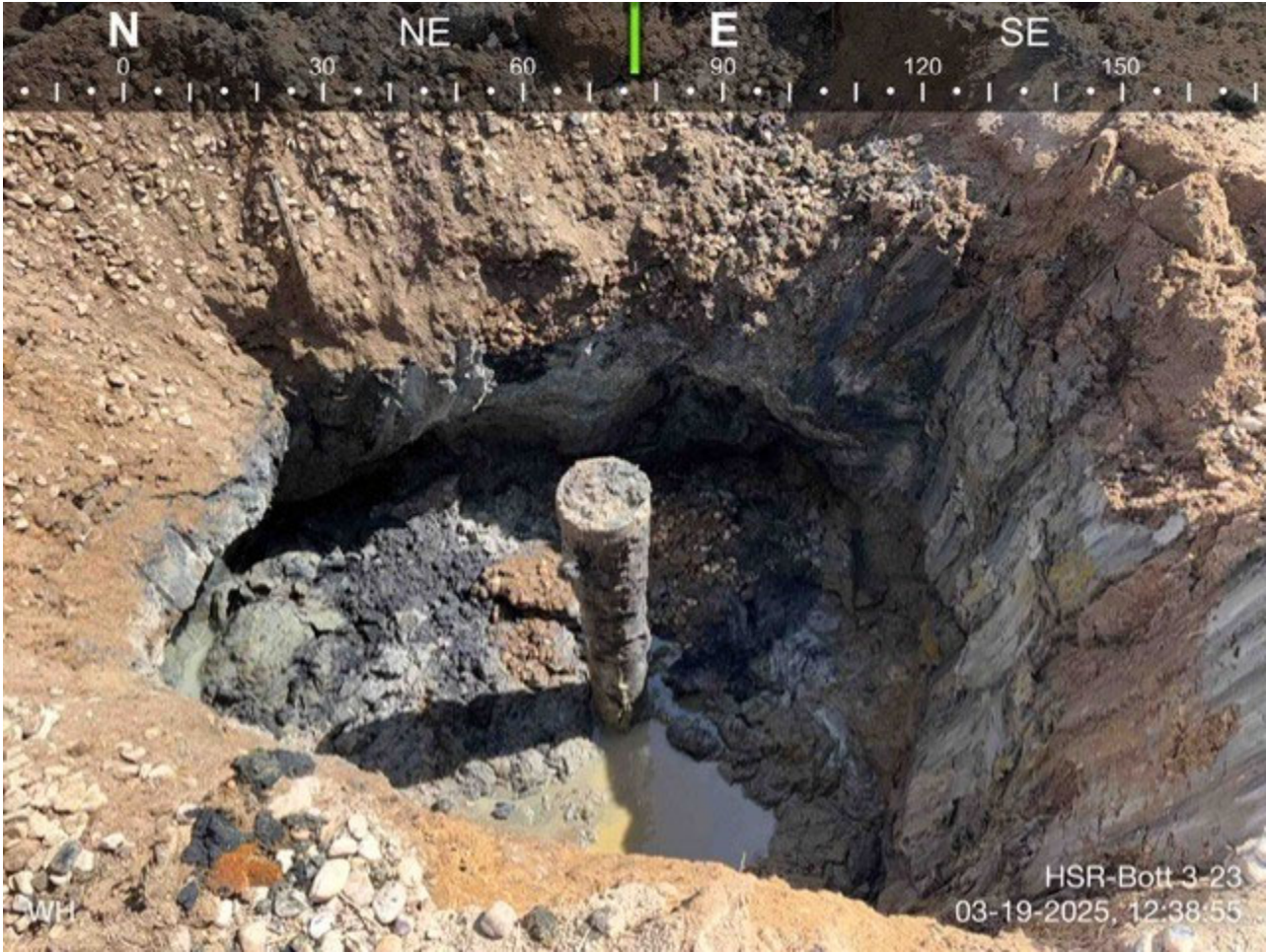
1. **Bold** faced values exceed the ECMC Table 915-1 limit(s)
 2. Blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
- ft-bgs - feet below ground surface
mg/L - milligrams per liter

**ATTACHMENT A
PHOTOGRAPHIC LOG**

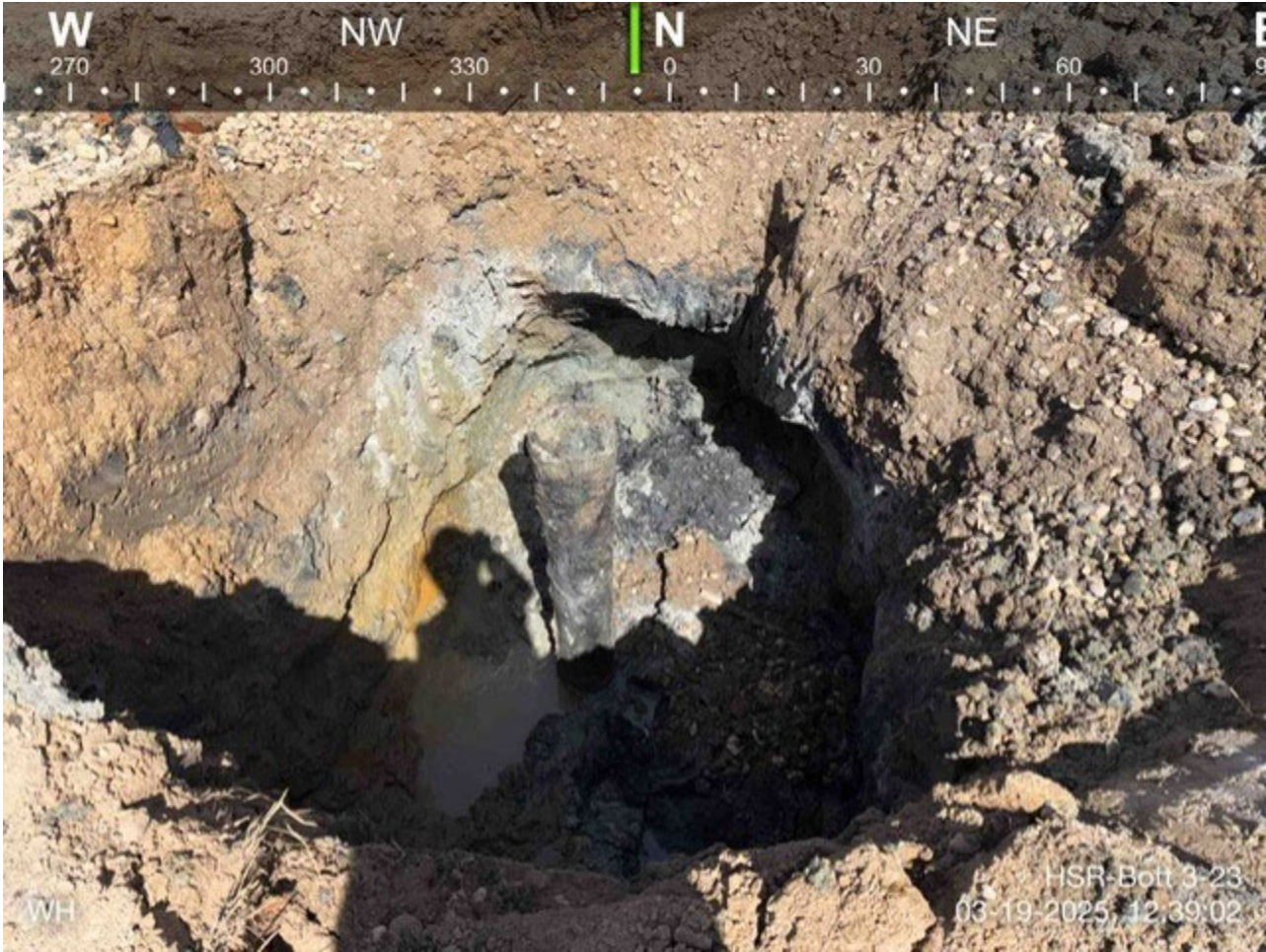
HSR-BOTT 3-23 Wellhead Photographic Log



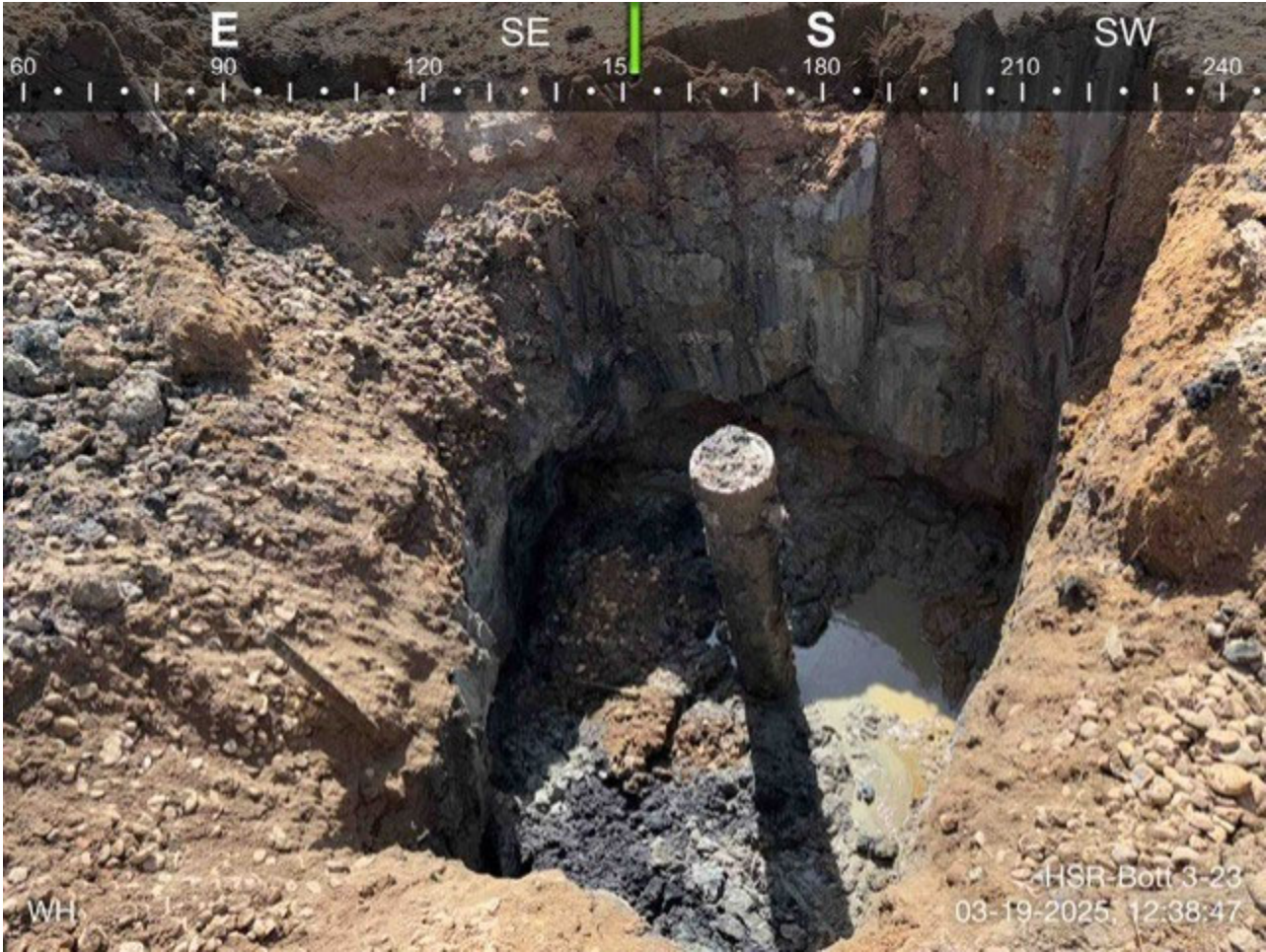
HSR-BOTT 3-23 Wellhead Photographic Log



HSR-BOTT 3-23 Wellhead Photographic Log



HSR-BOTT 3-23 Wellhead Photographic Log



**ATTACHMENT B
FACILITY CLOSURE CHECKLISTS**

Wellhead Closure Checklist

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

Additional attachments (optional):		Pit Closure		Tank Battery Closure		Flowline Closure		Partially Buried Vault Closure	
Site Name & COGCC Facility Number: HSR-BOTT 3-23, 247488		Date: 03/19/2025				Remediation Project #: 39039			
Associated Wells: NA		Age of Site: 10/19/1991-spud date				Number of Photos Attached: 4			
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) Lat/Long: 40.303850 / -104.632990							Estimated Facility Size (acres): ~0.01		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Overall good									
USCS Soil Type: SC					Estimated Depth to Groundwater: ~ 6 ft below ground surface				
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None encountered or observed									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None encountered or observed									
Wellhead(s)									
Well API	05-123-15285								
Age	10/19/1991-spud date								
Condition of surface around wellhead	Good								
PID Readings	0.9 ppm - 1.8 ppm								
Condition of subsurface (staining present)	Good								
PID Readings	6.4 ppm								
Sample taken? Location/Sample ID#	WH01@6								
Photo Number(s)	1-4								
Other observations regarding wellheads: Rust, grey, and black staining and a sulfur odor were present on all four sidewalls and the base of the wellhead excavation.									
Summary									
Was impacted soil identified? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes - less than 10 cubic yards <input type="checkbox"/> Yes - more than 10 cubic yards									
Total number of samples field screened: 5				Total number of samples collected: 5					
Highest PID Reading: 6.4 ppm				Total number of samples submitted to lab for analysis: 1					
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent:				Estimated spill volume:					
Lateral extent:				Volume of soil removed:					
Is additional investigation required?									
Was groundwater encountered during the investigation? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes - not impacted or in contact with impacted soils <input type="checkbox"/> Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater: 6ft				Was remedial groundwater removal conducted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Date Groundwater was encountered: 03/19/2025				Commencement date of removal:					
Sheen on groundwater? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed prior to sampling:					
Free product observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed post sampling:					
Total number of samples collected: 1				Total Volume of groundwater removed:					
Total number of samples submitted to lab for analysis: 1									