



Facility Closure Investigation and Environmental Summary

Stroh H12-16 Wellhead

ECMC Remediation Project #34390

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

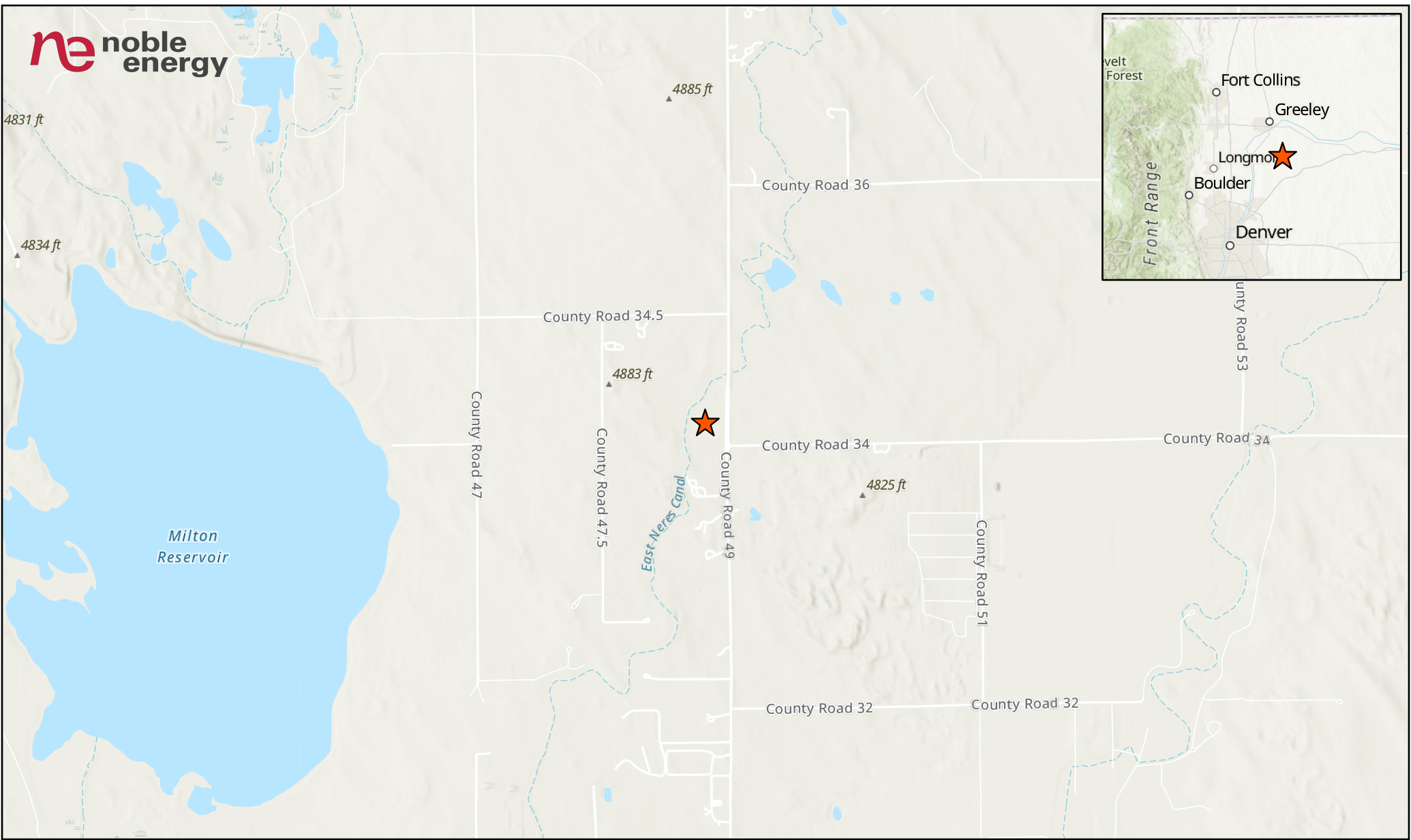
Table 5 – Soil Analytical Results Summary Table – Metals

Attachment A: Photographic Log

Attachment B: Facility Closure Checklists

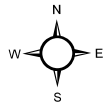
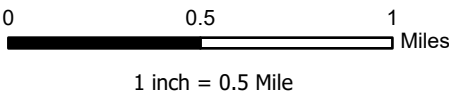
Attachment C: Laboratory Analytical Reports


FIGURES

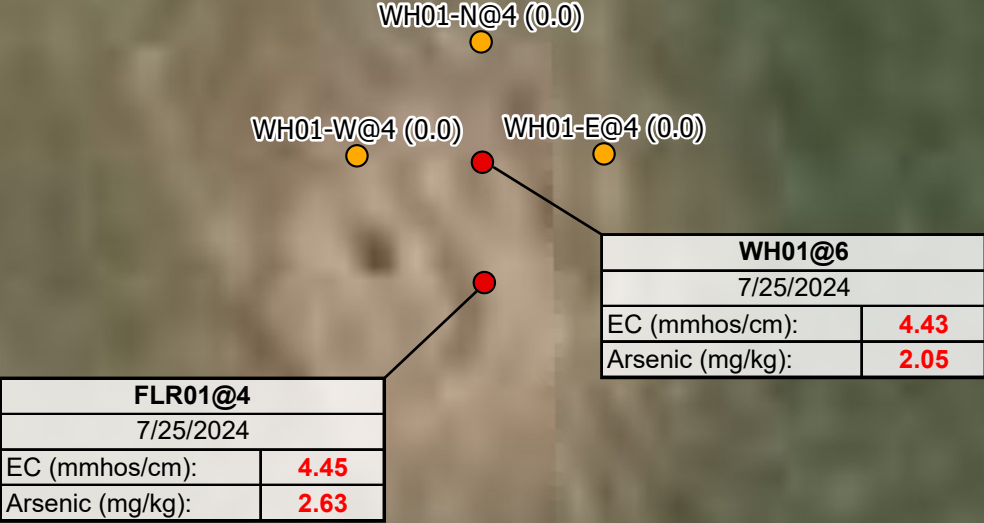


LEGEND

 Site Location



Project No: 024-394	STROTH H12-16 WELLHEAD GENERAL LOCATION MAP NOBLE ENERGY SE 1/4 SE 1/4 SECTION 12 T3N R65W, 6TH PM WELD COUNTY, COLORADO		1843 Sunlight Dr. Longmont, CO 80504 303.378.4036	Figure
Map By: JW				1
Date: 09/16/2024				

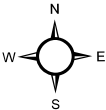
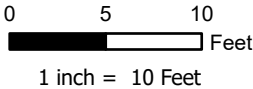


LABEL LEGEND
 XXXX@X: SAMPLE NAME @ DEPTH IN FEET
 WH: WELLHEAD SAMPLE
 FLR: FLOWLINE RISER SAMPLE
 EC: ELECTRICAL CONDUCTIVITY
RED: ABOVE ECMC TABLE 915-1 GWSSL

Legend

● Soil Sample ● Screening Location

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



Project No: 024-394

Map By: JW

Date: 09/16/2024

STROH H12-16 WELLHEAD
SOIL SAMPLE AND FIELD SCREENING LOCATIONS
 NOBLE ENERGY
 SE 1/4 SE 1/4 SECTION 12
 T3N R65W, 6TH PM
 WELD COUNTY, COLORADO



1843 Sunlight Drive
 Longmont, CO 80504
 303.378.4036

Figure

2

TABLES

TABLE 1
FIELD DATA SUMMARY TABLE
NOBLE 100322
STROH H12-16 WELLHEAD, WELD COUNTY, COLORADO
REM # 34390

Sample ID	Sample Date	Depth (ft-bgs)	GPS Data Latitude/Longitude		VOC Concentration (ppm)
WH01@6	7/25/2024	6	40.233837	-104.604276	0.0
FLR01@4	7/25/2024	4	40.233820	-104.604276	0.0
WH01-W@4	7/25/2024	4	40.233838	-104.604300	0.0
WH01-E@4	7/25/2024	4	40.233838	-104.604254	0.0
WH01-N@4	7/25/2024	4	40.233854	-104.604277	0.0

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

TABLE 2
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE 100322
STROH H12-16 WELLHEAD, WELD COUNTY, COLORADO
REM # 34390

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	7/25/2024	6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.002	<125.200	<0.200	<25.0	<100
FLR01@4	7/25/2024	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.002	<125.200	<0.200	<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

ft-bgs - feet below ground surface

mg/kg - milligrams per kilogram

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE 100322
STROH H12-16 WELLHEAD, WELD COUNTY, COLORADO
REM # 34390

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	7/25/2024	6	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.002	<0.002
FLR01@4	7/25/2024	4	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.002	<0.002

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
STROH H12-16 WELLHEAD, WELD COUNTY, COLORADO
REM # 34390

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	7/25/2024	6	8.14	4.43	3.95	2.54
FLR01@4	7/25/2024	4	8.05	4.45	4.42	1.55

1. **RED** - Above ECMC Table 915-1 Standards

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
STROH H12-16 WELLHEAD, WELD COUNTY, COLORADO
REM # 34390

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	7/25/2024	6	2.05	79.0	0.159	<0.161*	<9.43	11.9	6.44	<0.245	<0.0943	<34.9
FLR01@4	7/25/2024	4	2.63	81.5	0.125	<0.177*	<9.52	7.87	7.91	<0.247	<0.0952	<35.2

1. **RED** - Above ECMC Table 915-1 Standards
 2. Red 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

**ATTACHMENT A
PHOTOGRAPHIC LOG**

Stroh H12-16 Wellhead Photographic Log



Entrada Consulting Group
July 2024

Stroh H12-16 Wellhead Photographic Log



Stroh H12-16 Wellhead Photographic Log



Stroh H12-16 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
Site Name & COGCC Facility Number: Stroh H12-16, 286660		Date: 7/25/2024				Remediation Project #: 34390
Associated Wells: NA		Age of Site: 11/25/2006-spud date				Number of Photos Attached: 4
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.233820 / -104.604270					Estimated Facility Size (acres): ~0.01	
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)						
Overall good, some staining observed						
USCS Soil Type: Silty Sand (SM)				Estimated Depth to Groundwater: Unknown as none encountered		
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	05-123-24259					
Age	11/25/2006-spud date					
Condition of surface around wellhead	Staining					
PID Readings	0.0 ppm					
Condition of subsurface (staining present)	Staining					
PID Readings	0.0 ppm					
Sample taken? Location/Sample ID#	WH01@6, FLR01@4					
Photo Number(s)	1-4					
Other observations regarding wellheads:						
Rust colored staining was observed on eastern sidewall of wellhead excavation						
Summary						
Was impacted soil identified?						
No		Yes - less than 10 cubic yards		Yes - more than 10 cubic yards		
Total number of samples field screened: 5				Total number of samples collected: 5		
Highest PID Reading: 0.0 ppm				Total number of samples submitted to lab for analysis: 2		
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?						
No		Yes - not impacted or in contact with impacted soils		Yes - groundwater impacted and/or in contact with impacted soils		
Measured depth to groundwater:				Was remedial groundwater removal conducted? Yes No		
Date Groundwater was encountered:				Commencement date of removal:		
Sheen on groundwater? Yes No				Volume of groundwater removed prior to sampling:		
Free product observed? Yes No				Volume of groundwater removed post sampling:		
Total number of samples collected:				Total Volume of groundwater removed:		
Total number of samples submitted to lab for analysis:						