



## **Facility Closure Investigation and Environmental Summary**

State 16-1214 Wellhead

ECMC Remediation Project #34127

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**

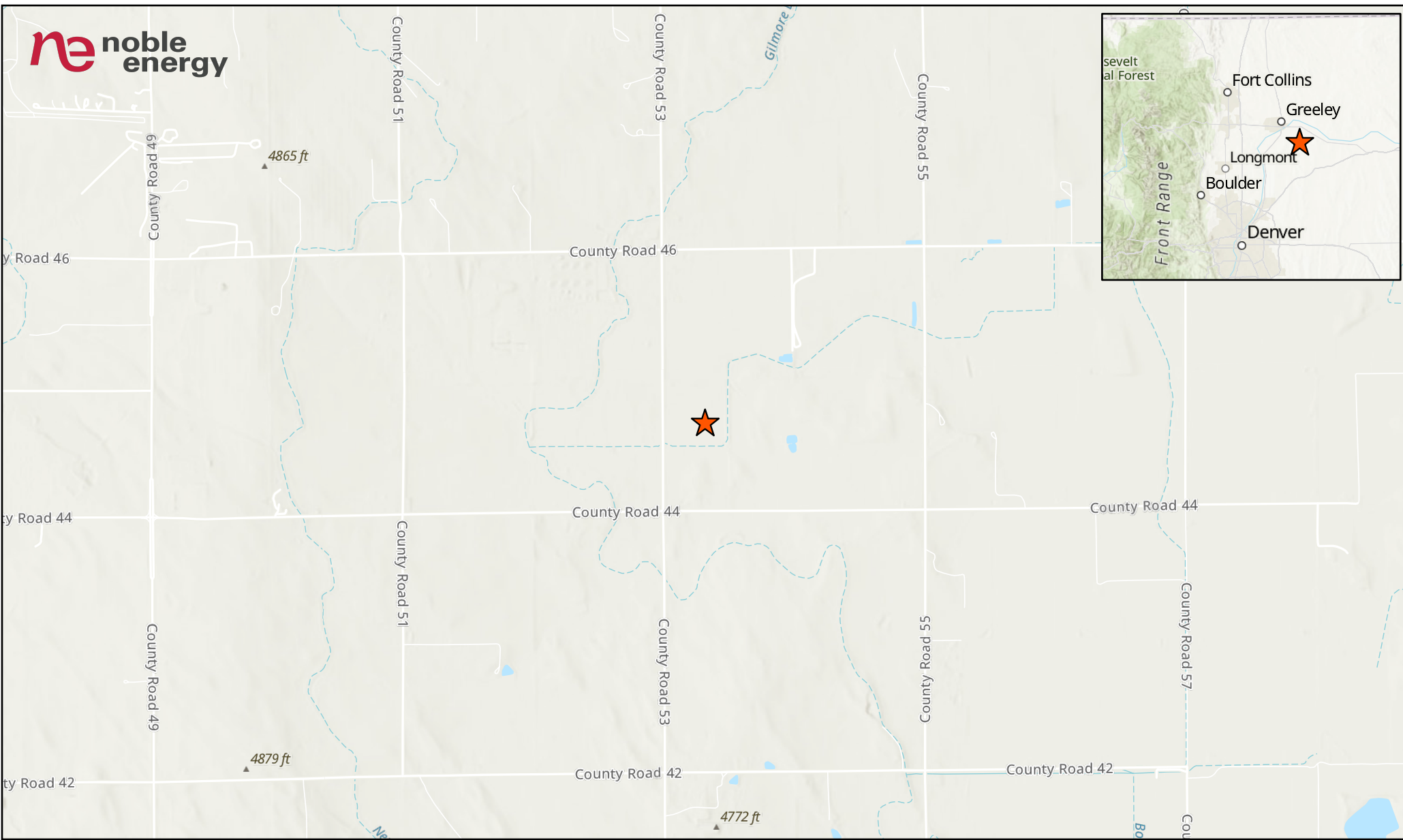
**Table 6 – Groundwater Analytical Results Summary Table – Organics**

**Table 7 – Groundwater Analytical Results Summary Table – Inorganics**

**Attachment A: Photographic Log**

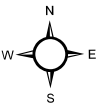
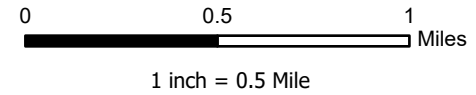
**Attachment B: Facility Closure Checklists**

## **FIGURES**



**LEGEND**

Site Location



Project No: 024-216

Map By: JW

Date: 07/11/2024

**STATE 16-1214 WELLHEAD  
GENERAL LOCATION MAP**  
NOBLE ENERGY  
NW 1/4 SW 1/4 SECTION 16  
T4N R64W, 6TH PM  
WELD COUNTY, COLORADO



1843 Sunlight Dr.  
Longmont, CO 80504  
303.378.4036

Figure

1

| WH01@6           |             |
|------------------|-------------|
| 5/30/2024        |             |
| Arsenic (mg/kg): | <b>3.29</b> |
| Barium (mg/kg):  | <b>84.5</b> |

WH01-N@4 (0.0)

WH01-W@4 (0.0)

WH01-E@4 (44.8)

WH01-S@4 (0.0)

| GW01                 |              |
|----------------------|--------------|
| 5/30/2024            |              |
| TDS (mg/l):          | <b>1,360</b> |
| Chloride Ion (mg/l): | <b>256</b>   |
| Sulfate Ion (mg/l):  | <b>317</b>   |

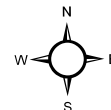
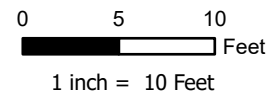
**LABEL LEGEND**

XXXX@X: SAMPLE NAME @ DEPTH IN FEET  
 WH: WELLHEAD SAMPLE  
 TDS: TOTAL DISSOLVED SOLIDS  
**RED**: ABOVE ECMC TABLE 915-1 GWSSL  
**GREEN**: ABOVE ECMC TABLE 915-1 GWSSL,  
 REPRESENTATIVE OF NATURAL SITE  
 CONCENTRATIONS

**Legend**

- Soil Sample
- Screening Location
- ▲ Groundwater Sample

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



Project No: 024-216

Map By: JW

Date: 07/11/2024

**STATE 16-1214 WELLHEAD  
 SOIL SAMPLE AND FIELD SCREENING LOCATIONS**  
 NOBLE ENERGY  
 NW 1/4 SW 1/4 SECTION 16  
 T4N R64W, 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**  
**STATE 16-1214 WELLHEAD, WELD COUNTY, COLORADO**  
**REM # 34127**

| Sample ID | Sample Date | Depth (ft-bgs) | GPS Data<br>Latitude/Longitude |             | VOC Concentration<br>(ppm) |
|-----------|-------------|----------------|--------------------------------|-------------|----------------------------|
| WH01@6    | 5/30/2024   | 6              | 40.310087                      | -104.562054 | 0.0                        |
| WH01-N@4  | 5/30/2024   | 4              | 40.310119                      | -104.562056 | 0.0                        |
| WH01-W@4  | 5/30/2024   | 4              | 40.310087                      | -104.562090 | 0.0                        |
| WH01-E@4  | 5/30/2024   | 4              | 40.310087                      | -104.562023 | 44.8                       |
| WH01-S@4  | 5/30/2024   | 4              | 40.310063                      | -104.562053 | 0.0                        |
| GW01      | 5/30/2024   | 5.5            | 40.310079                      | -104.562065 | NM                         |

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  
STATE 16-1214 WELLHEAD, WELD COUNTY, COLORADO  
REM # 34127

| 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  | 5/30/2024   | 6              | <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  
STATE 16-12I4 WELLHEAD, WELD COUNTY, COLORADO  
REM # 34127

| Sample ID   | Sample Date | Depth (ft-bgs) | Acenaphthene<br>(mg/kg) | Anthracene<br>(mg/kg) | Benzo (a)<br>Anthracene<br>(mg/kg) | Benzo (a)<br>Pyrene<br>(mg/kg) | Benzo (b)<br>Fluoranthene<br>(mg/kg) | Benzo (k)<br>Fluoranthene<br>(mg/kg) | Chrysene<br>(mg/kg) | Dibenzo (a,h)<br>Anthracene<br>(mg/kg) | Fluoranthene<br>(mg/kg) | Fluorene<br>(mg/kg) | Indeno (1,2,3-<br>cd) Pyrene<br>(mg/kg) | Pyrene<br>(mg/kg) | 1-Methyl -<br>Naphthalene<br>(mg/kg) | 2-Methyl-<br>Naphthalene<br>(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  | 5/30/2024   | 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                              |

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**  
**STATE 16-1214 WELLHEAD, WELD COUNTY, COLORADO**  
**REM # 34127**

| Sample ID                                | Sample Date | Depth (ft-bgs) | pH<br>(Standard<br>Units) | EC<br>(mmhos/cm) | SAR<br>(Standard<br>Units) | Boron<br>(mg/L) |
|--|-------------|----------------|---------------------------|------------------|----------------------------|-----------------|
| ECMC Table 915-1 Soil Suitability Limits |             |                | 6 - 8.3                   | <4               | <6                         | 2               |
| WH01@6                                   | 5/30/2024   | 6              | 8.21                      | 0.666            | 3.37                       | 0.455           |

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  
STATE 16-1214 WELLHEAD, WELD COUNTY, COLORADO  
REM # 34127

| 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  | 5/30/2024   | 6              | 3.29            | 84.5           | 0.150           | <0.334*               | <9.47          | 6.46         | 6.92           | <0.246           | <0.0947        | <35.0        |

1. **RED** - Above ECMC Table 915-1 Standards
  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  
STATE 16-1214 WELLHEAD, WELD COUNTY, COLORADO  
REM # 34127

| 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                    | 5/30/2024   | ~5.5           | <1.00          | <1.00          | <1.00                | <1.00          | <2.00              | <2.00                          | 4.79                           |

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**  
**STATE 16-1214 WELLHEAD, WELD COUNTY, COLORADO**  
**REM # 34127**

| 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                    | 5/30/2024   | ~5.5           | 1360                          | 256                             | 317                             |

1. **GREEN** - Above ECMC Table 915-1 Standards, but representative of natural site concentrations
  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

State 16-1214 Wellhead Photographic Log



State 16-1214 Wellhead Photographic Log



State 16-1214 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:<br>State 16-1214, 250093  |                      | Date:<br>05/30/2024                  |  |   |  |                  | Remediation Project #:<br>34127        |                                |  |
| Associated Wells:  |                      | Age of Site:<br>02/07/1994-spud date |  |   |  |                  | Number of Photos Attached:<br>3        |                                |  |
| Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple)<br>40.310090 / -104.562030  |                      |                                      |  |   |  |                  | Estimated Facility Size (acres): ~0.01 |                                |  |
| General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)<br><br>Good Overall  |                      |                                      |  |   |  |                  |  |                                |  |
| USCS Soil Type: Clayey Sand (SC)   |                      |                                      |  |   | Estimated Depth to Groundwater: ~5.5 feet below ground surface |                  |  |                                |  |
| Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)<br><br>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)<br><br>None encountered or observed  |                      |                                      |  |   |  |                  |  |                                |  |
| Wellhead(s)  |                      |                                      |  |   |  |                  |  |                                |  |
| Well API   | 05-123-17896         |                                      |  |   |  |                  |  |                                |  |
| Age  | 02/07/1994-spud date |                                      |  |   |  |                  |  |                                |  |
| Condition of surface around wellhead   | Good                 |                                      |  |   |  |                  |  |                                |  |
| PID Readings   | 0.0 to 44.8 ppm      |                                      |  |   |  |                  |  |                                |  |
| Condition of subsurface (staining present)   | Good                 |                                      |  |   |  |                  |  |                                |  |
| PID Readings   | 0.0 ppm              |                                      |  |   |  |                  |  |                                |  |
| Sample taken? Location/Sample ID#  | WH01@6               |                                      |  |   |  |                  |  |                                |  |
| Photo Number(s)  | 1-3                  |                                      |  |   |  |                  |  |                                |  |
| Other observations regarding wellheads:  |                      |                                      |  |   |  |                  |  |                                |  |
| Summary  |                      |                                      |  |   |  |                  |  |                                |  |
| Was impacted soil identified?<br><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: 5  |  |                  |  |                                |  |
| Highest PID Reading: 44.8 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?<br>No <input checked="" type="checkbox"/> Yes - not impacted or in contact with impacted soils      Yes - groundwater impacted and/or in contact with impacted soils |                      |                                      |  |   |  |                  |  |                                |  |
| Measured depth to groundwater: ~5.5 feet below ground surface  |                      |                                      |  | Was remedial groundwater removal conducted?    Yes <input checked="" type="checkbox"/> No |  |                  |  |                                |  |
| Date Groundwater was encountered: 05/30/2024   |                      |                                      |  | 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: 1   |                      |                                      |  | Total Volume of groundwater removed: NA   |  |                  |  |                                |  |
| Total number of samples submitted to lab for analysis: 1   |                      |                                      |  |   |  |                  |  |                                |  |