

# Wellhead Closure Checklist

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

Additional attachments (optional): <u>      </u>		Pit Closure <u>      </u>		Tank Battery Closure <u>      </u>		Flowline Closure: <u>      </u>		Partially Buried Vault Closure <u>      </u>	
Site Name & COGCC Facility Number: <b>Huntsman G #13-9</b>		Date: <b>11/17/23</b>					Remediation Project #: <b>31082</b>		
Associated Wells: <b>05-123-16321</b>		Age of Site: <b>years</b>					Number of Photos Attached: <b>6</b>		
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple)						<b>40.310550 / -104.604642</b>		Estimated Facility Size (acres): <u>      </u>	
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) <b>Good condition</b>									
USCS Soil Type: <b>Silty SAND</b>				Estimated Depth to Groundwater: <b>~10-20'</b>					
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) <b>None observed</b>									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) <b>None observed</b>									
Wellhead(s)									
Well API	<b>05-123-16321</b>								
Age	<b>years</b>								
Condition of surface around wellhead	<b>Good - No odor/no staining</b>								
PID Readings	<b>WH-N: 0.8</b>	<b>WH-E: 0.6</b>	<b>WH-S: 1.1</b>	<b>WH-W: 1.0</b>					
Condition of subsurface (staining present)	<b>Good - No odor/no staining</b>								
PID Readings	<b>1.5</b>	<b>1.8</b>	<b>2.2</b>	<b>1.7</b>	<b>2.4</b>				
Sample taken? Location/Sample ID#	<b>WH-SS-01</b>	<b>WH-SS-02</b>	<b>WH-SS-03</b>	<b>WH-SS-04</b>	<b>WH-FS-01</b>				
Photo Number(s)	<b>See photo log</b>								
Other observations regarding wellheads: <b>Well casing cut/capped following assessment</b>									
Summary									
Was impacted soil identified? <input checked="" type="radio"/> <b>No</b> Yes - less than 10 cubic yards      Yes - more than 10 cubic yards									
Total number of samples field screened: <b>9</b>				Total number of samples collected: <b>9</b>					
Highest PID Reading: <b>2.4</b>				Total number of samples submitted to lab for analysis: <b>1</b>					
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent:				Estimated spill volume:					
<b>N/A</b>									
Lateral extent:				Volume of soil removed:					
Is additional investigation required?									
Was groundwater encountered during the investigation? <input checked="" type="radio"/> <b>No</b> Yes - not impacted or in contact with impacted soils      Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater:				Was remedial groundwater removal conducted?      Yes      No					
Date Groundwater was encountered:				Commencement date of removal:					
Sheen on groundwater?      Yes      No				Volume of groundwater removed prior to sampling:					
Free product observed?      Yes      No				Volume of groundwater removed post sampling:					
Total number of samples collected:				Total Volume of groundwater removed:					
Total number of samples submitted to lab for analysis:									



## **FIGURES**

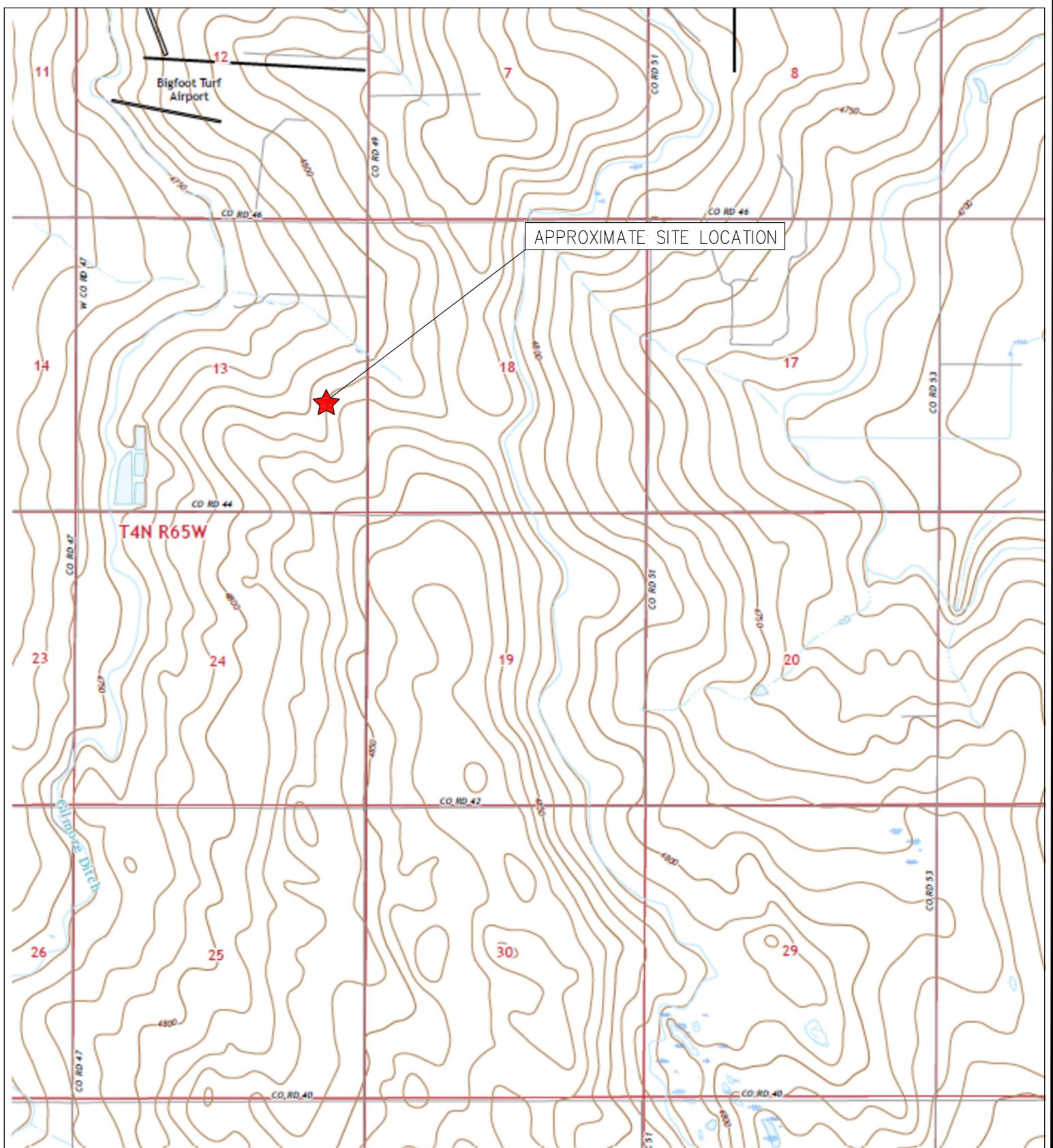
**Figure 1: Topographic Site Location Map**

**Figure 2: Aerial Site Location Map**

**Figure 3: Sample Location Map**

**Figure 4: Soil Analytical Map**

**Figure 5: Metals in Soil Map**



TOPOGRAPHIC SITE LOCATION MAP  
 HUNTSMAN G #13-9  
 CLOSURE ASSESSMENT  
 40.310550 / -104.604642  
 NE¼ SE¼ SEC.13 T4N R65W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-16321  
 REMEDIATION # 31082



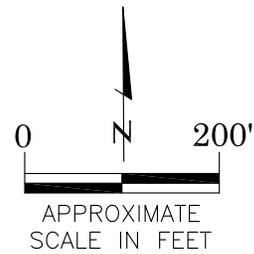
**EAGLE**  
 ENVIRONMENTAL  
 CONSULTING, LLC

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



**LEGEND**

- FORMER HUNTSMAN G #13-9 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



AERIAL SITE LOCATION MAP  
 HUNTSMAN G #13-9  
 CLOSURE ASSESSMENT  
 40.310550 / -104.604642  
 NE¼ SE¼ SEC.13 T4N R65W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-16321  
 REMEDIATION # 31082

FIGURE NO.  
2

DRAWN BY:  
RS



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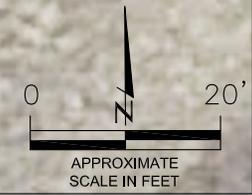
**LEGEND**

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

SAMPLE LOCATION MAP  
 HUNTSMAN G #13-9  
 CLOSURE ASSESSMENT  
 40.310550 / -104.604642  
 NE¼ SE¼ SEC.13 T4N R65W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-16321  
 REMEDIATION # 31082

FIGURE NO.  
3  
 DRAWN BY:  
RS

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**LEGEND**

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

**PARAMETERS**

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

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

BRL = BELOW REGULATORY LIMITS

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

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

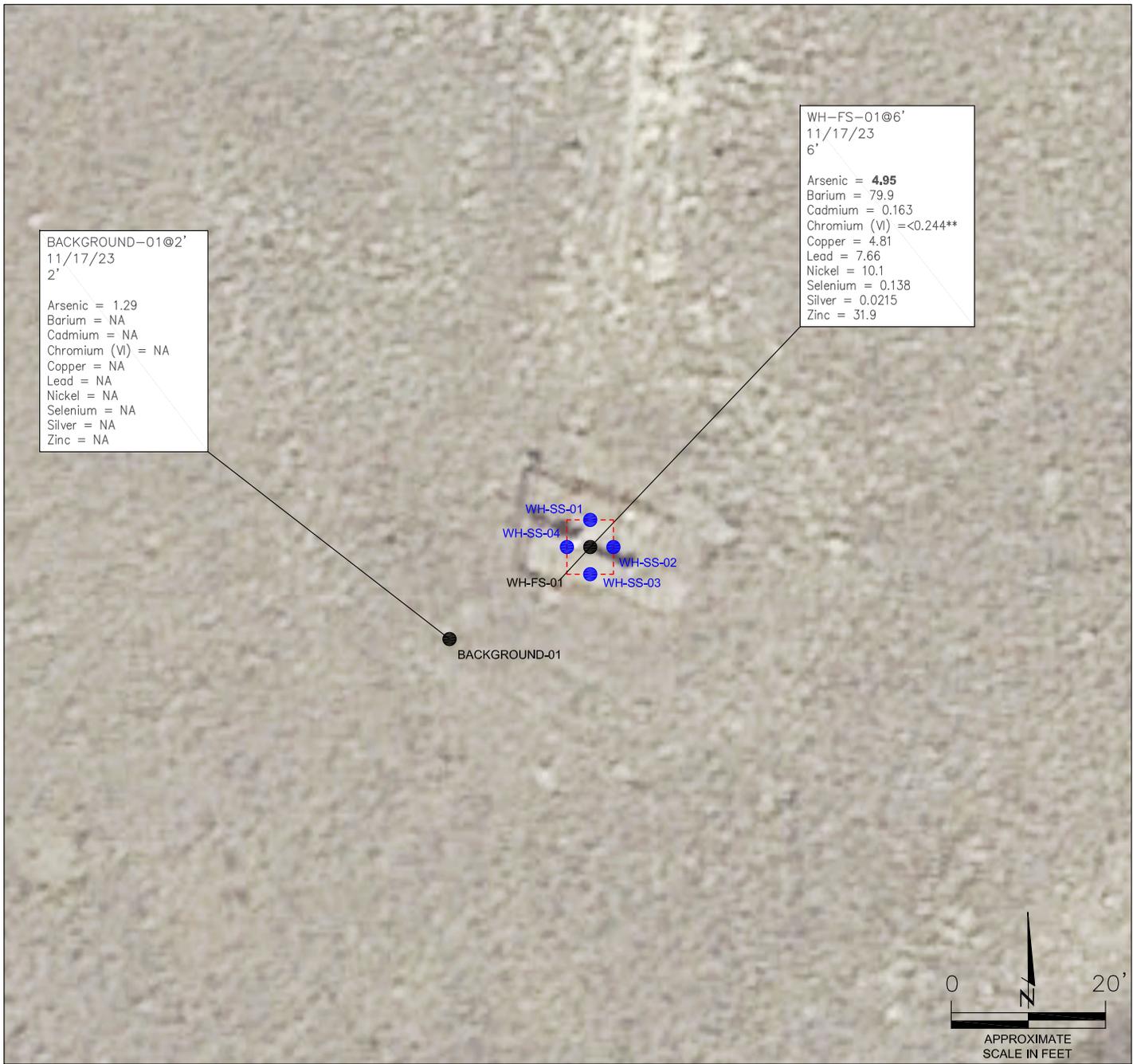
ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

SOIL ANALYTICAL MAP  
HUNTSMAN G #13-9  
CLOSURE ASSESSMENT  
40.310550 / -104.604642  
NE¼ SE¼ SEC.13 T4N R65W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-16321  
REMEDIACTION # 31082

FIGURE NO.  
4

DRAWN BY:  
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BACKGROUND-01@2'  
11/17/23  
2'

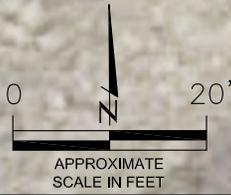
Arsenic = 1.29  
Barium = NA  
Cadmium = NA  
Chromium (VI) = NA  
Copper = NA  
Lead = NA  
Nickel = NA  
Selenium = NA  
Silver = NA  
Zinc = NA

WH-FS-01@6'  
11/17/23  
6'

Arsenic = **4.95**  
Barium = 79.9  
Cadmium = 0.163  
Chromium (VI) = <0.244\*\*  
Copper = 4.81  
Lead = 7.66  
Nickel = 10.1  
Selenium = 0.0215  
Silver = 0.0215  
Zinc = 31.9

WH-SS-01  
WH-SS-04  
WH-SS-02  
WH-FS-01  
WH-SS-03

BACKGROUND-01



**LEGEND**

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

**PARAMETERS**

SAMPLE LOCATION  
DATE SAMPLE COLLECTED  
APPROXIMATE DEPTH  
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)

mg/kg = MILLIGRAMS PER KILOGRAM

NA = NOT ANALYZED

**NOTES:**

VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT/OR ABOVE LABORATORY REPORTING LIMITS AND/OR MINIMUM DETECTION LIMITS.

ELEVATED METALS ARE NATURALLY OCCURRING IN COLORADO. LOCAL CLEAN-UP LEVELS ARE 1.25\*BACKGROUND CONCENTRATIONS WHERE APPLICABLE.

VALUES PRESENTED IN **BOLD** EXCEED ECMC TABLE 915-1 REGULATORY LIMITS AND APPLICABLE LOCAL CLEAN-UP LEVELS.

\*\*ACHIEVABLE PRACTICAL QUANTITATIVE LIMITS FOR HEXAVALENT CHROMIUM (Cr VI) IN SOILS IS IN THE RANGE OF 0.1 TO 1 mg/kg.

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

METALS IN SOIL MAP  
HUNTSMAN G #13-9  
CLOSURE ASSESSMENT  
40.310550 / -104.604642  
NE¼ SE¼ SEC.13 T4N R65W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-16321  
REMEDIACTION # 31082

FIGURE NO.  
5

DRAWN BY:  
RS



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## **TABLES**

**Table 1: Photoionization Detector Reading Summary**

**Table 2: Soil Analytical Results Summary**

**TABLE 1**  
**PHOTOIONIZATION DETECTOR READING SUMMARY**  
**HUNTSMAN G #13-9**  
**CLOSURE ASSESSMENT**  
**40.310550 / -104.604642**  
**NE¼ SE¼ SEC.13 T4N R65W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-16321**  
**REMEDIAION # 31082**

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-FS-01 @ 6' (40.310571 / -104.604668)	11/17/23	6	2.4	Y
WH-SS-01 @ 5' (40.310579 / -104.604668)	11/17/23	5	1.5	N
WH-SS-02 @ 5' (40.310571 / -104.604658)	11/17/23	5	1.8	N
WH-SS-03 @ 5' (40.310561 / -104.604668)	11/17/23	5	2.2	N
WH-SS-04 @ 5' (40.310571 / -104.604677)	11/17/23	5	1.7	N
WH-N @ 0.5' (40.310590 / -104.604668)	11/17/23	0.5	0.8	N
WH-E @ 0.5' (40.310571 / -104.604641)	11/17/23	0.5	0.6	N
WH-S @ 0.5' (40.310552 / -104.604667)	11/17/23	0.5	1.1	N
WH-W @ 0.5' (40.310570 / -104.604692)	11/17/23	0.5	1.0	N
Background-01 @ 2' (40.310539 / -104.604730)	11/17/23	2	0.3	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				

TABLE 2  
SOIL ANALYTICAL RESULTS SUMMARY  
HUNTSMAN G #13-9  
CLOSURE ASSESSMENT  
40.310550 / -104.604642  
NE¼ SE¼ SEC.13 T4N R65W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-16321  
REMEDATION # 31082

Sample Location		WH-FS-01 @ 6'		Background-01 @ 2'		
(Latitude / Longitude)		(40.310571 / -104.604668)		(40.310539 / -104.604730)		
Sample Date		11/17/2023		11/17/2023		
Sample Depth		6'		2'		
PID Reading (ppm-v)		2.4		0.3		
Regulatory Limits						
Chemical of Concern	Units	ECMC Table 915-1 RSSLs	ECMC Table 915-1 GSSLs	Local Clean-Up Level		
<b>VOCS</b>						
Benzene	mg/kg	1.2	0.0026	--	<0.00200	NA
Toluene	mg/kg	490	0.69	--	<0.00200	NA
Ethylbenzene	mg/kg	5.8	0.78	--	<0.00200	NA
Total Xylenes	mg/kg	58	9.9	--	<0.00200	NA
Naphthalene	mg/kg	2	0.0038	--	<0.00380	NA
1,2,4-Trimethylbenzene	mg/kg	30	0.0081	--	<0.00200	NA
1,3,5-Trimethylbenzene	mg/kg	27	0.0087	--	<0.00200	NA
<b>TOTAL PETROLEUM HYDROCARBONS</b>						
TPH-GRO	mg/kg	500	--	--	<0.200	NA
TPH-DRO	mg/kg	500	--	--	<25.0	NA
TPH-RRO	mg/kg	500	--	--	<100	NA
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>						
1-Methyl-naphthalene	mg/kg	18	0.006	--	<0.002	NA
2-Methyl-naphthalene	mg/kg	24	0.019	--	<0.002	NA
Acenaphthene	mg/kg	360	0.55	--	<0.020	NA
Anthracene	mg/kg	1800	5.8	--	<0.020	NA
Benzo(a)-anthracene	mg/kg	1.1	0.011	--	<0.005	NA
Benzo(a)-pyrene	mg/kg	0.11	0.24	--	<0.020	NA
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	--	<0.020	NA
Benzo(k)-fluoranthene	mg/kg	11	2.9	--	<0.020	NA
Chrysene	mg/kg	110	9	--	<0.020	NA
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	--	<0.020	NA
Fluoranthene	mg/kg	240	8.9	--	<0.020	NA
Fluorene	mg/kg	240	0.54	--	<0.020	NA
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	--	<0.020	NA
Pyrene	mg/kg	180	1.3	--	<0.020	NA
<b>SOIL SUITABILITY (Inorganics)</b>						
Boron	mg/L	2	--	--	0.133	NA
pH	standard unit	6-8.3	--	--	<b>8.41</b>	<b>8.33</b>
Sodium Adsorption Ratio (SAR)	--	<6	--	--	2.54	NA
Specific Conductance (EC)	mmhos/cm	<4	--	--	0.402	NA
<b>METALS</b>						
Arsenic	mg/kg	0.68	0.29	1.61	<b>4.95</b>	1.29
Barium	mg/kg	15000	82	--	79.9	NA
Cadmium	mg/kg	71	0.38	--	0.163	NA
Copper	mg/kg	3100	46	--	4.81	NA
Lead	mg/kg	400	14	--	7.66	NA
Nickel	mg/kg	1500	26	--	10.1	NA
Selenium	mg/kg	390	0.26	--	0.138	NA
Silver	mg/kg	390	0.8	--	0.0215	NA
Zinc	mg/kg	23000	370	--	31.9	NA
Hexavalent Chromium	mg/kg	0.3**	0.00067**	0.1 to 1.0**	<0.244**	NA
ECMC = Energy & Carbon Management Commission		NA - Not Analyzed		VOCS - Volatile Organic Compounds		
mg/kg = milligrams per kilogram						
mmhos/cm = millimhos per centimeter		RSSLs = Residential Soil Screening Levels				
PID = Photoionization Detector		GSSLs = Protection of Groundwater Soil Screening Levels				
ppm-v = parts per million by volume		TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics				
mg/L = milligrams per liter		TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics				
SAR = Sodium Adsorption Ratio		TPH-RRO = Total Petroleum Hydrocarbons - Residual Range Organics				
Notes:						
Values presented with a less than symbol (<) did not contain concentrations at or above the laboratory reporting limit and/or minimum detection limit.						
Elevated metals are naturally occurring in Colorado. Local Clean-up Levels are 1.25*Background concentrations where applicable.						
Values presented in <b>BOLD</b> exceed ECMC Table 915-1 Regulatory Limits and applicable Local Clean-up Levels.						
**Achievable practical quantitative limits for Hexavalent Chromium in soils is in the range of 0.1 to 1 mg/kg.						



## **ATTACHMENT A**

### **Photo Log**

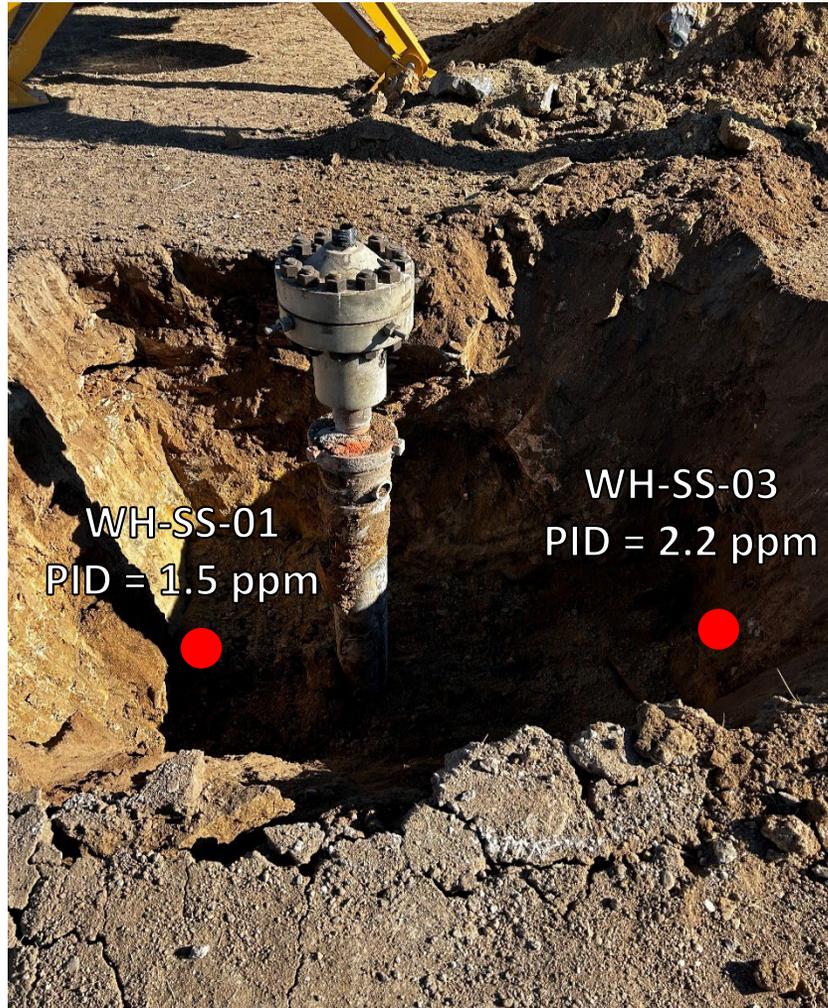
Huntsman G #13-9  
API # 05-123-16321  
Remediation # 31082

Closure Assessment

November 2023

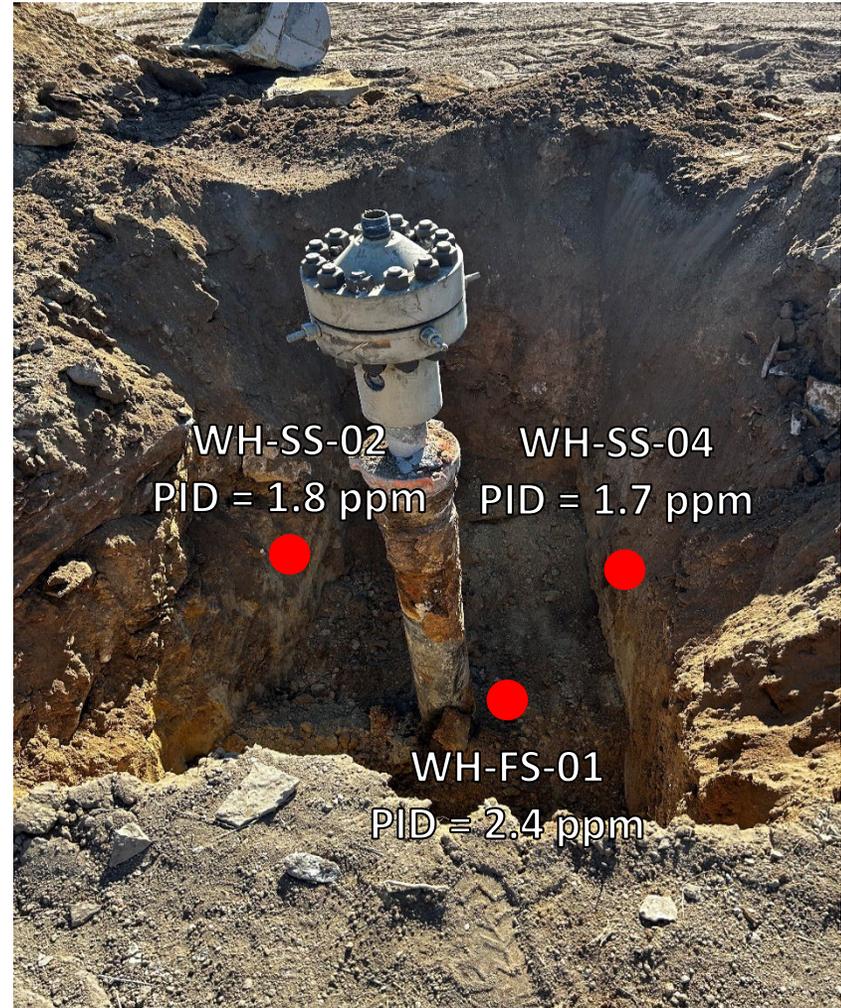


# Wellhead Excavation – 11/17/23



Looking east

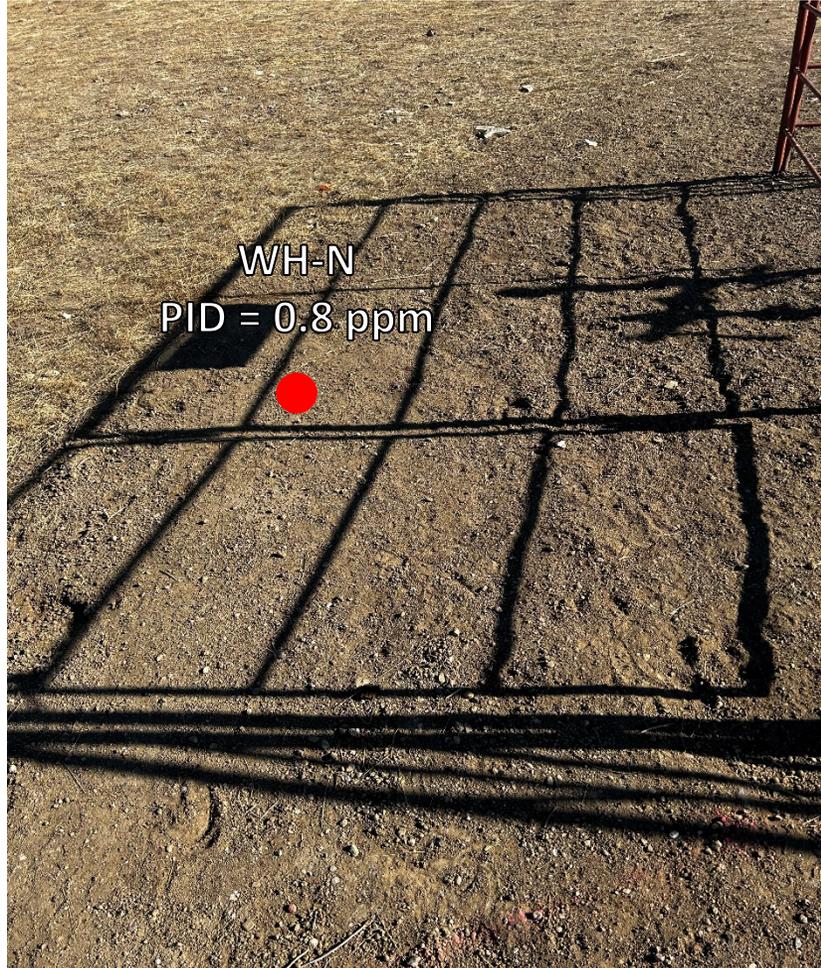
No petroleum hydrocarbon staining or odor observed



Looking south

No petroleum hydrocarbon staining or odor observed

# Wellhead Surface – 11/17/23



Looking east

Site in good condition – no petroleum hydrocarbon staining or odor  
Observed on surface around wellhead



Looking north

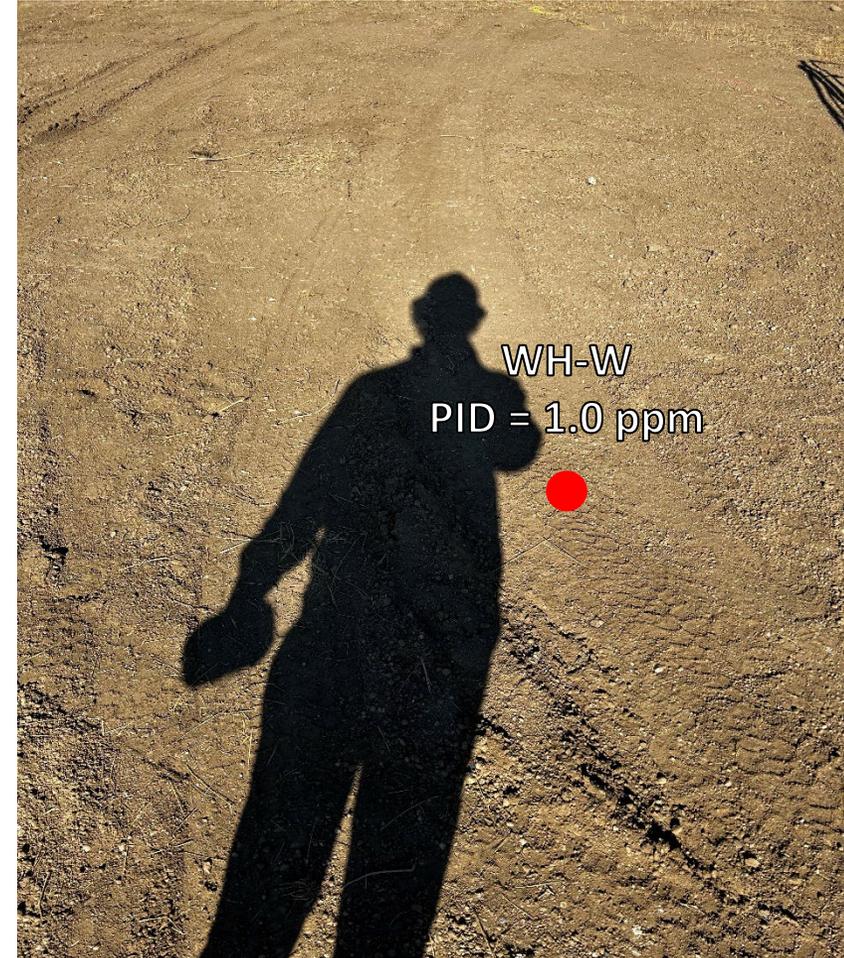
Site in good condition – no petroleum hydrocarbon staining or odor  
Observed on surface around wellhead

# Wellhead Surface – 11/17/23



Looking east

Site in good condition – no petroleum hydrocarbon staining or odor  
Observed on surface around wellhead



Looking north

Site in good condition – no petroleum hydrocarbon staining or odor  
Observed on surface around wellhead