



Mull Drilling Company, Inc.  
1700 N. Waterfront Parkway, Bld. 1200  
Wichita, Kansas 67206  
Tel: +1 316.264.6366  
Fax: +1 316.264.6440  
www.mulldrlg.com

March 28, 2022

Mr. Jason Kosola, P.G.  
Southeast Environmental Protection Specialist  
Colorado Oil & Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, Colorado 80203

**RE: *Mauer 1-SWD***  
***UIC Disposal 150042***  
***Well API #05-073-06010***  
***Continual Investigation & Planned Initial Excavation Activities***  
***Remediation Project # 25832***

Mr. Kosola:

Mull Drilling Co., Inc (Mull) is providing this report to the Colorado Oil and Gas Commission (COGCC) for environmental services that have been occurring at the Mauer 1-SWD as well as notification of ongoing investigation and excavation activities. The location in question is the site of an older well that was converted to a Salt Water Disposal sometime in the past. Mull has already mobilized to the site for cutting and capping of well itself. All above ground tanks and equipment have been removed and disposed of.



**Site Location**

In following proper abandonment procedures Mull has performed an investigation of the flowlines in the area. It was determined that the process lines which travel to the SWD are still in operation and will continue to be utilized for produced water operations to the adjacent Koch SWD. Final abandonment procedures and final removal of all lines will occur with landowner permissions and decommissioning of parallel operations.

### ***Investigation***

A soils investigation occurred December 2022 in order to check the presence of any soil impacts. A licensed geologist mobilized to the location and confirmed the presence of soil impacts by taking soil samples in areas indicative of petroleum or produced water impacted locations. All samples conformed to Table 915-1 analysis: 8 total samples were taken including a background sample and two at depth to determine approximate vertical stratification of impacts. All collected soil samples were submitted to Pace Laboratories of Kansas for analysis following approved chain of custody protocols.

Please see ***Figure I*** for existing sampling locations.

The initial investigation determined that soil impacts were in extant and will require excavation. Impacts were primarily conductance (EC) and Sodium Adsorption Ratio (SAR). There was also one sample that contained hydrocarbons that were above range. Hydrocarbons were predominately Diesel Range Organics (DRO). Arsenic was high in all samples including the background. Accordingly, Mull will be disregarding arsenic as a cleanup parameter.

### ***Initial Excavation: Tank Battery***

Because of the extent of impacts Mull will perform the excavation in stages to allow for complete capture of all contaminants and to verify depth and lateral extent of impacts. The first stage will consist of an excavation of the former tank battery down to 6-8 ft below ground surface, allowing for continued operations of existing utilities. Samples shall be taken at total depth for ESA purposes and to verify capture of contaminants and conform to Table 915-1. The location shall then be backfilled with fresh soils in order to properly bury the location to prevent freezing of adjacent lines.

Additional samples will be taken in adjacent areas to capture data gaps and verify presence of any additional impacts. Currently 9 sampling location will be added. Please see ***Figure I*** for these locations. Additions to this number shall be made should the onsite geologist determine it will help verify complete capture of impacted materials.

Secondary and tertiary excavations will take out the southern half of the lease road turnaround (Primarily EC and SAR impacts) and then the northern half and roadway (Hydrocarbon Impacts) once data gaps have been identified. All impacted soils will be disposed to Phantom Landfill of Penrose Colorado, EPA #COR000208454 or an appropriate waste connections landfill as dictated by the levels of impacts and general proximity to the site. This disposal process assumes

proper sampling for radionucleotides which shall occur concurrently. Please look to **Figure II** for approximate outlines of future excavations.

Should there be any questions or concerns feel free to contact us,

A handwritten signature in cursive script that reads "James Beilman".

James Beilman, PG, CPG  
Director – Safety & Environmental  
Tel: +1 316.264.6366 (128)  
Cell: +1 316.364.9203  
JBeilman@Mulldrilling.com

Attachments:

***Figure I – Prior Sampling Points and Expected Sampling Points***

***Figure II – Approximate Excavation Zones***

***Table 915-1 – Current Results***

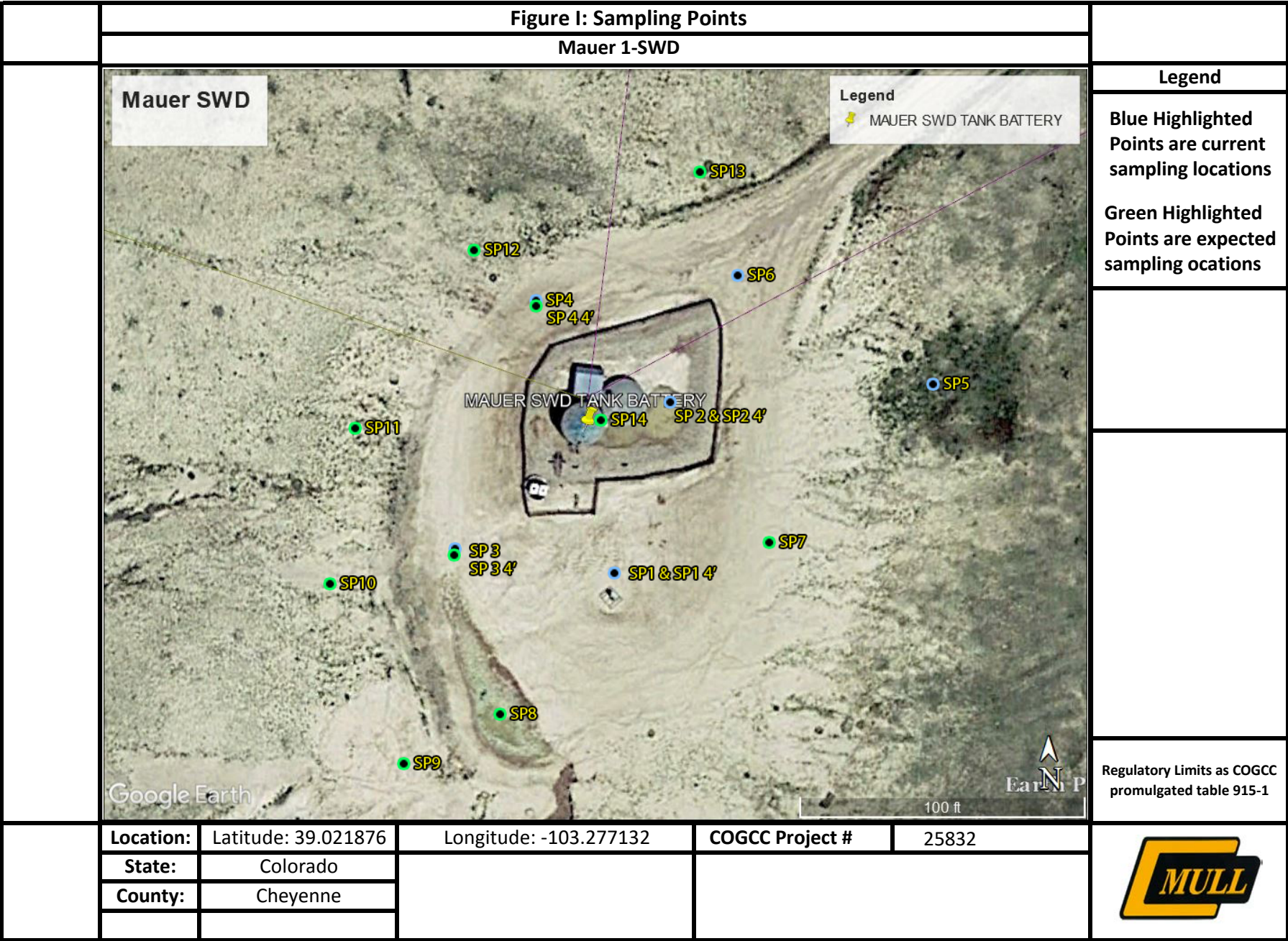
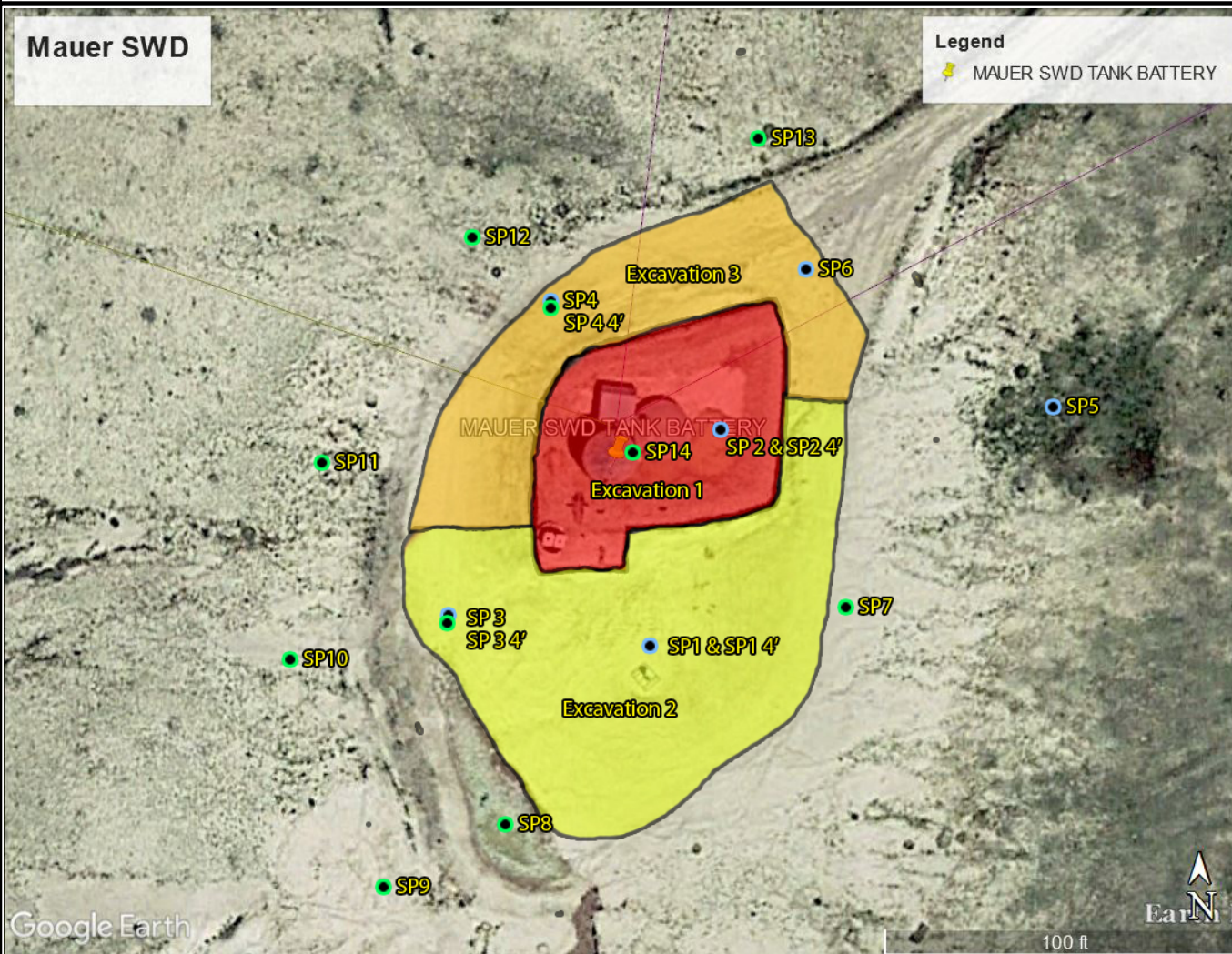




Figure II: Approximate Excavation Areas

Mauer 1-SWD



Legend

Blue Highlighted Points are current sampling locations

Green Highlighted Points are expected sampling locations

Regulatory Limits as COGCC promulgated table 915-1

Location:	Latitude: 39.021876	Longitude: -103.277132	COGCC Project #	25832
State:	Colorado			
County:	Cheyenne			



Table 915-1 Mauer 3.28.23 Results

12/1/2022

CLEANUP CONCENTRATIONS		SP 1	SP 1 4'	SP2	SP 2 4'	SP 3	SP 4	SP 5	SP 6
Contaminant of Concern	Concentrations	39.021733; - 103.2777094	39.021733; - 103.2777094	39.021899; - 103.277024	39.021899; - 103.277024	39.021740; - 103.277285	39.021994; - 103.277227	39.021922; - 103.276682	39.022022; - 103.276940
Soil TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons)	500mg/kg	48.6	ND	41.5	ND	64.6	556.8	8.2J	5.2J
Soils and Groundwater - liquid hydrocarbons including condensate and oil	below visual detection limits	ND	ND	ND	ND	ND	ND	ND	ND
Soil Suitability for Reclamation									
Electrical conductivity (EC) (by saturated paste method)	<4mmhos/cm	11.2	4.11	0.829	1.71	15.1	1.68	1.42	0.479
Sodium adsorption ratio (SAR) (by saturated paste method)	<6	11.6	17.4	1.27	19	18.4	7.45	1.94	3.75
pH (by saturated paste method)	6–8.3	8.47	8.27	8.97	8.82	7.59	7.81	7.97	8.88
boron (hot water soluble soil extract)	2mg/l	0.469	0.699	0.184J	1.16	1.41	0.34	0.57	0.319
Organic Compounds in Groundwater									
benzene	5µg/l	NA	NA	NA	NA	NA	NA	NA	NA
toluene	560 to 1,000µg/l	NA	NA	NA	NA	NA	NA	NA	NA
ethylbenzene	700µg/l	NA	NA	NA	NA	NA	NA	NA	NA
xylenes (sum of o-, m- and p- isomers = total xylenes)	1,400 to 10,000µg/l	NA	NA	NA	NA	NA	NA	NA	NA
naphthalene	140µg/l	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-trimethylbenzene	67µg/l	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-trimethylbenzene	67µg/l	NA	NA	NA	NA	NA	NA	NA	NA
Groundwater Inorganic Parameters									
total dissolved solids (TDS)	<1.25 X local background	NA	NA	NA	NA	NA	NA	NA	NA
chloride ion	250mg/l or <1.25 X local background	NA	NA	NA	NA	NA	NA	NA	NA
sulfate ion	250mg/l or <1.25 X local background	NA	NA	NA	NA	NA	NA	NA	NA

Soils	Residential Soil Screening Level Concentrations (mg/kg)	Protection of Groundwater Soil Screening Level Concentrations (mg/kg)								
Organic Compounds in Soils										
benzene	1.2	0.0026 (M)	0.00070J	ND	ND	ND	ND	0.0012J	ND	ND
toluene	490	0.69 (M)	ND	ND	ND	ND	ND	ND	ND	ND
ethylbenzene	5.8	0.78 (M)	ND	ND	ND	ND	ND	ND	ND	ND
xylenes (sum of o-, m- and p- isomers = total xylenes)	58	9.9 (M)	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	ND	ND	ND	ND	ND	ND	ND	ND
acenaphthene	360	0.55 (R)	ND	ND	ND	ND	ND	ND	ND	ND
anthracene	1800	5.8 (R)	ND	ND	0.0044	ND	ND	0.0031J	ND	ND
benzo(a)anthracene	1.1	0.011 (R)	0.0031J	ND	0.0023J	ND	ND	ND	ND	ND
benzo(b)fluoranthene	1.1	0.3 (R)	ND	ND	ND	ND	ND	ND	ND	ND
benzo(k)fluoranthene	11	2.9 (R)	ND	ND	ND	ND	ND	ND	ND	ND
benzo(a)pyrene	0.11	0.24 (M)	ND	ND	ND	0.0022J	ND	ND	ND	ND
chrysene	110	9 (R)	ND	ND	ND	ND	0.0024J	ND	ND	ND
dibenzo(a,h)anthracene	0.11	0.096 (R)	ND	ND	ND	ND	ND	ND	ND	ND
fluoranthene	240	8.9 (R)	ND	ND	0.012	0.0032J	0.0025J	ND	ND	ND
fluorene	240	0.54 (R)	ND	ND	ND	ND	ND	ND	ND	ND
indeno(1,2,3-cd)pyrene	1.1	0.98 (R)	ND	ND	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	ND	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	ND	ND	ND	ND	ND	ND	ND	ND
naphthalene	2	0.0038 (R)	ND	ND	ND	ND	ND	ND	ND	ND
pyrene	180	1.3 (R)	ND	ND	ND	0.0027J	0.0024J	ND	ND	ND
Metals in Soils										
arsenic	0.68	0.29 (M)	3.9	8.2	8.6	7.3	7.6	6.9	7.7	6.7
barium	15000	82 (M)	177	176	210	178	554	164	170	174
cadmium	71	0.38 (M)	0.29J	0.68	0.65	0.6	0.58	0.52J	0.55	0.51
chromium (VI)	0.3	0.00067 (R)	0.636J	ND	0.354J	ND	ND	0.276J	ND	ND
copper	3100	46 (M)	6.3	17.5	14.1	13.3	13.8	11.7	13.3	12.3
lead	400	14 (M)	6.6	12.7	16.7	11.4	12.7	12.8	11.2	9.8
nickel	1500	26 (R)	7.1	15	12.5	12.6	12.4	11.1	12.3	11.7
selenium	390	0.26 (M)	0.34J	0.44J	ND	0.58J	0.34J	0.49J	0.50J	0.52J
silver	390	0.8 (R)	ND	ND	ND	ND	ND	ND	ND	ND
zinc	23000	370 (R)	23.6	55.4	50.4	45.9	45.2	42.2	47.5	37.4

The letter "(R)" following a protection of Groundwater soil screening level indicates the concentration is derived from a risk-based approach. The letter "(M)" following a protection of Groundwater soil screening level indicates the concentration is derived from the drinking water MCL.