

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov



September 16, 2016

Brian Meyer
TransCanada Keystone Pipeline LP
13710 FNB Parkway, Ste 300
Omaha, NE 68154

RE: Closure for DENR Spill Case 2016.056 – TransCanada Keystone Pipeline Release –
Six Miles East of Menno, Hutchinson County, South Dakota

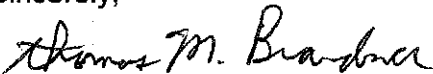
Dear Mr. Meyer:

Staff from the South Dakota Department of Environment and Natural Resources (DENR) have reviewed the available information for this case and determined no additional investigation or remedial action is required at this site. DENR has determined, based on the available site information, there is no current risk to human health or further risk to the environment. Therefore, DENR will close this case.

Reports indicate an estimated 400 barrels of crude oil was spilled as a result of a pipeline leak impacting soils surrounding the pipeline. TransCanada initiated investigation and remediation efforts and more than 20,000 tons of contaminated material was removed from the site and properly disposed of at a permitted landfill. There were no impacts to groundwater and all confirmation sample results were below DENR's Tier 1 action levels. However, if additional problems related to the pipeline release develop, TransCanada may be required to perform further investigation or remediation to address the concern.

If you have questions about this Closure designation, please contact Brian Walsh of my staff at (605) 773-3296. Thank you for your cooperation and the steps you have taken to protect South Dakota's environment.

Sincerely,


Thomas M. Brandner
Engineer Manager
Ground Water Quality Program

c: Bob Baumgartner, TransCanada Keystone Pipeline LP, Houston, TX
c/e: Dave Hoffman, Hutchinson County Emergency Management, Parkston, SD



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MEMORANDUM

To: Tom Brandner, Engineer Manager, Ground Water Quality Program *T.B.*
From: Brian Walsh, Environmental Scientist III, Ground Water Quality Program *B.W.*
Date: September 16, 2016
Subject: Closure for DENR Spill Case 2016.056 – TransCanada Keystone Pipeline Release – Six Miles East of Menno, Hutchinson County, South Dakota

Introduction

This memo describes the facts associated with DENR spill case 2016.056. The description covers general spill information, investigation and remediation efforts and remaining contamination. Finally, case closure is recommended. A closure letter is attached for your review.

General Spill Information

Site Name: TransCanada Keystone Pipeline Release
Location: Keystone Pipeline
500 feet south of the intersection of US-18 and 437th Ave.
Approximately 6 miles east of Menno, Hutchinson County, SD
Responsible Party: TransCanada Keystone Pipeline LP
Discovery Date: April 2, 2016

Description of the Incident – General Timeline

4/2/16 – 12:36 PM oil on the ground reported by a landowner
4/2/16 – 12:41 PM TransCanada shuts down the pipeline – initial spill volume estimated to be 187 gallons based on the amount of oil on the surface when initial responders arrived on scene.
4/3/16 – DENR onsite, investigation and excavation activities underway
4/7/16 – Spill volume revised to 400 barrels based on known area of contaminated soil

4/8/16 – Leak location identified at a girth weld anomaly at the 6 O'clock position on a transition weld

4/9/16 – Leak repaired, limited operation resumes with approval from the U.S. DOT Pipeline Hazardous Material Safety Administration (PHMSA)

4/19/16 – Began transporting contaminated material to the Waste Management facility in Minnesota for final disposal

5/5/16 – Final pipe repair completed

5/13/16 – East Side Assessment report submitted to DENR

7/8/16 – West Side Assessment report submitted to DENR

8/22/16 – Final Corrective Action report submitted to DENR

Investigation and Remediation Activities

Upon discovery of the release, TransCanada shut-down the pipeline and dispatched personnel to the site to begin investigation and remediation activities. Activities included soil borings, soil excavation, collection of impacted waters, temporary storage of impacted material, final disposal of impacted material, confirmation sampling, backfilling, and final site restoration. Work areas included the Remediation Area (located 500 feet south of the intersection of US-18 and 437th Ave. Hutchinson Co. on both the east and west side of 437th Ave.), Soil Staging Yard (east side of Hwy 81, approximately 1,400 feet north of 279th Street), and the TransCanada Pump Station – slurry pit (located approximately 4 miles north of the Remediation Area).

The remedial investigation indicated the only impacted media was soil and any rainwater that came into contact with impacted soil. There were no observed impacts to groundwater and the aquifer at the Remediation Area (Niobrara aquifer) is located at a depth more than 100 feet below land surface.

A total of 20,428.52 tons (1,005 truckloads) of hydrocarbon impacted soils and other materials (PPE, sorbents, sampling equipment, etc....) were removed and landfilled at a Waste Management facility near Glencoe, Minnesota.

A total of 1,174.25 tons of non-hazardous fluids (no free product) were disposed of at Waste Management's facility. The remaining liquid, approximately 13,084 gallons from frac tank 1 was delivered to Beaver Oil in Illinois where 31 gallons of crude oil was recovered for fuel blending. The remaining water from frac tank 1 was disposed of as a characteristic hazardous waste liquid in accordance with Beaver Oil's disposal permit.

Remaining Contamination

The tables below show the results of the laboratory confirmation samples for the Remediation Area, Soil Staging Yard and the TransCanada Pump Station – Slurry Pit. Sample results do not identify any parameters remaining that exceed DENR's Tier 1 action levels.

Remediation Area – Limit of Excavation Sample Results

Sample ID	Date	Molice Oil	PPI - PRO	Benzene	Ethylbenzene	o-xthalene	Toluene	None Total
SDT (mg/kg)		<500	500	100	100	25	100	100
E-25B	6/8/2016	<12.2	<12.2	<0.0308	<0.0617	<0.247	<0.0617	<0.185
E-25C	6/8/2016	<12.3	<12.3	<0.0295	<0.0590	<0.236	<0.0590	<0.177
E-25A	6/8/2016	<12.0	<12.0	<0.0265	<0.0531	<0.212	<0.0531	<0.159
F-3	4/11/2016	<12.9	<12.9	<0.0252	<0.0630	<0.252	<0.0630	<0.693
N-3	4/11/2016	<12.4	<12.4	<0.0251	<0.0628	<0.251	<0.0628	<0.691
S3-B	4/11/2016	<12.1	<12.1	<0.0245	<0.0611	<0.245	<0.0611	<0.672
F-4	4/11/2016	<12.0	<12.0	<0.0236	<0.0590	<0.236	<0.0590	<0.649
N-4	4/11/2016	<12.8	<12.8	<0.0250	<0.0624	<0.250	<0.0624	<0.686
S-4	4/11/2016	<12.1	<12.1	<0.0236	<0.0590	<0.236	<0.0590	<0.649
F5-B	4/12/2016	<11.9	<11.9	<0.0232	<0.0579	<0.232	<0.0579	<0.637
N5-B	4/12/2016	<12.2	<12.2	<0.0239	<0.0596	<0.239	<0.0596	<0.656
S5-B	4/12/2016	<12.1	<12.1	<0.0242	<0.0605	<0.242	<0.0605	<0.666
F6-B	4/12/2016	<12.2	<12.2	<0.0247	<0.0619	<0.247	<0.0619	<0.680
N6-B	4/12/2016	<12.2	<12.2	<0.0247	<0.0618	<0.247	<0.0618	<0.680
S6	4/12/2016	<12.3	<12.3	<0.0248	<0.0620	<0.248	<0.0620	<0.682
F8	4/13/2016	<12.3	<12.3	<0.0244	<0.0610	<0.244	<0.0610	<0.183
N8	4/13/2016	<12.4	<12.4	<0.0249	<0.0623	<0.249	<0.0623	<0.187
S8	4/13/2016	<12.4	<12.4	<0.0250	<0.0624	<0.250	<0.0624	<0.187
F9	4/15/2016	<12.9	<12.9	<0.0255	<0.0638	<0.255	<0.0638	<0.191
N9	4/15/2016	<12.0	<12.0	<0.0252	<0.0630	<0.252	<0.0630	<0.189
S9	4/15/2016	<12.4	<12.4	<0.0249	<0.0622	<0.249	<0.0622	<0.187
F10	4/15/2016	<12.8	<12.8	<0.0261	<0.0652	<0.261	<0.0652	<0.195
N10	4/15/2016	<12.3	<12.3	<0.0247	<0.0618	<0.247	<0.0618	<0.185
S10	4/15/2016	<12.2	<12.2	<0.0234	<0.0584	<0.234	<0.0584	<0.175
F-17	6/6/2016	<11.6	<11.6	<0.0293	<0.0586	<0.234	<0.0586	<0.176
N-17	6/6/2016	<12.0	<12.0	<0.0308	<0.0617	<0.247	<0.0617	<0.185
S-17	6/6/2016	<12.0	<12.0	<0.0291	<0.0583	<0.233	<0.0583	<0.175
F-18A	6/6/2016	<12.7	<12.7	<0.0256	<0.0513	<0.205	<0.0513	<0.154
F-18B	6/6/2016	<12.8	<12.8	<0.0336	<0.0672	<0.269	<0.0672	<0.202
N-18	6/6/2016	<13.6	<13.6	<0.0333	<0.0666	<0.266	<0.0666	<0.200
S-18	6/6/2016	<11.4	<11.4	<0.0307	<0.0614	<0.245	<0.0614	<0.184
F-19A	6/6/2016	<12.2	<12.2	<0.0342	<0.0684	<0.274	<0.0684	<0.205
F-19B	6/6/2016	<12.0	<12.0	<0.0282	<0.0564	<0.225	<0.0564	<0.169
N-19	6/6/2016	<11.9	<11.9	<0.0362	<0.0723	<0.289	<0.0723	<0.217
S-19	6/6/2016	<11.8	<11.8	<0.0296	<0.0592	<0.237	<0.0592	<0.178
F20-A	6/6/2016	<11.7	<11.7	<0.0283	<0.0566	<0.226	<0.0566	<0.170
F20-B	6/6/2016	<11.8	<11.8	<0.0262	<0.0524	<0.210	<0.0524	<0.157
N-20	6/6/2016	<12.0	<12.0	<0.0261	<0.0523	<0.209	<0.0523	<0.157
S-20	6/6/2016	<12.0	<12.0	<0.0267	<0.0535	<0.214	<0.0535	<0.160
F-21A	6/7/2016	<12.1	<12.1	<0.0279	<0.0559	<0.224	<0.0559	<0.168
F-21B	6/7/2016	<11.9	<11.9	<0.0287	<0.0573	<0.229	<0.0573	<0.172
F-21C	6/7/2016	<12.4	<12.4	0.0779 J	0.0793	<0.186	<0.0856	<0.140
N-21	6/7/2016	<11.6	<11.6	<0.0280	<0.0560	<0.224	<0.0560	<0.168
S-21	6/7/2016	<11.9	<11.9	<0.0286	<0.0573	<0.229	<0.0573	<0.172
F-22A	6/7/2016	<12.5	<12.5	<0.0253	<0.0507	<0.203	<0.0507	<0.152
F-22B	6/7/2016	<12.4	<12.4	<0.0306	<0.0612	<0.245	<0.0612	<0.183
F-22C	6/7/2016	<12.5	<12.5	<0.0310	<0.0620	<0.248	<0.0620	<0.186
N-22	6/7/2016	<12.3	<12.3	<0.0289	<0.0577	<0.231	<0.0577	<0.173
S-22	6/7/2016	<11.7	<11.7	<0.0274	<0.0548	<0.219	<0.0548	<0.164
F-23A	6/7/2016	<11.7	<11.7	<0.0288	<0.0576	<0.230	<0.0576	<0.173
F-23B	6/7/2016	<13.0	<13.0	<0.0308	<0.0616	<0.246	<0.0616	<0.185
F-23C	6/7/2016	<12.0	<12.0	<0.0310	<0.0620	<0.248	<0.0620	<0.186
N-23	6/8/2016	<12.6	<12.6	<0.0312	<0.0625	<0.250	<0.0625	<0.187
S-23	6/7/2016	<12.5	<12.5	<0.0300	<0.0600	<0.240	<0.0600	<0.180
F-24A	6/7/2016	<12.2	<12.2	<0.0269	<0.0538	<0.215	<0.0538	<0.161
F-24B	6/7/2016	<12.1	<12.1	<0.0292	<0.0585	<0.234	<0.0585	<0.175
N-24	6/8/2016	<12.4	<12.4	<0.0273	<0.0546	<0.218	<0.0546	<0.164
S-24	6/8/2016	<12.2	<12.2	<0.0304	<0.0608	<0.243	<0.0608	<0.183
W-17A	6/6/2016	<14.2	<14.2	<0.0385	<0.0770	<0.308	<0.0770	<0.231
W-17B	6/6/2016	<12.0	<12.0	<0.0303	<0.0606	<0.242	<0.0606	<0.182
W-17C	6/6/2016	<11.8	<11.8	<0.0296	<0.0592	<0.237	<0.0592	<0.178

J – estimated value

Remediation Area – Surface Soil Results

Sample ID	Date	Manganese	PPH – DPE	Benzene	1,1,1-Trichloroethane	Dibromobenzene	Chlorine	Xylenes (Total)
SD (mg/kg)		200	200	0.02	0.05	0.20	0.05	0.10
RA-1	6/23/2016	<12.4	<12.4	<0.0284	<0.0568	<0.227	<0.0568	<0.170
RA-2	6/23/2016	<12.0	<12.0	<0.0276	<0.0552	<0.221	<0.0552	<0.166
RA-3	6/23/2016	<11.6	<11.6	<0.0235	<0.0470	<0.188	<0.0470	<0.141
RA-4	6/23/2016	<11.4	<11.4	<0.0241	<0.0483	<0.193	<0.0483	<0.145
RA-5	6/23/2016	<11.9	<11.9	<0.0256	<0.0513	<0.205	<0.0513	<0.154
RA-6	6/23/2016	<10.8	<10.8	<0.0306	<0.0612	<0.245	<0.0612	<0.184
RA-7	6/23/2016	42.4	<11.7	<0.0287	<0.0575	<0.230	<0.0575	<0.172
RA-8	6/23/2016	<11.3	<11.3	<0.0256	<0.0512	<0.205	<0.0512	<0.154
RA-9	6/23/2016	23.7 J	<10.6 UJ	<0.0285	<0.0570	<0.228	<0.0570	<0.171
RA-10	6/23/2016	11.9	<11.1	<0.0259	<0.0517	<0.207	<0.0517	<0.155
RA-11	6/23/2016	<12.1	<12.1	<0.0273	<0.0547	<0.219	<0.0547	<0.164
RA-12	6/23/2016	24.4	<12.5	<0.0304	<0.0608	<0.243	<0.0608	<0.182
RA-13	6/23/2016	27.4	<12.0	<0.0253	<0.0506	<0.202	<0.0506	<0.152
RA-14	6/23/2016	<11.3	<11.3	<0.0252	<0.0503	<0.201	<0.0503	<0.151
RA-15	6/23/2016	37.6	18.1	<0.0249	<0.0499	<0.200	<0.0499	<0.150
RA-16	6/23/2016	<10.9	<10.9	<0.0235	<0.0470	<0.188	<0.0470	<0.141
RA-17	6/23/2016	53.1	16.8	<0.0266	<0.0532	<0.213	<0.0532	<0.160
RA-18	6/23/2016	80.7	32.1	<0.0240	<0.0479	<0.192	<0.0479	<0.144
RA-19	6/23/2016	64.7	21.6	<0.0316	<0.0633	<0.253	<0.0633	<0.190
RA-20	6/23/2016	20	<12.1	<0.0328	<0.0656	<0.262	<0.0656	<0.197
RA-21	6/23/2016	<11.5	<11.5	<0.0235	<0.0470	<0.188	<0.0470	<0.141
RA-22	6/23/2016	17	<11.6	<0.0257	<0.0514	<0.206	<0.0514	<0.154
RA-23	6/23/2016	<11.8	<11.8	<0.0243	<0.0487	<0.195	<0.0487	<0.146
RA-24	6/23/2016	37.7	20.9	<0.0249	<0.0499	<0.200	<0.0499	<0.150
RA-25	6/23/2016	12.6	<11.6	<0.0271	<0.0543	<0.217	<0.0543	<0.163
RA-26	6/23/2016	37.8	16.2	<0.0222	<0.0445	<0.178	<0.0445	<0.133
RA-27	6/23/2016	<11.7	<11.7	<0.0246	<0.0492	<0.197	<0.0492	<0.148
RA-28	6/23/2016	<12.2	<12.2	<0.0257	<0.0513	<0.205	<0.0513	<0.154
RA-29	6/23/2016	<12.6	<12.6	<0.0271	<0.0542	<0.217	<0.0542	<0.163
RA-30	6/23/2016	<11.6	<11.6	<0.0262	<0.0524	<0.209	<0.0524	<0.157
RA-31	6/26/2016	297	104	<0.0202	<0.0404	<0.162	<0.0404	<0.121
RA-32	6/26/2016	147	51.8	<0.204	<0.0409	<0.163	<0.0409	<0.123
RA-33	6/26/2016	41.6	15.9	<0.0209	<0.0419	<0.167	<0.0419	<0.126
RA-34	6/26/2016	<11.5	<11.5	<0.0260	<0.0521	<0.208	<0.0521	<0.156
RA-35	6/26/2016	13.9	<11.1	<0.0236	<0.0472	<0.189	<0.0472	<0.142
RA-36	6/26/2016	<11.5	<11.5	<0.0247	<0.0494	<0.198	<0.0494	<0.148
RA-37	6/26/2016	<11.4	<11.4	<0.0233	<0.0466	<0.186	<0.0466	<0.140
RA-38	6/26/2016	<11.5	<11.5	<0.0252	<0.0504	<0.202	<0.0504	<0.151
RA-39	6/26/2016	28.5	<11.7	<0.0227	<0.0454	<0.182	<0.0454	<0.136
RA-40	6/26/2016	<11.7	<11.7	<0.0227	<0.0455	<0.182	<0.0455	<0.136
RA-41	6/26/2016	<12.2	<12.2	<0.0272	<0.0545	<0.218	<0.0545	<0.163
RA-42	6/26/2016	<11.4	<11.4	<0.0247	<0.0493	<0.197	<0.0493	<0.148
RA-43	6/26/2016	<11.6	<11.6	<0.0244	<0.0488	<0.195	<0.0488	<0.146
RA-44	6/26/2016	<11.5	<11.5	<0.0241	<0.0481	<0.192	<0.0481	<0.144
RA-45	6/26/2016	56.9	<11.4	<0.0201	<0.0403	<0.161	<0.0403	<0.121
RA-46	6/26/2016	23.4	<11.5	<0.0233	<0.0465	<0.186	<0.0465	<0.140
RA-47	6/26/2016	89.4 J	37.1	<0.0236	<0.0472	<0.189	<0.0472	<0.142
RA-48	6/26/2016	<11.5	<11.5	<0.0254	<0.0508	<0.203	<0.0508	<0.152
RA-49	6/26/2016	13.1	<10.2	<0.0220	<0.0439	<0.176	<0.0439	<0.132
RA-50	6/26/2016	25.8	<11.1	<0.0252	<0.0503	<0.201	<0.0503	<0.151
RA-51	6/26/2016	<11.4	<11.4	<0.0250	<0.0499	<0.200	<0.0499	<0.150

J – estimated value
UJ – estimated reporting limit

Soil Staging Yard – Surface Soil Results

Sample ID	Date	Motor Oil	PCB/DRO	Mercury	1,1-Dichloroethene	Naphthalene	Polycyclic Aromatic Hydrocarbons (Total)	Lead	Cadmium
KY-1	6/25/2016	<11.2	<11.2	<0.0223	<0.0446	<0.178	<0.0446	<0.134	
KY-2	6/25/2016	<10.7	<10.7	<0.0228	<0.0457	<0.183	<0.0457	<0.137	
KY-3	6/25/2016	13.3	<12.4	<0.0245	<0.0490	<0.196	<0.0490	<0.147	
KY-4	6/25/2016	41.4	11.3	<0.0202	<0.0404	<0.161	<0.0404	<0.121	
KY-5	6/25/2016	42.6	12.5	<0.0209	<0.0418	<0.167	<0.0418	<0.126	
KY-6	6/25/2016	<10.3	<10.3	<0.0236	<0.0471	<0.188	<0.0471	<0.141	
KY-7	6/25/2016	15.8	<10.4	<0.0215	<0.0431	<0.172	<0.0431	<0.129	
KY-8	6/29/2016	<10.5	<10.5	<0.0235	<0.0471	<0.188	<0.0471	<0.141	
KY-10	6/29/2016	<10.5	<10.5	<0.0232	<0.0465	<0.186	<0.0465	<0.139	
KY-11	6/29/2016	148	33.3	<0.0251	<0.0503	<0.201	<0.0503	<0.151	
KY-12	6/25/2016	19.4	<10.6	<0.0242	<0.0485	<0.194	<0.0485	<0.145	
KY-13	6/25/2016	11.8	<10.0	<0.0228	<0.0456	<0.182	<0.0456	<0.137	
KY-14	6/25/2016	26.6	11.4	<0.0181	<0.0362	<0.145	<0.0362	<0.109	
KY-15	6/29/2016	<12.1	<12.1	<0.0275	<0.0549	<0.220	<0.0549	<0.165	
KY-16	6/29/2016	<12.1	<12.1	<0.0278	<0.0556	<0.222	<0.0556	<0.167	
KY-17	6/29/2016	<10.6	<10.6	<0.0243	<0.0485	<0.194	<0.0485	<0.146	
KY-18	6/29/2016	<12.0	<12.0	<0.0270	<0.0539	<0.216	<0.0539	<0.162	
KY-19	6/29/2016	<10.6	<10.6	<0.0238	<0.0477	<0.191	<0.0477	<0.143	
KY-20	6/25/2016	<11.2	<11.2	<0.0259	<0.0519	<0.207	<0.0519	<0.156	
KY-21	6/25/2016	23.9	<11.2	<0.0221	<0.0442	<0.177	<0.0442	<0.133	
KY-22	6/25/2016	12.5	<10.0	<0.0226	<0.0453	<0.181	<0.0453	<0.136	
KY-23	6/25/2016	22.1	<12.4	<0.0227	<0.0455	<0.182	<0.0455	<0.136	
KY-24	6/25/2016	15.7	<13.3	<0.0269	<0.0538	<0.215	<0.0538	<0.161	
KY-25	6/25/2016	<11.0	<11.0	<0.0248	<0.0497	<0.199	<0.0497	<0.149	
KY-26	6/25/2016	<10.8	<10.8	<0.0233	<0.0466	<0.186	<0.0466	<0.140	
KY-27	6/25/2016	<11.6	<11.6	<0.0232	<0.0465	<0.186	<0.0465	<0.139	
KY-28	6/29/2016	26.4	<10.6	<0.0244	<0.0489	<0.196	<0.0489	<0.147	
KY-29	6/25/2016	29.6	<11.7	<0.0249	<0.0497	<0.199	<0.0497	<0.149	
KY-30	6/25/2016	19.6	<13.1	<0.0275	<0.0551	<0.220	<0.0551	<0.165	
KY-31	6/29/2016	32.2	<12.3	<0.0278	<0.0556	<0.222	<0.0556	<0.167	
KY-32	6/29/2016	15.0	<10.9	<0.0251	<0.0503	<0.201	<0.0503	<0.151	
KY-33	6/25/2016	61.6	16.1	<0.0238	<0.0475	<0.190	<0.0475	<0.143	
KY-34	6/25/2016	19.3	<11.7	<0.0251	<0.0502	<0.201	<0.0502	<0.151	
KY-35	6/29/2016	36.9	<10.7	<0.0236	<0.0472	<0.189	<0.0472	<0.141	
KY-36	6/29/2016	48.7	11.4	<0.0231	<0.0461	<0.185	<0.0461	<0.138	
KY-37	6/29/2016	152	47.3	<0.0235	<0.0470	<0.188	<0.0470	<0.141	
KY-38	6/29/2016	<21.7 U*	<11.0	<0.0243	<0.0486	<0.194	<0.0486	<0.146	
KY-39	6/28/2016	13.1	<10.1	<0.0230	<0.0460	<0.184	<0.0460	<0.138	
KY-40	6/28/2016	123	39.4	<0.0213	<0.0426	<0.171	<0.0426	<0.128	
KY-41	6/28/2016	<10.4	<10.4	<0.0183	<0.0367	<0.147	<0.0367	<0.110	
KY-42	6/28/2016	<10.4	<10.4	<0.0237	<0.0473	<0.189	<0.0473	<0.142	
KY-43	6/28/2016	<10.4	<10.4	<0.0231	<0.0462	<0.185	<0.0462	<0.139	
KY-44	6/29/2016	28.4	<10.7	<0.0271	<0.0542	<0.217	<0.0542	<0.163	
KY-45	6/29/2016	34.2	<11.0	<0.0246	<0.0492	<0.197	<0.0492	<0.147	
KY-46	6/28/2016	<10.3	<10.3	<0.0242	<0.0484	<0.194	<0.0484	<0.145	
KY-47	6/28/2016	27.8	<10.3	<0.0222	<0.0443	<0.177	<0.0443	<0.133	
KY-48	6/28/2016	<10.5	<10.5	<0.0178	<0.0356	<0.142	<0.0356	<0.107	
KY-49	6/28/2016	<10.6	<10.6	<0.0205	<0.0409	<0.164	<0.0409	<0.123	
KY-50	6/28/2016	<10.5	<10.5	<0.0240	<0.0480	<0.192	<0.0480	<0.144	
KY-51	6/28/2016	23.3	<10.4	<0.0237	<0.0474	<0.190	<0.0474	<0.142	
KY-52	6/29/2016	<10.9	<10.9	<0.0258	<0.0517	<0.207	<0.0517	<0.155	
KY-53	6/29/2016	<12.5 U*	<10.9	<0.0232	<0.0464	<0.186	<0.0464	<0.139	
KY-54	6/28/2016	<10.6	<10.6	<0.0238	<0.0476	<0.191	<0.0476	<0.143	
KY-55	6/28/2016	14.4	<10.5	<0.0238	<0.0477	<0.191	<0.0477	<0.143	
KY-56	6/28/2016	33.4	<10.5	<0.0207	<0.0414	<0.166	<0.0414	<0.124	
KY-57	6/28/2016	<10.4	<10.4	<0.0235	<0.0471	<0.188	<0.0471	<0.141	
KY-58	6/28/2016	26.5	<10.4	<0.0210	<0.0420	<0.168	<0.0420	<0.126	
KY-59	6/28/2016	106 J	23.2	<0.0241	<0.0482	<0.193	<0.0482	<0.145	
KY-60	6/29/2016	<10.8	<10.8	<0.0217	<0.0433	<0.173	<0.0433	<0.130	
KY-61	6/29/2016	24.8	<10.5	<0.0245	<0.0490	<0.196	<0.0490	<0.147	
KY-62	6/28/2016	34.1	<10.2	<0.0232	<0.0465	<0.186	<0.0465	<0.139	
KY-63	6/28/2016	12.4	<10.4	<0.0222	<0.0443	<0.177	<0.0443	<0.133	
KY-64	6/28/2016	12.2	<10.3	<0.0204	<0.0408	<0.163	<0.0408	<0.122	
KY-65	6/25/2016	<11.1	<11.1	<0.0239	<0.0478	<0.191	<0.0478	<0.143	
KY-66	6/25/2016	<12.0	<12.0	<0.0248	<0.0495	<0.198	<0.0495	<0.149	
KY-67	6/25/2016	<11.7	<11.7	<0.0228	<0.0456	<0.182	<0.0456	<0.137	
KY-68	6/25/2016	48.3	<12.6	<0.0248	<0.0496	<0.198	<0.0496	<0.149	

J – estimated value U* – qualified not detected due to associated blank contamination

Pump Station – Slurry Pit Results

Sample ID (Slurry Pit)	Date	Water Oil (ppm)	PH - DRC	Benzene (ppm)	Ethylbenzene (ppm)	Naphthalene (ppm)	Toluene (ppm)	Xylene (o,p,m) (ppm)
Slurry Pit A	7/8/2016	28.2	<12.6	<0.0636	<0.0636	<0.254	<0.0636	<0.191
Slurry Pit B	7/8/2016	28.4	<12.1	<0.0604	<0.0604	<0.242	<0.0604	<0.181
Slurry Pit C	7/8/2016	119	29.1	<0.0585	<0.0585	<0.234	<0.0585	<0.176
Slurry Pit D	7/8/2016	72.0	16.6	<0.0576	<0.0576	<0.230	<0.0576	<0.173

Potential Exposure Pathways

Groundwater

Based on the remediation efforts performed at the site and a review of the confirmation sample results the evidence does not indicate impacts to groundwater as a result of the release. Therefore, the groundwater exposure pathway is not considered complete.

Soil

Soils at the site were impacted by the crude oil release. However, based on the remedial excavation performed at the site and a review of the confirmation samples there is no remaining contamination above the Tier 1 Action Levels so the soil exposure pathway is not considered complete.

Recommendations

Based on a review of information provided and an evaluation of potential risks associated with this site, I recommend closure status for this site.