

September 16, 2013

Tyson Ertel
HES Advisor
OXY USA WTP LP, OXY USA Inc.
760 Horizon Drive, Suite 101
Grand Junction, CO 81506

Re: Cascade Creek 705-22-43, Additional Investigation Summary Report,
Garfield County, Colorado, Olsson Project No. 013-0242

Dear Mr. Ertel:

The following letter report below summarizes Olsson Associates, Inc. (Olsson) additional site investigation activities for the referenced location.

Project Background Summary

On January 11, 2013, it was discovered by OXY USA WTP LP (Oxy) that a valve failed due to freezing conditions on one of the two production tanks on the Oxy Cascade Creek (CC) 705-22-43 (site) that resulted in the release of approximately 180 barrels (bbls) of production water and condensate mixture into the unlined soil secondary containment area. The Colorado Oil and Gas Conservation Commission (COGCC) was verbally notified of the release on January 12, 2013. Approximately one bbl breached the containment area and flowed to the north along the site access road for approximately 50 feet. The remaining released fluid was adsorbed by the soil within the secondary containment. On January 11, 2013 the impacted soil outside the secondary containment was excavated and temporarily stockpiled within the secondary containment area for future disposal.

Site Setting

The site is located in the southeast quarter of the northwest quarter of Section 5, Township 7 South, Range 97 West, Sixth Principal Meridian in Garfield County, Colorado (39.47766 latitude and -108.24353 longitude). Conn Creek, at its closest point, is approximately 0.23 miles west of the site. A commercial water well permitted to Oxy is located approximately 0.5 miles south-southwest (down gradient) of the site. The site location is depicted on the Site Map included as Figure 1.

Prior Site Investigations

On January 15, 2013 Olsson provided environmental oversight for a hydro-excavator to pothole three locations (PH1, PH2, and PH3) adjacent to the secondary containment to depths ranging

from 6 feet to 12 feet below ground surface (ft-bgs) to assess the extent of the release, however petroleum-impacted soil was not observed.

On February 8, 2013 Olsson conducted a site investigation to assess potential subsurface soil impacts associated with the release by advancing five borings (BH1, BH2, BH3, BH4, and BH9) using at selected locations on the site. The locations of the potholes and February 2013 are depicted on the Boring Location Map included as Figure 2. Olsson prepared a report for Oxy dated April 22, 2013 for the prior site investigations.

Additional Subsurface Investigation

On July 16, 2013 to July 18, 2013 Olsson conducted an additional site investigation to further assess subsurface soil impacts by advancing seven additional borings (BH5, BH6, BH7, BH8, BH10, BH11, and BH12) as indicated on attached Figure 2. Well production was suspended and the production tanks and secondary containment were temporarily relocated to allow for additional site characterization. Drilling services were provided by High Plains Drilling of Denver, Colorado using a CME-75 drill rig equipped with 6-inch hollow stem auger. Soil samples were collected continuously (lithology permitting) using a 4-inch diameter continuous split-spoon sampler.

An Olsson geologist documented the site lithology, examined the soils for suspected environmental impact (i.e. chemical staining and/or odors) and field screened the soils using a photo-ionization detector (PID) for the presence of volatile organic vapors as the borings were advanced. The field soil screening method involved placing a representative sample from each soil core interval into plastic bags, sealing the bags, and allowing the bag contents to equilibrate to the surrounding ambient conditions. The intake probe of a Mini-Rae PID was inserted into the individual sample bags to measure the volatile organic vapors desorbed from the impacted soils into the headspace of the bag. The PID readings were recorded in parts per million (ppm). The PID headspace screening readings ranged from less than 1 ppm to 1,949 ppm (boring BH8 at 15 ft-bgs to 20 ft-bgs), as shown on the attached boring logs. The maximum observed field screening PID measurements are summarized below in Table 1.

Table 1 – Additional Site Investigation

Maximum PID Field Screening Measurements

Boring	Sample Date	Depth (ft-bgs)	PID Reading (ppm)
BH5	7/16/13	10-15	602
BH6	7/16/13	10-15	1,434
BH7	7/16/13	10-15	674
BH8	7/17/13	15-20	1,949
BH10	7/17/13	45-50	11.8
BH11	7/18/13	40-45	89
BH12	7/18/13	30-35	1,649

ft-bgs – Feet below ground surface ppm – Parts per million

Similar to the previous investigations, the borings encountered alluvium consisting of inter-bedded sand, silt, clay, gravel, lithic fragments underlain by weathered shale and shale bedrock. Groundwater was not observed in the borings during drilling. Copies of the boring logs are attached. Boring observations are summarized as follows:

- Boring BH5 was located east of the production tanks within the former secondary containment and advanced to a depth of 50 ft-bgs. Petroleum-impacted soils were observed between 6 ft-bgs and 10 ft-bgs.
- Boring BH6 was located under the former location of the eastern production tank within the former secondary containment and advanced to a total depth of 50 ft-bgs. Petroleum-impacted soils were observed between 6 ft-bgs and 30 ft-bgs.
- Boring BH7 was located southwest of the former location of the west tank within the former secondary containment and advanced to a total depth of 50 ft-bgs. Petroleum-impacted soils were observed between 10 ft-bgs and 31 ft-bgs.
- Boring BH8 was located south of former secondary containment and advanced to a total depth of 50 ft-bgs. Petroleum-impacted soils were observed between 15 ft-bgs and 30 ft-bgs.
- Boring BH10 was located approximately 25 feet south of the former secondary containment to a total depth of 50 ft-bgs. Petroleum impacted soil was not observed in this boring.
- Boring BH11 was located along the west edge of the pad southwest of former secondary containment and advanced to a total depth of 50 ft-bgs. Petroleum impacted soil was not observed in this boring.
- Boring BH12 was located along the west edge of the pad due west of the former secondary containment and advanced to a total depth of 50 ft-bgs. Petroleum-impacted soils were observed between 25 and 30 ft-bgs.

Dry Wells

Upon reaching total depth at borings BH5, BH8, BH10, BH11 and BH12, dry wells were constructed to accommodate potential future remediation efforts (e.g. injection of chemical oxidizing agents for remediation of residual hydrocarbon impacted soil, soil vapor extraction or bioventing). The wells were constructed of 2-inch diameter polyvinyl chloride (PVC) 0.010 well screen extending from the base of the boring to within 10 feet of the ground surface. A 10/20 mesh graded sand pack was placed around the well screen to approximately two feet above the well screen. A hydrated bentonite seal was placed above the sand pack and extend to within one foot of the surface. A flush-mount vaulted well protector was set in concrete at the ground surface. The dry wells at boring locations BH5, BH8, BH10 and BH11 were constructed with a 40 foot screened interval and the dry well at BH12 was constructed with a 35 foot screened interval. Completion logs for the dry wells are attached.

Geologic Cross Sections

Olsson prepared geologic cross sections depicting boring lithology and PID field screening measurements. Locations of the cross sections are shown on attached Figure 3. Cross section A to A' is included as Figure 4. Cross section B to B' is included as Figure 5. Cross section C to C' is included as Figure 6. Cross section D to D' is included as Figure 7. Cross section E to E' is included as Figure 8.

Soil Sample Laboratory Analyses

Soil samples exhibiting the highest PID field screening measurements or indications of potential petroleum impact were collected for laboratory analysis which included the following COGCC Table 910-1 for soil constituents:

- Gasoline range hydrocarbons (GRO) using EPA Method 8015;
- Diesel range hydrocarbons (DRO) using EPA Method 8015;
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8260B;
- Arsenic, barium, cadmium, chromium, copper, lead, nickel, selenium, silver, zinc using EPA Method 6010B;
- Mercury using EPA Method 7471;
- Hexavalent chromium using EPA Method 7196A;
- Poly-nuclear aromatic hydrocarbons (PAHs) using EPA Method 8270C – selected ion monitoring (SIM);
- Sodium absorption ration (SAR);
- Specific conductance (SC) using standard method (SM) 9050 Modified
- pH using SM 9045D; and
- Oxidation reduction potential (ORP) using SM 2580B-2011

Laboratory Analytical Results

The laboratory analytical results for both site investigation soil samples are summarized in attached Table 2. The laboratory results for the additional site investigation include the following:

- Total petroleum hydrocarbons (TPH) was reported above the COGCC Table 910-1 concentration levels of 500 milligrams per kilogram (mg/kg) for soil samples BH5 (10-15 ft.) at 860 mg/kg, BH5 (45-50 ft.) at 690 mg/kg, BH6 (10-15 ft.) at 1120 mg/kg, BH7 (10-15 ft.) at 800 mg/kg, and BH8 (15-20 ft.) at 4860 mg/kg;

- Benzene was reported above the COGCC Table 910-1 concentration level of 0.17 mg/kg in soil sample BH8 (15-20 ft.) at 2.4 mg/kg;
- Toluene, ethylbenzene, and total xylenes were reported either below laboratory reporting limits or below their respective COGCC Table 910-1 concentration levels;
- Arsenic was reported above the COGCC Table (10-1 concentration for arsenic of 0.39 mg/kg in soil samples BH5 (10-15 ft.) at 6.6 mg/kg, BH5 (45-50 ft.) at 7.1 mg/kg, BH6 (10-15 ft.) at 5.8 mg/kg, BH6 (45-50 ft.) at 24 mg/kg, BH7 (10-15 ft.) at 8 mg/kg, BH7 (45-50 ft.) at 6.6 mg/kg, BH8 (15-20 ft.) at 11 mg/kg, BH8 (45-50 ft.) at 7.7 mg/kg, BH9 (15-20 ft.) at 9.4 mg/kg, BH9 (30-34 ft.) at 10 mg/kg, BH10 (20-25 ft.) at 8 mg/kg, BH10 (45-50 ft.) at 14 mg/kg, BH11 (40-45 ft.) at 13 mg/kg, BH11 (45-50 ft.) at 12 mg/kg, BH12 (30-35 ft.) at 3.6 mg/kg and BH12 (40-45 ft.) at 89 mg/kg;
- The remaining metals were reported either below laboratory reporting limits or within COGCC Table 910-1 concentration levels;
- pH was reported above the COGCC concentration level range of 6 to 9 pH units in soil samples BH1 (32-35 ft.), BH2 (37-38 ft.), and BH3 (20-22 ft.) at 9.1;
- PAHs were not reported at or above the laboratory reporting limits in the soil samples submitted for analysis; and
- SAR and EC were reported with COGCC Table 910-1 concentration levels

Summary

Based on the field observations and laboratory analysis of soil samples it appears the extent of the contamination zone relating to the CC 705-22-43 release has been determined. Petroleum-impacted soils were encountered within and immediately adjacent to the existing production tanks and secondary containment at depths between 10 ft-bgs and 50 ft-bgs.

At the direction of Oxy, Olsson can prepare an evaluation of potential remediation methods for the site along with a scope of work and cost estimate to complete a COGCC Form 27 Remediation Work Plan for the site.

Please call me if you have any questions.

Sincerely,

Olsson Associates, Inc.






Tim Dobransky, CHMM
Senior Scientist



Kevin J. Taylor, P.G.
Senior Project Scientist



-  Conn Creek
-  Existing Road
-  705-22-43 well pad



PROJECT NO:	013-0242	<p>Site Map CC 705-22-43 Pad OXY USA WTP LP Garfield County, Colorado</p>	 <p>760 HORIZON DRIVE, SUITE 102 GRAND JUNCTION, CO 81506 TEL 970.263.7800 FAX 970.263.7456</p>	FIGURE
DRAWN BY:	BKR			1
DATE:	04/02/2013			



- ▼ Boring locations: February 2013 and July 2013
- ▼ Boring completed with slotted PVC for future potential remediation option

● Locations Hydro-Excavated on 1/15/13

All locations are approximate




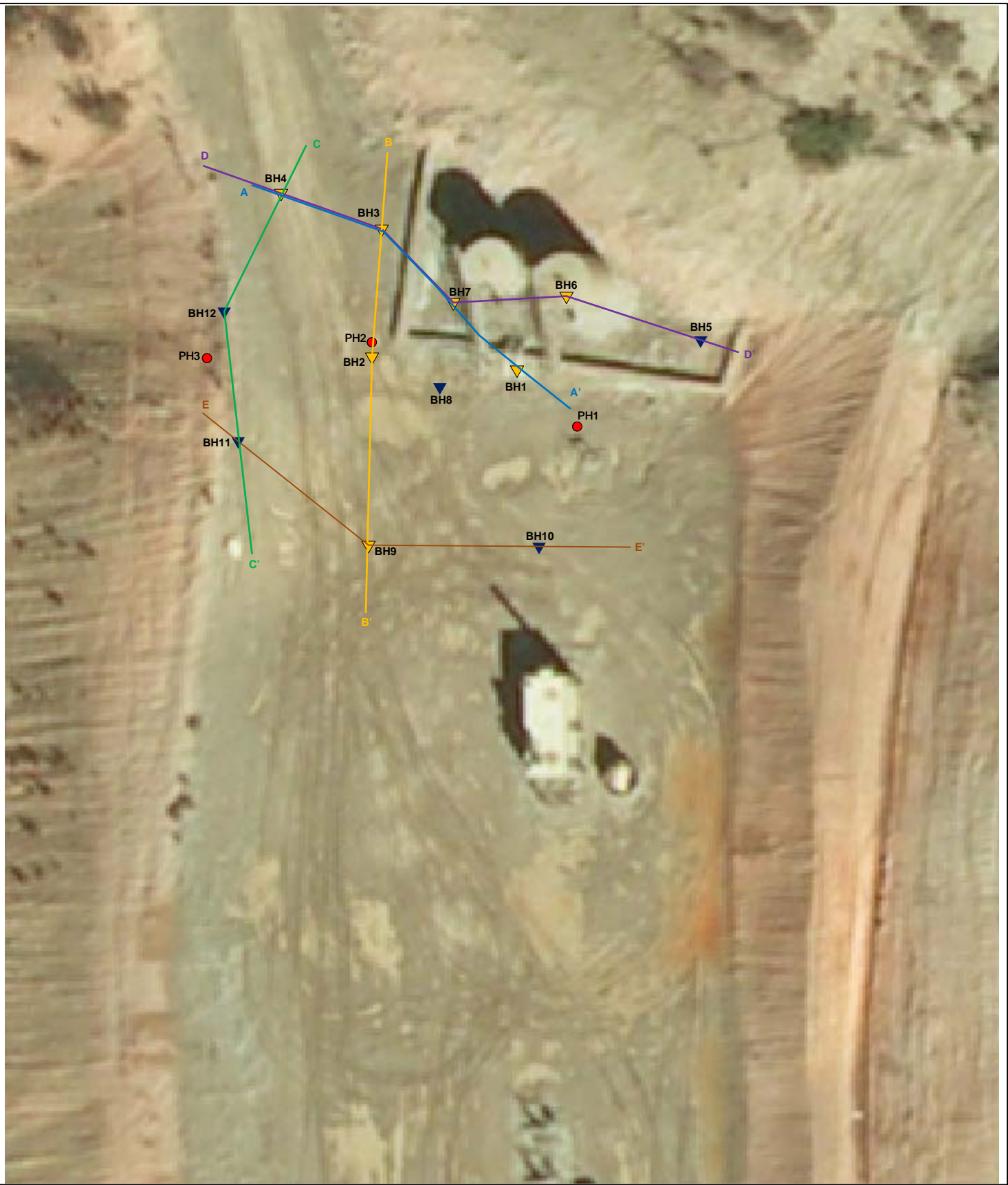
PROJECT NO:	013-0242	Boring Location Map CC 705-22-43 Pad OXY USA WTP LP		760 Horizon Drive Grand Junction, CO 81506 TEL 970.263.7800 FAX 970.263.7456	FIGURE
DRAWN BY:	BKR				2
DATE:	8/20/2013				

Table 2
OXY USA WTP LP
CC 705-22-43
Subsurface Investigation
Soil Sample Summary

SAMPLE SUMMARY	
Location Description	OXY USA WTP CC 705-22-43
Sample Type	Soil
Sample Dates	February and July, 2013

LABORATORY DATA SUMMARY																									
Sample ID	BH 1	BH 1	BH 2	BH 2	BH 3	BH 3	BH 4	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	BH 9	BH 9	BH10	BH10	BH11	BH11	BH12	BH12	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS
Depth	25-30'	32-35'	25-30'	37-38'	15-20'	20-22'	10-14'	10-15'	45-50'	10-15'	45-50'	10-15'	45-50'	15-20'	45-50'	15-20'	30-34'	20-25'	45-50'	40-45'	45-50'	30-35'	40-45'		
Analytical Parameters																									
TPH																								NA	mg/kg
TPH-GRO	480	97	3000	1000	610	300	62	700	440	860	300	670	3	4500	6.8	0.59	7.9	5.2	1.8	1.1	2.2	150	2.6	NA	mg/kg
TPH-DRO	160	40	500	140	180	93	66	160	250	260	<200	130	160	360	<400	16	31	4.1	130	33	6	51	16	NA	mg/kg
Total TPH	640	137	3500	1140	790	393	128	860	690	1120	<500	800	163	4860	<406.8	16.59	38.9	9.3	131.8	34.1	8.2	201	18.6	500	mg/kg
BTEX																									
Benzene	0.28	<0.0050	5.2	0.83	<0.50	<0.20	<0.50	<0.50	<0.050	<0.50	<0.050	<0.50	0.011	2.4	0.046	0.0067	0.067	0.011	<0.0050	<0.0050	0.053	<0.0050	0.04	0.17	mg/kg
Toluene	17	0.05	82	4.6	7.7	4	1.8	4.1	<0.25	3.4	<0.25	<2.5	<0.025	44	0.35	0.049	1.1	0.33	<0.025	<0.025	0.11	<0.025	0.044	85	mg/kg
Ethylbenzene	4.7	0.11	14	4.4	1.7	0.95	0.38	1.2	0.27	0.79	<0.050	<0.50	<0.005	4.1	0.052	<0.0050	0.12	0.099	<0.0050	<0.0050	<0.0050	0.016	0.037	100	mg/kg
Total Xylene	44	0.46	230	57	31	16	6.5	20	1.4	24	0.2	23	0.028	170	0.56	0.046	1.9	1.8	<0.015	0.026	<0.015	0.33	0.31	175	mg/kg
Metals																									
Chromium, Hexavalent	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	23	mg/kg
Chromium, Trivalent	12	12	14	10	9.5	12	11	9.2	8.2	7.6	11	17	10	14	8.4	15	16	11	13	21	18	9.8	10	120,000	mg/kg
Arsenic	6.6	1.3	8.8	<0.38	5.5	5.8	6.4	6.6	7.1	5.8	24	8	6.6	11	7.7	9.4	10	8	14	13	12	3.6	89	0.39	mg/kg
Barium	350	200	260	280	350	240	240	200	150	150	1500	260	780	220	320	300	320	250	580	320	420	190	260	15,000	mg/kg
Cadmium	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.26	<0.25	<0.25	0.5	0.39	0.5	<0.25	0.26	<0.25	<0.25	<0.25	0.32	<0.25	<0.25	0.37	<1.2	70	mg/kg
Chromium	12	12	14	10	9.5	12	11	9.2	8.2	7.6	11	17	10	14	8.4	15	16	11	13	21	18	9.8	10	NA	mg/kg
Copper	14	20	16	12	9.2	15	14	15	22	11	33	18	16	12	13	16	16	10	30	26	17	9.6	22	3,100	mg/kg
Lead	12	15	9.4	6	6.7	13	6.2	7.6	9	5.8	13	8.8	6.7	8	5.4	9.5	8.2	6.8	12	13	9.6	5.6	18	400	mg/kg
Nickel	12	16	12	8.7	11	12	13	14	13	11	19	17	14	13	11	11	11	9.9	21	18	15	12	29	1,600	mg/kg
Mercury	0.024	<0.020	<0.020	<0.020	0.031	<0.020	<0.020	<0.020	<0.020	<0.020	0.033	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.051	<0.020	<0.020	<0.020	0.11	1,600	mg/kg
Selenium	3.7	4	2.2	3.7	2.4	3.8	2.4	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	1.4	<1.0	2.2	1.7	<1.0	1.9	1.3	1.1	<1.0	5.7	390	mg/kg
Silver	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	390	mg/kg
Zinc	64	76	57	58	55	70	61	52	46	40	59	64	59	47	42	54	53	40	66	59	56	48	68	23,000	mg/kg
Polynuclear Aromatic Hyrdrocarbons																									
Anthracene	<0.0060	<0.0060	0.0073	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	0.0086	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	1,000	mg/kg
Acenaphthene	0.0081	<0.0060	0.027	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	0.014	<0.0060	<0.0060	0.011	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	1,000	mg/kg
Acenaphthylene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	0.013	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	NA	mg/kg
Benzo(a)anthracene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.22	mg/kg
Benzo(a)pyrene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.022	mg/kg
Benzo(b)fluoranthene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.22	mg/kg
Benzo(g,h,i)perylene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	0.0076	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	NA	mg/kg
Benzo(k)fluoranthene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	2.2	mg/kg
Chrysene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	22	mg/kg
Dibenzo(a,h)anthracene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.022	mg/kg
Fluoranthene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	1,000	mg/kg
Fluorene	0.016	<0.0060	0.054	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	0.021	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.0062	<0.0060	1,000	mg/kg
Indeno(1,2,3-cd)pyrene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.22	mg/kg
Napthalene	0.4	0.074	1.5	0.2	0.48	0.12	0.017	0.19	0.32	0.2	0.19	0.21	0.037	0.64	<0.20	<0.0060	<0.0060	0.26	<0.020	<0.020	<0.020	0.14	<0.020	23	mg/kg
1-Methylnaphthalene	0.29	0.084	0.96	0.14	0.35	0.081	0.01	0.16	0.37	0.2	0.27	0.17	0.038	0.46	<0.20	<0.0060	<0.0060	<0.020	<0.020	<0.020	<0.020	0.12	<0.020	NA	mg/kg
2-Methylnaphthalene	0.84	0.21	2.9	0.44	0.98	0.23	0.031	0.54	1.6	0.53	1	0.48	0.15	1.3	0.53	<0.0060	<0.0060	0.03	<0.020	<0.020	<0.020	0.34	0.028	NA	mg/kg
Phenanthrene	0.014	0.0071	0.032	<0.060	<0.060	0.0062	0.0096	0.024	0.046	0.025	0.066	0.011	0.024	0.014	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	NA	mg/kg
Pyrene	<0.0060	<0.0060	<0.0060	<0.060	<0.060	<0.0060	<0.0060	0.0079	0.053	0.0068	0.055	<0.0060	0.012	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	1,000	mg/kg
General Chemistry																									
pH	8.4	9.1	8.4	9.1	8.8	9.1	8.8	8	8.7	8.1	8.5	8.7	8.8	8.2	8.6	8.5	8.4	8.4	8.1	8.3	8.1	8.8	8.3	6-9	su
Sodium Adsorption Ratio	5.8	7.9	3	9.1	1.8	6	1.4	4.2	6.7	2.6	5.8	5.6	6	1.5	5.2	2.6	4.4	9.2	6.3	3	4.6	5.6	4.4	<12	ratio
Specific Conductivity	0.99	0.69	0.61	0.57	0.24	0.47	0.26	0.4	0.83	2.3	0.75	0.48	0.63	0.49	0.76	0.85	1.3	2	2.8	0.71	1.5	0.44	1.1	<4 mmhos/cm or 2x background	mmhos/cm

mg/kg - milligrams per kilogram
BDL - parameter was below the detection limit
mmhos/cm - millimhos per centimeter
su - standard units
NA - not applicable
COGCC - Colorado Oil and Gas Conservation Commission
Over COGCC Table 910-1 Concentration Level but under BACKGROUND level
Over COGCC Table 910-1 Concentration Level and not within BACKGROUND level
Over COGCC Table 910-1 Concentration Level




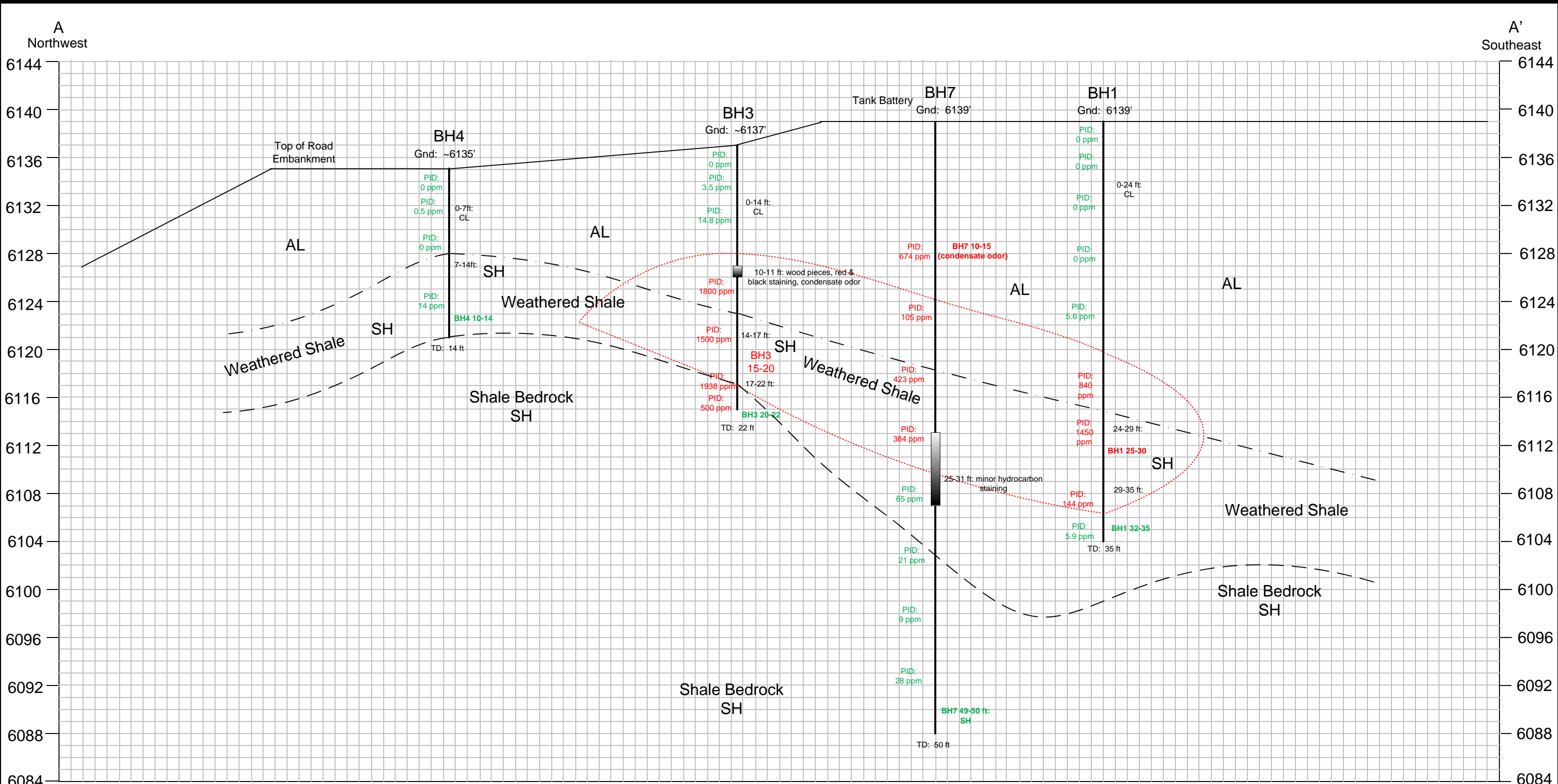
- ▼ Boring locations: February 2013 and July 2013
- ▼ Boring completed with slotted PVC for future potential remediation option

A ——— A' Cross Section

● Locations Hydro-Excavated on 1/15/13



PROJECT NO:	013-0242	Cross Section Map CC 705-22-43 Pad OXY USA WTP LP		760 Horizon Drive Grand Junction, CO 81506 TEL 970.263.7800 FAX 970.263.7456	FIGURE
DRAWN BY:	BKR				3
DATE:	8/20/2013				



LEGEND:

Unified Soil Classification System

- SC Clayey sands, sand – clay mixtures
- SH Shale
- CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
- AL Inter-bedded sand, gravel, clay, silt and cobbles

Estimated competent bedrock

Estimated extent of contamination

Estimated weathered bedrock contact

Observed hydrocarbon staining

GND: Ground Elevation from COGCC Wellhead Data

BH1 OA soil boring location

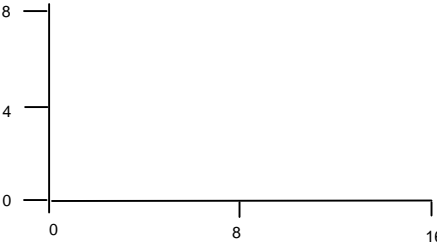
PID: 41 ppm Photoionization Detector Reading in parts per million

BH2 25-30 Soil Sample collected for laboratory analysis above Table 910-1

BH2 25-30 Soil Sample collected for laboratory analysis below Table 910-1

TD: 25 ft Total Depth in feet

No Vertical Exaggeration

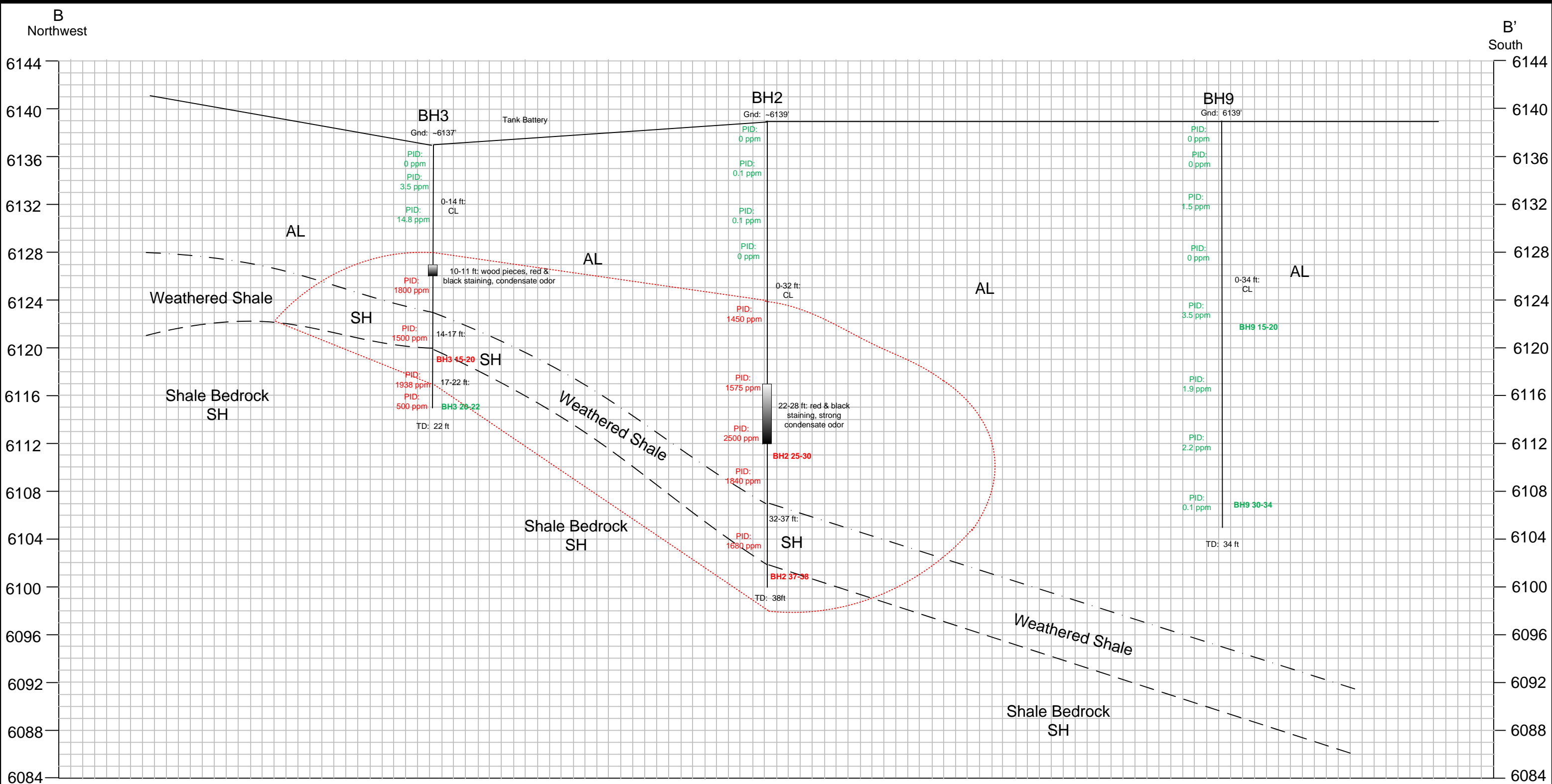


Approximate Scale: 1 inch = 8 feet

Figure 4
A-A' Geologic Cross-Section
CC 705-22-43 Pad

Revision Date	9/6/2013
Revision No.	
Revised By	BKR
Project No.	013-0242
Scale	As Shown





LEGEND:

Unified Soil Classification System

- CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
- SH Shale
- SC Clayey sands, sand – clay mixtures
- AL Inter-bedded sand, gravel, clay, silt and cobbles

- Estimated competent bedrock
- Estimated extent of contamination
- Estimated weathered bedrock contact
- Observed hydrocarbon staining

GND: Ground Elevation from COGCC Wellhead Data

- BH1** OA soil boring location
- PID: 41 ppm Photoionization Detector Reading in parts per million
- BH2 25-30** Soil Sample collected for laboratory analysis above Table 910-1
- BH2 25-30** Soil Sample collected for laboratory analysis below Table 910-1
- TD: 25 ft Total Depth in feet

No Vertical Exaggeration

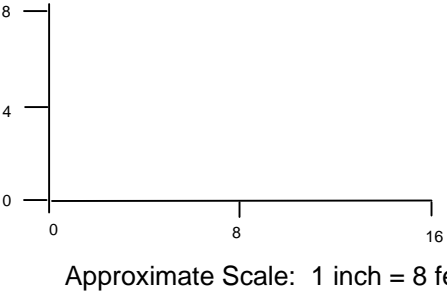
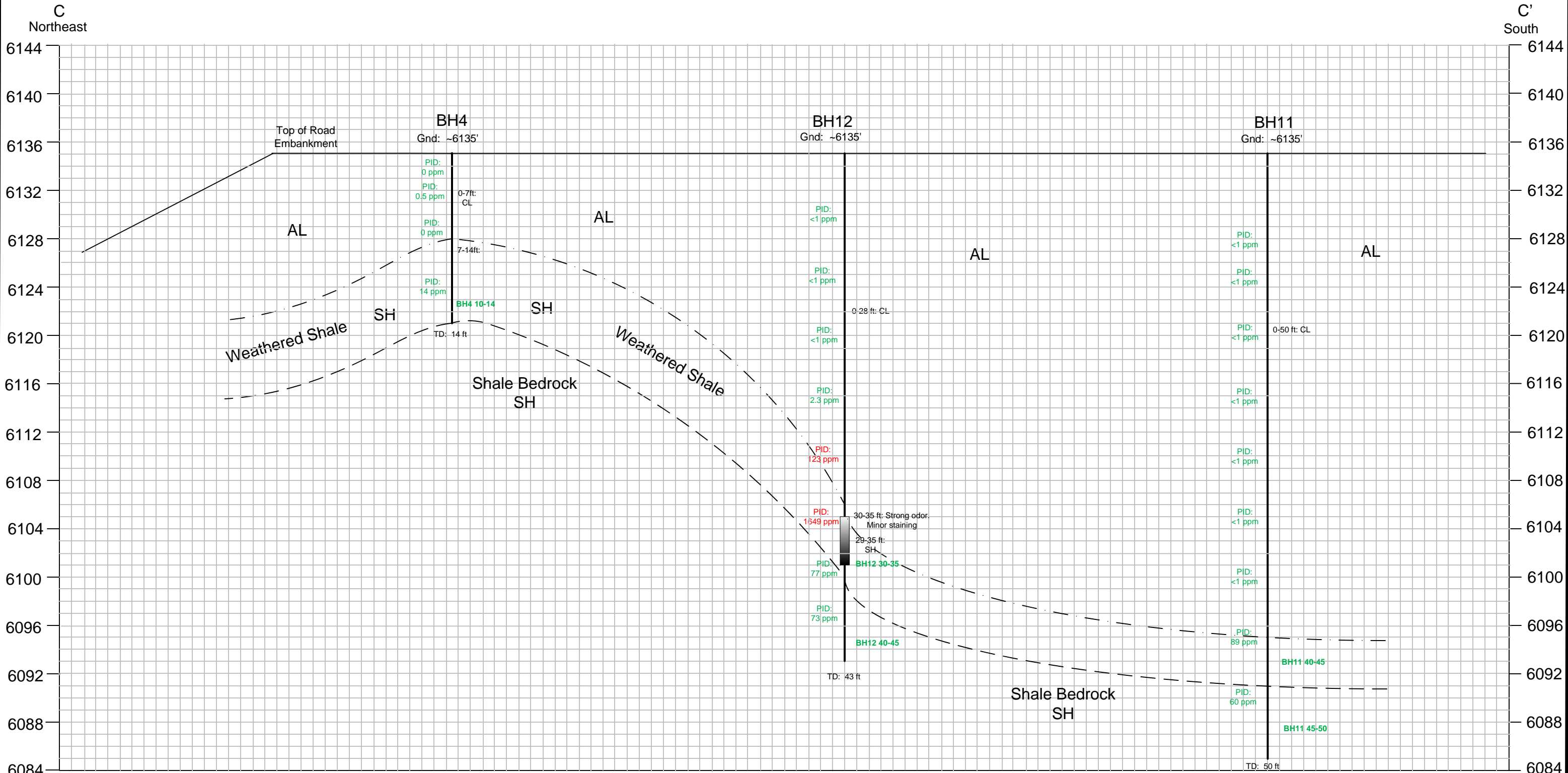


Figure 5
B-B' Geologic Cross-Section
CC 705-22-43 Pad

Revision Date	2/19/2013
Revision No.	
Revised By	WWM
Project No.	013-0242
Scale	As Shown





LEGEND:

Unified Soil Classification System

- SC Clayey sands, sand – clay mixtures
- SH Shale
- CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
- AL Inter-bedded sand, gravel, clay, silt and cobbles

- Estimated competent bedrock
- Estimated extent of contamination
- Estimated weathered bedrock contact
- Observed hydrocarbon staining

GND: Ground Elevation from COGCC Wellhead Data

BH1 OA soil boring location
PID: 41 ppm
Photoionization Detector Reading in parts per million

BH2 25-30 Soil Sample collected for laboratory analysis above Table 910-1
BH2 25-30 Soil Sample collected for laboratory analysis below Table 910-1
TD: 25 ft Total Depth in feet

No Vertical Exaggeration

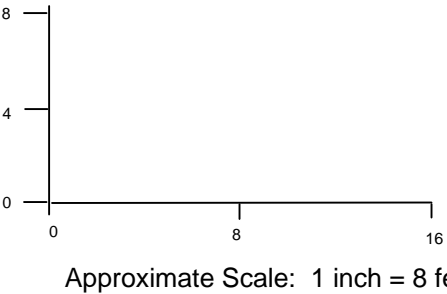
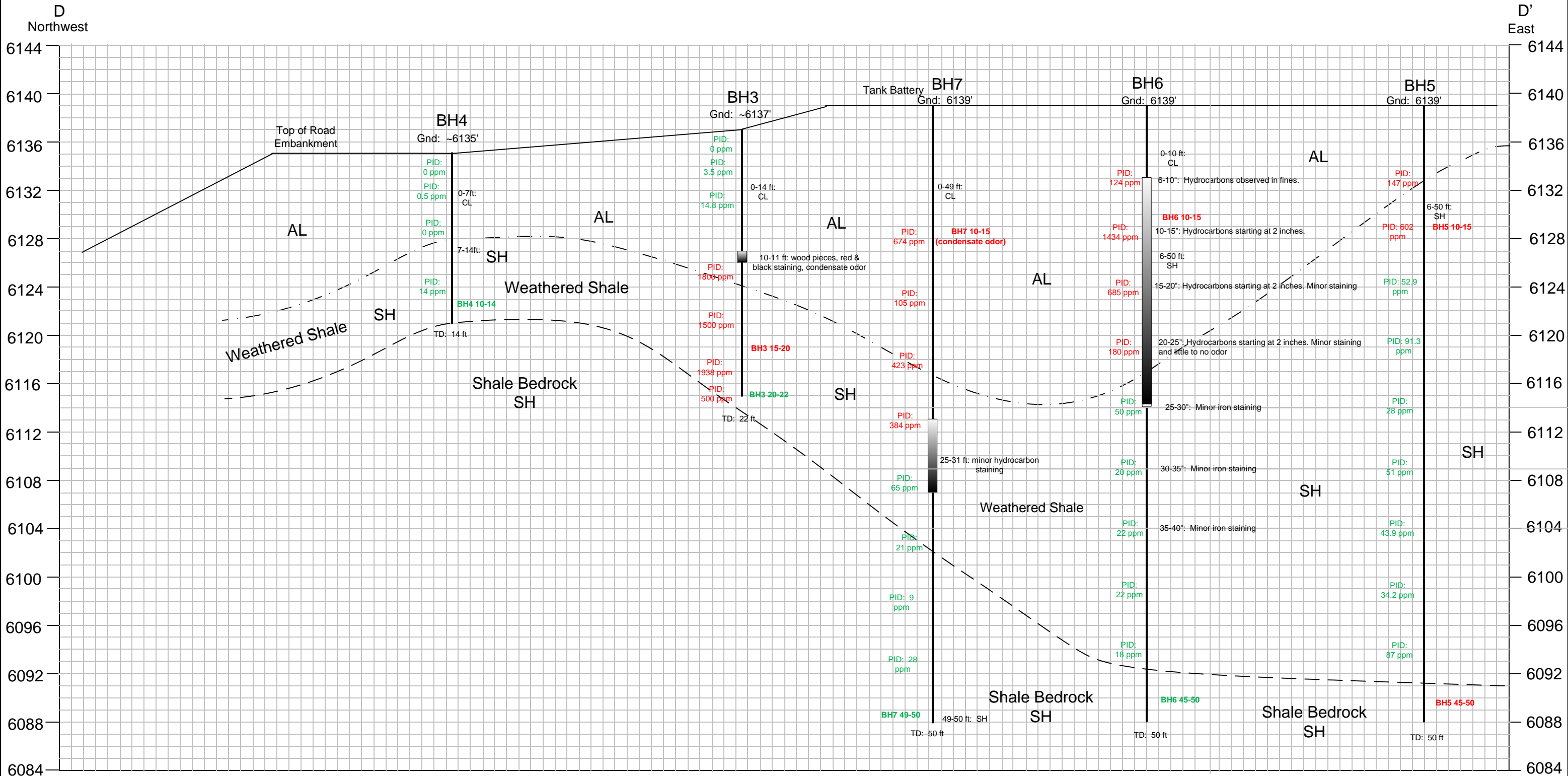


Figure 6
C-C' Geologic Cross-Section
CC 705-22-43 Pad

Revision Date	8/20/2013
Revision No.	
Revised By	BKR
Project No.	013-0242
Scale	As Shown





LEGEND:

Unified Soil Classification System

- SC Clayey sands, sand – clay mixtures
- SH Shale
- CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
- AL Inter-bedded sand, gravel, clay, silt and cobbles

- Estimated competent bedrock
- Estimated extent of contamination
- Estimated weathered bedrock contact
- Observed hydrocarbon staining

GND: Ground Elevation from COGCC Wellhead Data

- BH1 OA soil boring location
- PID: 41 ppm Photoionization Detector Reading in parts per million
- BH2 25-30 Soil Sample collected for laboratory analysis above Table 910-1
- BH2 25-30 Soil Sample collected for laboratory analysis below Table 910-1
- TD: 25 ft Total Depth in feet

No Vertical Exaggeration

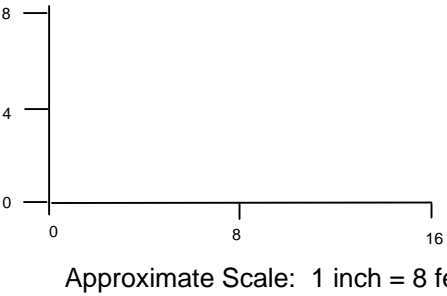
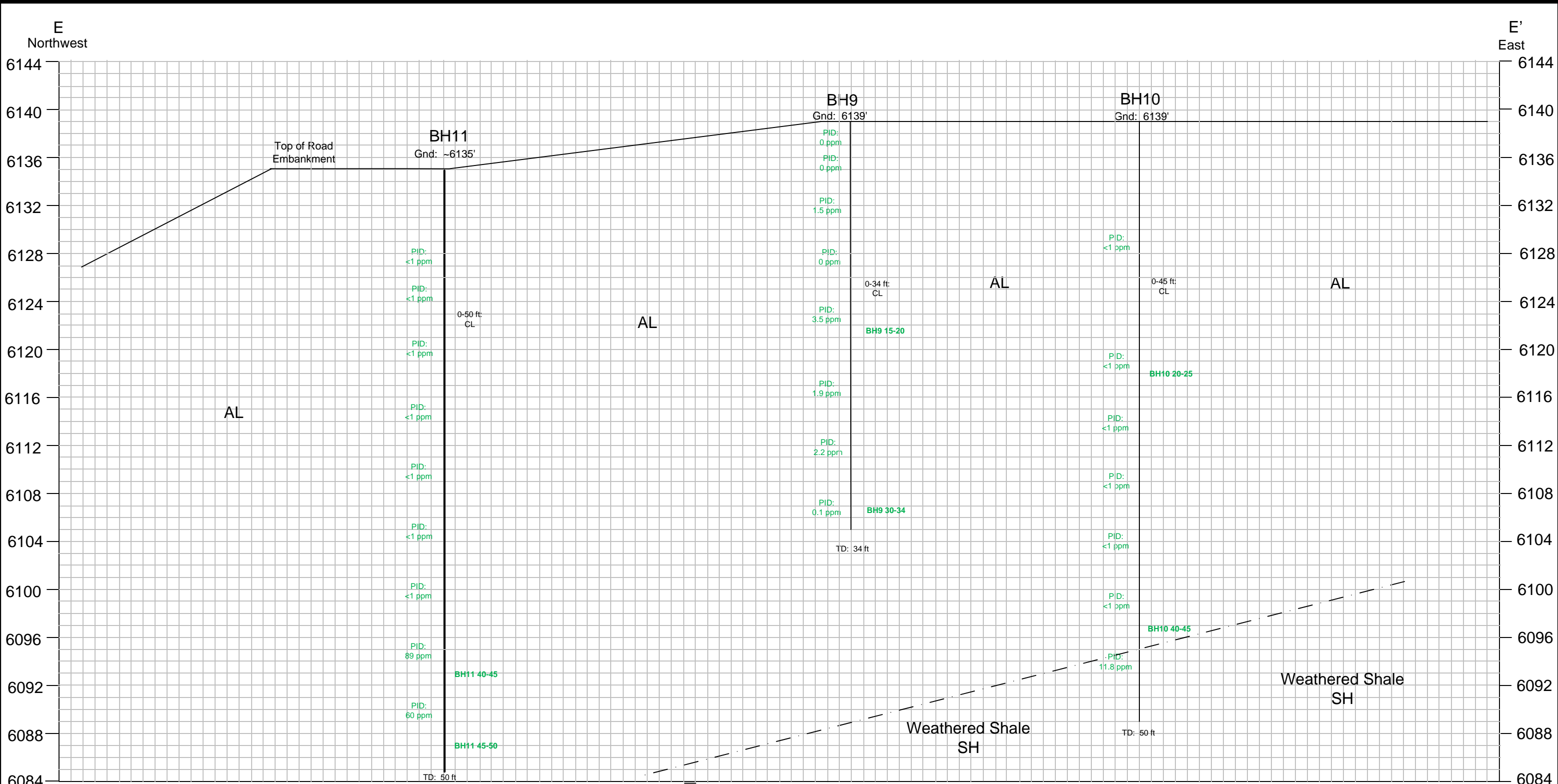


Figure 7
D-D' Geologic Cross-Section
CC 705-22-43 Pad

Revision Date	9/6/2013
Revision No.	
Revised By	BKR
Project No.	013-0242
Scale	As Shown





LEGEND:

Unified Soil Classification System

- SC Clayey sands, sand – clay mixtures
- SH Shale
- CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
- AL Inter-bedded sand, gravel, clay, silt and cobbles

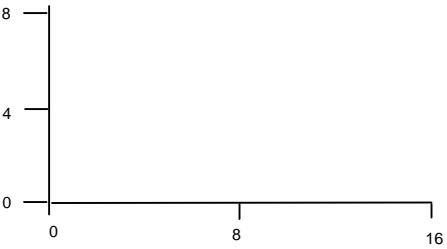
- Estimated competent bedrock
- Estimated extent of contamination
- Estimated weathered bedrock contact
- Observed hydrocarbon staining

GND: Ground Elevation from COGCC Wellhead Data

BH1 OA soil boring location
PID: 41 ppm
Photoionization Detector Reading in parts per million

BH2 25-30 Soil Sample collected for laboratory analysis above Table 910-1
BH2 25-30 Soil Sample collected for laboratory analysis below Table 910-1
TD: 25 ft Total Depth in feet

No Vertical Exaggeration


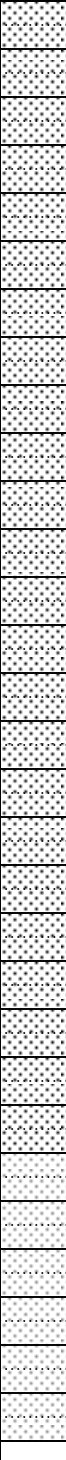


Approximate Scale: 1 inch = 8 feet


Figure 8
E-E' Geologic Cross-Section
CC 705-22-43 Pad

Revision Date	8/20/2013
Revision No.	
Revised By	BKR
Project No.	013-0242
Scale	As Shown



LOCATION MAP												760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456											
												TEST HOLE/WELL LOG				PAGE 1 of 2							
								Test/Well Number: BH5				Project: Oxy CC 705-22-43											
								Date: 7/16/2013				Project Number: 013-0242											
								Logged by: B. Baugh				Drilled by: High Plains Drilling											
								Drilling Method: 6" Hollow Stem Auger				Sampling Method: 4" Continuous Split Spoon											
Elevation:		Detector: PID		Seal: Hydrated Bentonite				Grout: NA															
Gravel Pack: Graded Silica Sand 10/20 Mesh								Hole Diameter:				F. L. Meter:											
Casing Type: PVC				Diameter: 2 in.				Length: 10'				DTP:				DTW:							
Screen Type: PVC				Slot: 0.010 in.				Diameter: 2 in.				Length: 40'				Well Depth:				Total Depth: 50'			
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS								WELL COMPLETION				
	Tan	Dry			147	None		0			0-6: Hydrovac Pothole												
								1															
								2															
								3															
								4															
								5															
								6					6-10: Weathered shale bedrock with coarse sand, some fine clay.										
								7															
								8															
								9															
								10					10-15: Fine grain sand mixed with 1-3 inch cobbles of weathered sandstone bedrock dry.										
								11															
								12															
								13															
								14															
								15					15-20: Fine grain sand mixed with 1-3 inch cobbles of weathered sandstone bedrock dry.										
								16															
								17															
								18															
								19															
								20					20-25: Fine grain sand mixed with 1-3 inch cobbles of weathered sandstone bedrock dry.										
								21															
								22															
								23															
								24															
								25					25-30: Medium coarse sand, 1-2 inch lithic fragments to large 4 inch fragments. Weathered clay stone/ bedrock – dry.										
								26															
								27															
								28															
								29															
								30															

LOCATION MAP



760 Horizon Drive, Suite 102
Grand Junction, CO 81506
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TEST HOLE/WELL LOG

PAGE 2 of 2

Test/Well Number: BH5Project: Oxy CC 705-22-43

Date: 7/16/2013Project Number: 013-0242

Logged by: B. BaughDrilled by: High Plains Drilling

Drilling Method: 6" Hollow Stem AugerSampling Method: 4" Continuous Split Spoon


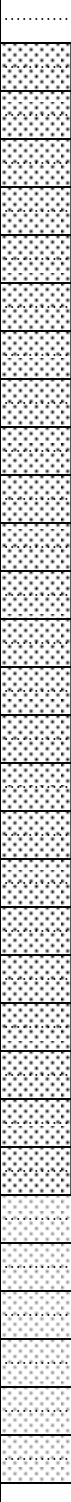
Elevation:Detector: PIDSeal: Hydrated BentoniteGrout: NA


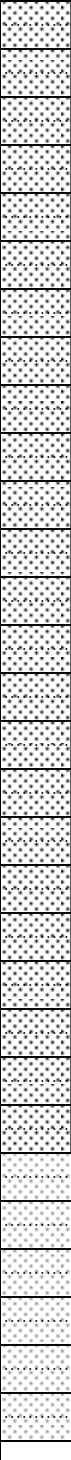
Gravel Pack: Graded Silica Sand 10/20 MeshHole Diameter: F. L. Meter:

Casing Type: PVC Diameter: 2 in. Length: 10'DTP: DTW:

Screen Type: PVC Slot: 0.010 in. Diameter: 2 in. Length: 40'Well Depth: Total Depth: 50'

Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS	WELL COMPLETION
		Dry	30-40		51	None		30			30-35: Light brown weathered bedrock. Clay stone / shale.	
								31				
								32				
								33				
								34				
			30-40		43.9			35			35-40: Light brown weathered bedrock. Clay stone / shale.	
								36				
								37				
								38				
								39				
			30		34.2			40			40-45: Light brown weathered shale, dry to solid organic shale bedrock.	
								41				
								42				
								43				
								44				
					87			45			45-50: Alternating weathered shale bedrock and solid shale bedrock.	
								46				
								47				
								48				
								49				
								50				
								51				
								52				
								53				
								54				
								55				
								56				
								57				
								58				
								59				
								60				

LOCATION MAP													760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456								
										TEST HOLE/WELL LOG					PAGE 1 of 2						
Elevation:					Detector: PID					Seal: N/A			Grout: NA								
Gravel Pack: N/A										Hole Diameter:			F. L. Meter:								
Casing Type: None					Diameter:					Length:			DTP:			DTW:					
Screen Type: None					Slot:					Diameter:			Length:			Well Depth:			Total Depth: 50'		
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS						WELL COMPLETION				
		Dry ↓	30		124	Yes ↓		0			0-6: Hydrovac Pothole										
								1													
								2													
								3													
								4													
								5													
								6					6-10: Weathered gray/ blue shale, 1-2 inch lithic fragments, hydrocarbons observed in fines.								
								7													
								8													
								9					10-15: Fine to medium light brown sand and weathered bedrock, hydrocarbon staining 2 inches.								
								10													
								11													
								12													
								13													
								14					15-20: Fine to medium light brown sand and weathered bedrock. Minor staining.								
								15													
								16													
								17													
								18													
								19					20-25: Fine to medium light brown sand and weathered bedrock. Minor staining and little to no odor.								
								20													
								21													
								22													
								23													
								24					25-30: Fine to medium light brown sand and weathered bedrock, minor iron staining (4").								
								25													
								26													
								27													
								28													
								29													
								30													

LOCATION MAP										760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456							
						TEST HOLE/WELL LOG								PAGE 2 of 2			
						Test/Well Number: BH6				Project: Oxy CC 705-22-43							
						Date: 7/16/2013				Project Number: 013-0242							
						Logged by: B. Baugh				Drilled by: High Plains Drilling							
						Drilling Method: 6" Hollow Stem Auger				Sampling Method: 4" Continuous Split Spoon							
Elevation:		Detector: PID		Seal: None				Grout: NA									
Gravel Pack: N/A		Casing Type: N/A				Diameter: Length:				Hole Diameter:		F. L. Meter:					
Screen Type: N/A		Slot:		Diameter: Length:				DTP:		DTW:							
Screen Type: N/A		Slot:		Diameter: Length:				Well Depth:		Total Depth: 50'							
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS		WELL COMPLETION				
		Dry ↓	50		20	None ↓		30			30-35: Fine to medium light brown sand and weathered bedrock, minor iron staining (4").						
								31									
								32									
								33									
								34									
								35									
								36									
								37									
								38									
								39									
								40									
								41									
								42									
								43									
								44									
								45									
								46									
								47									
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								49									
								50									
								51									
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								58									
								59									
								60									

LOCATION MAP



760 Horizon Drive, Suite 102
Grand Junction, CO 81506
T: 970.263.7800
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TEST HOLE/WELL LOG

PAGE 1 of 2

Test/Well Number:	BH7
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Project:	Oxy CC 705-22-43
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Date:	7/16/2013
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Project Number:	013-0242
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Logged by:	B. Baugh
------------	----------

Drilled by:	High Plains Drilling
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Drilling Method: 6" Hollow Stem Auger

Sampling Method:	4" Continuous Split Spoon
------------------	---------------------------

Elevation:	Detector: PID
------------	---------------

Seal:	NA
-------	----

Grout:	NA
--------	----

Gravel Pack:	NA
--------------	----

Hole Diameter:	F. L. Meter:
----------------	--------------

Casing Type:	None
--------------	------

Diameter:	Length:
-----------	---------

DTP:

DTW:

Screen Type:	None	Slot:
--------------	------	-------

Slot: _____

Diameter:	Length:
-----------	---------

Length:

Well Depth:

Total Depth:	50'
--------------	-----

Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS	WELL COMPLETION
		Dry ↓	80		674	No ↓		0			0-6: Hydrovac Pothole	
								1				
								2				
								3				
								4				
								5				
								6			6-10: No Recovery	
								7				
								8				
								9				
								10			10-15: Fine light brown sand, 1-2 inch lithic fragments. No visible staining, strong hydrocarbon odor.	
								11				
								12				
								13				
								14				
			60		105			15			15-20: Fine light brown sand, 1-2 inch lithic fragments. No odor or staining.	
								16				
								17				
								18				
								19				
			80		423	↓		20			20-25: Fine light brown sand, 0.5-1 inch lithic fragments, 4 inch iron oxide (red) staining.	
								21				
								22				
								23				
								24				
			80		384	Yes		25			25-30: Fine light brown sand, 0.5-1 inch lithic fragments, minor hydrocarbon staining 6 inches.	
								26				
								27				
								28				
								29				
								30				

LOCATION MAP

760 Horizon Drive, Suite 102
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TEST HOLE/WELL LOG

PAGE 2 of 2

Test/Well Number: BH7Project: Oxy CC 705-22-43

Date: 7/16/2013Project Number: 013-0242

Logged by: B. BaughDrilled by: High Plains Drilling

Drilling Method: 6" Hollow Stem AugerSampling Method: 4" Continuous Split Spoon

Elevation:Detector: PIDSeal: NAGrout: NA

Gravel Pack: NAHole Diameter:F. L. Meter:

Casing Type: NoneDiameter:Length:DTP:DTW:

Screen Type: NoneSlot:Diameter:Length:Well Depth:Total Depth: 50'

Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS	WELL COMPLETION
		Dry	50		65	None		30			30-35: Fine light brown sand, 0.5-1 inch lithic fragments. No staining observed	
								31				
								32				
								33				
								34				
			80		21			35			35-40: Fine light brown sand, 0.5-1 inch lithic fragments.	
								36				
								37				
								38				
								39				
			80		9			40			40-45: Fine light brown sand, lithic fragments, minor iron staining. No odor.	
								41				
								42				
								43				
								44				
			40		28			45			45-50: Fine grain sand, 1-3 inch lithic grains, bottom 8 inches weathered shale bedrock.	
								46				
								47				
								48				
								49				
								50				
								51				
								52				
								53				
								54				
								55				
								56				
								57				
								58				
								59				
								60				

LOCATION MAP												760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456				
												TEST HOLE/WELL LOG				PAGE 1 of 2
								Test/Well Number: BH8				Project: Oxy CC 705-22-43				
								Date: 7/17/2013				Project Number: 013-0242				
								Logged by: B. Baugh				Drilled by: High Plains Drilling				
								Drilling Method: 6" Hollow Stem Auger				Sampling Method: 4" Continuous Split Spoon				
Elevation:		Detector: PID		Seal: Hydrated Bentonite				Grout: NA								
Gravel Pack: Graded Silica Sand 10/20 Mesh								Hole Diameter:				F. L. Meter:				
Casing Type: PVC				Diameter: 2 in.				Length: 10'		DTP:				DTW:		
Screen Type: PVC				Slot: 0.010 in.		Diameter: 2 in.		Length: 38'		Well Depth:		Total Depth: 48'				
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS				WELL COMPLETION	
		Dry ↓ ↓ Moist ↓ ↓ ↓ Dry ↓	60		<1	No ↓ ↓ ↓ Yes ↓ ↓ ↓ No ↓		0			0-5: Hydrovac Pothole					
								1								
								2								
								3								
								4								
								5								
								6								
								7								
								8								
								9								
								10								
								11								
								12								
								13								
								14								
								15								
								16								
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								18								
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								25								
								26								
								27								
								28								
								29								
								30								

LOCATION MAP

760 Horizon Drive, Suite 102
Grand Junction, CO 81506
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TEST HOLE/WELL LOG

PAGE 2 of 2

Test/Well Number: BH8Project: Oxy CC 705-22-43

Date: 7/17/2013Project Number: 013-0242

Logged by: B. BaughDrilled by: High Plains Drilling

Drilling Method: 6" Hollow Stem AugerSampling Method: 4" Continuous Split Spoon


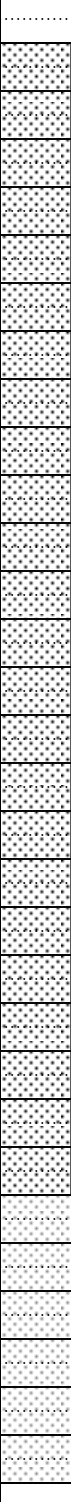
Elevation:Detector: PIDSeal: Hydrated BentoniteGrout: NA


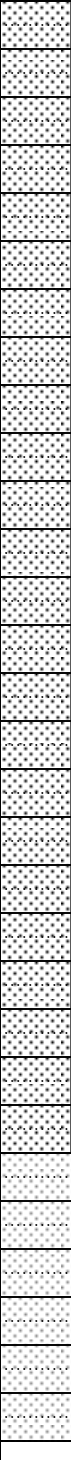

Gravel Pack: Graded Silica Sand 10/20 MeshHole Diameter: F. L. Meter:

Casing Type: PVC Diameter: 2 in.Length: 10'DTP: DTW:

Screen Type: PVC Slot: 0.010 in.Diameter: 2 in.Length: 38'Well Depth: Total Depth: 48'

Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS	WELL COMPLETION
		Dry	80		1721	None		30			30-35: Light brown fine sand, and gravel. 2 inch iron oxide staining.	
								31				
								32				
								33				
								34				
			80		65			35			35-40: Fine light brown sand, and gravel.	
								36				
								37				
								38				
								39				
			70		69			40			40-45: Fine light brown sand,1-2 inch gravel. Minor red staining.	
								41				
								42				
								43				
								44				
			50		85			45			45-50: Very fine homogenous light brown sand to ~18 inches of shale bedrock.	
								46				
								47				
								48				
								49				
								50				
								51				
								52				
								53				
								54				
								55				
								56				
								57				
								58				
								59				
								60				

LOCATION MAP												760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456			
												TEST HOLE/WELL LOG			
								Test/Well Number: BH10				Project: Oxy CC 705-22-43			
								Date: 7/17/2013				Project Number: 013-0242			
								Logged by: B. Baugh				Drilled by: Terracon			
								Drilling Method: 6" Hollow Stem Auger				Sampling Method: High Plains Drilling			
Elevation:		Detector: PID		Seal: Hydrated Bentonite				Grout: NA							
Gravel Pack: Graded Silica Sand 10/20 Mesh								Hole Diameter:				F. L. Meter:			
Casing Type: PVC				Diameter: 2 in.				Length: 10'		DTP:		DTW:			
Screen Type: PVC				Slot: 0.010 in.		Diameter: 2 in.		Length: 40'		Well Depth:		Total Depth: 50'			
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS		WELL COMPLETION		
		Moist ↓	70		<1	No ↓		0			0-6.5: Hydrovac Pothole				
								1							
								2							
								3							
								4							
								5							
								6							
								7							
								8							
								9							
		10				10-15: Very fine light brown sand and gravel. 1 inch recovery, unknown what interval this sample represents.									
		11													
		12													
		13													
		14													
		15													
		16													
		17													
		18													
		19													
		20	Moist ↓		80/90	<1		No ↓	20					20-25: Very fine light brown sand with trace gravels to green and brown compacted clay with iron staining.	
		21													
		22													
		23													
		24													
		25													
		26													
		27													
		28													
		29													
		30				25-30: Very fine brown sand and clay to compacted silt clay, trace pebbles.									

LOCATION MAP												760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456							
												TEST HOLE/WELL LOG							
								Test/Well Number: BH10				Project: Oxy CC 705-22-43							
								Date: 7/17/2013				Project Number: 013-0242							
								Logged by: B. Baugh				Drilled by: High Plains Drilling							
								Drilling Method: 6" Hollow Stem Auger				Sampling Method: 4" Continuous Split Spoon							
Elevation:		Detector: PID		Seal: Hydrated Bentonite				Grout: NA											
Gravel Pack: Graded Silica Sand 10/20 Mesh								Hole Diameter:				F. L. Meter:							
Casing Type: PVC				Diameter: 2 in.				Length: 10'		DTP:		DTW:							
Screen Type: PVC		Slot: 0.010 in.		Diameter: 2 in.		Length: 40'		Well Depth:		Total Depth: 50'									
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS		WELL COMPLETION						
		Dry	70		<1	None		30			30-35: Light brown silty clay, trace pebbles, woody debris, iron staining. Bottom foot shale bedrock.								
								31											
								32											
								33											
								34											
								35											
								36											
								37											
								38											
								39											
								40											
								41											
								42											
								43											
								44											
								45											
								46											
								47											
								48											
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								50											
51																			
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54																			
55																			
56																			
57																			
58																			
59																			
60																			

LOCATION MAP



760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456
--

Test/Well Number: BH11	Project: Oxy
Date: 7/18/2013	Project Number:
Logged by: B. Baugh	Drilled by: Hig
Drilling Method: 6" Hollow Stem Auger	Sampling Method: 4"

CC 705-22-43
013-0242
h Plains Drilling
Continuous Split Spoon

Seal:	Hydrated Bentonite
-------	--------------------

Hole Diameter:	F. L. Meter:
----------------	--------------

DTP:	DTW: NA
------	---------

Diameter: 2 in. Length: 10'


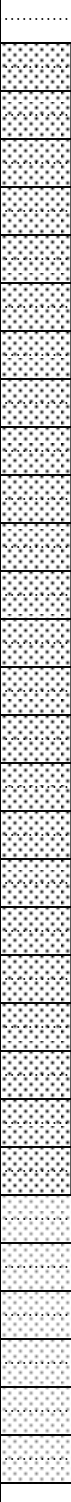
Well Depth:	Total Depth: 50'
-------------	------------------

Diameter:	2 in.	Length:	40'
-----------	-------	---------	-----

Soil/Rock Type	Color	Moisture Content	% Fines	Stucture	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS	WELL COMPLETION	
								0			0-7: Hydrovac Pothole		
								1					
								2					
								3					
								4					
								5					
								6					
		Moist	70		<1	None		7			7-10: Light brown silt and fine sand, 10% pebbles.		
								8					
			80		<1			9					
								10			10-15: Light brown silt and fine sand, 20% gravel 1-2 inches.		
								11					
								12					
								13					
			70		<1			14					
								15			15-20: Light brown silt and fine sand, 20% gravel 1-2 inches.		
								16					
								17					
								18					
								19					
			70		<1			20			20-25: Light brown silt and fine sand, 20% gravel 1-2 inches.		
								21					
								22					
								23					
								24					
			70		<1			25			25-30: Light brown silt and fine sand, 20% gravel 1-2 inches.		
								26					
								27					
								28					
								29					
								30					

LOCATION MAP												760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456				
												TEST HOLE/WELL LOG				PAGE 2 of 2
								Test/Well Number: BH11				Project: Oxy CC 705-22-43				
								Date: 7/18/2013				Project Number: 013-0242				
								Logged by: B. Baugh				Drilled by: High Plains Drilling				
								Drilling Method: 6" Hollow Stem Auger				Sampling Method: 4" Continuous Split Spoon				
Elevation:		Detector: PID		Seal: Hydrated Bentonite				Grout: NA								
Gravel Pack: Graded Silica Sand 10/20 Mesh								Hole Diameter:				F. L. Meter:				
Casing Type: PVC								Diameter: 2 in.		Length: 10'		DTP:		DTW:		
Screen Type: PVC Slot: 0.010 in.								Diameter: 2 in.		Length: 40'		Well Depth:		Total Depth: 50'		
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS				WELL COMPLETION	
		Dry ↓	70		<1	None ↓		30			30-35: Light brown silt and fine sand, 30% gravel 1-2 inches.					
								31								
								32								
								33								
								34			35-40: Light brown silt and fine sand, 30% gravel 1-2 inches.					
								35								
								36								
								37								
								38			40-45: Light brown fine sand, 10% gravel, bottom 3 inches dark organic shale.					
								39								
								40								
								41								
								42			45-50: Fine light brown sand and gravel to silty clay.					
								43								
								44								
								45								
								46								
								47								
								48								
								49								
50																
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58																
59																
60																

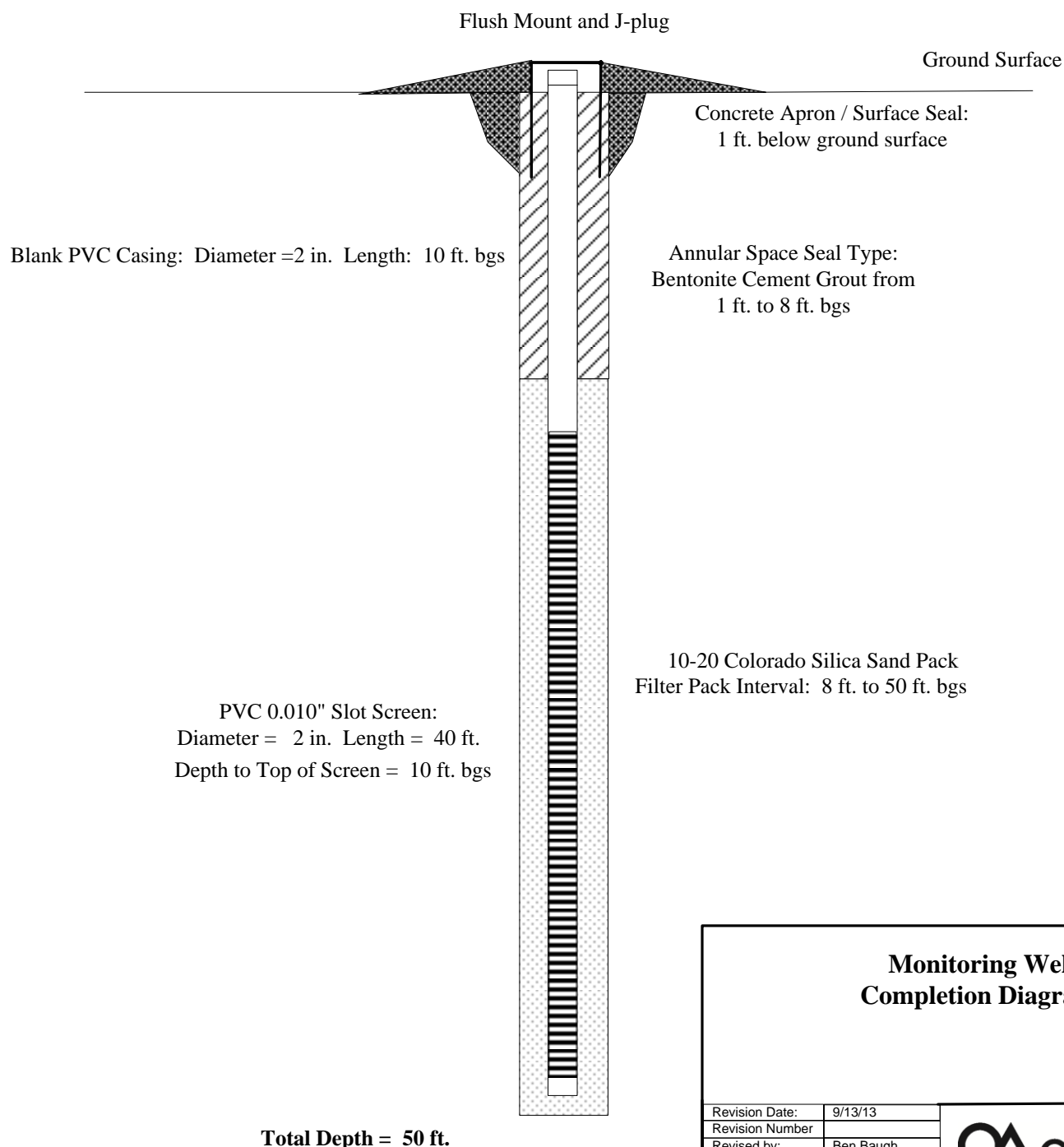
LOCATION MAP												760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456				
												TEST HOLE/WELL LOG				PAGE 1 of 1
								Test/Well Number: BH12				Project: Oxy CC 705-22-43				
								Date: 7/18/2013				Project Number: 013-0242				
								Logged by: B. Baugh				Drilled by: High Plains Drilling				
								Drilling Method: 6" Hollow Stem Auger				Sampling Method: 4" Continuous Split Spoon				
Elevation:		Detector: PID		Seal: Hydrated Bentonite				Grout: NA								
Gravel Pack: Graded Silica Sand 10/20 Mesh								Hole Diameter:				F. L. Meter:				
Casing Type: PVC								Diameter: 2 in.		Length: 8'		DTP:		DTW:		
Screen Type: PVC Slot: 0.010 in.								Diameter: 2 in.		Length: 35'		Well Depth:		Total Depth: 43'		
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS				WELL COMPLETION	
		Moist ↓	90		<1	None ↓		0			0-7: Hydrovac Pothole					
								1								
								2								
								3								
								4								
								5								
								6								
								7								
								8								
								9								
		80	<1			10			10-15: Brown clayey slit, 20% gravel, woody debris.							
						11										
						12										
						13										
						14										
						15										
						16										
						17										
						18										
						19										
		Dry ↓	80	2.3			20			20-25: Light brown sit and fine sand, 20% gravel.						
							21									
							22									
							23									
							24									
							25									
							26									
							27									
							28									
							29									
		90	123				30			25-30: Fine to medium sand, 10% gravel to about 3 inch weathered bedrock at bottom.						

LOCATION MAP												760 Horizon Drive, Suite 102 Grand Junction, CO 81506 T: 970.263.7800 F: 970.263.7456				
												TEST HOLE/WELL LOG				PAGE 2 of 2
								Test/Well Number: BH12				Project: Oxy CC 705-22-43				
								Date: 7/18/2013				Project Number: 013-0242				
								Logged by: B. Baugh				Drilled by: High Plains Drilling				
								Drilling Method: 6" Hollow Stem Auger				Sampling Method: 4" Continuous Split Spoon				
Elevation:		Detector: PID		Seal: Hydrated Bentonite				Grout: NA								
Gravel Pack: Graded Silica Sand 10/20 Mesh								Hole Diameter:				F. L. Meter:				
Casing Type: PVC								Diameter: 2 in.		Length: 8'		DTP:		DTW:		
Screen Type: PVC		Slot: 0.010 in.		Diameter: 2 in.		Length: 35'		Well Depth:		Total Depth: 43'						
Soil/Rock Type	Color	Moisture Content	% Fines	Structure	Vapor (ppm)	Staining	Sample #	Depth (ft)	Sample Recovery %	Penetration Resistance	LITHOLOGY/REMARKS				WELL COMPLETION	
		Dry ↓	90		1649	Minor ↓		30			30-35: Light brown fine sand, trace gravels, to red-brown fine sand, trace gravels, strong odor.					
								31								
								32								
								33			35-40: Light brown/ gray fine sand, trace gravels to about 1' competent shale bedrock.					
								34								
								35								
								36			40-43:Light brown/ gray fine sand, trace gravels to about 16 inches competent shale bedrock, very fissile (dark oil shale)					
								37								
								38								
								39								
								40								
								41								
								42								
								43								
								44								
								45								
								46								
								47								
								48								
								49								
								50								
								51								
								52								
								53								
								54								
								55								
								56								
								57								
								58								
								59								
								60								

MONITORING WELL COMPLETION DIAGRAM

Project: Oxy USA WTP LP
Location: Oxy CC 705-22-43
Contractor: Olsson Associates
Driller: High Plains Drilling
Method: 6-Inch Hollow Stem Auger

Borehole No. BH5
Date: 7/16/13
Observed By: Ben Baugh
Checked By: Ben Baugh
Sheet 1 of 1



Monitoring Well Completion Diagram

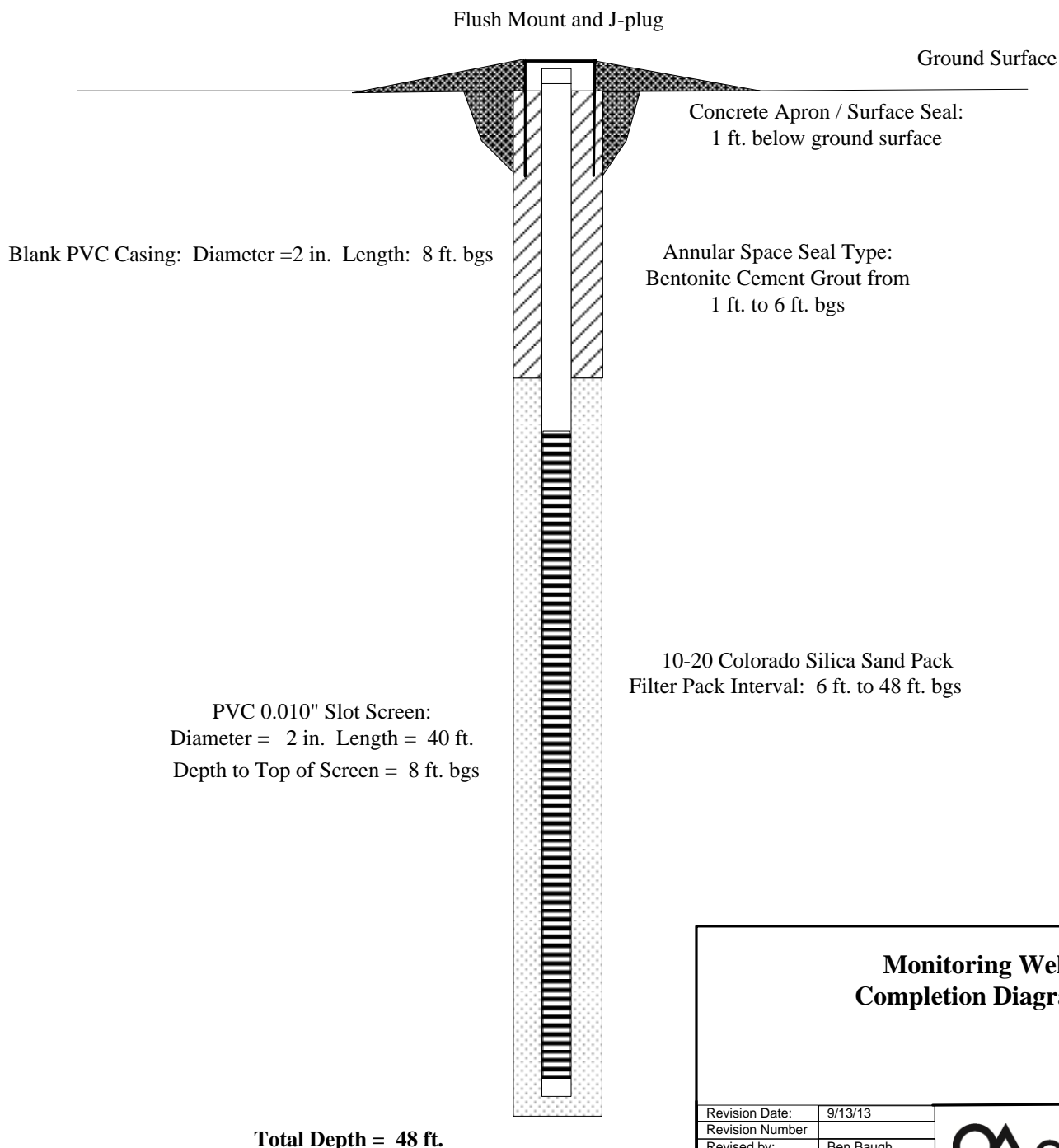
Revision Date:	9/13/13
Revision Number	
Revised by:	Ben Baugh
Approved by:	Tim Dobransky
Project Number:	013-0242
Scale:	Not to Scale

OLSSON
ASSOCIATES

MONITORING WELL COMPLETION DIAGRAM

Project: Oxy USA WTP LP
Location: Oxy CC 705-22-43
Contractor: Olsson Associates
Driller: High Plains Drilling
Method: 6-Inch Hollow Stem Auger

Borehole No. BH8
Date: 7/16/13
Observed By: Ben Baugh
Checked By: Ben Baugh
Sheet 1 of 1



Monitoring Well Completion Diagram

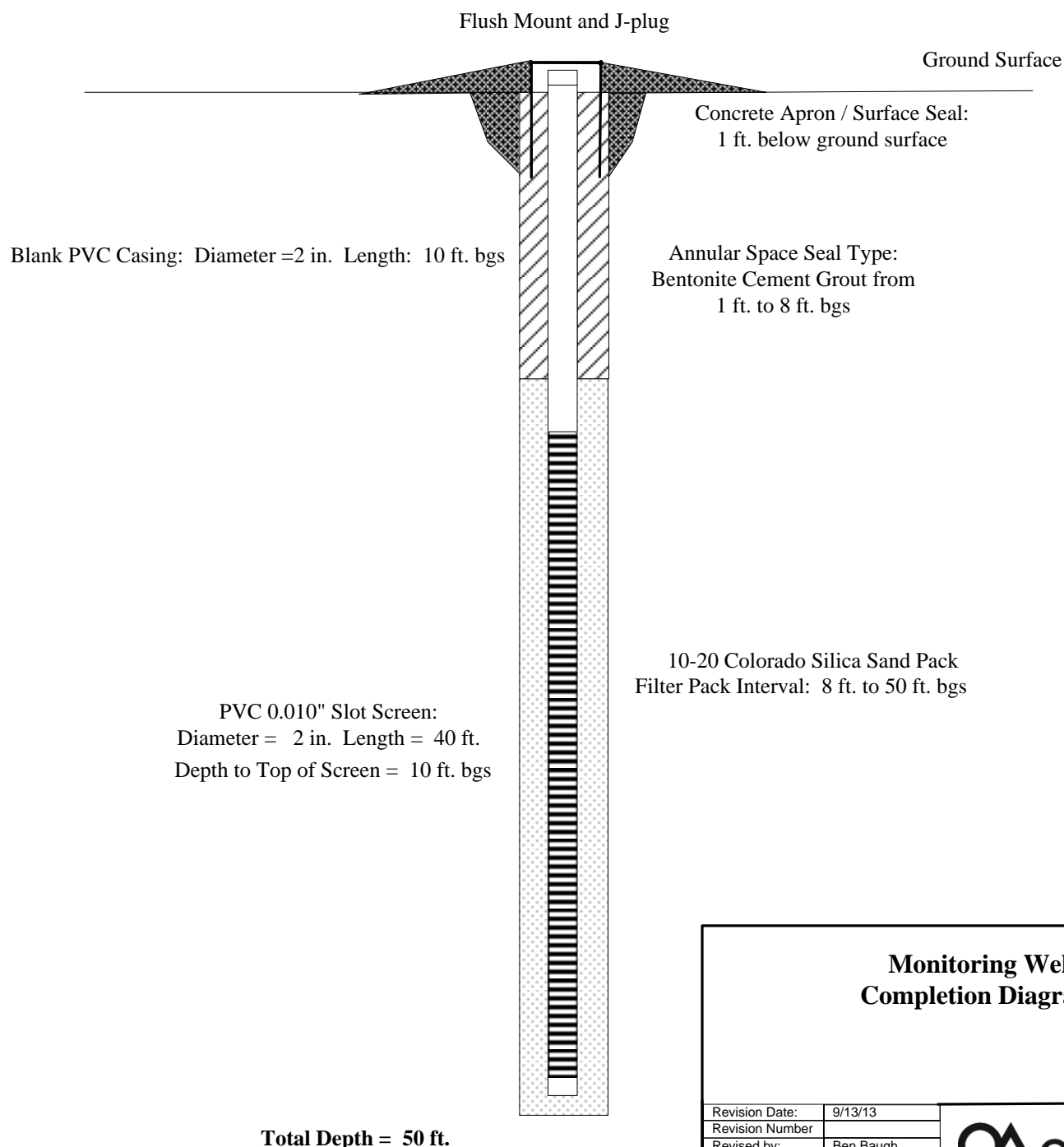
Revision Date:	9/13/13
Revision Number	
Revised by:	Ben Baugh
Approved by:	Tim Dobransky
Project Number:	013-0242
Scale:	Not to Scale

OLSSON
ASSOCIATES

MONITORING WELL COMPLETION DIAGRAM

Project: Oxy USA WTP LP
Location: Oxy CC 705-22-43
Contractor: Olsson Associates
Driller: High Plains Drilling
Method: 6-Inch Hollow Stem Auger

Borehole No. BH10
Date: 7/16/13
Observed By: Ben Baugh
Checked By: Ben Baugh
Sheet 1 of 1



Monitoring Well Completion Diagram

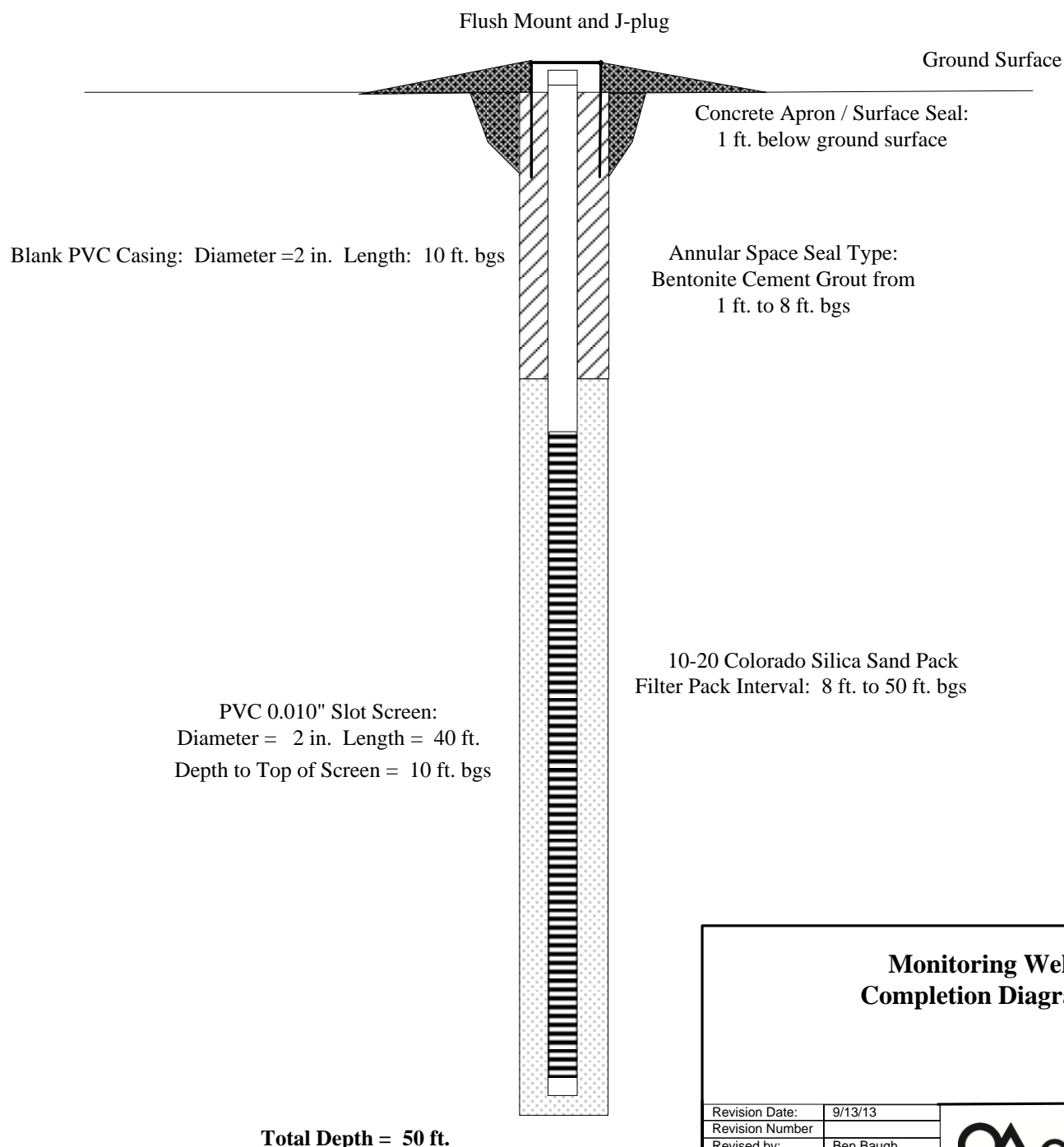
Revision Date:	9/13/13
Revision Number	
Revised by:	Ben Baugh
Approved by:	Tim Dobransky
Project Number:	013-0242
Scale:	Not to Scale

OLSSON
ASSOCIATES

MONITORING WELL COMPLETION DIAGRAM

Project: Oxy USA WTP LP
Location: Oxy CC 705-22-43
Contractor: Olsson Associates
Driller: High Plains Drilling
Method: 6-Inch Hollow Stem Auger

Borehole No. BH11
Date: 7/16/13
Observed By: Ben Baugh
Checked By: Ben Baugh
Sheet 1 of 1



Monitoring Well Completion Diagram

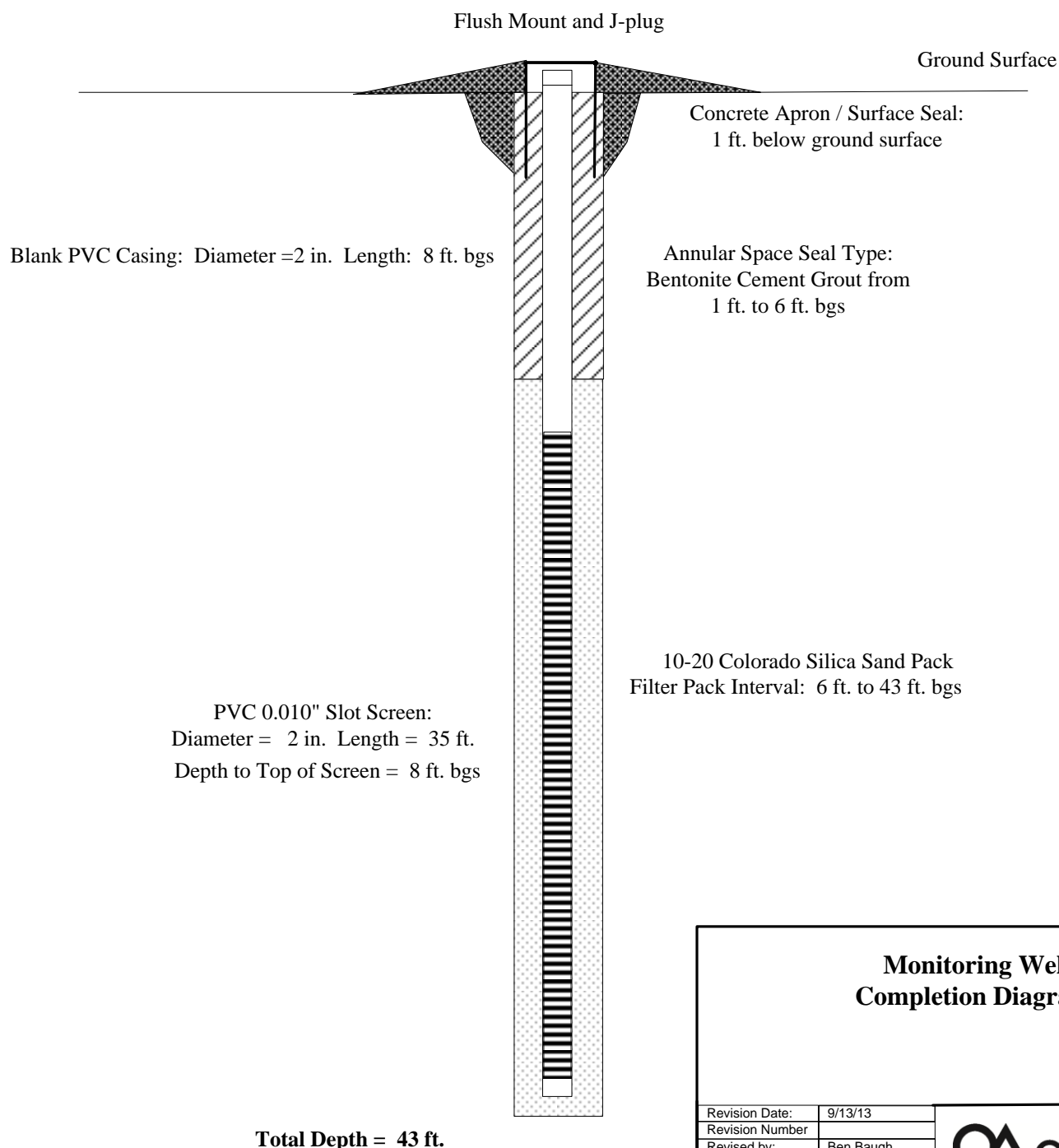
Revision Date:	9/13/13
Revision Number	
Revised by:	Ben Baugh
Approved by:	Tim Dobransky
Project Number:	013-0242
Scale:	Not to Scale

OLSSON
ASSOCIATES

MONITORING WELL COMPLETION DIAGRAM

Project: Oxy USA WTP LP
Location: Oxy CC 705-22-43
Contractor: Olsson Associates
Driller: High Plains Drilling
Method: 6-Inch Hollow Stem Auger

Borehole No. BH12
Date: 7/16/13
Observed By: Ben Baugh
Checked By: Ben Baugh
Sheet 1 of 1



Monitoring Well Completion Diagram

Revision Date:	9/13/13
Revision Number	
Revised by:	Ben Baugh
Approved by:	Tim Dobransky
Project Number:	013-0242
Scale:	Not to Scale

OLSSON
ASSOCIATES



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

Report Summary

Tuesday July 30, 2013

Report Number: L647751

Samples Received: 07/20/13

Client Project:

Description: CC 705-22-43

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH5-10/15
Collected By : Ben B
Collection Date : 07/16/13 09:50

ESC Sample # : L647751-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	9.2	2.0	mg/kg	Calc.	07/24/13	1
ORP	170		mV	2580 B-2011	07/23/13	1
pH	8.0		su	9045D	07/26/13	1
Sodium Adsorption Ratio	4.2			Calc.	07/26/13	1
Specific Conductance	400		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	6.6	0.38	mg/kg	6010B	07/24/13	1
Barium	200	0.25	mg/kg	6010B	07/24/13	1
Cadmium	0.26	0.25	mg/kg	6010B	07/24/13	1
Chromium	9.2	0.50	mg/kg	6010B	07/24/13	1
Copper	15.	1.0	mg/kg	6010B	07/24/13	1
Lead	7.6	0.25	mg/kg	6010B	07/24/13	1
Nickel	14.	1.0	mg/kg	6010B	07/24/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/24/13	1
Silver	BDL	0.50	mg/kg	6010B	07/24/13	1
Zinc	52.	1.5	mg/kg	6010B	07/24/13	1
TPH (GC/FID) Low Fraction	700	50.	mg/kg	8015D/GRO	07/23/13	500
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	93.5		% Rec.	602/8015	07/23/13	500
Benzene	BDL	0.50	mg/kg	8260B	07/21/13	500
Toluene	4.1	2.5	mg/kg	8260B	07/21/13	500
Ethylbenzene	1.2	0.50	mg/kg	8260B	07/21/13	500
Total Xylenes	20.	1.5	mg/kg	8260B	07/21/13	500
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	07/21/13	500
Dibromofluoromethane	107.		% Rec.	8260B	07/21/13	500
a,a,a-Trifluorotoluene	106.		% Rec.	8260B	07/21/13	500
4-Bromofluorobenzene	119.		% Rec.	8260B	07/21/13	500
TPH (GC/FID) High Fraction	160	80.	mg/kg	3546/DRO	07/25/13	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/25/13	20

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-01 (PH) - 8.0@22.4c



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Mt. Juliet, TN 37122
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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

ESC Sample # : L647751-01

Sample ID : BH5-10/15

Site ID :

Collected By : Ben B
Collection Date : 07/16/13 09:50

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	0.19	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	0.024	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	0.0079	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	0.16	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	0.54	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	127.		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	90.8		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	100.		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/30/13 15:50 Printed: 07/30/13 15:51
L647751-01 (PH) - 8.0@22.4c



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH5-45/50

Collected By : Ben B
Collection Date : 07/16/13 11:20

ESC Sample # : L647751-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium, Trivalent	8.2	2.0	mg/kg	Calc.	07/24/13	1
ORP	170		mV	2580 B-2011	07/23/13	1
pH	8.7		su	9045D	07/26/13	1
Sodium Adsorption Ratio	6.7			Calc.	07/26/13	1
Specific Conductance	830		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	7.1	0.38	mg/kg	6010B	07/24/13	1
Barium	150	0.25	mg/kg	6010B	07/24/13	1
Cadmium	BDL	0.25	mg/kg	6010B	07/24/13	1
Chromium	8.2	0.50	mg/kg	6010B	07/24/13	1
Copper	22.	1.0	mg/kg	6010B	07/24/13	1
Lead	9.0	0.25	mg/kg	6010B	07/24/13	1
Nickel	13.	1.0	mg/kg	6010B	07/24/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/24/13	1
Silver	BDL	0.50	mg/kg	6010B	07/24/13	1
Zinc	46.	1.5	mg/kg	6010B	07/24/13	1
TPH (GC/FID) Low Fraction	440	50.	mg/kg	8015D/GRO	07/23/13	500
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	92.0		% Rec.	602/8015	07/23/13	500
Benzene	BDL	0.050	mg/kg	8260B	07/24/13	50
Toluene	BDL	0.25	mg/kg	8260B	07/24/13	50
Ethylbenzene	0.27	0.050	mg/kg	8260B	07/24/13	50
Total Xylenes	1.4	0.15	mg/kg	8260B	07/24/13	50
Surrogate Recovery						
Toluene-d8	116.		% Rec.	8260B	07/24/13	50
Dibromofluoromethane	99.4		% Rec.	8260B	07/24/13	50
a,a,a-Trifluorotoluene	105.		% Rec.	8260B	07/24/13	50
4-Bromofluorobenzene	115.		% Rec.	8260B	07/24/13	50
TPH (GC/FID) High Fraction	250	200	mg/kg	3546/DRO	07/25/13	50
Surrogate recovery (%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/25/13	50

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L647751-02 (SV8270PAHSIM) - Dilution due to matrix
L647751-02 (V8260BTX) - Non-target compounds too high to run at a lower dilution.
L647751-02 (PH) - 8.7@21.2c



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REPORT OF ANALYSIS

July 30, 2013

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH5-45/50

Collected By : Ben B
Collection Date : 07/16/13 11:20

ESC Sample # : L647751-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Acenaphthene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Acenaphthylene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Benzo(a)anthracene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Benzo(a)pyrene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Benzo(b)fluoranthene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Benzo(g,h,i)perylene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Benzo(k)fluoranthene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Chrysene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Dibenz(a,h)anthracene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Fluoranthene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Fluorene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Indeno(1,2,3-cd)pyrene	BDL	0.030	mg/kg	8270C-SIM	07/26/13	5
Naphthalene	0.32	0.10	mg/kg	8270C-SIM	07/26/13	5
Phenanthrene	0.046	0.030	mg/kg	8270C-SIM	07/26/13	5
Pyrene	0.053	0.030	mg/kg	8270C-SIM	07/26/13	5
1-Methylnaphthalene	0.37	0.10	mg/kg	8270C-SIM	07/26/13	5
2-Methylnaphthalene	1.6	0.10	mg/kg	8270C-SIM	07/26/13	5
2-Chloronaphthalene	BDL	0.10	mg/kg	8270C-SIM	07/26/13	5
Surrogate Recovery						
Nitrobenzene-d5	40.4		% Rec.	8270C-SIM	07/26/13	5
2-Fluorobiphenyl	58.7		% Rec.	8270C-SIM	07/26/13	5
p-Terphenyl-d14	55.2		% Rec.	8270C-SIM	07/26/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L647751-02 (SV8270PAHSIM) - Dilution due to matrix

L647751-02 (V8260BTEX) - Non-target compounds too high to run at a lower dilution.

L647751-02 (PH) - 8.7@21.2c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH6-10/15
Collected By : Ben B
Collection Date : 07/16/13 13:40

ESC Sample # : L647751-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium, Trivalent	7.6	2.0	mg/kg	Calc.	07/24/13	1
ORP	190		mV	2580 B-2011	07/23/13	1
pH	8.1		su	9045D	07/26/13	1
Sodium Adsorption Ratio	2.6			Calc.	07/26/13	1
Specific Conductance	2300		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	5.8	0.38	mg/kg	6010B	07/24/13	1
Barium	150	0.25	mg/kg	6010B	07/24/13	1
Cadmium	BDL	0.25	mg/kg	6010B	07/24/13	1
Chromium	7.6	0.50	mg/kg	6010B	07/24/13	1
Copper	11.	1.0	mg/kg	6010B	07/24/13	1
Lead	5.8	0.25	mg/kg	6010B	07/24/13	1
Nickel	11.	1.0	mg/kg	6010B	07/24/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/24/13	1
Silver	BDL	0.50	mg/kg	6010B	07/24/13	1
Zinc	40.	1.5	mg/kg	6010B	07/24/13	1
TPH (GC/FID) Low Fraction	860	50.	mg/kg	8015D/GRO	07/23/13	500
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	93.9		% Rec.	602/8015	07/23/13	500
Benzene	BDL	0.50	mg/kg	8260B	07/21/13	500
Toluene	3.4	2.5	mg/kg	8260B	07/21/13	500
Ethylbenzene	0.79	0.50	mg/kg	8260B	07/21/13	500
Total Xylenes	24.	1.5	mg/kg	8260B	07/21/13	500
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	07/21/13	500
Dibromofluoromethane	106.		% Rec.	8260B	07/21/13	500
a,a,a-Trifluorotoluene	107.		% Rec.	8260B	07/21/13	500
4-Bromofluorobenzene	118.		% Rec.	8260B	07/21/13	500
TPH (GC/FID) High Fraction	260	80.	mg/kg	3546/DRO	07/25/13	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/25/13	20

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-03 (PH) - 8.1@21.2c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

ESC Sample # : L647751-03

Sample ID : BH6-10/15

Site ID :

Collected By : Ben B
Collection Date : 07/16/13 13:40

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	0.20	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	0.025	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	0.0068	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	0.20	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	0.53	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	151.		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	83.7		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	97.5		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L647751-03 (PH) - 8.1@21.2c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH6-45/50
Collected By : Ben B
Collection Date : 07/16/13 14:50

ESC Sample # : L647751-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium, Trivalent	11.	2.0	mg/kg	Calc.	07/25/13	1
ORP	170		mV	2580 B-2011	07/23/13	1
pH	8.5		su	9045D	07/26/13	1
Sodium Adsorption Ratio	5.8			Calc.	07/26/13	1
Specific Conductance	750		umhos/cm	9050AMod	07/23/13	1
Mercury	0.033	0.020	mg/kg	7471	07/22/13	1
Arsenic	24.	0.38	mg/kg	6010B	07/25/13	1
Barium	1500	0.25	mg/kg	6010B	07/25/13	1
Cadmium	0.50	0.25	mg/kg	6010B	07/25/13	1
Chromium	11.	0.50	mg/kg	6010B	07/25/13	1
Copper	33.	1.0	mg/kg	6010B	07/25/13	1
Lead	13.	0.25	mg/kg	6010B	07/25/13	1
Nickel	19.	1.0	mg/kg	6010B	07/25/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	59.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	300	5.0	mg/kg	8015D/GRO	07/23/13	50
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	89.6		% Rec.	602/8015	07/23/13	50
Benzene	BDL	0.050	mg/kg	8260B	07/21/13	50
Toluene	BDL	0.25	mg/kg	8260B	07/21/13	50
Ethylbenzene	BDL	0.050	mg/kg	8260B	07/21/13	50
Total Xylenes	0.20	0.15	mg/kg	8260B	07/21/13	50
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	07/21/13	50
Dibromofluoromethane	96.1		% Rec.	8260B	07/21/13	50
a,a,a-Trifluorotoluene	109.		% Rec.	8260B	07/21/13	50
4-Bromofluorobenzene	117.		% Rec.	8260B	07/21/13	50
TPH (GC/FID) High Fraction	BDL	200	mg/kg	3546/DRO	07/25/13	50
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/25/13	50

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-04 (V8260BTEX) - Non-target compounds too high to run at a lower dilution.
L647751-04 (PH) - 8.5@20.9c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

ESC Sample # : L647751-04

Sample ID : BH6-45/50

Site ID :

Collected By : Ben B
Collection Date : 07/16/13 14:50

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	0.0086	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	0.014	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	0.013	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	0.0076	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	0.19	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	0.066	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	0.055	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	0.27	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	1.0	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	57.3		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	88.9		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	95.2		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L647751-04 (V8260BTEX) - Non-target compounds too high to run at a lower dilution.

L647751-04 (PH) - 8.5@20.9c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH7-10/15
Collected By : Ben B
Collection Date : 07/16/13 15:57

ESC Sample # : L647751-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium, Trivalent	17.	2.0	mg/kg	Calc.	07/25/13	1
ORP	160		mV	2580 B-2011	07/23/13	1
pH	8.7		su	9045D	07/26/13	1
Sodium Adsorption Ratio	5.6			Calc.	07/26/13	1
Specific Conductance	480		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	8.0	0.38	mg/kg	6010B	07/25/13	1
Barium	260	0.25	mg/kg	6010B	07/25/13	1
Cadmium	0.39	0.25	mg/kg	6010B	07/25/13	1
Chromium	17.	0.50	mg/kg	6010B	07/25/13	1
Copper	18.	1.0	mg/kg	6010B	07/25/13	1
Lead	8.8	0.25	mg/kg	6010B	07/25/13	1
Nickel	17.	1.0	mg/kg	6010B	07/25/13	1
Selenium	1.9	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	64.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	670	50.	mg/kg	8015D/GRO	07/23/13	500
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	98.1		% Rec.	602/8015	07/23/13	500
Benzene	BDL	0.50	mg/kg	8260B	07/21/13	500
Toluene	BDL	2.5	mg/kg	8260B	07/21/13	500
Ethylbenzene	BDL	0.50	mg/kg	8260B	07/21/13	500
Total Xylenes	23.	1.5	mg/kg	8260B	07/21/13	500
Surrogate Recovery						
Toluene-d8	99.6		% Rec.	8260B	07/21/13	500
Dibromofluoromethane	102.		% Rec.	8260B	07/21/13	500
a,a,a-Trifluorotoluene	109.		% Rec.	8260B	07/21/13	500
4-Bromofluorobenzene	111.		% Rec.	8260B	07/21/13	500
TPH (GC/FID) High Fraction	130	80.	mg/kg	3546/DRO	07/25/13	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/25/13	20

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-05 (PH) - 8.7@21.5c



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Est. 1970

REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

ESC Sample # : L647751-05

Sample ID : BH7-10/15

Site ID :

Collected By : Ben B
Collection Date : 07/16/13 15:57

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	0.21	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	0.011	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	0.17	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	0.48	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	51.1		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	82.6		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	88.7		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L647751-05 (PH) - 8.7@21.5c



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH7-45/50
Collected By : Ben B
Collection Date : 07/16/13 17:15

ESC Sample # : L647751-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	10.	2.0	mg/kg	Calc.	07/25/13	1
ORP	160		mV	2580 B-2011	07/23/13	1
pH	8.8		su	9045D	07/26/13	1
Sodium Adsorption Ratio	6.0			Calc.	07/26/13	1
Specific Conductance	630		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	6.6	0.38	mg/kg	6010B	07/25/13	1
Barium	780	0.25	mg/kg	6010B	07/25/13	1
Cadmium	0.50	0.25	mg/kg	6010B	07/25/13	1
Chromium	10.	0.50	mg/kg	6010B	07/25/13	1
Copper	16.	1.0	mg/kg	6010B	07/25/13	1
Lead	6.7	0.25	mg/kg	6010B	07/25/13	1
Nickel	14.	1.0	mg/kg	6010B	07/25/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	59.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	3.0	0.50	mg/kg	8015D/GRO	07/24/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	100.		% Rec.	602/8015	07/24/13	5
Benzene	0.011	0.0050	mg/kg	8260B	07/21/13	5
Toluene	BDL	0.025	mg/kg	8260B	07/21/13	5
Ethylbenzene	BDL	0.0050	mg/kg	8260B	07/21/13	5
Total Xylenes	0.028	0.015	mg/kg	8260B	07/21/13	5
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	07/21/13	5
Dibromofluoromethane	106.		% Rec.	8260B	07/21/13	5
a,a,a-Trifluorotoluene	106.		% Rec.	8260B	07/21/13	5
4-Bromofluorobenzene	114.		% Rec.	8260B	07/21/13	5
TPH (GC/FID) High Fraction	160	80.	mg/kg	3546/DRO	07/25/13	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/25/13	20

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-06 (PH) - 8.8@21.5c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH7-45/50

Collected By : Ben B
Collection Date : 07/16/13 17:15

ESC Sample # : L647751-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	0.037	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	0.024	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	0.012	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	0.038	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	0.15	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	74.3		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	87.2		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	98.3		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH8-15/20
Collected By : Ben B
Collection Date : 07/17/13 09:40

ESC Sample # : L647751-07

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium, Trivalent	14.	2.0	mg/kg	Calc.	07/25/13	1
ORP	180		mV	2580 B-2011	07/23/13	1
pH	8.2		su	9045D	07/26/13	1
Sodium Adsorption Ratio	1.5			Calc.	07/26/13	1
Specific Conductance	490		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	11.	0.38	mg/kg	6010B	07/25/13	1
Barium	220	0.25	mg/kg	6010B	07/25/13	1
Cadmium	BDL	0.25	mg/kg	6010B	07/25/13	1
Chromium	14.	0.50	mg/kg	6010B	07/25/13	1
Copper	12.	1.0	mg/kg	6010B	07/25/13	1
Lead	8.0	0.25	mg/kg	6010B	07/25/13	1
Nickel	13.	1.0	mg/kg	6010B	07/25/13	1
Selenium	1.4	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	47.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	4500	250	mg/kg	8015D/GRO	07/25/13	2500
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	102.		% Rec.	602/8015	07/25/13	2500
Benzene	2.4	0.25	mg/kg	8260B	07/23/13	250
Toluene	44.	1.2	mg/kg	8260B	07/23/13	250
Ethylbenzene	4.1	0.25	mg/kg	8260B	07/23/13	250
Total Xylenes	170	0.75	mg/kg	8260B	07/23/13	250
Surrogate Recovery						
Toluene-d8	97.5		% Rec.	8260B	07/23/13	250
Dibromofluoromethane	103.		% Rec.	8260B	07/23/13	250
a,a,a-Trifluorotoluene	102.		% Rec.	8260B	07/23/13	250
4-Bromofluorobenzene	103.		% Rec.	8260B	07/23/13	250
TPH (GC/FID) High Fraction	360	4.0	mg/kg	3546/DRO	07/24/13	1
Surrogate recovery(%) o-Terphenyl	73.6		% Rec.	3546/DRO	07/24/13	1

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-07 (PH) - 8.2@21.4c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH8-15/20

Collected By : Ben B
Collection Date : 07/17/13 09:40

ESC Sample # : L647751-07

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	0.011	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	0.021	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	0.64	0.40	mg/kg	8270C-SIM	07/28/13	20
Phenanthrene	0.014	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	0.46	0.40	mg/kg	8270C-SIM	07/28/13	20
2-Methylnaphthalene	1.3	0.40	mg/kg	8270C-SIM	07/28/13	20
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	297.		% Rec.	8270C-SIM	07/28/13	20
2-Fluorobiphenyl	93.1		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	97.2		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH8-45/50
Collected By : Ben B
Collection Date : 07/17/13 09:50

ESC Sample # : L647751-08

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium, Trivalent	8.4	2.0	mg/kg	Calc.	07/25/13	1
ORP	160		mV	2580 B-2011	07/23/13	1
pH	8.6		su	9045D	07/26/13	1
Sodium Adsorption Ratio	5.2			Calc.	07/26/13	1
Specific Conductance	760		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	7.7	0.38	mg/kg	6010B	07/25/13	1
Barium	320	0.25	mg/kg	6010B	07/25/13	1
Cadmium	0.26	0.25	mg/kg	6010B	07/25/13	1
Chromium	8.4	0.50	mg/kg	6010B	07/25/13	1
Copper	13.	1.0	mg/kg	6010B	07/25/13	1
Lead	5.4	0.25	mg/kg	6010B	07/25/13	1
Nickel	11.	1.0	mg/kg	6010B	07/25/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	42.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	6.8	0.50	mg/kg	8015D/GRO	07/23/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	84.1		% Rec.	602/8015	07/23/13	5
Benzene	0.046	0.0050	mg/kg	8260B	07/23/13	5
Toluene	0.35	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	0.052	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	0.56	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	95.5		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	108.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	86.4		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	75.8		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	BDL	400	mg/kg	3546/DRO	07/25/13	100
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/25/13	100

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-08 (PH) - 8.6@21.3c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH8-45/50

Collected By : Ben B
Collection Date : 07/17/13 09:50

ESC Sample # : L647751-08

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Acenaphthene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Acenaphthylene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Benzo(a)anthracene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Benzo(a)pyrene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Benzo(b)fluoranthene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Benzo(g,h,i)perylene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Benzo(k)fluoranthene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Chrysene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Dibenz(a,h)anthracene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Fluoranthene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Fluorene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Indeno(1,2,3-cd)pyrene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Naphthalene	BDL	0.20	mg/kg	8270C-SIM	07/26/13	10
Phenanthrene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
Pyrene	BDL	0.060	mg/kg	8270C-SIM	07/26/13	10
1-Methylnaphthalene	BDL	0.20	mg/kg	8270C-SIM	07/26/13	10
2-Methylnaphthalene	0.53	0.20	mg/kg	8270C-SIM	07/26/13	10
2-Chloronaphthalene	BDL	0.20	mg/kg	8270C-SIM	07/26/13	10
Surrogate Recovery						
Nitrobenzene-d5	47.9		% Rec.	8270C-SIM	07/26/13	10
2-Fluorobiphenyl	60.8		% Rec.	8270C-SIM	07/26/13	10
p-Terphenyl-d14	58.8		% Rec.	8270C-SIM	07/26/13	10

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH10-20/25
Collected By : Ben B
Collection Date : 07/17/13 13:10

ESC Sample # : L647751-09

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	11.	2.0	mg/kg	Calc.	07/25/13	1
ORP	170		mV	2580 B-2011	07/23/13	1
pH	8.4		su	9045D	07/26/13	1
Sodium Adsorption Ratio	9.2			Calc.	07/26/13	1
Specific Conductance	2000		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	8.0	0.38	mg/kg	6010B	07/25/13	1
Barium	250	0.25	mg/kg	6010B	07/25/13	1
Cadmium	BDL	0.25	mg/kg	6010B	07/25/13	1
Chromium	11.	0.50	mg/kg	6010B	07/25/13	1
Copper	10.	1.0	mg/kg	6010B	07/25/13	1
Lead	6.8	0.25	mg/kg	6010B	07/25/13	1
Nickel	9.9	1.0	mg/kg	6010B	07/25/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	40.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	5.2	0.50	mg/kg	8015D/GRO	07/23/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	96.8		% Rec.	602/8015	07/23/13	5
Benzene	0.011	0.0050	mg/kg	8260B	07/23/13	5
Toluene	0.33	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	0.099	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	1.8	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	105.		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	108.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	99.5		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	95.4		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	4.1	4.0	mg/kg	3546/DRO	07/24/13	1
Surrogate recovery(%) o-Terphenyl	71.4		% Rec.	3546/DRO	07/24/13	1

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-09 (PH) - 8.4@21.4c



12065 Lebanon Rd.
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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

ESC Sample # : L647751-09

Sample ID : BH10-20/25

Site ID :

Collected By : Ben B
Collection Date : 07/17/13 13:10

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	0.026	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	0.030	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	86.2		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	76.4		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	80.4		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH10-45/50
Collected By : Ben B
Collection Date : 07/17/13 13:30

ESC Sample # : L647751-10

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	13.	2.0	mg/kg	Calc.	07/25/13	1
ORP	180		mV	2580 B-2011	07/23/13	1
pH	8.1		su	9045D	07/26/13	1
Sodium Adsorption Ratio	6.3			Calc.	07/26/13	1
Specific Conductance	2800		umhos/cm	9050AMod	07/23/13	1
Mercury	0.051	0.020	mg/kg	7471	07/22/13	1
Arsenic	14.	0.38	mg/kg	6010B	07/25/13	1
Barium	580	0.25	mg/kg	6010B	07/25/13	1
Cadmium	0.32	0.25	mg/kg	6010B	07/25/13	1
Chromium	13.	0.50	mg/kg	6010B	07/25/13	1
Copper	30.	1.0	mg/kg	6010B	07/25/13	1
Lead	12.	0.25	mg/kg	6010B	07/25/13	1
Nickel	21.	1.0	mg/kg	6010B	07/25/13	1
Selenium	1.9	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	66.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	1.8	0.50	mg/kg	8015D/GRO	07/23/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	92.1		% Rec.	602/8015	07/23/13	5
Benzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Toluene	BDL	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	BDL	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	98.5		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	112.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	91.9		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	84.0		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	130	4.0	mg/kg	3546/DRO	07/25/13	1
Surrogate recovery(%) o-Terphenyl	66.1		% Rec.	3546/DRO	07/25/13	1

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-10 (PH) - 8.1@21.4c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH10-45/50

Collected By : Ben B
Collection Date : 07/17/13 13:30

ESC Sample # : L647751-10

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	96.5		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	87.3		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	96.6		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : PILE
Collected By : Ben B
Collection Date : 07/17/13 09:30

ESC Sample # : L647751-11

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	9.2	2.0	mg/kg	Calc.	07/25/13	1
ORP	180		mV	2580 B-2011	07/23/13	1
pH	7.8		su	9045D	07/26/13	1
Sodium Adsorption Ratio	3.9			Calc.	07/26/13	1
Specific Conductance	1500		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	6.5	0.38	mg/kg	6010B	07/25/13	1
Barium	190	0.25	mg/kg	6010B	07/25/13	1
Cadmium	0.26	0.25	mg/kg	6010B	07/25/13	1
Chromium	9.2	0.50	mg/kg	6010B	07/25/13	1
Copper	12.	1.0	mg/kg	6010B	07/25/13	1
Lead	7.3	0.25	mg/kg	6010B	07/25/13	1
Nickel	12.	1.0	mg/kg	6010B	07/25/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	43.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	07/23/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	96.6		% Rec.	602/8015	07/23/13	5
Benzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Toluene	BDL	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	BDL	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	110.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	98.3		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	95.0		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/24/13	1
Surrogate recovery(%) o-Terphenyl	76.7		% Rec.	3546/DRO	07/24/13	1

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-11 (PH) - 7.8@21.8c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : PILE

Collected By : Ben B
Collection Date : 07/17/13 09:30

ESC Sample # : L647751-11

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	0.057	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	97.5		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	89.5		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	90.7		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH11-40/45
Collected By : Ben B
Collection Date : 07/18/13 09:10

ESC Sample # : L647751-12

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	21.	2.0	mg/kg	Calc.	07/25/13	1
ORP	170		mV	2580 B-2011	07/23/13	1
pH	8.3		su	9045D	07/26/13	1
Sodium Adsorption Ratio	3.0			Calc.	07/26/13	1
Specific Conductance	710		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	13.	0.38	mg/kg	6010B	07/25/13	1
Barium	320	0.25	mg/kg	6010B	07/25/13	1
Cadmium	BDL	0.25	mg/kg	6010B	07/25/13	1
Chromium	21.	0.50	mg/kg	6010B	07/25/13	1
Copper	26.	1.0	mg/kg	6010B	07/25/13	1
Lead	13.	0.25	mg/kg	6010B	07/25/13	1
Nickel	18.	1.0	mg/kg	6010B	07/25/13	1
Selenium	1.3	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	59.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	1.1	0.50	mg/kg	8015D/GRO	07/23/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	97.2		% Rec.	602/8015	07/23/13	5
Benzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Toluene	BDL	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	0.026	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	97.9		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	111.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	94.4		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	89.1		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	33.	4.0	mg/kg	3546/DRO	07/25/13	1
Surrogate recovery(%) o-Terphenyl	59.2		% Rec.	3546/DRO	07/25/13	1

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-12 (PH) - 8.3@21.5c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH11-40/45

Collected By : Ben B
Collection Date : 07/18/13 09:10

ESC Sample # : L647751-12

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	93.9		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	90.3		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	95.1		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH11-45/50

Collected By : Ben B
Collection Date : 07/18/13 09:20

ESC Sample # : L647751-13

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium, Trivalent	18.	2.0	mg/kg	Calc.	07/25/13	1
ORP	180		mV	2580 B-2011	07/23/13	1
pH	8.1		su	9045D	07/26/13	1
Sodium Adsorption Ratio	4.6			Calc.	07/26/13	1
Specific Conductance	1500		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	12.	0.38	mg/kg	6010B	07/25/13	1
Barium	420	0.25	mg/kg	6010B	07/25/13	1
Cadmium	BDL	0.25	mg/kg	6010B	07/25/13	1
Chromium	18.	0.50	mg/kg	6010B	07/25/13	1
Copper	17.	1.0	mg/kg	6010B	07/25/13	1
Lead	9.6	0.25	mg/kg	6010B	07/25/13	1
Nickel	15.	1.0	mg/kg	6010B	07/25/13	1
Selenium	1.1	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	56.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	2.2	0.50	mg/kg	8015D/GRO	07/23/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	93.7		% Rec.	602/8015	07/23/13	5
Benzene	0.053	0.0050	mg/kg	8260B	07/23/13	5
Toluene	0.11	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	BDL	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	101.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	94.1		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	95.2		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	6.0	4.0	mg/kg	3546/DRO	07/25/13	1
Surrogate recovery(%) o-Terphenyl	79.5		% Rec.	3546/DRO	07/25/13	1

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-13 (PH) - 8.1@21.3c



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

ESC Sample # : L647751-13

Sample ID : BH11-45/50

Site ID :

Collected By : Ben B
Collection Date : 07/18/13 09:20

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/26/13	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/26/13	1
Surrogate Recovery						
Nitrobenzene-d5	89.8		% Rec.	8270C-SIM	07/26/13	1
2-Fluorobiphenyl	92.6		% Rec.	8270C-SIM	07/26/13	1
p-Terphenyl-d14	92.0		% Rec.	8270C-SIM	07/26/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/30/13 15:50 Printed: 07/30/13 15:51
L647751-13 (PH) - 8.1@21.3c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH12-30/35
Collected By : Ben B
Collection Date : 07/18/13 12:45

ESC Sample # : L647751-14

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	9.8	2.0	mg/kg	Calc.	07/25/13	1
ORP	150		mV	2580 B-2011	07/23/13	1
pH	8.8		su	9045D	07/26/13	1
Sodium Adsorption Ratio	5.6			Calc.	07/26/13	1
Specific Conductance	440		umhos/cm	9050AMod	07/23/13	1
Mercury	BDL	0.020	mg/kg	7471	07/22/13	1
Arsenic	3.6	0.38	mg/kg	6010B	07/25/13	1
Barium	190	0.25	mg/kg	6010B	07/25/13	1
Cadmium	0.37	0.25	mg/kg	6010B	07/25/13	1
Chromium	9.8	0.50	mg/kg	6010B	07/25/13	1
Copper	9.6	1.0	mg/kg	6010B	07/25/13	1
Lead	5.6	0.25	mg/kg	6010B	07/25/13	1
Nickel	12.	1.0	mg/kg	6010B	07/25/13	1
Selenium	BDL	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	48.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	150	5.0	mg/kg	8015D/GRO	07/23/13	50
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	91.7		% Rec.	602/8015	07/23/13	50
Benzene	BDL	0.0050	mg/kg	8260B	07/23/13	5
Toluene	BDL	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	0.016	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	0.33	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	106.		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	103.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	104.		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	100.		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	51.	4.0	mg/kg	3546/DRO	07/24/13	1
Surrogate recovery(%) o-Terphenyl	73.2		% Rec.	3546/DRO	07/24/13	1

Polynuclear Aromatic Hydrocarbons

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Det. Limit - Practical Quantitation Limit(PQL)
L647751-14 (PH) - 8.8@21.0c



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REPORT OF ANALYSIS

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760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

ESC Sample # : L647751-14

Sample ID : BH12-30/35

Site ID :

Collected By : Ben B
Collection Date : 07/18/13 12:45

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Fluorene	0.0062	0.0060	mg/kg	8270C-SIM	07/29/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Naphthalene	0.14	0.020	mg/kg	8270C-SIM	07/29/13	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
1-Methylnaphthalene	0.12	0.020	mg/kg	8270C-SIM	07/29/13	1
2-Methylnaphthalene	0.34	0.020	mg/kg	8270C-SIM	07/29/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/29/13	1
Surrogate Recovery						
Nitrobenzene-d5	109.		% Rec.	8270C-SIM	07/29/13	1
2-Fluorobiphenyl	90.6		% Rec.	8270C-SIM	07/29/13	1
p-Terphenyl-d14	98.4		% Rec.	8270C-SIM	07/29/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L647751-14 (PH) - 8.8@21.0c



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July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43
Sample ID : BH12-40/45
Collected By : Ben B
Collection Date : 07/18/13 13:00

ESC Sample # : L647751-15

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/26/13	1
Chromium,Trivalent	10.	2.0	mg/kg	Calc.	07/25/13	1
ORP	170		mV	2580 B-2011	07/23/13	1
pH	8.3		su	9045D	07/26/13	1
Sodium Adsorption Ratio	4.4			Calc.	07/26/13	1
Specific Conductance	1100		umhos/cm	9050AMod	07/23/13	1
Mercury	0.11	0.020	mg/kg	7471	07/22/13	1
Arsenic	89.	0.38	mg/kg	6010B	07/25/13	1
Barium	260	0.25	mg/kg	6010B	07/25/13	1
Cadmium	BDL	1.2	mg/kg	6010B	07/25/13	5
Chromium	10.	0.50	mg/kg	6010B	07/25/13	1
Copper	22.	1.0	mg/kg	6010B	07/25/13	1
Lead	18.	0.25	mg/kg	6010B	07/25/13	1
Nickel	29.	1.0	mg/kg	6010B	07/25/13	1
Selenium	5.7	1.0	mg/kg	6010B	07/25/13	1
Silver	BDL	0.50	mg/kg	6010B	07/25/13	1
Zinc	68.	1.5	mg/kg	6010B	07/25/13	1
TPH (GC/FID) Low Fraction	2.6	0.50	mg/kg	8015D/GRO	07/23/13	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	97.2		% Rec.	602/8015	07/23/13	5
Benzene	0.040	0.0050	mg/kg	8260B	07/23/13	5
Toluene	0.044	0.025	mg/kg	8260B	07/23/13	5
Ethylbenzene	0.037	0.0050	mg/kg	8260B	07/23/13	5
Total Xylenes	0.31	0.015	mg/kg	8260B	07/23/13	5
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	07/23/13	5
Dibromofluoromethane	111.		% Rec.	8260B	07/23/13	5
a,a,a-Trifluorotoluene	95.8		% Rec.	8260B	07/23/13	5
4-Bromofluorobenzene	93.9		% Rec.	8260B	07/23/13	5
TPH (GC/FID) High Fraction	16.	4.0	mg/kg	3546/DRO	07/24/13	1
Surrogate recovery(%) o-Terphenyl	56.0		% Rec.	3546/DRO	07/24/13	1

Polynuclear Aromatic Hydrocarbons

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L647751-15 (PH) - 8.3@21.4c



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July 30, 2013

Date Received : July 20, 2013
Description : CC 705-22-43

Sample ID : BH12-40/45

Collected By : Ben B
Collection Date : 07/18/13 13:00

ESC Sample # : L647751-15

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/29/13	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/29/13	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/29/13	1
2-Methylnaphthalene	0.028	0.020	mg/kg	8270C-SIM	07/29/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/29/13	1
Surrogate Recovery						
Nitrobenzene-d5	84.8		% Rec.	8270C-SIM	07/29/13	1
2-Fluorobiphenyl	88.2		% Rec.	8270C-SIM	07/29/13	1
p-Terphenyl-d14	90.8		% Rec.	8270C-SIM	07/29/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/30/13 15:50 Printed: 07/30/13 15:51
L647751-15 (PH) - 8.3@21.4c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L647751-01	WG673438	SAMP	o-Terphenyl	R2757961	J7
L647751-02	WG673408	SAMP	Toluene-d8	R2755441	J1
	WG673432	SAMP	Nitrobenzene-d5	R2758721	J2
	WG673438	SAMP	o-Terphenyl	R2757961	J7
L647751-03	WG673240	SAMP	Arsenic	R2756748	J3J6
	WG673240	SAMP	Barium	R2756748	J3J6
	WG673240	SAMP	Cadmium	R2756748	J6
	WG673240	SAMP	Chromium	R2756748	J3J6
	WG673240	SAMP	Copper	R2756748	J3J6
	WG673240	SAMP	Lead	R2756748	J3J6
	WG673240	SAMP	Nickel	R2756748	J3J6
	WG673240	SAMP	Selenium	R2756748	J6
	WG673240	SAMP	Silver	R2756748	J6
	WG673240	SAMP	Zinc	R2756748	J3J6
	WG673432	SAMP	Nitrobenzene-d5	R2758721	J1
L647751-04	WG673438	SAMP	o-Terphenyl	R2757961	J7
	WG673283	SAMP	Arsenic	R2757312	J6
	WG673283	SAMP	Barium	R2757312	V
	WG673283	SAMP	Cadmium	R2757312	J6
	WG673283	SAMP	Chromium	R2757312	J6
	WG673283	SAMP	Copper	R2757312	J6
	WG673283	SAMP	Lead	R2757312	J6
	WG673283	SAMP	Nickel	R2757312	J6
	WG673283	SAMP	Selenium	R2757312	J6
	WG673283	SAMP	Silver	R2757312	J6
	WG673283	SAMP	Zinc	R2757312	J6
	WG673438	SAMP	TPH (GC/FID) High Fraction	R2757961	O
L647751-05	WG673438	SAMP	o-Terphenyl	R2757961	J7
L647751-06	WG673438	SAMP	o-Terphenyl	R2757961	J7
L647751-07	WG673432	SAMP	Nitrobenzene-d5	R2759225	J7
L647751-08	WG673166	SAMP	a,a,a-Trifluorotoluene	R2754304	J2
	WG673438	SAMP	TPH (GC/FID) High Fraction	R2757961	O
	WG673438	SAMP	o-Terphenyl	R2757961	J7
L647751-15	WG673288	SAMP	Cadmium	R2757860	O

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
07/30/13 at 15:51:53

TSR Signing Reports: 134
R5 - Desired TAT

Log BTEX by 8260 unless otherwise noted

Sample: L647751-01 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-02 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-03 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-04 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-05 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-06 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-07 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-08 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-09 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-10 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-11 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-12 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-13 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-14 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50
Sample: L647751-15 Account: OXYGJCO Received: 07/20/13 09:00 Due Date: 07/26/13 00:00 RPT Date: 07/30/13 15:50