



April 18, 2017

Mr. Scot A. Donato
Great Western Operating Company, LLC
1801 Broadway, Suite 500
Denver, Colorado 80202

**RE: Closure Request: Confirmation Soil Sampling
Postle IC 11-042 HC Production Facility Surface Releases
Weld County, Colorado
Olsson Project #017-0418**

Dear Mr. Donato,

Olsson Associates (Olsson) was retained by Great Western Operating Company, LLC (GWOC) to perform confirmation soil sampling at the Postle IC 11-042 HC Production Facility (Site) following two separate surface releases. The first release occurred on February 12, 2017 in an area beneath and immediately north of the drill rig. The second release occurred on February 15, 2017, approximately 40 feet north of the first release. The intent of the project was to collect confirmation soil samples to assess the presence or absence of petroleum hydrocarbon impacts, caused by each release, above the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 concentrations levels. The Site is an active well pad and production facility located on the east side of Interstate 25, 0.7 miles north of Weld County Road 64, in Weld County, Colorado. This letter summarizes the project activities and analytical results and serves as the Closure Request for both the first release that occurred on February 12, 2017 and the second release that occurred on February 15, 2017.

The Site is located in an agricultural area in the southwest quarter of the northwest quarter of Section 11, Township 3 North, Range 68 West of the 6th Principle Meridian. The ground surface in the vicinity of the Site generally slopes to the south. The nearest surface water is McKay Reservoir, located approximately 1,540 feet to the north (topographically up-gradient). According to records at the Colorado Division of Water Resources, the nearest domestic groundwater well is located 1,730 feet to the northeast (topographically cross-gradient). The nearest residential structure is located approximately 1,315 feet to the north (topographically up-gradient). Figure 1 illustrates the general location of the Site.

Olsson conducted soil sampling activities and the required release reporting in accordance with the COGCC 900 Series Rules. During this project, Olsson followed sampling procedures, equipment decontamination methods, and chain-of-custody procedures in accordance with U.S. Environmental Protection Agency (EPA) guidelines.

First Release – Description and Initial Response – February 12, 2017

According to GWOC's Spill/Release Report dated February 12, 2017, a plug fell out of the snail on the transfer pump from the scavenger tank. Approximately 18 barrels (bbls) of oil based mud (OBM) was released within containment and less than 2 bbls was released outside of

containment. A vacuum truck was utilized to remove the OBM within containment and the soil outside of containment was scraped with a loader and transported offsite for disposal. The snail plug was replaced and all other plugs on all pumps were checked for leaks.

First Release – Confirmation Soil Sampling Activities – February 13, 2017

Olsson visited the Site on February 13, 2017 and observed the release area and the transfer pump placed on crane matting. OBM had seeped through matting joints and outside of containment barriers. Prior to arrival, approximately one to three inches of surface soil had been scraped with a loader and transported offsite. Stained soil was observed along the edges of the matting; however, the area beneath the matting was inaccessible due to ongoing drilling operations. Based on Olsson's visual assessment, the impacted area was estimated to be approximately 1,200 square feet (ft²).

Four confirmation soil samples (Postle-01 through Postle-04) were collected from the release area, north of the drill rig and west of the crane matting, for field screening and laboratory analysis. The sample locations were recorded on a Trimble GeoExplorer 2008 series handheld global positioning system (Trimble) and are depicted on Figure 2. All soil samples were collected from the surface to approximately three inches below ground surface (bgs) and placed into laboratory supplied glass jars, sealed, labeled, and placed into a cooler with ice. Hydrocarbon odors and staining were observed in the soil from each sample.

The field soil screening consisted of placing a representative portion of each soil sample into a new re-sealable plastic bag, allowing the bag contents to equilibrate to the ambient air temperature and volatile organic compounds to desorb from the soil. The air intake nozzle of a Mini Rae 3000 photo-ionization detector (PID) was introduced into the individual sample bags to measure the volatile organic vapors in the bags in parts per million (ppm). The soil sample PID field screening readings ranged from 125 ppm to 392 ppm and are included on Table 1.

An initial Form 19 Spill/Release Report was submitted to the COGCC on February 13, 2017 (document number 401208201). A copy of the initial Form 19 is included in Appendix A.

First Release – Soil Analytical Methods and Results – February 13, 2017

On the day of collection, the four soil samples were submitted to Origins Laboratory, Inc. (Origins) in Denver, CO for analysis. Origins analyzed each soil sample for benzene, toluene, ethylbenzene, total xylene (BTEX) and gasoline-range organics (GRO) by EPA Method 8260C and diesel-range organics (DRO) by EPA Method 8015C. The soil analytical results are illustrated on Figure 2 and included on Table 1. A copy of the laboratory report is included in Appendix B.

Based on the analytical results, concentrations of BTEX in the four confirmation soil samples were not reported above the COGCC Table 910-1 concentration levels or were not detected above laboratory reporting limits. In accordance with COGCC requirements, GRO and DRO values were added together to obtain the total petroleum hydrocarbon (TPH) concentration. Concentrations of TPH were reported above the COGCC Table 910-1 concentration level of 500 milligrams per kilogram (mg/kg) at Postle-01 (9,284 mg/kg), Postle-02 (3,144 mg/kg), and Postle-03 (32,760 mg/kg). TPH concentrations were reported below the COGCC Table 910-1 concentration level in soil sample Postle-04 (304.8 mg/kg).

Second Release – Description and Initial Response – February 15, 2017

According to GWOC's Spill/Release Report dated February 15, 2017, an earthen berm was built at the front edge of the high wall mix off bin, located on the north side of the drill rig, to contain water from cement trucks washing their contents into the bin. The berm failed and fluid consisting of approximately 15 bbls of fresh water containing less than 1 bbl of oil was released on the surface in front of the bin. A vacuum truck was utilized to remove the contents within the bin and the soil outside the bin was scraped with a loader and transported offsite for disposal. The mixing bin was removed from the area.

Second Release – Confirmation Soil Sampling Activities – February 15, 2017

Olsson visited the Site on February 15, 2017 and observed the second release area on the north side of the drill rig, approximately 40 feet north of the first release that occurred on February 13, 2017. Prior to arrival, approximately one to three inches of impacted surface soil had been scraped with a loader and transported offsite. Minor soil staining and hydrocarbon odors were observed at the surface in the release area. Based on Olsson's visual assessment, the impacted area was estimated to be approximately 385 ft².

Four confirmation soil samples (Postle2-01 through Postle2-04) were collected from the release area for field screening and laboratory analysis. The sample locations were recorded on the Trimble and are depicted on Figure 2. All soil samples were collected from the surface to approximately three inches bgs and placed into laboratory supplied glass jars, sealed, labeled, and placed into a cooler with ice. No soil staining was observed in the samples; however, hydrocarbon odors were observed.

Field soil screening consisted of the same methods described above. The soil sample PID field screening readings ranged from 109 ppm to 375 ppm and are included on Table 1.

An initial Form 19 Spill/Release Report was submitted to the COGCC on February 15, 2017 (document number 401210437). A copy of the initial Form 19 is included in Appendix A.

Second Release – Soil Analytical Methods and Results – February 15, 2017

On the day of collection, the four soil samples were submitted to Origins for analysis. Origins analyzed each soil sample for BTEX, GRO, and DRO by the same methods described above. The soil analytical results are illustrated on Figure 2 and included on Table 1. A copy of the laboratory report is included in Appendix B.

Based on the analytical results, concentrations of BTEX in the four confirmation soil samples were not reported above the COGCC Table 910-1 concentration levels or were not detected above laboratory reporting limits. Concentrations of TPH were reported above the COGCC Table 910-1 concentration level of 500 mg/kg at Postle2-01 (2,624 mg/kg) and Postle2-03 (1,718 mg/kg). TPH concentrations were reported below the COGCC Table 910-1 concentration level in soil sample Postle2-02 (219 mg/kg) and were not detected at or above the laboratory reporting limits in soil sample Postle2-04.

Discussion

The extent of impact following both releases was not determined during the initial assessments and hydrocarbon impacted soil remained at the Site. Additional assessment and confirmation

sampling of the soil in the area immediately adjacent to the north of the drill rig, where both releases occurred, was postponed until the drill rig departed the Site. A supplemental Form 19 Spill/Release Report was submitted to the COGCC, for each release, requesting that confirmation/closure soil sampling be delayed until drilling operations were complete. Both Form 19s were submitted on February 22, 2017. Document number 401209998 is associated with the February 12, 2017 release and document number 4012122645 is associated with the February 15, 2017 release. Copies of both supplemental Form 19s are included in Appendix A.

Combined Excavation – Confirmation/Closure Soil Sampling Activities – April 7, 2017

Following the departure of the drill rig, Olsson re-visited the Site on April 7, 2017 and observed that both release areas had been combined as one excavation that measured approximately 50 feet north to south, by 105 feet east to west, by 0.5 to 1.0 foot deep. The Trimble was used to locate the initial 8 sample locations. Postle-03, Postle2-02, and Postle2-03 were located outside the excavation. A Caterpillar 980K loader was used to excavate an additional seven feet to the north and south to include all initial sample locations. The loader was also used to excavate an additional six inches where stained soil remained in place at the center and at the northeast and southwest corners of the excavation. The Trimble was used to record the four corners of the final excavation, which measured approximately 63 feet north to south, by 105 feet east to west, by 1.0 foot to 1.5 feet deep. According to GWOC, approximately 120 cubic yards (yd³) of impacted soil was excavated from the combined release area and disposed of at Waste Management's North Weld Landfill in Ault, Colorado.

Six confirmation/closure soil samples (Postle-040717-1 through Postle-040717-6) were collected from the excavation for field screening and laboratory analysis. The confirmation/closure samples were collected at locations adjacent to where the initial samples were collected. The locations were recorded on the Trimble and are depicted on Figure 3. All samples were collected in native brown, calcareous, moist clay from 1.0 foot to 1.5 feet bgs and placed into laboratory supplied glass jars, sealed, labeled, and placed into a cooler with ice. No soil staining or hydrocarbon odors were observed in the samples.

Field soil screening consisted of the same methods described above. The soil sample PID field screening readings ranged from 0.1 ppm to 14.5 ppm and are included on Table 1.

Combined Excavation – Soil Analytical Methods and Results – April 7, 2017

On the day of collection, the six soil samples were submitted to Origins for analysis. Origins analyzed each soil sample for BTEX, GRO, and DRO by the same methods described above. The soil analytical results are illustrated on Figure 3 and included on Table 1. A copy of the laboratory report is included in Appendix B.

Based on the analytical results, BTEX and TPH concentrations were not detected at or above laboratory reporting limits in the six confirmation/closure soil samples collected.

Conclusions

Between February 13, 2017 and April 7, 2017, Olsson conducted soil sampling activities at the Postle IC 11-042 HC Production Facility. The intent of the project was to collect confirmation soil samples to assess the presence or absence of petroleum hydrocarbon impacts, caused by

two separate surface releases, above the COGCC Table 910-1 concentrations levels, and confirm that impacted soil had been excavated and disposed of properly.

Olsson visited the Site on February 13, 2017 and February 15, 2017, following each release, to collect confirmation soil samples. The extent of impact following each release was not determined during the initial assessments and hydrocarbon impacted soil remained at the Site. A supplemental Form 19 Spill/Release Report was submitted to the COGCC, for each release, requesting that confirmation/closure soil sampling be postponed until drilling operations were complete.

Following the departure of the drill rig, approximately 120 yd³ of impacted soil was excavated from the combined release area on April 6 and April 7, 2017. Six confirmation/closure soil samples were collected from the excavation for field screening and laboratory analysis, at locations adjacent to where the initial samples were collected. Based on the soil sample analytical results, as indicated above, BTEX and TPH concentrations were not detected at or above laboratory reporting limits in the six confirmation/closure soil samples.

Olsson recommends that GWOC request closure for both releases at this Site from COGCC based on the following:

- Approximately 120 yd³ of impacted soil were excavated and disposed of at North Weld Landfill
- BTEX and TPH concentrations were not detected at or above laboratory reporting limits in the six final confirmation/closure soil samples collected
- Groundwater was not encountered during this project

Thank you for allowing Olsson Associates an opportunity to participate in this project. If you have any questions or require further information, please call us at 303-237-2072.

Sincerely,

Olsson Associates, Inc.



Jason Davidson, PG
Project Geologist



John Lohner
Vice President

TABLE

Table 1
Postle IC 11-042 HC Production Facility Surface Releases
Soil Analytical Summary
February and April 2017
Weld County, Colorado

Sample Number	Sample Date	Sample Depth (in-bgs)	PID (ppm)	BTEX (mg/kg)				TPH (mg/kg)			Boring Location
				Benzene	Toluene	Ethylbenzene	Total Xylenes	GRO (C6-C10 Range)	DRO (C10-C28 Range)	TPH=GRO+DRO	
*COGCC Table 910-1 Concentration Levels				0.17	85	100	175	500	500	500	
Postle-01	2/13/2017	0-6	385	ND	0.222	0.534	3.47	494	8,790	9,284	40.244130, -104.978460
Postle-02	2/13/2017	0-6	362	ND	ND	0.092	0.420	234	2,910	3,144	40.244105, -104.978552
Postle-03	2/13/2017	0-6	392	0.058	2.26	2.95	16.8	2,560	30,200	32,760	40.244090, -104.978573
Postle-04	2/13/2017	0-6	125	ND	ND	0.190	ND	79.8	225	304.8	40.244109, -104.978604
Postle2-01	2/15/2017	0-6	365	ND	ND	ND	0.376	344	2,280	2,624	40.244246, -104.978417
Postle2-02	2/15/2017	0-6	375	ND	ND	ND	ND	ND	219	219	40.244257, -104.978415
Postle2-03	2/15/2017	0-6	259	ND	ND	ND	0.054	148	1,570	1,718	40.244251, -104.978429
Postle2-04	2/15/2017	0-6	109	ND	ND	ND	ND	ND	ND	ND	40.244239, -104.978530
Postle-040717-1	4/7/2017	0-6	0.1	ND	ND	ND	ND	ND	ND	ND	40.244249, -104.978419
Postle-040717-2	4/7/2017	0-6	0.5	ND	ND	ND	ND	ND	ND	ND	40.244233, -104.978565
Postle-040717-3	4/7/2017	0-6	0.5	ND	ND	ND	ND	ND	ND	ND	40.244097, -104.978561
Postle-040717-4	4/7/2017	0-6	14.5	ND	ND	ND	ND	ND	ND	ND	40.244133, -104.978465
Postle-040717-5	4/7/2017	0-6	0.3	ND	ND	ND	ND	ND	ND	ND	40.244162, -104.978524
Postle-040717-6	4/7/2017	0-6	0.2	ND	ND	ND	ND	ND	ND	ND	40.244197, -104.978471

*Colorado Oil and Gas Conservation Commission (COGCC), 900 Series, Exploration and Production Waste Management, Table 910-1, Concentration Levels, February 1, 2014

in-bgs - Inches below ground surface

mg/kg - Milligrams per kilogram

PID - Photo-ionization detector

ppm - Parts per million

BTEX - Benzene, toluene, ethylbenzene, total xylenes

GRO - Gasoline range organics

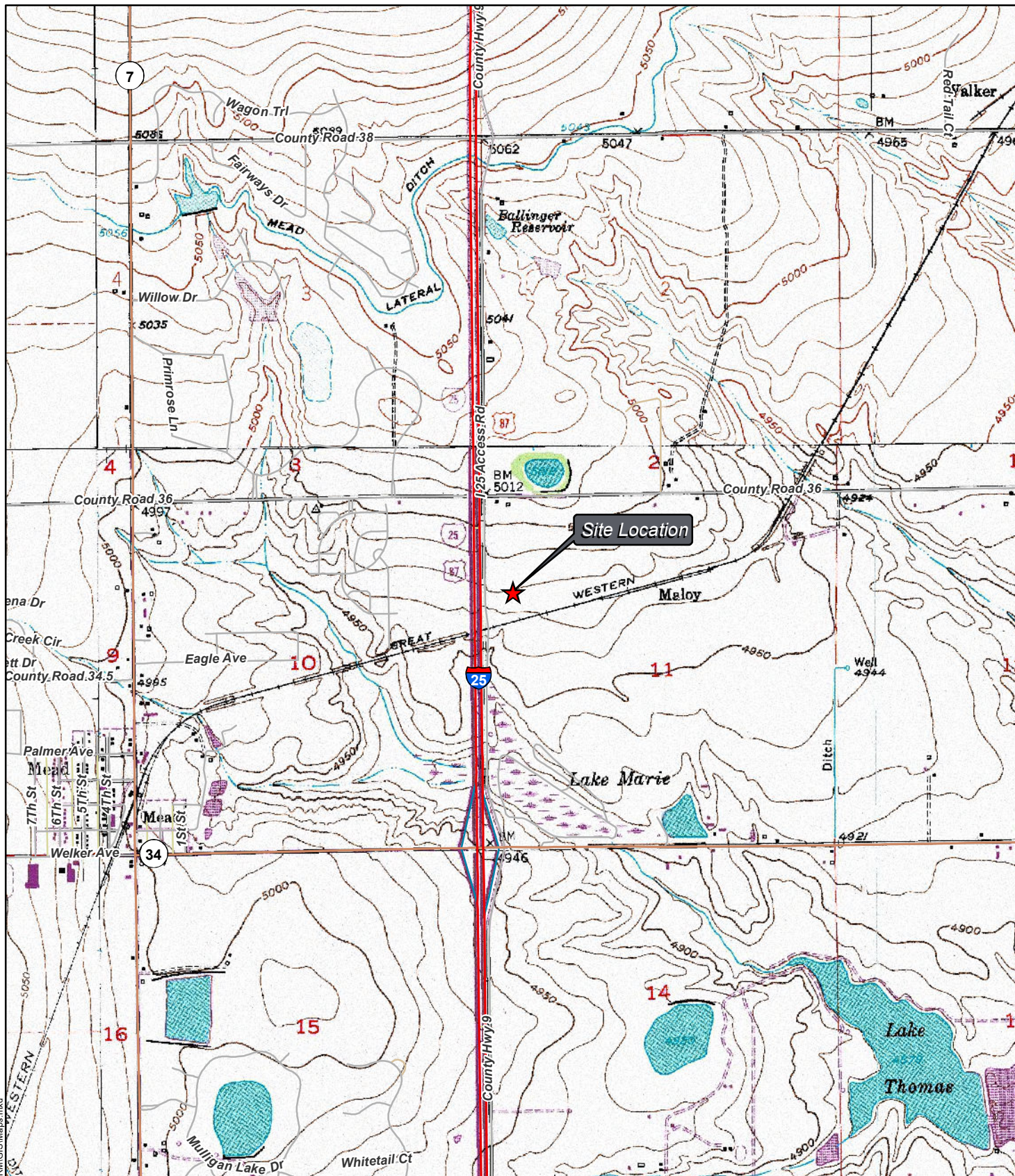
DRO - Diesel range organics

TPH - Total petroleum hydrocarbons

ND - Sample not reported above laboratory reporting limit

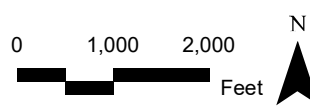
Bold - Above COGCC Table 910-1 concentration level

FIGURES



★ Site Location

DISCLAIMER : This Geographic Information System (GIS) and its components are designed as a source of reference for answering inquiries, for planning and for modeling. GIS is not intended, nor does it replace legal description information in the chain of title and other information contained in official government records such as the County Clerk and Recorders office or the courts. In addition, the representations of locations in this GIS cannot be substituted for actual legal surveys.



Project Number: 017-0418

Drawn By: JDF

Revision Date: 4/18/2017

General Location Map
 Postle IC 11-042 HC Well Pad
 API Number: 05-123-39413
 SWNW 11 T3N R68W 6PM

Great Western Operating Company LLC

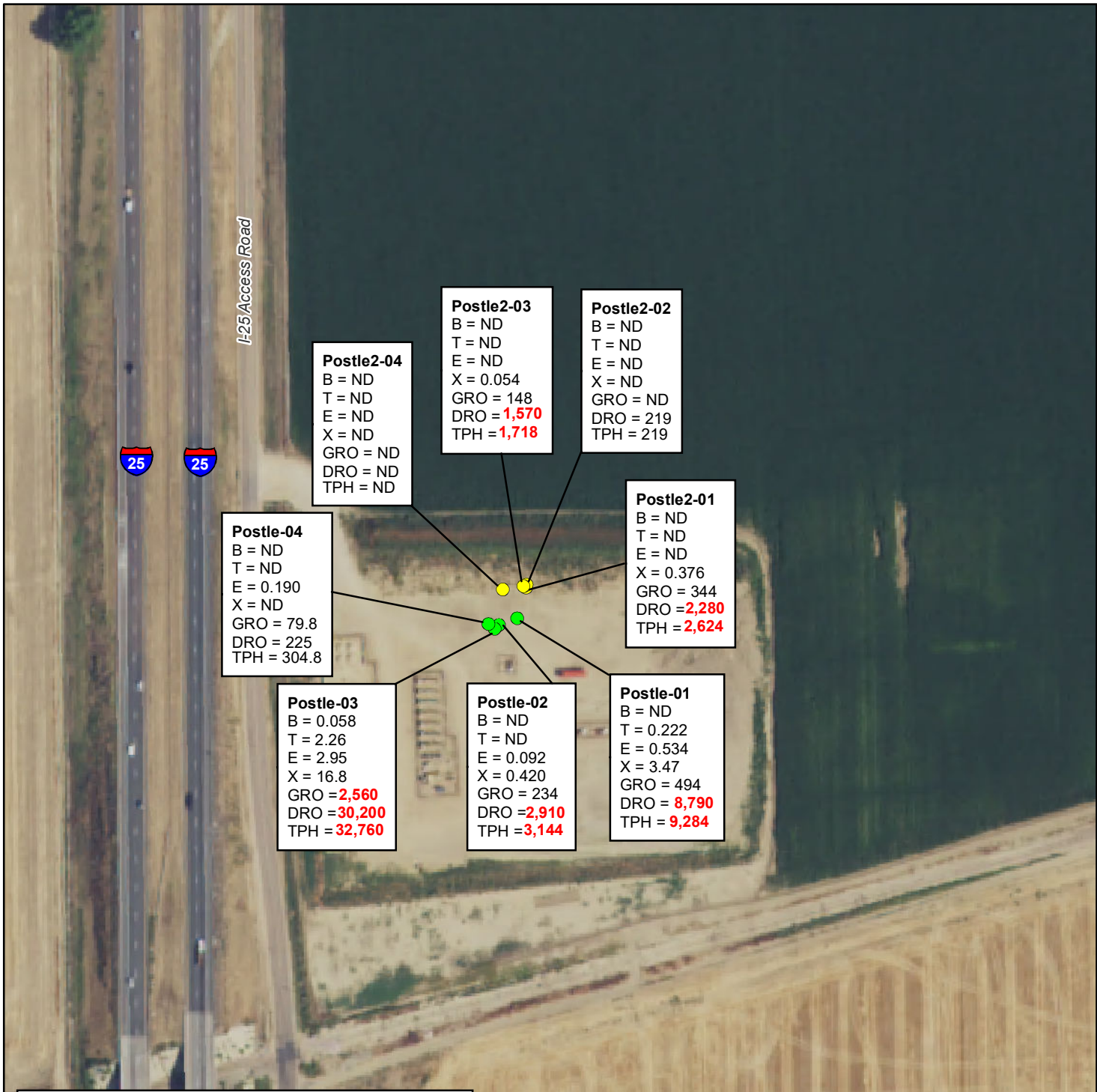


4690 Table Mountain Drive
 Suite 200
 Golden, Colorado 80403
 P: 303.237.2072
 F: 303.237.2659

Figure

1

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Legend
 All concentrations reported in milligrams per kilogram (mg/kg)
 BTEX - Benzene, toluene, ethylbenzene, total xylenes
 GRO - Gasoline range organics
 DRO - Diesel range organics
 TPH - Total petroleum hydrocarbons
 ND - Sample not reported above laboratory reporting limit
Bold- Above COGCC Table 910-1 concentration level

- Soil Sample Points - First Release (2/13/2017)
- Soil Sample Points - Second Release (2/15/2017)

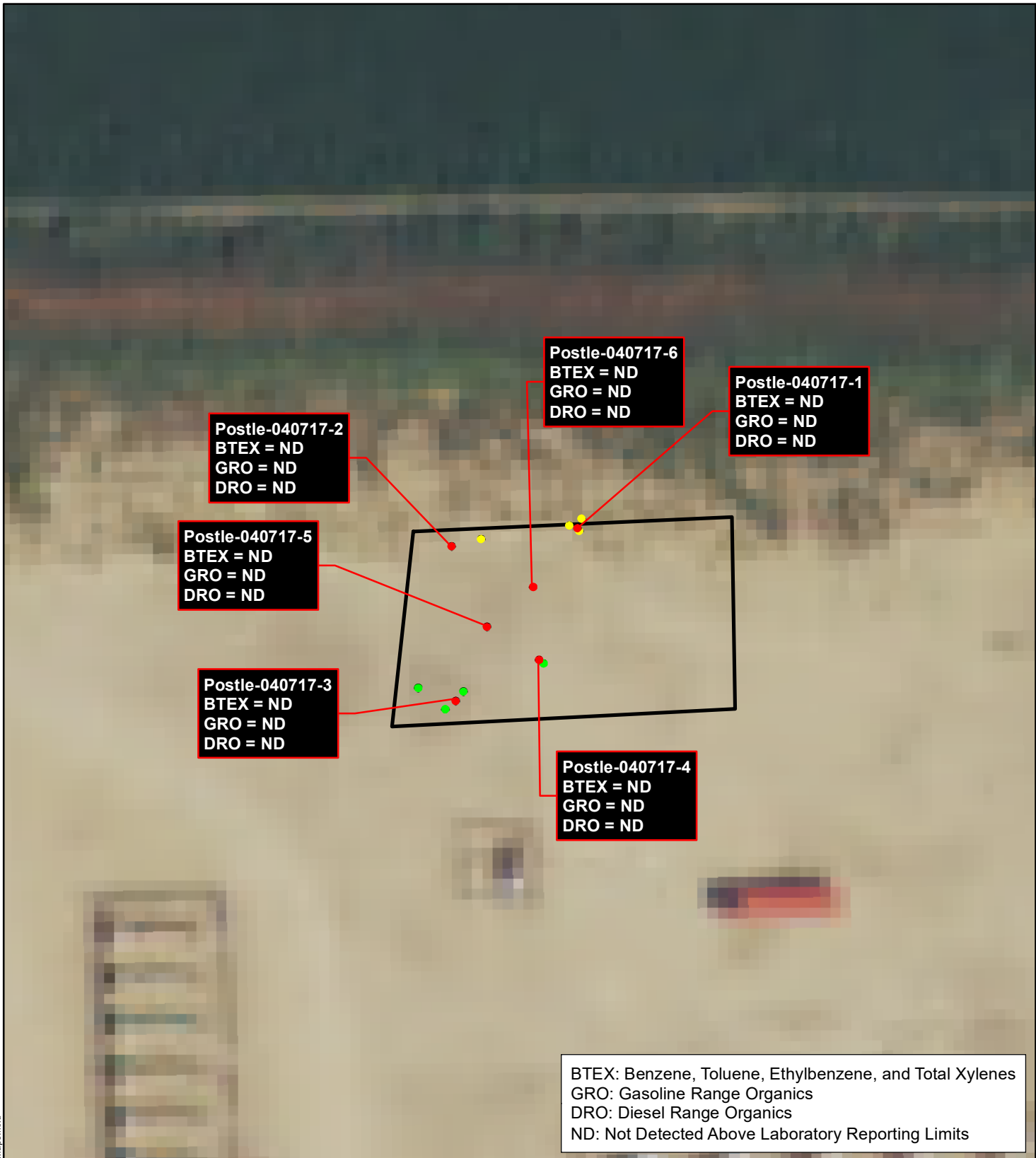
DISCLAIMER : This Geographic Information System (GIS) and its components are designed as a source of reference for answering inquiries, for planning and for modeling. GIS is not intended, nor does it replace legal description information in the chain of title and other information contained in official government records such as the County Clerk and Recorders office or the courts. In addition, the representations of locations in this GIS cannot be substituted for actual legal surveys.

0 100 200 Feet

N

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Project Number: 017-0418	Soil Samples Map Postle IC 11-042 HC Well Pad API Number: 05-123-39413 SWNW 11 T3N R68W 6PM Great Western Operating Company LLC		4690 Table Mountain Drive Suite 200 Golden, Colorado 80403 P: 303.237.2072 F: 303.237.2659	Figure 2
Drawn By: JDF				
Revision Date: 4/18/2017				



BTEX: Benzene, Toluene, Ethylbenzene, and Total Xylenes
 GRO: Gasoline Range Organics
 DRO: Diesel Range Organics
 ND: Not Detected Above Laboratory Reporting Limits

- Soil Sample Points - Combined Excavation (4/7/2017)
- Soil Sample Points - First Release (2/13/2017)
- Soil Sample Points - Second Release (2/15/2017)
- Excavation Perimeter



DISCLAIMER : This Geographic Information System (GIS) and its components are designed as a source of reference for answering inquiries, for planning and for modeling. GIS is not intended, nor does it replace legal description information in the chain of title and other information contained in official government records such as the County Clerk and Records office or the courts. In addition, the representations of locations in this GIS cannot be substituted for actual legal surveys.

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Project Number: 017-0418	Soil Sample Map Postle IC 11-042 HC Well Pad API Number: 05-123-39413 SWNW 11 T3N R68W 6PM Great Western Operating Company LLC		4690 Table Mountain Drive Suite 200 Golden, Colorado 80403 P: 303.237.2072 F: 303.237.2659	Figure 3
Drawn By: JDF				
Revision Date: 4/18/2017				

**APPENDIX A
COGCC INITIAL AND
SUPPLEMENTAL FORM 19**

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

401208201

Date Received:

02/13/2017

Spill report taken by:

Spill/Release Point ID:

SPILL/RELEASE REPORT (INITIAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Refer to COGCC Rule 906.b. for reporting requirements of spills or releases of E&P Waste or produced fluids. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: GREAT WESTERN OPERATING COMPANY LLC	Operator No: 10110	Phone Numbers
Address: 1801 BROADWAY #500		Phone: (303) 398-0537
City: DENVER State: CO Zip: 80202		Mobile: ()
Contact Person: Scot Donato		Email: sdonato@gwogco.com

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 401208201

Initial Report Date: 02/13/2017 Date of Discovery: 02/12/2017 Spill Type: Recent Spill

Spill/Release Point Location:

Location of Spill/Release: QTRQTR SWNW SEC 11 TWP 3N RNG 68W MERIDIAN 6

Latitude: 40.243964 Longitude: -104.978294

Municipality (if within municipal boundaries): County: WELD

Reference Location:

Facility Type: WELL Facility/Location ID No
 No Existing Facility or Location ID No.
 Well API No. (Only if the reference facility is well) 05-123-39413

Fluid(s) Spilled/Released (please answer Yes/No):

Was one (1) barrel or more spilled outside of berms or secondary containment? Yes
Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

Were Five (5) barrels or more spilled? Yes

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): 0 Estimated Condensate Spill Volume(bbl): 0

Estimated Flow Back Fluid Spill Volume(bbl): 0 Estimated Produced Water Spill Volume(bbl): 0

Estimated Other E&P Waste Spill Volume(bbl): 0 Estimated Drilling Fluid Spill Volume(bbl): >=5 and <100

Specify: 20 bbl OBM; 18 inside containment, 2 outside

Land Use:

Current Land Use: NON-CROP LAND Other(Specify):

Weather Condition: 41, calm, overcast

Surface Owner: FEE Other(Specify): James Postle

Check if impacted or threatened by spill/Release (please answer Yes/No to all that apply):

Waters of the State Residence/Occupied Structure Livestock Public Byway Surface Water Supply Area
As defined in COGCC 100-Series Rules

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

Plug fell out of snail on transfer pump from scavenger tank. Approximately 18 total bbls OBM spilled in containment, less than 2 bbls out of containment. A vac truck was used to clean up the OBM in containment, dirt out of containment was scraped. Plug was replaced and all other plugs on all pumps were checked.

List Agencies and Other Parties Notified:

OTHER NOTIFICATIONS

<u>Date</u>	<u>Agency/Party</u>	<u>Contact</u>	<u>Phone</u>	<u>Response</u>
2/13/2017	COGCC	Chris Canfield	303-894-2100	Ext: 5183 Verbal- Left voicemail 2/13/17 09:00
2/13/2017	Landowner	James Postle	-	Verbal by Great Western 2/13/17 10:00
2/13/2017	Weld County	Tom Parko	-	Email: tparko@co.weld.co.us
2/13/2017	Weld County	Roy Rudisill (OEM)	-	Email: rrudisill@weldgov.com
2/13/2017	Weld County	Troy Swain	-	Email: tswain@weldgov.com
2/13/2017	Weld County	Gracie Marques (OEM)	-	Email: gmarquez@weldgov.com
2/13/2017	Weld COunty	Jay McDonald (PW)	-	Email: jmcdonald@weldgov.com

OPERATOR COMMENTS:

--

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: _____ Print Name: Nikki Graber

Title: Project Geologist Date: 02/13/2017 Email: ngrab@olssonassocieates.com

COA Type

Description

--	--

Attachment Check List

Att Doc Num

Name

401208201	FORM 19 SUBMITTED
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Total Attach: 1 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
--	--	---------------------

Total: 0 comment(s)

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

401210437

Date Received:

02/15/2017

Spill report taken by:

Spill/Release Point ID:

SPILL/RELEASE REPORT (INITIAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Refer to COGCC Rule 906.b. for reporting requirements of spills or releases of E&P Waste or produced fluids. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: GREAT WESTERN OPERATING COMPANY LLC	Operator No: 10110	Phone Numbers
Address: 1801 BROADWAY #500		Phone: (303) 398-0537
City: DENVER	State: CO Zip: 80202	Mobile: ()
Contact Person: Scot Donato		Email: sdonato@gwogco.com

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 401210437

Initial Report Date: 02/15/2017 Date of Discovery: 02/15/2017 Spill Type: Recent Spill

Spill/Release Point Location:

Location of Spill/Release: QTRQTR SWNW SEC 11 TWP 3N RNG 68W MERIDIAN 6

Latitude: 40.243964 Longitude: -104.978294

Municipality (if within municipal boundaries): County: WELD

Reference Location:

Facility Type: WELL Facility/Location ID No
 No Existing Facility or Location ID No.
 Well API No. (Only if the reference facility is well) 05-123-39413

Fluid(s) Spilled/Released (please answer Yes/No):

Was one (1) barrel or more spilled outside of berms or secondary containment? No
Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

Were Five (5) barrels or more spilled? Yes

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): >0 and <1 Estimated Condensate Spill Volume(bbl): 0

Estimated Flow Back Fluid Spill Volume(bbl): 0 Estimated Produced Water Spill Volume(bbl): 0

Estimated Other E&P Waste Spill Volume(bbl): >=5 and <100 Estimated Drilling Fluid Spill Volume(bbl): 0

Specify: 14 bbl concrete wash water, <1 bbl oil

Land Use:

Current Land Use: NON-CROP LAND Other(Specify):

Weather Condition: 30, calm, sunny

Surface Owner: FEE Other(Specify): James Postle

Check if impacted or threatened by spill/Release (please answer Yes/No to all that apply):

Waters of the State Residence/Occupied Structure Livestock Public Byway Surface Water Supply Area
As defined in COGCC 100-Series Rules

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

401209998

Date Received:

02/22/2017

Spill report taken by:

Spill/Release Point ID:

SPILL/RELEASE REPORT (SUPPLEMENTAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Refer to COGCC Rule 906.b. for reporting requirements of spills or releases of E&P Waste or produced fluids. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: <u>GREAT WESTERN OPERATING COMPANY LLC</u>	Operator No: <u>10110</u>	Phone Numbers Phone: <u>(303) 398-0537</u> Mobile: <u>()</u> Email: <u>sdonato@gwogco.com</u>
Address: <u>1801 BROADWAY #500</u>		
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>		
Contact Person: <u>Scot Donato</u>		

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 401208201

Initial Report Date: 02/13/2017 Date of Discovery: 02/12/2017 Spill Type: Recent Spill

Spill/Release Point Location:

Location of Spill/Release: QTRQTR SWNW SEC 11 TWP 3N RNG 68W MERIDIAN 6

Latitude: 40.243964 Longitude: -104.978294

Municipality (if within municipal boundaries): _____ County: WELD

Reference Location:

Facility Type: WELL Facility/Location ID No _____
 No Existing Facility or Location ID No.
 Well API No. (Only if the reference facility is well) 05-123-39413

Fluid(s) Spilled/Released (please answer Yes/No):

Was one (1) barrel or more spilled outside of berms or secondary containment? Yes
Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

Were Five (5) barrels or more spilled? Yes

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): 0 Estimated Condensate Spill Volume(bbl): 0

Estimated Flow Back Fluid Spill Volume(bbl): 0 Estimated Produced Water Spill Volume(bbl): 0

Estimated Other E&P Waste Spill Volume(bbl): 0 Estimated Drilling Fluid Spill Volume(bbl): >=5 and <100

Specify: 20 bbl OBM; 18 inside containment, 2 outside

Land Use:

Current Land Use: NON-CROP LAND Other(Specify): _____

Weather Condition: 41, calm, overcast

Surface Owner: FEE Other(Specify): James Postle

Check if impacted or threatened by spill/Release (please answer Yes/No to all that apply):

Waters of the State Residence/Occupied Structure Livestock Public Byway Surface Water Supply Area

As defined in COGCC 100-Series Rules

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

Plug fell out of snail on transfer pump from scavenger tank. Approximately 18 total bbls OBM spilled in containment, less than 2 bbls out of containment. A vac truck was used to clean up the OBM in containment, dirt out of containment was scraped. Plug was replaced and all other plugs on all pumps were checked.

List Agencies and Other Parties Notified:

OTHER NOTIFICATIONS

Date	Agency/Party	Contact	Phone	Response
2/13/2017	COGCC	Chris Canfield	303-894-2100	Ext: 5183 Verbal- Left voicemail 2/13/17 09:00
2/13/2017	Landowner	James Postle	-	Verbal by Great Western 2/13/17 10:00
2/13/2017	Weld County	Tom Parko	-	Email: tparko@co.weld.co.us
2/13/2017	Weld County	Roy Rudisill (OEM)	-	Email: rrudisill@weldgov.com
2/13/2017	Weld County	Troy Swain	-	Email: tswain@weldgov.com
2/13/2017	Weld County	Gracie Marques (OEM)	-	Email: gmarquez@weldgov.com
2/13/2017	Weld COunty	Jay McDonald (PW)	-	Email: jmcdonald@weldgov.com

SPILL/RELEASE DETAIL REPORTS

#1 Supplemental Report Date: 02/22/2017

FLUIDS	BBL's SPILLED	BBL's RECOVERED	Unknown
OIL	<u>0</u>	<u>0</u>	<input type="checkbox"/>
CONDENSATE	<u>0</u>	<u>0</u>	<input type="checkbox"/>
PRODUCED WATER	<u>0</u>	<u>0</u>	<input type="checkbox"/>
DRILLING FLUID	<u>20</u>	<u>20</u>	<input type="checkbox"/>
FLOW BACK FLUID	<u>0</u>	<u>0</u>	<input type="checkbox"/>
OTHER E&P WASTE	<u>0</u>	<u>0</u>	<input type="checkbox"/>

specify: _____

Was spill/release completely contained within berms or secondary containment? NO Was an Emergency Pit constructed? NO

Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

A Form 15 Pit Report shall be submitted within 30 calendar days after the construction of an emergency pit

Impacted Media (Check all that apply) Soil Groundwater Surface Water Dry Drainage Feature

Surface Area Impacted: Length of Impact (feet): 50 Width of Impact (feet): 37

Depth of Impact (feet BGS): _____ Depth of Impact (inches BGS): _____

How was extent determined?

The extent of impact has yet to be determined. Initial samples of potentially impacted soils were collected outside the known containment barriers on 2/13/17. Four samples were submitted to the laboratory on 2/13/17 for release confirmation. Lab results and a site map are attached.

Soil/Geology Description:

Wiley-Colby complex, 1 to 3 percent slopes

Depth to Groundwater (feet BGS) 15 Number Water Wells within 1/2 mile radius: 3

If less than 1 mile, distance in feet to nearest
 Water Well 1730 None Surface Water 1540 None
 Wetlands 1540 None Springs _____ None
 Livestock _____ None Occupied Building 1315 None

Additional Spill Details Not Provided Above:

The transfer pump was placed on crane matting which resulted in the OBM seeping through matting joints as well as over containment barriers. The area beneath the mats cannot be accessed until the drill rig has departed the site.

CORRECTIVE ACTIONS

#1 Supplemental Report Date: 02/22/2017

Cause of Spill (Check all that apply) Human Error Equipment Failure Historical-Unknown
 Other (specify) _____

Describe Incident & Root Cause (include specific equipment and point of failure)

Plug fell out of snail on transfer pump from scavenger tank.

Describe measures taken to prevent the problem(s) from reoccurring:

Plug was replaced and all other plugs on all pumps were checked.

Volume of Soil Excavated (cubic yards): _____

Disposition of Excavated Soil (attach documentation) Offsite Disposal Onsite Treatment
 Other (specify) _____

Volume of Impacted Ground Water Removed (bbls): 0

Volume of Impacted Surface Water Removed (bbls): 0

REQUEST FOR CLOSURE

Spill/Release Reports should be closed when impacts have been remediated or when further investigation and corrective actions will take place under an approved Form 27.

Basis for Closure: Corrective Actions Completed (documentation attached)

Work proceeding under an approved Form 27

Form 27 Remediation Project No: _____

OPERATOR COMMENTS:

Additional assessment and confirmation sampling of the soil beneath the drill rig matting cannot occur until the drill rig has departed the site. It is anticipated that drilling operations will conclude before the end of March 2017 at which time, additional confirmation soil sampling will ensue, as is necessary to meet COGCC standards. The additional soil sampling activities will be documented on a follow-up Form 19 Supplemental.

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: _____ Print Name: Jason Davidson

Title: Project Geologist Date: 02/22/2017 Email: jdavidson@olssonassociates.com

COA Type

Description

--	--

Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
401209998	FORM 19 SUBMITTED
401212239	TOPOGRAPHIC MAP
401212245	SITE MAP
401215403	ANALYTICAL RESULTS

Total Attach: 4 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

401212264

Date Received:

02/22/2017

Spill report taken by:

Spill/Release Point ID:

SPILL/RELEASE REPORT (SUPPLEMENTAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Refer to COGCC Rule 906.b. for reporting requirements of spills or releases of E&P Waste or produced fluids. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: <u>GREAT WESTERN OPERATING COMPANY LLC</u>	Operator No: <u>10110</u>	Phone Numbers
Address: <u>1801 BROADWAY #500</u>		Phone: <u>(303) 398-0537</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80202</u>
Contact Person: <u>Scot Donato</u>		Mobile: <u>()</u>
		Email: <u>sdonato@gwogco.com</u>

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 401210437

Initial Report Date: 02/15/2017 Date of Discovery: 02/15/2017 Spill Type: Recent Spill

Spill/Release Point Location:

Location of Spill/Release: QTRQTR SWNW SEC 11 TWP 3N RNG 68W MERIDIAN 6

Latitude: 40.243964 Longitude: -104.978294

Municipality (if within municipal boundaries): _____ County: WELD

Reference Location:

Facility Type: WELL Facility/Location ID No _____

No Existing Facility or Location ID No.

Well API No. (Only if the reference facility is well) 05-123-39413

Fluid(s) Spilled/Released (please answer Yes/No):

Was one (1) barrel or more spilled outside of berms or secondary containment? No

Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

Were Five (5) barrels or more spilled? Yes

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): >0 and <1 Estimated Condensate Spill Volume(bbl): 0

Estimated Flow Back Fluid Spill Volume(bbl): 0 Estimated Produced Water Spill Volume(bbl): 0

Estimated Other E&P Waste Spill Volume(bbl): >=5 and <100 Estimated Drilling Fluid Spill Volume(bbl): 0

Specify: 14 bbl concrete wash water, <1 bbl oil

Land Use:

Current Land Use: NON-CROP LAND Other(Specify): _____

Weather Condition: 30, calm, sunny

Surface Owner: FEE Other(Specify): James Postle

Check if impacted or threatened by spill/Release (please answer Yes/No to all that apply):

Waters of the State Residence/Occupied Structure Livestock Public Byway Surface Water Supply Area

As defined in COGCC 100-Series Rules

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

Fluid consisting of 14 bbls of fresh water used to wash out a cement truck and <1 bbl of oil was released from the high wall mix off bin.

List Agencies and Other Parties Notified:

OTHER NOTIFICATIONS

Date	Agency/Party	Contact	Phone	Response
2/15/2017	COGCC	Chris Canfield	303-894-2100	Ext: 5183 Verbal - Left voicemail at 10:13
2/15/2017	Landowner	Brian Postle	-	Email from Great Western
2/15/2017	Weld County	Tom Parko	-	Email: tparko@co.weld.co.us
2/15/2017	Weld County	Roy Rudisill (OEM)	-	Email: rrudisill@weldgov.com
2/15/2017	Weld County	Troy Swain	-	Email: tswain@weldgov.com
2/15/2017	Weld County	Gracie Marques (OEM)	-	Email: gmarquez@weldgov.com
2/15/2017	Weld County	Jay McDonald (PW)	-	Email: jmcdonald@weldgov.com

SPILL/RELEASE DETAIL REPORTS

#1 Supplemental Report Date: 02/22/2017

FLUIDS	BBL's SPILLED	BBL's RECOVERED	Unknown
OIL	<u>1</u>	<u>1</u>	<input type="checkbox"/>
CONDENSATE	<u>0</u>	<u>0</u>	<input type="checkbox"/>
PRODUCED WATER	<u>0</u>	<u>0</u>	<input type="checkbox"/>
DRILLING FLUID	<u>0</u>	<u>0</u>	<input type="checkbox"/>
FLOW BACK FLUID	<u>0</u>	<u>0</u>	<input type="checkbox"/>
OTHER E&P WASTE	<u>14</u>	<u>14</u>	<input type="checkbox"/>

specify: 14 bbls concrete wash water with <1 bbl oil

Was spill/release completely contained within berms or secondary containment? NO Was an Emergency Pit constructed? NO
Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

A Form 15 Pit Report shall be submitted within 30 calendar days after the construction of an emergency pit

Impacted Media (Check all that apply) Soil Groundwater Surface Water Dry Drainage Feature

Surface Area Impacted: Length of Impact (feet): 55 Width of Impact (feet): 6
 Depth of Impact (feet BGS): _____ Depth of Impact (inches BGS): _____

How was extent determined?
 The extent of impact has yet to be determined. Initial samples of potentially impacted soils were collected outside the known containment barriers on 2/15/17. Four samples were submitted to the laboratory on 2/15/17 for closure/release confirmation. Lab results and a site map are attached.

Soil/Geology Description:
 Wiley-Colby complex, 1 to 3 percent slopes

Depth to Groundwater (feet BGS) 15 Number Water Wells within 1/2 mile radius: 3

If less than 1 mile, distance in feet to nearest

Water Well	<u>1730</u>	None	<input type="checkbox"/>	Surface Water	<u>1540</u>	None	<input type="checkbox"/>
Wetlands	<u>1540</u>	None	<input type="checkbox"/>	Springs	<u> </u>	None	<input checked="" type="checkbox"/>
Livestock	<u> </u>	None	<input checked="" type="checkbox"/>	Occupied Building	<u>1315</u>	None	<input type="checkbox"/>

Additional Spill Details Not Provided Above:

The fluid release from the high wall mix off bin occurred in an area immediately adjacent to the north of the drill rig. The area is currently covered by drilling equipment and cannot be accessed until the drill rig has departed the site.

CORRECTIVE ACTIONS

#1 Supplemental Report Date: 02/22/2017

Cause of Spill (Check all that apply) Human Error Equipment Failure Historical-Unknown
 Other (specify) _____

Describe Incident & Root Cause (include specific equipment and point of failure)

A berm was built in the high wall mix off bin for cement truck to wash out. The berm failed and fluid consisting 14 bbls of fresh water and <1 bbl of oil was released on the ground in front of the tank.

Describe measures taken to prevent the problem(s) from reoccurring:

The high wall mix off bin was removed from the area.

Volume of Soil Excavated (cubic yards): _____

Disposition of Excavated Soil (attach documentation) Offsite Disposal Onsite Treatment
 Other (specify) _____

Volume of Impacted Ground Water Removed (bbls): 0

Volume of Impacted Surface Water Removed (bbls): 0

REQUEST FOR CLOSURE

Spill/Release Reports should be closed when impacts have been remediated or when further investigation and corrective actions will take place under an approved Form 27.

Basis for Closure: Corrective Actions Completed (documentation attached)
 Work proceeding under an approved Form 27
Form 27 Remediation Project No: _____

OPERATOR COMMENTS:

Additional assessment and confirmation sampling of the soil in the area immediately adjacent to the north of the drill rig cannot occur until the drill rig has departed the site. It is anticipated that drilling operations will conclude before the end of March 2017 at which time, additional confirmation soil sampling will ensue, as is necessary to meet COGCC standards. The additional soil sampling activities will be documented on a follow-up Form 19 Supplemental.

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: _____ Print Name: Jason Davidson
Title: Project Geologist Date: 02/22/2017 Email: jdavidson@olssonassociates.com

COA Type

Description

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Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
401212264	FORM 19 SUBMITTED
401212294	TOPOGRAPHIC MAP
401212297	SITE MAP
401216625	ANALYTICAL RESULTS

Total Attach: 4 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)

APPENDIX B
SOIL CONFIRMATION SAMPLES
LABORATORY REPORTS

February 21, 2017

Olsson Associates

Jason Davidson

4690 Table Mountain Drive

Golden CO 80403

Project Name - Postle Drill Pad

Project Number - [none]

Attached are your analytical results for Postle Drill Pad received by Origins Laboratory, Inc. February 13, 2017. This project is associated with Origins project number X702246-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



Olsson Associates
4690 Table Mountain Drive
Golden CO 80403

Jason Davidson
Project Number: [none]
Project: Postle Drill Pad

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Postle-01	X702246-01	Soil	February 13, 2017 15:15	02/13/2017 17:40
Postle-02	X702246-02	Soil	February 13, 2017 15:35	02/13/2017 17:40
Postle-03	X702246-03	Soil	February 13, 2017 15:45	02/13/2017 17:40
Postle-04	X702246-04	Soil	February 13, 2017 15:50	02/13/2017 17:40

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Origins Laboratory

F-012207-01-R1
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X 702246

Client: Olsson Associates

Client Project ID: Postle Drill Pad

Checklist Completed by: Don Lee

Shipped Via: HD
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2-13-17 1523

Airbill #: NA

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____ (Describe)

Cooler Number/Temperature: 1 / 4.9 °C _____ / _____ °C _____ / _____ °C _____ / _____ °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	/			
Is there ice present (document if blue ice is used)	/			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		/		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		/		
Were all samples received intact ⁽¹⁾ ?	/			
Was adequate sample volume provided ⁽¹⁾ ?	/			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		/		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	/			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	/			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	/			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	/			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			/	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCl, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)		/		
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

[Signature]
 Reviewed by (Project Manager)

2/14/17
 Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Postle-01
2/13/2017 3:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702246-01 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	8790	50.0	mg/kg	1	B7B1405	02/14/2017	02/14/2017	
Surrogate: o-Terphenyl	86.6 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	494	5.00	mg/kg	25	B7B2001	02/20/2017	02/20/2017	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	0.222	0.050	"	"	"	"	"	
Ethylbenzene	0.534	0.050	"	"	"	"	"	
Xylenes, total	3.47	0.050	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.8 %	70-130			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Postle-02
2/13/2017 3:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702246-02 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	2910	50.0	mg/kg	1	B7B1405	02/14/2017	02/14/2017	
Surrogate: <i>o</i> -Terphenyl	97.0 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	234	5.00	mg/kg	25	B7B2001	02/20/2017	02/20/2017	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	0.092	0.050	"	"	"	"	"	
Xylenes, total	0.420	0.050	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	88.5 %	70-130			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Postle-03
2/13/2017 3:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702246-03 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	30200	500	mg/kg	10	B7B1405	02/14/2017	02/21/2017	
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Surrogate: o-Terphenyl	149 %	59-131			"	"	"	S-04
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	2560	50.0	mg/kg	250	B7B2001	02/20/2017	02/21/2017	
Benzene	0.058	0.050	"	25	"	"	02/20/2017	
Toluene	2.26	0.050	"	"	"	"	"	
Ethylbenzene	2.95	0.050	"	"	"	"	"	
Xylenes, total	16.8	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	110 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	86.0 %	70-130			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Postle-04
2/13/2017 3:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702246-04 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	225	50.0	mg/kg	1	B7B1405	02/14/2017	02/21/2017	
Surrogate: o-Terphenyl	97.3 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	79.8	5.00	mg/kg	25	B7B2001	02/20/2017	02/20/2017	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	0.190	0.050	"	"	"	"	"	
Xylenes, total	ND	0.050	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	67.2 %	70-130			"	"	"	S-04

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2001 - EPA 5030 (soil)

Blank (B7B2001-BLK1)

Prepared: 02/20/2017 Analyzed: 02/20/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		99.1	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.3	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2001 - EPA 5030 (soil)

LCS (B7B2001-BS1)

Prepared: 02/20/2017 Analyzed: 02/20/2017

Benzene	0.095	0.002	mg/kg	0.100		95.0	77.1-124			
Toluene	0.094	0.002	"	0.100		94.0	74.5-128			
Ethylbenzene	0.097	0.002	"	0.100		97.5	66.4-127			
m,p-Xylene	0.194	0.004	"	0.200		96.9	76.6-124			
o-Xylene	0.093	0.002	"	0.100		93.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2001 - EPA 5030 (soil)

Matrix Spike (B7B2001-MS1)	Source: X702248-01			Prepared: 02/20/2017 Analyzed: 02/20/2017						
Benzene	0.110	0.002	mg/kg	0.100	ND	110	71.8-126			
Toluene	0.117	0.002	"	0.100	ND	117	65.1-130			
Ethylbenzene	0.137	0.002	"	0.100	ND	137	62.2-130			QM-07
m,p-Xylene	0.324	0.004	"	0.200	ND	162	46.5-137			QM-07
o-Xylene	0.156	0.002	"	0.100	ND	156	54.2-134			QM-07
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.3	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	70-130			

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2001 - EPA 5030 (soil)

Matrix Spike Dup (B7B2001-MSD1)	Source: X702248-01			Prepared: 02/20/2017 Analyzed: 02/20/2017						
Benzene	0.110	0.002	mg/kg	0.100	ND	110	71.8-126	0.437	11.3	
Toluene	0.117	0.002	"	0.100	ND	117	65.1-130	0.496	15.4	
Ethylbenzene	0.096	0.002	"	0.100	ND	96.2	62.2-130	35.2	19.6	QR-03
m,p-Xylene	0.233	0.004	"	0.200	ND	116	46.5-137	32.9	19.2	QR-03
o-Xylene	0.111	0.002	"	0.100	ND	111	54.2-134	34.2	17.9	QR-03
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	45		"	62.5		71.6	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: [none]
 Project: Postle Drill Pad

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B1405 - EPA 3580

Blank (B7B1405-BLK1)

Prepared: 02/14/2017 Analyzed: 02/14/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	57		"	50.0		113	59-131			

LCS (B7B1405-BS1)

Prepared: 02/14/2017 Analyzed: 02/14/2017

Diesel (C10-C28)	1020	50.0	mg/kg	1000		102	64-121			
Surrogate: o-Terphenyl	48		"	50.0		95.3	59-131			

Matrix Spike (B7B1405-MS1)

Source: X702230-01

Prepared: 02/14/2017 Analyzed: 02/14/2017

Diesel (C10-C28)	4240	50.0	mg/kg	1000	3620	62.3	53-125			
Surrogate: o-Terphenyl	52		"	50.0		104	59-131			

Matrix Spike Dup (B7B1405-MSD1)

Source: X702230-01

Prepared: 02/14/2017 Analyzed: 02/14/2017

Diesel (C10-C28)	3730	50.0	mg/kg	1000	3620	11.0	53-125	12.9	20	QM-4X
Surrogate: o-Terphenyl	54		"	50.0		109	59-131			

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Olsson Associates
4690 Table Mountain Drive
Golden CO 80403

Jason Davidson
Project Number: [none]
Project: Postle Drill Pad

Notes and Definitions

- U Sample is Non-Detect.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QM-4X The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

February 22, 2017

Olsson Associates

Jason Davidson

4690 Table Mountain Drive

Golden CO 80403

Project Name - Postle Drill Pad Spill #2

Project Number - 017-0418

Attached are your analytical results for Postle Drill Pad Spill #2 received by Origins Laboratory, Inc. February 15, 2017. This project is associated with Origins project number X702272-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



Olsson Associates
4690 Table Mountain Drive
Golden CO 80403

Jason Davidson
Project Number: 017-0418
Project: Postle Drill Pad Spill #2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Postle2-01	X702272-01	Soil	February 15, 2017 13:00	02/15/2017 15:10
Postle2-02	X702272-02	Soil	February 15, 2017 13:15	02/15/2017 15:10
Postle2-03	X702272-03	Soil	February 15, 2017 13:30	02/15/2017 15:10
Postle2-04	X702272-04	Soil	February 15, 2017 13:40	02/15/2017 15:10

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Origins Laboratory F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 2702272 Client: Olsson Associates
 Client Project ID: Postle Drill Pad Spill #2

Checklist Completed by: DAW Shipped Via: HD
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Date/time completed: 2-15-17 1600 Airbill #: NA

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 (Describe)

Cooler Number/Temperature: 1 / 4.3 °C 1 °C 1 °C 1 °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with Na ₂ SO ₃ +NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>		
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by: [Signature] (Project Manager) Date/Time Reviewed: 2/16/17

Origins Laboratory, Inc.

[Signature]

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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Postle2-01
2/15/2017 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702272-01 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B7B2101	02/21/2017	02/21/2017	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	0.376	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.3 %	70-130			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	344	50.0	mg/kg	1	B7B2103	02/21/2017	02/21/2017	
Diesel (C10-C28)	2280	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	109 %	59-131			"	"	"	
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Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Postle2-02
2/15/2017 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702272-02 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B7B2101	02/21/2017	02/21/2017	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.8 %	70-130			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B7B2103	02/21/2017	02/21/2017	U
Diesel (C10-C28)	219	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	86.4 %	59-131			"	"	"	
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Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Postle2-03
2/15/2017 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702272-03 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B7B2101	02/21/2017	02/21/2017	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	0.054	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.4 %	70-130			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	148	50.0	mg/kg	1	B7B2103	02/21/2017	02/21/2017	
Diesel (C10-C28)	1570	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	121 %	59-131			"	"	"	
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Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Postle2-04
2/15/2017 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X702272-04 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B7B2101	02/21/2017	02/21/2017	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B7B2103	02/21/2017	02/21/2017	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	100 %	59-131			"	"	"	
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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Blank (B7B2101-BLK1)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.6	70-130			

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Blank (B7B2101-BLK2)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5	95.8		70-130			
Surrogate: Toluene-d8	62		"	62.5	99.0		70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100		70-130			

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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Blank (B7B2101-BLK3)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5	94.8		70-130			
Surrogate: Toluene-d8	62		"	62.5	99.0		70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	101		70-130			

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

LCS (B7B2101-BS1)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Benzene	0.098	0.002	mg/kg	0.100		97.9	77.1-124			
Toluene	0.095	0.002	"	0.100		95.1	74.5-128			
Ethylbenzene	0.089	0.002	"	0.100		89.0	66.4-127			
m,p-Xylene	0.175	0.004	"	0.200		87.4	76.6-124			
o-Xylene	0.094	0.002	"	0.100		94.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	55		ug/kg	62.5		87.8	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

LCS (B7B2101-BS2)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Benzene	0.101	0.002	mg/kg	0.100		101	77.1-124			
Toluene	0.100	0.002	"	0.100		100	74.5-128			
Ethylbenzene	0.099	0.002	"	0.100		98.6	66.4-127			
m,p-Xylene	0.206	0.004	"	0.200		103	76.6-124			
o-Xylene	0.103	0.002	"	0.100		103	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	54		ug/kg	62.5		86.2	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

LCS (B7B2101-BS3)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Benzene	0.104	0.002	mg/kg	0.100		104	77.1-124			
Toluene	0.099	0.002	"	0.100		99.5	74.5-128			
Ethylbenzene	0.099	0.002	"	0.100		99.2	66.4-127			
m,p-Xylene	0.206	0.004	"	0.200		103	76.6-124			
o-Xylene	0.103	0.002	"	0.100		103	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.8	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.3	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Matrix Spike (B7B2101-MS1)	Source: X702288-06			Prepared: 02/21/2017 Analyzed: 02/21/2017						
Benzene	0.105	0.002	mg/kg	0.100	ND	105	71.8-126			
Toluene	0.103	0.002	"	0.100	ND	103	65.1-130			
Ethylbenzene	0.104	0.002	"	0.100	ND	104	62.2-130			
m,p-Xylene	0.215	0.004	"	0.200	ND	108	46.5-137			
o-Xylene	0.107	0.002	"	0.100	ND	107	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	53		ug/kg	62.5		84.1	70-130			
Surrogate: Toluene-d8	62		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Matrix Spike (B7B2101-MS2)	Source: X702287-02			Prepared: 02/21/2017 Analyzed: 02/21/2017						
Benzene	0.099	0.002	mg/kg	0.100	ND	99.3	71.8-126			
Toluene	0.096	0.002	"	0.100	ND	95.6	65.1-130			
Ethylbenzene	0.095	0.002	"	0.100	0.001	93.7	62.2-130			
m,p-Xylene	0.197	0.004	"	0.200	ND	98.3	46.5-137			
o-Xylene	0.099	0.002	"	0.100	0.0008	97.9	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Matrix Spike (B7B2101-MS3)	Source: X702272-04			Prepared: 02/21/2017 Analyzed: 02/21/2017						
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126			
Toluene	0.097	0.002	"	0.100	ND	97.4	65.1-130			
Ethylbenzene	0.095	0.002	"	0.100	ND	95.0	62.2-130			
m,p-Xylene	0.196	0.004	"	0.200	ND	97.9	46.5-137			
o-Xylene	0.098	0.002	"	0.100	0.0005	97.9	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		95.0	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.2	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

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 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Matrix Spike Dup (B7B2101-MSD1)	Source: X702288-06			Prepared: 02/21/2017 Analyzed: 02/21/2017						
Benzene	0.103	0.002	mg/kg	0.100	ND	103	71.8-126	2.62	11.3	
Toluene	0.100	0.002	"	0.100	ND	100	65.1-130	2.90	15.4	
Ethylbenzene	0.100	0.002	"	0.100	ND	100	62.2-130	3.59	19.6	
m,p-Xylene	0.209	0.004	"	0.200	ND	104	46.5-137	3.00	19.2	
o-Xylene	0.104	0.002	"	0.100	ND	104	54.2-134	2.26	17.9	
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.5	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.8	70-130			

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 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Matrix Spike Dup (B7B2101-MSD2)	Source: X702287-02			Prepared: 02/21/2017 Analyzed: 02/21/2017						
Benzene	0.096	0.002	mg/kg	0.100	ND	95.9	71.8-126	3.46	11.3	
Toluene	0.092	0.002	"	0.100	ND	92.4	65.1-130	3.38	15.4	
Ethylbenzene	0.090	0.002	"	0.100	0.001	88.6	62.2-130	5.62	19.6	
m,p-Xylene	0.185	0.004	"	0.200	ND	92.3	46.5-137	6.29	19.2	
o-Xylene	0.094	0.002	"	0.100	0.0008	93.3	54.2-134	4.73	17.9	
Surrogate: 1,2-Dichloroethane-d4	56		ug/kg	62.5		89.3	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	70-130			

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 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2101 - EPA 5030 (soil)

Matrix Spike Dup (B7B2101-MSD3)	Source: X702272-04			Prepared: 02/21/2017 Analyzed: 02/21/2017						
Benzene	0.115	0.002	mg/kg	0.100	ND	115	71.8-126	11.7	11.3	QR-02
Toluene	0.110	0.002	"	0.100	ND	110	65.1-130	12.6	15.4	
Ethylbenzene	0.108	0.002	"	0.100	ND	108	62.2-130	12.6	19.6	
m,p-Xylene	0.229	0.004	"	0.200	ND	114	46.5-137	15.5	19.2	
o-Xylene	0.113	0.002	"	0.100	0.0005	113	54.2-134	13.8	17.9	
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.0	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418
 Project: Postle Drill Pad Spill #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7B2103 - EPA 3580

Blank (B7B2103-BLK1)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Surrogate: o-Terphenyl	55		"	50.0		110	59-131			

LCS (B7B2103-BS1)

Prepared: 02/21/2017 Analyzed: 02/21/2017

Gasoline (C6-C10)	1040	50.0	mg/kg	1000		104	59-133			
Diesel (C10-C28)	926	50.0	"	1000		92.6	64-121			
Surrogate: o-Terphenyl	54		"	50.0		108	59-131			

Matrix Spike (B7B2103-MS1)

Source: X702272-04

Prepared: 02/21/2017 Analyzed: 02/21/2017

Gasoline (C6-C10)	1110	50.0	mg/kg	1000	ND	111	57-139			
Diesel (C10-C28)	977	50.0	"	1000	ND	97.7	53-125			
Surrogate: o-Terphenyl	55		"	50.0		111	59-131			

Matrix Spike Dup (B7B2103-MSD1)

Source: X702272-04

Prepared: 02/21/2017 Analyzed: 02/21/2017

Gasoline (C6-C10)	951	50.0	mg/kg	1000	ND	95.1	57-139	15.2	20	
Diesel (C10-C28)	916	50.0	"	1000	ND	91.6	53-125	6.42	20	
Surrogate: o-Terphenyl	47		"	50.0		94.2	59-131			

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Olsson Associates
4690 Table Mountain Drive
Golden CO 80403

Jason Davidson
Project Number: 017-0418
Project: Postle Drill Pad Spill #2

Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President

April 10, 2017

Olsson Associates

Jason Davidson

4690 Table Mountain Drive

Golden CO 80403

Project Name - Postle 1 C 11-042 HC Spills

Project Number - 017-0418 ph 100/101 Ta

Attached are your analytical results for Postle 1 C 11-042 HC Spills received by Origins Laboratory, Inc. April 07, 2017. This project is associated with Origins project number Y704081-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



Olsson Associates
4690 Table Mountain Drive
Golden CO 80403

Jason Davidson
Project Number: 017-0418 ph 100/101 Task
Project: Postle 1 C 11-042 HC Spills

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Postle-040717-1	Y704081-01	Soil	April 7, 2017 10:30	04/07/2017 14:18
Postle-040717-2	Y704081-02	Soil	April 7, 2017 10:38	04/07/2017 14:18
Postle-040717-3	Y704081-03	Soil	April 7, 2017 10:41	04/07/2017 14:18
Postle-040717-4	Y704081-04	Soil	April 7, 2017 10:36	04/07/2017 14:18
Postle-040717-5	Y704081-05	Soil	April 7, 2017 10:44	04/07/2017 14:18
Postle-040717-6	Y704081-06	Soil	April 7, 2017 10:34	04/07/2017 14:18

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418 ph 100/101 Task
 Project: Postle 1 C 11-042 HC Spills

Origins Laboratory

F-012207-01-R1
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 1704081 Client: Olsson Assoc.
 Client Project ID: Postle 1C 11-042 HC Spills
 Checklist Completed by: DL Shipped Via: HD
 Date/time completed: 4-2-12 1440 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: NA
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 1 / 10.1 °C _____ / _____ °C _____ / _____ °C (Describe)
 Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?		<input checked="" type="checkbox"/>		Sampled same Day
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>		
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) DL Date/Time Reviewed 4-2-12 1440

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418 ph 100/101 Task
 Project: Postle 1 C 11-042 HC Spills

Postle-040717-1
4/7/2017 10:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704081-01 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D0703	04/07/2017	04/08/2017	U
Surrogate: o-Terphenyl	76.8 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7D0702	04/07/2017	04/08/2017	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418 ph 100/101 Task
 Project: Postle 1 C 11-042 HC Spills

Postle-040717-2
4/7/2017 10:38:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704081-02 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D0703	04/07/2017	04/08/2017	U
Surrogate: o-Terphenyl	66.0 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7D0702	04/07/2017	04/10/2017	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130			"	"	04/08/2017	
Surrogate: Toluene-d8	105 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418 ph 100/101 Task
 Project: Postle 1 C 11-042 HC Spills

Postle-040717-3
4/7/2017 10:41:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704081-03 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D0703	04/07/2017	04/08/2017	U
Surrogate: <i>o</i> -Terphenyl	82.3 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7D0702	04/07/2017	04/10/2017	U
Benzene	ND	0.050	"	"	"	"	04/08/2017	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.4 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Olsson Associates
 4690 Table Mountain Drive
 Golden CO 80403

Jason Davidson
 Project Number: 017-0418 ph 100/101 Task
 Project: Postle 1 C 11-042 HC Spills

Postle-040717-4
4/7/2017 10:36:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704081-04 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D0703	04/07/2017	04/08/2017	U
Surrogate: o-Terphenyl	84.9 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7D0702	04/07/2017	04/10/2017	U
Benzene	ND	0.050	"	"	"	"	04/08/2017	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

Origins Laboratory, Inc.



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 Golden CO 80403

Jason Davidson
 Project Number: 017-0418 ph 100/101 Task
 Project: Postle 1 C 11-042 HC Spills

Postle-040717-5
4/7/2017 10:44:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704081-05 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D0703	04/07/2017	04/08/2017	U
Surrogate: <i>o</i> -Terphenyl	78.8 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7D0702	04/07/2017	04/10/2017	U
Benzene	ND	0.050	"	"	"	"	04/08/2017	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

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Jason Davidson
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 Project: Postle 1 C 11-042 HC Spills

Postle-040717-6
4/7/2017 10:34:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704081-06 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D0703	04/07/2017	04/08/2017	U
Surrogate: <i>o</i> -Terphenyl	67.3 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7D0702	04/07/2017	04/10/2017	U
Benzene	ND	0.050	"	"	"	"	04/08/2017	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	107 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.6 %	70-130			"	"	"	

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

Blank (B7D0702-BLK1)

Prepared: 04/07/2017 Analyzed: 04/07/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	68		"	62.5		109	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

Blank (B7D0702-BLK2)

Prepared: 04/07/2017 Analyzed: 04/07/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.8	70-130			

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Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

LCS (B7D0702-BS1)

Prepared: 04/07/2017 Analyzed: 04/07/2017

Benzene	0.115	0.002	mg/kg	0.100		115	77.1-124			
Toluene	0.111	0.002	"	0.100		111	74.5-128			
Ethylbenzene	0.110	0.002	"	0.100		110	66.4-127			
m,p-Xylene	0.220	0.004	"	0.200		110	76.6-124			
o-Xylene	0.112	0.002	"	0.100		112	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	66		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.4	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

LCS (B7D0702-BS2)

Prepared: 04/07/2017 Analyzed: 04/07/2017

Benzene	0.103	0.002	mg/kg	0.100		103	77.1-124			
Toluene	0.102	0.002	"	0.100		102	74.5-128			
Ethylbenzene	0.105	0.002	"	0.100		105	66.4-127			
m,p-Xylene	0.209	0.004	"	0.200		105	76.6-124			
o-Xylene	0.105	0.002	"	0.100		105	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.1	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

Matrix Spike (B7D0702-MS1)	Source: Y704061-01			Prepared: 04/07/2017 Analyzed: 04/07/2017						
Benzene	0.109	0.002	mg/kg	0.100	ND	109	71.8-126			
Toluene	0.104	0.002	"	0.100	ND	104	65.1-130			
Ethylbenzene	0.103	0.002	"	0.100	ND	103	62.2-130			
m,p-Xylene	0.210	0.004	"	0.200	ND	105	46.5-137			
o-Xylene	0.108	0.002	"	0.100	ND	108	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.1	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

Matrix Spike (B7D0702-MS2)	Source: Y704081-01			Prepared: 04/07/2017 Analyzed: 04/07/2017						
Benzene	2.49	0.050	mg/kg	2.50	ND	99.8	71.8-126			
Toluene	2.45	0.050	"	2.50	ND	97.9	65.1-130			
Ethylbenzene	2.42	0.050	"	2.50	ND	97.0	62.2-130			
m,p-Xylene	4.81	0.100	"	5.00	ND	96.2	46.5-137			
o-Xylene	2.45	0.050	"	2.50	ND	98.2	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.2	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.6	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

Matrix Spike Dup (B7D0702-MSD1)	Source: Y704061-01			Prepared: 04/07/2017 Analyzed: 04/07/2017						
Benzene	0.097	0.002	mg/kg	0.100	ND	96.7	71.8-126	12.0	11.3	QR-02
Toluene	0.089	0.002	"	0.100	ND	89.1	65.1-130	15.0	15.4	
Ethylbenzene	0.087	0.002	"	0.100	ND	87.1	62.2-130	16.9	19.6	
m,p-Xylene	0.176	0.004	"	0.200	ND	87.9	46.5-137	17.7	19.2	
o-Xylene	0.093	0.002	"	0.100	ND	93.0	54.2-134	14.7	17.9	
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.0	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	55		"	62.5		88.4	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0702 - EPA 5030 (soil)

Matrix Spike Dup (B7D0702-MSD2)	Source: Y704081-01			Prepared: 04/07/2017 Analyzed: 04/07/2017						
Benzene	2.36	0.050	mg/kg	2.50	ND	94.4	71.8-126	5.56	11.3	
Toluene	2.28	0.050	"	2.50	ND	91.0	65.1-130	7.31	15.4	
Ethylbenzene	2.22	0.050	"	2.50	ND	89.0	62.2-130	8.63	19.6	
m,p-Xylene	4.47	0.100	"	5.00	ND	89.4	46.5-137	7.39	19.2	
o-Xylene	2.44	0.050	"	2.50	ND	97.5	54.2-134	0.675	17.9	
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.4	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7D0703 - EPA 3550B

Blank (B7D0703-BLK1)					Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	42		"	50.0		84.2	59-131			
Blank (B7D0703-BLK2)					Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	36		"	50.0		72.4	59-131			
LCS (B7D0703-BS1)					Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	959	50.0	mg/kg	1000		95.9	64-121			
Surrogate: o-Terphenyl	46		"	50.0		92.1	59-131			
LCS (B7D0703-BS2)					Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	965	50.0	mg/kg	1000		96.5	64-121			
Surrogate: o-Terphenyl	47		"	50.0		93.9	59-131			
Matrix Spike (B7D0703-MS1)		Source: Y704061-01			Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	948	50.0	mg/kg	1000	14.0	93.4	53-125			
Surrogate: o-Terphenyl	44		"	50.0		87.9	59-131			
Matrix Spike (B7D0703-MS2)		Source: Y704061-05			Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	957	50.0	mg/kg	1000	31.7	92.5	53-125			
Surrogate: o-Terphenyl	47		"	50.0		94.4	59-131			

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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7D0703 - EPA 3550B										
Matrix Spike Dup (B7D0703-MSD1)			Source: Y704061-01		Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	957	50.0	mg/kg	1000	14.0	94.3	53-125	0.906	20	
Surrogate: o-Terphenyl	47		"	50.0		93.8	59-131			
Matrix Spike Dup (B7D0703-MSD2)			Source: Y704061-05		Prepared: 04/07/2017 Analyzed: 04/07/2017					
Diesel (C10-C28)	926	50.0	mg/kg	1000	31.7	89.5	53-125	3.21	20	
Surrogate: o-Terphenyl	47		"	50.0		94.5	59-131			

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Jason Davidson
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Project: Postle 1 C 11-042 HC Spills

Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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Jen Pellegrini For Noelle Doyle Mathis, President