

State of Colorado  
Oil and Gas Conservation Commission

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



FOR OGCC USE ONLY

#6926

RECEIVED  
3/30/2012

## SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

☒ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No: 2223041

## CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe):

## GENERAL INFORMATION

<b>OGCC Operator Number:</b> 69175		<b>Contact Name and Telephone</b>	
<b>Name of Operator:</b> Petroleum Development Corporation		<b>Name:</b> Brandon Bruns	
<b>Address:</b> 1775 Sherman Street, Suite 3000		<b>No:</b> (303) 860-5800	
<b>City:</b> Denver <b>State:</b> CO <b>Zip:</b> 80203		<b>Fax:</b> (303) 860-5838	
<b>API/Facility No:</b> 05-123-20280		<b>County:</b> Weld	
<b>Facility Name:</b> Seele 31, 41, 42-31		<b>Facility Number:</b> 05-123-20280	
<b>Well Name:</b> Seele 31, 41, 42-31		<b>Well Number:</b> Seele 31, 41, 42-31	
<b>Location (QtrQtr, Sec, Twp, Rng, Meridian):</b> NWNW 31 T4N R67W 6th PM		<b>Latitude:</b> 40.276883 <b>Longitude:</b> -104.923421	

## TECHNICAL CONDITIONS

<b>Type of Waste Causing Impact (crude oil, condensate, produced water, etc.):</b> <u>Condensate</u>		
<b>Site Conditions:</b> Is location within a sensitive area (according to Rule 901e)? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, attach evaluation.		
<b>Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.):</b> <u>Oil and gas production and cultivated</u>		
<b>Soil type, if not previously identified on Form 2A or Federal Surface Use Plan:</b> <u>Sands/Silts</u>		
<b>Potential receptors (water wells within 1/4 mi, surface waters, etc.):</b> <u>Surface water area is located approximately 1,100' to the north of the Tank Battery.</u>		
<b>Residential buildings are located approximately 1,000 ft south, and a roadside ditch 80 ft east. Depth to shallowest groundwater is approximately 7 ft bgs.</b>		
<b>Description of Impact (if previously provided, refer to that form or document):</b>		
<b>Impacted Media (check):</b>	<b>Extent of Impact:</b>	<b>How Determined:</b>
<input checked="" type="checkbox"/> Soils	<u>Form 19 submitted on February 27, 2012</u>	<u>Excavation, geoprobing, and soil sampling</u>
<input type="checkbox"/> Vegetation		
<input checked="" type="checkbox"/> Groundwater	<u>Form 19 submitted on February 27, 2012</u>	<u>Groundwater sampling</u>
<input type="checkbox"/> Surface water		

## REMEDIALTION WORKPLAN

<b>Describe initial action taken (if previously provided, refer to that form or document):</b>  The Immediate response action was provided in a Form 19 submitted on February 27, 2012. An aerial map of the site is included on Figure 1.
<b>Describe how source is to be removed:</b>  The source area was previously excavated and impacted material was transported and disposed of as described in the Form 19 submitted on February 27, 2012.
<b>Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:</b>  PDC plans to conduct air sparge (AS) and soil vapor extraction (SVE) remediation activities to address residual hydrocarbon impacts at the site. AS and SVE activities will be conducted at temporary monitoring points BH-01, BH-02, and BH-03 (Figure 2). PDC will conduct AS and SVE activities utilizing a mobile remediation trailer. Vapor samples will be collected from the remediation trailer effluent stream during remediation activities to determine VOC concentrations in the vapor phase. Additionally, PDC will inject chemical oxidants (chemox) into the temporary monitoring wells subsequent to AS and SVE activities to act as a polishing agent. Groundwater confirmation samples will then be collected following injection activities. Additionally, geoprobing activities will be conducted near the existing monitoring well locations to collect confirmation soil samples. Should confirmation samples indicate that concentrations are below the COGCC Table 910-1 limits for hydrocarbon impacts, PDC will monitor groundwater concentrations at the site until four consecutive quarters of groundwater analytical results are in compliance with COGCC standards.

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Oil and Gas Conservation Commission

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Page 2

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: \_\_\_\_\_

Tracking Number: \_\_\_\_\_  
Name of Operator: Petroleum Development Corporation  
OGCC Operator No: 69175  
Received Date: \_\_\_\_\_  
Well Name & No: Seele 31, 41, 42-31  
Facility Name & No.: Seele 31, 41, 42-31

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):  
Groundwater was impacted at the site. As described in the February 27, 2012 Form 19, three (3) temporary groundwater monitoring wells were installed at the site. Following AS, SVE, and chemical oxidation injection activities, the temporary monitoring wells will be sampled during the following quarterly monitoring period to determine residual hydrocarbon impacts in groundwater continue to persist at the Site using USEPA Method 8260 B. Should confirmation groundwater samples indicate that concentrations are below the COGCC Table 910-1 limits for hydrocarbon impacts, PDC will monitor groundwater concentrations at the site until four consecutive quarters of groundwater analytical results are in compliance with COGCC standards.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.  
The area where the excavation is located is used as the produced water and condensate tank secondary containment area and partially as an equipment access area to the tank battery location and consists of road base. The excavation has been backfilled and compacted with clean material and the ground surface was contoured to match pre-existing conditions.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.  
Is further site investigation required? ☐ Y ☒ N If yes, describe:  
The groundwater plume has been delineated and no further subsurface investigation is required at the site. Laboratory analytical results from groundwater and soil samples that were collected during excavation and geoprobing activities indicate that moderate hydrocarbon impacts exist outside the extents of the previous excavation. The laboratory analytical results are provided in Table 1 and the temporary monitoring well locations are illustrated on Figure 2.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):  
Waste was disposed of at the Waste Management Facility in Ault, CO.

IMPLEMENTATION SCHEDULE

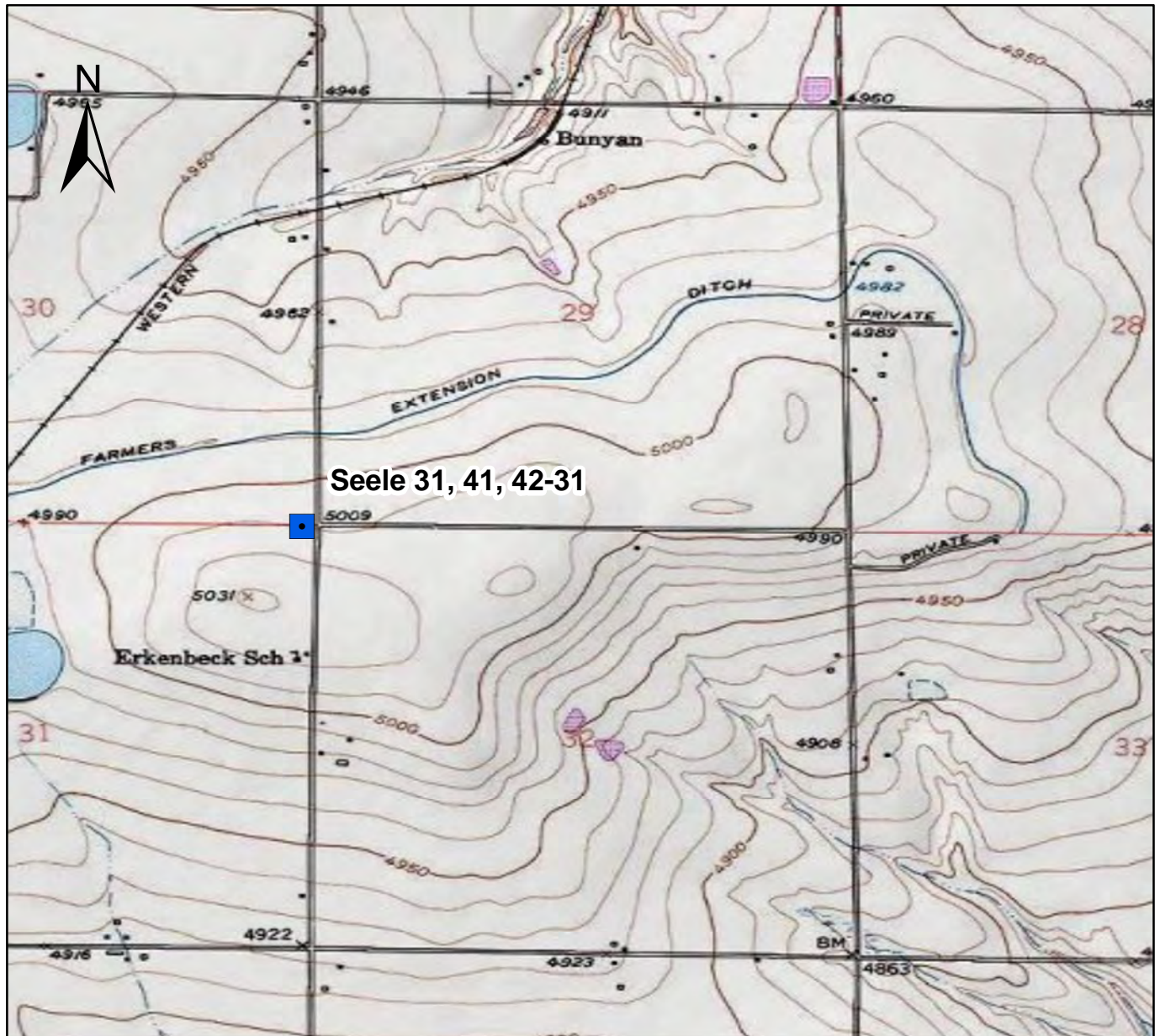
Date Site Investigation Began: <u>1/9/2012</u>	Date Site Investigation Completed: <u>1/27/12</u>	Remediation Plan Submitted: _____
Remediation Start Date: <u>1/9/2012</u>	Anticipated Completion Date: <u>NA</u>	Actual Completion Date: _____

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

Print Name: Brandon Bruns

Signed:  Title: EHS Professional Date: 3/30/12

OGCC Approved: \_\_\_\_\_ Title: EPS Date: 4/3/2012



0 750 1,500 3,000 4,500  
Feet



## Figure 1

Site Location Map  
Seele 31, 41, 42-31  
NWNE S31 T4N R67W  
Weld County, Colorado

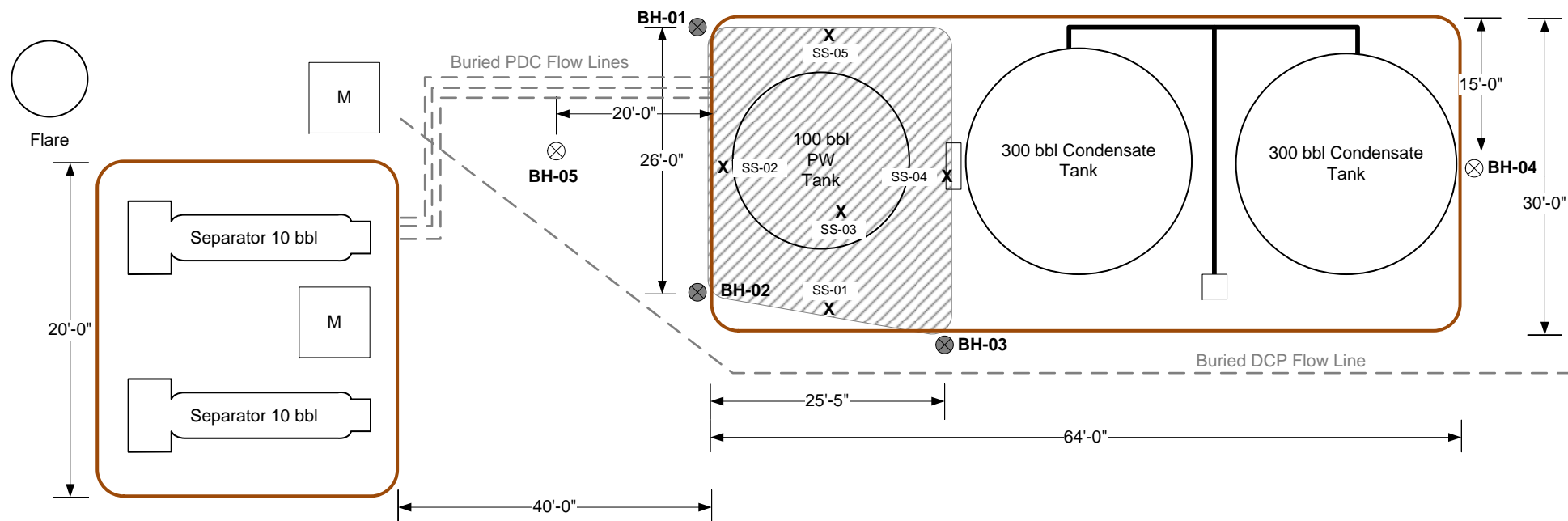
Drawn By: CAW  
Date: 02/20/2012

  
Tasman Geosciences



Surface  
Drainage

County Road 40



PROJECT  
NO:

DRAWN BY: BDH

DATE: 1/30/12

**Facility Diagram**  
PDC Energy – DJ Basin  
Seele 31, 41, 42-31  
T4N R67W S31  
Weld County, CO



5690 Webster Avenue  
Arvada CO 80002

LEGEND

- Earthen Berm
- Bore Hole Location
- Bore Hole Location With Temporary Well Installed
- Approximate Extent of Excavation
- Excavation Soil Sample

M Meter Shed

FIGURE 2

Not to Scale

**TABLE 1**  
**SEELE 31, 41, 42-31**  
**GROUNDWATER ANALYTICAL RESULTS**

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzne (ug/L)	Total Xylenes (ug/L)
BH01	1/27/2012	<b>5,300</b>	<b>1,200</b>	180	1,300
BH02	1/27/2012	<b>7,500</b>	<b>680</b>	240	<b>1,400</b>
BH03	1/27/2012	<b>16,000</b>	<b>4,400</b>	420	<b>2,900</b>
COGCC standards for Groundwater (ug/L) <sup>(1)</sup>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>

Notes:

1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.

**Bold** red values indicate an exceedance of the COGCC soil standards for the Site.

Sample locations are shown on Figure 2.

ug/L= Micrograms per liter.



**TABLE 2**  
**SEELE 31, 41, 42-31**  
**SOIL ANALYTICAL RESULTS TABLE**

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzne (mg/kg)	Total Xylenes (mg/kg)	Napthalene (mg/kg)	TPH <sup>(2)</sup> (mg/kg)
SS01	1/10/2011	9	700	<b>0.17</b>	1.1	0.6	2.3	0.19	18
SS02	1/10/2011	9	690	<b>14</b>	22	15	82	8.3	<b>5,700</b>
SS03	1/10/2011	12	1,400	<b>1.5</b>	7.1	3	21.6	2.9	<b>2,180</b>
SS04	1/10/2011	9	165	<b>37</b>	84	32	165	3.6	<b>13,900</b>
SS05	1/10/2011	9	1,110	<b>3.7</b>	2.7	8.9	61	8	<b>3,400</b>
BH01 - 10.5-12	1/26/2012	10.5-12	1,400	0.012	0.011	ND	ND	ND	ND
BH02 - 8-12	1/26/2012	8-12	802	<b>24</b>	<b>290</b>	36	<b>420</b>	21	<b>28,600</b>
BH03 - 9-11	1/26/2012	9-11	1,025	0.018	0.098	0.064	0.51	0.12	406
BH04 - 7-10	1/27/2012	7-10	0	ND	ND	ND	ND	ND	ND
BH05 - 7-10	1/27/2012	7-10	85	ND	ND	ND	ND	ND	ND
COGCC standards for Soil (mg/kg) <sup>(1)</sup>				<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>

Notes:

1). Standards for Soil are taken from 2 CCR 404-1, Table 910-1, effective April 1, 2009.

2). TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

GRO - Gasoline range organics.

DRO - Diesel range organics.

mg/kg= Milligrams per kilogram.

bgs - Below ground surface.

ppm - Parts per million

ND- Not Detected

**Bold** red values indicate an exceedance of the COGCC soil standards for the Site.

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 13, 2012

Brandon Bruns  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Seele 31, 41, 42-31

Enclosed are the results of analyses for samples received by Summit Scientific on 01/10/12 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
President / Laboratory Director



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	R201056-01	Soil	01/10/12 15:50	01/10/12 18:00
SS02	R201056-02	Soil	01/10/12 15:55	01/10/12 18:00
SS03	R201056-03	Soil	01/10/12 16:00	01/10/12 18:00
SS04	R201056-04	Soil	01/10/12 16:05	01/10/12 18:00
SS05	R201056-05	Soil	01/10/12 16:10	01/10/12 18:00

Summit Scientific

*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.*







PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
01/13/12 13:18

**SS01**  
**R201056-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/10/12 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2011007	01/10/12	01/11/12	8015 Full Carbon Chain	

Date Sampled: **01/10/12 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/10/12 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.19	0.0050	mg/kg	1	2011010	01/10/12	01/11/12	EPA 8260B	
Benzene	0.17	0.0050	"	"	"	"	"	"	
Toluene	1.1	0.050	"	10	"	"	"	"	
Ethylbenzene	0.60	0.0050	"	1	"	"	"	"	
m,p-Xylene	1.1	0.10	"	10	"	"	"	"	
o-Xylene	1.2	0.050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	18	5.0	"	"	"	"	"	"	

Date Sampled: **01/10/12 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.9 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		102 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	78.4-125		"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
01/13/12 13:18

**SS02**  
**R201056-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/10/12 15:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>3000</b>	50	mg/kg	1	2011007	01/10/12	01/11/12	8015 Full Carbon Chain	

Date Sampled: **01/10/12 15:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		124 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/10/12 15:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>8.3</b>	0.050	mg/kg	10	2011010	01/10/12	01/11/12	EPA 8260B	E
<b>Benzene</b>	<b>14</b>	0.050	"	"	"	"	"	"	E
<b>Toluene</b>	<b>22</b>	0.050	"	"	"	"	"	"	E
<b>Ethylbenzene</b>	<b>15</b>	0.050	"	"	"	"	"	"	E
<b>m,p-Xylene</b>	<b>55</b>	0.10	"	"	"	"	"	"	E
<b>o-Xylene</b>	<b>27</b>	0.050	"	"	"	"	"	"	E
<b>Gasoline Range Hydrocarbons</b>	<b>2700</b>	5.0	"	"	"	"	"	"	E

Date Sampled: **01/10/12 15:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		486 %	67.4-143		"	"	"	"	S-02
<i>Surrogate: Toluene-d8</i>		968 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		425 %	78.4-125		"	"	"	"	S-02

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
01/13/12 13:18

**SS03**  
**R201056-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/10/12 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1400</b>	50	mg/kg	1	2011007	01/10/12	01/11/12	8015 Full Carbon Chain	

Date Sampled: **01/10/12 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		111 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/10/12 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>2.9</b>	0.050	mg/kg	10	2011010	01/10/12	01/11/12	EPA 8260B	
<b>Benzene</b>	<b>1.5</b>	0.050	"	"	"	"	"	"	
<b>Toluene</b>	<b>7.1</b>	0.050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>3.0</b>	0.050	"	"	"	"	"	"	
<b>m,p-Xylene</b>	<b>15</b>	0.10	"	"	"	"	"	"	
<b>o-Xylene</b>	<b>6.6</b>	0.050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>780</b>	5.0	"	"	"	"	"	"	E

Date Sampled: **01/10/12 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		85.8 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		162 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		232 %	78.4-125		"	"	"	"	S-02

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
01/13/12 13:18

**SS04**  
**R201056-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/10/12 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>10000</b>	50	mg/kg	1	2011007	01/10/12	01/11/12	8015 Full Carbon Chain	

Date Sampled: **01/10/12 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		219 %	80-124		"	"	"	"	S-02

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/10/12 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>3.6</b>	0.050	mg/kg	10	2011010	01/10/12	01/11/12	EPA 8260B	
<b>Benzene</b>	<b>37</b>	0.050	"	"	"	"	"	"	E
<b>Toluene</b>	<b>84</b>	0.050	"	"	"	"	"	"	E
<b>Ethylbenzene</b>	<b>32</b>	0.050	"	"	"	"	"	"	E
<b>m,p-Xylene</b>	<b>110</b>	0.10	"	"	"	"	"	"	E
<b>o-Xylene</b>	<b>55</b>	0.050	"	"	"	"	"	"	E
<b>Gasoline Range Hydrocarbons</b>	<b>3900</b>	5.0	"	"	"	"	"	"	

Date Sampled: **01/10/12 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		869 %	67.4-143		"	"	"	"	S-02
<i>Surrogate: Toluene-d8</i>		3820 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		4750 %	78.4-125		"	"	"	"	S-02

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
01/13/12 13:18

**SS05**  
**R201056-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/10/12 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1600</b>	50	mg/kg	1	2011007	01/10/12	01/11/12	8015 Full Carbon Chain	

Date Sampled: **01/10/12 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		111 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/10/12 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>8.0</b>	0.050	mg/kg	10	2011010	01/10/12	01/11/12	EPA 8260B	
<b>Benzene</b>	<b>3.7</b>	0.050	"	"	"	"	"	"	
<b>Toluene</b>	<b>2.7</b>	0.050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>8.9</b>	0.050	"	"	"	"	"	"	
<b>m,p-Xylene</b>	<b>41</b>	0.10	"	"	"	"	"	"	E
<b>o-Xylene</b>	<b>20</b>	0.050	"	"	"	"	"	"	E
<b>Gasoline Range Hydrocarbons</b>	<b>1800</b>	5.0	"	"	"	"	"	"	E

Date Sampled: **01/10/12 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		89.1 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		890 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		464 %	78.4-125		"	"	"	"	S-02

Summit Scientific

*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.*



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2011007 - EPA 3550A**

**Blank (2011007-BLK1)**

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.9 " 12.5 103 80-124

**Blank (2011007-BLK2)**

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.0 " 12.5 104 80-124

**LCS (2011007-BS1)**

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) 485 50 mg/kg 501 96.7 81.4-129 9.26

**LCS (2011007-BS2)**

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) 508 50 mg/kg 501 101 81.4-129 9.26

**LCS Dup (2011007-BSD1)**

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) 491 50 mg/kg 501 97.9 81.4-129 1.24 9.26

**LCS Dup (2011007-BSD2)**

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) 513 50 mg/kg 501 102 81.4-129 0.889 9.26

**Matrix Spike (2011007-MS1)**

Source: R201054-01

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) 563 50 mg/kg 501 63.4 99.7 77.8-133 8.48

**Matrix Spike (2011007-MS2)**

Source: R201054-02

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) 2200 50 mg/kg 501 2180 2.65 77.8-133 8.48

**Matrix Spike Dup (2011007-MSD1)**

Source: R201054-01

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO) 554 50 mg/kg 501 63.4 97.9 77.8-133 1.63 8.48

Summit Scientific

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.





PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2011007 - EPA 3550A**

**Matrix Spike Dup (2011007-MSD2)**

**Source: R201054-02**

Prepared: 01/10/12 Analyzed: 01/11/12

C10-C28 (DRO)	2430	50	mg/kg	501	2180	50.0	77.8-133	10.3	8.48
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Summit Scientific

*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.*



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2011010 - EPA 5030 Soil MS**

**Blank (2011010-BLK1)**

Prepared: 01/10/12 Analyzed: 01/11/12

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
m,p-Xylene	ND	0.010	"							
o-Xylene	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0406</i>		<i>"</i>	<i>0.0397</i>		<i>102</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0428</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>78.4-125</i>			

**Blank (2011010-BLK2)**

Prepared: 01/10/12 Analyzed: 01/11/12

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
m,p-Xylene	ND	0.010	"							
o-Xylene	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0403</i>		<i>"</i>	<i>0.0397</i>		<i>102</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0430</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>78.4-125</i>			

**LCS (2011010-BS1)**

Prepared: 01/10/12 Analyzed: 01/11/12

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.103	0.0050	"	0.100		103	61-139		11.1	
Toluene	0.107	0.0050	"	0.100		107	64-132		10.9	
Ethylbenzene	0.106	0.0050	"	0.100		106	68.7-135		20	
m,p-Xylene	0.207	0.010	"	0.200		104	70.4-129		20	
o-Xylene	0.102	0.0050	"	0.100		102	66.9-126		20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0393</i>		<i>"</i>	<i>0.0397</i>		<i>99.0</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0421</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>78.4-125</i>			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2011010 - EPA 5030 Soil MS**

**LCS (2011010-BS2)**

Prepared: 01/10/12 Analyzed: 01/12/12

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0975	0.0050	"	0.100		97.5	61-139		11.1	
Toluene	0.107	0.0050	"	0.100		107	64-132		10.9	
Ethylbenzene	0.114	0.0050	"	0.100		114	68.7-135		20	
m,p-Xylene	0.218	0.010	"	0.200		109	70.4-129		20	
o-Xylene	0.105	0.0050	"	0.100		105	66.9-126		20	
Surrogate: 1,2-Dichloroethane-d4	0.0524		"	0.0397		132	67.4-143			
Surrogate: Toluene-d8	0.0428		"	0.0400		107	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0446		"	0.0400		112	78.4-125			

**LCS Dup (2011010-BSD1)**

Prepared: 01/10/12 Analyzed: 01/11/12

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.102	0.0050	"	0.100		102	61-139	1.09	11.1	
Toluene	0.108	0.0050	"	0.100		108	64-132	0.503	10.9	
Ethylbenzene	0.103	0.0050	"	0.100		103	68.7-135	2.30	20	
m,p-Xylene	0.205	0.010	"	0.200		102	70.4-129	1.14	20	
o-Xylene	0.102	0.0050	"	0.100		102	66.9-126	0.442	20	
Surrogate: 1,2-Dichloroethane-d4	0.0408		"	0.0397		103	67.4-143			
Surrogate: Toluene-d8	0.0429		"	0.0400		107	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400		100	78.4-125			

**LCS Dup (2011010-BSD2)**

Prepared: 01/10/12 Analyzed: 01/12/12

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0973	0.0050	"	0.100		97.3	61-139	0.216	11.1	
Toluene	0.106	0.0050	"	0.100		106	64-132	1.01	10.9	
Ethylbenzene	0.113	0.0050	"	0.100		113	68.7-135	0.529	20	
m,p-Xylene	0.215	0.010	"	0.200		108	70.4-129	1.29	20	
o-Xylene	0.102	0.0050	"	0.100		102	66.9-126	2.76	20	
Surrogate: 1,2-Dichloroethane-d4	0.0533		"	0.0397		134	67.4-143			
Surrogate: Toluene-d8	0.0437		"	0.0400		109	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0444		"	0.0400		111	78.4-125			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2011010 - EPA 5030 Soil MS**

Matrix Spike (2011010-MS1)				Source: R201052-01		Prepared: 01/10/12		Analyzed: 01/12/12	
Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20
Benzene	0.0947	0.0050	"	0.100	0.0202	74.6	42.9-137		17.9
Toluene	0.105	0.0050	"	0.100	0.00549	99.8	42.6-130		11.9
Ethylbenzene	0.359	0.0050	"	0.100	0.411	NR	39-133		20
m,p-Xylene	3.82	0.010	"	0.200	8.17	NR	34.7-134		20
o-Xylene	0.252	0.0050	"	0.100	0.382	NR	41.3-126		20
Surrogate: 1,2-Dichloroethane-d4	0.0560		"	0.0397		141	67.4-143		
Surrogate: Toluene-d8	0.0431		"	0.0400		108	77.3-114		
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		91.0	78.4-125		

Matrix Spike (2011010-MS2)				Source: R201052-02		Prepared: 01/10/12		Analyzed: 01/12/12	
Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20
Benzene	0.0961	0.0050	"	0.100	0.00	96.1	42.9-137		17.9
Toluene	0.105	0.0050	"	0.100	0.0163	88.5	42.6-130		11.9
Ethylbenzene	0.115	0.0050	"	0.100	0.0286	86.8	39-133		20
m,p-Xylene	0.262	0.010	"	0.200	0.312	NR	34.7-134		20
o-Xylene	0.116	0.0050	"	0.100	0.0342	81.4	41.3-126		20
Surrogate: 1,2-Dichloroethane-d4	0.0570		"	0.0397		144	67.4-143		S-02
Surrogate: Toluene-d8	0.0418		"	0.0400		104	77.3-114		
Surrogate: 4-Bromofluorobenzene	0.0483		"	0.0400		121	78.4-125		

Matrix Spike Dup (2011010-MSD1)				Source: R201052-01		Prepared: 01/10/12		Analyzed: 01/12/12	
Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20
Benzene	0.0949	0.0050	"	0.100	0.0202	74.7	42.9-137	0.127	17.9
Toluene	0.103	0.0050	"	0.100	0.00549	97.9	42.6-130	1.81	11.9
Ethylbenzene	0.257	0.0050	"	0.100	0.411	NR	39-133	32.9	20
m,p-Xylene	3.21	0.010	"	0.200	8.17	NR	34.7-134	17.4	20
o-Xylene	0.245	0.0050	"	0.100	0.382	NR	41.3-126	2.89	20
Surrogate: 1,2-Dichloroethane-d4	0.0559		"	0.0397		141	67.4-143		
Surrogate: Toluene-d8	0.0424		"	0.0400		106	77.3-114		
Surrogate: 4-Bromofluorobenzene	0.0348		"	0.0400		87.1	78.4-125		

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2011010 - EPA 5030 Soil MS**

Matrix Spike Dup (2011010-MSD2)		Source: R201052-02			Prepared: 01/10/12		Analyzed: 01/12/12			
Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20	
Benzene	0.0949	0.0050	"	0.100	0.00	94.9	42.9-137	1.23	17.9	
Toluene	0.102	0.0050	"	0.100	0.0163	85.5	42.6-130	2.93	11.9	
Ethylbenzene	0.111	0.0050	"	0.100	0.0286	82.5	39-133	3.73	20	
m,p-Xylene	0.268	0.010	"	0.200	0.312	NR	34.7-134	2.38	20	QM-07
o-Xylene	0.115	0.0050	"	0.100	0.0342	80.3	41.3-126	0.887	20	
Surrogate: 1,2-Dichloroethane-d4	0.0573		"	0.0397		144	67.4-143			S-02
Surrogate: Toluene-d8	0.0425		"	0.0400		106	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0471		"	0.0400		118	78.4-125			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Seele 31, 41, 42-31

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
01/13/12 13:18

### Notes and Definitions

S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.

E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 30, 2012

Mike Lindstrom  
Tasman Geosciences  
5690 Webster Street  
Arvada, CO 80002  
RE: Seele 31,41,42-31

Enclosed are the results of analyses for samples received by Summit Scientific on 01/27/12 17:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury  
President / Laboratory Director





Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH04 - 7-10'	R201191-01	Soil	01/27/12 08:25	01/27/12 17:20
BH05 - 7-10'	R201191-02	Soil	01/27/12 09:00	01/27/12 17:20
BH-01	R201191-03	Water	01/27/12 10:40	01/27/12 17:20
BH-02	R201191-04	Water	01/27/12 11:00	01/27/12 17:20
BH-03	R201191-05	Water	01/27/12 10:50	01/27/12 17:20

Summit Scientific

*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.*

Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

R 201191

## Summit Scientific

52

741 Corporate Circle Suite I ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-277-9531 Fax

Page 1 of 1

Client: Tasman Geosciences

Address: 5690 Webster Street

City/State/Zip: Arvada, CO 80002

Phone: (720) 988-2024

Phone: (720) 988-2024 Fax:

Sampler Name: Brian Humphrey

**Project Manager:**

E-Mail:

Project Name: See/e 31,41,42-31

Project Number:

[illegible]

[www.s2scientific.com](http://www.s2scientific.com)

Summit Scientific

*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.*





Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**BH04 - 7-10'**  
**R201191-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/27/12 08:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2012803	01/28/12	01/28/12	8015 Full Carbon Chain	

Date Sampled: **01/27/12 08:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.9 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/27/12 08:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
Benzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Naphthalene	ND	10	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **01/27/12 08:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.7 %	78.4-125		"	"	"	"	

Summit Scientific

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.



Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**BH05 - 7-10'**  
**R201191-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/27/12 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2012803	01/28/12	01/29/12	8015 Full Carbon Chain	

Date Sampled: **01/27/12 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.3 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/27/12 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
Benzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Naphthalene	ND	10	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **01/27/12 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.8 %	78.4-125		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**BH-01**  
**R201191-03 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/27/12 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/l	1	2012805	01/28/12	01/29/12	EPA 8260B	
<b>Benzene</b>	<b>5300</b>	100	"	100	"	"	"	"	
<b>Toluene</b>	<b>1200</b>	100	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>180</b>	100	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>1300</b>	100	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>68</b>	1.0	"	1	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>11000</b>	500	"	"	"	"	"	"	

Date Sampled: **01/27/12 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.4 %	57.9-139		"	"	"	"	
Surrogate: Toluene-d8		96.8 %	83.1-115		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.3 %	80.8-120		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**BH-02**  
**R201191-04 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/27/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/l	1	2012805	01/28/12	01/29/12	EPA 8260B	
<b>Benzene</b>	<b>7500</b>	100	"	100	"	"	"	"	
<b>Toluene</b>	<b>680</b>	100	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>240</b>	100	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>1400</b>	100	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>7900</b>	100	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>24000</b>	500	"	1	"	"	"	"	

Date Sampled: **01/27/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.5 %	57.9-139		"	"	"	"	
Surrogate: Toluene-d8		113 %	83.1-115		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.9 %	80.8-120		"	"	"	"	

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**BH-03**  
**R201191-05 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/27/12 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/l	1	2012805	01/28/12	01/29/12	EPA 8260B	
<b>Benzene</b>	<b>16000</b>	100	"	100	"	"	"	"	
<b>Toluene</b>	<b>4400</b>	100	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>420</b>	100	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>2900</b>	100	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>73</b>	1.0	"	1	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>62000</b>	50000	"	100	"	"	"	"	

Date Sampled: **01/27/12 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.4 %	57.9-139		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	83.1-115		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.1 %	80.8-120		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2012803 - EPA 3550A**

**Blank (2012803-BLK1)**

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.2 " 12.5 98.0 80-124

**LCS (2012803-BS1)**

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 514 50 mg/kg 501 103 81.4-129 9.26

**LCS Dup (2012803-BSD1)**

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 529 50 mg/kg 501 106 81.4-129 2.95 9.26

**Matrix Spike (2012803-MS1)**

Source: R201182-01

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 516 50 mg/kg 501 ND 103 77.8-133 8.48

**Matrix Spike Dup (2012803-MSD1)**

Source: R201182-01

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 535 50 mg/kg 501 ND 107 77.8-133 3.53 8.48

Summit Scientific

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2012804 - EPA 5030 Soil MS**

**Blank (2012804-BLK1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/kg							
Benzene	ND	5.0	"							
Toluene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Xylenes (total)	ND	10	"							
Naphthalene	ND	10	"							
Gasoline Range Hydrocarbons	ND	500	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>34.8</i>		<i>"</i>	<i>39.7</i>		<i>87.7</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>35.8</i>		<i>"</i>	<i>40.0</i>		<i>89.4</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>38.7</i>		<i>"</i>	<i>40.0</i>		<i>96.8</i>	<i>78.4-125</i>			

**LCS (2012804-BS1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/kg				60-140		25	
Benzene	75.4	5.0	"	100		75.4	61-139		11.1	
Toluene	73.6	5.0	"	100		73.6	64-132		10.9	
Ethylbenzene	82.4	5.0	"	100		82.4	68.7-135		20	
m,p-Xylene	154	5.0	"	200		77.1	70.4-129		20	
o-Xylene	78.4	5.0	"	100		78.4	66.9-126		20	
Naphthalene	ND	10	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>34.2</i>		<i>"</i>	<i>39.7</i>		<i>86.2</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>35.3</i>		<i>"</i>	<i>40.0</i>		<i>88.3</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>39.6</i>		<i>"</i>	<i>40.0</i>		<i>98.9</i>	<i>78.4-125</i>			

**LCS Dup (2012804-BSD1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/kg				60-140		25	
Benzene	76.7	5.0	"	100		76.7	61-139	1.77	11.1	
Toluene	75.8	5.0	"	100		75.8	64-132	2.93	10.9	
Ethylbenzene	82.6	5.0	"	100		82.6	68.7-135	0.327	20	
m,p-Xylene	156	5.0	"	200		77.8	70.4-129	0.833	20	
o-Xylene	78.7	5.0	"	100		78.7	66.9-126	0.382	20	
Naphthalene	ND	10	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>34.0</i>		<i>"</i>	<i>39.7</i>		<i>85.6</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>35.8</i>		<i>"</i>	<i>40.0</i>		<i>89.5</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>39.1</i>		<i>"</i>	<i>40.0</i>		<i>97.6</i>	<i>78.4-125</i>			

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2012804 - EPA 5030 Soil MS**

Matrix Spike (2012804-MS1)				Source: R201177-01		Prepared: 01/28/12		Analyzed: 01/29/12	
Methyl tert-butyl ether	ND	5.0	ug/kg		ND		50-150		30
Benzene	77.0	5.0	"	100	ND	77.0	42.9-137		17.9
Toluene	75.2	5.0	"	100	ND	75.2	42.6-130		11.9
Ethylbenzene	83.1	5.0	"	100	ND	83.1	39-133		20
m,p-Xylene	153	5.0	"	200	ND	76.7	34.7-134		20
o-Xylene	78.7	5.0	"	100	ND	78.7	41.3-126		20
Naphthalene	ND	10	"		ND		26.4-144		30
Surrogate: 1,2-Dichloroethane-d4	36.0		"	39.7		90.8	67.4-143		
Surrogate: Toluene-d8	35.9		"	40.0		89.8	77.3-114		
Surrogate: 4-Bromofluorobenzene	40.4		"	40.0		101	78.4-125		

Matrix Spike Dup (2012804-MSD1)				Source: R201177-01		Prepared: 01/28/12		Analyzed: 01/29/12	
Methyl tert-butyl ether	ND	5.0	ug/kg		ND		50-150		30
Benzene	77.7	5.0	"	100	ND	77.7	42.9-137	0.970	17.9
Toluene	76.0	5.0	"	100	ND	76.0	42.6-130	1.19	11.9
Ethylbenzene	83.8	5.0	"	100	ND	83.8	39-133	0.935	20
m,p-Xylene	156	5.0	"	200	ND	78.1	34.7-134	1.76	20
o-Xylene	79.8	5.0	"	100	ND	79.8	41.3-126	1.44	20
Naphthalene	ND	10	"		ND		26.4-144		30
Surrogate: 1,2-Dichloroethane-d4	37.0		"	39.7		93.1	67.4-143		
Surrogate: Toluene-d8	36.3		"	40.0		90.8	77.3-114		
Surrogate: 4-Bromofluorobenzene	40.8		"	40.0		102	78.4-125		

**Batch 2012805 - EPA 5030 Water MS**

Blank (2012805-BLK1)				Prepared: 01/28/12		Analyzed: 01/29/12	
Methyl tert-butyl ether	ND	5.0	ug/l				
Benzene	ND	1.0	"				
Toluene	ND	1.0	"				
Ethylbenzene	ND	1.0	"				
Xylenes (total)	ND	1.0	"				
Naphthalene	ND	1.0	"				
Gasoline Range Hydrocarbons	ND	500	"				
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.2		97.4	57.9-139
Surrogate: Toluene-d8	12.9		"	13.3		96.7	83.1-115
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.5	80.8-120

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2012805 - EPA 5030 Water MS**

**LCS (2012805-BS1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/l				60-140		25	
Benzene	29.0	1.0	"	33.3		87.0	60.1-131		10.9	
Toluene	29.1	1.0	"	33.3		87.4	65.9-127		11.3	
Ethylbenzene	28.4	1.0	"	33.3		85.1	65.1-129		20	
m,p-Xylene	60.1	2.0	"	66.7		90.2	66.8-127		20	
o-Xylene	29.4	1.0	"	33.3		88.4	61.2-120		20	
Naphthalene	ND	1.0	"				85-126		25	
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.2		100	57.9-139			
Surrogate: Toluene-d8	13.6		"	13.3		102	83.1-115			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.2	80.8-120			

**LCS Dup (2012805-BSD1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/l				60-140		25	
Benzene	28.2	1.0	"	33.3		84.5	60.1-131	2.87	10.9	
Toluene	28.6	1.0	"	33.3		85.7	65.9-127	2.05	11.3	
Ethylbenzene	28.1	1.0	"	33.3		84.3	65.1-129	0.956	20	
m,p-Xylene	59.6	2.0	"	66.7		89.4	66.8-127	0.919	20	
o-Xylene	29.5	1.0	"	33.3		88.5	61.2-120	0.170	20	
Naphthalene	ND	1.0	"				85-126		25	
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.2		96.8	57.9-139			
Surrogate: Toluene-d8	13.4		"	13.3		100	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.8	80.8-120			

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: [none]  
Project Manager: Mike Lindstrom

**Reported:**  
01/30/12 14:08

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

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Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

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# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 31, 2012

Mike Lindstrom  
Tasman Geosciences  
5690 Webster Street  
Arvada, CO 80002  
RE: Seele 31,41,42-31

Enclosed are the results of analyses for samples received by Summit Scientific on 01/27/12 08:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
President / Laboratory Director



Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: Seele 31,41,42-31  
Project Manager: Mike Lindstrom

**Reported:**  
01/31/12 09:37

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01-10.5-12'	R201186-01	Soil	01/26/12 14:35	01/27/12 08:30
BH02-8-12'	R201186-02	Soil	01/26/12 15:20	01/27/12 08:30
BH03-9-11'	R201186-03	Soil	01/26/12 14:30	01/27/12 08:30

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31

Project Number: Seele 31,41,42-31

Project Manager: Mike Lindstrom

**Reported:**

01/31/12 09:37

R201186

Summit Scientific

52

74 | Corporate Circle Suite I ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-277-9531 Fax

Page 1 of 1

Client: Tasman Geosciences

Address: 5690 Webster Street

Project Manager: *Mike Lindstrom*

City/State/Zip: Arvada, CO 80002

E-Mail: [mlindstrom@tasman-gpo.com](mailto:mlindstrom@tasman-gpo.com)

Phone: (720) 988-2024

Project Name: Seele 31, 41, 42-31

Sampler Name:

Project Number: See/e 31.41.42-31

[illegible]

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: Seele 31,41,42-31  
Project Manager: Mike Lindstrom

**Reported:**  
01/31/12 09:37

**BH01-10.5-12'**  
**R201186-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/26/12 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2012803	01/28/12	01/28/12	8015 Full Carbon Chain	

Date Sampled: **01/26/12 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		100 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/26/12 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
<b>Benzene</b>	<b>0.012</b>	0.0050	"	"	"	"	"	"	
<b>Toluene</b>	<b>0.011</b>	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/26/12 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.6 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		92.4 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.6 %	78.4-125		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: Seele 31,41,42-31  
Project Manager: Mike Lindstrom

**Reported:**  
01/31/12 09:37

**BH02-8-12'**  
**R201186-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/26/12 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>9600</b>	50	mg/kg	1	2012803	01/28/12	01/28/12	8015 Full Carbon Chain	

Date Sampled: **01/26/12 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		98.1 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/26/12 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
<b>Benzene</b>	<b>24</b>	0.50	"	100	"	"	"	"	
<b>Toluene</b>	<b>290</b>	5.0	"	1000	"	"	"	"	
<b>Ethylbenzene</b>	<b>36</b>	0.50	"	100	"	"	"	"	
<b>Xylenes (total)</b>	<b>420</b>	10	"	1000	"	"	"	"	
<b>Naphthalene</b>	<b>21</b>	1.0	"	100	"	"	01/29/12	"	
<b>Gasoline Range Hydrocarbons</b>	<b>19000</b>	500	"	1000	"	"	01/29/12	"	

Date Sampled: **01/26/12 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		85.7 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		110 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		91.4 %	78.4-125		"	"	"	"	

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Tasman Geosciences  
5690 Webster Street  
Arvada CO, 80002

Project: Seele 31,41,42-31  
Project Number: Seele 31,41,42-31  
Project Manager: Mike Lindstrom

**Reported:**  
01/31/12 09:37

**BH03-9-11'**  
**R201186-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/26/12 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>370</b>	50	mg/kg	1	2012803	01/28/12	01/28/12	8015 Full Carbon Chain	

Date Sampled: **01/26/12 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		99.3 %	80-124		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/26/12 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
<b>Benzene</b>	<b>0.018</b>	0.0050	"	"	"	"	"	"	
<b>Toluene</b>	<b>0.098</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.064</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.51</b>	0.010	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.12</b>	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>36</b>	0.50	"	"	"	"	"	"	

Date Sampled: **01/26/12 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		90.7 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.9 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		94.6 %	78.4-125		"	"	"	"	

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Project Manager: Mike Lindstrom

**Reported:**  
01/31/12 09:37

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2012803 - EPA 3550A**

**Blank (2012803-BLK1)**

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.2 " 12.5 98.0 80-124

**LCS (2012803-BS1)**

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 514 50 mg/kg 501 103 81.4-129 9.26

**LCS Dup (2012803-BSD1)**

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 529 50 mg/kg 501 106 81.4-129 2.95 9.26

**Matrix Spike (2012803-MS1)**

Source: R201182-01

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 516 50 mg/kg 501 ND 103 77.8-133 8.48

**Matrix Spike Dup (2012803-MSD1)**

Source: R201182-01

Prepared: 01/28/12 Analyzed: 01/29/12

C10-C28 (DRO) 535 50 mg/kg 501 ND 107 77.8-133 3.53 8.48

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Project: Seele 31,41,42-31  
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**Reported:**  
01/31/12 09:37

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike Level	Source		%REC		RPD	
	Result	Limit	Units		Result	%REC	Limits	RPD	Limit	Notes

**Batch 2012804 - EPA 5030 Soil MS**

**Blank (2012804-BLK1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0348</i>		<i>"</i>	<i>0.0397</i>		<i>87.7</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0358</i>		<i>"</i>	<i>0.0400</i>		<i>89.4</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>78.4-125</i>			

**LCS (2012804-BS1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	0.0050	mg/kg				60-140		25	
Benzene	0.0754	0.0050	"	0.100		75.4	61-139		11.1	
Toluene	0.0736	0.0050	"	0.100		73.6	64-132		10.9	
Ethylbenzene	0.0824	0.0050	"	0.100		82.4	68.7-135		20	
m,p-Xylene	0.154	0.0050	"	0.200		77.1	70.4-129		20	
o-Xylene	0.0784	0.0050	"	0.100		78.4	66.9-126		20	
Naphthalene	ND	0.010	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0342</i>		<i>"</i>	<i>0.0397</i>		<i>86.2</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0353</i>		<i>"</i>	<i>0.0400</i>		<i>88.3</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>98.9</i>	<i>78.4-125</i>			

**LCS Dup (2012804-BSD1)**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	0.0050	mg/kg				60-140		25	
Benzene	0.0767	0.0050	"	0.100		76.7	61-139	1.77	11.1	
Toluene	0.0758	0.0050	"	0.100		75.8	64-132	2.93	10.9	
Ethylbenzene	0.0826	0.0050	"	0.100		82.6	68.7-135	0.327	20	
m,p-Xylene	0.156	0.0050	"	0.200		77.8	70.4-129	0.833	20	
o-Xylene	0.0787	0.0050	"	0.100		78.7	66.9-126	0.382	20	
Naphthalene	ND	0.010	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0340</i>		<i>"</i>	<i>0.0397</i>		<i>85.6</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0358</i>		<i>"</i>	<i>0.0400</i>		<i>89.5</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0391</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>78.4-125</i>			

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Project Number: Seele 31,41,42-31  
Project Manager: Mike Lindstrom

**Reported:**  
01/31/12 09:37

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 2012804 - EPA 5030 Soil MS**

**Matrix Spike (2012804-MS1)**

**Source: R201177-01**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	0.0050	mg/kg		ND		50-150		30	
Benzene	0.0770	0.0050	"	0.100	ND	77.0	42.9-137		17.9	
Toluene	0.0752	0.0050	"	0.100	ND	75.2	42.6-130		11.9	
Ethylbenzene	0.0831	0.0050	"	0.100	ND	83.1	39-133		20	
m,p-Xylene	0.153	0.0050	"	0.200	ND	76.7	34.7-134		20	
o-Xylene	0.0787	0.0050	"	0.100	ND	78.7	41.3-126		20	
Naphthalene	ND	0.010	"		ND		26.4-144		30	
Surrogate: 1,2-Dichloroethane-d4	0.0360		"	0.0397		90.8	67.4-143			
Surrogate: Toluene-d8	0.0359		"	0.0400		89.8	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	78.4-125			

**Matrix Spike Dup (2012804-MSD1)**

**Source: R201177-01**

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	0.0050	mg/kg		ND		50-150		30	
Benzene	0.0777	0.0050	"	0.100	ND	77.7	42.9-137	0.970	17.9	
Toluene	0.0760	0.0050	"	0.100	ND	76.0	42.6-130	1.19	11.9	
Ethylbenzene	0.0839	0.0050	"	0.100	ND	83.9	39-133	0.935	20	
m,p-Xylene	0.156	0.0050	"	0.200	ND	78.1	34.7-134	1.76	20	
o-Xylene	0.0798	0.0050	"	0.100	ND	79.8	41.3-126	1.44	20	
Naphthalene	ND	0.010	"		ND		26.4-144		30	
Surrogate: 1,2-Dichloroethane-d4	0.0370		"	0.0397		93.1	67.4-143			
Surrogate: Toluene-d8	0.0363		"	0.0400		90.8	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	78.4-125			

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Project: Seele 31,41,42-31  
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Project Manager: Mike Lindstrom

**Reported:**  
01/31/12 09:37

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

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A handwritten signature in black ink, appearing to be 'MSM'.

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