

1625 Broadway
Suite 2200.
Denver, CO 80202



Tel: 303.228.4000
Fax: 303.228.4286
www.nobleenergyinc.com

North America Division

August 27, 2012

Mr. Chris Canfield
Department Of Natural Resources
Oil & Gas Conservation Commission
707 Wapiti Ct, Suite 204
Rifle, CO 81650

RE: Form 27, Site Sampling Map, Laboratory Analytical Data and Request for No Further Action
SGV 350 Pad
Facility #334355
SESE Sec. 35, T7S, R96W
Garfield County, Colorado

Dear Mr. Canfield:

Please find attached a completed form 27, site sampling map and laboratory analytical data for the SGV 350 Pad. Based on the site remedial activities and attached laboratory analysis Noble Energy Inc. is requesting that the COGCC consider this location closed, requiring no further action.

Noble Energy Inc. would like to claim business confidentiality protection for the information submitted in this letter, the supporting materials attached and all previous and subsequent correspondence related to this matter. Please contact the Noble Energy Environmental Department at (303) 228-4158 if you have any questions or require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Ryan Bruner', with a long horizontal flourish extending to the right.

Ryan Bruner
Environmental and Regulatory Supervisor

Attachments

State of Colorado
Oil and Gas Conservation Commission



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

#7300

FOR OGCC USE ONLY

RECEIVED
8/27/2012

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: 2221894

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

OGCC Operator Number: <u>100322</u>	Contact Name and Telephone: <u>Ryan Bruner</u>
Name of Operator: <u>Noble Energy, Inc.</u>	No: <u>303-228-4158</u>
Address: <u>1625 Broadway, Suite 2200</u>	Fax: <u>303-228-4286</u>
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>	

API Number: <u>NA</u>	County: <u>Garfield</u>
Facility Name: <u>SGV 350 Pad</u>	Facility Number: <u>334355</u>
Well Name: <u>NA</u>	Well Number: <u>NA</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>SESE Sec. 35 T7S R96W 6PM</u> Latitude: <u>39.389783</u> Longitude: <u>-108.067647</u>	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Produced water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Non-irrigated rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Potts-Ildefonso complex, 12 to 25 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Water well 1,077' west, unnamed ditch 1,232' northeast, and groundwater approximately 93' below ground surface.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>37' x 11' x 6'</u>	<u>Excavation</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

REMEDATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

A polyethylene (poly) pipeline transferring produced water failed causing an unknown quantity of produced water to be released to the subsurface. The poly pipeline was shut-in, vacuum trucks recovered produced water at the release location and on the pad surface, and the line was repaired. See Form 19 (Document #2221894).

Describe how source is to be removed:

Impacted soil at the release was removed via excavation until clean sidewalls were obtained, and confirmation soil samples were collected. Soil samples were analyzed for BTEX, TPH, pH, EC, SAR, PAHs, and COGCC Table 910-1 metals (excluding boron). The most recent samples are in compliance with COGCC standards except for EC in one sample.

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.:

Impacted soil was removed via excavation and landfarmed on site within a lined berm.

NOBLE

FORM 27 Rev 6/99

State of Colorado Oil and Gas Conservation Commission 1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



Tracking Number: Name of Operator: OGCC Operator No: Received Date: Well Name & No: Facility Name & No: SGV 350 Pad 334355

REMEDIATION WORKPLAN (Cont.)

Page 2

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Groundwater was not encountered during excavation activities.

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.

Landfarmed soil will be used to backfill the excavation, and the original grade will be restored. The oil and gas production facility remains on site.

Location ID # 334355
SPILL Non-Facility ID# 427210
spill report Track # 2221894

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 [x] N If yes, describe:

See attached report.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Approximately 90 cubic yards of impacted soil were landfarmed on site in a lined berm.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 12/21/2011 Date Site Investigation Completed: 7/16/2012 Date Remediation Plan Submitted: 8/22/2012
Remediation Start Date: 12/21/2011 Anticipated Completion Date: TBD Actual Completion Date: TBD

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

Print Name: Ryan Bruner Signed: [Signature]

Title: Environmental Regulatory Supervisor Date: 8/22/2012

OGCC Approved: [Signature] Title: FOR Date: 09/19/2012

Chris Camfield
EPS NW Region

Note: Per Rule 909.c
Form 27s should be submitted
for prior approval, not as a
Notice of Completion.



August 22, 2012

Mr. Ryan Bruner
Environmental Regulatory Supervisor
Noble Energy, Inc.
1625 Broadway Suite 2200
Denver, Colorado 80202

**RE: Remediation Activity Summary Report/No Further Action Request
SGV 350 Pad
Garfield County, Colorado
COGCC Tracking #2221894**

Dear Mr. Bruner:

Noble Energy, Inc. (Noble) conducted environmental remediation and soil sampling activities following the identification of petroleum hydrocarbon impacted soil as a result of a polyethylene (poly) pipeline failure adjacent to the SGV 350 Pad (Site). This correspondence describes the work conducted at the Site.

The legal site description is the southeast quarter of the southeast quarter of section 35, township 7 south, and range 96 west (Figure 1). The Site is located approximately 1.2 miles east southeast of the intersection of County Road 300 and County Road 306 in Garfield County, Colorado.

Site Assessment

On December 21, 2011, ECOS Environmental (ECOS) personnel were on site to delineate the surficial extent of impact and collect a background sample. Six surface soil samples (WC1 through WC6) were collected to define the impacted area and then submitted to Accutest Laboratories of Wheat Ridge, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (EPA) method 8260B, total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) and diesel range organics (DRO) by EPA method 8015B, electrical conductivity (EC) by Department of Agriculture Book N9 method, pH by EPA method 9045C, and sodium adsorption ratio (SAR) by EPA method 200.7 and calculation. In addition, samples WC1 and WC2 were analyzed for polycyclic aromatic hydrocarbons (PAHs) by EPA method 8270C SIM and Table 910-1 metals (except boron) by EPA methods 6010, 6020, 7471A, and 3060A. On December 21, 2011, a background soil sample (B) was collected and submitted for analysis of EC by Department of Agriculture Book N9 method, pH by EPA method 9045C, SAR by EPA method 200.7 and calculation, and arsenic by EPA method 6020.

Remediation Activities

A Noble contractor excavated approximately 90 cubic yards of impacted soil from the release location, which was landfarmed on site within a lined berm. The total extent of the excavation, as illustrated on Figure 2, was approximately 37 feet east-west by 11 feet north-south by 6 feet below ground surface (bgs). Groundwater was not encountered during excavation activities. Landfarmed soil will be used to backfill the excavation.

On January 13, 2012, Noble personnel were on site to oversee excavation activities, field screen soil, document site activities, conduct health and safety monitoring, and collect confirmation samples for laboratory analysis. Composite soil samples were collected from the impacted interval along the sidewalls and floor of the excavation. Once visually observed impacted soil had been excavated, four composite confirmation soil samples (WC7 through WC10) were collected from the excavation sidewalls, and one soil sample (WC11) was collected at the base of the excavation and then all samples were submitted to Origins Laboratory of Denver, Colorado, for analysis of BTEX by EPA method 8260C and TPH as GRO and DRO by EPA method 8015C.

Analytical Results and Closure Sampling

The Colorado Oil and Gas Conservation Commission (COGCC) cleanup standards for BTEX in soil are 0.17 milligrams per kilogram (mg/kg), 85 mg/kg, 100 mg/kg, and 175 mg/kg, respectively. The COGCC standard for TPH in soil is 500 mg/kg.

Soil analytical results indicate that all arsenic concentrations exceeded the COGCC soil standard of 0.39 milligrams per kilogram (mg/kg) but are below background concentrations. Soil samples WC1, WC2, and WC11, collected December 21, 2011, exceeded COGCC standards for benzene and TPH at concentrations of 3.54 mg/kg and 587 mg/kg, 0.959 mg/kg and 625 mg/kg, and 1.89 mg/kg and 1,841 mg/kg, respectively. Sample WC11 also exceeded standards for ethylbenzene at a concentration of 116 mg/kg and total xylenes at a concentration of 350 mg/kg. Samples WC1, WC2, WC4 and WC5 exceeded COGCC standards for EC and SAR, and sample WC4 exceeded the COGCC standard for pH. All other samples for COGCC Table 910-1 metals, TPH, BTEX, pH, EC, SAR and PAHs are in compliance with COGCC standards. The soil analytical results are summarized in Table 1 and Table 2. The laboratory analytical report is attached.

After receiving analytical results that indicated exceedances of COGCC standards, the excavation was left open from January 2012 through June 2012 to allow for additional remediation of impact. A heater and tarp were placed over the water line to prevent freezing.

On June 22, 2012, three additional soil samples from the previously impacted sampling locations (WC1, WC2, WC11) and five soil samples from new sampling locations (WC4, WC5, WC12 through WC14) were collected and submitted to ALS Environmental Laboratory (ALS) of Houston, Texas, for analysis of BTEX by EPA method 8260, and TPH as GRO and DRO by EPA method 8015. In addition, samples WC1, WC2, WC4, and WC5 were submitted for analysis of EC by LADNR-29B, and SAR by EPA method 6020 and calculation. On June 22,

2012, after soil was landfarmed on site, one landfarm sample (land farm 01) was collected and submitted to ALS for analysis of BTEX and TPH. Sample WC1 exceeded COGCC standard for EC. All other samples were in compliance with COGCC standards.

On July 16, 2012, three background samples (B2 through B4) were collected at various points from the surrounding vegetated slope and submitted to ALS for analysis of arsenic by EPA method 6020 (Figure 2).

Per the excavation activities conducted at the Site, impacted soil exceeding state cleanup standards was remediated or removed and landfarmed on site. All soil samples analyzed for arsenic exceeded the COGCC standard for arsenic, but were within the range of naturally occurring levels in the region. No Table 910-1 metals other than arsenic were detected in exceedance of COGCC standards in any of the soil samples collected from the excavation or landfarm. The June 2012 soil samples collected from previously impacted areas were in compliance for BTEX and TPH. Groundwater was not encountered, and a clean sample was collected from the base of the excavation. Based on the work described in this report, confirmation samples are within cleanup goals, indicating impact has been removed. Noble therefore respectfully requests a No Further Action status for this Site.

LTE appreciates the opportunity to provide environmental services to Noble. Please call LTE at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.



Liz Houle, E.I.T.
Project Manager



Rob Rebel, P.E.
Project Engineer

Attachments

Figure 1	Site Location Map
Figure 2	Site Map
Table 1	Soil Analytical Results
Table 2	Soil PAH Analytical Results
Attachment	Laboratory Analytical Reports

FIGURES

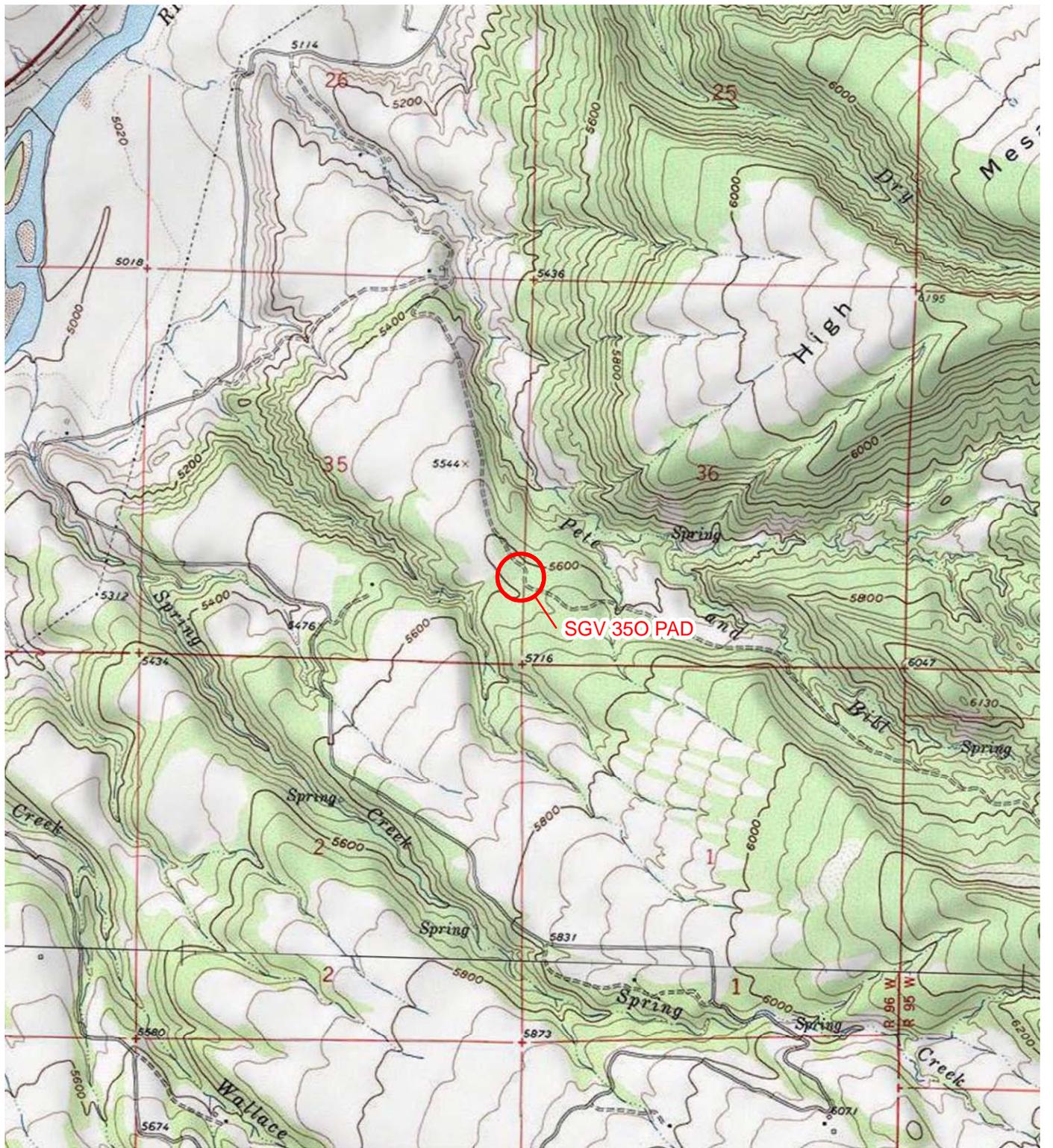


IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

 SITE LOCATION

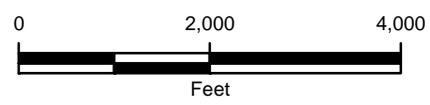


FIGURE 1
SITE LOCATION MAP
SGV 350 PAD
GARFIELD COUNTY, COLORADO

NOBLE ENERGY, INC.





IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

-  RELEASE
-  SURFACE SAMPLE
-  BACKGROUND SAMPLE
-  FLOOR SAMPLE
-  COMPOSITE SIDEWALL SAMPLE
-  EXCAVATION
-  EXTENT OF RELEASE
-  LANDFARM

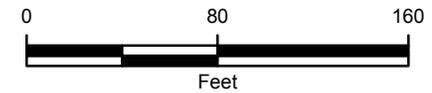


FIGURE 2
SITE MAP
SGV 350 PAD
GARFIELD COUNTY, COLORADO

NOBLE ENERGY, INC.



TABLES

TABLE 1
SOIL ANALYTICAL RESULTS
SGV 350 PAD
GARFIELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Location	Standard	Units	Land Farm 01	B	B2	B3	B4	WC1		WC2		WC3	WC4	
Sample Date			6/22/2012	12/21/2011	7/16/2012	7/16/2012	7/16/2012	12/21/2011	6/22/2012	12/21/2011	6/22/2012	12/21/2011	12/21/2011	6/22/2012
Arsenic	0.39	mg/kg		5.3	8.07	6.57	18.9	7.0		9.6				
Barium	15,000	mg/kg						596		228				
Cadmium	70	mg/kg						<1.4		<1.4				
Chromium (III)	120,000	mg/kg						11.6		12.6				
Chromium (VI)	23	mg/kg						<0.50		<0.51				
Copper	3,100	mg/kg						11.6		16.4				
Lead	400	mg/kg						9.7		11.7				
Mercury	23	mg/kg						<0.13		<0.14				
Nickel	1,600	mg/kg						12.4		15.3				
Selenium	390	mg/kg						<7.2		<6.9				
Silver	390	mg/kg						<4.3		<4.2				
Zinc	23,000	mg/kg						32.9		38.9				
SAR	12	--		0.247				60.6	5.34	41.0	3.90	0.637	38.4	3.27
EC	4	mmhos/cm		0.276				10.300	4.17	9.470	3.90	0.378	7.820	2.77
pH	6 to 9	SU		8.49				8.55		7.99		8.80	9.31	
TPH-DRO	--	mg/kg	13					192	2.7	240	9.7	28.1	46.5	
TPH-GRO	--	mg/kg	<0.050					395	<0.050	385	<0.050	<13	9.84	
TPH	500	mg/kg	13					587	2.7	625	9.7	28.1	56.34	
Benzene	0.17	mg/kg	<0.0050					3.540	<0.0050	0.959	<0.0050	<0.033	0.0241	
Toluene	85	mg/kg	<0.0050					26.900	<0.0050	16.500	<0.0050	<0.330	0.356	
Ethylbenzene	100	mg/kg	<0.0050					4.670	<0.0050	2.620	<0.0050	<0.130	0.0551	
Total Xylenes	175	mg/kg	<0.015					78.500	<0.015	46.400	<0.015	<0.130	1.170	

NOTES:

EC - electrical conductivity
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
mv - millivolts
SAR - sodium adsorption ratio
SU - standard units
TPH-GRO - total petroleum hydrocarbons - gasoline range organics analyzed by EPA Method 8015
TPH-DRO - total petroleum hydrocarbons - diesel range organics analyzed by EPA Method 8015
TPH Total - total petroleum hydrocarbons is the sum of TPH-GRO and TPH-DRO
< - indicates result is less than the stated laboratory reporting limit
BOLD - indicates result exceeds the applicable standard
Benzene, toluene, ethylbenzene, and total xylenes analyzed by SW8260
Metals by EPA Methods 6010, 7471A, 3060A
-- No standard

TABLE 1
SOIL ANALYTICAL RESULTS
SGV 350 PAD
GARFIELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Location	Standard	Units	WC5	WC 6	WC7	WC8	WC9	WC10	WC11	WC12	WC13	WC14		
Sample Date			12/21/2011	6/22/2012	12/21/2011	1/13/2012	1/13/2012	1/13/2012	1/13/2012	1/13/2012	6/22/2012	6/22/2012	6/22/2012	6/22/2012
Arsenic	0.39	mg/kg												
Barium	15,000	mg/kg												
Cadmium	70	mg/kg												
Chromium (III)	120,000	mg/kg												
Chromium (VI)	23	mg/kg												
Copper	3,100	mg/kg												
Lead	400	mg/kg												
Mercury	23	mg/kg												
Nickel	1,600	mg/kg												
Selenium	390	mg/kg												
Silver	390	mg/kg												
Zinc	23,000	mg/kg												
SAR	12	--	23.0	4.99	0.423									
EC	4	mmhos/cm	6.650	2.64	0.296									
pH	6 to 9	SU	8.63		8.10									
TPH-DRO	--	mg/kg	26.4		13.7	<50.0	<50.0	<50.0	<50.0	511	29	35	43	39
TPH-GRO	--	mg/kg	9.30		<13	<50.0	<50.0	<50.0	<50.0	1,330	0.86	<0.050	<0.050	<0.050
TPH	500	mg/kg	35.70		13.7	<100.0	<100.0	<100.0	<100.0	1,841	29.86	35	43	39
Benzene	0.17	mg/kg	0.0015		<0.030	<0.0040	0.0416	0.0364	0.0700	1.89	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	85	mg/kg	0.0383		<0.300	0.0103	0.238	0.200	0.512	116	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	100	mg/kg	0.0195		<0.120	<0.0040	0.0240	0.0067	0.0763	10.8	<0.0050	<0.0050	<0.0050	<0.0050
Total Xylenes	175	mg/kg	0.901		<0.120	0.0456	0.408	0.429	1.13	350	<0.015	<0.015	<0.015	<0.015

NOTES:

EC - electrical conductivity
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
mv - millivolts
SAR - sodium adsorption ratio
SU - standard units
TPH-GRO - total petroleum hydrocarbons - gasoline range organics analyzed by SW8015
TPH-DRO - total petroleum hydrocarbons - diesel range organics analyzed by SW8015
TPH Total - total petroleum hydrocarbons is the sum of TPH-GRO and TPH-DRO
< - indicates result is less than the stated laboratory reporting limit
BOLD - indicates result exceeds the applicable standard
Benzene, toluene, ethylbenzene, and total xylenes analyzed by SW8260
Metals by Methods SW6010, SW7471A, SW3060A
-- No standard

TABLE 2

**SOIL PAH ANALYTICAL RESULTS
SGV 350 PAD
GARFIELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Analyte	Standard	Units	WC1	WC2
Sample Date			12/30/2011	12/30/2011
Acenaphthene	1,000	mg/kg	<0.0093	<0.0090
Anthracene	1,000	mg/kg	<0.0093	<0.0090
Benzo (a) anthracene	0.22	mg/kg	<0.023	<0.022
Benzo (b) fluoranthene	0.22	mg/kg	<0.023	<0.022
Benzo (k) fluoranthene	2.2	mg/kg	<0.023	<0.022
Benzo (a) pyrene	0.022	mg/kg	<0.017	<0.016
Chrysene	22	mg/kg	<0.023	<0.022
Dibenz (a,h) anthracene	0.022	mg/kg	<0.023	<0.022
Fluoranthene	1,000	mg/kg	<0.0093	<0.0090
Fluorene	1,000	mg/kg	0.0212	0.0452
Indeno (1,2,3-cd) pyrene	0.22	mg/kg	<0.028	<0.027
Napthalene	23	mg/kg	0.202	0.325
Pyrene	1000	mg/kg	<0.0093	<0.0090

NOTES:

PAH - polycyclic aromatic hydrocarbon

mg/kg - milligrams per kilogram

BOLD - indicates result exceeds the applicable standard

< - indicates result is less than the stated laboratory reporting limit

Analyzed by SW8270

ATTACHMENT
LABORATORY ANALYTICAL REPORTS

Technical Report for

Ecos Environmental

Noble

35-0 Spill/Noble122111

Accutest Job Number: D30587

Sampling Date: 12/21/11

Report to:

Ecos Environmental
6690 Highway 82
Glenwood Springs, CO 81601
zpevec@ecosenvironmental.com

ATTN: Zuleika Pevec

Total number of pages in report: 121



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

Ecos Environmental

Job No: D30587

Noble

Project No: 35-0 Spill/Noble122111

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D30587-1	12/21/11	15:37 ZP	12/23/11	SO	Soil	NOBLE122111-WC1
D30587-1A	12/21/11	15:37 ZP	12/23/11	SO	Soil	NOBLE122111-WC1
D30587-1R	12/21/11	15:37 ZP	12/23/11	SO	Soil	NOBLE122111-WC1
D30587-2	12/21/11	16:00 ZP	12/23/11	SO	Soil	NOBLE122111-WC2
D30587-2A	12/21/11	16:00 ZP	12/23/11	SO	Soil	NOBLE122111-WC2
D30587-2R	12/21/11	16:00 ZP	12/23/11	SO	Soil	NOBLE122111-WC2
D30587-3	12/21/11	16:09 ZP	12/23/11	SO	Soil	NOBLE122111-WC3
D30587-4	12/21/11	16:19 ZP	12/23/11	SO	Soil	NOBLE122111-WC4
D30587-5	12/21/11	16:32 ZP	12/23/11	SO	Soil	NOBLE122111-WC5
D30587-6	12/21/11	16:37 ZP	12/23/11	SO	Soil	NOBLE122111-WC6
D30587-7	12/21/11	16:49 ZP	12/23/11	SO	Soil	NOBLE122111-B
D30587-7A	12/21/11	16:49 ZP	12/23/11	SO	Soil	NOBLE122111-B

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Ecos Environmental

Job No D30587

Site: Noble

Report Date 1/18/2012 4:27:15 PM

On 12/23/2011, 7 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D30587 was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO	Batch ID: M:MSK1915
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- The data for SW846 8260B meets quality control requirements.
- D30587-1, D30587-2, D30587-3, and D30587-4: Analysis performed at Accutest Laboratories, Marlborough, MA.

Matrix SO	Batch ID: M:MSK1920
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- The data for SW846 8260B meets quality control requirements.
- D30587-6: Analysis performed at Accutest Laboratories, Marlborough, MA.

Matrix SO	Batch ID: M:MSV196
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- The data for SW846 8260B meets quality control requirements.
- D30587-5: Analysis performed at Accutest Laboratories, Marlborough, MA.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: OP5080
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- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30596-1MS, D30596-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The RPD(s) for the MS and MSD recoveries of 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Naphthalene are outside control limits for sample OP5080-MSD. Variability of recovery may be due to sample matrix/homogeneity.
- OP5080-MS/MSD: Dilution required due to matrix interference; extract was viscous.

Volatiles by GC By Method SW846 8015B

Matrix SO	Batch ID: GGB815
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- All samples were analyzed within the recommended method holding time.
- Sample(s) D30594-1MS, D30594-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix SO	Batch ID: OP5072
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- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30596-1MS, D30596-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010B

Matrix AQ	Batch ID: MP6558
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- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30587-5MS, D30587-5MSD were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix SO	Batch ID: MP6551
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- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- MP6551-SD1 for Lead: Serial dilution indicates possible matrix interference.
- MP6551-SD1 for Arsenic, Cadmium, and Selenium: Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 6020

Matrix SO	Batch ID: MP6552
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- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30595-1MS, D30595-1MSD, D30595-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471A

Matrix SO	Batch ID: MP6550
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- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30567-3MSD, D30567-3MS were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Mercury are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Mercury are outside control limits. High RPD due to possible sample matrix or nonhomogeneity.
- The RPD(s) for the MS and MSD recoveries of Mercury are outside control limits for sample MP6550-S2. High RPD due to possible sample matrix or nonhomogeneity.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO	Batch ID: GN13195
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- Sample(s) D30587-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN13036
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- The data for SM19 2540B M meets quality control requirements.

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO	Batch ID: R11485
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- The data for SW846 3060/7196A M meets quality control requirements.
- D30587-1R for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix SO	Batch ID: R11486
------------------	-------------------------

- The data for SW846 3060/7196A M meets quality control requirements.
- D30587-2R for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO	Batch ID: M:GP14035
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- The data for SW846 3060A/7196A meets quality control requirements.
- D30587-1R and D30587-2R for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW846 9045C

Matrix SO	Batch ID: GN13046
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- The following samples were run outside of holding time for method SW846 9045C: D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6, D30587-7

Matrix SO	Batch ID: GN13193
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- The following samples were run outside of holding time for method SW846 9045C: D30587-1R, D30587-2R

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO	Batch ID: MP6558
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- D30587-1A, D30587-2A, D30587-3, D30587-4, D30587-5, D30587-6, and D30587-7A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States

Job No D30587

Site: ECOECO: Noble

Report Date 1/13/2012 11:43:14 AM

6 Sample(s) were collected on 12/21/2011 and were received at Accutest on 12/23/2011 properly preserved, at 1.8 Deg. C and intact. These Samples received an Accutest job number of D30587. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: SO

Batch ID: MSK1915

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC6814-5MS, MC6814-5MSD were used as the QC samples indicated.

Matrix: SO

Batch ID: MSK1920

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC6867-1MS, MC6867-1MSD were used as the QC samples indicated.
- MSK1920-MB for 4-Bromofluorobenzene: Outside control limits. Associated target analytes are non-detect.

Matrix: SO

Batch ID: MSV196

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30587-5MS, D30587-5MSD were used as the QC samples indicated.
- D30587-5MS/MSD for Xylene (total) are outside control limits due to high level in sample relative to spike amount.

Wet Chemistry By Method SW846 3060A/7196A

Matrix: SO

Batch ID: GP14035

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30848-1DUP, D30848-1MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D30587).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Method: SW846 8260B	
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	K57023.D	1	12/28/11	AMA	n/a	n/a	M:MSK1915
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.0 g	10.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	3540	44	11	ug/kg	
108-88-3	Toluene	26900	440	16	ug/kg	
100-41-4	Ethylbenzene	4670	180	12	ug/kg	
1330-20-7	Xylene (total)	78500	180	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		70-130%
2037-26-5	Toluene-D8	109%		70-130%
460-00-4	4-Bromofluorobenzene	130%		70-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC1	
Lab Sample ID: D30587-1	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8270C BY SIM SW846 3546	Percent Solids: 71.9
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07431.D	1	12/30/11	DC	12/29/11	OP5080	E3G277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	9.3	7.4	ug/kg	
208-96-8	Acenaphthylene	ND	9.3	8.3	ug/kg	
120-12-7	Anthracene	ND	9.3	8.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	23	12	ug/kg	
50-32-8	Benzo(a)pyrene	ND	23	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	23	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	23	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	23	10	ug/kg	
218-01-9	Chrysene	ND	23	10	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	23	17	ug/kg	
206-44-0	Fluoranthene	ND	9.3	9.3	ug/kg	
86-73-7	Fluorene	21.2	9.3	7.9	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	28	25	ug/kg	
90-12-0	1-Methylnaphthalene	174	9.3	6.9	ug/kg	
91-57-6	2-Methylnaphthalene	437	9.3	7.9	ug/kg	
91-20-3	Naphthalene	202	9.3	8.8	ug/kg	
85-01-8	Phenanthrene	13.4	9.3	6.5	ug/kg	
129-00-0	Pyrene	ND	9.3	8.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	21%		10-145%
321-60-8	2-Fluorobiphenyl	29%		10-130%
1718-51-0	Terphenyl-d14	43%		22-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.1
3

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Method: SW846 8015B	
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14415.D	1	12/27/11	SK	n/a	n/a	GGB815
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	395	18	8.8	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	107%		60-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.1
3

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Method: SW846-8015B SW846 3546	
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12572.D	1	12/28/11	TR	12/27/11	OP5072	GFD651
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	192	19	12	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	81%		43-136%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Project: Noble	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Mercury	< 0.13	0.13	mg/kg	1	12/27/11	12/27/11 JB	SW846 7471A ¹	SW846 7471A ²

(1) Instrument QC Batch: MA2076

(2) Prep QC Batch: MP6550

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Redox Potential Vs H2	309		mv	1	01/10/12 11:10	JK	ASTM D1498-76M
Solids, Percent	71.9		%	1	12/27/11	SWT	SM19 2540B M
Specific Conductivity	10300	1.0	umhos/cm	1	01/03/12	JD	DEPT.OF AG, BOOK N9
pH	8.55		su	1	12/27/11 15:20	JK	SW846 9045C

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1A	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Project: Noble	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	79.4	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	11.2	1.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	2180	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6558

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1A	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	60.6		ratio	1	12/28/11 13:04	JB	USDA HANDBOOK 60

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1R	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Project: Noble	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	7.0	3.6	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Barium	596	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Cadmium	< 1.4	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Chromium	11.9	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Copper	11.6	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Lead	9.7	7.2	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Nickel	12.4	4.3	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Selenium	< 7.2	7.2	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Silver	< 4.3	4.3	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Zinc	32.9	4.3	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6551

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC1	Date Sampled: 12/21/11
Lab Sample ID: D30587-1R	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 71.9
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	< 0.50	0.50	mg/kg	1	01/12/12 15:53	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	11.6	1.9	mg/kg	1	01/12/12 15:53	AMA	SW846 3060/7196A M
Redox Potential Vs H2	309		mv	1	01/10/12 11:10	JK	ASTM D1498-76M
pH	9.46		su	1	01/10/12 11:10	JK	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC2	
Lab Sample ID: D30587-2	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8260B	Percent Solids: 74.3
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	K57026.D	1	12/28/11	AMA	n/a	n/a	M:MSK1915
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	11.4 g	10.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	959	38	9.6	ug/kg	
108-88-3	Toluene	16500	380	14	ug/kg	
100-41-4	Ethylbenzene	2620	150	9.9	ug/kg	
1330-20-7	Xylene (total)	46400	150	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		70-130%
2037-26-5	Toluene-D8	109%		70-130%
460-00-4	4-Bromofluorobenzene	129%		70-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC2	
Lab Sample ID: D30587-2	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8270C BY SIM SW846 3546	Percent Solids: 74.3
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07432.D	1	12/30/11	DC	12/29/11	OP5080	E3G277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	9.0	7.2	ug/kg	
208-96-8	Acenaphthylene	ND	9.0	8.1	ug/kg	
120-12-7	Anthracene	ND	9.0	8.1	ug/kg	
56-55-3	Benzo(a)anthracene	ND	22	12	ug/kg	
50-32-8	Benzo(a)pyrene	ND	22	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	22	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	22	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	22	9.9	ug/kg	
218-01-9	Chrysene	ND	22	9.9	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	22	17	ug/kg	
206-44-0	Fluoranthene	ND	9.0	9.0	ug/kg	
86-73-7	Fluorene	45.2	9.0	7.6	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	27	25	ug/kg	
90-12-0	1-Methylnaphthalene	345	9.0	6.7	ug/kg	
91-57-6	2-Methylnaphthalene	916	9.0	7.6	ug/kg	
91-20-3	Naphthalene	325	9.0	8.5	ug/kg	
85-01-8	Phenanthrene	21.8	9.0	6.3	ug/kg	
129-00-0	Pyrene	ND	9.0	8.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	17%		10-145%
321-60-8	2-Fluorobiphenyl	27%		10-130%
1718-51-0	Terphenyl-d14	43%		22-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.4
3

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Method: SW846 8015B	
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14416.D	1	12/27/11	SK	n/a	n/a	GGB815
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	385	17	8.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	108%		60-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.4
3

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Method: SW846-8015B SW846 3546	
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12573.D	1	12/28/11	TR	12/27/11	OP5072	GFD651
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	240	18	12	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	70%		43-136%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Project: Noble	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Mercury	< 0.14	0.14	mg/kg	1	12/27/11	12/27/11 JB	SW846 7471A ¹	SW846 7471A ²

(1) Instrument QC Batch: MA2076

(2) Prep QC Batch: MP6550

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Redox Potential Vs H2	355		mv	1	01/10/12 11:10	JK	ASTM D1498-76M
Solids, Percent	74.3		%	1	12/27/11	SWT	SM19 2540B M
Specific Conductivity	9470	1.0	umhos/cm	1	01/03/12	JD	DEPT.OF AG, BOOK N9
pH	7.99		su	1	12/27/11 15:20	JK	SW846 9045C

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2A	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Project: Noble	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	128	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	19.0	1.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	1880	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6558

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2A	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	41.0		ratio	1	12/28/11 13:13	JB	USDA HANDBOOK 60

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2R	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Project: Noble	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	9.6	3.5	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Barium	228	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Cadmium	< 1.4	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Chromium	12.9	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Copper	16.4	1.4	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Lead	11.7	6.9	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Nickel	15.3	4.2	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Selenium	< 6.9	6.9	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Silver	< 4.2	4.2	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²
Zinc	38.9	4.2	mg/kg	1	12/27/11	12/28/11 JB	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6551

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC2	Date Sampled: 12/21/11
Lab Sample ID: D30587-2R	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 74.3
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	< 0.51	0.51	mg/kg	1	01/12/12 15:53	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	12.6	1.9	mg/kg	1	01/12/12 15:53	AMA	SW846 3060/7196A M
Redox Potential Vs H2	355		mv	1	01/10/12 11:10	JK	ASTM D1498-76M
pH	8.90		su	1	01/10/12 11:10	JK	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC3	
Lab Sample ID: D30587-3	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8260B	Percent Solids: 87.2
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	K57024.D	1	12/28/11	AMA	n/a	n/a	M:MSK1915
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	9.90 g	10.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	33	8.2	ug/kg	
108-88-3	Toluene	ND	330	12	ug/kg	
100-41-4	Ethylbenzene	ND	130	8.5	ug/kg	
1330-20-7	Xylene (total)	124	130	8.2	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		70-130%
2037-26-5	Toluene-D8	110%		70-130%
460-00-4	4-Bromofluorobenzene	119%		70-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

37
3

Client Sample ID: NOBLE122111-WC3	Date Sampled: 12/21/11
Lab Sample ID: D30587-3	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.2
Method: SW846 8015B	
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14417.D	1	12/27/11	SK	n/a	n/a	GGB815
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	99%		60-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

37
3

Client Sample ID: NOBLE122111-WC3	Date Sampled: 12/21/11
Lab Sample ID: D30587-3	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.2
Method: SW846-8015B SW846 3546	
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12574.D	1	12/28/11	TR	12/27/11	OP5072	GFD651
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	28.1	15	9.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	81%		43-136%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC3	Date Sampled: 12/21/11
Lab Sample ID: D30587-3	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.2
Project: Noble	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	52.7	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	10.2	1.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	19.3	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6558

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC3	Date Sampled: 12/21/11
Lab Sample ID: D30587-3	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.2
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	0.637		ratio	1	12/28/11 12:23	JB	USDA HANDBOOK 60
Solids, Percent	87.2		%	1	12/27/11	SWT	SM19 2540B M
Specific Conductivity	378	1.0	umhos/cm	1	01/03/12	JD	DEPT.OF AG, BOOK N9
pH	8.80		su	1	12/27/11 15:20	JK	SW846 9045C

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC4	Date Sampled: 12/21/11
Lab Sample ID: D30587-4	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 75.6
Method: SW846 8260B	
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	K57025.D	1	12/28/11	AMA	n/a	n/a	M:MSK1915
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.2 g	10.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	24.1	41	10	ug/kg	J
108-88-3	Toluene	356	410	15	ug/kg	J
100-41-4	Ethylbenzene	55.1	160	11	ug/kg	J
1330-20-7	Xylene (total)	1170	160	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		70-130%
2037-26-5	Toluene-D8	110%		70-130%
460-00-4	4-Bromofluorobenzene	123%		70-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC4	
Lab Sample ID: D30587-4	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8015B	Percent Solids: 75.6
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14418.D	1	12/27/11	SK	n/a	n/a	GGB815
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	9.84	16	8.1	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	97%		60-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID: NOBLE122111-WC4	Date Sampled: 12/21/11
Lab Sample ID: D30587-4	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 75.6
Method: SW846-8015B SW846 3546	
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12575.D	1	12/28/11	TR	12/27/11	OP5072	GFD651
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	46.5	18	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	84%		43-136%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC4	Date Sampled: 12/21/11
Lab Sample ID: D30587-4	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 75.6
Project: Noble	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	115	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	13.8	1.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	1640	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6558

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC4	Date Sampled: 12/21/11
Lab Sample ID: D30587-4	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 75.6
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	38.4		ratio	1	12/28/11 12:48	JB	USDA HANDBOOK 60
Solids, Percent	75.6		%	1	12/27/11	SWT	SM19 2540B M
Specific Conductivity	7820	1.0	umhos/cm	1	01/03/12	JD	DEPT.OF AG, BOOK N9
pH	9.31		su	1	12/27/11 15:20	JK	SW846 9045C

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC5	
Lab Sample ID: D30587-5	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8260B	Percent Solids: 81.3
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	V4403.D	1	01/04/12	AMA	n/a	n/a	M:MSV196
Run #2							

	Initial Weight	Final Volume
Run #1	2.48 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.5	1.2	0.31	ug/kg	
108-88-3	Toluene	38.3	12	0.44	ug/kg	
100-41-4	Ethylbenzene	19.5	5.0	0.32	ug/kg	
1330-20-7	Xylene (total)	901	5.0	0.31	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		70-130%
2037-26-5	Toluene-D8	102%		70-130%
460-00-4	4-Bromofluorobenzene	100%		70-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.9
3

Client Sample ID: NOBLE122111-WC5	
Lab Sample ID: D30587-5	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8015B	Percent Solids: 81.3
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14419.D	1	12/28/11	SK	n/a	n/a	GGB815
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	9.30	15	7.3	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	96%		60-140%		

ND = Not detected	MDL - Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

3.9
3

Client Sample ID: NOBLE122111-WC5	Date Sampled: 12/21/11
Lab Sample ID: D30587-5	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 81.3
Method: SW846-8015B SW846 3546	
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12576.D	1	12/28/11	TR	12/27/11	OP5072	GFD651
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	26.4	16	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	86%		43-136%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC5	Date Sampled: 12/21/11
Lab Sample ID: D30587-5	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 81.3
Project: Noble	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	182	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	25.4	1.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	1250	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6558

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC5	Date Sampled: 12/21/11
Lab Sample ID: D30587-5	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 81.3
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	23.0		ratio	1	12/28/11 11:53	JB	USDA HANDBOOK 60
Solids, Percent	81.3		%	1	12/27/11	SWT	SM19 2540B M
Specific Conductivity	6650	1.0	umhos/cm	1	01/03/12	JD	DEPT.OF AG, BOOK N9
pH	8.63		su	1	12/27/11 15:20	JK	SW846 9045C

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC6	
Lab Sample ID: D30587-6	Date Sampled: 12/21/11
Matrix: SO - Soil	Date Received: 12/23/11
Method: SW846 8260B	Percent Solids: 87.4
Project: Noble	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	K57143.D	1	01/03/12	AMA	n/a	n/a	M:MSK1920
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.7 g	10.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	30	7.6	ug/kg	
108-88-3	Toluene	ND	300	11	ug/kg	
100-41-4	Ethylbenzene	ND	120	7.9	ug/kg	
1330-20-7	Xylene (total)	ND	120	7.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	119%		70-130%
2037-26-5	Toluene-D8	111%		70-130%
460-00-4	4-Bromofluorobenzene	126%		70-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC6	Date Sampled: 12/21/11
Lab Sample ID: D30587-6	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.4
Method: SW846 8015B	
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14420.D	1	12/28/11	SK	n/a	n/a	GGB815
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	96%		60-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC6	Date Sampled: 12/21/11
Lab Sample ID: D30587-6	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.4
Method: SW846-8015B SW846 3546	
Project: Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12577.D	1	12/28/11	TR	12/27/11	OP5072	GFD651
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	13.7	15	9.9	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	86%		43-136%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: NOBLE122111-WC6	Date Sampled: 12/21/11
Lab Sample ID: D30587-6	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.4
Project: Noble	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	40.0	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	7.96	1.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	11.2	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6558

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-WC6	Date Sampled: 12/21/11
Lab Sample ID: D30587-6	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 87.4
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	0.423		ratio	1	12/28/11 12:57	JB	USDA HANDBOOK 60
Solids, Percent	87.4		%	1	12/27/11	SWT	SM19 2540B M
Specific Conductivity	296	1.0	umhos/cm	1	01/03/12	JD	DEPT.OF AG, BOOK N9
pH	8.10		su	1	12/27/11 15:20	JK	SW846 9045C

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-B	Date Sampled: 12/21/11
Lab Sample ID: D30587-7	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 86.0
Project: Noble	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.3	0.46	mg/kg	5	12/27/11	12/27/11 GJ	SW846 6020 ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2079

(2) Prep QC Batch: MP6552

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-B	Date Sampled: 12/21/11
Lab Sample ID: D30587-7	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 86.0
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent	86		%	1	12/27/11	SWT	SM19 2540B M
Specific Conductivity	276	1.0	umhos/cm	1	01/03/12	JD	DEPT.OF AG, BOOK N9
pH	8.49		su	1	12/27/11 15:20	JK	SW846 9045C

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-B	Date Sampled: 12/21/11
Lab Sample ID: D30587-7A	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 86.0
Project: Noble	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	52.4	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	10.2	1.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	7.46	2.0	mg/l	1	12/28/11	12/28/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2082

(2) Prep QC Batch: MP6558

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE122111-B	Date Sampled: 12/21/11
Lab Sample ID: D30587-7A	Date Received: 12/23/11
Matrix: SO - Soil	Percent Solids: 86.0
Project: Noble	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	0.247		ratio	1	12/28/11 13:23	JB	USDA HANDBOOK 60

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D30587

Client: ECOS

Immediate Client Services Action Required: No

Date / Time Received: 12/23/2011 10:00:00 A

No. Coolers: 1

Client Service Action Required at Login: No

Project: 45-O SPILL

Airbill #'s: FEDEX

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	Infrared gun	
3. Cooler media:	Ice (bag)	

<u>Quality Control Preservation</u>	<u>Y or N</u>		<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y or N</u>		<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

4.1
4

Job Change Order: D30587_1/9/2012

Requested: 1/9/2012
Account Name: Ecos Environmental
Project: Noble
CSR: RR

Received Date: 12/23/2011
Due Date: 1/16/2012
Deliverable: COMMBN
TAT (Days): 5

Change: Please log for Cu, Ni, and Zn to the R sample and the original so it can be retrieved from the original run.
Thank you.

Sample #:
D30587-1, 2

Above Changes Per: Asher Weinberg - Client
Date: 1/9/2012

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

Job Change Order: D30587 _ 1/9/2012

Requested: 1/9/2012
Account Name: Ecos Environmental
Project: Noble
CSR: RR

Received Date: 12/23/2011
Due Date: 1/3/2012
Deliverable: COMMBN
TAT (Days): 5

Sample #: D30587-1, 2
Change: Please log run for XXCRA and CR3 to an "R" sample for billing as well as the original for CR3 calc. Please log for a 5 day turn due 1/16/12. Thank you.

Above Changes Per: Asher Weinberg - Client **Date:** 1/9/2012

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

GC/MS Semi-volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D30587
Account: ECOEOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5080-MB	3G07426.D	1	12/30/11	DC	12/29/11	OP5080	E3G277

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30587-1, D30587-2

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	5.3	ug/kg	
208-96-8	Acenaphthylene	ND	6.7	6.0	ug/kg	
120-12-7	Anthracene	ND	6.7	6.0	ug/kg	
56-55-3	Benzo(a)anthracene	ND	17	8.7	ug/kg	
50-32-8	Benzo(a)pyrene	ND	17	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	17	12	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	17	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	17	7.3	ug/kg	
218-01-9	Chrysene	ND	17	7.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	17	12	ug/kg	
206-44-0	Fluoranthene	ND	6.7	6.7	ug/kg	
86-73-7	Fluorene	ND	6.7	5.7	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	18	ug/kg	
90-12-0	1-Methylnaphthalene	ND	6.7	5.0	ug/kg	
91-57-6	2-Methylnaphthalene	ND	6.7	5.7	ug/kg	
91-20-3	Naphthalene	ND	6.7	6.3	ug/kg	
85-01-8	Phenanthrene	ND	6.7	4.7	ug/kg	
129-00-0	Pyrene	ND	6.7	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
4165-60-0	Nitrobenzene-d5	83%	10-145%
321-60-8	2-Fluorobiphenyl	85%	10-130%
1718-51-0	Terphenyl-d14	105%	22-130%

5.1.1
5

Blank Spike Summary

Job Number: D30587
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5080-BS	3G07427.D	1	12/30/11	DC	12/29/11	OP5080	E3G277

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30587-1, D30587-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	64.4	77	34-130
208-96-8	Acenaphthylene	83.3	60.4	72	33-130
120-12-7	Anthracene	83.3	67.9	81	35-130
56-55-3	Benzo(a)anthracene	83.3	60.5	73	36-130
50-32-8	Benzo(a)pyrene	83.3	50.4	60	36-130
205-99-2	Benzo(b)fluoranthene	83.3	48.0	58	35-130
191-24-2	Benzo(g,h,i)perylene	83.3	59.3	71	31-130
207-08-9	Benzo(k)fluoranthene	83.3	70.5	85	37-130
218-01-9	Chrysene	83.3	65.9	79	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	50.3	60	32-130
206-44-0	Fluoranthene	83.3	64.0	77	38-130
86-73-7	Fluorene	83.3	67.4	81	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	51.2	61	28-130
90-12-0	1-Methylnaphthalene	83.3	66.5	80	33-130
91-57-6	2-Methylnaphthalene	83.3	66.4	80	32-130
91-20-3	Naphthalene	83.3	63.2	76	35-130
85-01-8	Phenanthrene	83.3	64.6	78	36-130
129-00-0	Pyrene	83.3	67.5	81	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	72%	10-145%
321-60-8	2-Fluorobiphenyl	69%	10-130%
1718-51-0	Terphenyl-d14	74%	22-130%

5.2.1
5

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30587
Account: ECOEOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5080-MS ^a	3G07429.D	4	12/30/11	DC	12/29/11	OP5080	E3G277
OP5080-MSD ^a	3G07430.D	4	12/30/11	DC	12/29/11	OP5080	E3G277
D30596-1 ^a	3G07428.D	4	12/30/11	DC	12/29/11	OP5080	E3G277

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30587-1, D30587-2

CAS No.	Compound	D30596-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	94.4	49.7	53	67.8	72	31* ^b	10-155/30
208-96-8	Acenaphthylene	ND	94.4	52.9	56	73.3	78	32* ^b	10-175/30
120-12-7	Anthracene	ND	94.4	66.7	71	75.9	80	13	10-155/30
56-55-3	Benzo(a)anthracene	ND	94.4	82.0	87	87.5	93	6	10-175/30
50-32-8	Benzo(a)pyrene	ND	94.4	68.3	72	73.5	78	7	10-164/30
205-99-2	Benzo(b)fluoranthene	ND	94.4	75.7	80	82.9	88	9	10-165/30
191-24-2	Benzo(g,h,i)perylene	ND	94.4	70.9	75	75.4	80	6	10-185/30
207-08-9	Benzo(k)fluoranthene	ND	94.4	61.8	65	65.1	69	5	10-178/30
218-01-9	Chrysene	ND	94.4	63.7	67	67.8	72	6	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND	94.4	74.2	79	74.4	79	0	10-144/30
206-44-0	Fluoranthene	ND	94.4	78.6	83	83.5	89	6	10-207/30
86-73-7	Fluorene	ND	94.4	61.5	65	76.6	81	22	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND	94.4	80	85	91.2	97	12	10-180/30
90-12-0	1-Methylnaphthalene	ND	94.4	41.1	44	72.5	77	55* ^b	10-222/30
91-57-6	2-Methylnaphthalene	ND	94.4	40.9	43	76.8	81	61* ^b	10-159/30
91-20-3	Naphthalene	ND	94.4	27	29	68.1	72	43* ^b	10-198/30
85-01-8	Phenanthrene	ND	94.4	61.4	65	69.2	73	12	10-146/30
129-00-0	Pyrene	ND	94.4	71.6	76	76.0	81	6	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D30596-1	Limits
4165-60-0	Nitrobenzene-d5	19%	60%	55%	10-145%
321-60-8	2-Fluorobiphenyl	44%	72%	70%	10-130%
1718-51-0	Terphenyl-d14	70%	76%	77%	22-130%

(a) Dilution required due to matrix interference; extract was viscous.

(b) Variability of recovery may be due to sample matrix/homogeneity.

5.3.1
5

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D30587
Account: ECOEOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB815-MB	GB14410.D	1	12/27/11	SK	n/a	n/a	GGB815

The QC reported here applies to the following samples:

Method: SW846 8015B

D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	108% 60-140%

Blank Spike Summary

Job Number: D30587
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB815-BS	GB14411.D	1	12/27/11	SK	n/a	n/a	GGB815

The QC reported here applies to the following samples:

Method: SW846 8015B

D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	113	103	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	113%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30587
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30594-1MS	GB14413.D	1	12/27/11	SK	n/a	n/a	GGB815
D30594-1MSD	GB14414.D	1	12/27/11	SK	n/a	n/a	GGB815
D30594-1	GB14412.D	1	12/27/11	SK	n/a	n/a	GGB815

The QC reported here applies to the following samples:

Method: SW846 8015B

D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6

CAS No.	Compound	D30594-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	136	138	101	139	102	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D30594-1	Limits
120-82-1	1,2,4-Trichlorobenzene	107%	112%	103%	60-140%

6.3.1
6

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D30587
Account: ECOEOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5072-MB	FD12567.D	1	12/27/11	TR	12/27/11	OP5072	GFD651

The QC reported here applies to the following samples:

Method: SW846-8015B

D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	92% 43-136%

7.1.1
7

Blank Spike Summary

Job Number: D30587
Account: ECOECOEA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5072-BS	FD12568.D	1	12/27/11	TR	12/27/11	OP5072	GFD651

The QC reported here applies to the following samples:

Method: SW846-8015B

D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	500	75	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	85%	43-136%

7.2.1

7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30587
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5072-MS	FD12569.D	1	12/27/11	TR	12/27/11	OP5072	GFD651
OP5072-MSD	FD12570.D	1	12/28/11	TR	12/27/11	OP5072	GFD651
D30596-1	FD12571.D	1	12/28/11	TR	12/27/11	OP5072	GFD651

The QC reported here applies to the following samples:

Method: SW846-8015B

D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6

CAS No.	Compound	D30596-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	53.3	754	497	59	567	68	13	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D30596-1	Limits
84-15-1	o-Terphenyl	79%	89%	87%	43-136%

7.3.1
7

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6550
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 12/27/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	-0.000040	<0.10

Associated samples MP6550: D30587-1, D30587-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

8.1.1

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6550
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 12/27/11

Metal	D30567-3 Original MS	SpikeLot HGWSR1	% Rec	QC Limits
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Mercury 0.10 0.11 0.394 2.5N (a) 85-115

Associated samples MP6550: D30587-1, D30587-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

8.1.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP6550
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 12/27/11

Metal	D30567-3 Original MSD	Spike HGWSR1	lot % Rec	MSD RPD	QC Limit
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Mercury 0.10 0.016 0.409 -20.5N(a) 149.2 (b)20

Associated samples MP6550: D30587-1, D30587-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

(b) High RPD due to possible sample matrix or nonhomogeneity.

8.1.2
8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6550
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 12/27/11

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.36	0.4	90.0	80-120

Associated samples MP6550: D30587-1, D30587-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

8.1.3
8

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6551
Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
Units: mg/kg

Prep Date: 12/27/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59	0.17	<2.5
Barium	1.0	.11	.11	0.040	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.040	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.020	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	0.070	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	-0.17	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	-0.040	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.090	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.14	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06	0.17	<3.0

Associated samples MP6551: D30587-1R, D30587-2R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6551
Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP6551
 Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
 Units: mg/kg

Prep Date: 12/27/11

Metal	D30595-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	5.4	113	119	90.1	75-125
Barium	251	460	239	87.5	75-125
Beryllium					
Boron					
Cadmium	0.23	53.3	59.7	88.9	75-125
Calcium					
Chromium	42.9	99.5	59.7	94.8	75-125
Cobalt					
Copper	8.7	66.0	59.7	96.0	75-125
Iron					
Lead	11.2	118	119	89.4	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	16.7	67.6	59.7	85.3	75-125
Phosphorus					
Potassium					
Selenium	2.0	106	119	87.1	75-125
Silicon					
Silver	0.0	21.8	23.9	91.3	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	41.7	93.6	59.7	86.9	75-125

Associated samples MP6551: D30587-1R, D30587-2R

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.2.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6551
Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

8.2.2

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
 Account: ECOEEOA - Ecos Environmental
 Project: Noble

QC Batch ID: MP6551
 Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
 Units: mg/kg

Prep Date: 12/27/11

Metal	D30595-1 Original	MSD	SpikeLot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	5.4	112	119	89.3	0.9	20
Barium	251	456	239	85.8	0.9	20
Beryllium						
Boron						
Cadmium	0.23	52.8	59.7	88.1	0.9	20
Calcium						
Chromium	42.9	97.6	59.7	91.6	1.9	20
Cobalt						
Copper	8.7	64.6	59.7	93.6	2.1	20
Iron						
Lead	11.2	116	119	87.8	1.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	16.7	67.1	59.7	84.4	0.7	20
Phosphorus						
Potassium						
Selenium	2.0	104	119	85.4	1.9	20
Silicon						
Silver	0.0	21.5	23.9	90.0	1.4	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	41.7	91.7	59.7	83.8	2.1	20

Associated samples MP6551: D30587-1R, D30587-2R

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.2.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6551
Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30587
 Account: ECOEEOA - Ecos Environmental
 Project: Noble

QC Batch ID: MP6551
 Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
 Units: mg/kg

Prep Date: 12/27/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	97.3	100	97.3	80-120
Barium	189	200	94.5	80-120
Beryllium				
Boron				
Cadmium	47.4	50	94.8	80-120
Calcium				
Chromium	49.0	50	98.0	80-120
Cobalt				
Copper	47.7	50	95.4	80-120
Iron				
Lead	97.8	100	97.8	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.2	50	94.4	80-120
Phosphorus				
Potassium				
Selenium	94.9	100	94.9	80-120
Silicon				
Silver	19.4	20	97.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.2	50	94.4	80-120

Associated samples MP6551: D30587-1R, D30587-2R

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.2.3
8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6551
Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

8.2.3

8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30587
 Account: ECOEEOA - Ecos Environmental
 Project: Noble

QC Batch ID: MP6551
 Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
 Units: ug/l

Prep Date: 12/27/11

Metal	D30595-1 Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	48.3	85.5	77.0 (a)	0-10
Barium	2230	2240	0.4	0-10
Beryllium				
Boron				
Cadmium	2.00	0.00	100.0(a)	0-10
Calcium				
Chromium	382	352	7.9	0-10
Cobalt				
Copper	77.5	63.5	18.1*(b)	0-10
Iron				
Lead	99.7	82.5	17.3*(b)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	148	142	4.5	0-10
Phosphorus				
Potassium				
Selenium	17.9	32.0	78.8 (a)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	370	375	1.2	0-10

Associated samples MP6551: D30587-1R, D30587-2R

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.2.4
8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6551
Matrix Type: SOLID

Methods: SW846 6010B, SW846 6010C
Units: ug/l

Prep Date:

Metal

- (anr) Analyte not requested
- (a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- (b) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6552
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 12/27/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	0.072	<0.40
Barium	1.0	.0035	.1		
Beryllium	0.10	.0075	.014		
Boron	20	.97	1		
Cadmium	0.050	.023	.048		
Calcium	200	1.8	8.2		
Chromium	1.0	.021	.24		
Cobalt	0.10	.0033	.003		
Copper	1.0	.011	.063		
Iron	20	.81	3.7		
Lead	0.25	.0012	.015		
Magnesium	50	.067	2.6		
Manganese	0.50	.007	.029		
Molybdenum	0.50	.0044	.023		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	3.2		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.002		
Sodium	250	.8	4.4		
Strontium	10	.004	.04		
Thallium	0.10	.015	.02		
Tin	5.0	.006	.028		
Titanium	1.0	.035	.062		
Uranium	0.25	.00038	.0009		
Vanadium	2.0	.052	.29		
Zinc	5.0	.039	.12		

Associated samples MP6552: D30587-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

8.3.1
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP6552
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 12/27/11

Metal	D30595-1 Original MS		SpikeLot MPICPALL % Rec	QC Limits
Aluminum				
Antimony				
Arsenic	5.5	124	119	99.2 75-125
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6552: D30587-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

8.3.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP6552
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 12/27/11

Metal	D30595-1 Original MSD		SpikeLot MPICPALL % Rec	MSD RPD	QC Limit	
Aluminum						
Antimony						
Arsenic	5.5	125	119	100.1	0.8	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6552: D30587-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

8.3.2
8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30587
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP6552
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 12/27/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	106	100	106.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6552: D30587-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

8.3.3
8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30587
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP6552
 Matrix Type: SOLID

Methods: SW846 6020
 Units: ug/l

Prep Date: 12/27/11

Metal	D30595-1			QC
	Original	SDL 5:25	%DIF	Limits

Aluminum				
Antimony				
Arsenic	48.6	52.4	7.8	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6552: D30587-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

8.3.4
 8

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6558
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date: 12/28/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	124	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	24.5	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	69.0	<2000
Strontium	25		1.3		
Thallium	50	15	15		
Tin	250	28	50		
Titanium	50	.55	1.6		
Uranium	250	7.5	18		
Vanadium	50	.8	1.1		
Zinc	150	1.4	9		

Associated samples MP6558: D30587-3, D30587-4, D30587-5, D30587-6, D30587-1A, D30587-2A, D30587-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6558
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

8.4.1

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
 Account: ECOEEOA - Ecos Environmental
 Project: Noble

QC Batch ID: MP6558
 Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
 Units: ug/l

Prep Date: 12/28/11

Metal	D30587-5 Original MS		Spike/lot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	182000	312000	125000	104.0	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	25400	149000	125000	98.9	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	1250000	1340000	125000	72.0 (a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6558: D30587-3, D30587-4, D30587-5, D30587-6, D30587-1A, D30587-2A, D30587-7A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.4.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6558
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
 Account: ECOEEOA - Ecos Environmental
 Project: Noble

QC Batch ID: MP6558
 Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
 Units: ug/l

Prep Date: 12/28/11

Metal	D30587-5 Original MSD		SpikeLot MPICPAL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	182000	312000	125000	104.0	0.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	25400	150000	125000	99.7	0.7	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	1250000	1350000	125000	80.0	0.7	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6558: D30587-3, D30587-4, D30587-5, D30587-6, D30587-1A, D30587-2A, D30587-7A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.4.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6558
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

8.4.2

8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30587
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP6558
 Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
 Units: ug/l

Prep Date: 12/28/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	133000	125000	106.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	125000	125000	100.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	125000	125000	100.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6558: D30587-3, D30587-4, D30587-5, D30587-6, D30587-1A, D30587-2A, D30587-7A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.4.3
8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP6558
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

8.4.3

8

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30587
Account: ECOECOEA - Ecos Environmental
Project: Noble

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6228/GN13106			umhos/cm	10008	9370	93.6	90-110%
pH	GN13046			su	8.00	7.98	99.8	99.3-100.7%
pH	GN13193			su	8.00	7.96	99.5	99.3-100.7%

Associated Samples:

Batch GN13046: D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6, D30587-7

Batch GN13193: D30587-1R, D30587-2R

Batch GP6228: D30587-1, D30587-2, D30587-3, D30587-4, D30587-5, D30587-6, D30587-7

(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30587
Account: ECOECO - Ecos Environmental
Project: Noble

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN13195	D30587-1	mv	309	311	0.6	0-20%

Associated Samples:

Batch GN13195: D30587-1, D30587-1R, D30587-2, D30587-2R

(*) Outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D30587

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 12/24/2011

Delivery Method:

Client Service Action Required at Login: No

Project:

No. Coolers: 1

Airbill #'s:

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. SmpI Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	Infrared gun	
3. Cooler media:	Ice (bag)	

<u>Quality Control Preservation</u>	<u>Y or N</u>		<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

GC/MS Volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK1915-MB	K57004.D	1	12/28/11	GK	n/a	n/a	MSK1915

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-1, D30587-2, D30587-3, D30587-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	25	6.3	ug/kg	
100-41-4	Ethylbenzene	ND	100	6.5	ug/kg	
108-88-3	Toluene	ND	250	9.0	ug/kg	
1330-20-7	Xylene (total)	ND	100	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	117% 70-130%
2037-26-5	Toluene-D8	110% 70-130%
460-00-4	4-Bromofluorobenzene	129% 70-130%



Method Blank Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK1920-MB	K57132.D	1	01/03/12	GK	n/a	n/a	MSK1920

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	25	6.3	ug/kg	
100-41-4	Ethylbenzene	ND	100	6.5	ug/kg	
108-88-3	Toluene	ND	250	9.0	ug/kg	
1330-20-7	Xylene (total)	ND	100	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	121% 70-130%
2037-26-5	Toluene-D8	108% 70-130%
460-00-4	4-Bromofluorobenzene	131% * a 70-130%

(a) Outside control limits. Associated target analytes are non-detect.

Method Blank Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSV196-MB	V4402.D	1	01/04/12	AMY	n/a	n/a	MSV196

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.13	ug/kg	
108-88-3	Toluene	ND	5.0	0.18	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	0.13	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	110% 70-130%
2037-26-5	Toluene-D8	104% 70-130%
460-00-4	4-Bromofluorobenzene	91% 70-130%

Method Blank Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK1920-MB1	K57163.D	1	01/04/12	GK	n/a	n/a	MSK1920

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6867-1MS, MC6867-1MSD

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	25	6.3	ug/kg	
100-41-4	Ethylbenzene	ND	100	6.5	ug/kg	
108-88-3	Toluene	ND	250	9.0	ug/kg	
1330-20-7	Xylene (total)	ND	100	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	119%	70-130%
2037-26-5	Toluene-D8	110%	70-130%
460-00-4	4-Bromofluorobenzene	129%	70-130%

Blank Spike Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK1920-BS	K57130.D	1	01/03/12	GK	n/a	n/a	MSK1920

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2570	103	70-130
100-41-4	Ethylbenzene	2500	2760	110	70-130
108-88-3	Toluene	2500	2680	107	70-130
1330-20-7	Xylene (total)	7500	8450	113	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	109%	70-130%
2037-26-5	Toluene-D8	105%	70-130%
460-00-4	4-Bromofluorobenzene	110%	70-130%

11.2.1
11

Blank Spike Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSV196-BS	V4400.D	1	01/04/12	AMY	n/a	n/a	MSV196

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	54.5	109	70-130
100-41-4	Ethylbenzene	50	50.1	100	70-130
108-88-3	Toluene	50	54.7	109	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	119%	70-130%
2037-26-5	Toluene-D8	109%	70-130%
460-00-4	4-Bromofluorobenzene	94%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK1915-BS	K57002.D	1	12/28/11	GK	n/a	n/a	MSK1915
MSK1915-BSD	K57003.D	1	12/28/11	GK	n/a	n/a	MSK1915

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-1, D30587-2, D30587-3, D30587-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	2500	2710	108	2650	106	2	70-130/25
100-41-4	Ethylbenzene	2500	2950	118	2910	116	1	70-130/25
108-88-3	Toluene	2500	2810	112	2750	110	2	70-130/25
1330-20-7	Xylene (total)	7500	8980	120	8790	117	2	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	113%	113%	70-130%
2037-26-5	Toluene-D8	113%	111%	70-130%
460-00-4	4-Bromofluorobenzene	118%	116%	70-130%

11.3.1

11

Blank Spike/Blank Spike Duplicate Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOEOCA: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSK1920-BS1	K57160.D	1	01/04/12	GK	n/a	n/a	MSK1920
MSK1920-BSD1	K57161.D	1	01/04/12	GK	n/a	n/a	MSK1920

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	2500	2790	112	2840	114	2	70-130/25
100-41-4	Ethylbenzene	2500	2970	119	3030	121	2	70-130/25
108-88-3	Toluene	2500	2840	114	2900	116	2	70-130/25
1330-20-7	Xylene (total)	7500	8960	119	9330	124	4	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	115%	119%	70-130%
2037-26-5	Toluene-D8	107%	108%	70-130%
460-00-4	4-Bromofluorobenzene	111%	113%	70-130%

11.3.2
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOEOCA: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6814-5MS	K57021.D	1	12/28/11	GK	n/a	n/a	MSK1915
MC6814-5MSD	K57022.D	1	12/28/11	GK	n/a	n/a	MSK1915
MC6814-5	K57020.D	1	12/28/11	GK	n/a	n/a	MSK1915

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-1, D30587-2, D30587-3, D30587-4

CAS No.	Compound	MC6814-5 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	2960	3300	112	3420	116	4	70-130/30
100-41-4	Ethylbenzene	ND	2960	3590	121	3720	126	4	70-130/30
108-88-3	Toluene	ND	2960	3430	116	3560	120	4	70-130/30
1330-20-7	Xylene (total)	112	8870	11000	123	11400	127	4	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC6814-5	Limits
1868-53-7	Dibromofluoromethane	111%	114%	124%	70-130%
2037-26-5	Toluene-D8	110%	114%	113%	70-130%
460-00-4	4-Bromofluorobenzene	117%	121%	125%	70-130%

11.4.1

11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOECO: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30587-5MS	V4410.D	1	01/04/12	AMY	n/a	n/a	MSV196
D30587-5MSD	V4411.D	1	01/04/12	AMY	n/a	n/a	MSV196
D30587-5	V4403.D	1	01/04/12	AMY	n/a	n/a	MSV196

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-5

CAS No.	Compound	D30587-5 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.5	107	123	113	145	119	16	70-130/30
100-41-4	Ethylbenzene	19.5	107	132	105	153	111	15	70-130/30
108-88-3	Toluene	38.3	107	146	100	170	109	15	70-130/30
1330-20-7	Xylene (total)	901	322	997	30* a	1140	66* a	13	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D30587-5	Limits
1868-53-7	Dibromofluoromethane	115%	116%	110%	70-130%
2037-26-5	Toluene-D8	108%	110%	102%	70-130%
460-00-4	4-Bromofluorobenzene	106%	106%	100%	70-130%

(a) Outside control limits due to high level in sample relative to spike amount.

11.4.2

11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30587
Account: ALMS Accutest Mountain States
Project: ECOEOCA: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6867-1MS	K57178.D	1	01/04/12	GK	n/a	n/a	MSK1920
MC6867-1MSD	K57179.D	1	01/04/12	GK	n/a	n/a	MSK1920
MC6867-1	K57144.D	1	01/03/12	GK	n/a	n/a	MSK1920

The QC reported here applies to the following samples:

Method: SW846 8260B

D30587-6

CAS No.	Compound	MC6867-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	2620	2970	113	3060	117	3	70-130/30
100-41-4	Ethylbenzene	ND	2620	3230	123	3320	127	3	70-130/30
108-88-3	Toluene	ND	2620	3100	118	3150	120	2	70-130/30
1330-20-7	Xylene (total)	ND	7860	9860	125	10200	130	3	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC6867-1	Limits
1868-53-7	Dibromofluoromethane	117%	117%	120%	70-130%
2037-26-5	Toluene-D8	111%	114%	109%	70-130%
460-00-4	4-Bromofluorobenzene	118%	119%	125%	70-130%

11.4.3

11

General Chemistry

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30587
Account: ALMS - Accutest Mountain States
Project: ECOECO: Noble

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP14035/GN37530	0.40	0.0	mg/kg	40	38.5	96.3	80-120%
Chromium, Hexavalent	GP14035/GN37530			mg/kg	1180	1260	106.8	80-120%

Associated Samples:

Batch GP14035: D30587-1R, D30587-2R

(*) Outside of QC limits

12.1
12

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30587
Account: ALMS - Accutest Mountain States
Project: ECOECO: Noble

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP14035/GN37530	D30848-1	mg/kg	0.24	0.20	18.2	0-20%

Associated Samples:

Batch GP14035: D30587-1R, D30587-2R

(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30587
Account: ALMS - Accutest Mountain States
Project: ECOECO: Noble

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP14035/GN37530	D30848-1	mg/kg	0.24	43.9	44.0	99.7	75-125%
Chromium, Hexavalent	GP14035/GN37530	D30848-1	mg/kg	0.24	922	1000	108.4	75-125%

Associated Samples:

Batch GP14035: D30587-1R, D30587-2R

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

12.3
12



January 20, 2012

Noble Energy Inc.

Asher Weinberg

804 Grand Avenue

Platteville CO 80651

Project Name - 35 O

Project Number - [none]

Attached are you analytical results for 35 O received by Origins Laboratory, Inc. January 16, 2012. This project is associated with Origins project number X201057-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody.

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



Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Asher Weinberg
Project Number: [none]
Project: 35 O

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WC7	X201057-01	Soil	January 13, 2012 9:55	01/16/2012 09:34
WC8	X201057-02	Soil	January 13, 2012 9:55	01/16/2012 09:34
WC9	X201057-03	Soil	January 13, 2012 9:55	01/16/2012 09:34
WC10	X201057-04	Soil	January 13, 2012 9:55	01/16/2012 09:34
WC11	X201057-05	Soil	January 13, 2012 9:55	01/16/2012 09:34

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.

Noelle E Doyle, President

Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 2201057 Client: Noble
 Client Project ID: 35 O
 Checklist Completed by: Jeff Smith Shipped Via: FedEx
 Date/time completed: 1/16/12 9:34 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: NA
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____ (Describe)
 Cooler Number/Temperature: 1 / 1.4 °C _____ / _____ °C _____ / _____ °C
 Thermometer ID: T001

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"/>	Soil
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"/>	Soil
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)

1.17.12
 Date/Time Reviewed

Origins Laboratory, Inc.



Noelle E Doyle, President

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.

Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

WC7
 1/13/2012 9:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X201057-01 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.0040	mg/kg	1	2A16007	01/16/2012	01/19/2012	
Toluene	0.0103	0.0040	"	"	"	"	"	
Ethylbenzene	ND	0.0040	"	"	"	"	"	
Xylenes, total	0.0456	0.0040	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	98.8 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.3 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	2A16008	01/16/2012	01/18/2012	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	99.6 %	65-125			"	"	"	
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Origins Laboratory, Inc.



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Noelle E Doyle, President

Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

WC8
 1/13/2012 9:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X201057-02 (Soil)

BTEX by EPA 8260C

Benzene	0.0416	0.0040	mg/kg	1	2A16007	01/16/2012	01/20/2012	
Toluene	0.238	0.0040	"	"	"	"	"	
Ethylbenzene	0.0240	0.0040	"	"	"	"	"	
Xylenes, total	0.408	0.0040	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	99.3 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.0 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	2A16008	01/16/2012	01/18/2012	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	86.5 %	65-125			"	"	"	
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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

WC9

1/13/2012 9:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X201057-03 (Soil)

BTEX by EPA 8260C

Benzene	0.0364	0.0040	mg/kg	1	2A16007	01/16/2012	01/20/2012	
Toluene	0.200	0.0040	"	"	"	"	"	
Ethylbenzene	0.0067	0.0040	"	"	"	"	"	
Xylenes, total	0.429	0.0040	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	99.6 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.3 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.7 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	2A16008	01/16/2012	01/18/2012	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	79.9 %	65-125			"	"	"	
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Origins Laboratory, Inc.



Noelle E Doyle, President

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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

WC10
 1/13/2012 9:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X201057-04 (Soil)

BTEX by EPA 8260C

Benzene	0.0700	0.0040	mg/kg	1	2A16007	01/16/2012	01/20/2012	
Toluene	0.512	0.0040	"	"	"	"	"	
Ethylbenzene	0.0763	0.0040	"	"	"	"	"	
Xylenes, total	1.13	0.0040	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	98.7 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.5 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	2A16008	01/16/2012	01/18/2012	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	74.1 %	65-125			"	"	"	
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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

WC11
 1/13/2012 9:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X201057-05 (Soil)

BTEX by EPA 8260C

Benzene	1.89	0.200	mg/kg	50	2A16007	01/16/2012	01/20/2012	
Toluene	116	2.00	"	500	"	"	01/20/2012	
Ethylbenzene	10.8	0.200	"	50	"	"	01/20/2012	
Xylenes, total	350	2.00	"	500	"	"	01/20/2012	

Surrogate: 1,2-Dichloroethane-d4	100 %	70-130			"	"	01/20/2012	
Surrogate: Toluene-d8	104 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	119 %	70-130			"	"	"	

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

Gasoline (C6-C10)	1330	50.0	mg/kg	1	2A16008	01/16/2012	01/18/2012	
Diesel (C10-C28)	511	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	91.1 %	65-125			"	"	"	
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Origins Laboratory, Inc.



Noelle E Doyle, President

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 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

Blank (2A16007-BLK1)

Prepared: 01/16/2012 Analyzed: 01/19/2012

Benzene	ND	0.004	mg/kg							
Toluene	ND	0.004	"							
Ethylbenzene	ND	0.004	"							
Xylenes, total	ND	0.004	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	62		ug/L	62.5		99.6	70-130			
<i>Surrogate: Toluene-d8</i>	62		"	62.5		99.9	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	59		"	62.5		94.0	70-130			

Origins Laboratory, Inc.



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Noelle E Doyle, President

Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

Blank (2A16007-BLK2)

Prepared: 01/16/2012 Analyzed: 01/19/2012

Benzene	ND	0.004	mg/kg							
Toluene	ND	0.004	"							
Ethylbenzene	ND	0.004	"							
Xylenes, total	ND	0.004	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>63</i>		<i>ug/L</i>	<i>62.5</i>		<i>100</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>63</i>		<i>"</i>	<i>62.5</i>		<i>100</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>59</i>		<i>"</i>	<i>62.5</i>		<i>95.1</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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Noelle E Doyle, President

Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

LCS (2A16007-BS1)

Prepared: 01/16/2012 Analyzed: 01/18/2012

Benzene	0.2	0.004	mg/kg	0.200		106	70-130			
Toluene	0.2	0.004	"	0.200		101	70-130			
Ethylbenzene	0.2	0.004	"	0.200		98.9	70-130			
m,p-Xylene	0.4	0.008	"	0.400		96.9	70-130			
o-Xylene	0.2	0.004	"	0.200		96.5	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>61</i>		<i>ug/L</i>	<i>62.5</i>		<i>98.1</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>62</i>		<i>"</i>	<i>62.5</i>		<i>99.9</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>60</i>		<i>"</i>	<i>62.5</i>		<i>95.2</i>	<i>70-130</i>			

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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

LCS (2A16007-BS2)

Prepared: 01/16/2012 Analyzed: 01/18/2012

Benzene	0.2	0.004	mg/kg	0.200		105	70-130			
Toluene	0.2	0.004	"	0.200		99.7	70-130			
Ethylbenzene	0.2	0.004	"	0.200		98.9	70-130			
m,p-Xylene	0.4	0.008	"	0.400		96.8	70-130			
o-Xylene	0.2	0.004	"	0.200		96.6	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>63</i>		<i>ug/L</i>	<i>62.5</i>		<i>100</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>62</i>		<i>"</i>	<i>62.5</i>		<i>99.2</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>61</i>		<i>"</i>	<i>62.5</i>		<i>97.1</i>	<i>70-130</i>			

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Noelle E Doyle, President

Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

Matrix Spike (2A16007-MS1)	Source: X201043-01			Prepared: 01/16/2012 Analyzed: 01/18/2012						
Benzene	0.2	0.004	mg/kg	0.200	0.01	97.8	70-130			
Toluene	0.2	0.004	"	0.200	0.03	91.8	70-130			
Ethylbenzene	0.2	0.004	"	0.200	0.01	91.1	70-130			
m,p-Xylene	0.4	0.008	"	0.400	0.02	87.8	70-130			
o-Xylene	0.2	0.004	"	0.200	0.01	87.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	62		ug/L	62.5		99.2	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		93.5	70-130			

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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

Matrix Spike (2A16007-MS2)	Source: X201057-01			Prepared: 01/16/2012 Analyzed: 01/18/2012						
Benzene	0.2	0.004	mg/kg	0.200	ND	105	70-130			
Toluene	0.2	0.004	"	0.200	0.01	101	70-130			
Ethylbenzene	0.2	0.004	"	0.200	0.002	97.2	70-130			
m,p-Xylene	0.4	0.008	"	0.400	0.04	97.5	70-130			
o-Xylene	0.2	0.004	"	0.200	0.007	94.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	62		ug/L	62.5		99.5	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.8	70-130			

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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

Matrix Spike Dup (2A16007-MSD1)	Source: X201043-01			Prepared: 01/16/2012 Analyzed: 01/19/2012						
Benzene	0.2	0.004	mg/kg	0.200	0.01	99.7	70-130	1.83	20	
Toluene	0.2	0.004	"	0.200	0.03	93.4	70-130	1.54	20	
Ethylbenzene	0.2	0.004	"	0.200	0.01	91.1	70-130	0.0617	20	
m,p-Xylene	0.4	0.008	"	0.400	0.02	89.1	70-130	1.40	20	
o-Xylene	0.2	0.004	"	0.200	0.01	88.5	70-130	0.831	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>63</i>		<i>ug/L</i>	<i>62.5</i>		<i>101</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>63</i>		<i>"</i>	<i>62.5</i>		<i>101</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>59</i>		<i>"</i>	<i>62.5</i>		<i>94.8</i>	<i>70-130</i>			

Origins Laboratory, Inc.



Noelle E Doyle, President

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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 2A16007 - EPA 5030 (soil)

Matrix Spike Dup (2A16007-MSD2)	Source: X201057-01			Prepared: 01/16/2012 Analyzed: 01/19/2012						
Benzene	0.2	0.004	mg/kg	0.200	ND	101	70-130	4.06	20	
Toluene	0.2	0.004	"	0.200	0.01	98.1	70-130	3.09	20	
Ethylbenzene	0.2	0.004	"	0.200	0.002	94.9	70-130	2.31	20	
m,p-Xylene	0.4	0.008	"	0.400	0.04	95.0	70-130	2.42	20	
o-Xylene	0.2	0.004	"	0.200	0.007	94.1	70-130	0.835	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>61</i>		<i>ug/L</i>	<i>62.5</i>		<i>97.8</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>63</i>		<i>"</i>	<i>62.5</i>		<i>100</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>59</i>		<i>"</i>	<i>62.5</i>		<i>94.0</i>	<i>70-130</i>			

Origins Laboratory, Inc.



Noelle E Doyle, President

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Noble Energy Inc.
 804 Grand Avenue
 Platteville CO 80651

Asher Weinberg
 Project Number: [none]
 Project: 35 O

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 8015M - 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 2A16008 - Default Prep GC-Semi

Blank (2A16008-BLK1)

Prepared: 01/16/2012 Analyzed: 01/18/2012

Gasoline (C6-C10) ND 50.0 mg/kg
 Diesel (C10-C28) ND 50.0 "

Surrogate: o-Terphenyl 50 g 50.0 99.2 65-125

LCS (2A16008-BS1)

Prepared: 01/16/2012 Analyzed: 01/18/2012

Gasoline (C6-C10) 788 50.0 mg/kg 1000 78.8 70-130
 Diesel (C10-C28) 899 50.0 " 1000 89.9 70-130

Surrogate: o-Terphenyl 45 g 50.0 89.2 65-125

Matrix Spike (2A16008-MS1)

Source: X201057-01

Prepared: 01/16/2012 Analyzed: 01/18/2012

Gasoline (C6-C10) 770 50.0 mg/kg 1000 15.7 75.4 70-130
 Diesel (C10-C28) 883 50.0 " 1000 10.8 87.2 70-130

Surrogate: o-Terphenyl 39 g 50.0 77.3 65-125

Matrix Spike Dup (2A16008-MSD1)

Source: X201057-01

Prepared: 01/16/2012 Analyzed: 01/18/2012

Gasoline (C6-C10) 859 50.0 mg/kg 1000 15.7 84.3 70-130 11.0 20
 Diesel (C10-C28) 969 50.0 " 1000 10.8 95.8 70-130 9.32 20

Surrogate: o-Terphenyl 44 g 50.0 88.0 65-125

Origins Laboratory, Inc.



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Noelle E Doyle, President

Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Asher Weinberg
Project Number: [none]
Project: 35 O

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit
RPD Relative Percent Difference

Origins Laboratory, Inc.



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Noelle E Doyle, President



13-Jul-2012

Asher Weinberg
Noble Energy
505 B East 8th Avenue
Yuma, Colorado 80759

Tel: (970) 625-1494
Fax: (970) 625-1654

Re: CO - Table 910

Work Order: **12061024**

Dear Asher,

ALS Environmental received 12 samples on 23-Jun-2012 09:25 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 25.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in cursive script that reads "Patricia L. Lynch".

Electronically approved by: Patricia L. Lynch

Patricia L. Lynch
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Noble Energy
Project: CO - Table 910
Work Order: 12061024

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
12061024-01	Land Farm 01	Soil		6/22/2012 12:04	6/23/2012 09:25	<input type="checkbox"/>
12061024-02	B2	Soil		6/22/2012 12:04	6/23/2012 09:25	<input type="checkbox"/>
12061024-03	B3	Soil		6/22/2012 12:04	6/23/2012 09:25	<input type="checkbox"/>
12061024-04	B4	Soil		6/22/2012 12:04	6/23/2012 09:25	<input type="checkbox"/>
12061024-05	WC14	Soil		6/22/2012 12:00	6/23/2012 09:25	<input type="checkbox"/>
12061024-06	WC12	Soil		6/22/2012 12:00	6/23/2012 09:25	<input type="checkbox"/>
12061024-07	WC13	Soil		6/22/2012 12:00	6/23/2012 09:25	<input type="checkbox"/>
12061024-08	WC11	Soil		6/22/2012 12:00	6/23/2012 09:25	<input type="checkbox"/>
12061024-09	WC1	Soil		6/22/2012 11:22	6/23/2012 09:25	<input type="checkbox"/>
12061024-10	WC2	Soil		6/22/2012 11:22	6/23/2012 09:25	<input type="checkbox"/>
12061024-11	WC4	Soil		6/22/2012 11:45	6/23/2012 09:25	<input type="checkbox"/>
12061024-12	WC5	Soil		6/22/2012 11:45	6/23/2012 09:25	<input type="checkbox"/>

Client: Noble Energy
Project: CO - Table 910
Work Order: 12061024

Case Narrative

Due to an oversight in the laboratory, samples B2,B3 and B4 were disposed prior to completion of the requested metals analyses.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
Project: CO - Table 910
Sample ID: Land Farm 01
Collection Date: 6/22/2012 12:04 PM

Work Order: 12061024
Lab ID: 12061024-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TPH AND MISCELLANEOUS GCFID			SW8015M				Analyst: KMB
DRO (>C10 - C28)	13		1.7 mg/Kg		1	6/26/2012	6/27/2012 03:30 PM
<i>Surr: 2-Fluorobiphenyl</i>	83.1		60-135 %REC		1	6/26/2012	6/27/2012 03:30 PM
GASOLINE RANGE ORGANICS - SW8015C			SW8015				Analyst: KKP
Gasoline Range Organics	ND		0.050 mg/Kg		1	6/26/2012	6/26/2012 08:06 PM
<i>Surr: 4-Bromofluorobenzene</i>	94.9		70-130 %REC		1	6/26/2012	6/26/2012 08:06 PM
VOLATILES			SW8260				Analyst: WLR
Benzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:26 PM
Ethylbenzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:26 PM
m,p-Xylene	ND		0.010 mg/Kg		1	6/26/2012	6/26/2012 12:26 PM
o-Xylene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:26 PM
Toluene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:26 PM
Xylenes, Total	ND		0.015 mg/Kg		1	6/26/2012	6/26/2012 12:26 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	74.7		70-128 %REC		1	6/26/2012	6/26/2012 12:26 PM
<i>Surr: 4-Bromofluorobenzene</i>	93.2		73-126 %REC		1	6/26/2012	6/26/2012 12:26 PM
<i>Surr: Dibromofluoromethane</i>	95.0		71-128 %REC		1	6/26/2012	6/26/2012 12:26 PM
<i>Surr: Toluene-d8</i>	95.9		73-127 %REC		1	6/26/2012	6/26/2012 12:26 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
 Project: CO - Table 910
 Sample ID: WC14
 Collection Date: 6/22/2012 12:00 PM

Work Order: 12061024
 Lab ID: 12061024-05
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TPH AND MISCELLANEOUS GCFID			SW8015M				Analyst: KMB
DRO (>C10 - C28)	39		1.7 mg/Kg		1	6/26/2012	6/27/2012 03:51 PM
Surr: 2-Fluorobiphenyl	76.3		60-135 %REC		1	6/26/2012	6/27/2012 03:51 PM
GASOLINE RANGE ORGANICS - SW8015C			SW8015				Analyst: KKP
Gasoline Range Organics	ND		0.050 mg/Kg		1	6/26/2012	6/26/2012 06:53 PM
Surr: 4-Bromofluorobenzene	97.8		70-130 %REC		1	6/26/2012	6/26/2012 06:53 PM
VOLATILES			SW8260				Analyst: WLR
Benzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:50 PM
Ethylbenzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:50 PM
m,p-Xylene	ND		0.010 mg/Kg		1	6/26/2012	6/26/2012 12:50 PM
o-Xylene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:50 PM
Toluene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 12:50 PM
Xylenes, Total	ND		0.015 mg/Kg		1	6/26/2012	6/26/2012 12:50 PM
Surr: 1,2-Dichloroethane-d4	77.4		70-128 %REC		1	6/26/2012	6/26/2012 12:50 PM
Surr: 4-Bromofluorobenzene	93.7		73-126 %REC		1	6/26/2012	6/26/2012 12:50 PM
Surr: Dibromofluoromethane	94.0		71-128 %REC		1	6/26/2012	6/26/2012 12:50 PM
Surr: Toluene-d8	98.5		73-127 %REC		1	6/26/2012	6/26/2012 12:50 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
 Project: CO - Table 910
 Sample ID: WC12
 Collection Date: 6/22/2012 12:00 PM

Work Order: 12061024
 Lab ID: 12061024-06
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TPH AND MISCELLANEOUS GCFID			SW8015M				Analyst: KMB
DRO (>C10 - C28)	35		1.7 mg/Kg		1	6/26/2012	6/27/2012 04:13 PM
Surr: 2-Fluorobiphenyl	74.7		60-135 %REC		1	6/26/2012	6/27/2012 04:13 PM
GASOLINE RANGE ORGANICS - SW8015C			SW8015				Analyst: KKP
Gasoline Range Organics	ND		0.050 mg/Kg		1	6/26/2012	6/26/2012 07:11 PM
Surr: 4-Bromofluorobenzene	89.3		70-130 %REC		1	6/26/2012	6/26/2012 07:11 PM
VOLATILES			SW8260				Analyst: WLR
Benzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:13 PM
Ethylbenzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:13 PM
m,p-Xylene	ND		0.010 mg/Kg		1	6/26/2012	6/26/2012 01:13 PM
o-Xylene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:13 PM
Toluene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:13 PM
Xylenes, Total	ND		0.015 mg/Kg		1	6/26/2012	6/26/2012 01:13 PM
Surr: 1,2-Dichloroethane-d4	77.2		70-128 %REC		1	6/26/2012	6/26/2012 01:13 PM
Surr: 4-Bromofluorobenzene	92.4		73-126 %REC		1	6/26/2012	6/26/2012 01:13 PM
Surr: Dibromofluoromethane	91.7		71-128 %REC		1	6/26/2012	6/26/2012 01:13 PM
Surr: Toluene-d8	96.0		73-127 %REC		1	6/26/2012	6/26/2012 01:13 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
Project: CO - Table 910
Sample ID: WC13
Collection Date: 6/22/2012 12:00 PM

Work Order: 12061024
Lab ID: 12061024-07
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TPH AND MISCELLANEOUS GCFID			SW8015M				Analyst: KMB
DRO (>C10 - C28)	43		1.7 mg/Kg		1	6/26/2012	6/27/2012 04:34 PM
<i>Surr: 2-Fluorobiphenyl</i>	70.1		60-135 %REC		1	6/26/2012	6/27/2012 04:34 PM
GASOLINE RANGE ORGANICS - SW8015C			SW8015				Analyst: KKP
Gasoline Range Organics	ND		0.050 mg/Kg		1	6/26/2012	6/26/2012 07:29 PM
<i>Surr: 4-Bromofluorobenzene</i>	90.0		70-130 %REC		1	6/26/2012	6/26/2012 07:29 PM
VOLATILES			SW8260				Analyst: WLR
Benzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:37 PM
Ethylbenzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:37 PM
m,p-Xylene	ND		0.010 mg/Kg		1	6/26/2012	6/26/2012 01:37 PM
o-Xylene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:37 PM
Toluene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 01:37 PM
Xylenes, Total	ND		0.015 mg/Kg		1	6/26/2012	6/26/2012 01:37 PM
<i>Surr: 1,2-Dichloroethane-d4</i>	74.3		70-128 %REC		1	6/26/2012	6/26/2012 01:37 PM
<i>Surr: 4-Bromofluorobenzene</i>	91.5		73-126 %REC		1	6/26/2012	6/26/2012 01:37 PM
<i>Surr: Dibromofluoromethane</i>	93.3		71-128 %REC		1	6/26/2012	6/26/2012 01:37 PM
<i>Surr: Toluene-d8</i>	98.8		73-127 %REC		1	6/26/2012	6/26/2012 01:37 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
 Project: CO - Table 910
 Sample ID: WC11
 Collection Date: 6/22/2012 12:00 PM

Work Order: 12061024
 Lab ID: 12061024-08
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TPH AND MISCELLANEOUS GCFID			SW8015M				Analyst: KMB
DRO (>C10 - C28)	29		1.7 mg/Kg		1	6/26/2012	6/27/2012 02:47 PM
Surr: 2-Fluorobiphenyl	63.9		60-135 %REC		1	6/26/2012	6/27/2012 02:47 PM
GASOLINE RANGE ORGANICS - SW8015C			SW8015				Analyst: KKP
Gasoline Range Organics	0.86		0.050 mg/Kg		1	6/26/2012	6/26/2012 07:48 PM
Surr: 4-Bromofluorobenzene	76.8		70-130 %REC		1	6/26/2012	6/26/2012 07:48 PM
VOLATILES			SW8260				Analyst: WLR
Benzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 02:01 PM
Ethylbenzene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 02:01 PM
m,p-Xylene	ND		0.010 mg/Kg		1	6/26/2012	6/26/2012 02:01 PM
o-Xylene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 02:01 PM
Toluene	ND		0.0050 mg/Kg		1	6/26/2012	6/26/2012 02:01 PM
Xylenes, Total	ND		0.015 mg/Kg		1	6/26/2012	6/26/2012 02:01 PM
Surr: 1,2-Dichloroethane-d4	75.7		70-128 %REC		1	6/26/2012	6/26/2012 02:01 PM
Surr: 4-Bromofluorobenzene	91.4		73-126 %REC		1	6/26/2012	6/26/2012 02:01 PM
Surr: Dibromofluoromethane	95.7		71-128 %REC		1	6/26/2012	6/26/2012 02:01 PM
Surr: Toluene-d8	96.0		73-127 %REC		1	6/26/2012	6/26/2012 02:01 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
 Project: CO - Table 910
 Sample ID: WC1
 Collection Date: 6/22/2012 11:22 AM

Work Order: 12061024
 Lab ID: 12061024-09
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TPH AND MISCELLANEOUS GCFID			SW8015M				Analyst: KMB
DRO (>C10 - C28)	2.7		1.7	mg/Kg	1	6/26/2012	6/27/2012 03:09 PM
Surr: 2-Fluorobiphenyl	65.3		60-135	%REC	1	6/26/2012	6/27/2012 03:09 PM
GASOLINE RANGE ORGANICS - SW8015C			SW8015				Analyst: KKP
Gasoline Range Organics	ND		0.050	mg/Kg	1	6/26/2012	6/26/2012 09:00 PM
Surr: 4-Bromofluorobenzene	89.6		70-130	%REC	1	6/26/2012	6/26/2012 09:00 PM
LA29B SODIUM ADSORPTION RATIO			LA29B SAR				Analyst: ALR
Sodium Adsorption Ratio	5.34		0.0100	meq/meq	1	7/3/2012	7/5/2012
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR			LA29B-6020				Analyst: SKS
Calcium	131		24.9	mg/L	50	7/3/2012	7/3/2012 05:56 PM
Magnesium	17.3		9.95	mg/L	50	7/3/2012	7/3/2012 05:56 PM
Sodium	245		24.9	mg/L	50	7/3/2012	7/3/2012 05:56 PM
VOLATILES			SW8260				Analyst: WLR
Benzene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:25 PM
Ethylbenzene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:25 PM
m,p-Xylene	ND		0.010	mg/Kg	1	6/26/2012	6/26/2012 02:25 PM
o-Xylene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:25 PM
Toluene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:25 PM
Xylenes, Total	ND		0.015	mg/Kg	1	6/26/2012	6/26/2012 02:25 PM
Surr: 1,2-Dichloroethane-d4	74.9		70-128	%REC	1	6/26/2012	6/26/2012 02:25 PM
Surr: 4-Bromofluorobenzene	92.5		73-126	%REC	1	6/26/2012	6/26/2012 02:25 PM
Surr: Dibromofluoromethane	96.4		71-128	%REC	1	6/26/2012	6/26/2012 02:25 PM
Surr: Toluene-d8	95.9		73-127	%REC	1	6/26/2012	6/26/2012 02:25 PM
LA29B ELECTRICAL CONDUCTIVITY			LADNR-29B EC				Analyst: TDW
Electrical Conductivity @ saturation	4.17		0.0100	mmhos/cm @25	1		7/5/2012 04:00 PM
Electrical Conductivity, 1:1 aqueous	2.25		0.0100	mmhos/cm @25	1		7/5/2012 04:00 PM
LA29B SATURATION POINT			LADNR-29B SP				Analyst: KAH
Saturation Point	0.540		0.100	% Saturation as	1		7/2/2012 11:00 AM
MOISTURE			SW3550				Analyst: KAH
Percent Moisture	25.3		0.0100	wt%	1		6/30/2012 09:40 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
Project: CO - Table 910
Sample ID: WC2
Collection Date: 6/22/2012 11:22 AM

Work Order: 12061024
Lab ID: 12061024-10
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TPH AND MISCELLANEOUS GCFID			SW8015M				Analyst: KMB
DRO (>C10 - C28)	9.7		1.7	mg/Kg	1	6/26/2012	6/27/2012 03:30 PM
Surr: 2-Fluorobiphenyl	62.8		60-135	%REC	1	6/26/2012	6/27/2012 03:30 PM
GASOLINE RANGE ORGANICS - SW8015C			SW8015				Analyst: KKP
Gasoline Range Organics	ND		0.050	mg/Kg	1	6/26/2012	6/26/2012 09:18 PM
Surr: 4-Bromofluorobenzene	86.2		70-130	%REC	1	6/26/2012	6/26/2012 09:18 PM
LA29B SODIUM ADSORPTION RATIO			LA29B SAR				Analyst: ALR
Sodium Adsorption Ratio	3.90		0.0100	meq/meq	1	7/3/2012	7/5/2012
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR			LA29B-6020				Analyst: SKS
Calcium	16.0		4.98	mg/L	10	7/3/2012	7/3/2012 05:58 PM
Magnesium	3.91		1.99	mg/L	10	7/3/2012	7/3/2012 05:58 PM
Sodium	67.1		4.98	mg/L	10	7/3/2012	7/3/2012 05:58 PM
VOLATILES			SW8260				Analyst: WLR
Benzene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:49 PM
Ethylbenzene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:49 PM
m,p-Xylene	ND		0.010	mg/Kg	1	6/26/2012	6/26/2012 02:49 PM
o-Xylene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:49 PM
Toluene	ND		0.0050	mg/Kg	1	6/26/2012	6/26/2012 02:49 PM
Xylenes, Total	ND		0.015	mg/Kg	1	6/26/2012	6/26/2012 02:49 PM
Surr: 1,2-Dichloroethane-d4	74.4		70-128	%REC	1	6/26/2012	6/26/2012 02:49 PM
Surr: 4-Bromofluorobenzene	94.0		73-126	%REC	1	6/26/2012	6/26/2012 02:49 PM
Surr: Dibromofluoromethane	91.4		71-128	%REC	1	6/26/2012	6/26/2012 02:49 PM
Surr: Toluene-d8	96.8		73-127	%REC	1	6/26/2012	6/26/2012 02:49 PM
LA29B ELECTRICAL CONDUCTIVITY			LADNR-29B EC				Analyst: TDW
Electrical Conductivity @ saturation	3.90		0.0100	mmhos/cm @25	1		7/5/2012 04:00 PM
Electrical Conductivity, 1:1 aqueous	2.27		0.0100	mmhos/cm @25	1		7/5/2012 04:00 PM
LA29B SATURATION POINT			LADNR-29B SP				Analyst: KAH
Saturation Point	0.581		0.100	% Saturation as	1		7/2/2012 11:00 AM
MOISTURE			SW3550				Analyst: KAH
Percent Moisture	28.4		0.0100	wt%	1		6/30/2012 09:40 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
 Project: CO - Table 910
 Sample ID: WC4
 Collection Date: 6/22/2012 11:45 AM

Work Order: 12061024
 Lab ID: 12061024-11
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
LA29B SODIUM ADSORPTION RATIO			LA29B SAR				Analyst: ALR
Sodium Adsorption Ratio	3.27		0.0100 meq/meq		1	7/3/2012	7/5/2012
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR			LA29B-6020				Analyst: SKS
Calcium	121		4.99 mg/L		10	7/3/2012	7/3/2012 06:01 PM
Magnesium	13.3		4.99 mg/L		10	7/3/2012	7/3/2012 06:01 PM
Sodium	142		4.99 mg/L		10	7/3/2012	7/3/2012 06:01 PM
LA29B ELECTRICAL CONDUCTIVITY			LADNR-29B EC				Analyst: TDW
Electrical Conductivity @ saturation	2.77		0.0100 mmhos/cm @25		1		7/5/2012 04:00 PM
Electrical Conductivity, 1:1 aqueous	1.16		0.0100 mmhos/cm @25		1		7/5/2012 04:00 PM
LA29B SATURATION POINT			LADNR-29B SP				Analyst: KAH
Saturation Point	0.418		0.100 % Saturation as		1		7/2/2012 11:00 AM
MOISTURE			SW3550				Analyst: KAH
Percent Moisture	27.6		0.0100 wt%		1		6/30/2012 09:40 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 13-Jul-12

Client: Noble Energy
 Project: CO - Table 910
 Sample ID: WC5
 Collection Date: 6/22/2012 11:45 AM

Work Order: 12061024
 Lab ID: 12061024-12
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
LA29B SODIUM ADSORPTION RATIO			LA29B SAR				Analyst: ALR
Sodium Adsorption Ratio	4.99		0.0100 meq/meq		1	7/3/2012	7/5/2012
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR			LA29B-6020				Analyst: SKS
Calcium	73.8		4.99 mg/L		10	7/3/2012	7/3/2012 06:03 PM
Magnesium	5.44		4.99 mg/L		10	7/3/2012	7/3/2012 06:03 PM
Sodium	165		4.99 mg/L		10	7/3/2012	7/3/2012 06:03 PM
LA29B ELECTRICAL CONDUCTIVITY			LADNR-29B EC				Analyst: TDW
Electrical Conductivity @ saturation	2.64		0.0100 mmhos/cm @25		1		7/5/2012 04:00 PM
Electrical Conductivity, 1:1 aqueous	1.10		0.0100 mmhos/cm @25		1		7/5/2012 04:00 PM
LA29B SATURATION POINT			LADNR-29B SP				Analyst: KAH
Saturation Point	0.417		0.100 % Saturation as		1		7/2/2012 11:00 AM
MOISTURE			SW3550				Analyst: KAH
Percent Moisture	4.94		0.0100 wt%		1		6/30/2012 09:40 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Noble Energy
Work Order: 12061024
Project: CO - Table 910

QC BATCH REPORT

Batch ID: **62161** Instrument ID **FID-7** Method: **SW8015M**

MBLK		Sample ID: FBLKS1-120626-62161			Units: mg/Kg		Analysis Date: 6/27/2012 02:47 PM			
Client ID:		Run ID: FID-7_120627A			SeqNo: 2842313		Prep Date: 6/26/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	ND	1.7								
<i>Surr: 2-Fluorobiphenyl</i>	3.498	0	3.3	0	106	60-135	0			

LCS		Sample ID: FLCSS1-120626-62161			Units: mg/Kg		Analysis Date: 6/27/2012 03:09 PM			
Client ID:		Run ID: FID-7_120627A			SeqNo: 2842314		Prep Date: 6/26/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	30.66	1.7	33.3	0	92.1	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	3.025	0	3.3	0	91.7	60-135	0			

MS		Sample ID: 12061024-12BMS			Units: mg/Kg		Analysis Date: 6/27/2012 04:34 PM			
Client ID: WC5		Run ID: FID-7_120627A			SeqNo: 2842325		Prep Date: 6/26/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	31.49	1.7	32.95	7.813	71.9	70-130	0			
<i>Surr: 2-Fluorobiphenyl</i>	2.203	0	3.265	0	67.5	60-135	0			

MSD		Sample ID: 12061024-12BMSD			Units: mg/Kg		Analysis Date: 6/27/2012 04:55 PM			
Client ID: WC5		Run ID: FID-7_120627A			SeqNo: 2842326		Prep Date: 6/26/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	31.73	1.7	32.95	7.813	72.6	70-130	31.49	0.761	30	
<i>Surr: 2-Fluorobiphenyl</i>	1.997	0	3.265	0	61.2	60-135	2.203	9.85	30	

The following samples were analyzed in this batch:

12061024-01B	12061024-05B	12061024-06B
12061024-07B	12061024-08B	12061024-09B
12061024-10B	12061024-11B	12061024-12B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
 Work Order: 12061024
 Project: CO - Table 910

QC BATCH REPORT

Batch ID: **R130148** Instrument ID **FID-9** Method: **SW8015**

MBLK		Sample ID: GBLKS1-120626-R130148			Units: mg/Kg			Analysis Date: 6/26/2012 06:17 PM		
Client ID:		Run ID: FID-9_120626A			SeqNo: 2843198			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	ND	0.050								
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.09376</i>	<i>0.0050</i>	<i>0.1</i>	<i>0</i>	<i>93.8</i>	<i>70-130</i>	<i>0</i>			

LCS		Sample ID: GLCSS1-120626-R130148			Units: mg/Kg			Analysis Date: 6/26/2012 05:40 PM		
Client ID:		Run ID: FID-9_120626A			SeqNo: 2843183			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.016	0.050	1	0	102	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.09665</i>	<i>0.0050</i>	<i>0.1</i>	<i>0</i>	<i>96.6</i>	<i>70-130</i>	<i>0</i>			

LCSD		Sample ID: GLCSDS1-120626-R130148			Units: mg/Kg			Analysis Date: 6/26/2012 05:58 PM		
Client ID:		Run ID: FID-9_120626A			SeqNo: 2843184			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9672	0.050	1	0	96.7	70-130	1.016	4.89	30	
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.093</i>	<i>0.0050</i>	<i>0.1</i>	<i>0</i>	<i>93</i>	<i>70-130</i>	<i>0.09665</i>	<i>3.85</i>	<i>30</i>	

MS		Sample ID: 12061024-12BMS			Units: mg/Kg			Analysis Date: 6/26/2012 10:30 PM		
Client ID: WC5		Run ID: FID-9_120626A			SeqNo: 2843195			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.025	0.050	1	0	103	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.09191</i>	<i>0.0050</i>	<i>0.1</i>	<i>0</i>	<i>91.9</i>	<i>70-130</i>	<i>0</i>			

MSD		Sample ID: 12061024-12BMSD			Units: mg/Kg			Analysis Date: 6/26/2012 10:48 PM		
Client ID: WC5		Run ID: FID-9_120626A			SeqNo: 2843196			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9625	0.050	1	0	96.2	70-130	1.025	6.3	30	
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.09487</i>	<i>0.0050</i>	<i>0.1</i>	<i>0</i>	<i>94.9</i>	<i>70-130</i>	<i>0.09191</i>	<i>3.17</i>	<i>30</i>	

The following samples were analyzed in this batch:

12061024-01B	12061024-05B	12061024-06B
12061024-07B	12061024-08B	12061024-09B
12061024-10B	12061024-11B	12061024-12B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
Work Order: 12061024
Project: CO - Table 910

QC BATCH REPORT

Batch ID: **62315** Instrument ID **ICPMS05** Method: **La29B-6020**

LCS		Sample ID: LCS-070212 SAR-62315				Units: mg/L		Analysis Date: 7/3/2012 05:53 PM		
Client ID:		Run ID: ICPMS05_120703A				SeqNo: 2845697		Prep Date: 7/3/2012		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	53.43	5.0	50	0	107	80-120	0			
Magnesium	47.41	5.0	50	0	94.8	80-120	0			
Sodium	55.96	5.0	50	0	112	80-120	0			

DUP		Sample ID: 1206984-01ADUP				Units: mg/L		Analysis Date: 7/3/2012 06:21 PM		
Client ID:		Run ID: ICPMS05_120703A				SeqNo: 2845708		Prep Date: 7/3/2012		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	42.88	5.0	0	0	0		47.95	11.2	30	
Magnesium	16.68	5.0	0	0	0		19.15	13.8	30	
Sodium	261.8	5.0	0	0	0		300.8	13.9	30	

The following samples were analyzed in this batch:

12061024-09D	12061024-10D	12061024-11D
12061024-12D		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
Work Order: 12061024
Project: CO - Table 910

QC BATCH REPORT

Batch ID: **62315a** Instrument ID **MISC-Metals** Method: **La29B SAR**

DUP Sample ID: **1206984-01ADUP** Units: **meq/meq** Analysis Date: **7/5/2012**
 Client ID: Run ID: **MISC-METALS_120705** SeqNo: **2846347** Prep Date: **7/3/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	8.6	0.010	0	0	0		9.29	7.71	30	

The following samples were analyzed in this batch:

12061024-09D	12061024-10D	12061024-11D
12061024-12D		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
 Work Order: 12061024
 Project: CO - Table 910

QC BATCH REPORT

Batch ID: R130160 Instrument ID VOA5 Method: SW8260

MBLK		Sample ID: VBLKS1-062612-R130160			Units: µg/Kg			Analysis Date: 6/26/2012 09:18 AM		
Client ID:		Run ID: VOA5_120626A			SeqNo: 2835532		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
o-Xylene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	15								
<i>Surr: 1,2-Dichloroethane-d4</i>	35.59	0	50	0	71.2	70-128	0			
<i>Surr: 4-Bromofluorobenzene</i>	46.55	0	50	0	93.1	73-126	0			
<i>Surr: Dibromofluoromethane</i>	48.38	0	50	0	96.8	71-128	0			
<i>Surr: Toluene-d8</i>	50.07	0	50	0	100	73-127	0			

LCS		Sample ID: VLCSS1-062612-R130160			Units: µg/Kg			Analysis Date: 6/26/2012 08:09 AM		
Client ID:		Run ID: VOA5_120626A			SeqNo: 2835530		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	47.08	5.0	50	0	94.2	79-120	0			
Ethylbenzene	48.06	5.0	50	0	96.1	80-122	0			
m,p-Xylene	92.13	10	100	0	92.1	79-122	0			
o-Xylene	47.16	5.0	50	0	94.3	80-123	0			
Toluene	46.1	5.0	50	0	92.2	79-120	0			
Xylenes, Total	139.3	15	150	0	92.9	80-120	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	40.22	0	50	0	80.4	70-128	0			
<i>Surr: 4-Bromofluorobenzene</i>	48.31	0	50	0	96.6	73-126	0			
<i>Surr: Dibromofluoromethane</i>	50.04	0	50	0	100	71-128	0			
<i>Surr: Toluene-d8</i>	47.47	0	50	0	94.9	73-127	0			

LCSD		Sample ID: VLCSDS1-062612-R130160			Units: µg/Kg			Analysis Date: 6/26/2012 08:32 AM		
Client ID:		Run ID: VOA5_120626A			SeqNo: 2835531		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	48.75	5.0	50	0	97.5	79-120	47.08	3.48	30	
Ethylbenzene	53.8	5.0	50	0	108	80-122	48.06	11.3	30	
m,p-Xylene	102.3	10	100	0	102	79-122	92.13	10.4	30	
o-Xylene	52.06	5.0	50	0	104	80-123	47.16	9.88	30	
Toluene	50.7	5.0	50	0	101	79-120	46.1	9.49	30	
Xylenes, Total	154.3	15	150	0	103	80-120	139.3	10.2	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	39.12	0	50	0	78.2	70-128	40.22	2.78	30	
<i>Surr: 4-Bromofluorobenzene</i>	47.69	0	50	0	95.4	73-126	48.31	1.29	30	
<i>Surr: Dibromofluoromethane</i>	48.35	0	50	0	96.7	71-128	50.04	3.45	30	
<i>Surr: Toluene-d8</i>	47.28	0	50	0	94.6	73-127	47.47	0.418	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
 Work Order: 12061024
 Project: CO - Table 910

QC BATCH REPORT

Batch ID: R130160 Instrument ID VOA5 Method: SW8260

MS				Sample ID: 1206944-01AMS			Units: µg/Kg		Analysis Date: 6/26/2012 11:15 AM		
Client ID:				Run ID: VOA5_120626A			SeqNo: 2835536		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	45.88	5.0	50	0	91.8	79-120	0				
Ethylbenzene	48.73	5.0	50	0	97.5	80-122	0				
m,p-Xylene	92.37	10	100	0	92.4	79-122	0				
o-Xylene	46.24	5.0	50	0	92.5	80-123	0				
Toluene	46.14	5.0	50	0	92.3	79-120	0				
Xylenes, Total	138.6	15	150	0	92.4	80-120	0				
<i>Surr: 1,2-Dichloroethane-d4</i>	41.03	0	50	0	82.1	70-128	0				
<i>Surr: 4-Bromofluorobenzene</i>	48.74	0	50	0	97.5	73-126	0				
<i>Surr: Dibromofluoromethane</i>	47.85	0	50	0	95.7	71-128	0				
<i>Surr: Toluene-d8</i>	47.36	0	50	0	94.7	73-127	0				

MSD				Sample ID: 1206944-01AMSD			Units: µg/Kg		Analysis Date: 6/26/2012 11:39 AM		
Client ID:				Run ID: VOA5_120626A			SeqNo: 2835537		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	52.82	5.0	50	0	106	79-120	45.88	14.1	30		
Ethylbenzene	55.15	5.0	50	0	110	80-122	48.73	12.4	30		
m,p-Xylene	106.2	10	100	0	106	79-122	92.37	14	30		
o-Xylene	53.85	5.0	50	0	108	80-123	46.24	15.2	30		
Toluene	52.84	5.0	50	0	106	79-120	46.14	13.5	30		
Xylenes, Total	160.1	15	150	0	107	80-120	138.6	14.4	30		
<i>Surr: 1,2-Dichloroethane-d4</i>	40.16	0	50	0	80.3	70-128	41.03	2.13	30		
<i>Surr: 4-Bromofluorobenzene</i>	47.83	0	50	0	95.7	73-126	48.74	1.89	30		
<i>Surr: Dibromofluoromethane</i>	48.68	0	50	0	97.4	71-128	47.85	1.74	30		
<i>Surr: Toluene-d8</i>	48.39	0	50	0	96.8	73-127	47.36	2.16	30		

The following samples were analyzed in this batch:

12061024-01A	12061024-05A	12061024-06A
12061024-07A	12061024-08A	12061024-09A
12061024-10A	12061024-11A	12061024-12A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
Work Order: 12061024
Project: CO - Table 910

QC BATCH REPORT

Batch ID: **R130440** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP	Sample ID: 12061291-02BDUP	Units: wt%					Analysis Date: 6/30/2012 09:40 AM				
Client ID:	Run ID: BALANCE1_120630A	SeqNo: 2842907			Prep Date:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Percent Moisture	22.27	0.010	0	0	0	0-0	21.55	3.29	20		

The following samples were analyzed in this batch:

12061024-09D	12061024-10D	12061024-11D
12061024-12D		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
Work Order: 12061024
Project: CO - Table 910

QC BATCH REPORT

Batch ID: **R130538** Instrument ID **Balance1** Method: **LaDNR-29B SP (Dissolve)**

DUP	Sample ID: 12061066-01BDUP	Units: % Saturation as D				Analysis Date: 7/2/2012 11:00 AM				
Client ID:	Run ID: BALANCE1_120702E	SeqNo: 2844995	Prep Date:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Saturation Point	0.539	0.10	0	0	0		0.539	0	30	

The following samples were analyzed in this batch:

12061024-09C	12061024-10C	12061024-11C
12061024-12C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
 Work Order: 12061024
 Project: CO - Table 910

QC BATCH REPORT

Batch ID: **R130624** Instrument ID **WetChem** Method: **LaDNR-29B EC (Dissolve)**

MBLK		Sample ID: WBLKW1-120705-R130624				Units: mmhos/cm @25°C		Analysis Date: 7/5/2012 04:00 PM		
Client ID:		Run ID: WETCHEM_120705G				SeqNo: 2846903		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ saturation	ND	0.010								
Electrical Conductivity, 1:1 aqueous	ND	0.010								

LCS		Sample ID: WLCSW1-120705-R130624				Units: mmhos/cm @25°C		Analysis Date: 7/5/2012 04:00 PM		
Client ID:		Run ID: WETCHEM_120705G				SeqNo: 2846904		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity, 1:1 aqueous	1.42	0.010	1.412		0	101	90-110	0		

DUP		Sample ID: 12061066-01BDUP				Units: mmhos/cm @25°C		Analysis Date: 7/5/2012 04:00 PM		
Client ID:		Run ID: WETCHEM_120705G				SeqNo: 2846913		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ saturation	3.839	0.010	0		0	0	3.822	0.444	20	
Electrical Conductivity, 1:1 aqueous	2.07	0.010	0		0	0	2.06	0.484	20	

The following samples were analyzed in this batch:

12061024-09C	12061024-10C	12061024-11C
12061024-12C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
Project: CO - Table 910
WorkOrder: 12061024

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
aturation as Dec	
meq/meq	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
mhos/cm @25°i	
wt%	



Cincinnati, OH
419 335 3366
Houston, TX
281 433 3366
Fort Collins, CO
970 225 1511
St. Louis, MO
314 351 6070

Chain of Custody Form

12061024

NOBLE ENERGY, Noble Energy

Project: CO - Table 910

5200, WV
5100
5280

Page 1 of 1
COC ID: 57541

Customer Information

ALS Project Manager:

Project Information

Project Name

Project Number

Bill To Company

Invoice Attn

Address

City/State/Zip

Phone

Fax

e-Mail Address

Project Name

Project Number

Bill To Company

Invoice Attn

Address

City/State/Zip

Phone

Fax

e-Mail Address

Project Name

Project Number

Bill To Company

Invoice Attn

Address

City/State/Zip

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e-Mail Address

Project Name

Project Number

Bill To Company

Invoice Attn

Address

City/State/Zip

Phone

Fax

e-Mail Address

Project Name

Project Number

Bill To Company

Invoice Attn

Address

City/State/Zip

Phone

Fax

e-Mail Address

Project Name

Project Number

Bill To Company

Invoice Attn

Address

City/State/Zip

Phone

Fax

e-Mail Address

Project Name

Project Number

Bill To Company

Invoice Attn

Address

City/State/Zip

Phone

Fax

e-Mail Address

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Bill To Company

Invoice Attn

Address

City/State/Zip

Phone

Fax

e-Mail Address

Project Name

Project Number

Bill To Company

Invoice Attn



Cincinnati, OH
+1 513 733 5336
Evansville, IN
+1 423 386 2000

Fort Collins, CO
+1 970 490 1311
Holland, MI
+1 616 399 6079

Memphis, TN
+1 901 507 5656
Middletown, PA
+1 717 944 5241

Spring City, PA
+1 610 588 4903
Salt Lake City, UT
+1 801 266 7700

Frank Churchill, WV
+1 304 362 3168
York, PA
+1 717 905 5280

Chain of Custody Form

Page 1 of 1
COC ID: 57542

Customer Information		Project Information		ALS Project Manager: <u>12061024</u>													
Purchase Order	Project Name	Project Number	Parameter/Method Request for Analysis														
Work Order	Company Name	Bill To Company	ALS Project Manager														
Send Report To	Invoice Attn	Address	ALS Project Manager														
City/State/Zip	City/State/Zip	Phone	ALS Project Manager														
Phone	City/State/Zip	Phone	ALS Project Manager														
Fax	City/State/Zip	Fax	ALS Project Manager														
e-Mail Address	City/State/Zip	e-Mail Address	ALS Project Manager														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WCH	6/22/12	11:45	Soil	Mono	4	X	X	X								
2	WCS	6/22/12	11:45	Soil	↓	4	X	X	X								
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Shipments Please Print & Sign
 Requisitioned by: Asher Weinberg
 Date: 6/22/12 Time: 2:45
 Requisitioned by: AW
 Date: 6/21/12 Time: 04:05
 Logged by (Laboratory):
 Date: 6/21/12 Time: 04:05
 Preservative Key: 1-HCl, 2-HNO₃, 3-H₂SO₄, 4-H₂O, 5-Na₂S₂O₈, 6-Na₂SO₃, 7-Other, 8-4°C, 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited in the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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27-Jul-2012

Asher Weinberg
Noble Energy
505 B East 8th Avenue
Yuma, Colorado 80759

Tel: (970) 625-1494
Fax: (970) 625-1654

Re: 350

Work Order: **1207704**

Dear Asher,

ALS Environmental received 3 samples on 17-Jul-2012 09:15 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 11.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink that reads "Patricia L. Lynch".

Electronically approved by: Jumoke M. Lawal

Patricia L. Lynch
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

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Environmental The logo icon for ALS Environmental, a stylized blue triangle with a yellow flame-like shape inside.

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Noble Energy
Project: 350
Work Order: 1207704

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1207704-01	B 2	Soil		7/16/2012 12:31	7/17/2012 09:15	<input type="checkbox"/>
1207704-02	B 3	Soil		7/16/2012 12:40	7/17/2012 09:15	<input type="checkbox"/>
1207704-03	B 4	Soil		7/16/2012 12:45	7/17/2012 09:15	<input type="checkbox"/>

ALS Environmental

Date: 29-Jul-12

Client: Noble Energy

Project: 350

Work Order: 1207704

Case Narrative

No Exceptions

ALS Environmental

Date: 29-Jul-12

Client: Noble Energy

Project: 350

Sample ID: B 2

Collection Date: 7/16/2012 12:31 PM

Work Order: 1207704

Lab ID: 1207704-01

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
METALS			SW6020				Analyst: SKS
Arsenic	8.07		0.969 mg/Kg		2	7/19/2012	7/20/2012 03:10 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 29-Jul-12

Client: Noble Energy

Project: 350

Sample ID: B 3

Collection Date: 7/16/2012 12:40 PM

Work Order: 1207704

Lab ID: 1207704-02

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
METALS			SW6020				Analyst: SKS
Arsenic	6.57		0.925	mg/Kg	2	7/19/2012	7/20/2012 04:24 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 29-Jul-12

Client: Noble Energy

Project: 350

Sample ID: B 4

Collection Date: 7/16/2012 12:45 PM

Work Order: 1207704

Lab ID: 1207704-03

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
METALS			SW6020				Analyst: SKS
Arsenic	18.9		0.897 mg/Kg		2	7/19/2012	7/20/2012 03:13 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Noble Energy
 Work Order: 1207704
 Project: 350

QC BATCH REPORT

Batch ID: **62775** Instrument ID **ICPMS05** Method: **SW6020**

MBLK	Sample ID: MBLKS2-071912-62775				Units: mg/Kg		Analysis Date: 7/23/2012 09:52 AM			
Client ID:	Run ID: ICPMS05_120723A			SeqNo: 2869001		Prep Date: 7/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.50								

LCS	Sample ID: MLCSS2-071912-62775				Units: mg/Kg		Analysis Date: 7/20/2012 03:08 PM			
Client ID:	Run ID: ICPMS05_120720A			SeqNo: 2868184		Prep Date: 7/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.396	0.50	10	0	94	80-120	0			

MS	Sample ID: 1207808-07AMS				Units: mg/Kg		Analysis Date: 7/23/2012 10:15 AM			
Client ID:	Run ID: ICPMS05_120723A			SeqNo: 2869021		Prep Date: 7/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	12.97	0.45	9.082	4.156	97	75-125	0			

MSD	Sample ID: 1207808-07AMSD				Units: mg/Kg		Analysis Date: 7/23/2012 12:02 PM			
Client ID:	Run ID: ICPMS05_120723A			SeqNo: 2869475		Prep Date: 7/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.4	0.45	8.99	4.156	103	75-125	12.97	3.3	25	

DUP	Sample ID: 1207808-07ADUP				Units: mg/Kg		Analysis Date: 7/23/2012 10:12 AM			
Client ID:	Run ID: ICPMS05_120723A			SeqNo: 2869019		Prep Date: 7/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.223	0.46	0	0	0	0-0	4.156	1.61	25	

The following samples were analyzed in this batch:

1207704-01A	1207704-02A	1207704-03A
-------------	-------------	-------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Noble Energy
Project: 350
WorkOrder: 1207704

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
mg/Kg	Milligrams per Kilogram

Cincinnati, OH
+1 513 733 5336
Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511
Holland, MI
+1 616 399 6070

Chain of Custody Form

Page of

COC ID: 57548



1207704

NOBLE ENERGY: Noble Energy

Project: 350



ALS Project Manager:

Customer Information		Project Information															
Purchase Order	Project Name	A										A					
Work Order	Project Number	350										A					
Company Name	Bill To Company	Noble Energy										C					
Send Report To	Invoice Attn	Asher Weinberg										D					
Address	Address	800 Airport Road, Suite 3										E					
City/State/Zip	City/State/Zip	Rifle, Colorado 81650										G					
Phone	Phone	(970) 625-1494										H					
Fax	Fax											I					
e-Mail Address	e-Mail Address											J					
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	B2	7/16/12	12:31	Soil	-	1	X										
2	B3	7/16/12	12:40	Soil	-	1	X										
3	B4	7/16/12	12:45	Soil	-	1	X										
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Asher Weinberg, CO

Relinquished by: [Signature] Date: 7/16/12

Received by: [Signature] Date: 7/16/12

Checked by (Laboratory): [Signature] Date: 7/16/12

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₃ 7-Other 8-4°C 9-5035

QC Package: (Check One Box Below)

Level II 500 CC TR-IP Check List

Level III 500 CC/3000 Dials TR-IP Level IV

Level IV 5000/1500 LP

Other / ETO

Notes: 5 Day TAT / Colorado Table 010 Parameters

Required Turnaround Time: (Check Box)

10hr 24hr 48hr 72hr 120hr

Results Due Date:

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

Lab Hub LLC **CUSTODY SEAL**

Date: 7-16-12 Lab Hub, LLC

Signature: _____ Partridge, CO