



10/05/11

Technical Report for

Ecos Environmental

Noble

Production Water Spill/Noble 091911

Accutest Job Number: D28130

Sampling Date: 09/28/11

Report to:

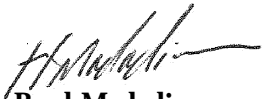
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ATTN: Zuleika Pevec

Total number of pages in report: 112



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)

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Test results relate only to samples analyzed.

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12.3: Matrix Spike Results Summary 112

Sample Summary

Ecos Environmental

Job No: D28130

Noble

Project No: Production Water Spill/Noble 091911

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D28130-1	09/28/11	09:40 ZP	09/29/11	SO	Soil	NOBLE091911-WC1-A
D28130-2	09/28/11	09:46 ZP	09/29/11	SO	Soil	NOBLE091911-WC1-B
D28130-3	09/28/11	10:16 ZP	09/29/11	SO	Soil	NOBLE091911-WC2-A
D28130-4	09/28/11	10:26 ZP	09/29/11	SO	Soil	NOBLE091911-WC3-A
D28130-5	09/28/11	10:39 ZP	09/29/11	SO	Soil	NOBLE091911-WC4-A
D28130-6	09/28/11	11:01 ZP	09/29/11	SO	Soil	NOBLE091911-WC5-A
D28130-7	09/28/11	11:14 ZP	09/29/11	SO	Soil	NOBLE091911-DS
D28130-8	09/28/11	10:00 ZP	09/29/11	SO	Soil	NOBLE091911-BG
D28130-8A	09/28/11	10:00 ZP	09/29/11	SO	Soil	NOBLE091911-BG

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Ecos Environmental**Job No** D28130**Site:** Noble**Report Dat** 10/5/2011 10:48:52 AM

On 09/29/2011, 8 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 1.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D28130 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:** V3V806

- All samples were analyzed within the recommended method holding time.
- Sample(s) D28130-7MS, D28130-7MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix SO**Batch ID:** V5V1056

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D28125-1MS, D28125-1MSD were used as the QC samples indicated.

Matrix SO**Batch ID:** V5V1057

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D28141-1MS, D28141-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C

Matrix SO**Batch ID:** OP4579

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D28130-8MS, D28130-8MSD were used as the QC samples indicated.
- D28130-8: Elevated RL due to matrix interference.

Volatiles by GC By Method SW846 8015B

Matrix SO**Batch ID:** GGB753

- All samples were analyzed within the recommended method holding time.
- Sample(s) D28125-1MS, D28125-1MSD 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: OP4576
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D28125-1MS, D28125-1MSD 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: MP5903
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D28130-1MS, D28130-1MSD 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: MP5925
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D28126-5MS, D28126-5MSD, D28126-5SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic, Cadmium, Selenium are outside control limits for sample MP5925-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7471A

Matrix SO	Batch ID: MP5928
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D28126-5MSD, D28126-5MS were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Mercury are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO	Batch ID: GN11815
------------------	--------------------------

- Sample(s) D28126-5DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN11801
------------------	--------------------------

- The data for SM19 2540B M meets quality control requirements.

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO	Batch ID: M:GP13591
------------------	----------------------------

- The data for SW846 3060A/7196A meets quality control requirements.
- D28130-8 for Chromium, Hexavalent: Elevated RL due to dilution required for matrix interference. Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW846 9045C

Matrix SO	Batch ID: GN11813
------------------	--------------------------

- The following sample was run outside of holding time for method SW846 9045C: D28130-8.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP5903

- 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 D28130

Site: ECOEOCA: Noble

Report Date 10/5/2011 12:03:01 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 09/28/2011 and were received at Accutest on 09/29/2011 properly preserved, at 4.4 Deg. C and intact. These Samples received an Accutest job number of D28130. 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.

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP13591

- 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) D28126-5MS, D28126-5DUP were used as the QC samples for Chromium, Hexavalent.
- RPD(s) for Duplicate for Chromium, Hexavalent are outside control limits for sample GP13591-D1. RPD acceptable due to low duplicate and sample concentrations.
- D28130-8 for Chromium, Hexavalent: Elevated RL due to dilution required for matrix interference.

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(D28130).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	NOBLE091911-WC1-A	
Lab Sample ID:	D28130-1	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8260B	Percent Solids: 82.4
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17769.D	1	09/29/11	DC	n/a	n/a	V5V1056
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.02 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	71	31	ug/kg	
108-88-3	Toluene	ND	140	71	ug/kg	
100-41-4	Ethylbenzene	ND	140	36	ug/kg	
1330-20-7	Xylene (total)	ND	280	140	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	92%		61-130%
460-00-4	4-Bromofluorobenzene	91%		53-131%
17060-07-0	1,2-Dichloroethane-D4	102%		62-130%

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:	NOBLE091911-WC1-A	
Lab Sample ID:	D28130-1	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8015B	Percent Solids: 82.4
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13246.D	1	09/30/11	SK	n/a	n/a	GGB753
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	14	7.1	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	73%		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: NOBLE091911-WC1-A
Lab Sample ID: D28130-1
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 82.4

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10452.D	1	09/30/11	CS	09/30/11	OP4576	GFD495
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)	90.4	16	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	89%		61-142%		

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: NOBLE091911-WC1-A**Lab Sample ID:** D28130-1**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 82.4

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	165	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²
Magnesium	30.9	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²
Sodium	1930	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA1866

(2) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE091911-WC1-A**Lab Sample ID:** D28130-1**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 82.4

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	36.1		ratio	1	09/30/11 17:18	JM	USDA HANDBOOK 60
Solids, Percent	82.4		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	9030	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC1-B	Date Sampled:	09/28/11
Lab Sample ID:	D28130-2	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	87.3
Method:	SW846 8260B		
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17770.D	1	09/29/11	DC	n/a	n/a	V5V1056
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	64	28	ug/kg	
108-88-3	Toluene	ND	130	64	ug/kg	
100-41-4	Ethylbenzene	ND	130	32	ug/kg	
1330-20-7	Xylene (total)	ND	260	130	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	97%		61-130%
460-00-4	4-Bromofluorobenzene	94%		53-131%
17060-07-0	1,2-Dichloroethane-D4	105%		62-130%

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

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Client Sample ID: NOBLE091911-WC1-B
Lab Sample ID: D28130-2
Matrix: SO - Soil
Method: SW846 8015B
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 87.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13247.D	1	09/30/11	SK	n/a	n/a	GGB753
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)	ND	13	6.4	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	78%		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:	NOBLE091911-WC1-B		Date Sampled:	09/28/11
Lab Sample ID:	D28130-2		Date Received:	09/29/11
Matrix:	SO - Soil		Percent Solids:	87.3
Method:	SW846-8015B SW846 3546			
Project:	Noble			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10563.D	1	10/03/11	KV	09/30/11	OP4576	GFD500
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)	2360	15	9.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	78%		61-142%		

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:	NOBLE091911-WC1-B	Date Sampled:	09/28/11
Lab Sample ID:	D28130-2	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	87.3
Project:	Noble		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	176	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²
Magnesium	33.3	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²
Sodium	2040	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA1866
(2) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC1-B	Date Sampled:	09/28/11
Lab Sample ID:	D28130-2	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	87.3
Project:	Noble		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	36.9		ratio	1	09/30/11 18:01	JM	USDA HANDBOOK 60
Solids, Percent	87.3		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	9550	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC2-A	
Lab Sample ID:	D28130-3	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8260B	Percent Solids: 72.0
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17771.D	1	09/29/11	DC	n/a	n/a	V5V1056
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	88	39	ug/kg	
108-88-3	Toluene	ND	180	88	ug/kg	
100-41-4	Ethylbenzene	ND	180	44	ug/kg	
1330-20-7	Xylene (total)	ND	350	180	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	96%		61-130%
460-00-4	4-Bromofluorobenzene	95%		53-131%
17060-07-0	1,2-Dichloroethane-D4	108%		62-130%

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:	NOBLE091911-WC2-A	Date Sampled:	09/28/11
Lab Sample ID:	D28130-3	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	72.0
Method:	SW846 8015B		
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13248.D	1	09/30/11	SK	n/a	n/a	GGB753
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)	ND	18	8.8	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	75%		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: NOBLE091911-WC2-A
Lab Sample ID: D28130-3
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 72.0

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10564.D	1	10/03/11	KV	09/30/11	OP4576	GFD500
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)	117	19	12	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	80%		61-142%		

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: NOBLE091911-WC2-A**Lab Sample ID:** D28130-3**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 72.0

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	138	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²
Magnesium	30.2	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²
Sodium	886	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA1866

(2) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE091911-WC2-A**Lab Sample ID:** D28130-3**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 72.0

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	17.8		ratio	1	09/30/11 18:11	JM	USDA HANDBOOK 60
Solids, Percent	72		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	4920	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC3-A	
Lab Sample ID:	D28130-4	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8260B	Percent Solids: 79.5
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17772.D	1	09/29/11	DC	n/a	n/a	V5V1056
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.02 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	76	33	ug/kg	
108-88-3	Toluene	ND	150	76	ug/kg	
100-41-4	Ethylbenzene	ND	150	38	ug/kg	
1330-20-7	Xylene (total)	ND	300	150	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	99%		61-130%
460-00-4	4-Bromofluorobenzene	99%		53-131%
17060-07-0	1,2-Dichloroethane-D4	114%		62-130%

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

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Client Sample ID:	NOBLE091911-WC3-A	
Lab Sample ID:	D28130-4	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8015B	Percent Solids: 79.5
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13249.D	1	09/30/11	SK	n/a	n/a	GGB753
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	15	7.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	75%		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:	NOBLE091911-WC3-A		Date Sampled:	09/28/11
Lab Sample ID:	D28130-4		Date Received:	09/29/11
Matrix:	SO - Soil		Percent Solids:	79.5
Method:	SW846-8015B SW846 3546			
Project:	Noble			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10565.D	1	10/03/11	KV	09/30/11	OP4576	GFD500
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)	111	17	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	84%		61-142%		

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: NOBLE091911-WC3-A**Lab Sample ID:** D28130-4**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 79.5

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	121	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Magnesium	32.2	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Sodium	435	2.0	mg/l	1	09/30/11	10/03/11 JM	SW846 6010B ²	EPA 200.7 ³

(1) Instrument QC Batch: MA1866

(2) Instrument QC Batch: MA1868

(3) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC3-A	Date Sampled:	09/28/11
Lab Sample ID:	D28130-4	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	79.5
Project:	Noble		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	9.07		ratio	1	10/03/11 14:08	JM	USDA HANDBOOK 60
Solids, Percent	79.5		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	2550	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC4-A	
Lab Sample ID:	D28130-5	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8260B	Percent Solids: 80.2
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17773.D	1	09/29/11	DC	n/a	n/a	V5V1056
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.05 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	74	33	ug/kg	
108-88-3	Toluene	ND	150	74	ug/kg	
100-41-4	Ethylbenzene	ND	150	37	ug/kg	
1330-20-7	Xylene (total)	ND	300	150	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	88%		61-130%
460-00-4	4-Bromofluorobenzene	87%		53-131%
17060-07-0	1,2-Dichloroethane-D4	99%		62-130%

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: NOBLE091911-WC4-A
Lab Sample ID: D28130-5
Matrix: SO - Soil
Method: SW846 8015B
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 80.2

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13250.D	1	09/30/11	SK	n/a	n/a	GGB753
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)	8.23	15	7.4	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	72%		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

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Client Sample ID:	NOBLE091911-WC4-A		Date Sampled:	09/28/11
Lab Sample ID:	D28130-5		Date Received:	09/29/11
Matrix:	SO - Soil		Percent Solids:	80.2
Method:	SW846-8015B SW846 3546			
Project:	Noble			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10566.D	1	10/03/11	KV	09/30/11	OP4576	GFD500
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)	23.7	17	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	85%		61-142%		

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: NOBLE091911-WC4-A**Lab Sample ID:** D28130-5**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 80.2

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	235	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Magnesium	50.0	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Sodium	827	2.0	mg/l	1	09/30/11	10/03/11 JM	SW846 6010B ²	EPA 200.7 ³

(1) Instrument QC Batch: MA1866

(2) Instrument QC Batch: MA1868

(3) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC4-A	Date Sampled:	09/28/11
Lab Sample ID:	D28130-5	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	80.2
Project:	Noble		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	12.8		ratio	1	10/03/11 14:14	JM	USDA HANDBOOK 60
Solids, Percent	80.2		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	4850	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC5-A	
Lab Sample ID:	D28130-6	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8260B	Percent Solids: 86.1
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17774.D	1	09/30/11	DC	n/a	n/a	V5V1056
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.08 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	65	29	ug/kg	
108-88-3	Toluene	ND	130	65	ug/kg	
100-41-4	Ethylbenzene	ND	130	33	ug/kg	
1330-20-7	Xylene (total)	ND	260	130	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	96%		61-130%
460-00-4	4-Bromofluorobenzene	92%		53-131%
17060-07-0	1,2-Dichloroethane-D4	106%		62-130%

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: NOBLE091911-WC5-A
Lab Sample ID: D28130-6
Matrix: SO - Soil
Method: SW846 8015B
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 86.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13251.D	1	09/30/11	SK	n/a	n/a	GGB753
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)	ND	13	6.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	73%		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:	NOBLE091911-WC5-A		Date Sampled:	09/28/11
Lab Sample ID:	D28130-6		Date Received:	09/29/11
Matrix:	SO - Soil		Percent Solids:	86.1
Method:	SW846-8015B SW846 3546			
Project:	Noble			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10567.D	1	10/03/11	KV	09/30/11	OP4576	GFD500
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)	21.3	15	10	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	88%		61-142%		

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: NOBLE091911-WC5-A**Lab Sample ID:** D28130-6**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 86.1

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	154	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Magnesium	30.1	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Sodium	544	2.0	mg/l	1	09/30/11	10/03/11 JM	SW846 6010B ²	EPA 200.7 ³

(1) Instrument QC Batch: MA1866

(2) Instrument QC Batch: MA1868

(3) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC5-A	Date Sampled:	09/28/11
Lab Sample ID:	D28130-6	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	86.1
Project:	Noble		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	10.5		ratio	1	10/03/11 14:20	JM	USDA HANDBOOK 60
Solids, Percent	86.1		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	3330	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-DS	
Lab Sample ID:	D28130-7	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8260B	Percent Solids: 87.4
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V14094.D	1	09/30/11	DC	n/a	n/a	V3V806
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.06 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	64	28	ug/kg	
108-88-3	Toluene	ND	130	64	ug/kg	
100-41-4	Ethylbenzene	ND	130	32	ug/kg	
1330-20-7	Xylene (total)	ND	250	130	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	99%		61-130%
460-00-4	4-Bromofluorobenzene	86%		53-131%
17060-07-0	1,2-Dichloroethane-D4	86%		62-130%

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: NOBLE091911-DS
Lab Sample ID: D28130-7
Matrix: SO - Soil
Method: SW846 8015B
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 87.4

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13252.D	1	09/30/11	SK	n/a	n/a	GGB753
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)	ND	13	6.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	75%		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:	NOBLE091911-DS	Date Sampled:	09/28/11
Lab Sample ID:	D28130-7	Date Received:	09/29/11
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	FD10568.D	1	10/03/11	KV	09/30/11	OP4576	GFD500
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)	12.8	15	9.9	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	88%		61-142%		

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: NOBLE091911-DS**Lab Sample ID:** D28130-7**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 87.4

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	68.2	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Magnesium	15.5	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Sodium	176	2.0	mg/l	1	09/30/11	10/03/11 JM	SW846 6010B ²	EPA 200.7 ³

(1) Instrument QC Batch: MA1866

(2) Instrument QC Batch: MA1868

(3) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-DS	Date Sampled:	09/28/11
Lab Sample ID:	D28130-7	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	87.4
Project:	Noble		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	5.00		ratio	1	10/03/11 14:27	JM	USDA HANDBOOK 60
Solids, Percent	87.4		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	1340	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-BG	
Lab Sample ID:	D28130-8	Date Sampled: 09/28/11
Matrix:	SO - Soil	Date Received: 09/29/11
Method:	SW846 8260B	Percent Solids: 87.1
Project:	Noble	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17788.D	1	09/30/11	DC	n/a	n/a	V5V1057
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	65	28	ug/kg	
108-88-3	Toluene	ND	130	65	ug/kg	
100-41-4	Ethylbenzene	ND	130	32	ug/kg	
1330-20-7	Xylene (total)	ND	260	130	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	95%		61-130%
460-00-4	4-Bromofluorobenzene	94%		53-131%
17060-07-0	1,2-Dichloroethane-D4	88%		62-130%

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:	NOBLE091911-BG	Date Sampled:	09/28/11
Lab Sample ID:	D28130-8	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	87.1
Method:	SW846 8270C SW846 3546		
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	1G104581.D	5	10/01/11	TMB	09/30/11	OP4579	E1G511
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	250	ug/kg	
208-96-8	Acenaphthylene	ND	290	230	ug/kg	
120-12-7	Anthracene	ND	290	210	ug/kg	
56-55-3	Benzo(a)anthracene	ND	190	160	ug/kg	
50-32-8	Benzo(a)pyrene	ND	190	140	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	190	150	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	190	160	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	190	160	ug/kg	
218-01-9	Chrysene	ND	190	160	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	190	160	ug/kg	
206-44-0	Fluoranthene	ND	190	180	ug/kg	
86-73-7	Fluorene	ND	290	250	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	190	170	ug/kg	
90-12-0	1-Methylnaphthalene	ND	270	210	ug/kg	
91-57-6	2-Methylnaphthalene	ND	270	230	ug/kg	
91-20-3	Naphthalene	ND	380	230	ug/kg	
85-01-8	Phenanthrene	ND	380	250	ug/kg	
129-00-0	Pyrene	ND	230	150	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	56%		10-193%
321-60-8	2-Fluorobiphenyl	62%		20-138%
1718-51-0	Terphenyl-d14	76%		17-174%

(a) Elevated RL due to matrix interference.

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: NOBLE091911-BG
Lab Sample ID: D28130-8
Matrix: SO - Soil
Method: SW846 8015B
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 87.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13253.D	1	09/30/11	SK	n/a	n/a	GGB753
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	6.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	72%		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: NOBLE091911-BG
Lab Sample ID: D28130-8
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: Noble

Date Sampled: 09/28/11
Date Received: 09/29/11
Percent Solids: 87.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10569.D	1	10/03/11	KV	09/30/11	OP4576	GFD500
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)	30.7	15	9.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	76%		61-142%		

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: NOBLE091911-BG**Lab Sample ID:** D28130-8**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 87.1

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.4	2.8	mg/kg	1	10/03/11	10/03/11 JM	SW846 6010B ¹	SW846 3050B ³
Barium	238	5.5	mg/kg	5	10/03/11	10/04/11 JM	SW846 6010B ¹	SW846 3050B ³
Cadmium	< 1.1	1.1	mg/kg	1	10/03/11	10/03/11 JM	SW846 6010B ¹	SW846 3050B ³
Chromium	19.6	1.1	mg/kg	1	10/03/11	10/03/11 JM	SW846 6010B ¹	SW846 3050B ³
Lead	10.7	5.5	mg/kg	1	10/03/11	10/03/11 JM	SW846 6010B ¹	SW846 3050B ³
Mercury	< 0.12	0.12	mg/kg	1	10/04/11	10/04/11 JB	SW846 7471A ²	SW846 7471A ⁴
Selenium	< 5.5	5.5	mg/kg	1	10/03/11	10/03/11 JM	SW846 6010B ¹	SW846 3050B ³
Silver	< 3.3	3.3	mg/kg	1	10/03/11	10/03/11 JM	SW846 6010B ¹	SW846 3050B ³

(1) Instrument QC Batch: MA1868

(2) Instrument QC Batch: MA1870

(3) Prep QC Batch: MP5925

(4) Prep QC Batch: MP5928

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE091911-BG**Lab Sample ID:** D28130-8**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 87.1**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	6.6	4.6	mg/kg	10	10/04/11 17:20	AMA	SW846 3060A/7196A
Redox Potential Vs H2	533		mv	1	09/30/11	JD	ASTM D1498-76M
Solids, Percent	87.1		%	1	09/30/11	SWT	SM19 2540B M
Specific Conductivity	101	1.0	umhos/cm	1	10/02/11	JD	DEPT.OF AG, BOOK N9
pH	6.97		su	1	09/30/11 14:25	JD	SW846 9045C

(a) Elevated RL due to dilution required for matrix interference. Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID: NOBLE091911-BG**Lab Sample ID:** D28130-8A**Matrix:** SO - Soil**Project:** Noble**Date Sampled:** 09/28/11**Date Received:** 09/29/11**Percent Solids:** 87.1

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	10.6	2.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Magnesium	3.21	1.0	mg/l	1	09/30/11	09/30/11 JM	SW846 6010B ¹	EPA 200.7 ³
Sodium	8.04	2.0	mg/l	1	09/30/11	10/03/11 JM	SW846 6010B ²	EPA 200.7 ³

(1) Instrument QC Batch: MA1866

(2) Instrument QC Batch: MA1868

(3) Prep QC Batch: MP5903

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-BG	Date Sampled:	09/28/11
Lab Sample ID:	D28130-8A	Date Received:	09/29/11
Matrix:	SO - Soil	Percent Solids:	87.1
Project:	Noble		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	0.555		ratio	1	10/03/11 14:33	JM	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg 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: D28130

Client: ECOS

Immediate Client Services Action Required: No

Date / Time Received: 9/29/2011 12:30:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: NOBLE

Airbill #'s: CO

Cooler Security
Y or N
Y or N

- | | |
|--|--|
| 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"/> |

Cooler Temperature
Y or N

- | | |
|---|--|
| 1. Temp criteria achieved: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 2. Cooler temp verification: Infrared gun | |
| 3. Cooler media: Ice (bag) | |

Quality Control Preservation
Y or N
N/A

- | | |
|---|--|
| 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"/> | |

Sample Integrity - Documentation
Y or N

- | | |
|---|--|
| 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"/> | |

Sample Integrity - Condition
Y or N

- | | |
|---|--|
| 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 | |

Sample Integrity - Instructions
Y or N N/A

- | | |
|--|--|
| 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

 Accutest Laboratories
 V: (303) 425-6021

 4036 Youngfield Street
 F: (303) 425-6854

 Wheat Ridge, CO
 www.accutest.com

D28130: Chain of Custody

Page 2 of 2

GC/MS Volatiles

5

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D28130
Account: ECOEOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1056-MB	5V17756.D	1	09/29/11	DC	n/a	n/a	V5V1056

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	104% 61-130%
460-00-4	4-Bromofluorobenzene	93% 53-131%
17060-07-0	1,2-Dichloroethane-D4	111% 62-130%

Method Blank Summary

Page 1 of 1

Job Number: D28130
Account: ECOEOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V806-MB	3V14092.D	1	09/30/11	DC	n/a	n/a	V3V806

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-7

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	101% 61-130%
460-00-4	4-Bromofluorobenzene	86% 53-131%
17060-07-0	1,2-Dichloroethane-D4	92% 62-130%

Method Blank Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1057-MB	5V17778.D	1	09/30/11	DC	n/a	n/a	V5V1057

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-8

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	98% 61-130%
460-00-4	4-Bromofluorobenzene	88% 53-131%
17060-07-0	1,2-Dichloroethane-D4	93% 62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1056-BS	5V17757.D	1	09/29/11	DC	n/a	n/a	V5V1056

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	58.2	116	70-130
100-41-4	Ethylbenzene	50	53.6	107	70-130
108-88-3	Toluene	50	56.1	112	70-130
1330-20-7	Xylene (total)	150	164	109	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	105%	61-130%
460-00-4	4-Bromofluorobenzene	104%	53-131%
17060-07-0	1,2-Dichloroethane-D4	112%	62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V806-BS	3V14093.D	1	09/30/11	DC	n/a	n/a	V3V806

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-7

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	54.2	108	70-130
100-41-4	Ethylbenzene	50	54.3	109	70-130
108-88-3	Toluene	50	55.2	110	70-130
1330-20-7	Xylene (total)	150	174	116	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	102%	61-130%
460-00-4	4-Bromofluorobenzene	98%	53-131%
17060-07-0	1,2-Dichloroethane-D4	100%	62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1057-BS	5V17779.D	1	09/30/11	DC	n/a	n/a	V5V1057

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-8

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	53.3	107	70-130
100-41-4	Ethylbenzene	50	53.3	107	70-130
108-88-3	Toluene	50	55.9	112	70-130
1330-20-7	Xylene (total)	150	163	109	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	105%	61-130%
460-00-4	4-Bromofluorobenzene	104%	53-131%
17060-07-0	1,2-Dichloroethane-D4	96%	62-130%

Blank Spike Summary

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1057-BS	5V17780.D	1	09/30/11	DC	n/a	n/a	V5V1057

The QC reported here applies to the following samples: Method: SW846 8260B

D28130-8

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
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CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	61-130%
460-00-4	4-Bromofluorobenzene	91%	53-131%
17060-07-0	1,2-Dichloroethane-D4	93%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D28125-1MS	5V17759.D	1	09/29/11	DC	n/a	n/a	V5V1056
D28125-1MSD	5V17760.D	1	09/29/11	DC	n/a	n/a	V5V1056
D28125-1	5V17758.D	1	09/29/11	DC	n/a	n/a	V5V1056

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6

CAS No.	Compound	D28125-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	48.7	J	3200	3660	113	3940	122	7	70-134/30
100-41-4	Ethylbenzene	ND		3200	3240	101	3520	110	8	70-137/30
108-88-3	Toluene	174		3200	3400	101	3710	111	9	70-130/30
1330-20-7	Xylene (total)	145	J	9600	10300	106	11000	113	7	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D28125-1	Limits
2037-26-5	Toluene-D8	98%	101%	100%	61-130%
460-00-4	4-Bromofluorobenzene	110%	111%	100%	53-131%
17060-07-0	1,2-Dichloroethane-D4	114%	111%	112%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D28130-7MS	3V14095.D	1	09/30/11	DC	n/a	n/a	V3V806
D28130-7MSD	3V14096.D	1	09/30/11	DC	n/a	n/a	V3V806
D28130-7	3V14094.D	1	09/30/11	DC	n/a	n/a	V3V806

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-7

CAS No.	Compound	D28130-7 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3190	3120	98	3440	108	10	70-134/30
100-41-4	Ethylbenzene	ND		3190	2990	94	3370	106	12	70-137/30
108-88-3	Toluene	ND		3190	3030	95	3240	102	7	70-130/30
1330-20-7	Xylene (total)	ND		9560	10300	108	11200	117	8	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D28130-7	Limits
2037-26-5	Toluene-D8	98%	99%	99%	61-130%
460-00-4	4-Bromofluorobenzene	102%	106%	86%	53-131%
17060-07-0	1,2-Dichloroethane-D4	99%	93%	86%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D28141-1MS	5V17782.D	1	09/30/11	DC	n/a	n/a	V5V1057
D28141-1MSD	5V17783.D	1	09/30/11	DC	n/a	n/a	V5V1057
D28141-1	5V17781.D	1	09/30/11	DC	n/a	n/a	V5V1057

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-8

CAS No.	Compound	D28141-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		2750	2760	100	3010	109	9	70-134/30
100-41-4	Ethylbenzene	ND		2750	2710	98	2990	109	10	70-137/30
108-88-3	Toluene	ND		2750	2760	100	3060	111	10	70-130/30
1330-20-7	Xylene (total)	ND		8260	8520	103	9380	114	10	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D28141-1	Limits
2037-26-5	Toluene-D8	90%	99%	97%	61-130%
460-00-4	4-Bromofluorobenzene	104%	111%	96%	53-131%
17060-07-0	1,2-Dichloroethane-D4	89%	92%	93%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D28141-1MS	5V17784.D	1	09/30/11	DC	n/a	n/a	V5V1057
D28141-1MSD	5V17785.D	1	09/30/11	DC	n/a	n/a	V5V1057
D28141-1	5V17781.D	1	09/30/11	DC	n/a	n/a	V5V1057

The QC reported here applies to the following samples:

Method: SW846 8260B

D28130-8

CAS No.	Compound	D28141-1 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
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CAS No.	Surrogate Recoveries	MS	MSD	D28141-1	Limits
2037-26-5	Toluene-D8	98%	101%	97%	61-130%
460-00-4	4-Bromofluorobenzene	101%	103%	96%	53-131%
17060-07-0	1,2-Dichloroethane-D4	92%	96%	93%	62-130%

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D28130
Account: ECOEOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4579-MB	1G104579.D	1	10/01/11	TMB	09/30/11	OP4579	E1G511

The QC reported here applies to the following samples:

Method: SW846 8270C

D28130-8

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	50	43	ug/kg	
208-96-8	Acenaphthylene	ND	50	40	ug/kg	
120-12-7	Anthracene	ND	50	37	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	28	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	24	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	26	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	28	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	28	ug/kg	
218-01-9	Chrysene	ND	33	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	28	ug/kg	
206-44-0	Fluoranthene	ND	33	32	ug/kg	
86-73-7	Fluorene	ND	50	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	29	ug/kg	
90-12-0	1-Methylnaphthalene	ND	47	37	ug/kg	
91-57-6	2-Methylnaphthalene	ND	47	40	ug/kg	
91-20-3	Naphthalene	ND	67	40	ug/kg	
85-01-8	Phenanthrene	ND	67	43	ug/kg	
129-00-0	Pyrene	ND	40	27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	71% 10-193%
321-60-8	2-Fluorobiphenyl	71% 20-138%
1718-51-0	Terphenyl-d14	97% 17-174%

Blank Spike Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4579-BS	1G104580.D	1	10/01/11	TMB	09/30/11	OP4579	E1G511

The QC reported here applies to the following samples:

Method: SW846 8270C

D28130-8

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	1670	1140	68	40-136
208-96-8	Acenaphthylene	1670	1180	71	42-139
120-12-7	Anthracene	1670	1310	79	40-141
56-55-3	Benzo(a)anthracene	1670	1330	80	38-143
50-32-8	Benzo(a)pyrene	1670	1350	81	39-145
205-99-2	Benzo(b)fluoranthene	1670	1540	92	38-151
191-24-2	Benzo(g,h,i)perylene	1670	778	47	35-136
207-08-9	Benzo(k)fluoranthene	1670	1580	95	38-147
218-01-9	Chrysene	1670	1400	84	39-137
53-70-3	Dibenzo(a,h)anthracene	1670	820	49	35-139
206-44-0	Fluoranthene	1670	1400	84	34-132
86-73-7	Fluorene	1670	1240	74	41-136
193-39-5	Indeno(1,2,3-cd)pyrene	1670	960	58	31-144
90-12-0	1-Methylnaphthalene	1670	1160	70	36-130
91-57-6	2-Methylnaphthalene	1670	1180	71	40-131
91-20-3	Naphthalene	1670	1180	71	36-130
85-01-8	Phenanthrene	1670	1290	77	40-135
129-00-0	Pyrene	1670	1530	92	29-157

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	69%	10-193%
321-60-8	2-Fluorobiphenyl	64%	20-138%
1718-51-0	Terphenyl-d14	88%	17-174%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D28130
Account: ECOECO Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4579-MS	1G104582.D	5	10/01/11	TMB	09/30/11	OP4579	E1G511
OP4579-MSD	1G104583.D	5	10/01/11	TMB	09/30/11	OP4579	E1G511
D28130-8 ^a	1G104581.D	5	10/01/11	TMB	09/30/11	OP4579	E1G511

The QC reported here applies to the following samples:

Method: SW846 8270C

D28130-8

CAS No.	Compound	D28130-8 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		1910	1330	70	1170	61	13	20-151/30
208-96-8	Acenaphthylene	ND		1910	1150	60	1010	53	13	23-156/30
120-12-7	Anthracene	ND		1910	1120	59	974	51	14	25-149/30
56-55-3	Benzo(a)anthracene	ND		1910	1130	59	1030	54	9	22-157/30
50-32-8	Benzo(a)pyrene	ND		1910	1250	65	1160	61	7	23-153/30
205-99-2	Benzo(b)fluoranthene	ND		1910	1300	68	1230	64	6	22-161/30
191-24-2	Benzo(g,h,i)perylene	ND		1910	602	32	484	25	22	20-158/30
207-08-9	Benzo(k)fluoranthene	ND		1910	1360	71	1240	65	9	17-161/30
218-01-9	Chrysene	ND		1910	1170	61	1030	54	13	16-159/30
53-70-3	Dibenzo(a,h)anthracene	ND		1910	689	36	574	30	18	21-154/30
206-44-0	Fluoranthene	ND		1910	1330	70	1220	64	9	16-140/30
86-73-7	Fluorene	ND		1910	1220	64	1040	54	16	15-153/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		1910	824	43	672	35	20	21-159/30
90-12-0	1-Methylnaphthalene	ND		1910	1350	71	1170	61	14	10-148/30
91-57-6	2-Methylnaphthalene	ND		1910	1380	72	1180	62	16	10-181/30
91-20-3	Naphthalene	ND		1910	1080	57	921	48	16	10-176/30
85-01-8	Phenanthrene	ND		1910	1090	57	974	51	11	22-152/30
129-00-0	Pyrene	ND		1910	1320	69	1150	60	14	10-200/30

CAS No.	Surrogate Recoveries	MS	MSD	D28130-8	Limits
4165-60-0	Nitrobenzene-d5	56%	57%	56%	10-193%
321-60-8	2-Fluorobiphenyl	56%	59%	62%	20-138%
1718-51-0	Terphenyl-d14	66%	68%	76%	17-174%

(a) Elevated RL due to matrix interference.

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: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB753-MB	GB13228.D	1	09/29/11	SK	n/a	n/a	GGB753

The QC reported here applies to the following samples: Method: SW846 8015B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8

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	83% 60-140%

Blank Spike Summary

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB753-BS	GB13229.D	1	09/29/11	SK	n/a	n/a	GGB753

The QC reported here applies to the following samples: Method: SW846 8015B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	123	112	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	89%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D28125-1MS	GB13231.D	1	09/29/11	SK	n/a	n/a	GGB753
D28125-1MSD	GB13232.D	1	09/29/11	SK	n/a	n/a	GGB753
D28125-1	GB13230.D	1	09/29/11	SK	n/a	n/a	GGB753

The QC reported here applies to the following samples: Method: SW846 8015B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8

CAS No.	Compound	D28125-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		141	144	102	156	111	8	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D28125-1	Limits
120-82-1	1,2,4-Trichlorobenzene	81%	83%	80%	60-140%

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: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4576-MB	FD10435.D	1	09/30/11	CS	09/30/11	OP4576	GFD495

The QC reported here applies to the following samples: Method: SW846-8015B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8

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% 61-142%

Blank Spike Summary

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4576-BS	FD10436.D	1	09/30/11	CS	09/30/11	OP4576	GFD495

The QC reported here applies to the following samples: Method: SW846-8015B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	541	81	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	95%	61-142%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D28130
Account: ECOECO A Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4576-MS	FD10437.D	1	09/30/11	CS	09/30/11	OP4576	GFD495
OP4576-MSD	FD10438.D	1	09/30/11	CS	09/30/11	OP4576	GFD495
D28125-1	FD10439.D	1	09/30/11	CS	09/30/11	OP4576	GFD495

The QC reported here applies to the following samples: Method: SW846-8015B

D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8

CAS No.	Compound	D28125-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	199		765	771	75	844	84	9	24-157/35

CAS No.	Surrogate Recoveries	MS	MSD	D28125-1	Limits
84-15-1	o-Terphenyl	79%	85%	78%	61-142%

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: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5903
Matrix Type: AQUEOUS

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

Prep Date: 09/30/11

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	16.0	<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	12.5	<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	-75	<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 MP5903: D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8A

Results < IDL are shown as zero for calculation purposes

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5903
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5903
Matrix Type: AQUEOUS

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

Prep Date: 09/30/11

Metal	D28130-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	165000	312000	125000	117.6	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	30900	158000	125000	101.7	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	1930000	2170000	125000	192.0(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP5903: D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8A

Results < IDL are shown as zero for calculation purposes

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5903
Matrix Type: AQUEOUS

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

Prep Date:

Metal

- (*) Outside of QC limits
- (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: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5903
Matrix Type: AQUEOUS

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

Prep Date: 09/30/11

Metal	D28130-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	165000	315000	125000	120.0	1.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	30900	158000	125000	101.7	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	1930000	2210000	125000	224.0(a)	1.8	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP5903: D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8A

Results < IDL are shown as zero for calculation purposes

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5903
Matrix Type: AQUEOUS

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

Prep Date:

Metal

- (*) Outside of QC limits
- (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.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D28130
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP5903
 Matrix Type: AQUEOUS

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

Prep Date: 09/30/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	136000	125000	108.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	126000	125000	100.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	127000	125000	101.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP5903: D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8A

Results < IDL are shown as zero for calculation purposes

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D28130

Account: ECOECO - Ecos Environmental

Project: Noble

QC Batch ID: MP5903

Methods: SW846 6010B, USDA HANDBOOK 60

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

Metal

(*) Outside of QC limits

(anr) Analyte not requested

9.1.3

9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 10/03/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59	-0.10	<2.5
Barium	1.0	.11	.11	0.14	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.0	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.010	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16		
Iron	7.0	.34	2		
Lead	5.0	.16	.21	0.18	<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		
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	-0.39	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.010	<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		

Associated samples MP5925: D28130-8

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 10/03/11

Metal	D28126-5 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	8.6	115	123	86.7	75-125
Barium	2420	2690	245	110.0	75-125
Beryllium	anr				
Boron					
Cadmium	0.85	53.8	61.3	86.3	75-125
Calcium					
Chromium	23.3	72.6	61.3	80.4	75-125
Cobalt					
Copper	anr				
Iron	anr				
Lead	16.1	116	123	81.4	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Phosphorus	anr				
Potassium					
Selenium	3.2	110	123	87.0	75-125
Silicon					
Silver	0.0	23.2	24.5	94.5	75-125
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc	anr				

Associated samples MP5925: D28130-8

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 10/03/11

Metal	D28126-5 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	8.6	113	118	88.5	1.8	20
Barium	2420	2510	236	38.1 (a)	6.9	20
Beryllium	anr					
Boron						
Cadmium	0.85	52.1	59	86.9	3.2	20
Calcium						
Chromium	23.3	73.2	59	84.6	0.8	20
Cobalt						
Copper	anr					
Iron	anr					
Lead	16.1	113	118	82.1	2.6	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Phosphorus	anr					
Potassium						
Selenium	3.2	107	118	88.0	2.8	20
Silicon						
Silver	0.0	22.6	23.6	95.8	2.6	20
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium	anr					
Vanadium						
Zinc	anr					

Associated samples MP5925: D28130-8

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

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.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 10/03/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	86.5	100	86.5	80-120
Barium	176	200	88.0	80-120
Beryllium	anr			
Boron				
Cadmium	43.4	50	86.8	80-120
Calcium				
Chromium	43.4	50	86.8	80-120
Cobalt				
Copper	anr			
Iron	anr			
Lead	88.2	100	88.2	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium				
Selenium	88.1	100	88.1	80-120
Silicon				
Silver	18.9	20	94.5	80-120
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	anr			

Associated samples MP5925: D28130-8

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D28130

Account: ECOECO - Ecos Environmental

Project: Noble

QC Batch ID: MP5925

Methods: SW846 6010B

Matrix Type: SOLID

Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 10/03/11

Metal	D28126-5 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	70.0	120	70.7 (a)	0-10
Barium	19700	20900	6.1	0-10
Beryllium	anr			
Boron				
Cadmium	6.90	4.00	42.0 (a)	0-10
Calcium				
Chromium	190	201	6.0	0-10
Cobalt				
Copper	anr			
Iron	anr			
Lead	131	128	2.4	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium				
Selenium	26.2	0.00	100.0(a)	0-10
Silicon				
Silver	0.00	2.00		0-10
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	anr			

Associated samples MP5925: D28130-8

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5925
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

9.2.4

9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

QC Batch ID: MP5928
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 10/04/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	-0.0033	<0.10

Associated samples MP5928: D28130-8

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP5928
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 10/04/11

Metal	D28126-5 Original MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.031	0.36	0.454	72.4N(a) 85-115

Associated samples MP5928: D28130-8

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.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D28130
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP5928
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 10/04/11

Metal	D28126-5 Original MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit	
Mercury	0.031	0.43	0.472	84.5	17.7	20

Associated samples MP5928: D28130-8

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D28130
 Account: ECOECO - Ecos Environmental
 Project: Noble

QC Batch ID: MP5928
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 10/04/11

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

Associated samples MP5928: D28130-8

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

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: D28130
Account: ECOECO - Ecos Environmental
Project: Noble

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP5595/GN11826			umhos/cm	9980	9700	97.2	90-110%
pH	GN11813			su	8.00	7.96	99.5	99.3-100.7%

Associated Samples:
Batch GN11813: D28130-8
Batch GP5595: D28130-1, D28130-2, D28130-3, D28130-4, D28130-5, D28130-6, D28130-7, D28130-8
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D28130
Account: ECOECO A - Ecos Environmental
Project: Noble

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN11815	D28126-5	mv	295	304	3.0	0-20%

Associated Samples:
Batch GN11815: D28130-8
(*) 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: D28130

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 9/30/2011

Delivery Method:

Client Service Action Required at Login: No

Project: SUB

No. Coolers: 1

Airbill #'s:

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 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"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun | |
| 3. Cooler media: | Ice (bag) | |

Quality Control Preservation

Y or N

N/A

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 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"/> |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 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"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 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 | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 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

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: D28130
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	GP13591/GN36384	0.40	0.0	mg/kg	40	40.0	100.0	80-120%
Chromium, Hexavalent	GP13591/GN36384			mg/kg	1170	1150	98.3	80-120%

Associated Samples:
Batch GP13591: D28130-8
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D28130
Account: ALMS - Accutest Mountain States
Project: ECOECO: Noble

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP13591/GN36384	D28126-5	mg/kg	0.28	0.48	52.6(a)	0-20%

Associated Samples:
Batch GP13591: D28130-8
(*) Outside of QC limits
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D28130
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	GP13591/GN36384	D28126-5	mg/kg	0.28	48.3	37.6	77.3	75-125%
Chromium, Hexavalent	GP13591/GN36384	D28126-5	mg/kg	0.28	910	1040	114.2	75-125%

Associated Samples:
Batch GP13591: D28130-8
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits