



1437 Larimer St.
Denver, CO 80202
720•473•3131
sean.ohearn@enertiag.com

January 3, 2012

Mr. Carlos Lujan, Ph.D.
State of Colorado
Oil & Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

RE: Final Pit Closure Report
Battle Mountain Federal 14-10 Well Location
REM No. 6129, DOC No. 2215973

Dear Mr. Lujan:

The following includes a summary of work completed to date/Final Closure Report (Report) for the residual drilling materials pit on the Battle Mountain Federal 14-10 well location (BMF 14-10). This Report is submitted on behalf of Entek GRB, LLC (Entek) in partial fulfillment of the requirements set forth in the approved workplan for the BMF 14-10 pit closure dated September 9, 2011.

Background

BMF 14-10 is located on BLM land in Section 14, Township 12 North, Range 89 West, Moffat County, Colorado. The BMF 14-10 location has been assigned Location ID No. 421159.

On September 9, 2011, a Form 27 Site Investigation and Remediation Workplan (Workplan) was submitted to COGCC for closure of the unlined pit at the BMF 14-10 well location. The Workplan included: a proposed remediation strategy for the pit; photographs of the pit; a schematic illustrating sample locations (residual drilling materials collected from accessible areas within the pit and background sample locations); and laboratory analysis of the residual drilling material and background soil samples with summary table. COGCC completed its review of the submitted documents and issued a signed Workplan on September 16th. For reference, a copy of the signed Workplan is included as Attachment A.

Site Investigation Activities

As outlined in the Workplan, residual drilling material samples were collected from accessible areas within the pit. In addition, 2 background samples were collected from undisturbed areas in the vicinity of the pit. Figure 2 included in the Workplan (Attachment A) illustrates the sample locations. Residual drilling material samples and were analyzed for COGCC Table 910-1

Mr. Carlos Lujan, Ph.D.

Page 2

parameters. These parameters include the following: total metals; BTEX (benzene, toluene, ethylbenzene, and total xylenes); select semi-volatile organics; total petroleum hydrocarbons (TPH) both volatile (TVPH) and extractible (TEPH); SAR (sodium absorption ratio); EC (electrical conductivity); and pH. Background soil samples were analyzed for total Ar, SAR, EC, and pH.

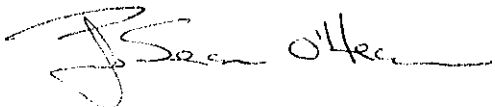
Results of the sampling program are presented in the Workplan. In summary, all parameters included in the analysis were below COGCC limits with the exception of arsenic and SAR. Arsenic concentrations ranged from 4.7 mg/kg to 8.6 mg/kg and SAR levels ranged from 1.08 to 54.9 in the residual material samples. Background arsenic concentrations and SAR levels were 3.4 mg/kg and 0.27 (soil sample A) and 3.8 mg/kg and 0.17 (soil sample B).

Remediation Activities

Due to the elevated concentrations/levels of arsenic and SAR in the residual drilling material, clean soil was mixed with the residual drilling material and the upper 3' of the pit was backfilled with clean soil and graded to match existing grade. Figure 1 includes photographs of the backfilled pit. This work was completed on or about October 15, 2011. Once activity at the well location has ceased, the ground surface will be roughened and broadcast seeded in accordance with the revegetation procedures included in the Entek Storm Water Management Plan (SWMP) for its Northeast Sand Wash Basin Development Field. Well location restoration and revegetation shall be conducted in a manner consistent with BLM Best Management Practices for Noxious and Invasive Weed Prevention and the SWMP.

We trust that this Closure Report is acceptable and complete. Please contact me should you have any questions or require additional information.

Sincerely,
ENERTIA CONSULTING GROUP, LLC

A handwritten signature in black ink, appearing to read "J. Sean O'Hearn", is written over a horizontal line.

J. Sean O'Hearn, P.E., P.G.
Managing Partner

LITTLE SNAKE RIVER

COUNTY ROAD 129

BATTLE MOUNTAIN
FEDERAL 14-10 PIT



FIGURE 1
ENTEK GRB
BATTLE MOUNTAIN
FEDERAL 14-10 PIT
SLATER DOME FIELD
FEBRUARY 10, 2012



N.T.S.

ATTACHMENT A

**SITE INVESTIGATION AND REMEDIATION WORKPLAN
RESIDUAL DRILLING MATERIALS STOCKPILE
BATTLE MOUNTAIN FEDERAL 14-10 – LOCATION ID No. 421159**

State of Colorado Oil and Gas Conservation Commission

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



FOR OGCC USE ONLY

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:

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

OGCC Operator Number: 10323

Name of Operator: Entek GRB, LLC

Address: 535 16th Street, Suite 620

City: Denver

State: CO Zip: 80202

Contact Name and Telephone:

Kristen Stocks

No: (307) 200-1930

Fax: (866) 435-9424

API Number: 05-081-07641

County: Moffatt

Facility Name: Slater Dome

Facility Number: 17551 Location ID # 421159

Well Name: Battle Mountain Federal 14-10

Well Number: 14-10

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NESE 14, 12N, 89W, 6th Latitude: 40.9923 Longitude: -107.3399

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Residual drilling materials

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.): undeveloped rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan:

Potential receptors (water wells within 1/4 mi, surface waters, etc.): none

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

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

residual drilling materials contained within unlined pit

How Determined:

visual observation and drilling materials sample taken

REMEDIALATION WORKPLAN

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

Residual drilling fluid materials are present in the unlined pit located in the southeast corner of the Battle Mountain Federal 14-10 well pad (see Figure 1 for approximate pit location). Two discrete samples of the residual material and two discrete samples of the pit sidewalls have been obtained and tested for Table 910-1 parameters. Figure 2 illustrates the sample locations. The sample results, summarized in Table 1 and included as Appendix A, indicate contaminant concentrations within acceptable limits. Accordingly, the proposed initial action will be to leave the residual drilling materials in place and backfill the upper 2' (minimum) of the pit with clean fill material only.

Describe how source is to be removed:

Residual drilling materials to be left in place. Remaining pit volume (upper 2+ feet) to be backfilled with clean fill. Ground surface to be shaped and graded to match existing grade.

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.:

Given the results of the sample analysis, the environmental impact associated with leaving the material in place and covering the material with a minimum of 2' of clean fill is anticipated to be minimal. Once activity on the 14-10 has ended, the well pad surface will be reclaimed/revegetated in accordance with Entek Storm Water Management Plan requirements.

Submit Page 2 with Page 1



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: (Location ID # 421159)
Facility Name & No: Battle Mountain Federal 14-10 pit

OGCC Employee: _____

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

Depth to groundwater in the vicinity of the Battle Mountain Federal 14-10 pit location is reported to be greater than 400'. Accordingly, it is unlikely that groundwater has been impacted by the residual drilling materials.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The residual drilling materials will be left in place and backfilled with clean fill material. Once backfilled, the former pit surface will be shaped and graded to match the existing grade around the perimeter of the pit. Once activity at the well location has ceased, the ground surface will be roughened and broadcast seeded in accordance with revegetation procedures included in the Entek Storm Water Management Plan (SWMP). Well location restoration and revegetation shall be conducted in a manner consistent with BLM Best Management Practices for Noxious and Invasive Weed Prevention and the SWMP.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☐ Y ☒ N If yes, describe:

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

Remain in existing unlined pit.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: <u>8/1</u>	Date Site Investigation Completed: <u>8/31</u>	Date Remediation Plan Submitted: <u>9/9</u>
Remediation Start Date: <u>9/14</u>	Anticipated Completion Date: <u>10/15</u>	Actual Completion Date: _____

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

Print Name: Tim Hopkins

Signed: [Signature]

Title: Regional Manager

Date: 9/9/11

OGCC Approved: [Signature]

Title: FOR Chris Canfield

Date: 09/16/2011

EPS NW Region

COA: Arsenic at the bottom of the pit

was 0.6 mg/kg in one sample.

Max allowable arsenic concentration is $3.8 \text{ mg} + 10\% = 4.2 \text{ mg/kg}$ (per background samples)
Material at the bottom of the pit should be scrapped and mixed with clean material
to reduce arsenic concentration.

LITTLE SNAKE RIVER

COUNTY ROAD 129

BATTLE MOUNTAIN
FEDERAL 14-10 PIT



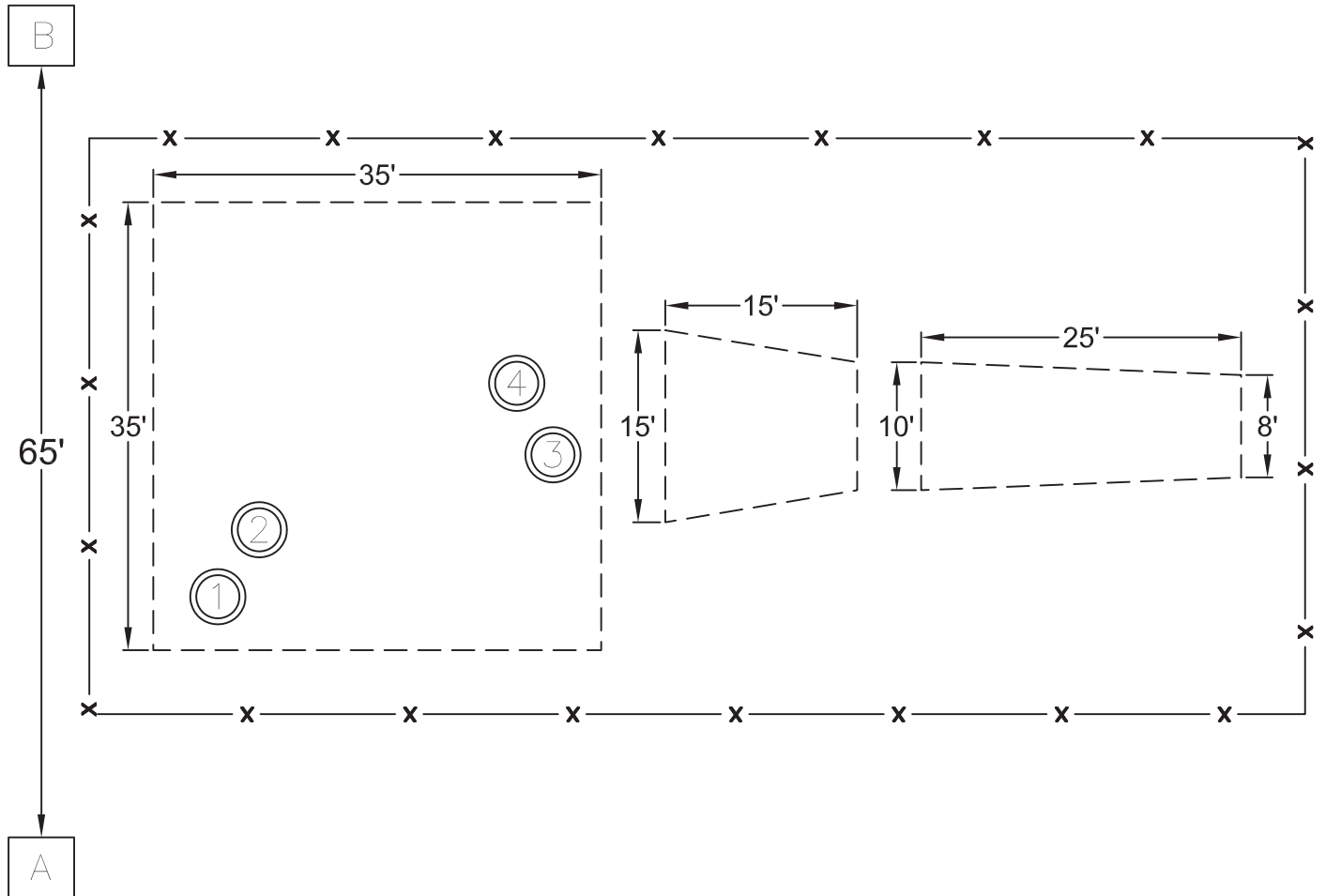
FIGURE 1

BATTLE MOUNTAIN
FEDERAL 14-10
SLATER DOME FIELD
SEPTEMBER 9, 2011



N.T.S.

ENERTIA
CONSULTING
GROUP



LEGEND





-  PIT SAMPLE LOCATION
-  BACKGROUND SAMPLE LOCATION
-  PIT PERIMETER
-  FENCE

FIGURE 2
BATTLE MOUNTAIN
FEDERAL 14-10
SLATER DOME FIELD
SEPTEMBER 9, 2011

Table 1 - 14-10 Pit Sidewall and Bottom Sample Results
Soil Sample Date - July 29, 2011

Contaminant of Concern	COGCC Limit	14-10-1	14-10-2	14-10-3	14-10-4
Organic Compounds in Soil					
TPH (total volatile and extractable petroleum hydrocarbons)	500 mg/kg	ND	170 mg/kg	43 mg/kg	500 mg/kg
Benzene	0.17 mg/kg	ND	.0095 mg/kg	ND	0.160 mg/kg
Toluene	85 mg/kg	ND	.0363 mg/kg	0.0007 mg/kg	0.950 mg/kg
Ethylbenzene	100 mg/kg	ND	.0104 mg/kg	ND	0.370 mg/kg
Xylenes (total)	175 mg/kg	ND	.0293 mg/kg	0.0008 mg/kg	1.980 mg/kg
Acenaphthene	1,000 mg/kg	ND	ND	ND	ND
Anthracene	1,000 mg/kg	ND	ND	ND	ND
Benzo(A)anthracene	0.22 mg/kg	ND	ND	ND	ND
Benzo(B)fluoranthene	0.22 mg/kg	ND	ND	ND	ND
Benzo(K)fluoranthene	2.2 mg/kg	ND	ND	ND	ND
Benzo(A)pyrene	0.022 mg/kg	ND	ND	ND	ND
Chrysene	22 mg/kg	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.022 mg/kg	ND	ND	ND	ND
Fluoranthene	1,000 mg/kg	ND	ND	ND	ND
Fluorene	1,000 mg/kg	ND	ND	ND	ND
Indeno(1,2,3,C,D)pyrene	0.22 mg/kg	ND	ND	ND	ND
Napthalene	23 mg/kg	ND	ND	ND	ND
Pyrene	1,000 mg/kg	ND	ND	ND	ND
Inorganics in Soils					
Electrical Conductivity (EC)	<4 mmhos/cm or 2x background	0.564	13.8	0.705	16.2
Sodium Adsorption Ratio (SAR)	<12	1.08	54.9	1.14	46.7
pH	6 to 9	7.9	8.3	8	8

Metals in Soils					
Arsenic	0.39 mg/kg	5.3 mg/kg	6.0 mg/kg	4.7 mg/kg	8.6 mg/kg
Barium (LDNR True Total Barium)	15,000 mg/kg	197 mg/kg	380 mg/kg	351 mg/kg	6,720 mg/kg
Boron (Hot Water Soluble)	2 mg/l	8 mg/kg	19	7 mg/kg	ND
Cadmium	70 mg/kg	ND	ND	ND	1.2 mg/kg
Chromium (total)	120,000 mg/kg	19 mg/kg	42 mg/kg	20 mg/kg	31 mg/kg
Chromium (VI)	23 mg/kg				
Copper	3,100 mg/kg	11 mg/kg	22 mg/kg	12 mg/kg	20 mg/kg
Lead (inorganic)	400 mg/kg	7 mg/kg	19 mg/kg	10 mg/kg	16 mg/kg
Mercury	23 mg/kg	ND	ND	ND	ND
Nickel (soluble salts)	1,600 mg/kg	15 mg/kg	24 mg/kg	16 mg/kg	26 mg/kg
Selenium	390 mg/kg	ND	ND	ND	ND
Silver	390 mg/kg	ND	ND	ND	ND
Zinc	23,000 mg/kg	40 mg/kg	78 mg/kg	45 mg/kg	102 mg/kg
Liquid Hydrocarbons in Soil and Groundwater					
Liquid Hydrocarbons including Condensate and Oil	Below Detection Level	BDL	BDL	BDL	BDL

14-10 Background Sample Results
Soil Sample Date - July 29, 2011

Contaminant of Concern	COGCC Limit	14-10-A	14-10-B		
Organic Compounds in Soil					
Arsenic (total)	0.39 mg/kg	3.4 mg/kg	3.8 mg/kg		
Sodium Adsorption Ratio (SAR)	<12	0.27	0.17		
Electrical Conductivity (EC)	<4 mmhos/cm or 2x background	0.366	0.402		
pH	6 to 9	6.5	7		

August 25, 2011

Report to:

Kristen Stocks
Entek GRB LLC
535 16th Street Suite 620
Denver, CO 80202

Bill to:

Lauri Wetherell
Entek GRB LLC
1660 Lincoln Street Suite 2150
Denver, CO 80264

cc: Sean O'Hearn

Project ID:

ACZ Project ID: L89561

Kristen Stocks:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 29, 2011. This project has been assigned to ACZ's project number, L89561. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L89561. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 25, 2011. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Sue Webber has reviewed and
approved this report.



Entek GRB LLC

August 25, 2011

Project ID:

ACZ Project ID: L89561

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 6 soil samples from Entek GRB LLC on July 29, 2011. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L89561. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, organic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following anomaly required further explanation not provided by the Extended Qualifier Report:

1. The samples were received outside of the recommended temperature range of 0 to 6 degrees C. They were hand delivered immediately after sampling.

Entek GRB LLC

Project ID:

Sample ID: 14-10-1

ACZ Sample ID: **L89561-01**

Date Sampled: 07/29/11 00:00

Date Received: 07/29/11

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020 ICP-MS	5.3			mg/Kg	0.3	1	08/17/11 17:42	msh
Barium, total (3050)	M6010B ICP	197		*	mg/Kg	0.3	2	08/16/11 20:33	aeb
Boron, total (3050)	M6010B ICP	8		*	mg/Kg	1	5	08/16/11 20:33	aeb
Cadmium, total (3050)	M6010B ICP		U		mg/Kg	0.5	2	08/16/11 20:33	aeb
Calcium, soluble (Sat. Paste)	M6010B ICP	2.07			meq/L	0.01	0.05	08/17/11 10:43	aeb
Chromium, total (3050)	M6010B ICP	19			mg/Kg	1	5	08/16/11 20:33	aeb
Copper, total (3050)	M6010B ICP	11			mg/Kg	1	5	08/16/11 20:33	aeb
Lead, total (3050)	M6010B ICP	7	B	*	mg/Kg	4	20	08/16/11 20:33	aeb
Magnesium, soluble (Sat. Paste)	M6010B ICP	1.65			meq/L	0.02	0.08	08/17/11 10:43	aeb
Mercury, total	M7471A CVAA		U		mg/Kg	0.04	0.2	08/23/11 17:48	erf
Nickel, total (3050)	M6010B ICP	15			mg/Kg	1	5	08/16/11 20:33	aeb
Selenium, total (3050)	M6010B ICP		U	*	mg/Kg	6	30	08/16/11 20:33	aeb
Silver, total (3050)	M6010B ICP		U		mg/Kg	1	3	08/16/11 20:33	aeb
Sodium Absorption Ratio	Calculation	1.08				0.03	0.15	08/25/11 9:59	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	1.47			meq/L	0.01	0.09	08/17/11 10:43	aeb
Zinc, total (3050)	M6010B ICP	40		*	mg/Kg	1	5	08/16/11 20:33	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B	0.564		*	mmhos/cm	0.001	0.01	08/16/11 16:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	08/16/11 16:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	86.6		*	%	0.1	0.5	08/10/11 9:00	ndj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/03/11 9:58	jms
Crush and Pulverize	USDA No. 1, 1972							08/10/11 13:00	ndj
Digestion - Hot Plate	M3050B ICP							08/15/11 18:19	mss2
Digestion - Hot Plate	M3050B ICP-MS							08/15/11 18:19	mss2
Saturated Paste Extraction	USDA No. 60 (2)							08/15/11 9:00	ndj

Entek GRB LLC

Project ID:

Sample ID: 14-10-2

ACZ Sample ID: **L89561-02**

Date Sampled: 07/29/11 00:00

Date Received: 07/29/11

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020 ICP-MS	6.0			mg/Kg	0.3	1	08/17/11 17:45	msh
Barium, total (3050)	M6010B ICP	380		*	mg/Kg	0.3	2	08/16/11 20:44	aeb
Boron, total (3050)	M6010B ICP	19		*	mg/Kg	1	5	08/16/11 20:44	aeb
Cadmium, total (3050)	M6010B ICP		U		mg/Kg	0.5	2	08/16/11 20:44	aeb
Calcium, soluble (Sat. Paste)	M6010B ICP	10.50		*	meq/L	0.02	0.1	08/17/11 10:50	aeb
Chromium, total (3050)	M6010B ICP	42			mg/Kg	1	5	08/16/11 20:44	aeb
Copper, total (3050)	M6010B ICP	22			mg/Kg	1	5	08/16/11 20:44	aeb
Lead, total (3050)	M6010B ICP	19	B	*	mg/Kg	4	20	08/16/11 20:44	aeb
Magnesium, soluble (Sat. Paste)	M6010B ICP	1.43		*	meq/L	0.03	0.2	08/17/11 10:50	aeb
Mercury, total	M7471A CVAA		U		mg/Kg	0.1	0.5	08/23/11 17:50	erf
Nickel, total (3050)	M6010B ICP	24			mg/Kg	1	5	08/16/11 20:44	aeb
Selenium, total (3050)	M6010B ICP		U	*	mg/Kg	6	30	08/16/11 20:44	aeb
Silver, total (3050)	M6010B ICP		U		mg/Kg	1	3	08/16/11 20:44	aeb
Sodium Absorption Ratio	Calculation	54.90				0.03	0.15	08/25/11 9:59	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	134			meq/L	0.1	0.9	08/17/11 13:35	aeb
Zinc, total (3050)	M6010B ICP	78		*	mg/Kg	1	5	08/16/11 20:44	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B	13.800		*	mmhos/cm	0.001	0.01	08/16/11 16:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	8.3		*	units	0.1	0.1	08/16/11 16:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	34.6		*	%	0.1	0.5	08/10/11 9:00	ndj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/03/11 9:59	jms
Crush and Pulverize	USDA No. 1, 1972							08/10/11 13:00	ndj
Digestion - Hot Plate	M3050B ICP							08/15/11 21:35	mss2
Digestion - Hot Plate	M3050B ICP-MS							08/15/11 21:35	mss2
Saturated Paste Extraction	USDA No. 60 (2)							08/15/11 9:00	ndj

Entek GRB LLC

Project ID:

Sample ID: 14-10-3

ACZ Sample ID: **L89561-03**

Date Sampled: 07/29/11 00:00

Date Received: 07/29/11

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020 ICP-MS	4.7			mg/Kg	0.3	1	08/17/11 17:48	msh
Barium, total (3050)	M6010B ICP	351		*	mg/Kg	0.3	2	08/16/11 20:47	aeb
Boron, total (3050)	M6010B ICP	7		*	mg/Kg	1	5	08/16/11 20:47	aeb
Cadmium, total (3050)	M6010B ICP		U		mg/Kg	0.5	2	08/16/11 20:47	aeb
Calcium, soluble (Sat. Paste)	M6010B ICP	2.99			meq/L	0.01	0.05	08/17/11 10:53	aeb
Chromium, total (3050)	M6010B ICP	20			mg/Kg	1	5	08/16/11 20:47	aeb
Copper, total (3050)	M6010B ICP	12			mg/Kg	1	5	08/16/11 20:47	aeb
Lead, total (3050)	M6010B ICP	10	B	*	mg/Kg	4	20	08/16/11 20:47	aeb
Magnesium, soluble (Sat. Paste)	M6010B ICP	1.81			meq/L	0.02	0.08	08/17/11 10:53	aeb
Mercury, total	M7471A CVAA		U		mg/Kg	0.04	0.2	08/23/11 17:53	erf
Nickel, total (3050)	M6010B ICP	16			mg/Kg	1	5	08/16/11 20:47	aeb
Selenium, total (3050)	M6010B ICP		U	*	mg/Kg	6	30	08/16/11 20:47	aeb
Silver, total (3050)	M6010B ICP		U		mg/Kg	1	3	08/16/11 20:47	aeb
Sodium Absorption Ratio	Calculation	1.14				0.03	0.15	08/25/11 9:59	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	1.76			meq/L	0.01	0.09	08/17/11 10:53	aeb
Zinc, total (3050)	M6010B ICP	45		*	mg/Kg	1	5	08/16/11 20:47	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B	0.705		*	mmhos/cm	0.001	0.01	08/16/11 16:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	8.0		*	units	0.1	0.1	08/16/11 16:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	85.9		*	%	0.1	0.5	08/10/11 9:00	ndj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/03/11 10:01	jms
Crush and Pulverize	USDA No. 1, 1972							08/10/11 13:00	ndj
Digestion - Hot Plate	M3050B ICP							08/15/11 22:40	mss2
Digestion - Hot Plate	M3050B ICP-MS							08/15/11 22:40	mss2
Saturated Paste Extraction	USDA No. 60 (2)							08/15/11 9:00	ndj

Entek GRB LLC

Project ID:

Sample ID: 14-10-4

ACZ Sample ID: **L89561-04**

Date Sampled: 07/29/11 00:00

Date Received: 07/29/11

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020 ICP-MS	8.6			mg/Kg	0.3	1	08/17/11 17:51	msh
Barium, total (3050)	M6010B ICP	6720		*	mg/Kg	3	20	08/17/11 10:01	aeb
Boron, total (3050)	M6010B ICP		U	*	mg/Kg	1	5	08/16/11 20:50	aeb
Cadmium, total (3050)	M6010B ICP	1.2	B		mg/Kg	0.5	2	08/16/11 20:50	aeb
Calcium, soluble (Sat. Paste)	M6010B ICP	19.20		*	meq/L	0.05	0.2	08/17/11 10:56	aeb
Chromium, total (3050)	M6010B ICP	31			mg/Kg	1	5	08/16/11 20:50	aeb
Copper, total (3050)	M6010B ICP	20			mg/Kg	1	5	08/16/11 20:50	aeb
Lead, total (3050)	M6010B ICP	16	B	*	mg/Kg	4	20	08/16/11 20:50	aeb
Magnesium, soluble (Sat. Paste)	M6010B ICP	1.39		*	meq/L	0.08	0.4	08/17/11 10:56	aeb
Mercury, total	M7471A CVAA		U		mg/Kg	0.09	0.4	08/23/11 17:55	erf
Nickel, total (3050)	M6010B ICP	26			mg/Kg	1	5	08/16/11 20:50	aeb
Selenium, total (3050)	M6010B ICP		U	*	mg/Kg	60	300	08/17/11 10:01	aeb
Silver, total (3050)	M6010B ICP		U		mg/Kg	1	3	08/16/11 20:50	aeb
Sodium Absorption Ratio	Calculation	46.70				0.03	0.15	08/25/11 9:59	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	150		*	meq/L	0.09	0.3	08/17/11 10:56	aeb
Zinc, total (3050)	M6010B ICP	102		*	mg/Kg	1	5	08/16/11 20:50	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B	16.200		*	mmhos/cm	0.001	0.01	08/16/11 16:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	8.0		*	units	0.1	0.1	08/16/11 16:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	42.7		*	%	0.1	0.5	08/10/11 9:00	ndj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/03/11 10:03	jms
Crush and Pulverize	USDA No. 1, 1972							08/10/11 13:00	ndj
Digestion - Hot Plate	M3050B ICP							08/15/11 23:46	mss2
Digestion - Hot Plate	M3050B ICP-MS							08/15/11 23:46	mss2
Saturated Paste Extraction	USDA No. 60 (2)							08/15/11 9:00	ndj

Entek GRB LLC

Project ID:

Sample ID: 14-10-A

ACZ Sample ID: **L89561-05**

Date Sampled: 07/29/11 00:00

Date Received: 07/29/11

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020 ICP-MS	3.4			mg/Kg	0.3	1	08/17/11 17:54	msh
Calcium, soluble (Sat. Paste)	M6010B ICP	2.33			meq/L	0.01	0.05	08/17/11 10:59	aeb
Magnesium, soluble (Sat. Paste)	M6010B ICP	0.82			meq/L	0.02	0.08	08/17/11 10:59	aeb
Sodium Absorption Ratio	Calculation	0.27				0.03	0.15	08/25/11 10:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	0.34			meq/L	0.01	0.09	08/17/11 10:59	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B	0.366		*	mmhos/cm	0.001	0.01	08/16/11 16:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	6.5		*	units	0.1	0.1	08/16/11 16:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	90.9		*	%	0.1	0.5	08/10/11 9:00	ndj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/03/11 10:05	jms
Digestion - Hot Plate	M3050B ICP-MS							08/16/11 0:51	mss2
Saturated Paste Extraction	USDA No. 60 (2)							08/15/11 9:00	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							08/11/11 9:00	ndj

Entek GRB LLC

Project ID:

Sample ID: 14-10-B

ACZ Sample ID: **L89561-06**

Date Sampled: 07/29/11 00:00

Date Received: 07/29/11

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020 ICP-MS	3.8			mg/Kg	0.3	1	08/17/11 17:58	msh
Calcium, soluble (Sat. Paste)	M6010B ICP	2.70			meq/L	0.01	0.05	08/17/11 11:02	aeb
Magnesium, soluble (Sat. Paste)	M6010B ICP	0.90			meq/L	0.02	0.08	08/17/11 11:02	aeb
Sodium Absorption Ratio	Calculation	0.17				0.03	0.15	08/25/11 10:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	0.23			meq/L	0.01	0.09	08/17/11 11:02	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B	0.402		*	mmhos/cm	0.001	0.01	08/16/11 16:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.0		*	units	0.1	0.1	08/16/11 16:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	86.7		*	%	0.1	0.5	08/10/11 9:00	ndj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/03/11 10:07	jms
Digestion - Hot Plate	M3050B ICP-MS							08/16/11 1:57	mss2
Saturated Paste Extraction	USDA No. 60 (2)							08/15/11 9:00	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							08/11/11 9:00	ndj

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click:

<http://www.acz.com/public/extqualist.pdf>

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID:

Arsenic, total (3050)

M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307627													
WG307627ICV	ICV	08/17/11 16:51	MS110712-1	.05		.05202	mg/L	104	90	110			
WG307627ICB	ICB	08/17/11 16:54				U	mg/L		-0.0015	0.0015			
WG307445PBS	PBS	08/17/11 17:07				U	mg/Kg		-0.9	0.9			
WG307445LCSS1	LCSS	08/17/11 17:10	PCN37003	92.6		97.1	mg/Kg		76.8	108			
WG307445LCSSD1	LCSSD	08/17/11 17:13	PCN37003	92.6		94.8	mg/Kg		76.8	108	2.4	20	
L89507-01MS	MS	08/17/11 17:26	MS110815-2	25.025	1.7	26.34	mg/Kg	98.5	75	125			
L89507-01MSD	MSD	08/17/11 17:29	MS110815-2	25.025	1.7	25.71	mg/Kg	95.9	75	125	2.42	20	

Barium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	2		1.9928	mg/L	99.6	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.009	0.009			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-0.9	0.9			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	169		174.12	mg/Kg		140	198			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	169		172.91	mg/Kg		140	198	0.7	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5	197	271.98	mg/Kg	148.5	75	125			M3
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5	197	260.48	mg/Kg	125.7	75	125	4.32	20	M3

WG307620

WG307620ICV	ICV	08/17/11 9:24	II110816-2	2		2.0412	mg/L	102.1	90	110			
WG307620ICB	ICB	08/17/11 9:27				U	mg/L		-0.009	0.009			
WG307445PBS	PBS	08/17/11 9:39				U	mg/Kg		-0.9	0.9			
WG307445LCSS1	LCSS	08/17/11 9:42	PCN37003	169		177.66	mg/Kg		140	198			
WG307445LCSSD1	LCSSD	08/17/11 9:45	PCN37003	169		176.59	mg/Kg		140	198	0.6	20	
L89561-01MS	MS	08/17/11 9:54	II110811-3	50.5	200	275.97	mg/Kg	150.4	75	125			M3
L89561-01MSD	MSD	08/17/11 9:58	II110811-3	50.5	200	266.24	mg/Kg	131.2	75	125	3.59	20	M3

Boron, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	2		2.057	mg/L	102.9	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.03	0.03			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-3	3			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	106		116.4	mg/Kg		75.5	137			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	106		115.2	mg/Kg		75.5	137	1	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5505	8	61.4	mg/Kg	105.6	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5505	8	59.9	mg/Kg	102.7	75	125	2.47	20	

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID:

Cadmium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	2		1.9887	mg/L	99.4	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.015	0.015			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-1.5	1.5			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	61.8		66.12	mg/Kg		51.5	72			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	61.8		64.43	mg/Kg		51.5	72	2.6	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5	U	50.13	mg/Kg	99.3	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5	U	51.1	mg/Kg	101.2	75	125	1.92	20	

Calcium, soluble (Sat. Paste)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307622													
WG307622ICV	ICV	08/17/11 10:28	II110816-1	100		101.37	mg/L	101.4	90	110			
WG307622ICB	ICB	08/17/11 10:31				U	mg/L		-0.6	0.6			
L89561-01DUP	DUP	08/17/11 10:46			2.07	1.847	meq/L				11.4	20	

Chromium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	2		1.978	mg/L	98.9	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.03	0.03			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-3	3			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	71.3		73.6	mg/Kg		58.3	84.3			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	71.3		72.6	mg/Kg		58.3	84.3	1.4	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5	19	72.2	mg/Kg	105.3	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5	19	70.1	mg/Kg	101.2	75	125	2.95	20	

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307454													
L89561-01DUP	DUP	08/16/11 16:00			.564	.517	nmhos/cm				8.7	20	

Copper, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	2		1.977	mg/L	98.9	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.03	0.03			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-3	3			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	81.2		81.8	mg/Kg		68.1	94.3			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	81.2		80.7	mg/Kg		68.1	94.3	1.4	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5	11	60.7	mg/Kg	98.4	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5	11	59.8	mg/Kg	96.6	75	125	1.49	20	

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID:

Lead, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	4		3.818	mg/L	95.5	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.12	0.12			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-12	12			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	92.4		89.4	mg/Kg		77	108			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	92.4		89.8	mg/Kg		77	108	0.4	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	101	7	99.3	mg/Kg	91.4	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	101	7	100.6	mg/Kg	92.7	75	125	1.3	20	

Magnesium, soluble (Sat. Paste)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307622													
WG307622ICV	ICV	08/17/11 10:28	II110816-1	100		105.06	mg/L	105.1	90	110			
WG307622ICB	ICB	08/17/11 10:31				U	mg/L		-0.6	0.6			
L89561-01DUP	DUP	08/17/11 10:46			1.65	1.468	meq/L				11.7	20	

Mercury, total

M7471A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307651													
WG307651ICV	ICV	08/23/11 17:38	II110817-2	.01003		.01011	mg/L	100.8	90	110			
WG307651ICB	ICB	08/23/11 17:40				U	mg/L		-0.0006	0.0006			
WG307651PBS	PBS	08/23/11 17:42				U	mg/Kg		-0.12	0.12			
WG307651LCSS	LCSS	08/23/11 17:44	PCN36030	16.3		18.79	mg/Kg		11.6	21			
WG307651LCSSD	LCSSD	08/23/11 17:46	PCN36030	16.3		18.51	mg/Kg		11.6	21	1.5	20	
L89563-02MS	MS	08/23/11 18:02	II110803-2	1.001	U	1.084	mg/Kg	108.3	85	115			
L89563-02MSD	MSD	08/23/11 18:08	II110803-2	1.001	U	1.085	mg/Kg	108.4	85	115	0.09	20	

Nickel, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	2.002		2.057	mg/L	102.7	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.03	0.03			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-3	3			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	59.1		63.9	mg/Kg		49.5	68.7			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	59.1		63.6	mg/Kg		49.5	68.7	0.5	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5	15	64.9	mg/Kg	98.8	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5	15	64.8	mg/Kg	98.6	75	125	0.15	20	

pH, Saturated Paste

USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307454													
L89561-01DUP	DUP	08/16/11 16:00			7.9	8.02	units				1.5	20	
WG307454ICV	ICV	08/16/11 16:00	PCN36616	4		3.97	units	99.3	97	103			

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID:

Selenium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	4		4.236	mg/L	105.9	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.18	0.18			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-18	18			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	89.5		97.4	mg/Kg		70.7	108			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	89.5		78.8	mg/Kg		70.7	108	21.1	20	RK
L89561-01MS	MS	08/16/11 20:37	II110811-3	101	U	104.6	mg/Kg	103.6	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	101	U	109.6	mg/Kg	108.5	75	125	4.67	20	

WG307620

WG307620ICV	ICV	08/17/11 9:24	II110816-2	4		4.127	mg/L	103.2	90	110			
WG307620ICB	ICB	08/17/11 9:27				.072	mg/L		-0.18	0.18			
WG307445PBS	PBS	08/17/11 9:39				7.8	mg/Kg		-18	18			
WG307445LCSS1	LCSS	08/17/11 9:42	PCN37003	89.5		97.3	mg/Kg		70.7	108			
WG307445LCSSD1	LCSSD	08/17/11 9:45	PCN37003	89.5		96.5	mg/Kg		70.7	108	0.8	20	
L89561-01MS	MS	08/17/11 9:54	II110811-3	101	U	103.1	mg/Kg	102.1	75	125			
L89561-01MSD	MSD	08/17/11 9:58	II110811-3	101	U	110.1	mg/Kg	109	75	125	6.57	20	

Silver, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	.998		.984	mg/L	98.6	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.03	0.03			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-3	3			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	34.4		33.7	mg/Kg		22.8	46			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	34.4		33.6	mg/Kg		22.8	46	0.3	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5	U	49	mg/Kg	97	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5	U	48.8	mg/Kg	96.6	75	125	0.41	20	

Sodium, soluble (Sat. Paste)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307622													
WG307622ICV	ICV	08/17/11 10:28	II110816-1	100		101.46	mg/L	101.5	90	110			
WG307622ICB	ICB	08/17/11 10:31				U	mg/L		-0.9	0.9			
L89561-01DUP	DUP	08/17/11 10:46			1.47	1.275	meq/L				14.2	20	
WG307662													
WG307662ICV	ICV	08/17/11 13:13	II110816-1	100		101.4	mg/L	101.4	90	110			
WG307662ICB	ICB	08/17/11 13:16				U	mg/L		-0.9	0.9			
L89561-01DUP	DUP	08/17/11 13:32			1.39	1.203	meq/L				14.4	20	

Solids, Percent

CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307141													
WG307141PBS	PBS	08/10/11 9:00				U	%		99.9	100.1			
L89713-01DUP	DUP	08/10/11 9:00			24.5	24.68	%				0.7	20	

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID:

Zinc, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG307548													
WG307548ICV	ICV	08/16/11 20:06	II110816-2	2		1.967	mg/L	98.4	90	110			
WG307548ICB	ICB	08/16/11 20:09				U	mg/L		-0.03	0.03			
WG307445PBS	PBS	08/16/11 20:23				U	mg/Kg		-3	3			
WG307445LCSS1	LCSS	08/16/11 20:26	PCN37003	141		145.3	mg/Kg		114	168			
WG307445LCSSD1	LCSSD	08/16/11 20:30	PCN37003	141		145	mg/Kg		114	168	0.2	20	
L89561-01MS	MS	08/16/11 20:37	II110811-3	50.5	40	94.5	mg/Kg	107.9	75	125			
L89561-01MSD	MSD	08/16/11 20:40	II110811-3	50.5	40	91.6	mg/Kg	102.2	75	125	3.12	20	

Entek GRB LLC

ACZ Project ID: **L89561**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L89561-01	WG307548	Barium, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Boron, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Lead, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Selenium, total (3050)	M6010B ICP	RK	LCSS/LCSSD recovery within acceptance criteria but RPD exceeded the laboratory control limit. Acceptable MS/MSD RPD demonstrates precision.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L89561-02	WG307548	Barium, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Boron, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG307622	Calcium, soluble (Sat. Paste)	M6010B ICP	DD	Sample required dilution due to matrix color or odor.
	WG307548	Lead, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG307622	Magnesium, soluble (Sat. Paste)	M6010B ICP	DD	Sample required dilution due to matrix color or odor.
	WG307548	Selenium, total (3050)	M6010B ICP	RK	LCSS/LCSSD recovery within acceptance criteria but RPD exceeded the laboratory control limit. Acceptable MS/MSD RPD demonstrates precision.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L89561-03	WG307548	Barium, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Boron, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Lead, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Selenium, total (3050)	M6010B ICP	RK	LCSS/LCSSD recovery within acceptance criteria but RPD exceeded the laboratory control limit. Acceptable MS/MSD RPD demonstrates precision.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Entek GRB LLC

ACZ Project ID: **L89561**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L89561-04	WG307620	Barium, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG307548	Boron, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG307622	Calcium, soluble (Sat. Paste)	M6010B ICP	DD	Sample required dilution due to matrix color or odor.
	WG307548	Lead, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG307622	Magnesium, soluble (Sat. Paste)	M6010B ICP	DD	Sample required dilution due to matrix color or odor.
	WG307620	Selenium, total (3050)	M6010B ICP	DB	Sample required dilution due to low bias result.
	WG307622	Sodium, soluble (Sat. Paste)	M6010B ICP	DD	Sample required dilution due to matrix color or odor.
	WG307548	Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Entek GRB LLC

Project ID:

Sample ID: 14-10-1

ACZ Sample ID: **L89561-01**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: **WG307213**

Analyst: jjr

Extract Date: 08/11/11 18:06

Analysis Date: 08/11/11 18:06

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	0.2	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	0.2	1
m p Xylene	1330-20-7		U	1	*	ug/Kg	0.4	2
o Xylene	95-47-6		U	1	*	ug/Kg	0.2	1
Toluene	108-88-3		U	1	*	ug/Kg	0.2	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	100.6		1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	97.3		1	*	%	70	130

Entek GRB LLC
 Project ID:
 Sample ID: 14-10-1

ACZ Sample ID: **L89561-01**
 Date Sampled: 07/29/11 0:00
 Date Received: 07/29/11
 Sample Matrix: Soil

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
 Extract Method: **M3540**

Workgroup: WG306884

Analyst: mss
 Extract Date: 08/02/11 17:10
 Analysis Date: 08/04/11 22:34

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	33.3	*	mg/Kg	3	20
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	86.4		33.3	*	%	70	130

Entek GRB LLC

Project ID:

Sample ID: 14-10-1

ACZ Sample ID: **L89561-01**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

Polynuclear Aromatic Hydrocarbons GC/M

Analysis Method: **M8270C GC/MS**

Extract Method: **M3540**

Workgroup: **WG307181**

Analyst: itk

Extract Date: 08/08/11 17:12

Analysis Date: 08/10/11 15:10

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
2-Methylnaphthalene	91-57-6		U	33.31		ug/Kg	70	300
Acenaphthene	83-32-9		U	33.31		ug/Kg	70	300
Acenaphthylene	208-96-8		U	33.31		ug/Kg	70	300
Anthracene	120-12-7		U	33.31		ug/Kg	70	300
Benzo(a)anthracene	56-55-3		U	33.31		ug/Kg	70	300
Benzo(a)pyrene	50-32-8		U	33.31		ug/Kg	70	300
Benzo(b)fluoranthene	205-99-2		U	33.31		ug/Kg	70	300
Benzo(g,h,i)perylene	191-24-2		U	33.31		ug/Kg	70	300
Benzo(k)fluoranthene	207-08-9		U	33.31		ug/Kg	70	300
Chrysene	218-01-9		U	33.31		ug/Kg	70	300
Dibenzo(a,h)anthracene	53-70-3		U	33.31		ug/Kg	70	300
Fluoranthene	206-44-0		U	33.31		ug/Kg	70	300
Fluorene	86-73-7		U	33.31		ug/Kg	70	300
Indeno(1,2,3-cd)pyrene	193-39-5		U	33.31		ug/Kg	70	300
Naphthalene	91-20-3		U	33.31		ug/Kg	70	300
Phenanthrene	85-01-8		U	33.31		ug/Kg	70	300
Pyrene	129-00-0		U	33.31		ug/Kg	70	300
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
2-Fluorobiphenyl	321-60-8	85		33.31		%	45	105
Nitrobenzene-d5	4165-60-0	84.9		33.31		%	35	100
Terphenyl-d14	1718-51-0	125.3		33.31	*	%	30	125

Entek GRB LLC

Project ID:

Sample ID: 14-10-2

ACZ Sample ID: **L89561-02**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: **WG307213**

Analyst: jjr

Extract Date: 08/11/11 19:43

Analysis Date: 08/11/11 19:43

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2	9.5		1	*	ug/Kg	0.2	1
Ethylbenzene	100-41-4	10.4		1	*	ug/Kg	0.2	1
m p Xylene	1330-20-7	29.3		1	*	ug/Kg	0.4	2
o Xylene	95-47-6	16.2		1	*	ug/Kg	0.2	1
Toluene	108-88-3	36.3		1	*	ug/Kg	0.2	1
TVH C6 to C10	TVH	.88		1		mg/Kg	0.05	0.05
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	75		1	*	%	70	130
Bromofluorobenzene (TVH)	460-00 4	78.7		1		%	70	130

Entek GRB LLC
 Project ID:
 Sample ID: 14-10-2

ACZ Sample ID: **L89561-02**
 Date Sampled: 07/29/11 0:00
 Date Received: 07/29/11
 Sample Matrix: Soil

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
 Extract Method: **M3540**

Workgroup: WG306884

Analyst: mss
 Extract Date: 08/02/11 17:11
 Analysis Date: 08/04/11 23:00

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		170	J	830.56	*	mg/Kg	80	400
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	100.4		830.56	*	%	70	130

Entek GRB LLC

Project ID:

Sample ID: 14-10-2

ACZ Sample ID: **L89561-02**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

Polynuclear Aromatic Hydrocarbons GC/M

Analysis Method: **M8270C GC/MS**

Extract Method: **M3540**

Workgroup: **WG307181**

Analyst: itk

Extract Date: 08/08/11 17:13

Analysis Date: 08/10/11 15:39

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
2-Methylnaphthalene	91-57-6		U	3322.26	*	ug/Kg	7000	30000
Acenaphthene	83-32-9		U	3322.26	*	ug/Kg	7000	30000
Acenaphthylene	208-96-8		U	3322.26	*	ug/Kg	7000	30000
Anthracene	120-12-7		U	3322.26	*	ug/Kg	7000	30000
Benzo(a)anthracene	56-55-3		U	3322.26	*	ug/Kg	7000	30000
Benzo(a)pyrene	50-32-8		U	3322.26	*	ug/Kg	7000	30000
Benzo(b)fluoranthene	205-99-2		U	3322.26	*	ug/Kg	7000	30000
Benzo(g,h,i)perylene	191-24-2		U	3322.26	*	ug/Kg	7000	30000
Benzo(k)fluoranthene	207-08-9		U	3322.26	*	ug/Kg	7000	30000
Chrysene	218-01-9		U	3322.26	*	ug/Kg	7000	30000
Dibenzo(a,h)anthracene	53-70-3		U	3322.26	*	ug/Kg	7000	30000
Fluoranthene	206-44-0		U	3322.26	*	ug/Kg	7000	30000
Fluorene	86-73-7		U	3322.26	*	ug/Kg	7000	30000
Indeno(1,2,3-cd)pyrene	193-39-5		U	3322.26	*	ug/Kg	7000	30000
Naphthalene	91-20-3		U	3322.26	*	ug/Kg	7000	30000
Phenanthrene	85-01-8		U	3322.26	*	ug/Kg	7000	30000
Pyrene	129-00-0		U	3322.26	*	ug/Kg	7000	30000
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
2-Fluorobiphenyl	321-60-8	110.2		3322.26	*	%	45	105
Nitrobenzene-d5	4165-60-0	106		3322.26	*	%	35	100
Terphenyl-d14	1718-51-0	121.4		3322.26	*	%	30	125

Entek GRB LLC

Project ID:

Sample ID: 14-10-3

ACZ Sample ID: **L89561-03**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)Analysis Method: **M8021B/8015D GC/PID/FID**Extract Method: **5035A****Workgroup:** WG307213

Analyst: jjr

Extract Date: 08/11/11 20:16

Analysis Date: 08/11/11 20:16

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	0.2	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	0.2	1
m p Xylene	1330-20-7	.8	J	1	*	ug/Kg	0.4	2
o Xylene	95-47-6	.4	J	1	*	ug/Kg	0.2	1
Toluene	108-88-3	.7	J	1	*	ug/Kg	0.2	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	98.4		1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	104.1		1	*	%	70	130

Entek GRB LLC
 Project ID:
 Sample ID: 14-10-3

ACZ Sample ID: **L89561-03**
 Date Sampled: 07/29/11 0:00
 Date Received: 07/29/11
 Sample Matrix: Soil

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
 Extract Method: **M3540**

Workgroup: WG306884

Analyst: mss
 Extract Date: 08/02/11 17:12
 Analysis Date: 08/04/11 23:26

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		43		33.32	*	mg/Kg	3	20
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	93.8		33.32	*	%	70	130

Entek GRB LLC

Project ID:

Sample ID: 14-10-3

ACZ Sample ID: **L89561-03**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

Polynuclear Aromatic Hydrocarbons GC/M

Analysis Method: **M8270C GC/MS**

Extract Method: **M3540**

Workgroup: **WG307181**

Analyst: itk

Extract Date: 08/08/11 17:14

Analysis Date: 08/10/11 16:07

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
2-Methylnaphthalene	91-57-6		U	333.33	*	ug/Kg	700	3000
Acenaphthene	83-32-9		U	333.33	*	ug/Kg	700	3000
Acenaphthylene	208-96-8		U	333.33	*	ug/Kg	700	3000
Anthracene	120-12-7		U	333.33	*	ug/Kg	700	3000
Benzo(a)anthracene	56-55-3		U	333.33	*	ug/Kg	700	3000
Benzo(a)pyrene	50-32-8		U	333.33	*	ug/Kg	700	3000
Benzo(b)fluoranthene	205-99-2		U	333.33	*	ug/Kg	700	3000
Benzo(g,h,i)perylene	191-24-2		U	333.33	*	ug/Kg	700	3000
Benzo(k)fluoranthene	207-08-9		U	333.33	*	ug/Kg	700	3000
Chrysene	218-01-9		U	333.33	*	ug/Kg	700	3000
Dibenzo(a,h)anthracene	53-70-3		U	333.33	*	ug/Kg	700	3000
Fluoranthene	206-44-0		U	333.33	*	ug/Kg	700	3000
Fluorene	86-73-7		U	333.33	*	ug/Kg	700	3000
Indeno(1,2,3-cd)pyrene	193-39-5		U	333.33	*	ug/Kg	700	3000
Naphthalene	91-20-3		U	333.33	*	ug/Kg	700	3000
Phenanthrene	85-01-8		U	333.33	*	ug/Kg	700	3000
Pyrene	129-00-0		U	333.33	*	ug/Kg	700	3000
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
2-Fluorobiphenyl	321-60-8	102		333.33	*	%	45	105
Nitrobenzene-d5	4165-60-0	97		333.33	*	%	35	100
Terphenyl-d14	1718-51-0	121		333.33	*	%	30	125

Entek GRB LLC

Project ID:

Sample ID: 14-10-4

ACZ Sample ID: **L89561-04**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG307213

Analyst: jjr

Extract Date: 08/11/11 20:48

Analysis Date: 08/11/11 20:48

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2	160		50	*	ug/Kg	10	50
Ethylbenzene	100-41-4	370		50	*	ug/Kg	10	50
m p Xylene	1330-20-7	1980		50	*	ug/Kg	20	100
o Xylene	95-47-6	830		50	*	ug/Kg	10	50
Toluene	108-88-3	950		50		ug/Kg	10	50
TVH C6 to C10	TVH	57		50		mg/Kg	3	3
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	86.6		50		%	70	130
Bromofluorobenzene (TVH)	460-00 4	91.1		50		%	70	130

Entek GRB LLC
 Project ID:
 Sample ID: 14-10-4

ACZ Sample ID: **L89561-04**
 Date Sampled: 07/29/11 0:00
 Date Received: 07/29/11
 Sample Matrix: Soil

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
 Extract Method: **M3540**

Workgroup: WG306884
Analyst: mss
Extract Date: 08/02/11 17:15
Analysis Date: 08/05/11 0:43

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		500	J	1661.13	*	mg/Kg	200	800
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	103.3		1661.13	*	%	70	130

Entek GRB LLC

Project ID:

Sample ID: 14-10-4

ACZ Sample ID: **L89561-04**

Date Sampled: 07/29/11 0:00

Date Received: 07/29/11

Sample Matrix: Soil

Polynuclear Aromatic Hydrocarbons GC/M

Analysis Method: **M8270C GC/MS**

Extract Method: **M3540**

Workgroup: **WG307181**

Analyst: itk

Extract Date: 08/08/11 17:17

Analysis Date: 08/10/11 17:32

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
2-Methylnaphthalene	91-57-6		U	9900.99	*	ug/Kg	20000	100000
Acenaphthene	83-32-9		U	9900.99	*	ug/Kg	20000	100000
Acenaphthylene	208-96-8		U	9900.99	*	ug/Kg	20000	100000
Anthracene	120-12-7		U	9900.99	*	ug/Kg	20000	100000
Benzo(a)anthracene	56-55-3		U	9900.99	*	ug/Kg	20000	100000
Benzo(a)pyrene	50-32-8		U	9900.99	*	ug/Kg	20000	100000
Benzo(b)fluoranthene	205-99-2		U	9900.99	*	ug/Kg	20000	100000
Benzo(g,h,i)perylene	191-24-2		U	9900.99	*	ug/Kg	20000	100000
Benzo(k)fluoranthene	207-08-9		U	9900.99	*	ug/Kg	20000	100000
Chrysene	218-01-9		U	9900.99	*	ug/Kg	20000	100000
Dibenzo(a,h)anthracene	53-70-3		U	9900.99	*	ug/Kg	20000	100000
Fluoranthene	206-44-0		U	9900.99	*	ug/Kg	20000	100000
Fluorene	86-73-7		U	9900.99	*	ug/Kg	20000	100000
Indeno(1,2,3-cd)pyrene	193-39-5		U	9900.99	*	ug/Kg	20000	100000
Naphthalene	91-20-3		U	9900.99	*	ug/Kg	20000	100000
Phenanthrene	85-01-8		U	9900.99	*	ug/Kg	20000	100000
Pyrene	129-00-0		U	9900.99	*	ug/Kg	20000	100000
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
2-Fluorobiphenyl	321-60-8	216.2		9900.99	*	%	45	105
Nitrobenzene-d5	4165-60-0	203.2		9900.99	*	%	35	100
Terphenyl-d14	1718-51-0	258.4		9900.99	*	%	30	125

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of interest

QC Sample Types

SURR	Surrogate	LFM	Laboratory Fortified Matrix
INTS	Internal Standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	MS/MSD	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	PBS	Prep Blank - Soil
LFB	Laboratory Fortified Blank	PBW	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte detected in daily blank
H	Analysis exceeded method hold time.
J	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDL.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
W	Poor recovery for Silver quality control is accepted because Silver often precipitates with Chloride.
X	Quality control sample is out of control.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.
P	Analyte concentration differs from second detector by more than 40%.
E	Analyte concentration is estimated due to result exceeding calibration range.
M	Analyte concentration is estimated due to matrix interferences.

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
- (3) EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December, 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition (1995) & 20th edition (1998).

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Organic analyses are reported on an "as received" basis.
- (3) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID: 14-10-1

BTEX/Gasoline Range Organics (C6-C10)

M8021B/8015D GC/PID/FID

WG307213

AS	Sample ID: L89561-01AS		PCN/SCN: B110801-1-SPIK				Analyzed:		08/11/11 18:38	
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
BENZENE	25	U	19.86	ug/Kg	79.4	70	130			
ETHYLBENZENE	25	U	19.19	ug/Kg	76.8	70	130			
M P XYLENE	50	U	38.5	ug/Kg	77.0	70	130			
O XYLENE	50	U	36.27	ug/Kg	72.5	70	130			
TOLUENE	75	U	58.2	ug/Kg	77.6	70	130			
TVH C6 TO C10	.5	U	.442	mg/Kg	88.4	70	130			
BROMOFLUOROBENZENE (surr)				%	94.1	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	97.2	70	130			

ASD	Sample ID: L89561-01ASD			PCN/SCN: B110801-1-SPIK				Analyzed:		08/11/11 19:10	
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
BENZENE	25	U	21.78	ug/Kg	87.1	70	130	9.22	20		
ETHYLBENZENE	25	U	23.61	ug/Kg	94.4	70	130	20.65	20	R4	
M P XYLENE	50	U	47.26	ug/Kg	94.5	70	130	20.43	20	R4	
O XYLENE	50	U	45.51	ug/Kg	91.0	70	130	22.6	20	R4	
TOLUENE	75	U	67.8	ug/Kg	90.4	70	130	15.24	20		
TVH C6 TO C10	.5	U	.503	mg/Kg	100.6	70	130	12.91	20		
BROMOFLUOROBENZENE (surr)				%	102.3	70	130				
BROMOFLUOROBENZENE (TVH) (surr)				%	103.7	70	130				

LCSS	Sample ID: WG307213LCSS		PCN/SCN: B110801-1-SPIK				Analyzed: 08/11/11 16:28			
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
BENZENE	25		22.9	ug/Kg	91.6	70	130			
ETHYLBENZENE	25		23.29	ug/Kg	93.2	70	130			
M P XYLENE	50		47.84	ug/Kg	95.7	70	130			
O XYLENE	50		45.71	ug/Kg	91.4	70	130			
TOLUENE	75		68.46	ug/Kg	91.3	70	130			
TVH C6 TO C10	.5		.581	mg/Kg	116.2	70	130			
BROMOFLUOROBENZENE (surr)				%	105.9	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	107.3	70	130			

LCSSD	Sample ID: WG307213LCSSD		PCN/SCN: B110801-1-SPIK				Analyzed:		08/11/11 17:00	
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
BENZENE	25		22.89	ug/Kg	91.6	70	130	0	20	
ETHYLBENZENE	25		25.72	ug/Kg	102.9	70	130	9.9	20	
M P XYLENE	50		50.59	ug/Kg	101.2	70	130	5.6	20	
O XYLENE	50		48.68	ug/Kg	97.4	70	130	6.3	20	
TOLUENE	75		72.81	ug/Kg	97.1	70	130	6.2	20	
TVH C6 TO C10	.5		.525	mg/Kg	105.0	70	130	10.1	20	
BROMOFLUOROBENZENE (surr)				%	101.4	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	99.4	70	130			

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID: 14-10-1

PBS		Sample ID: WG307213PBS						Analyzed: 08/11/11 17:32		
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
BENZENE			U	ug/Kg		-1	1			
ETHYLBENZENE			.61	ug/Kg		-1	1			
M P XYLENE			.85	ug/Kg		-2	2			
O XYLENE			.7	ug/Kg		-1	1			
TOLUENE			.87	ug/Kg		-1	1			
TVH C6 TO C10			U	mg/Kg		-.05	.05			
BROMOFLUOROBENZENE (surr)				%	95.7	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	98.3	70	130			

PBS		Sample ID: WG307231PBS						Analyzed: 08/15/11 12:41		
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
BENZENE			.5	ug/Kg		-1	1			
ETHYLBENZENE			.72	ug/Kg		-1	1			
M P XYLENE			1.18	ug/Kg		-2	2			
O XYLENE			.61	ug/Kg		-1	1			
TOLUENE			.52	ug/Kg		-1	1			
TVH C6 TO C10			U	mg/Kg		-.05	.05			
BROMOFLUOROBENZENE (surr)				%	98.5	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	95.4	70	130			

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID: 14-10-1

Diesel Range Organics (C10-C28)

M8015D GC/FID

WG306884

MS	Sample ID: L89561-03MS			PCN/SCN: OP110613-1-30G			Analyzed: 08/04/11 23:52			
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28	83.3	43	288	mg/Kg	294.0	70	130			M1
OTP (surr)				%	107.9	70	130			M1

MSD		Sample ID: L89561-03MSD		PCN/SCN: OP110613-1-30G				Analyzed:		08/05/11 0:18	
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
TPH C10 TO C28	83.3	43	220.8	mg/Kg	213.4	70	130	26.42	20	M1 RD	
OTP (surr)				%	107.7	70	130				

LCSS		Sample ID: WG306695LCSS		PCN/SCN: OP110613-1-30G				Analyzed: 08/04/11 18:15			
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
TPH C10 TO C28	83.3		68.1	mg/Kg	81.7	70	130				
OTP (surr)				%	91.3	70	130				

LCSSD	Sample ID: WG306695LCSSD		PCN/SCN: OP110613-1-30G				Analyzed: 08/04/11 18:41			
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28	83.3		71.2	mg/Kg	85.4	70	130	4.5	20	
OTP (surr)				%	92.2	70	130			

PBS		Sample ID: WG306695PBS						Analyzed: 08/04/11 17:49			
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
TPH C10 TO C28			U	mg/Kg		-20	20				
OTP (surr)				%	80.1	70	130				

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID: 14-10-1

Polynuclear Aromatic Hydrocarbons GC/MS

M8270C GC/MS

WG307181

MS	Sample ID: L89561-03MS		PCN/SCN: OP110613-4-30G				Analyzed:		08/10/11 16:35	
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	1667	U	1700	ug/Kg	102.0	45	110			
PYRENE	1667	U	1810	ug/Kg	108.6	45	125			
2,4,6-TRIBROMOPHENOL (surr)				%	70.0	35	125			
2-FLUOROBIPHENYL (surr)				%	104.2	45	105			
2-FLUOROPHENOL (surr)				%	105.6	35	105			S1
NITROBENZENE-D5 (surr)				%	95.2	35	100			
PHENOL-D6 (surr)				%	112.3	40	100			S1
TERPHENYL-D14 (surr)				%	119.2	30	125			

MSD	Sample ID: L89561-03MSD		PCN/SCN: OP110613-4-30G				Analyzed:		08/10/11 17:04	
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	1667	U	1790	ug/Kg	107.4	45	110	5.16	20	
PYRENE	1667	U	1840	ug/Kg	110.4	45	125	1.64	20	
2,4,6-TRIBROMOPHENOL (surr)				%	75.6	35	125			
2-FLUOROBIPHENYL (surr)				%	109.6	45	105			S1
2-FLUOROPHENOL (surr)				%	111.9	35	105			S1
NITROBENZENE-D5 (surr)				%	103.2	35	100			S1
PHENOL-D6 (surr)				%	116.4	40	100			S1
TERPHENYL-D14 (surr)				%	124.2	30	125			

LCSS	Sample ID: WG307027LCSS		PCN/SCN: OP110613-4-30G				Analyzed:		08/10/11 9:57	
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	1667		1289	ug/Kg	77.3	45	110			
PYRENE	1667		1573	ug/Kg	94.4	45	125			
2,4,6-TRIBROMOPHENOL (surr)				%	77.9	35	125			
2-FLUOROBIPHENYL (surr)				%	81.3	45	105			
2-FLUOROPHENOL (surr)				%	84.3	35	105			
NITROBENZENE-D5 (surr)				%	82.1	35	100			
PHENOL-D6 (surr)				%	86.9	40	100			
TERPHENYL-D14 (surr)				%	105.5	30	125			

LCSSD	Sample ID: WG307027LCSSD		PCN/SCN: OP110613-4-30G				Analyzed: 08/10/11 10:26			
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	1667		1544	ug/Kg	92.6	45	110	18	20	
PYRENE	1667		1903	ug/Kg	114.2	45	125	19	20	
2,4,6-TRIBROMOPHENOL (surr)				%	96.1	35	125			
2-FLUOROBIPHENYL (surr)				%	97.1	45	105			
2-FLUOROPHENOL (surr)				%	99.1	35	105			
NITROBENZENE-D5 (surr)				%	98.9	35	100			
PHENOL-D6 (surr)				%	102.8	40	100			S1
TERPHENYL-D14 (surr)				%	127.1	30	125			S1

Entek GRB LLC

ACZ Project ID: **L89561**

Project ID: 14-10-1

PBS		Sample ID: WG307027PBS					Analyzed: 08/10/11 9:29			
Compound	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
2-METHYLNAPHTHALENE			U	ug/Kg		-300	300			
ACENAPHTHENE			U	ug/Kg		-300	300			
ACENAPHTHYLENE			U	ug/Kg		-300	300			
ANTHRACENE			U	ug/Kg		-300	300			
BENZO(A)ANTHRACENE			U	ug/Kg		-300	300			
BENZO(A)PYRENE			U	ug/Kg		-300	300			
BENZO(B)FLUORANTHENE			U	ug/Kg		-300	300			
BENZO(G,H,I)PERYLENE			U	ug/Kg		-300	300			
BENZO(K)FLUORANTHENE			U	ug/Kg		-300	300			
CHRYSENE			U	ug/Kg		-300	300			
DIBENZO(A,H)ANTHRACENE			U	ug/Kg		-300	300			
FLUORANTHENE			U	ug/Kg		-300	300			
FLUORENE			U	ug/Kg		-300	300			
INDENO(1,2,3-CD)PYRENE			U	ug/Kg		-300	300			
NAPHTHALENE			U	ug/Kg		-300	300			
PHENANTHRENE			U	ug/Kg		-300	300			
PYRENE			U	ug/Kg		-300	300			
2,4,6-TRIBROMOPHENOL (surr)				%	75.6	35	125			
2-FLUOROBIPHENYL (surr)				%	84.2	45	105			
2-FLUOROPHENOL (surr)				%	85.9	35	105			
NITROBENZENE-D5 (surr)				%	83.3	35	100			
PHENOL-D6 (surr)				%	89.4	40	100			
TERPHENYL-D14 (surr)				%	117.0	30	125			

Entek GRB LLC

ACZ Project ID: **L89561**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L89561-01	WG307213	*All Compounds*	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
		m p Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
		o Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
	WG306884	*All Compounds*	M8015D GC/FID	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG307181	Terphenyl-d14	M8270C GC/MS	S1	Surrogate recovery was above laboratory acceptance limits, but within method acceptance limits.
	WG306585	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
L89561-02	WG306695	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
	WG307027	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
	WG307213	Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Bromofluorobenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG306884	*All Compounds*	M8015D GC/FID	D1	Sample required dilution due to matrix.
			M8015D GC/FID	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG307181		M8270C GC/MS	D1	Sample required dilution due to matrix.

Entek GRB LLC

ACZ Project ID: **L89561**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		2-Fluorobiphenyl	M8270C GC/MS	S1	Surrogate recovery was above laboratory acceptance limits, but within method acceptance limits.
		Nitrobenzene-d5	M8270C GC/MS	S1	Surrogate recovery was above laboratory acceptance limits, but within method acceptance limits.
	WG306585	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
	WG306695	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
	WG307027	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
L89561-03	WG307213	*All Compounds*	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
		m p Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
		o Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
	WG306884	*All Compounds*	M8015D GC/FID	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG307181		M8270C GC/MS	D1	Sample required dilution due to matrix.
L89561-04	WG306585	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
	WG306695	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
	WG307027	Aliquot	M3540	D1	Sample required dilution due to matrix.
		Final Volume	M3540	D1	Sample required dilution due to matrix.
		Surrogate Added	M3540	D1	Sample required dilution due to matrix.
	WG307213	Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
		m p Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
		o Xylene	M8021B/8015D GC/PID/FID	R4	RPD for a spike and spike duplicate exceeded the method or laboratory acceptance limit. At a minimum, one spike recovery met acceptance criteria.
	WG306884	*All Compounds*	M8015D GC/FID	D1	Sample required dilution due to matrix.
			M8015D GC/FID	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

Entek GRB LLC

ACZ Project ID: **L89561**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG307181		M8270C GC/MS	D1	Sample required dilution due to matrix.
		2-Fluorobiphenyl	M8270C GC/MS	S4	Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.
		Nitrobenzene-d5	M8270C GC/MS	S4	Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.
		Terphenyl-d14	M8270C GC/MS	S4	Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.
WG306585	Aliquot		M3540	D1	Sample required dilution due to matrix.
	Final Volume		M3540	D1	Sample required dilution due to matrix.
	Surrogate Added		M3540	D1	Sample required dilution due to matrix.
WG306695	Aliquot		M3540	D1	Sample required dilution due to matrix.
	Final Volume		M3540	D1	Sample required dilution due to matrix.
	Surrogate Added		M3540	D1	Sample required dilution due to matrix.
WG307027	Aliquot		M3540	D1	Sample required dilution due to matrix.
	Final Volume		M3540	D1	Sample required dilution due to matrix.
	Surrogate Added		M3540	D1	Sample required dilution due to matrix.

Entek GRB LLC

ACZ Project ID: **L89561**

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Conductivity @25C	SM2510B
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Entek GRB LLC

ACZ Project ID: L89561
Date Received: 07/29/2011 16:34
Received By:
Date Printed: 8/1/2011

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

The client was not contacted.

Shipping Containers

Cooler Id	Temp (°C)	Rad (μR/hr)
2913	29.0	20

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Entek GRB LLC

ACZ Project ID: L89561
 Date Received: 07/29/2011 16:34
 Received By:
 Date Printed: 8/1/2011

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L89561-01	14-10-1									X		<input type="checkbox"/>
L89561-02	14-10-2									X		<input type="checkbox"/>
L89561-03	14-10-3									X		<input type="checkbox"/>
L89561-04	14-10-4									X		<input type="checkbox"/>
L89561-05	14-10-A									X		<input type="checkbox"/>
L89561-06	14-10-B									X		<input type="checkbox"/>

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Hydrochloric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

Name: Kristen Stacks
Company: Entek GRB
E-mail: kstacks@entekenergy.com

Address: 1999 Broadway Suite 950
Denver Co 80202

Telephone:

Name: Sean O'Hearn
Company: Enersta Consulting Group

E-mail: Sean.cheen@earthlink.com
Telephone: _____

Name: K Stacks
Company: Entek GRS
E-mail:

Address: _____

 Telephone: _____

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES	
NO	

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"

is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring?

Yes		No	
-----	--	----	--

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name:	Sampler's site Information	State	Zip code	Time Zone
-----------------	----------------------------	-------	----------	-----------

Quote #:	
Project/PO #:	
Reporting state for compliance testing:	
Check box if samples include NRC licensed material?	

14-10-1			3	LOGIC Table 910-1
14-10-2			3	" "
14-10-3			3	" "
14-10-4			3	" "
14-10-A			1	SALZ pH Tot. Ar
14-10-B			1	" " "

Matrix	SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)
--------	--

All sample Tars say collected on 7/31/11, should be 7/29/11
per client. iso

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

John O'Hara 7/25/16 56			
		WGS	7/25/11

State of Colorado Oil and Gas Conservation Commission

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



FOR OGCC USE ONLY

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:

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

OGCC Operator Number: 10323

Name of Operator: Entek GRB, LLC

Address: 535 16th Street, Suite 620

City: Denver

State: CO Zip: 80202

Contact Name and Telephone:

Kristen Stocks

No: (307) 200-1930

Fax: (866) 435-9424

API Number: 05-081-07641

County: Moffatt

Facility Name: Slater Dome

Facility Number: 17551 Location ID # 421159

Well Name: Battle Mountain Federal 14-10

Well Number: 14-10

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NESE 14, 12N, 89W, 6th Latitude: 40.9923 Longitude: -107.3399

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Residual drilling materials

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.): undeveloped rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan:

Potential receptors (water wells within 1/4 mi, surface waters, etc.): none

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

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

residual drilling materials contained within unlined pit

How Determined:

visual observation and drilling materials sample taken

REMEDIALATION WORKPLAN

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

Residual drilling fluid materials are present in the unlined pit located in the southeast corner of the Battle Mountain Federal 14-10 well pad (see Figure 1 for approximate pit location). Two discrete samples of the residual material and two discrete samples of the pit sidewalls have been obtained and tested for Table 910-1 parameters. Figure 2 illustrates the sample locations. The sample results, summarized in Table 1 and included as Appendix A, indicate contaminant concentrations within acceptable limits. Accordingly, the proposed initial action will be to leave the residual drilling materials in place and backfill the upper 2' (minimum) of the pit with clean fill material only.

Describe how source is to be removed:

Residual drilling materials to be left in place. Remaining pit volume (upper 2+ feet) to be backfilled with clean fill. Ground surface to be shaped and graded to match existing grade.

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.:

Given the results of the sample analysis, the environmental impact associated with leaving the material in place and covering the material with a minimum of 2' of clean fill is anticipated to be minimal. Once activity on the 14-10 has ended, the well pad surface will be reclaimed/revegetated in accordance with Entek Storm Water Management Plan requirements.

Submit Page 2 with Page 1



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: (Location ID # 421159)
Facility Name & No: Battle Mountain Federal 14-10 pit

OGCC Employee: _____

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

Depth to groundwater in the vicinity of the Battle Mountain Federal 14-10 pit location is reported to be greater than 400'. Accordingly, it is unlikely that groundwater has been impacted by the residual drilling materials.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The residual drilling materials will be left in place and backfilled with clean fill material. Once backfilled, the former pit surface will be shaped and graded to match the existing grade around the perimeter of the pit. Once activity at the well location has ceased, the ground surface will be roughened and broadcast seeded in accordance with revegetation procedures included in the Entek Storm Water Management Plan (SWMP). Well location restoration and revegetation shall be conducted in a manner consistent with BLM Best Management Practices for Noxious and Invasive Weed Prevention and the SWMP.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☐ Y ☒ N If yes, describe:

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

Remain in existing unlined pit.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: <u>8/1</u>	Date Site Investigation Completed: <u>8/31</u>	Date Remediation Plan Submitted: <u>9/9</u>
Remediation Start Date: <u>9/14</u>	Anticipated Completion Date: <u>10/15</u>	Actual Completion Date: _____

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

Print Name: Tim Hopkins

Signed: [Signature]

Title: Regional Manager

Date: 9/9/11

OGCC Approved: [Signature]

Title: FOR Chris Canfield

Date: 09/16/2011

EPS NW Region

COA: Arsenic at the bottom of the pit

was 0.6 mg/kg in one sample.

Max allowable arsenic concentration is $3.8 \text{ mg} + 10\% = 4.2 \text{ mg/kg}$ (per background samples)
Material at the bottom of the pit should be scrapped and mixed with clean material
to reduce arsenic concentration.