Second Groundwater Sampling Letter Report for the Former Building 133 Remedial Action Hunter Army Airfield, Savannah, Georgia

IMA

3d Inf Div (Mech)

December 2005

Submitted to:
U.S. Army Corps of Engineers
Savannah District
Contract No. W912HN-04-D-0019
Delivery Order No. 0004

Prepared by:
Solutions To Environmental Problems, Inc.
1006 Floyd Culler Court
Oak Ridge, Tennessee 37830

STEP

DOCUMENT 4

Facility ID #9-000653

STEP

SOLUTIONS TO ENVIRONMENTAL PROBLEMS
1006 Floyd Culler Court • Oak Ridge, Tennessee 37830
Telephone 865/481-7837 • Fax 865/481-0290

September 12, 2005

Commander
U.S. Army Engineer District, Savannah
CESAS-PM-H (Ana Vergara)
100 West Oglethorpe Avenue
Savannah, GA 31401-3604

Subject: Contract No. W912HN-04-D-0019, Delivery Order No. 0004
Second Groundwater Sampling Letter Report for the Former Building 133 Remedial Action, Hunter Army Airfield, Savannah, Georgia

Dear Ms. Vergara:

Solutions To Environmental Problems, Inc. (STEP) has been contracted to perform groundwater monitoring at the former Building 133 site at Hunter Army Airfield. Under a previous remedial action at the site, remediation of a plume of contaminated groundwater was accomplished using an air sparging system. During air sparging activities, groundwater was monitored, and the analytical results indicated that benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations had been progressively reduced and were below the remediation cleanup goals. The air sparging system was shutdown on August 16, 2004; however, groundwater monitoring continued in order to confirm the effectiveness of the treatment. STEP performed groundwater monitoring at the former Building 133 site in August 2004, February 2005, and April 2005. This letter report presents the groundwater monitoring results for these three monitoring events. Attachment 1 contains the figures referenced in this letter report, Attachment 2 contains the laboratory analytical data sheets for the three events, and Attachment 3 contains the data validation report.

Due to a construction project at the site, the air sparging system was removed and all air sparging points along with affected groundwater monitoring wells were plugged and abandoned in late April and early May of 2005.

Remediation Goal

The remediation goal for this site was to reduce the benzene concentration in the groundwater to an acceptable limit. For this site, the cleanup goal for benzene is 71 micrograms per liter (μg/L).

Groundwater Sampling

Since the air sparging system was shut down, groundwater monitoring has been conducted to evaluate the effectiveness of the air sparging system at the former Building 133 site. During each sampling event, groundwater samples were collected from 10 monitoring wells (133MW-02, 133MW-04, 133MW-05, 133MW-08, 133MW-09, 133MW-10, 133MW-11, 133MW-12, 133MW-13, and 133MW-14) using the low-flow method described in the U.S. Environmental Protection Agency publication, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures,* EPA/540/S-95/505 (April 1996). Figure 1 is a site map showing the location of the monitoring wells.

The groundwater samples were submitted for laboratory analysis of BTEX, methyl tertiary-butyl ether (MTBE), and the natural attenuation parameters nitrate, sulfate, methane, and alkalinity. A summary of the analytical methods and number of samples that were collected during each sampling event is presented in Table 1.

Table 1 Laboratory Methods and Analytes Summary

Parameter	Analytical Method	Field Samples	Duplicate Samples	MS/MSD Samples	Source Water
BTEX	8260B[1]	10	1	1	1
MTBE	8260B	10	1	1	1
Nitrate	353.2[2]	10	0	0	0
Sulfate	375.4	10	0	0	0
Methane	8015[1]	10	0	0	0
Alkalinity	310.1	10	0	0	0

[1]Method 8260B and Method 8015 found in US EPA SW846, *Test Methods for Evaluating Solid Wastes – Physical and Chemical Methods 3rd Ed.* (EPA, November 1986).
[2]300 series methods found in *Methods for Chemical Analysis of Waters and Wastes* (EPA, March 1983).

BTEX = benzene, toluene, ethylbenzene, and xylenes
MS = matrix spike
MSD = matrix spike duplicate
MTBE = methyl tertiary-butyl ether

Seven water quality parameters [ferrous iron, pH, dissolved oxygen (DO), conductivity, temperature, oxidation-reduction potential (ORP), and turbidity] were measured in the field during purging of the wells. Tables 2, 3, and 4 present the water quality parameter measurements from each well just prior to collection of the groundwater sample for laboratory analyses.

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Table 2 Groundwater Quality (Field Measured Parameters) August 2004

Well No.	Date	Time (Hours)	Depth to Water (feet)	pH	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	Temp (deg C)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Ferrous Iron (mg/L)
133MW-02	8/25/04	9:30	5.00	3.50	2.67	0.546	28.0	253	35.5	5.0
133MW-04	8/26/04	8:30	5.93	3.71	2.44	0.675	26.9	316	0.7	4.8
133MW-05	8/26/04	9:45	5.91	5.54	0.68	0.134	26.6	-106	0.3	2.4
133MW-08	8/25/04	13:20	6.00	3.24	3.37	1.370	33.4	398	1.0	5.2
133MW-09	8/25/04	15:10	5.83	2.82	2.88	2.820	33.0	257	11.8	6.6
133MW-10	8/24/04	16:00	5.42	2.17	2.43	5.280	33.5	267	35.6	>10
133MW-11	8/24/04	14:40	6.00	2.13	2.77	4.710	30.8	280	24.7	>10
133MW-12	8/24/04	11:25	4.95	5.01	0.87	0.097	24.8	29	11.2	4.0
133MW-13	8/24/04	9:46	4.70	4.63	2.45	0.070	24.4	177	10.8	3.2
133MW-14	8/25/04	10:50	5.95	4.37	2.84	0.392	28.9	168	3.0	6.4

deg C = degrees Centigrade
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = milliVolts
NTU = nephelometric turbidity units

Table 3 Groundwater Quality (Field Measured Parameters) February 2005

Well No.	Date	Time (Hours)	Depth To Water (feet)	pH	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	Temp (deg C)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Ferrous Iron (mg/L)
133MW-13	02/01/05	09:45	5.19	4.99	8.1	0.66	12.6	181	225	0.2
133MW-12	02/01/05	11:00	5.99	4.94	.53	0.89	15.4	8	.2	3.0
133MW-11	02/01/05	13:55	6.10	2.95	.23	2.83	18.7	230	5.0	3.4
133MW-10	02/01/05	15:00	5.67	2.32	.30	5.18	19.1	367	1.0	4.4
133MW-02	02/02/05	08:45	5.60	3.84	.36	.282	17.2	315	.6	2.8
133MW-14	02/02/05	09:55	6.72	3.74	.49	.715	16.9	258	.9	2.8
133MW-08	02/02/05	11:08	6.56	3.46	.44	2.21	17.6	335	7.9	3.4
133MW-09	02/02/05	14:15	6.44	3.327	.74	2.80	16.8	240	1.5	4.2
133MW-04	02/02/05	15:45	6.84	4.41	.80	.255	16.3	324	1.2	2.8
133MW-05	02/03/05	10:20	6.90	6.01	.28	.391	17.9	34	24.0	3.0

deg C = degrees Celsius
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = milliVolts
NTU = nephelometric turbidity units

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Table 4 Groundwater Quality (Field Measured Parameters) April 2005

Well No.	Date	Time (Hours)	Depth To Water (feet)	pH	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	Temp (deg C)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Ferrous Iron (mg/L)
133MW-12	04/26/05	08:25	5.59	5.12	4.31	0.99	18.25	-129	4.3	1.0
133MW-13	04/26/05	10:00	4.96	5.12	1.62	0.063	18.36	8	25.2	2.6
133MW-11	04/26/05	12:35	5.97	3.27	1.84	1.71	20.76	192	36.7	2.8
133MW-10	04/26/05	13:50	5.52	3.04	1.87	4.18	21.95	304	20.0	3.2
133MW-09	04/26/05	15:35	6.12	3.45	1.78	3.94	21.22	163	41.8	5.6
133MW-08	04/27/05	07:45	6.32	3.39	2.40	2.30	21.90	319	9.7	1.6
133MW-14	04/27/05	09:20	6.42	4.30	2.14	0.089	21.02	284	4.5	2.2
133MW-04	04/27/05	10:20	6.58	4.37	2.01	0.319	22.0	321	1.8	2.8
133MW-05	04/27/05	12:30	6.61	5.78	2.38	0.192	22.48	-100	16.5	2.2
133MW-02	04/27/05	14:00	5.32	6.18	2.44	0.227	23.02	-97	26.2	1.8

deg C = degrees Celsius
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = milliVolts
NTU = nephelometric turbidity units

The samples collected were delivered to General Engineering Labs, Charleston, South Carolina, for analysis; and laboratory results were validated by a third party validator (Data Chek). Tables 5, 6, and 7 present the validated data.

Table 5 Groundwater Analytical Results August 2004

Well Number	Parameter								
	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (total) (µg/L)	MTBE (µg/L)	Methane (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Alkalinity (mg/L)
133MW-02	0.55 J	<1.0 U	0.51 J	<1.0 U	<1.0 U	<14.0 U	0.00 U	249	0.00 U
133MW-04	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<14.0 U	0.00 U	338	0.00 U
133MW-05	63.1	0.55 J	60.2	30.8	0.97 J	104	0.00 U	56.2	9.44
133MW-05 DUP	53.2	0.59 J	41.3	24.4	0.69 J	NM	NM	NM	NM
133MW-08	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<14.0 U	0.148	1,350	0.00 U
133MW-09	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<14.0 U	0.172	3,190	0.00 U
133MW-10	0.71 J	1.40	2.1	13.2	<1.0 U	37.10	2.24	13,800	0.00 U
133MW-11	<1.0 U	0.87 J	0.24 J	2.3	<1.0 U	<20.0 U	0.00 U	13,100	0.00 U
133MW-12	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	53.8	0.00 U	25.7	0.00 U
133MW-13	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	30.3	0.00 U	18.4	0.00 U
133MW-14	14.8	0.53 J	8.7	5.0	0.66 J	53.1	0.00 U	185	0.00 U

Note: The remediation cleanup level for benzene is 71 µg/L.

DUP = duplicate sample
J = estimated value
µg/L = micrograms per liter
mg/L = milligrams per liter
MTBE = methyl tertiary-butyl ether
NM = not measured
U = not detected

STEP Inc

Table 6 Groundwater Analytical Results February 2005

Well Number	Parameter								
	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (total) (µg/L)	MTBE (µg/L)	Methane (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Alkalinity (mg/L)
133MW-02	25.0	1.0 U	4.8	0.46 J	0.90 J	275	0.1 U	138	2.0 U
133MW-04	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	14.0 U	0.79	142	2.0 U
133MW-05	2.5	1.0 U	0.22 J	1.0 U	1.0 U	20.8	0.1 U	412	2.0 U
133MW-08	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	14.0 U	0.1 U	1680	2.0 U
133MW-09	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	14.0 U	0.192	1040	2.0 U
133MW-10	1.0 U	0.50 J	3.0	7.7	1.0 U	14.3	0.1 U	3120	2.0 U
133MW-11	1.0 U	1.0 U	0.70 J	1.2	1.0 U	14.0 U	0.1 U	2160	2.0 U
133MW-12	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	37.6	0.1 U	22.8	2.0 U
133MW-13	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	14.0 U	0.1 U	17.8	2.0 U
133MW-14	1.0 U	1.0 U	0.32 J	1.0 U	1.0 U	14.0 U	0.1 U	1420	2.0 U

Note: The remediation cleanup level for benzene is 71 µg/L.
J = estimated value
µg/L = micrograms per liter
mg/L = milligrams per liter
MTBE = methyl tertiary-butyl ether
U = not detected above detection limit

Table 7 Groundwater Analytical Results April 2005

Well Number	Parameter								
	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (total) (µg/L)	MTBE (µg/L)	Methane (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Alkalinity (mg/L)
133MW-02	30.8	1.0 U	25.6	.48 J	1.0 U	975	0.1 U	49.6	2.13
133MW-04	1.0 U	1.0 U	1.0 U	1.0 U	0.54 J	7.19 J	0.27	110	2.0 U
133MW-05	1.9	1.0 U	0.91 J	1.0 U	1.0 U	42.3	0.1 U	90.4	2.0 U
133MW-08	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	14.0 U	0.102	647	2.0 U
133MW-09	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10.1 J	0.192	4270 J	2.0 U
133MW-10	0.43 J	1.0 U	2.0	3.9	1.0 U	116	0.1 U	374 J	2.0 U
133MW-11	1.0 U	1.0 U	1.0 U	1.1	.33 UJ	14.0 U	0.1 U	374 J	2.0 U
133MW-12	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	46.7	0.1 U	22.1	2.0 U
133MW-13	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	27.2	0.1 U	13.7 J	2.0 U
133MW-14	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	71.8	0.1 U	37.6	2.0 U

Note: The remediation cleanup level for benzene is 71 µg/L.
J = estimated value
µg/L = micrograms per liter
mg/L = milligrams per liter
MTBE = methyl tertiary-butyl ether
U = not detected above detection limit

Review of the analytical results for the three sampling events shows that none of the monitoring wells reported concentrations of benzene equaling or exceeding the remediation goal of 71 µg/L.

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Investigation Derived Waste

At the conclusion of each sampling event, all tubing, paper products, and other solid wastes were placed in a dumpster on site. All well purge water was considered investigation derived waste; therefore, it was placed in 55-gallon drums and properly labeled, characterized, and disposed.

Summary

As stated previously, benzene concentrations for all three groundwater sampling events were reported at levels consistently below the cleanup goal of 71 µg/L. Since the benzene concentrations in the groundwater are consistently below the cleanup goal, it is concluded that the air sparging system was successful in remediating the groundwater at the site, and no further action is recommended. Due to a construction project at the site, the air sparging system was removed and all air sparging points along with their associated groundwater monitoring wells were plugged and abandoned in late April and early May of 2005.

If you have any questions regarding the information presented in this report, please call me at 865-481-7837, extension 266.

Sincerely,
STEP, Inc.

FOR

Jim Madaj, PG
Project Manager

Attachments (as noted)

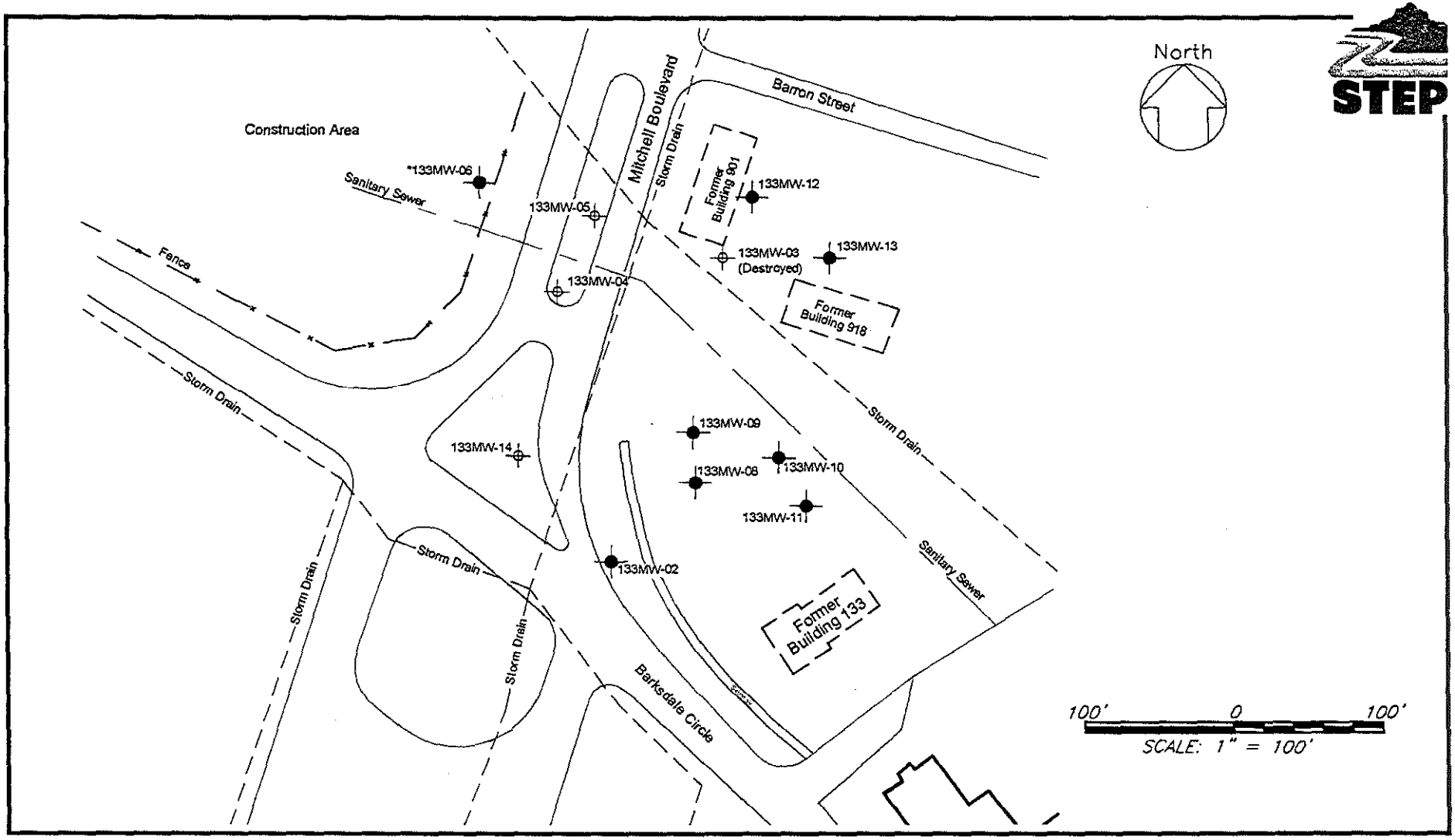
C/encl: Algeana Stevenson, Environmental Branch Directorate of Public Works
D. Becker, U.S. Army Corps of Engineers
Richard O'Donnell, U.S. Army Environmental Center
S. Marks, Environmental Branch Directorate of Public Works
T. Rutland, Environmental Branch Directorate of Public Works (3 copies)
Project Files

cc: Reader File

Attachment 1

Figures

R:\113\113-131-003\graphics\HAAF Wells Rev1.dwg(1:1)(07/07/05)
113-131 113-003



Legend

Existing Monitoring Well

Abandoned May 2005

* = Abandoned August 2005

Prepared For: USACE
Nashville District

Source: Fort Stewart
Job Title: Hunter Army Airfield
Savannah, Georgia

Figure 1 Monitoring Well Locations

07/07/05

Attachment 2

Laboratory Analytical Data Sheets

August 2004

GENERAL ENGINEERING LABORATORIES, LLC
a Member of THE GEL GROUP INC
Meeting Today's Needs with a Vision for Tomorrow

CASE NARRATIVE

STEP, Inc.
Hunter Army Airfield SWMU 133
SDG# 120193

September 14, 2004

Laboratory Identification:
General Engineering Laboratories, LLC.

Mailing Address:
P.O. Box 30712
Charleston, South Carolina 29417

Express Mail Delivery and Shipping Address:
2040 Savage Road
Charleston, South Carolina 29414

Telephone Number:
(843) 556-8171

Summary:
Sample receipt

The samples were logged-in at General Engineering Laboratories, Inc., (GEL) in Charleston, South Carolina on August 27, 2004 for Environmental Analyses.

Laboratory Identification	Sample Description
120193001	133MW004
120193002	133MW005
120193003	133MW004M
120193004	133MW905
120193005	SW04
120193006	TB03

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Internal Chain of Custody:

GENERAL ENGINEERING LABORATORIES, LLC
A Member of THE GEL GROUP INC
Meeting Today's Needs with a Vision for Tomorrow

Custody was maintained for all samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, and Cooler Receipt Checklist.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.

signing for S.K.

Sarah Kozlik
Project Manager

Enclosure

P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

CASE NARRATIVE
for
STEP, Inc.
Hunter Army Airfield SWMU 133
SDG# 119996

September 14, 2004

Laboratory Identification:
General Engineering Laboratories, LLC.

Mailing Address:
P.O. Box 30712
Charleston, South Carolina 29417

Express Mail Delivery and Shipping Address:
2040 Savage Road
Charleston, South Carolina 29414

Telephone Number:
(843) 556-8171

Summary:
Sample receipt

The samples were logged-in at General Engineering Laboratories, Inc., (GEL) in Charleston, South Carolina on August 26, 2004 for Environmental Analyses.

Laboratory Identification	Sample Description
119996001	133MW002
119996002	133MW014
119996003	133MW008
119996004	133MW009
119996005	TB02

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Internal Chain of Custody:

Custody was maintained for all samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, and Cooler Receipt Checklist.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.

Laura Steele signing for S.K.

Sarah Kozlik
Project Manager

Enclosure

GENERAL ENGINEERING LABORATORIES, LLC
a Member of THE GEL GROUP, INC.
P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

CASE NARRATIVE
for
STEP, Inc.
Hunter Army Airfield SWMU 133
SDG# 119861

September 14, 2004

Laboratory Identification:
General Engineering Laboratories, LLC.

Mailing Address:
P.O. Box 30712
Charleston, South Carolina 29417

Express Mail Delivery and Shipping Address:
2040 Savage Road
Charleston, South Carolina 29414

Telephone Number:
(843) 556-8171

Summary:

Sample receipt

The samples were logged-in at General Engineering Laboratories, Inc., (GEL) in Charleston, South Carolina on August 25, 2004 for Environmental Analyses. Per client request on August 25, 2004, samples were analyzed for Methane, although this parameter was not listed on the chain of custody.

Laboratory Identification	Sample Description
119861001	133MW013
119861002	133MW012
119861003	133MW011
119861004	133MW010
119861005	TB01

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Internal Chain of Custody:

Custody was maintained for all samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, and Cooler Receipt Checklist.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.

Laura Sleuz signing for S.K.

Sarah Kozlik
Project Manager

Enclosure

GENERAL ENGINEERING LABORATORIES, LLC
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P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW002

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) WATER Lab Sample ID: 119996001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Z716

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: not dec. _____ Date Analyzed: 09/05/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Revqual
1634-04-4	tert-Butyl methyl ether	1.0	U	u
71-43-2	Benzene	0.55	J	J
108-88-3	Toluene	1.0	U	u
100-41-4	Ethylbenzene	0.51	J	J
1330-20-7	Xylenes (total)	1.0	U	u

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW004

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 120193

Matrix: (soil/water) WATER Lab Sample ID: 120193001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Z720

Level: (low/med) LOW Date Received: 08/27/04

% Moisture: not dec. _____ Date Analyzed: 09/06/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW005

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 120193

Matrix: (soil/water) WATER Lab Sample ID: 120193002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Z732

Level: (low/med) LOW Date Received: 08/27/04

% Moisture: not dec. _____ Date Analyzed: 09/06/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	0.97	J
71-43-2	Benzene	63.1	
108-88-3	Toluene	0.55	J
100-41-4	Ethylbenzene	60.2	
1330-20-7	Xylenes (total)	30.8	

Rw 2nd
4 4

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW905

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 120193

Matrix: (soil/water) WATER Lab Sample ID: 120193004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Z734

Level: (low/med) LOW Date Received: 08/27/04

% Moisture: not dec. _____ Date Analyzed: 09/06/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	0.69	J	J
71-43-2	Benzene	53.2		
108-88-3	Toluene	0.59	J	J
100-41-4	Ethylbenzene	41.3		
1330-20-7	Xylenes (total)	24.4		

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW008

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) WATER Lab Sample ID: 119996003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 72718

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: not dec. _____ Date Analyzed: 09/06/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	1.0	U	↓
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW009

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) WATER Lab Sample ID: 119996004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Z719

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: not dec. _____ Date Analyzed: 09/06/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	RevQual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	1.0	U	↓
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW010

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) WATER Lab Sample ID: 119861004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Y337

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: not dec. _____ Date Analyzed: 08/26/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Re-Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	0.71	J	J
108-88-3	Toluene	1.4		
100-41-4	Ethylbenzene	2.1		
1330-20-7	Xylenes (total)	13.2		

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW011

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) WATER Lab Sample ID: 119861003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Y336

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: not dec. _____ Date Analyzed: 08/26/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	0.87	J	J
100-41-4	Ethylbenzene	0.24	J	J
1330-20-7	Xylenes (total)	2.3		

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW012

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) WATER Lab Sample ID: 119861002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Y335

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: not dec. _____ Date Analyzed: 08/26/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	u
71-43-2	Benzene	1.0	U	↓
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW013

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) WATER Lab Sample ID: 119861001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7Y334

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: not dec. _____ Date Analyzed: 08/26/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW014

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) WATER Lab Sample ID: 119996002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 72717

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: not dec. _____ Date Analyzed: 09/05/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	0.66	J	J
71-43-2	Benzene	14.8		
108-88-3	Toluene	0.53	J	J
100-41-4	Ethylbenzene	8.7		
1330-20-7	Xylenes (total)	5.0		

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW002

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) GROUND WAT Lab Sample ID: 119996001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 018B1801

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/31/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/31/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Reqnd u

1B

FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

133MW004

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 120193

Matrix: (soil/water) GROUND WATER Lab Sample ID: 120193001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 023B2301

Level: (low/med) LOW Date Received: 08/27/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/31/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/31/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Raw Q mel
74-82-8	Methane	14.0	U	U

FORM I SV-1 OLM03.0

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW005

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 120193

Matrix: (soil/water) GROUND WATER Lab Sample ID: 120193002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 024B2401

Level: (low/med) LOW Date Received: 08/27/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/31/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/31/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	104	

Rev. Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW008

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) GROUND WAT Lab Sample ID: 119996003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 021B2101

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/31/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/31/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Rev Qual
u

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW009

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) GROUND WAT Lab Sample ID: 119996004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 022B2201

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 08/31/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/31/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Rev Qual
U

FORM I SV-1 OLM03.0

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW010

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) GROUND WATER Lab Sample ID: 119861004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 027B2701

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/27/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	37.1	

Rw Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW011

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) GROUND WATER Lab Sample ID: 119861003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 026B2601

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/27/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	20.0	U

Re-qual
U

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW012

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) GROUND WATER Lab Sample ID: 119861002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 025B2501

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 08/27/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	53.8	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW013

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119861

Matrix: (soil/water) GROUND WATER Lab Sample ID: 119861001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 023B2301

Level: (low/med) LOW Date Received: 08/25/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 08/27/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	30.3	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW014

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 119996

Matrix: (soil/water) GROUND WAT Lab Sample ID: 119996002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 020B2001

Level: (low/med) LOW Date Received: 08/26/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/31/04

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 08/31/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	53.1	

Rw Qual

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 15, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW002
Sample ID: 119996001
Matrix: Ground Water
Collect Date: 25-AUG-04 09:40
Receive Date: 26-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

RW 9nd

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	0.0341	0.100	mg/L	1	MAR1	08/27/04	0017	360871	1
Sulfate		249	3.86	8.00	mg/L	20	MAR1	09/06/04	0848	360871	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	1	BEP2	09/07/04	1307	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

40

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 16, 2004

Contact: Mr. Doug Hawn

Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW004	Project:	STEP00104
Sample ID:	120193001	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	26-AUG-04 08:50		
Receive Date:	27-AUG-04		
Collector:	Client		

RW

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.118	0.0341	0.100	mg/L	U	1	MAR1 08/28/04	0638	361409	1
Sulfate		338	9.65	20.0	mg/L		50	VH1 09/09/04	0716	361409	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		EXN1 09/08/04	1601	363852	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 16, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW005
Sample ID: 120193002
Matrix: Ground Water
Collect Date: 26-AUG-04 09:50
Receive Date: 27-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

RW

Parameter	Qualifier	Result	DL	RL	Units	Dil	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.0341	0.100	mg/L	1		MAR1	08/28/04	0734	361409	1
Sulfate		56.2	0.386	0.800	mg/L		2	VHI	09/09/04	0814	361409	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3		9.44	1.45	2.00	mg/L			EXN1	09/08/04	1602	363852	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1000 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 15, 2004

Contact: Mr. Doug Hawn

Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW008
Sample ID: 119996003
Matrix: Ground Water
Collect Date: 25-AUG-04 13:20
Receive Date: 26-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

Rev Qual

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
EPA 300.0 Anions Liquid										
Nitrate-N		0.148	0.0341	0.100	mg/L	1	MAR1 08/27/04	0131	360871	1
Sulfate		1350	19.3	40.0	mg/L	100	MAR1 09/06/04	1006	360871	2
Titration Analysis Federal										
EPA 310.1 Total Alkalinity Federal										
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U	BEP2 09/07/04	1310	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but nor detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were nor spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by Tom Lewis Jr.

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company: Step, Inc.
Address: 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 15, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Page 1 of 1

Client Sample ID: 133MW009
Sample ID: 119996004
Matrix: Ground Water
Collect Date: 25-AUG-04 15:10
Receive Date: 26-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

Rev Qual

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N		0.172	0.0341	0.100	mg/L	1	MAR1	08/27/04	0149	360871	1
Sulfate		3190	19.3	40.0	mg/L	100	MAR1	09/06/04	1025	360871	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	u	BEP2	09/07/04	1310	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

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> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Reviewed by

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 14, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW010
Sample ID: 119861004
Matrix: Ground Water
Collect Date: 24-AUG-04 16:00
Receive Date: 25-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

Rev Qual

Parameter	Qualifier	Result	DL	RL		Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N		2.24	0.0341	0.100		mg/L	1	VH1	08/26/04	1103	360471	1
Sulfate		13800	3860	8000		mg/L	20000	VH1	08/31/04	1056	360471	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	U	mg/L		BEP2	09/07/04	1111	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
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H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Reviewed by

45

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 14, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW011
Sample ID: 119861003
Matrix: Ground Water
Collect Date: 24-AUG-04 14:45
Receive Date: 25-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

Rev Qual

Parameter	Qualifier	Result	DL	RL		Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.0341	0.100	U	mg/L	1	VH1	08/26/04	1044	360471	1
Sulfate		13100	3860	8000		mg/L	20000	VH1	08/31/04	1037	360471	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	U	mg/L		BEP2	09/07/04	1110	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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H Analytical holding time exceeded.
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P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Reviewed by

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 14, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW012
Sample ID: 119861002
Matrix: Ground Water
Collect Date: 24-AUG-04 11:30
Receive Date: 25-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

Rev Qual

Parameter	Qualifier	Result	DL	RL		Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	0.0341	0.100	U	mg/L	1	VH1 08/26/04	1025	360471	1
Sulfate		25.7	0.193	0.400		mg/L	1	VH1 08/31/04	1017	360471	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	U	mg/L		BEP2 09/07/04	1108	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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H Analytical holding time exceeded.
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P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Reviewed by

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 14, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW013
Sample ID: 119861001
Matrix: Ground Water
Collect Date: 24-AUG-04 09:50
Receive Date: 25-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

Rev Qual

Parameter	Qualifier	Result	DL	RL		Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.0341	0.100	U	mg/L	1	VH1	08/26/04	0926	360471	1
Sulfate		18.4	0.193	0.400		mg/L	1	VH1	08/31/04	0919	360471	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	U	mg/L		BEP2	09/07/04	1107	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: September 15, 2004

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW014
Sample ID: 119996002
Matrix: Ground Water
Collect Date: 25-AUG-04 10:55
Receive Date: 26-AUG-04
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	DL	RL	Units	Rev Qual	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.0341	0.100	mg/L	U	1	MAR1	08/27/04	0113	360871	1
Sulfate		185	1.93	4.00	mg/L		10	MAR1	09/06/04	0946	360871	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		BEP2	09/07/04	1308	363498	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
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E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Reviewed by

February 2005

Receipt Narrative
for
STEP, Inc.
Work Order: 130039

February 23, 2005

Laboratory Identification:

General Engineering Laboratories, LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt The sample arrived at General Engineering Laboratories, LLC, Charleston, South Carolina on February 04, 2005 for analysis.

Sample Identification The laboratory received the following samples:

Laboratory ID	Client ID
130039001	TB-03
130039002	RS-01
130039003	EQ-01
130039004	133MW005

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package: The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Flame Ionization Detector, General Chemistry and Volatile.

Sarah Kozlik
Project Manager

Receipt Narrative
for
STEP, Inc.
Work Order: 129892

February 22, 2005

Laboratory Identification:

General Engineering Laboratories, LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt The sample arrived at General Engineering Laboratories, LLC, Charleston, South Carolina on February 02, 2005 for analysis.

Sample Identification The laboratory received the following samples:

Laboratory ID	Client ID
129892001	TB-01
129892002	133MW013
129892003	133MW012
129892004	133MW912
129892005	133MW011
129892006	133MW010
129892007	133MW010M

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package: The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Flame Ionization Detector, General Chemistry and Volatile.

Sarah Kozlik
Project Manager

Receipt Narrative
for
STEP, Inc.
Work Order: 129948

February 22, 2005

Laboratory Identification:

General Engineering Laboratories, LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt The sample arrived at General Engineering Laboratories, LLC, Charleston, South Carolina on February 03, 2005 for analysis.

Sample Identification The laboratory received the following samples:

Laboratory ID	Client ID
129948001	TB-02
129948002	133MW002
129948003	133MW014
129948004	133MW008
129948005	133MW009
129948006	133MW004

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package: The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Flame Ionization Detector, General Chemistry and Volatile.

Sarah Kozlik
Project Manager

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW002

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) WATER Lab Sample ID: 129948002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X213

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: not dec. _____ Date Analyzed: 02/15/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	RevQual
1634-04-4	tert-Butyl methyl ether	0.90	J	J
71-43-2	Benzene	25.0		
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	4.8		
1330-20-7	Xylenes (total)	0.46	J	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW004

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) WATER Lab Sample ID: 129948006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X120

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: not dec. _____ Date Analyzed: 02/14/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual

U ↓

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW005

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 130039

Matrix: (soil/water) WATER Lab Sample ID: 130039004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X215

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: not dec. _____ Date Analyzed: 02/15/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	2.5		
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	0.22	J	J
1330-20-7	Xylenes (total)	1.0	U	U

5b

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW008

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) WATER Lab Sample ID: 129948004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X118

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: not dec. _____ Date Analyzed: 02/14/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev 2nd

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW009

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) WATER Lab Sample ID: 129948005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X119

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: not dec. _____ Date Analyzed: 02/14/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual
U
↓

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW010

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) WATER Lab Sample ID: 129892006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X212

Level: (low/med) LOW Date Received: 02/15/05

% Moisture: not dec. _____ Date Analyzed: 02/15/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	0.50	J	J
100-41-4	Ethylbenzene	3.0		
1330-20-7	Xylenes (total)	7.7		

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

133MW011

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) WATER Lab Sample ID: 129892005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X112

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: not dec. _____ Date Analyzed: 02/14/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	0.70	J
1330-20-7	Xylenes (total)	1.2	

Rw Qual

U ↓ J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW012

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) WATER Lab Sample ID: 129892003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X110

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: not dec. _____ Date Analyzed: 02/14/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual
U
↓

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW013

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) WATER Lab Sample ID: 129892002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X109

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: not dec. _____ Date Analyzed: 02/14/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW014

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) WATER Lab Sample ID: 129948003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 3X214

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: not dec. _____ Date Analyzed: 02/15/05

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	0.32	J
1330-20-7	Xylenes (total)	1.0	U

Reqnd

U
↓
J
U

FORM I VOA OLM03.0

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW002

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129948002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 022B2201

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	275	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW004

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129948006

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 027B2701

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

RW Qual
U

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW005

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 130039

Matrix: (soil/water) GROUND WAT Lab Sample ID: 130039004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 032B3201

Level: (low/med) LOW Date Received: 02/04/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	20.8	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW008

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129948004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 025B2501

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
74-82-8	Methane	14.0	U	U

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW009

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129948005

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 026B2601

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Rev Qual
U

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW010

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129892006

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 015B1501

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.3	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW011

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129892005

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 014B1401

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rw2ucl
74-82-8	Methane	14.0	U	u

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW012

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129892003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 012B1201

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	37.6	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW013

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129892

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129892002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 011B1101

Level: (low/med) LOW Date Received: 02/02/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Rw Qual
U

FORM I SV-1 OLM03.0

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW014

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 129948

Matrix: (soil/water) GROUND WAT Lab Sample ID: 129948003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 024B2401

Level: (low/med) LOW Date Received: 02/03/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/09/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/09/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Rev Qual
U

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW002
Sample ID: 129948002
Matrix: Ground Water
Collect Date: 02-FEB-05 08:45
Receive Date: 03-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	RwQual	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	MAR102/04/05	0249	399166	1
Sulfate		138		1.93	4.00	mg/L	10	MAR102/05/05	0408	399166	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		KXM 02/03/05	1721	399088	3 2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW004
Sample ID: 129948006
Matrix: Ground Water
Collect Date: 02-FEB-05 15:45
Receive Date: 03-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	Rev Qual	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N		0.791		0.0341	0.100	mg/L	1	MAR1 02/04/05	0441	399166	1
Sulfate		142		1.93	4.00	mg/L	10	MAR1 02/05/05	0600	399166	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		KXM 02/03/05 2	1729	399088	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
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** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 18, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW005
Sample ID: 130039004
Matrix: Ground Water
Collect Date: 03-FEB-05 10:20
Receive Date: 04-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	RwQud	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	MAR1 02/04/05	2135	399470	1
Sulfate		412		9.65	20.0	mg/L	50	VH1 02/07/05	1745	399470	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3		6.23	U bc, be	1.45	2.00	mg/L		KXM 02/04/05 2127 2		399657	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

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** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW008
Sample ID: 129948004
Matrix: Ground Water
Collect Date: 02-FEB-05 11:05
Receive Date: 03-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	ReQual	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	MAR102/04/05	0404	399166	1
Sulfate		1680		19.3	40.0	mg/L	100	MAR102/05/05	0523	399166	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		KXM 02/03/05 2	1723	399088	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

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** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW009
Sample ID: 129948005
Matrix: Ground Water
Collect Date: 02-FEB-05 14:15
Receive Date: 03-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	Rerun	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N		0.192		0.0341	0.100	mg/L	1	MAR1 02/04/05	0422	399166	1
Sulfate		1040		9.65	20.0	mg/L	50	MAR1 02/05/05	0542	399166	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		KXM 02/03/05 2	1723	399088	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

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** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW010
Sample ID: 129892006
Matrix: Ground Water
Collect Date: 01-FEB-05 15:00
Receive Date: 02-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	Rev Qual	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	VH1 02/03/05	0026	398908	1
Sulfate		3120		96.5	200	mg/L	500	VH1 02/07/05	1900	398908	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		BEP2 02/11/05	1316	399011	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

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E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW011
Sample ID: 129892005
Matrix: Ground Water
Collect Date: 01-FEB-05 13:55
Receive Date: 02-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	RwQual	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	VH1	02/02/05	2330	398908	1
Sulfate		2160		19.3	40.0	mg/L	100	VH1	02/07/05	1804	398908	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		BEP2	02/11/05	1313	399011	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
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B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW012
Sample ID: 129892003
Matrix: Ground Water
Collect Date: 01-FEB-05 11:00
Receive Date: 02-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	Rw Qual	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	VH1	02/02/05	2252	398908	1
Sulfate		22.8		0.193	0.400	mg/L	1	MAR1	02/05/05	0753	398908	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		BEP2	02/11/05	1308	399011	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW013
Sample ID: 129892002
Matrix: Ground Water
Collect Date: 01-FEB-05 09:45
Receive Date: 02-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	Rev Qual	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	VH1 02/02/05	2234	398908	1
Sulfate		17.8		0.193	0.400	mg/L	1	MAR1 02/05/05	0734	398908	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		BEP2 02/11/05	1303	399011	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: February 17, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID: 133MW014
Sample ID: 129948003
Matrix: Ground Water
Collect Date: 02-FEB-05 09:55
Receive Date: 03-FEB-05
Collector: Client

Project: STEP00104
Client ID: STEP001

Parameter	Qualifier	Result	Rev Qual	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	U	0.0341	0.100	mg/L	1	MAR102/04/05	0345	399166	1
Sulfate		1420		19.3	40.0	mg/L	100	MAR102/05/05	0504	399166	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	U	1.45	2.00	mg/L		KXM 02/03/05 1722 399088 2			3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

Notes:
The Qualifiers in this report are defined as follows :

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

April 2005

CASE NARRATIVE
for
STEP, Inc.
Hunter Army Airfield SWMU 133
SDG # 135202

May 13, 2005

Laboratory Identification:
General Engineering Laboratories, LLC

Mailing Address:
P.O. Box 30712
Charleston, South Carolina 29417

Express Mail Delivery and Shipping Address:
2040 Savage Road
Charleston, South Carolina 29414

Telephone Number:
(843) 556-8171

Summary:
Sample receipt

The samples were logged-in at General Engineering Laboratories, LLC, (GEL) in Charleston, South Carolina on April 27, 2005 for Environmental Analyses.

Laboratory Identification	Sample Description
135202001	133MW012
135202002	133MW013
135202003	133MW011
135202004	133MW010
135202005	133MW009
135202006	133MW912
135202007	TB-01

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Internal Chain of Custody:

Custody was maintained for all samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Flame Ionization Detector, General Chemistry and Volatile.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.

Laura Sluss
Project Manager

GENERAL ENGINEERING LABORATORIES, LLC
a Member of THE GEL GROUP, INC.
P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

CASE NARRATIVE
for
STEP, Inc.
Hunter Army Airfield SWMU 133
SDG # 135327

May 13, 2005

Laboratory Identification:
General Engineering Laboratories, LLC

Mailing Address:
P.O. Box 30712
Charleston, South Carolina 29417

Express Mail Delivery and Shipping Address:
2040 Savage Road
Charleston, South Carolina 29414

Telephone Number:
(843) 556-8171

Summary:
Sample receipt

The samples were logged-in at General Engineering Laboratories, LLC, (GEL) in Charleston, South Carolina on April 28, 2005 for Environmental Analyses.

Laboratory Identification	Sample Description
135327001	TB-02
135327002	TB-03
135327003	RS-01
135327004	FS-01
135327005	133MW004M
135327006	133MW008
135327007	133MW014
135327008	133MW004
135327009	133MW005
135327010	133MW002

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Internal Chain of Custody:

Custody was maintained for all samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Flame Ionization Detector, General Chemistry and Volatile.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.

Laura Sluss
Project Manager

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW002

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) WATER Lab Sample ID: 135327010

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J151

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q	
					Rev 2nd
1634-04-4	tert-Butyl methyl ether		1.0	U	U
71-43-2	Benzene		30.8		
108-88-3	Toluene	1.0	~~0.40~~	J	U 6c, 6d
100-41-4	Ethylbenzene		25.6		
1330-20-7	Xylenes (total)		0.48	J	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW004

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) WATER Lab Sample ID: 135327008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J149

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	0.54	J
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual
J
U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

133MW005

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) WATER Lab Sample ID: 135327009

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J150

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	1.9		
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	0.91	J	J
1330-20-7	Xylenes (total)	1.0	U	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW008

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) WATER Lab Sample ID: 135327006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J147

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

RW Qual

U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW009

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) WATER Lab Sample ID: 135202005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J139

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Reduced

4

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW010

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) WATER Lab Sample ID: 135202004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J138

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	ReQual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	0.43	J	J
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	2.0		
1330-20-7	Xylenes (total)	3.9		

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

133MW011

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) WATER Lab Sample ID: 135202003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J137

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	0.33	J	
71-43-2	Benzene	1.0	U	
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.1		

FORM I VOA OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW012

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) WATER Lab Sample ID: 135202001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J135

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	tert-Butyl methyl ether	1.0	U
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

Rev Qual
U ↓

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW013

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) WATER Lab Sample ID: 135202002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J136

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	RwQual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	1.0	U	↓
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW014

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) WATER Lab Sample ID: 135327007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1J148

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: not dec. _____ Date Analyzed: 05/10/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
1634-04-4	tert-Butyl methyl ether	1.0	U	U
71-43-2	Benzene	1.0	U	
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW002

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135327010

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 027B2701

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	975	

ReQual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW004

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135327008

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 022B2201

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
74-82-8	Methane	7.19	J	J

100

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW005

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135327009

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 023B2301

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	42.3	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW008

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135327006

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 020B2001

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Rev Qual
U

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW009

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135202005

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 016B1601

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Rev Qual
74-82-8	Methane	10.1	J	J

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW010

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135202004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 015B1501

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	116	

Rev Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW011

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135202003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 014B1401

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	14.0	U

Rw Qual
u

105

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW012

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135202001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 011B1101

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	46.7	

Re Qual

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

133MW013

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135202

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135202002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 013B1301

Level: (low/med) LOW Date Received: 04/27/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q Rev Qual
74-82-8	Methane	27.2	

1B
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
133MW014

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 135327

Matrix: (soil/water) GROUND WAT Lab Sample ID: 135327007

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 021B2101

Level: (low/med) LOW Date Received: 04/28/05

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/03/05

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/03/05

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q RwQual
74-82-8	Methane	71.8	

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Report Date: May 13, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW002	Project:	STEP00104
Sample ID:	135327010	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	27-APR-05 14:55		
Receive Date:	28-APR-05		
Collector:	Client		

Rw

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1	04/28/05	2206	420844	1
Sulfate		49.6	0.285	2.00	mg/L		5	VH1	05/04/05	0014	420844	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3		2.13	1.45	2.00	mg/L			BEP2	05/11/05	1250	424535	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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Report Date: May 13, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW004	Project:	STEP00104
Sample ID:	135327008	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	27-APR-05 10:50		
Receive Date:	28-APR-05		
Collector:	Client		

Rw

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N		0.273	0.020	0.100	mg/L		1	VH1	04/28/05	2129	420844	1
Sulfate		114	0.570	4.00	mg/L		10	VH1	05/03/05	2337	420844	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		BEP2	05/11/05	1249	424535	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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Report Date: May 13, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW005	Project:	STEP00104
Sample ID:	135327009	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	27-APR-05 13:50		
Receive Date:	28-APR-05		
Collector:	Client		

Rev

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1	04/28/05	2148	420844	1
Sulfate		90.4	0.570	4.00	mg/L		10	VH1	05/03/05	2355	420844	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		BEP2	05/11/05	1250	424535	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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Report Date: May 13, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW008	Project:	STEP00104
Sample ID:	135327006	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	27-APR-05 08:50		
Receive Date:	28-APR-05		
Collector:	Client		

Rev

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N		0.102	0.020	0.100	mg/L		1	VH1	04/28/05	2014	420844	1
Sulfate		647	5.70	40.0	mg/L		100	VH1	05/03/05	2240	420844	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		BEP2	05/11/05	1244	424535	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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Company : Step, Inc.
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Report Date: May 11, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW009	Project:	STEP00104
Sample ID:	135202005	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	26-APR-05 16:25		
Receive Date:	27-APR-05		
Collector:	Client		

Rev

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1	04/27/05	1849	420521	1
Sulfate		4270	11.4	80.0	mg/L	J Sa	200	VH1	04/29/05	1730	420521	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		NXS1	05/10/05	1522	424053	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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Report Date: May 11, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW010	Project:	STEP00104
Sample ID:	135202004	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	26-APR-05 14:55		
Receive Date:	27-APR-05		
Collector:	Client		

RW

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1 04/27/05	1830	420521	1
Sulfate		3510	5.70	40.0	mg/L	J Qa	100	VH1 04/29/05	0517	420521	2
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		NXS1 05/10/05	1521	424053	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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Report Date: May 11, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW011	Project:	STEP00104
Sample ID:	135202003	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	26-APR-05 13:25		
Receive Date:	27-APR-05		
Collector:	Client		

Rev

Parameter	Qualifier	Result	DL	RL	Units	Dul	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1	04/27/05	1811	420521	1
Sulfate		374	2.85	20.0	mg/L	J	8a 50	VH1	04/29/05	0459	420521	2
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		NXS1	05/10/05	1518	424053	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 300.0	
3	EPA 310.1	

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Company : Step, Inc.
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Report Date: May 11, 2005

Contact: Mr. Doug Hawn
Project: **Hunter Army Airfield SWMU 133**

Client Sample ID:	133MW012	Project:	STEP00104
Sample ID:	135202001	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	26-APR-05 09:30		
Receive Date:	27-APR-05		
Collector:	Client		

RW

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography Federal												
EPA 300.0 Anions Liquid												
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1	04/27/05	1657	420521	1
Sulfate		22.1	0.057	0.400	mg/L	J Ba	1					
Titration Analysis Federal												
EPA 310.1 Total Alkalinity Federal												
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		NXS1	05/10/05	1516	424053	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 310.1	

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Company : Step, Inc.
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Report Date: May 11, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW013	Project:	STEP00104
Sample ID:	135202002	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	26-APR-05 11:20		
Receive Date:	27-APR-05		
Collector:	Client		

Rev

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1 04/27/05	1753	420521	1
Sulfate		13.7	0.057	0.400	mg/L	J Sa	1				
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		NXS1 05/10/05	1517	424053	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 310.1	

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Company : Step, Inc.
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Report Date: May 13, 2005

Contact: Mr. Doug Hawn
Project: Hunter Army Airfield SWMU 133

Client Sample ID:	133MW014	Project:	STEP00104
Sample ID:	135327007	Client ID:	STEP001
Matrix:	Ground Water		
Collect Date:	27-APR-05 09:50		
Receive Date:	28-APR-05		
Collector:	Client		

Rev

Parameter	Qualifier	Result	DL	RL	Units	Qual	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal											
EPA 300.0 Anions Liquid											
Nitrate-N	U	0.00	0.020	0.100	mg/L	U	1	VH1 04/28/05	2110	420844	1
Sulfate		37.6	0.057	0.400	mg/L		1				
Titration Analysis Federal											
EPA 310.1 Total Alkalinity Federal											
Alkalinity, Total as CaCO3	U	0.00	1.45	2.00	mg/L	U		BEP2 05/11/05	1248	424535	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 310.1	

ATTACHMENT 3

Validation Report
for the Former Building 133 Remedial Action
Hunter Army Airfield
Savannah, Georgia

August 2005

Prepared by
DataCheck

TABLE OF CONTENTS

List of Tables

ACRONYMS AND ABBREVIATIONS

%	percent
%D	percent difference
BFB	bromofluorobenzene
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCAL	continuing calibration
CCB	continuing calibration blank
DFTPP	decafluorotriphenylphosphine
EPA	U.S. Environmental Protection Agency
ER	equipment rinseate
FB	field blank
FD	field duplicate
GFAA	graphite furnace atomic absorption
HAAF	Hunter Army Airfield
ICAL	initial calibration
ICB	initial calibration blank
LCS	laboratory control sample
MS	matrix spike
MSD	matrix spike duplicate
MTBE	methyl tert butyl ether
QC	quality control
RPD	relative percent difference
RRF	relative response factor
RSD	relative standard deviation
SDG	sample delivery group
TB	trip blank

1. INTRODUCTION

The data validation of 36 water samples in eight sample delivery groups (SDGs) from the former Building 133 site at Hunter Army Airfield (HAAF) in Savannah, Georgia was completed in September 2004, March 2005, and May 2005. Level III data validation was performed on 100 percent of the environmental samples. General Engineering Labs of Charleston, South Carolina, analyzed all samples for the following parameters using the analytical method indicated for each:

- methyl tertbutyl ether (MTBE)/benzene, toluene, ethylbenzene, and xylenes (BTEX) by GC/MS SW846 8260B;
- methane by SW846 8015 A/B-FID; and
- wet chemistry (sulfate, nitrate, and alkalinity) by U.S. Environmental Protection Agency (EPA) methods 300.0A and 310.1.

The number of samples for each analyte group is shown below.

Table 1-1 Number of Samples per Analyte Group

Parameter (Method)	Media	No. of Samples	SDGs
MTBE/BTEX	Water	36	8
Methane	Water	32	8
Wet Chem	Water	32	8

BTEX = benzene, toluene, ethylbenzene, and xylenes
MTBE = methyl tertbutyl ether
SDG = sample delivery group
Wet Chem = nitrate, sulfate, alkalinity

2. PROCEDURES

The sample data were validated following the logic identified in *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA-540/R-99-008)* (EPA, October 1999) and method specific criteria.

3. SUMMARY OF DATA VALIDATION FINDINGS

This data validation report reflects the data validation findings for samples associated with the investigation of the former Building 133 site at HAAF in Savannah, Georgia. The validated data set consisted of 36 samples that had been analyzed for MTBE/BTEX, methane and wet chemistry. Overall the data was of excellent quality, and all measurements required to satisfy the project quality control (QC) objectives (precision, accuracy, representativeness, comparability, and completeness) were met. Each of these measures and specific data qualifications are discussed below.

Precision: Precision is a measure of the agreement between duplicate sample measurements of the same quantity and is reflected in the relative percent difference (RPD) between spikes and the RPD for the field duplicate analysis. Precision for the former Building 133 site was measured at 97.6 percent.

Accuracy: Accuracy is measured by the results from the recovery of known amounts of compounds or elements from laboratory control samples (LCS), matrix spikes (MS), and surrogate recoveries. The overall measure of accuracy for the former Building 133 site was calculated by comparing the number of spike recoveries that exceeded the laboratory limits by the total number of LCS, MS and surrogate spikes. For all analyte groups, accuracy was measured 98.7 percent.

Representativeness: The measures of representativeness – sample handling, analytical blank analysis, field blanks – were met for all sites. Designated analytical protocols were followed. Holding times were met. Overall, no major problems were identified resulting from analytical failure.

Comparability: All data were analyzed using appropriate approved methods of analysis. All data results were reported correctly and in standard units.

Completeness: Completeness is the amount of valid data compared to the planned amount and is expressed as a percent of the usable data points divided by the total number of analytes for each parameter analyzed. Out of a total of 308 data points, no data points were rejected (designated by an "R" qualifier), resulting in a completeness of 100.0 percent.

Several sample results for the organic compounds were assigned "J" qualifiers by the laboratory, which is standard practice for these methods, because they were quantitated between the method detection limit

and the reporting limit. Due to the uncertainty associated with this region of quantitation, the validation reviewer retained the "J" qualifiers assigned by the laboratory to indicate an estimated quantity.

Data validation summaries, which function as worksheets for the validation task, are included for each parameter in each data package. The following section highlights the key findings of the data validation for each analysis.

4. ANALYSIS-SPECIFIC DATA VALIDATION SUMMARIES

4.1 MTBE/BTEX BY SW846 8260B

Thirty-six water samples were analyzed for MTBE/BTEX compounds. Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times/Sample Condition. Holding times were met for all sample analyses. All samples were received in acceptable condition. .

Initial Calibration and Continuing Calibration. All initial calibrations (ICALs) and continuing calibrations (CCALs) associated with the project samples met QC criteria.

Blanks. Toluene was found in the associated field and rinsate blanks, and a "U" qualifier was added to the toluene result for sample 133MW002 (SDG135327). No contaminants were noted in any of the other blanks and no other qualifiers were required.

Surrogate Recoveries. All surrogate recoveries were within the QC limits.

Matrix Spike/Matrix Spike Duplicate. The MS analysis for SDGs 129892,129948, and 130039 was from sample 133MW010 in SDG 129892. All results were within the QC limits. The MS analyses were within the QC limits for SDGs 119861, 119996, and 120193. The MS/matrix spike duplicate (MSD) analysis for SDG 119996 was shared with SDG120193. The MS analysis for SDGs 135327 and 135202 was from sample 133MW012 in SDG 135202. All results were within the QC limits.

Laboratory Control Sample. LCS analyses were performed for all eight SDGs, and all QC criteria were met.

Internal Standard. All area count recoveries and compound retention times were within the QC criteria.

Field Duplicates. No field duplicate (FD) analyses results were performed except for SDG 120195, and those results were within the QC limits.

Quantitation. All sample results were acceptable as qualified.

4.2 METHANE BY SW 846 8015 A/B-FID

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times/Sample Condition. Technical holding time criteria were met for all samples. All samples were received in acceptable condition.

Initial and Continuing Calibration. All the ICAL analyses and CCAL analyses were within QC limits.

Blanks. All blank results were nondetects.

Matrix Spike/Matrix Spike Duplicates. No MS/MSD analyses were performed with any of the SDGs. A duplicate analysis was performed for each SDG, and the results were within the QC limits.

Laboratory Control Sample. No qualifiers were required since all LCS recoveries were within the QC limits.

Field Duplicates. No field duplicate analyses were performed.

Quantitation. All sample results were acceptable as reported.

4.3 WET CHEMISTRY – SULFATE AND NITRATE BY EPA 300.0A; ALKALINITY BY EPA 310.1

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times/Sample Condition. The technical holding time criteria were met for all samples. All samples were received in acceptable condition.

Initial and Continuing Calibration. All ICAL and CCAL verification results were within acceptable limits.

Blanks. Sulfate and alkalinity were present in the equipment and rinsate blanks associated with SDG 130039. The sulfate result was greater than 5x the blank, so no qualifier was required. The alkalinity value was qualified as "U" since the sample value was less than the blank amount. No contaminants were noted in the blanks associated with any of the other of the SDGs.

Matrix Spike/Matrix Spike Duplicates. The recoveries for sulfate in SDGs 120193, 129948, 129892, and 135202 were above the QC limit, but no qualifications were required since all of the LCS recoveries were acceptable. The MS/MSD analyzed for SDG 129948 was outside the QC limits for alkalinity. The pH of the analysis never reached the 4.5 value required by the analysis. The results of the MS/MSD were not used in validating the data.

Laboratory Control Sample. No qualifiers were required since all LCS recoveries were within the QC limits.

Field Duplicates. No FD analyses were performed.

Quantitation. All results were acceptable as reported.

5. ASSIGNMENT OF DATA QUALIFIERS

5.1 DATA QUALIFIER DEFINITIONS

Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit or the reported analyte value was not detected above 5x or 10x the level reported in laboratory or field blanks.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

5.2 DATA VALIDATION REASON CODES

During the review process, a data validation reason code was added to each of the reviewer's qualifiers to allow the user to identify which results were qualified and the reason(s) for the qualifiers. Reason codes are listed and defined in Table 5-1.

Table 5-1 Data Validation Reason Codes

Reason Code	Definition
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding time exceeded
02A	Extraction
02B	Analysis
03	Instrument performance – outside criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	Retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient >0.995
05	Continuing calibration results outside specified criteria

Table 5-1 Data Validation Reason Codes (continued)

Reason Code	Definition
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits
10A	Recovery
10B	Retention time
11	Laboratory control sample recoveries outside specified limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgment was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

% = percent
%D = percent difference
BFB = bromofluorobenzene
CCB = continuing calibration blank
DFTPP = decafluorotriphenylphosphine
ER = equipment rinseate
FB = field blank
GFAA = graphite furnace atomic absorption
ICB = initial calibration blank
LCS = laboratory control sample
MS = matrix spike
MSD = matrix spike duplicate
QC = quality control
RPD = relative percent difference
RRF = relative response factor
RSD = relative standard deviation
TB = trip blank

6. REFERENCES

EPA (U.S. Environmental Protection Agency), October 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA-540/R-99-008).