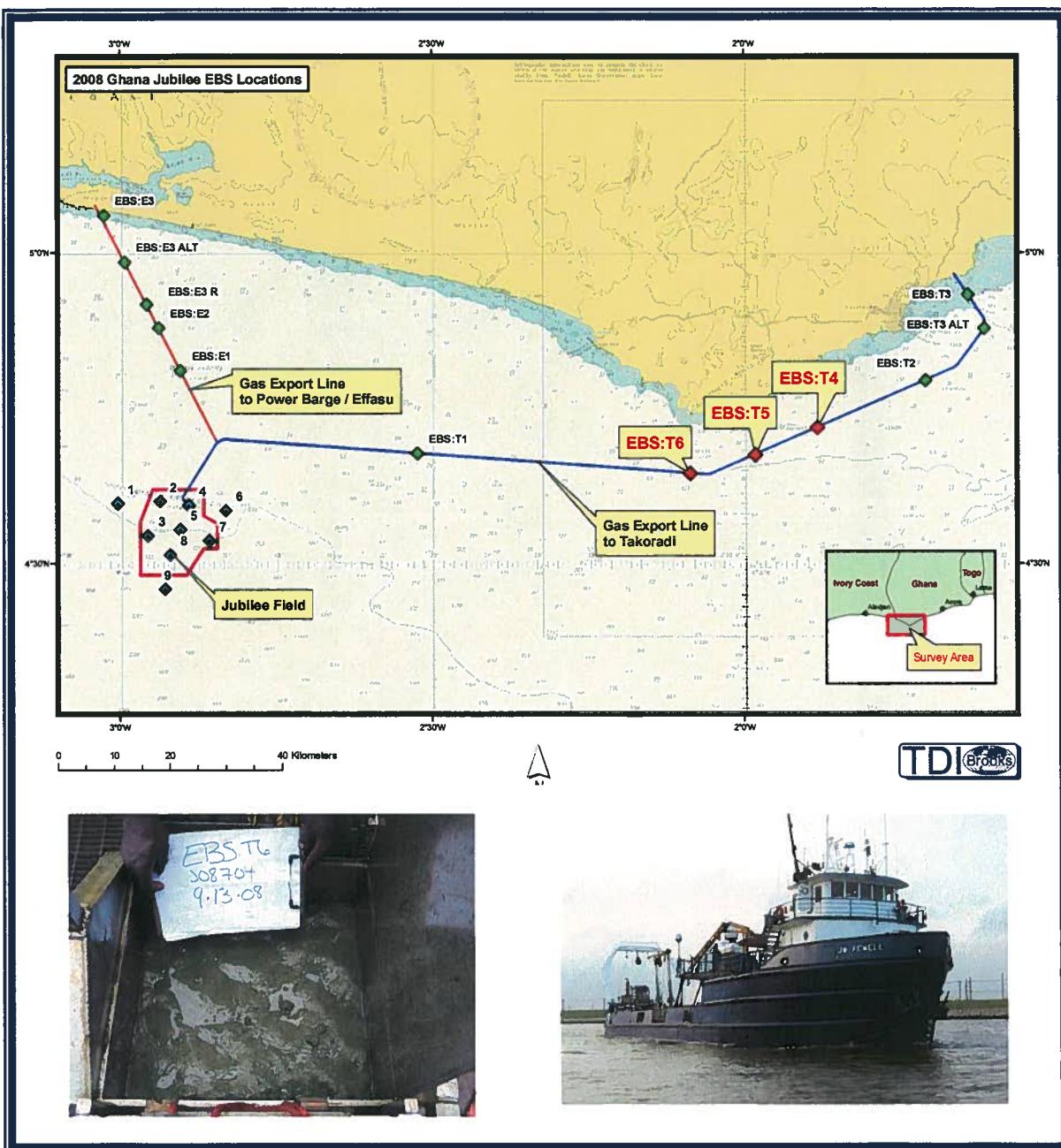


JUBILEE FIELD
Ghana
Technical Report # 08-2181**Environmental Baseline**
Analytical Report
TDI-Brooks**December 2008**

JUBILEE FIELD

Ghana

Environmental Baseline Survey

Analytical Report

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Introduction

TDI-Brooks International conducted an Environmental Baseline Survey (EBS) around the Jubilee Field for Tullow Ghana Limited. The survey was conducted off the *R/V JW Powell* from 9 September 2008 through 13 September 2008.

The Jubilee Field Unit Partners are developing the Jubilee Field, which is located in the Deepwater Tano and West Cape Three Points blocks, approximately 60 km offshore Ghana (**Figure 1**). The development includes production wells, water injection wells, and gas injection wells all to be tied in via manifolds and riser bases to a floating production, storage, and offloading vessel located 130 km WSW of Takoradi, Ghana.

Water and sediment samples were collected in the area of the gas export line to Power Barge/Effasu, gas export line to Takoradi and the Jubilee field. Water depths varied from 16 to >1800 m. The location of 4 stations that had to be relocated due to sampling difficulties is shown in **Figure 1**. The site, EBS:E3 along the gas export line to Power Barge/Effasu, was in water too shallow to sample. Sampling was attempted at EBS:E3 ALT, but that site was still too shallow for sampling. However, a third site was selected and successfully sampled, EBS:E3R. All pre-selected sites in the Jubilee field were successfully sampled. The following sites, EBS:T1, EBS:T3, EBS:T3ALT, EBS:T3, along the gas export line to Takoradi were sampled but sediment recoveries were poor. Consequently 3 new sites, EBS:T4, EBS:T5, and EBS:T6 were sampled.

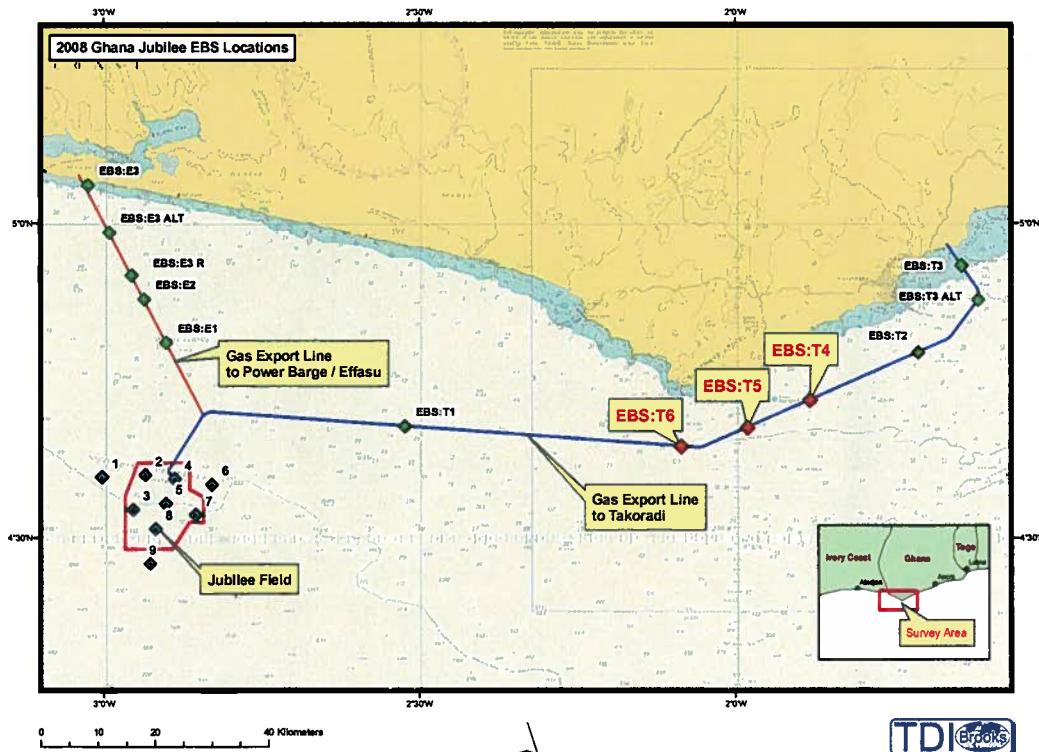


Figure 1. Map of Sampling Locations

Box cores and CTD casts and water samples were collected from all final stations. (Table 1).

Table 1. Location and depth of EIA stations.

| Locations | Date | Time | Lat. | Long. | Depths |
|----------------|-----------|----------|-------------|--------------|--------|
| EBS:T3 | 9/9/2008 | 8:54:34 | N04 55.9778 | W001 38.3939 | 16.6 |
| EBS:T3_CTD | 9/9/2008 | 9:22:28 | N04 55.9825 | W001 38.3912 | 17.3 |
| EBS:T3_ALT_SS | 9/9/2008 | 10:04:41 | N04 52.6817 | W001 36.8161 | 28.1 |
| EBS:T2_SS | 9/9/2008 | 11:19:42 | N04 47.6608 | W001 42.5213 | 33.3 |
| EBS:T2_CTD | 9/9/2008 | 11:33:02 | N04 47.6612 | W001 42.5264 | 34.4 |
| EBS:T1_CTD | 9/9/2008 | 18:51:36 | N04 40.5986 | W002 31.3688 | 73.6 |
| EBS:T1_SS | 9/9/2008 | 18:57:59 | N04 40.5979 | W002 31.3806 | 73.3 |
| Jub_EBS006_SS | 9/9/2008 | 23:05:02 | N04 35.0791 | W002 49.7665 | 942.5 |
| Jub_EBS006_CTD | 9/10/2008 | 0:20:51 | N04 35.0795 | W002 49.7700 | 947.5 |
| Jub_EBS007_SS | 9/10/2008 | 1:36:19 | N04 32.1627 | W002 51.3290 | 1180 |
| Jub_EBS007_CTD | 9/10/2008 | 1:36:55 | N04 32.1621 | W002 51.3283 | 1180 |
| Jub_EBS007_SSR | 9/10/2008 | 7:28:48 | N04 32.1616 | W002 51.3295 | 1180 |
| Jub_EBS009_CTD | 9/10/2008 | 9:25:36 | N04 27.4913 | W002 55.6064 | 1741.7 |
| Jub_EBS009_SS | 9/10/2008 | 9:33:42 | N04 27.4861 | W002 55.6122 | 1745.8 |
| Jub_EBS009_SSR | 9/10/2008 | 10:41:07 | N04 27.4902 | W002 55.6085 | 1766.7 |
| Jub_EBS008_CTD | 9/10/2008 | 12:18:45 | N04 30.7940 | W002 55.1232 | 1441.7 |
| Jub_EBS008_SS | 9/10/2008 | 12:19:07 | N04 30.7939 | W002 55.1238 | 1441.7 |
| Jub_EBS005_SS | 9/10/2008 | 13:40:55 | N04 33.2307 | W002 54.1438 | 1341.7 |
| Jub_EBS005_CTD | 9/10/2008 | 13:41:11 | N04 33.2303 | W002 54.1463 | 1341.7 |
| Jub_EBS005_SSR | 9/10/2008 | 14:17:50 | N04 33.2375 | W002 54.1485 | 1345.8 |
| Jub_EBS004_CTD | 9/10/2008 | 15:32:48 | N04 35.5703 | W002 53.2760 | 985.7 |
| Jub_EBS004_SS | 9/10/2008 | 15:33:08 | N04 35.5699 | W002 53.2754 | 985.7 |
| Jub_EBS002_CTD | 9/10/2008 | 16:44:46 | N04 35.9511 | W002 56.0940 | 992.9 |
| Jub_EBS002_SS | 9/10/2008 | 16:45:10 | N04 35.9526 | W002 56.0960 | 996.4 |
| Jub_EBS003_CTD | 9/10/2008 | 17:59:21 | N04 32.6502 | W002 57.2635 | 1382.1 |
| Jub_EBS003_SS | 9/10/2008 | 17:59:50 | N04 32.6484 | W002 57.2649 | 1378.6 |
| Jub_EBS003_SSR | 9/10/2008 | 18:45:29 | N04 32.6479 | W002 57.2523 | 1385.7 |
| Jub_EBS001_SS | 9/10/2008 | 20:11:04 | N04 35.7645 | W003 00.1693 | 1264.3 |
| Jub_EBS001_CTD | 9/10/2008 | 20:11:17 | N04 35.7623 | W003 00.1697 | 1267.8 |
| EBS:E1_SS | 9/11/2008 | 6:48:48 | N04 48.6119 | W002 54.1051 | 74.5 |
| EBS:E1_CTD | 9/11/2008 | 7:14:55 | N04 48.6048 | W002 54.0901 | 75 |
| EBS:E2_CTD | 9/11/2008 | 8:00:50 | N04 52.7208 | W002 56.1984 | 64 |
| EBS:E2_SS | 9/11/2008 | 8:08:57 | N04 52.7146 | W002 56.2021 | 64.5 |
| EBS:E3_ALT_SS | 9/11/2008 | 9:15:20 | N04 59.1209 | W002 59.4770 | 40 |
| EBS:E3ALT_CTD | 9/11/2008 | 9:44:24 | N04 59.1210 | W002 59.4679 | 40 |
| EBS:E3ALT_BWS | 9/11/2008 | 12:49:04 | N04 59.1270 | W002 59.4796 | 41.5 |
| EBS:E3ALT_SWS | 9/11/2008 | 12:49:31 | N04 59.1264 | W002 59.4778 | 41 |
| EBS:E2_SWS | 9/11/2008 | 13:51:49 | N04 52.7187 | W002 56.2057 | 65 |
| EBS:E2_BWS | 9/11/2008 | 13:52:30 | N04 52.7186 | W002 56.2068 | 64.7 |
| EBS:E1_BWS | 9/11/2008 | 15:03:43 | N04 48.6058 | W002 54.1054 | 74.7 |

| | | | | | |
|----------------|-----------|----------|-------------|--------------|--------|
| Jub_EBS001_BWS | 9/11/2008 | 17:25:30 | N04 35.7604 | W003 00.1770 | 1264.3 |
| Jub_EBS003_BWS | 9/12/2008 | 8:42:27 | N04 32.6422 | W002 57.2571 | 1385.7 |
| Jub_EBS003_SWS | 9/12/2008 | 8:43:09 | N04 32.6418 | W002 57.2586 | 1385.7 |
| Jub_EBS002_BWS | 9/12/2008 | 9:40:13 | N04 35.9558 | W002 56.0827 | 992.9 |
| Jub_EBS002_SWS | 9/12/2008 | 9:40:33 | N04 35.9534 | W002 56.0837 | 996.4 |
| Jub_EBS004_BWS | 9/12/2008 | 10:33:41 | N04 35.5656 | W002 53.2608 | 985.7 |
| Jub_EBS004_SWS | 9/12/2008 | 10:33:52 | N04 35.5652 | W002 53.2631 | 985.7 |
| Jub_EBS005_SWS | 9/12/2008 | 11:11:56 | N04 33.2326 | W002 54.1396 | 1346.4 |
| Jub_EBS005_BWS | 9/12/2008 | 11:27:21 | N04 33.2357 | W002 54.1425 | 1346.4 |
| Jub_EBS008_SWS | 9/12/2008 | 12:14:41 | N04 30.7959 | W002 55.1206 | 1435.7 |
| Jub_EBS008_BWS | 9/12/2008 | 12:24:44 | N04 30.7965 | W002 55.1183 | 1435.7 |
| Jub_EBS009_SWS | 9/12/2008 | 13:07:22 | N04 27.5013 | W002 55.6101 | 517.8 |
| Jub_EBS009_BWS | 9/12/2008 | 13:15:17 | N04 27.4933 | W002 55.6082 | 92.9 |
| Jub_EBS007_SWS | 9/12/2008 | 14:10:38 | N04 32.1587 | W002 51.3165 | 521.4 |
| Jub_EBS007_BWS | 9/12/2008 | 14:19:54 | N04 32.1560 | W002 51.3265 | 1178.6 |
| Jub_EBS006_SWS | 9/12/2008 | 14:57:03 | N04 35.0784 | W002 49.7678 | 942.9 |
| Jub_EBS006_BWS | 9/12/2008 | 15:09:02 | N04 35.0769 | W002 49.7658 | 942.9 |
| EBS:E3 R_BWS | 9/12/2008 | 20:37:10 | N04 55.0104 | W002 57.3632 | 50 |
| EBS:E3 R_SS | 9/12/2008 | 22:08:07 | N04 55.0121 | W002 57.3743 | 50 |
| EBS:E3 R_SWS | 9/12/2008 | 22:25:17 | N04 55.0046 | W002 57.3810 | 50 |
| EBS:E3 R_CTD | 9/12/2008 | 22:51:45 | N04 55.0220 | W002 57.3748 | 50 |
| EBS:T1_BWS | 9/13/2008 | 6:35:59 | N04 40.5954 | W002 31.3866 | 73.3 |
| EBS:T1_SWS | 9/13/2008 | 6:42:46 | N04 40.5964 | W002 31.3789 | 73.3 |
| EBS:T6_SWS | 9/13/2008 | 10:48:16 | N04 38.6372 | W002 05.0963 | 52.5 |
| EBS:T6_BWS | 9/13/2008 | 10:53:11 | N04 38.6428 | W002 05.0989 | 53.1 |
| EBS:T6_CTD | 9/13/2008 | 11:12:55 | N04 38.6369 | W002 05.1030 | 53.1 |
| EBS:T6_SS | 9/13/2008 | 11:23:01 | N04 38.6367 | W002 05.1029 | 51.9 |
| EBS:T6_SSR | 9/13/2008 | 11:53:23 | N04 38.6394 | W002 05.1046 | 52.5 |
| EBS:T5_SWS | 9/13/2008 | 13:23:36 | N04 40.4249 | W001 58.8556 | 45 |
| EBS:T5_BWS | 9/13/2008 | 13:32:23 | N04 40.4351 | W001 58.8604 | 45 |
| EBS:T5_CTD | 9/13/2008 | 13:46:10 | N04 40.4357 | W001 58.8554 | 44.7 |
| EBS:T5_SS | 9/13/2008 | 13:52:42 | N04 40.4334 | W001 58.8589 | 45.3 |
| EBS:T4_SWS | 9/13/2008 | 16:08:51 | N04 43.0769 | W001 52.8862 | 38.9 |
| EBS:T4_BWS | 9/13/2008 | 16:11:08 | N04 43.0778 | W001 52.8890 | 38.9 |
| EBS:T4_CTD | 9/13/2008 | 16:23:38 | N04 43.0776 | W001 52.8870 | 38.7 |
| EBS:T4_SS | 9/13/2008 | 16:32:05 | N04 43.0827 | W001 52.8965 | 39.4 |

SS=sediment sample, SWS=surface water sample, BWS=bottom water sample, SSR=sediment sample re-take. Blue cells were sites not successfully sampled.

Methods

Sediment Collection

Sediment samples were collected using a 50-cm x 50-cm box core. A visual inspection of the sediment surface was made to determine if the core was acceptable. Digital photographs were taken of surface of box cores. A 22-cm x 22-cm template was

pushed into the box core, as were two 3-inch diameter push cores. Chemistry samples were collected around the sub-sampling equipment.

A 22-cm x 22-cm template was used in the box core for subsampling infauna. Macroinfauna were sieved from the 0.484-m² area to a depth of 0.15-m. The overlying water was carefully siphoned off on to a 0.5-mm screen to retain any organisms floating in the water. Any organisms retained were rinsed from the screen into the sample jar, or into the bucket with the sediment for sieving. Infaunal organisms were separated from the sediment by gentle washing the sediment sample through a 500-micron sieve using the floatation process. Organisms larger than 0.5-mm were retained on the screens. Mud was transferred from the bucket to sieve in increments to prevent overloading and slowing the sieving process. Organisms retained on the sieve were gently concentrated using water through the bottom of the sieve to move the sample material to a corner of the sieve. The sample was washed into a jar using a large mouth funnel and buffered formalin dispensed from the squeeze bottle. The jar was filled no more than half the jar volume to ensure sufficient room for the fixative. The jars containing the infauna were filled to the top with a seawater formalin solution containing rose bengal to yield a final concentration of between 5 and 10 % buffered formalin. Samples were shipped back to College Station, Texas for analysis.

Chemistry samples were taken from the top 2-cm of the sediment surrounding the box core template and push cores. All chemistry sampling was performed using a Teflon scoop. Trace metals were sampled first in the center, hydrocarbon, total nitrogen, total phosphorus, and sulfate subsamples were taken from the next concentric zone around the center, and finally the grain size sample obtained from the periphery of the box core down to 10-cm. All sediment samples were frozen with the exception of grain size and sulfate, which were refrigerated. The analyses conducted are listed in **Table 2**. Additionally, Eh measurements, as an indicator of oxidation/reduction potential, were also taken for each box core.

Table 2. Sediment Analyses

| Analysis | Analytes |
|----------|---|
| Metals | Pb, Cd, Hg, and Ba |
| Organics | PAH, TOC |
| Other | Total Nitrogen, Total Phosphorus, Grain Size, Eh, Sulfate |

Water Collection

A SeaBird CTD cast was taken at all stations. CTD casts were acquired using a 2,000-m SeaBird Instrument, SBE-19 SeaCat. CTD casts were taken approximately 1 m below the surface to near-bottom. The CTD measured conductivity and temperature versus depth. Salinity and sound velocity were derived from the conductivity and temperature measurements. Additionally, the CTD unit housed an oxygen probe. Water column samples were collected using a 5-L Niskin Bottle. Water column samples were taken at two depths. Water was sampled near surface and near-bottom at shallow water sites and near surface and 100 m at the Jubilee sites. Field measurements were taken on a subsample from the Niskin Bottle. Water was collected for metals, nutrients,

total dissolved solids and suspended solids (**Table 3**). Trace metal samples were refrigerated. Water samples for suspended solids were filtered in the field and frozen. Nutrient samples were frozen. Water samples for total dissolved solids were kept cold. All samples were shipped to College Station, Texas for analysis.

Table 3. Water Analyses

| Analysis | Analytes |
|-----------|--|
| Metals | Pb, Cd, Hg, and Ba |
| Inorganic | Total Nitrogen and Total Phosphorus |
| Other | Suspended solids, Total Dissolved Solids |

Analytical Methods

PAH Sediment Extraction

An automated extraction apparatus (Dionex ASE200 Accelerated Solvent Extractor) was used to extract various organics (PAH/TPH) from 1 to 15 g of a pre-dried, homogenous sample. All appropriate surrogates and spiking solutions were added. The extractions were performed using 100% dichloromethane inside stainless-steel extraction cells held at elevated temperature and solvent pressure. The extracted compounds dissolved in the hot solvent were collected in 60-mL glass vials.

The following ASE extraction conditions were used to extract the sediments:

| | |
|------------------------|--|
| Extraction solvent: | 100% dichloromethane |
| Solvent pressure: | 1,500 psi |
| Cell temperature: | 100°C |
| Cell pre-heat time: | 5 min (non-adjustable pre-set for 100°C) |
| Static pressure time: | 2 min |
| Static cycles: | 2 ea |
| Solvent flush: | 60% of cell volume each cycle |
| Nitrogen purge time: | 90 sec at end to dry cell |
| Method rinse: | ON (between samples) |
| Total extraction time: | approximately 11 min/cell |

The solvent in the glass tube was concentrated in a 55 - 60°C water bath until the solvent was reduced in volume to approximately 5-10 mL. The extract was transferred into a Kurderna-Danish (KD) concentrator tube. The sample volume was reduced to 0.5 mL in a 55 - 60°C water bath. The extract was then submitted for instrument analysis.

PAH Analysis

The quantitative method for the determination of polycyclic aromatic hydrocarbons (PAHs) and their alkylated homologues in extracts of water and sediment was performed by capillary gas chromatography/mass spectrometry (GC/MS) in selected ion monitoring mode (SIM). The gas chromatograph was temperature-programmed and operated in splitless mode. The capillary column was an Agilent Technologies HP-5MS (60 m long by 0.25 mm ID and 0.25 µm film thickness). Carrier flow was by electronic

pressure control. The mass spectrometer scanned from 35 to 500 AMU every second or less and utilized 70 volts electron energy in electron impact ionization mode. The data acquisition system acquired and stored all data during analysis.

Calibration solutions were prepared at five concentrations ranging from 0.02 to 1 $\mu\text{g/mL}$ by diluting a commercially available solution containing the analytes of interest (typically NIST SRM 2260). For each analyte of interest, a relative response factor (RRF) was determined for each calibration level. The 5 response factors were then averaged to produce a mean relative response factor for each analyte.

An analytical set contained standards, samples, and quality control samples. Each extraction batch was analyzed as an analytical set including samples and some or all of the following quality control samples: method-blank, duplicate, matrix-spike, matrix-spike duplicate, and standard reference material.

Total Organic Carbon

Total organic carbon was determined in oven-dried, acid treated sediments using a LECO CR-412 Carbon Determinator. Samples were acid treated by adding 50% v/v of phosphoric acid to remove any inorganic carbon. Dried sediment was combusted at 1,350°C under an oxygen atmosphere and carbon present in the samples is oxidized to form CO₂ gas. This sample gas then flowed through two scrubber tubes. The first tube contained Anhydrene (Mg(ClO₄)₂), AR610 (halogen trap), and tin or copper granules to remove water and any chlorine gas, respectively. The second tube contained Anhydrene, which removes residual moisture. The sample gas then flowed through a nondispersive infrared (NDIR) detection cell.

In the NDIR detector cell, infrared energy is emitted from a nichrome wire heated to 850°C. Radiant energy enters the cell through a calcium fluoride window and projects through the cell chamber, which contains carrier or sample gas. Gases absorb infrared energy as they pass through the cell chamber. As energy exits the cell chamber through a second calcium fluoride window, a precise wavelength filter selectively blocks all wavelengths except that of CO₂ from passing into the detector. The detector responds to the energy changes between the carrier gas and sample gas and ultimately determines the concentration of the carbon contained in the sample.

Prior to analysis, the instrument establishes a baseline. As analysis proceeds, the integrated area under the signal detected is proportional to the amount of CO₂ passing through the NDIR cell. The computer reads the cell output nine times per second and provides a linearized output. The weight-corrected result is the total weight percent of carbon.

Grain Size

Sediment samples collected in the field were refrigerated until analysis. The large or coarse fraction ($> 63 \text{ um}$) was determined by sieving and the fine fraction ($< 63 \text{ um}$) was analyzed by gravimetric pipetting. Approximately 25-50 g of sample were weighed into a 750 ml wide-mouth mason jar which was filled with about 250 mL of deflocculent

solution (2.5 - 3.0 g/L sodium hexametaphosphate in deionized water). The jars were shaken until the sample was totally disaggregated. The sample was then poured through a 63 μm sieve. The coarse fraction (retained on the sieve) was concentrated against the bottom lip of the sieve and washed into a 150 mL beaker. Most of the supernatant was re-sieved. Material that went through the sieve was collected in a 1000 mL graduated cylinder. The volume of the cylinder was adjusted to 975 mL with deflocculant solution and covered. The coarse fraction was dried in an oven set between 70 – 90 °C. After drying, the coarse fraction was transferred to the top sieve in the sieve stack that is arranged in descending order, depending upon the sizes desired. The sieve stack was shaken to sort particles by size. The material retained on the sieve was transferred and weighed to determine %sand

The pipette analysis for the silt and clay size fractions was accomplished by filling the graduated cylinders to 1000 mL with deflocculant solution. The cylinders were kept in a constant temperature water bath at 24 °C for 24 hours. Following the incubation period, the samples in the cylinders were agitated for 1 minute with a plunger. The samples then sat, undisturbed for 20 seconds. A 25 mL aliquot was withdrawn at a depth of 20 cm and emptied into a 50 mL beaker. The sample sat, undisturbed for another 2 hours and 3 minutes after which another 25 mL aliquot was withdrawn for a depth of 10 cm and emptied into a 50 mL beaker. The beakers were dried in an oven set between 70 – 90 °C. After drying the samples were weighed to determine %silt and %clay.

Total Nitrogen and Total Phosphorus

Total phosphorus was determined using Standard Methods for Examination of Water Wastewater. 20th edition, method 4500-P E. Basically, a water sample is treated with ammonium molybdate and potassium antimonyl tartrate in an acidic medium that is reduced to molybdenum blue by ascorbic acid. The sample is read on a UV/VIS spectrophotometer at 880 nm.

Total nitrogen was determined using EPA method, 351.2. Basically, a sample is heated with sulfuric acid with mercuric sulfate and potassium sulfate. The sample is the sum of free ammonia and organic nitrogen which have been converted to ammonium sulfate. The samples are analyzed using an Auto Analyzer, treated with salicylate-nitroprussie, buffer, and hypochlorite and read at 660 nm.

Sulfate-Sulfur

Sediment samples were preserved with zinc acetate in the field. Sulfate was determined on a method modified from Standard Methods for the Examination of Water and Wastewater, 13th edition. Basically samples were centrifuged and 40 μL of sample was removed for analysis. Conditioning reagent (isopropyl alcohol, HCl, NaCl and glycerol) was added to a cuvette followed by water, sample and saturated BaCl₂. With the addition of the BaCl₂ the cuvette was shaken for 1 minute. The sample was placed in a UV/VIS spectrophotometer set at 420 nm. The highest absorbance during a 4-minute monitoring period was recorded.

Metals Waters

Samples were collected employing clean techniques with pre-cleaned bottles, equipment and instructions (compliant with EPA method 1669) provided by Albion Environmental (AE). Only samples to determine total recoverable metals were collected. Trace metal samples were collected in pre-cleaned and blanked plastic bottles and mercury samples were collected separately in pre-cleaned and blank glass bottles.

As required by EPA clean sampling method 1669, field quality assurance (QA) / quality control (QC) samples were collected and analyzed to confirm that the sampling was conducted consistently and without contamination. A field blank was collected during the sample collection to confirm the lack of contamination from the sampling procedures used.

Samples were received in good condition at Albion Environmental (AE). Trace metal samples were preserved under clean room conditions to a pH of < 2 using ultrapure nitric acid. Preserved samples were allowed to equilibrate for at least 72 hours to insure all metals adsorbed to the container walls were re-solubilized. In addition, all samples were also heated at > 65 degree Celsius for at least six hours to insure complete re-solubilization of all trace metals in the samples. As required by EPA method 1631 revision E, mercury (Hg) samples were preserved under clean room conditions with bromine monochloride (BrCl). Preserved Hg samples were also heated at > 65 degree Celsius for at least six hours to insure complete re-solubilization of all Hg in the samples.

Trace metals samples were analyzed by inductively coupled plasma-mass spectrometry (ICP-MS; US EPA 200.8/1638). Seawater samples were diluted 25 fold to minimize dissolved solids effects on the ICP-MS analyses as required by EPA method 200.8/1638. Matrix matching to the diluted seawater samples was also performed to minimize potential interferences. A full suite of in-house (laboratory) QA/QC samples was run with every sample set to insure the highest data quality. These include initial and continuing calibration standards, method blanks, laboratory control samples (blank spikes) and MS/MSD analysis. In addition, although not required by method 1638, AE ran two certified reference materials as independent indicators of method accuracy. Trace metals analyses proceeded nominally and all QA/QC samples met method acceptance criteria.

Mercury samples were analyzed by purge/trap cold vapor atomic fluorescence (P/T CVAF; U.S. EPA. Method 1631, revision E). The method detection limit for method 1631E is 0.0002 ppb and the method reporting limit is 0.0005 ppb. Seawater is a compatible matrix for this analytical method and no matrix specific method adjustments were required. A full suite of in-house (laboratory) QA/QC samples was run with every sample set to insure the highest data quality. This QA/QC suite includes method required QA/QC samples (i.e. matrix spike and matrix spike duplicate, method blanks and quality control sample) as well as optional QA/QC samples (i.e. blank spikes, laboratory duplicates and certified reference materials). Mercury analyses proceeded nominally and all QA/QC samples met method acceptance criteria.

Metals Sediments

Approximately 0.5 g. of sample was placed in a clean 100 mL beaker or flask to which 20 mL of concentrated, trace-metal grade HNO₃ and 2.5 mL HClO₄ were added. The container was covered with a watch glass and placed on a hot plate. The temperature of the hot plate was adjusted to allow reflux with acid evaporation. The samples were allowed to reflux for 4 hours or overnight. Following reflux, the temperature was turned up to drive off the HNO₃. The samples were cooled. The samples were then placed back on a hot plate to which 20 mL of D.I. water was added and heated until the solution clears or boils.

For mercury analysis, approximately 0.5 g. of sample was placed in a clean 50 mL round bottom flask to which 5 mL of concentrated, trace-metal grade nitric acid was added. The flasks were placed under condensers, ensuring sufficient water flow to permit reflux. The heat was turned up high enough to allow the nitric acid to reflux. The samples were allowed to reflux for two hours and then cooled. The condensers were rinsed with 1% hydrochloric acid into the flask. The samples were then diluted to 50 mL with 1% hydrochloric acid and transferred to 2 oz. bottles.

Following digestion, As and Se were analyzed by hydride generation. Mercury was analyzed by cold vapor. All other analytes were analyzed by either ICP, ICP-MS or graphite furnace AA.

Nutrients Waters

Urea, total nitrogen, total phosphorus, NO₃⁻, NO₂⁻, HSiO₃⁻, HPO₄²⁻, NH₄⁺ were analyzed in collected waters. Samples were analyzed using a TECHNICON Auto-Analyizer. Nitrate and nitrite analyses were based on the methodology of Armstrong et al (Armstrong et al., 1967) and utilize a ground Cd column for reduction of NO₃⁻ to NO₂⁻. Orthophosphate was measured using chemistry based on the investigations of Bernhardt and Wilhelms (Bernhardt and Wilhelms, 1967) with the modification of hydrazine as reductant. Silicate determination was accomplished using the methods of Armstrong et al. (Armstrong, Stearns et al., 1967) using stannous chloride. Ammonium analysis is based on the method of Harwood (Harwood and Kuhn 1970) and used dichloro-isocyanurate as an oxidizer. Urea is measured using diacetyl-monoximine and themicarbozide. The total concentrations of nitrogen and phosphorus were determined after an initial decomposition step. This method involves persulfate oxidation while heating the sample in an autoclave (115°C, 20 minutes)(Hansen and Koroleff 1999). After oxidation of the samples nutrient determination was conducted on the Technicon II analyzer.

Total Suspended Solids

Total suspended solids were determined by a gravimetric method described in U.S.EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Laboratory Methods Manual – Estuaries, Volume 1: Biological and Physical Analyses. United States Environmental Protection Agency, Office of Research and Development,

Narragansett, RI. EPA/620/R-95/008. Basically a volume of water is filtered through a 0.45 μ glass fiber filter. The filter is dried at 103-105°C to a constant weight and weighed.

Total Dissolved Solids

Total dissolved solids were determined using Standard Methods for Examination of Water Wastewater, 20th edition, method 2540-C. Basically, a sample was filtered through a 0.45 μ filter. An aliquot of the filtrate was evaporated to dryness in a weighed dish to a constant weight at 180°C.

Water Metals Data

TDI-BI / B&B Laboratories Clean Metals and Mercury Ghana Seawater Monitoring Study
 Final Aqueous Trace Metals Data for Samples Collected 11-13 September 2008
 (Data Report L1215-9457-001)

| B&B ID | AE Sample ID | Coll. Date | Location | Sample Type | Matrix | Processing | Method | Anal. Date | Ba (ppb) | Cd (ppb) | Pb (ppb) |
|------------------------------------|--------------|------------|-------------------------|----------------------|----------|------------|----------------|------------|----------|----------|----------|
| Field Samples (Notes 1,2,3) | | | | | | | | | | | |
| GEB0196 | LL-3145 | 9/11/2008 | JUN-EBS-001 top 1m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.50 | < 3.0 | < 3.0 |
| GEB0197 | LL-3113 | 9/12/2008 | JUB-EBS-001 bottom 100m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.43 | < 3.0 | < 3.0 |
| GEB0198 | LL-3153 | 9/12/2008 | JEB-EBS-002 top 1m | Grab (Metals) 1 of 2 | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.96 | < 3.0 | < 3.0 |
| GEB0200 | LL-3131 | 9/12/2008 | JUB-EBS-002 bottom 100m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.15 | < 3.0 | < 3.0 |
| GEB0201 | LL-3121 | 9/12/2008 | JUB-EBS-003 top 1 m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.54 | < 3.0 | < 3.0 |
| GEB0202 | LL-3163 | 9/12/2008 | JUB-EBS-003 bottom 100m | Grab (Metals) 1 of 2 | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.11 | < 3.0 | < 3.0 |
| GEB0204 | LL-3135 | 9/12/2008 | JUB-EBS-004 top 1 m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.43 | < 3.0 | < 3.0 |
| GEB0205 | LL-3095 | 9/12/2008 | JUB-EBS-004 bottom 100m | Grab (Metals) 1 of 2 | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 4.97 | < 3.0 | < 3.0 |
| GEB0207 | LL-3123 | 9/12/2008 | JUB-EBS-005 top 1m | Grab (metals) 1 of 2 | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.60 | < 3.0 | < 3.0 |
| GEB0209 | LL-3194 | 9/12/2008 | JUB-EBS-005 bottom 100m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.11 | < 3.0 | < 3.0 |
| GEB0212 | LL-3165 | 9/12/2008 | JUB-EBS-006 top 1 m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.53 | < 3.0 | < 3.0 |
| GEB0213 | LL-3129 | 9/12/2008 | JUB-EBS-006 bottom 100m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.08 | < 3.0 | < 3.0 |
| GEB0214 | LL-3171 | 9/12/2008 | JUB-EBS-007 top 1m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.46 | < 3.0 | < 3.0 |
| GEB0215 | LL-3133 | 9/12/2008 | JUB-EBS-007 bottom 100m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.23 | < 3.0 | < 3.0 |
| GEB0216 | LL-3155 | 9/12/2008 | JUB-EBS-008 top 1 m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.50 | < 3.0 | < 3.0 |
| GEB0217 | LL-3093 | 9/12/2008 | JUB-EBS-008 bottom 100m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.00 | < 3.0 | < 3.0 |
| GEB0218 | LL-3192 | 9/12/2008 | JUB-EBS-009 top 1 m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.50 | < 3.0 | < 3.0 |
| GEB0219 | LL-3099 | 9/12/2008 | JUB-EBS-009 bottom 100m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.17 | < 3.0 | < 3.0 |
| GEB0220 | LL-3125 | 9/11/2008 | EBS-E1 top 1 m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.44 | < 3.0 | < 3.0 |
| GEB0221 | LL-3196 | 9/11/2008 | EBS-E1 bottom 75m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.06 | < 3.0 | < 3.0 |
| GEB0222 | LL-3111 | 9/11/2008 | EBS-E2 top 1 m | Grab (metals) 1 of 2 | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.57 | < 3.0 | < 3.0 |
| GEB0224 | LL-3105 | 9/11/2008 | EBS-E2 bottom 67m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.15 | < 3.0 | < 3.0 |
| GEB0228 | LL-3157 | 9/11/2008 | EBS-E3R top 1 m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.56 | < 3.0 | < 3.0 |
| GEB0229 | LL-3103 | 9/11/2008 | EBS-E3R bottom 50m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.15 | < 3.0 | < 3.0 |
| GEB0232 | LL-3094 | 9/13/2008 | EBS-T4 top 1m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.57 | < 3.0 | < 3.0 |
| GEB0233 | LL-3096 | 9/13/2008 | EBS-T4 bottom 39m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.34 | < 3.0 | < 3.0 |
| GEB0236 | LL-3097 | 9/13/2008 | EBS-T5 top 1m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.49 | < 3.0 | < 3.0 |
| GEB0237 | LL-3098 | 9/13/2008 | EBS-T4 bottom | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.39 | < 3.0 | < 3.0 |
| GEB0238 | LL-3100 | 9/13/2008 | EBS-T6 top 1m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.47 | < 3.0 | < 3.0 |
| GEB0239 | LL-3102 | 9/13/2008 | EBS-T6 bottom 49m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.35 | < 3.0 | < 3.0 |

Notes:

1. Metals samples were collected using pre-cleaned sample containers and procedures compliant with EPA clean metals guidance (EPA methods 1669 and 1631E)
2. Metals concentration units are micrograms per liter (= parts per billion)
3. All trace elements were analyzed by normal mode (direct aspiration) ICP-MS modified for matrix matching to saltwater samples (EPA method 200.8/1638 modified). Saltwater samples were diluted 25 fold for this analysis.

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| B&B ID | AE Sample ID | Coll. Date | Location | Sample Type | Matrix | Processing | Method | Anal. Date | Ba (ppb) | Cd (ppb) | Pb (ppb) | | | | | | | | | | | |
|--|--|-------------|-------------------------|----------------------|------------|----------------|----------------|------------|----------|----------|----------|--|--|--|--|--|--|--|--|--|--|--|
| Field Quality Assurance (QA) Samples | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Blank | | | | | | | | | | | | | | | | | | | | | | |
| | KK-5468 | 10/29/2007 | Albion Env. | Bottle BLK (250 ml) | DIW | Diss. | EPA 200.8/1638 | 10/31/2007 | < 0.10 | < 0.10 | < 0.10 | | | | | | | | | | | |
| Field Blanks | | | | | | | | | | | | | | | | | | | | | | |
| GEB0210 | LL-3143 | 9/12/2008 | JUB-EBS-005 | Grab Field Blank | DIW | Total Rec. | EPA 200.8/1638 | 11/26/2008 | < 0.10 | < 0.10 | < 0.10 | | | | | | | | | | | |
| GEB0234 | LL-3174 | 9/13/2008 | EBS-T4 | Grab Field Blank | DIW | Total Rec. | EPA 200.8/1638 | 11/26/2008 | < 0.10 | < 0.10 | < 0.10 | | | | | | | | | | | |
| Field Duplicate | | | | | | | | | | | | | | | | | | | | | | |
| | No field duplicate samples were collected with this sample set | | | | | | | | | | | | | | | | | | | | | |
| Laboratory Quality Assurance Samples | | | | | | | | | | | | | | | | | | | | | | |
| Reporting Limit Normal Mode ICP-MS Analyzed Undiluted Samples | | | | | | | | | | | | | | | | | | | | | | |
| Reporting Limit Diluted (DF=25) Seawater Samples | | | | | | | | | | | | | | | | | | | | | | |
| Certified Reference Materials | | | | | | | | | | | | | | | | | | | | | | |
| | 1640-2 | Albion Env. | NIST SRM | Water | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 144 | 22.7 | 27.6 | | | | | | | | | | | | |
| | Certified Value | | % R | | | | | | 148 | 22.8 | 27.9 | | | | | | | | | | | |
| | | | | | | | | | 97 | 100 | 99 | | | | | | | | | | | |
| | 1643-E-1 | Albion Env. | NIST SRM | Water | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 542 | 6.49 | 21.3 | | | | | | | | | | | | |
| | Certified Value | | % R | | | | | | 544 | 6.57 | 19.6 | | | | | | | | | | | |
| | SLRS4-3 | Albion Env. | NRCC CRM | Water | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 12.3 | < 0.10 | < 0.10 | | | | | | | | | | | | |
| | Certified Value | | % R | | | | | | 12.2 | 0.012 | 0.086 | | | | | | | | | | | |
| | CASS-4 | Albion Env. | NRCC CRM | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 6.94 | < 3.0 | < 3.0 | | | | | | | | | | | | |
| | Certified Value | | % R | | | | | | NCV | 0.026 | 0.0098 | | | | | | | | | | | |
| Laboratory Duplicates | | | | | | | | | | | | | | | | | | | | | | |
| GEB0197 | LL-3113 | 9/12/2008 | JUB-EBS-001 bottom 100m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.43 | < 3.0 | < 3.0 | | | | | | | | | | | |
| | LL-3113-LDUP | 9/12/2008 | JUB-EBS-001 bottom 100m | Lab. Duplicate | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.34 | < 3.0 | < 3.0 | | | | | | | | | | | |
| Relative Percent Difference (RPD) | | | | | | | | | | | | | | | | | | | | | | |
| GEB0198 | LL-3153 | 9/12/2008 | JEB-EBS-002 top 1m | Grab (Metals) 1 of 2 | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.96 | < 3.0 | < 3.0 | | | | | | | | | | | |
| | LL-3153-LDUP | 9/12/2008 | JEB-EBS-002 top 1m | Lab. Duplicate | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.77 | < 3.0 | < 3.0 | | | | | | | | | | | |
| | LL-3153-LREP | 9/12/2008 | JEB-EBS-002 top 1m | Lab. Replicate | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.88 | < 3.0 | < 3.0 | | | | | | | | | | | |

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| B&B ID | AE Sample ID | Coll. Date | Location | Sample Type | Matrix | Processing | Method | Anal. Date | Ba (ppb) | Cd (ppb) | Pb (ppb) |
|---|-----------------|-------------|-------------------------|----------------------|----------------|----------------|----------------|------------|------------|------------|------------|
| Relative Standard Deviation (RSD) | | | | | | | | | | | |
| GEB0200 | LL-3131 | 9/12/2008 | JUB-EBS-002 bottom 100m | Grab (metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.15 | < 3.0 | < 3.0 |
| | LL-3131-LDUP | 9/12/2008 | JUB-EBS-002 bottom 100m | Lab. Duplicate | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.42 | < 3.0 | < 3.0 |
| | RPD | | | | | | | | 5.1 | | |
| Matrix Spikes | | | | | | | | | | | |
| GEB0198 | LL-3153 | 9/12/2008 | JEB-EBS-002 top 1m | Grab (Metals) 1 of 2 | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.96 | < 3.0 | < 3.0 |
| | LL-3153-MS | 9/12/2008 | JEB-EBS-002 top 1m | Matrix Spike | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 32.2 | 23.8 | 27.3 |
| | LL-3153-MSD | 9/12/2008 | JEB-EBS-002 top 1m | MS Duplicate | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 31.1 | 23.1 | 26.1 |
| | Expected | | | | | | | | 25.0 | 25.0 | 25.0 |
| | % R MS | | | | | | | | 107 | 103 | 104 |
| | % R MSD | | | | | | | | 108 | 104 | 106 |
| | RPD MS/MSD | | | | | | | | 3.5 | 3.0 | 4.5 |
| GEB0215 | LL-3133 | 9/12/2008 | JUB-EBS-007 bottom 100m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.23 | < 3.0 | < 3.0 |
| | LL-3133-MS | 9/12/2008 | JUB-EBS-007 bottom 100m | Matrix Spike | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 29.8 | 22.2 | 25.3 |
| | LL-3133-MSD | 9/12/2008 | JUB-EBS-007 bottom 100m | MS Duplicate | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 29.5 | 23.1 | 25.2 |
| | Expected | | | | | | | | 25.0 | 25.0 | 25.0 |
| | % R MS | | | | | | | | 107 | 103 | 104 |
| | % R MSD | | | | | | | | 108 | 104 | 106 |
| | RPD MS/MSD | | | | | | | | 1.0 | 4.0 | 0.4 |
| GEB0236 | LL-3097 | 9/13/2008 | EBS-T5 top 1m | Grab (Metals) | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 5.49 | < 3.0 | < 3.0 |
| | LL-3097-MS | 9/13/2008 | EBS-T5 top 1m | Matrix Spike | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 30.1 | 22.7 | 25.3 |
| | LL-3097-MSD | 9/13/2008 | EBS-T5 top 1m | MS Duplicate | Seawater | Total Rec. | EPA 200.8/1638 | 11/26/2008 | 30.7 | 23.3 | 26.7 |
| | Expected | | | | | | | | 25.0 | 25.0 | 25.0 |
| | % R MS | | | | | | | | 107 | 103 | 104 |
| | % R MSD | | | | | | | | 108 | 104 | 106 |
| | RPD MS/MSD | | | | | | | | 2.0 | 2.6 | 5.4 |
| Blank Spike | | | | | | | | | | | |
| | LCS-3 | Albion Env. | Blank Spike | DIW | Total Rec. | EPA 1638/200.8 | 11/26/2008 | 0.95 | 1.16 | 1.01 | |
| | Expected | | | | | | | | 95 | 116 | 101 |
| | % R | | | | | | | | | | |
| Percent Recovery at Reporting Limit (ML, Low Calibration Standard) | | | | | | | | | | | |
| CalStd-1 | Low Calib. Std. | Albion Env. | DIW | Total Rec. | EPA 1638/200.8 | 11/26/2008 | 0.097 | 0.088 | 0.050 | | |
| Reporting Limit (ML) | | | | | | | | 0.10 | 0.10 | 0.050 | |
| % R | | | | | | | | 97 | 88 | 99 | |
| Method Blank | Method Blank | Albion Env. | DIW | Total Rec. | EPA 200.8/1638 | 11/26/2008 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | |
| LL-4578 | | | | | | | | | | | |

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Final Aqueous Mercury Data for Samples Collected 11-13 September 2008
(Data Report L1215-9457-002)

| B&B ID | AE Sample ID | Collection Date | Location | Sample Type | Matrix | Processing | Method | Anai. Date | Hg (ng/L) |
|--------------------------------------|--------------|-----------------|-------------------------|-------------|----------|------------|-----------|------------|-----------|
| Field Samples (Notes 1,2,3,4) | | | | | | | | | |
| GEB0240 | LL-3128 | 9/11/2008 | JUB-EBS-001 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.278 |
| GEB0241 | LL-3148 | 9/12/2008 | JUB-EBS-001 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0242 | LL-3152 | 9/12/2008 | JUB-EBS-002 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0243 | LL-3144 | 9/12/2008 | JUB-EBS-002 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.218 |
| GEB0244 | LL-3124 | 9/12/2008 | JUB-EBS-003 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0245 | LL-3150 | 9/12/2008 | JUB-EBS-003 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0246 | LL-3146 | 9/12/2008 | JUB-EBS-004 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0247 | LL-3138 | 9/12/2008 | JUB-EBS-004 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0248 | LL-3140 | 9/12/2008 | JUB-EBS-005 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0249 | LL-3118 | 9/12/2008 | JUB-EBS-005 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0252 | LL-3168 | 9/12/2008 | JUB-EBS-006 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0253 | LL-3166 | 9/12/2008 | JUB-EBS-006 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0254 | LL-3108 | 9/12/2008 | JUB-EBS-007 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.279 |
| GEB0255 | LL-3112 | 9/12/2008 | JUB-EBS-007 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.235 |
| GEB0256 | LL-3116 | 9/12/2008 | JUB-EBS-008 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0257 | LL-3120 | 9/12/2008 | JUB-EBS-008 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0258 | LL-3114 | 9/12/2008 | JUB-EBS-009 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0259 | LL-3110 | 9/12/2008 | JUB-EBS-009 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0260 | LL-3126 | 9/11/2008 | EBS-E1 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.259 |
| GEB0263 | LL-3136 | 9/11/2008 | EBS-E1 bottom 75m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.237 |
| GEB0262 | LL-3122 | 9/11/2008 | EBS-E2 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.412 |
| GEB0263 | LL-3132 | 9/11/2008 | EBS-E2 bottom 67m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.229 |
| GEB0266 | LL-3164 | 9/12/2008 | EBS-E3R top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0267 | LL-3162 | 9/12/2008 | EBS-E3R bottom 50m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0270 | LL-3193 | 9/13/2008 | EBS-T4 top 1m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0271 | LL-3170 | 9/13/2008 | EBS-T4 bottom 39m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0274 | LL-3195 | 9/13/2008 | EBS-T5 top 1m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.200 |
| GEB0275 | LL-3197 | 9/13/2008 | EBS-T5 bottom 44m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0276 | LL-3154 | 9/12/2008 | EBS-T6 top 1m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| GEB0277 | LL-3156 | 9/12/2008 | EBS-T6 bottom 49m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |

APPROVED:

Dr. P.N. Boothe

TDI-BI / B&B Laboratories Clean Metals and Mercury Ghana Seawater Monitoring Study
 Final Aqueous Mercury Data for Samples Collected 11-13 September 2008
 (Data Report L1215-9457-002)

| B&B ID | AE Sample ID | Collection Date | Location | Sample Type | Matrix | Processing | Method | Anal. Date | Hg (ng/L) |
|---|--------------|-----------------|-------------|--------------------|------------|------------|------------|------------|-----------|
| Notes | | | | | | | | | |
| 1. Mercury samples were collected using pre-cleaned sample containers and procedures compliant with EPA clean mercury guidance (EPA methods 1669 and 1631E) | | | | | | | | | |
| 2. Mercury (Hg) concentration units are nanograms of Hg per liter (= parts per trillion) to facilitate data presentation of such low Hg concentrations typical of ambient seawater. | | | | | | | | | |
| 3. To minimize data censoring, Hg data are reported down to the method detection limit of 0.20 ng/L | | | | | | | | | |
| 4. Mercury was detected in one of the pour field blanks (LL-3106 at 0.208 ppqr) just above the method detection limit of 0.20 ng/L. Although generally not a concern, because of the extremely low Hg concentrations observed in the seawater samples, this detectable field blank indicates that some of the Hg observed in the seawater samples may be due to low-level Hg contamination during sampling. However, an inspection of the seawater Hg data suggests that the potential bias due to low-level Hg contamination during sampling was likely minimal. | | | | | | | | | |
| Field Quality Assurance (QA) Samples | | | | | | | | | |
| Equipment Blanks | | | | | | | | | |
| LL-2789 | | 7/18/2008 | Albion Env. | Bottle Blank (125) | DIW | Total Rec. | EPA 1631e | 7/23/2008 | < 0.20 |
| LL-2793 | | 7/22/2008 | Albion Env. | Bottle Blank (250) | DIW | Total Rec. | EPA 1631e | 7/23/2008 | < 0.20 |
| Field Blanks (Note 4) | | | | | | | | | |
| GEB0250 | LL-3106 | 9/12/2008 | JUB-EBS-005 | Grab Field Blank | DIW | Total Rec. | EPA 1631e | 11/14/2008 | 0.208 |
| GEB0272 | LL-3172 | 9/13/2008 | EBS-T4 | Grab Field Blank | DIW | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| Field Duplicate | | | | | | | | | |
| No field duplicate samples were collected with this sample set | | | | | | | | | |
| Laboratory Quality Assurance Samples | | | | | | | | | |
| Method Reporting Limit (ML) | | | | | | | | | |
| 0.50 | | | | | | | | | |
| Method Detection Limit (MDL) | | | | | | | | | |
| 0.20 | | | | | | | | | |
| Certified Reference Materials | | | | | | | | | |
| DORM2-K24 | | Albion Env. | NRCC CRM | Tissue | Total Rec. | EPA 1631e | 11/14/2008 | 4700000 | 4640000 |
| Certified Value | | | | | | | | | |
| % R | | | | | | | | 101 | |
| | | | | | | | | | |

TDI-BI / B&B Laboratories Clean Metals and Mercury Ghana Seawater Monitoring Study
Final Aqueous Mercury Data for Samples Collected 11-13 September 2008
(Data Report L1215-9457-002)

| B&B ID | AE Sample ID | Collection Date | Location | Sample Type | Matrix | Processing | Method | Anal. Date | Hg (ng/L) |
|--|-----------------|-----------------|-------------------------|----------------|----------|------------|-----------|------------|-----------|
| | TMA-989 | | Albion Env. | EPA Ref. Std. | Water | Total Rec. | EPA 1631e | 11/14/2008 | 203000 |
| | Certified Value | | | | | | | | 202000 |
| | % R | | | | | | | | 100 |
| Laboratory Duplicates | | | | | | | | | |
| GEB0256 | LL-3116 | 9/12/2008 | JUB-EBS-008 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| | LL-3116-LDUP | 9/12/2008 | JUB-EBS-008 top 1 m | Lab. Duplicate | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| Relative Percent Difference (RPD) | | | | | | | | | |
| GEB0257 | LL-3120 | 9/12/2008 | JUB-EBS-008 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| | LL-3120-LDUP | 9/12/2008 | JUB-EBS-008 bottom 100m | Lab. Duplicate | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 |
| RPD | | | | | | | | | |
| GEB0263 | LL-3132 | 9/11/2008 | EBS-E2 bottom 67m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.229 |
| | LL-3132-LDUP | 9/11/2008 | EBS-E2 bottom 67m | Lab. Duplicate | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.223 |
| RPD | | | | | | | | | |
| Matrix Spikes | | | | | | | | | |
| GEB0254 | LL-3108 | 9/12/2008 | JUB-EBS-007 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.279 |
| | LL-3108-MS | 9/12/2008 | JUB-EBS-007 top 1 m | Matrix Spike | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 2.06 |
| | LL-3108-MSD | 9/12/2008 | JUB-EBS-007 top 1 m | MS Duplicate | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 1.93 |
| Expected | | | | | | | | | |
| %R MS | | | | | | | | | |
| %R MSD | | | | | | | | | |
| RPD MS/MSD | | | | | | | | | |
| GEB0255 | LL-3112 | 9/12/2008 | JUB-EBS-007 bottom 100m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.235 |
| | LL-3112-MS | 9/12/2008 | JUB-EBS-007 bottom 100m | Matrix Spike | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 1.91 |
| | LL-3112-MSD | 9/12/2008 | JUB-EBS-007 bottom 100m | MS Duplicate | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 1.99 |
| Expected | | | | | | | | | |
| %R MS | | | | | | | | | |
| %R MSD | | | | | | | | | |
| RPD MS/MSD | | | | | | | | | |

TDI-BI / B&B Laboratories Clean Metals and Mercury Ghana Seawater Monitoring Study
Final Aqueous Mercury Data for Samples Collected 11-13 September 2008
(Data Report L1215-9457-002)

| B&B ID | AE Sample ID | Collection Date | Location | Sample Type | Matrix | Processing | Method | Anal. Date | Hg (ng/L) |
|---|--------------|-----------------|----------------|--------------|-----------|------------|-----------|------------|-----------|
| GEB0262 | LL-3122 | 9/11/2008 | EBS-E2 top 1 m | Grab (Hg) | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 0.412 |
| | LL-3122-MS | 9/11/2008 | EBS-E2 top 1 m | Matrix Spike | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 2.08 |
| | LL-3122-MSD | 9/11/2008 | EBS-E2 top 1 m | MS Duplicate | Seawater | Total Rec. | EPA 1631e | 11/14/2008 | 2.13 |
| Expected | | | | | | | | | 2.22 |
| % R MS | | | | | | | | | 75 |
| % R MSD | | | | | | | | | 77 |
| RPD MS/MSD | | | | | | | | | 2.4 |
| Blank Spikes | | | | | | | | | |
| LCS-1 | Albion Env. | Blank Spike | DIW | Total Rec. | EPA 1631e | 11/14/2008 | 2.28 | | |
| Expected | | | | | | | 2.22 | | |
| % R | | | | | | | 103 | | |
| QCS5 NIST-1 | Albion Env. | Ind. Chk. Std. | DIW | Total Rec. | EPA 1631e | 11/14/2008 | 5.26 | | |
| Expected | | | | | | | 5.00 | | |
| % R | | | | | | | 105 | | |
| QCS5-IV-1 | Albion Env. | Ind. Chk. Std. | DIW | Total Rec. | EPA 1631e | 11/14/2008 | 4.83 | | |
| Expected | | | | | | | 5.00 | | |
| % R | | | | | | | 97 | | |
| Percent Recovery at Reporting Limit (ML, Low Calibration Standard) | | | | | | | | | |
| CalStd-1 | Albion Env. | Low Calib. Std. | DIW | Total Rec. | EPA 1631e | 11/14/2008 | 0.489 | | |
| Reporting Limit (ML) | | | | | | | 0.500 | | |
| % R | | | | | | | 98 | | |
| Method Blanks | | | | | | | | | |
| MBLK-8 | Albion Env. | Method Blank | DIW | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 | | |
| MBLK-13 | Albion Env. | Method Blank | DIW | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 | | |
| MBLK-17 | Albion Env. | Method Blank | DIW | Total Rec. | EPA 1631e | 11/14/2008 | < 0.20 | | |

Albion Environmental
Bryan, TX 77801 (979)-268-2677

APPROVED: Dr. P.N. Booth

15 December 2008
Page 4 of 4

Sediment Metal Data

LET Sample Report

Units: %

Batch Number: L08090597

Analyte: % Moisture

| LET I.D. | Submitter I.D. | % | Matrix |
|-----------|----------------|------|---------------|
| L08090598 | GEB0031 | 62.5 | Soil/Sediment |
| L08090599 | GEB0032 | 77.7 | Soil/Sediment |
| L08090600 | GEB0033 | 71.8 | Soil/Sediment |
| L08090601 | GEB0034 | 74.7 | Soil/Sediment |
| L08090602 | GEB0035 | 56.9 | Soil/Sediment |
| L08090603 | GEB0036 | 70.4 | Soil/Sediment |
| L08090604 | GEB0037 | 71.8 | Soil/Sediment |
| L08090605 | GEB0038 | 76.2 | Soil/Sediment |
| L08090606 | GEB0039 | 76.2 | Soil/Sediment |
| L08090607 | GEB0040 | 36.6 | Soil/Sediment |
| L08090608 | GEB0041 | 39.3 | Soil/Sediment |
| L08090609 | GEB0042 | 37.5 | Soil/Sediment |
| L08090610 | GEB0043 | 47.6 | Soil/Sediment |
| L08090611 | GEB0044 | 50.1 | Soil/Sediment |
| L08090612 | GEB0045 | 53.5 | Soil/Sediment |

LET Sample Report

LET Sample ID: L08090598

Batch Number: L08090597

Submitter Sample ID: GEB0031

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 171 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 8 | 5 |

LET Sample Report

LET Sample ID: L08090599

Batch Number: L08090597

Submitter Sample ID: GEB0032

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 264 | 0.5 |
| Cd | 0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 17 | 5 |

LET Sample Report

LET Sample ID: L08090600

Batch Number: L08090597

Submitter Sample ID: GEB0033

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 273 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090601

Batch Number: L08090597

Submitter Sample ID: GEB0034

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 262 | 0.5 |
| Cd | 0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090602

Batch Number: L08090597

Submitter Sample ID: GEB0035

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|----------------|----------------------|-------------|
| | Dry Weight | D.L. |
| Ba | 144 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090603

Batch Number: L08090597

Submitter Sample ID: GEB0036

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 234 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 9 | 5 |

LET Sample Report

LET Sample ID: L08090604

Batch Number: L08090597

Submitter Sample ID: GEB0037

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 253 | 0.5 |
| Cd | 0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090605

Batch Number: L08090597

Submitter Sample ID: GEB0038

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 291 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090606

Batch Number: L08090597

Submitter Sample ID: GEB0039

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 368 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 7 | 5 |

LET Sample Report

LET Sample ID: L08090607

Batch Number: L08090597

Submitter Sample ID: GEB0040

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 26 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090608

Batch Number: L08090597

Submitter Sample ID: GEB0041

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 23 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090609

Batch Number: L08090597

Submitter Sample ID: GEB0042

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|----------------|----------------------|-------------|
| | Dry Weight | D.L. |
| Ba | 29 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 16 | 5 |

LET Sample Report

LET Sample ID: L08090610

Batch Number: L08090597

Submitter Sample ID: GEB0043

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 25 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 17 | 5 |

LET Sample Report

LET Sample ID: L08090611

Batch Number: L08090597

Submitter Sample ID: GEB0044

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 42 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 10 | 5 |

LET Sample Report

LET Sample ID: L08090612

Batch Number: L08090597

Submitter Sample ID: GEB0045

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Concentration | |
|---------|---------------|------|
| | Dry Weight | D.L. |
| Ba | 41 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | 9 | 5 |

LET Duplicate Report

LET Sample ID: L08090600D

Batch Number: L08090597

Submitter Sample ID: GEB0033

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Sample | D.L. | Duplicate | Average | |
|---------|--------|------|-----------|---------|-------------|
| | | | | Values | % Deviation |
| Ba | 273 | 0.5 | 279 | 276 | 2.2 |
| Cd | <0.2 | 0.2 | <0.2 | <0.2 | 0.0 |
| Hg | <0.1 | 0.1 | <0.1 | <0.1 | 0.0 |
| Pb | 10 | 5 | 8 | 9 | 22.2 |

LET Duplicate Report

LET Sample ID: L08090606D

Batch Number: L08090597

Submitter Sample ID: GEB0039

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Sample | D.L. | Duplicate | Average Values | % Deviation |
|---------|--------|------|-----------|----------------|-------------|
| Ba | 368 | 0.5 | 371 | 370 | 0.8 |
| Cd | <0.2 | 0.2 | <0.2 | <0.2 | 0.0 |
| Hg | <0.1 | 0.1 | <0.1 | <0.1 | 0.0 |
| Pb | 7 | 5 | 10 | 9 | 35.3 |

LET Duplicate Report

LET Sample ID: L08090612D

Batch Number: L08090597

Submitter Sample ID: GEB0045

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Sample | D.L. | Duplicate | Average Values | % Deviation |
|---------|--------|------|-----------|----------------|-------------|
| Ba | 41 | 0.5 | 42 | 42 | 2.4 |
| Cd | <0.2 | 0.2 | <0.2 | <0.2 | 0.0 |
| Hg | <0.1 | 0.1 | <0.1 | <0.1 | 0.0 |
| Pb | 9 | 5 | 10 | 10 | 10.5 |

LET Spike Report

LET Sample ID: L08090603S

Batch Number: L08090597

Submitter Sample ID: GEB0036

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Sample | | Spiked Sample | Sample Equivalent Spike | % Recovery |
|---------|---------------|------|------------------|-------------------------------|------------|
| | Dry Weight | D.L. | | | |
| Ba | 234 | 0.5 | 310 | 79.7 | ** |
| Cd | <0.2 | 0.2 | 18 | 19.9 | 90.4 |
| Hg | <0.1 | 0.1 | 3.5 | 3.98 | 87.9 |
| Pb | 9 | 5 | 380 | 398 | 93.2 |

** indicates spike too low

LET Spike Report

LET Sample ID: L08090609S

Batch Number: L08090597

Submitter Sample ID: GEB0042

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Sample | | Spiked Sample | Sample | % Recovery |
|---------|---------------|------|------------------|---------------------|------------|
| | Dry Weight | D.L. | | Equivalent Spike | |
| Ba | 29 | 0.5 | 108 | 79.2 | 99.7 |
| Cd | <0.2 | 0.2 | 19 | 19.8 | 96.0 |
| Hg | <0.1 | 0.1 | 4.1 | 3.96 | 104 |
| Pb | 16 | 5 | 400 | 396 | 97.0 |

LET Blank Report

LET Sample ID: L08090597

Batch Number: L08090597

Submitter Sample ID: Blank-1

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | Sample Equivalent Concentration | Detection Limit |
|----------------|--|----------------------------|
| Ba | <0.5 | 0.5 |
| Cd | <0.2 | 0.2 |
| Hg | <0.1 | 0.1 |
| Pb | <5 | 5 |

LET Reference Sample Report

LET Sample ID: L08090613

Batch Number: L08090597

SRM ID: ERA-D048

Matrix: Soil/Sediment

Units: mcg/g

| Analyte | LET Concentration | Detection Limit | Certified Mean ± s.d. |
|---------|----------------------|--------------------|--------------------------|
| Ba | 165 | 0.5 | 159 ± 34 |
| Cd | 203 | 0.6 | 240 ± 49 |
| Hg | 3.5 | 0.1 | 3.6 ± 1.15 |
| Pb | 82 | 5 | 79.3 ± 16.9 |

Total Organic Carbon

| Sample Name | GEB0001 | GEB0003 | GEB0005 | GEB0007 |
|----------------------------|----------------------|----------------------|-----------------------|----------------------|
| Client Name | JUB-EBS-001 (1 of 2) | JUB-EBS-002 (1 of 2) | JUB-EBS-003R (1 of 2) | JUB-EBS-004 (1 of 2) |
| Matrix | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Analysis Batch TOC | LECO1041 | LECO1041 | LECO1041 | LECO1041 |
| Preparation Date TOC | 10/02/08 | 10/02/08 | 10/02/08 | 10/02/08 |
| Analysis Date TOC | 10/03/08 | 10/03/08 | 10/03/08 | 10/03/08 |
| Sample Dry Weight (mg) | 354.6 | 352.9 | 354.7 | 351.6 |
| Method TOC | SEDMT-TC | SEDMT-TC | SEDMT-TC | SEDMT-TC |
| Target Analyte | mg Carbon | Q | mg Carbon | Q |
| Total Organic Carbon (TOC) | 5.01 | | 9.88 | 7.77 |
| | % Carbon | Q | % Carbon | Q |
| Total Organic Carbon (TOC) | 1.41 | | 2.80 | 2.19 |
| | | | | 2.99 |

| Sample Name | GEB0009 | GEB0011 | GEB0013 | GEB0015 |
|----------------------------|-----------------------|----------------------|-----------------------|----------------------|
| Client Name | JUB-EBS-005R (1 of 2) | JUB-EBS-006 (1 of 2) | JUB-EBS-007R (1 of 2) | JUB-EBS-008 (1 of 2) |
| Matrix | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/10/08 | 09/09/08 | 09/10/08 | 09/10/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Analysis Batch TOC | LECO1041 | LECO1041 | LECO1041 | LECO1041 |
| Preparation Date TOC | 10/02/08 | 10/02/08 | 10/02/08 | 10/02/08 |
| Analysis Date TOC | 10/03/08 | 10/03/08 | 10/03/08 | 10/03/08 |
| Sample Dry Weight (mg) | 352.7 | 353.9 | 353.9 | 352.4 |
| Method TOC | SEDMT-TC | SEDMT-TC | SEDMT-TC | SEDMT-TC |
| Target Analyte | mg Carbon | Q | mg Carbon | Q |
| Total Organic Carbon (TOC) | 4.27 | | 7.54 | |
| | % Carbon | Q | % Carbon | Q |
| Total Organic Carbon (TOC) | 1.21 | | 2.13 | |
| | | | 2.39 | |
| | | | 2.39 | |

| Sample Name | GEB0017 | GEB0019 | GEB0021 | GEB0023 |
|------------------------|-----------------------|-----------------|-----------------|------------------|
| Client Name | JUB-EBS-009R (1 of 2) | EBS-E1 (1 of 2) | EBS-E2 (1 of 2) | EBS-E3R (1 of 2) |
| Matrix | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/10/08 | 09/11/08 | 09/11/08 | 09/12/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Analysis Batch TOC | LECO1041 | LECO1041 | LECO1041 | LECO1041 |
| Preparation Date TOC | 10/02/08 | 10/02/08 | 10/02/08 | 10/02/08 |
| Analysis Date TOC | 10/03/08 | 10/03/08 | 10/03/08 | 10/03/08 |
| Sample Dry Weight (mg) | 353.6 | 354.6 | 350.7 | 352.7 |
| Method TOC | SEDMT-TC | SEDMT-TC | SEDMT-TC | SEDMT-TC |

| Target Analyte | mg Carbon | Q |
|----------------------------|-----------|---|-----------|---|-----------|---|-----------|---|
| Total Organic Carbon (TOC) | 7.79 | | 4.16 | | 3.03 | | 10.25 | |
| | % Carbon | Q |
| Total Organic Carbon (TOC) | 2.20 | | 1.17 | | 0.86 | | 2.91 | |

| | | | |
|-------------------------------|-----------------|-----------------|-----------------|
| Sample Name | GEB0025 | GEB0027 | GEB0029 |
| Client Name | EBS-T4 (1 of 2) | EBS-T5 (1 of 2) | EBS-T6 (1 of 2) |
| Matrix | Sediment | Sediment | Sediment |
| Collection Date | 09/13/08 | 09/13/08 | 09/13/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 |
| Analysis Batch TOC | LECO1041 | LECO1041 | LECO1041 |
| Preparation Date TOC | 10/02/08 | 10/02/08 | 10/02/08 |
| Analysis Date TOC | 10/03/08 | 10/03/08 | 10/03/08 |
| Sample Dry Weight (mg) | 351.4 | 353.7 | 353.7 |
| Method TOC | SEDMT-TC | SEDMT-TC | SEDMT-TC |

| Target Analyte | mg Carbon | Q | mg Carbon | Q | mg Carbon | Q |
|----------------------------|-----------|---|-----------|---|-----------|---|
| Total Organic Carbon (TOC) | 2.90 | | 3.53 | | 4.57 | |
| | % Carbon | Q | % Carbon | Q | % Carbon | Q |
| Total Organic Carbon (TOC) | 0.83 | | 1.00 | | 1.29 | |

Sample Name AC1041B
Client Name NA
Matrix Sediment
Collection Date NA
Received Date NA
Analysis Batch TOC LECO1041
Preparation Date TOC 10/02/08
Analysis Date TOC 10/03/08
Sample Dry Weight (mg) 350.0
Method TOC SEDMT-TC

| Target Analyte | mg Carbon | Q | mg Carbon | |
|----------------------------|-----------|----------|-----------|--------|
| | | | MDL | 3x MDL |
| Total Organic Carbon (TOC) | 0.09 | J | 0.11 | 0.33 |
| | | % Carbon | % Carbon | |
| Total Organic Carbon (TOC) | 0.03 | J | MDL | 3x MDL |
| | | | 0.03 | 0.09 |

B&B Laboratories
Project J08704
Report08-8121

2008 Jubilee Development Group-Ghana EBS
Total Organic Carbon
Laboratory Duplicate Report

Contract #

| | | |
|-------------------------------|----------------------|----------------------|
| Sample Name | GEB0001 | GEB0001D |
| Client Name | JUB-EBS-001 (1 of 2) | JUB-EBS-001 (1 of 2) |
| Matrix | Sediment | Sediment |
| Collection Date | 09/10/08 | 09/10/08 |
| Received Date | 09/18/08 | 09/18/08 |
| Analysis Batch TOC | LECO1041 | LECO1041 |
| Preparation Date TOC | 10/02/08 | 10/02/08 |
| Analysis Date TOC | 10/03/08 | 10/03/08 |
| Sample Dry Weight (mg) | 354.6 | 354.2 |
| Method | SEDMT-TC | SEDMT-TC |

| Target Analyte | mg Carbon | Q | mg Carbon | Q | | mg Carbon | |
|----------------------------|-----------|---|-----------|---|-----|-----------|--------|
| | | | | | | MDL | 2x MDL |
| Total Organic Carbon (TOC) | 5.01 | | 5.05 | | | 0.11 | 0.22 |
| | % Carbon | Q | % Carbon | Q | RPD | | |
| Total Organic Carbon (TOC) | 1.41 | | 1.43 | | 1 | % Carbon | |
| | | | | | | MDL | 2x MDL |
| | | | | | | 0.03 | 0.06 |

Sample Name LC1041SRM
Client Name SRM8704
Matrix Sediment
Collection Date NA
Received Date NA
Analysis Batch TOC LECO1041
Preparation Date TOC NA
Analysis Date TOC 10/03/08
Sample Dry Weight (mg) 351.7
Method TOC SEDMT-TC

| Target Analyte | mg Carbon | Q | | | | |
|----------------------------|-----------|-----|-----------------|-------|-------|--|
| Total Organic Carbon (TOC) | 11.73 | | Certified Value | | | |
| | % Carbon | Q | SRM8704 | -5% | +5% | |
| Total Organic Carbon (TOC) | 3.34 | 100 | % Carbon | | | |
| | | | 3.351 | 3.183 | 3.519 | |

SRMs are not acidified

B&B Laboratories
Project J08704
Report 08-8121

2008 Jubilee Development Group-Ghana EBS
Total Organic Carbon
Continuing Calibration Validation Report

Contract #

Sample Name LC1041SRM
Client Name SRM8704
Matrix Sediment
Collection Date NA
Received Date NA
Analysis Batch TOC LECO1041
Preparation Date TOC NA
Analysis Date TOC 10/03/08
Sample Dry Weight (mg) 351.7
Method TOC SEDMT-TC

| Target Analyte | mg Carbon | Q | Certified Value | | |
|----------------------------|-----------|-----|-----------------|------|------|
| Total Organic Carbon (TOC) | 11.73 | | SRM8704 | -5% | +5% |
| | % Carbon | Q | % Carbon | | |
| Total Organic Carbon (TOC) | 3.34 | 100 | 3.35 | 3.18 | 3.52 |

Grain Size Data

2008 Ghana Julilee Project
Grain Size
Client Submitted Samples

| Sample ID | GEB0344 | GEB0345 | GEB0346 | GEB0347 | GEB0348 | GEB0349 |
|-----------------------|-------------|-------------|--------------|-------------|--------------|-------------|
| Sample Name | JUB-EBS-001 | JUB-EBS-002 | JUB-EBS-003R | JUB-EBS-004 | JUB-EBS-005R | JUB-EBS-006 |
| Matrix | SED | SED | SED | SED | SED | SED |
| Collection Date | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 |
| Received Date | 09/23/08 | 09/23/08 | 09/23/08 | 09/23/08 | 09/23/08 | 09/23/08 |
| Analysis Date | 10/06/08 | 10/06/08 | 10/06/08 | 10/06/08 | 10/06/08 | 10/06/08 |
| Sample Wet Weight (g) | 10.38 | 11.01 | 9.31 | 7.40 | 11.24 | 10.43 |
| Analysis | % | % | % | % | % | % |
| GRAVEL | 0 | 0 | 0 | 0 | 0 | 0 |
| SAND | 32.58 | 2.82 | 7.11 | 3.99 | 44.85 | 18.02 |
| SILT | 27.93 | 44.05 | 32.75 | 41.92 | 17.79 | 40.27 |
| CLAY | 39.49 | 53.13 | 60.14 | 54.09 | 37.36 | 41.71 |

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

| Sample ID | GEB0350 | GEB0351 | GEB0352 | GEB0353 | GEB0354 | GEB0355 |
|-----------------------|--------------|-------------|--------------|----------|----------|----------|
| Sample Name | JUB-EBS-007R | JUB-EBS-008 | JUB-EBS-009R | EBS-E1 | EBS-E2 | EBS-E3R |
| Matrix | SED | SED | SED | SED | SED | SED |
| Collection Date | 09/10/08 | 09/10/08 | 09/10/08 | 09/11/08 | 09/11/08 | 09/12/08 |
| Received Date | 09/23/08 | 09/23/08 | 09/23/08 | 09/23/08 | 09/23/08 | 09/23/08 |
| Analysis Date | 10/06/08 | 10/06/08 | 10/06/08 | 10/06/08 | 10/06/08 | 10/06/08 |
| Sample Wet Weight (g) | 8.89 | 7.99 | 9.66 | 19.00 | 20.18 | 32.64 |
| Analysis | % | % | % | % | % | % |
| GRAVEL | 0 | 0 | 0 | 0 | 7.13 | 17.36 |
| SAND | 5.53 | 1.73 | 1.1 | 70.79 | 56.45 | 61.04 |
| SILT | 41.61 | 37.56 | 45.05 | 15.53 | 20.56 | 11.34 |
| CLAY | 52.86 | 60.71 | 53.85 | 13.68 | 15.86 | 10.26 |

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

B&B Laboratories
Project J08704
Job# 08-2181

2008 Ghana Julilee Project
Grain Size
Client Submitted Samples

| | | | |
|-----------------------|----------|----------|----------|
| Sample ID | GEB0361 | GEB0362 | GEB0363 |
| Sample Name | EBS-T4 | EBS-T5 | EBS-T6 |
| Matrix | SED | SED | SED |
| Collection Date | 09/13/08 | 09/13/08 | 09/13/08 |
| Received Date | 09/23/08 | 09/23/08 | 09/23/08 |
| Analysis Date | 10/06/08 | 10/06/08 | 10/06/08 |
| Sample Wet Weight (g) | 14.69 | 8.73 | 11.24 |

| Analysis | % | % | % |
|----------|-------|-------|-------|
| GRAVEL | 0 | 0 | 0 |
| SAND | 28.18 | 14.06 | 2.14 |
| SILT | 52.08 | 58.44 | 68.50 |
| CLAY | 19.74 | 27.50 | 29.36 |

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

B&B Laboratories
Project J08704
Job # 08-2181

2008 Ghana Jubilee EBS
Grain Size
Laboratory Duplicate Report

| | | |
|------------------------------|----------|------------|
| Sample ID | GEB0353 | GEB0353DUP |
| Sample Name | EBS-E1 | EBS-E1 |
| Matrix | SED | SED |
| Collection Date | 09/11/08 | 09/11/08 |
| Received Date | 09/23/08 | 09/23/08 |
| Analysis Date | 10/06/08 | 10/06/08 |
| Sample Wet Weight (g) | 19.00 | 18.47 |

| Analysis | % | % | RPD % |
|-----------------|----------|----------|--------------|
| Gravel | 0 | 0 | 0.0 |
| SAND | 70.79 | 70.29 | 0.7 |
| SILT | 15.53 | 15.79 | 1.7 |
| CLAY | 13.68 | 13.92 | 1.7 |

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Total Suspended Solids Data

| Client/Project Nam | B&B ID | Client ID | Filter Wt. G | Wt. G | TSS Wt. G | TSS mg/l | Filter Vol. mL | Concentration mg/l |
|--------------------|--------|-------------------|--------------|--------|-----------|----------|----------------|--------------------|
| Ghana Jubilee | GEB061 | JUB-EBS-001 1 M | 0.1127 | 0.1776 | 0.0649 | 64.90 | 2600 | 24.96 |
| Ghana Jubilee | GEB062 | JUB-EBS-001 100 M | 0.1118 | 0.1746 | 0.0628 | 62.80 | 3000 | 20.93 |
| Ghana Jubilee | GEB063 | JUB-EBS-002 1 M | 0.1111 | 0.1292 | 0.0181 | 18.10 | 2800 | 6.46 |
| Ghana Jubilee | GEB064 | JUB-EBS-002 100 M | 0.1123 | 0.1533 | 0.0410 | 40.97 | 3000 | 13.66 |
| Ghana Jubilee | GEB065 | JUB-EBS-003 1 M | 0.1116 | 0.1308 | 0.0192 | 19.17 | 3000 | 6.39 |
| Ghana Jubilee | GEB066 | JUB-EBS-003 100 M | 0.1115 | 0.1904 | 0.0769 | 78.87 | 2840 | 27.77 |
| Ghana Jubilee | GEB067 | JUB-EBS-004 1 M | 0.1128 | 0.1448 | 0.0320 | 32.03 | 3000 | 10.68 |
| Ghana Jubilee | GEB068 | JUB-EBS-004 100 M | 0.1141 | 0.1763 | 0.0622 | 62.17 | 3000 | 20.72 |
| Ghana Jubilee | GEB069 | JUB-EBS-005 1 M | 0.1144 | 0.2501 | 0.1357 | 135.70 | 3000 | 45.23 |
| Ghana Jubilee | GEB070 | JUB-EBS-005 100 M | 0.1138 | 0.1581 | 0.0443 | 44.27 | 3000 | 14.76 |
| Ghana Jubilee | GEB071 | JUB-EBS-006 1 M | 0.1134 | 0.1826 | 0.0692 | 69.17 | 3000 | 23.06 |
| Ghana Jubilee | GEB072 | JUB-EBS-006 100 M | 0.1117 | 0.1622 | 0.0505 | 50.53 | 3000 | 16.84 |
| Ghana Jubilee | GEB073 | JUB-EBS-007 1 M | 0.1102 | 0.1875 | 0.0773 | 77.30 | 3000 | 25.77 |
| Ghana Jubilee | GEB074 | JUB-EBS-007 100 M | 0.1135 | 0.2043 | 0.0908 | 90.77 | 3000 | 30.26 |
| Ghana Jubilee | GEB075 | JUB-EBS-008 1 M | 0.1145 | 0.1679 | 0.0534 | 53.43 | 3000 | 17.81 |
| Ghana Jubilee | GEB076 | JUB-EBS-008 100 M | 0.1137 | 0.1868 | 0.0731 | 73.13 | 3000 | 24.38 |
| Ghana Jubilee | GEB077 | JUB-EBS-009 1 M | 0.1128 | 0.1661 | 0.0533 | 53.33 | 3000 | 17.78 |
| Ghana Jubilee | GEB078 | JUB-EBS-009 100 M | 0.1110 | 0.1447 | 0.0337 | 33.67 | 3000 | 11.22 |
| Ghana Jubilee | GEB079 | EBS-E1 1 M | 0.1135 | 0.1779 | 0.0644 | 64.43 | 2700 | 23.86 |
| Ghana Jubilee | GEB080 | EBS-E1 75 M | 0.1122 | 0.2140 | 0.1018 | 101.80 | 3000 | 33.93 |
| Ghana Jubilee | GEB081 | EBS-E2 1 M | 0.1114 | 0.2352 | 0.1238 | 123.77 | 2500 | 49.51 |
| Ghana Jubilee | GEB082 | EBS-E2 67 M | 0.1113 | 0.2609 | 0.1496 | 149.57 | 3000 | 49.86 |
| Ghana Jubilee | GEB085 | EBS-E3R 1 M | 0.1121 | 0.2230 | 0.1109 | 110.87 | 3000 | 36.96 |
| Ghana Jubilee | GEB086 | EBS-E3R 50 M | 0.1124 | 0.3750 | 0.2626 | 262.57 | 3150 | 83.35 |
| Ghana Jubilee | GEB089 | EBS-T4 1 M | 0.1147 | 0.2217 | 0.1070 | 107.00 | 3000 | 35.67 |
| Ghana Jubilee | GEB090 | EBS-T4 39 M | 0.1127 | 0.1866 | 0.0739 | 73.93 | 3000 | 24.64 |
| Ghana Jubilee | GEB091 | EBS-T5 1 M | 0.1127 | 0.2247 | 0.1120 | 112.00 | 3180 | 35.22 |
| Ghana Jubilee | GEB092 | EBS-T5 44 M | 0.1130 | 0.3579 | 0.2449 | 244.87 | 3000 | 81.62 |
| Ghana Jubilee | GEB093 | EBS-T6 1 M | 0.1126 | 0.1353 | 0.0227 | 22.67 | 3000 | 7.56 |
| Ghana Jubilee | GEB094 | EBS-T6 49M | 0.1124 | 0.1592 | 0.0468 | 46.77 | 3000 | 0.02 |

Nutrient Data

| B&B Laboratories | | Nutrient Analysis | | | | | |
|--------------------|-------------------|--------------------|--------------|----------------|--------------|----------------|--------------|
| 8091802 | | Client Designation | | Total N | | Total P | |
| Sample Designation | | conc. (umol/L) | conc. (mg/L) | conc. (umol/L) | conc. (mg/L) | conc. (umol/L) | conc. (mg/L) |
| GEB0095 | JUB-EBS-001 1M | 4.82 | 0.068 | 0.48 | 0.0149 | | |
| GEB0096 | JUB-EBS-001 100 M | 19.74 | 0.276 | 1.22 | 0.0377 | | |
| GEB0097 | JUB-EBS-002 1 M | 3.75 | 0.052 | 0.47 | 0.0145 | | |
| GEB0098 | JUB-EBS-002 100 M | 18.71 | 0.262 | 1.06 | 0.0329 | | |
| GEB0099 | JUB-EBS-003 1 M | 13.60 | 0.190 | 0.54 | 0.0168 | | |
| GEB0100 | JUB-EBS-003 100 M | 12.95 | 0.181 | 1.11 | 0.0345 | | |
| GEB0101 | JUB-EBS-004 1M | 9.37 | 0.131 | 0.56 | 0.0174 | | |
| GEB0102 | JUB-EBS-004 100 M | 22.97 | 0.322 | 1.47 | 0.0455 | | |
| GEB0103 | JUB-EBS-005 1M | 3.96 | 0.055 | 0.60 | 0.0185 | | |
| GEB0104 | JUB-EBS-005 100 M | 21.67 | 0.303 | 1.43 | 0.0442 | | |
| GEB0105 | JUB-EBS-006 1M | 6.49 | 0.091 | 0.62 | 0.0192 | | |
| GEB0106 | JUB-EBS-006 100 M | 31.19 | 0.437 | 1.44 | 0.0446 | | |
| GEB0107 | JUB-EBS-007 1M | 9.00 | 0.126 | 0.60 | 0.0186 | | |
| GEB0108 | JUB-EBS-007 | 30.22 | 0.423 | 1.43 | 0.0443 | | |
| GEB0109 | JUB-EBS-008 1 M | 3.14 | 0.044 | 0.49 | 0.0152 | | |
| GEB0110 | JUB-EBS-008 100 M | 22.03 | 0.309 | 1.37 | 0.0423 | | |
| GEB0111 | JUB-EBS-009 1 M | 6.09 | 0.085 | 0.52 | 0.0160 | | |
| GEB0112 | JUB-EBS-009 100 M | 19.51 | 0.273 | 1.32 | 0.0410 | | |
| GEB0113 | EBS-E1 1 M | 22.63 | 0.317 | 0.67 | 0.0207 | | |
| GEB0114 | EBS-E1 100 M | 27.06 | 0.379 | 1.41 | 0.0438 | | |
| GEB0115 | EBS-E2 1 M | 11.22 | 0.157 | 0.74 | 0.0228 | | |
| GEB0116 | EBS-E2 100 M | 24.09 | 0.337 | 1.40 | 0.0435 | | |
| GEB0119 | EBS-E3R 1 M | 5.90 | 0.083 | 0.76 | 0.0236 | | |
| GEB0120 | EBS-E3R 100 M | 20.21 | 0.283 | 1.47 | 0.0455 | | |
| GEB0123 | EBS-T4 1 M | 4.65 | 0.065 | 0.74 | 0.0230 | | |
| GEB0124 | EBS-T4 100 M | 12.64 | 0.177 | 1.08 | 0.0334 | | |
| GEB0125 | EBS-T5 1 M | 8.52 | 0.119 | 0.91 | 0.0282 | | |
| GEB0126 | EBS-T5 100 M | 13.68 | 0.192 | 1.18 | 0.0366 | | |
| GEB0127 | EBS-T6 1 M | 7.51 | 0.105 | 0.90 | 0.0280 | | |
| GEB0128 | EBS-T6 100 M | 15.30 | 0.214 | 1.33 | 0.0411 | | |

B&B Laboratories
Job# J08704
Report# 08-2181

2008 Ghana Jubilee Project
Nutrients
Client Submitted Samples

| B&B Laboratories | | Nutrient Analysis | | |
|--------------------|--------------------|---------------------------|-------------------------|---|
| 8091802 | | | | |
| Sample Designation | Client Designation | Total N conc. (umol/L) | Total N conc. (mg/L) | Total P conc. (umol/L) conc. (mg/L) |
| | | | | |

| Total Blank Summary | | Total N conc. (uM) | Total P conc. (uM) |
|---------------------|--|-----------------------|-----------------------|
| Blank | | 17.08 | 0.239 |
| Blank | | 17.34 | 0.243 |
| Blank | | 16.69 | 0.234 |
| Blank | | 15.95 | 0.223 |
| Blank | | 13.03 | 0.183 |

| Average | 16.02 | Total N conc. (uM) | 0.23 | Total P conc. (uM) | 0.0072 |
|--------------------|-------|-----------------------|---------------------|-----------------------|--------|
| Standard Deviation | 1.75 | | <th></th> <td></td> | | |

0.19
0.0283

| B&B Laboratories | | Nutrient Analysis | |
|--------------------|--------------------|-------------------|--------------|
| EPA | | Total N | Total P |
| Sample Designation | Client Designation | conc. (µmol/L) | conc. (mg/L) |
| GEB0101 | JUB-EBS-004 1 M | 9.37 | 0.131 |
| GEB0101 Duplicate | JUB-EBS-004 1 M | 9.44 | 0.132 |
| | RPD | 0.7% | 0.7% |
| | | | 9.3% |
| GEB0116 | EBS-E2 100 M | 24.09 | 0.337 |
| GEB0116 Duplicate | EBS-E2 100 M | 23.76 | 0.333 |
| | RPD | 1.4% | 1.4% |
| | | | 9.7% |
| GEB0128 | EBS-T6 100 M | 15.30 | 0.214 |
| GEB0128 Duplicate | EBS-T6 100 M | 15.21 | 0.213 |
| | RPD | 0.6% | 0.6% |
| | | | 3.2% |
| | | | 3.2% |

| Nutrient | Detection Limit (µM) | Standard Range (µM) | Standard Range (mg/L) | Dissolved SPEX Acceptance Limits (µM) | Total SPEX Acceptance Limits (µM) |
|--------------------------------|----------------------|---------------------|-----------------------|---------------------------------------|-----------------------------------|
| NO ₃ ⁻ | 0.108 | 3.80-30.43 | 0.236-1.887 | 2.60-4.14 | 7.07-13.82 |
| HPO ₄ ⁼ | 0.0236 | 0.27-2.12 | 0.0259-0.205 | 1.65-2.58 | 1.50-2.14 |
| HSIO ₃ ⁻ | 0.127 | 3.84-30.68 | 0.296-2.36 | | |
| NH ₄ ⁺ | 0.0778 | 0.50-4.02 | 0.00902-0.0722 | 1.63-4.54 | |
| NO ₂ ⁻ | 0.0113 | 0.10-0.81 | 0.00460-0.0372 | 3.33-4.82 | |
| Urea | 0.138 | 0.50-3.97 | 0.0300-0.238 | | |

| B&B Laboratories | | Nutrient Analysis | | Total N | Recovery % | Total P | Recovery % |
|------------------|--------------------|--------------------|------------|-------------|------------|------------|------------|
| EPA | Sample Designation | Sample Type | conc. (µM) | (X = 11.14) | conc. (µM) | (X = 1.94) | |
| | SPEX Total SRM1 | SPEX Total SRM | 11.65 | 104.55 | 1.90 | 97.80 | |
| | SPEX Total SRM2 | SPEX Total SRM | 11.54 | 103.55 | 1.90 | 97.91 | |
| | SPEX Total SRM3 | SPEX Total SRM | 11.84 | 106.30 | 1.89 | 97.47 | |
| | SPEX Total SRM4 | SPEX Total SRM | 11.65 | 104.58 | 1.92 | 99.21 | |
| | SPEX Total SRM5 | SPEX Total SRM | 10.97 | 98.46 | 1.94 | 99.97 | |
| | | Mean | 11.53 | 1.91 | | | |
| | | Standard Deviation | 0.3319 | 0.0207 | | | |

Below are the values for the detection limits of the six nutrients.

| Nutrient | Detection Limit (µM) | Standard Range (µM) | Standard Range (mg/L) | Dissolved SPEX Acceptance Limits (µM) | Total SPEX Acceptance Limits (µM) |
|--------------------------------|----------------------|---------------------|-----------------------|---------------------------------------|-----------------------------------|
| NO ₃ ⁻ | 0.108 | 3.80-30.43 | 0.236-1.887 | 5.93-8.96 | 7.07-13.82 |
| HPO ₄ ⁼ | 0.0236 | 0.27-2.12 | 0.0259-0.205 | 1.65-2.58 | 1.50-2.14 |
| HSiO ₃ ⁻ | 0.127 | 3.84-30.68 | 0.296-2.36 | | |
| NH ₄ ⁺ | 0.0778 | 0.50-4.02 | 0.00902-0.0722 | 1.63-4.54 | |
| NO ₂ ⁻ | 0.0113 | 0.10-0.81 | 0.00460-0.0372 | 3.33-4.82 | |
| Urea | 0.138 | 0.50-3.97 | 0.0300-0.238 | | |

| B&B Laboratories | | Nutrient Analysis | | | |
|-----------------------|-------------|------------------------------|------------|-------------------------------|------------|
| EPA | | NO ₃ ⁻ | Recovery % | HPO ₄ ⁼ | Recovery % |
| Sample Designation | Sample Type | conc. (uM) | (x=7.43) | conc. (uM) | (x=2.12) |
| SPEX SRM _a | Total SRM | 7.23 | 97.3 | 2.09 | 98.6 |
| SPEX SRM _b | Total SRM | 7.16 | 96.4 | 2.08 | 98.2 |
| SPEX SRM _c | Total SRM | 7.36 | 99.1 | 2.17 | 102.1 |

| | | |
|--------------------|--------|--------|
| Mean | 7.25 | 2.11 |
| Standard Deviation | 0.1033 | 0.0461 |

Below are the values for the detection limits of the six nutrients.

| Nutrient | Detection Limit (uM) | Standard Range (uM) | Standard Range (mg/L) | Dissolved SPEX Acceptance Limits (uM) | Total SPEX Acceptance Limits (uM) |
|--------------------------------|----------------------|---------------------|-----------------------|---------------------------------------|-----------------------------------|
| NO ₃ ⁻ | 0.108 | 3.80-30.43 | 0.236-1.887 | 5.93-8.96 | 7.07-13.82 |
| HPO ₄ ⁼ | 0.0236 | 0.27-2.12 | 0.0259-0.205 | 1.65-2.58 | 1.50-2.14 |
| HSIO ₃ ⁻ | 0.127 | 3.84-30.68 | 0.296-2.36 | | |
| NH ₄ ⁺ | 0.0778 | 0.50-4.02 | 0.00902-0.0722 | 1.63-4.54 | |
| NO ₂ ⁻ | 0.0113 | 0.10-0.81 | 0.00460-0.0372 | 3.33-4.82 | |
| Urea | 0.138 | 0.50-3.97 | 0.0300-0.238 | | |

PAH Data

2008 Jubilee Development Group
Ghana EBS Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

| Sample Name | GEB0001.D | GEB0003.D | GEB0005.D | GEB0007.D | GEB0009.D |
|--------------------------------------|-------------------------------|----------------------|-------------------------------|----------------------|-------------------------------|
| Client Name | JUB-EBS-001 (1 of 2) | JUB-EBS-002 (1 of 2) | JUB-EBS-003R (1 of 2) | JUB-EBS-004 (1 of 2) | JUB-EBS-005R (1 of 2) |
| Matrix | Sediment | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Extraction Date | 10/31/08 | 10/31/08 | 10/31/08 | 10/31/08 | 10/31/08 |
| Extraction Batch | ENV 1946 | ENV 1946 | ENV 1946 | ENV 1946 | ENV 1946 |
| Date Acquired | 11/05/08 | 11/06/08 | 11/06/08 | 11/06/08 | 11/06/08 |
| Method | PAH-2002 | PAH-2002 | PAH-2002 | PAH-2002 | PAH-2002 |
| Sample Dry Weight (g) | 15.3 | 15.1 | 15.2 | 15.0 | 15.0 |
| % Moisture | 63 | 76 | 75 | 76 | 58 |
| % Dry | 37 | 24 | 25 | 24 | 42 |
| Dilution | NA | NA | NA | NA | NA |
| Target Compounds | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) |
| Naphthalene | 13.5 | | 12.7 | | 12.3 |
| C1-Naphthalenes | 8.1 | | 7.4 | | 7.1 |
| C2-Naphthalenes | 16.8 | | 17.4 | | 16.3 |
| C3-Naphthalenes | 14.3 | | 18.3 | | 17.0 |
| C4-Naphthalenes | 7.4 | | 11.1 | | 9.8 |
| Benzothiophene | 0.3 | | 0.4 | | 0.2 |
| C1-Benzothiophenes | 0.5 | | 0.6 | | 0.3 |
| C2-Benzothiophenes | 1.1 | | 0.9 | | 1.2 |
| C3-Benzothiophenes | 0.7 | | 0.7 | | 0.9 |
| Biphenyl | 1.4 | | 1.8 | | 1.5 |
| Aceanaphthylene | 0.5 | | 0.7 | | 0.6 |
| Aceanaphthene | 3.7 | | 5.2 | | 3.1 |
| Dibenzofuran | 3.0 | | 4.1 | | 3.0 |
| Fluorene | 1.8 | | 3.2 | | 1.8 |
| C1-Fluorenes | 2.9 | | 4.6 | | 3.4 |
| C2-Fluorenes | 3.7 | | 7.3 | | 5.5 |
| C3-Fluorenes | 2.7 | | 4.3 | | 3.4 |
| Carbazole | 0.2 J | | 0.5 | | 0.6 |
| Anthracene | 0.3 | | 0.6 | | 0.4 |
| Phenanthrene | 2.7 | | 5.3 | | 3.2 |
| C1-Phenanthrene/Anthracenes | 2.5 | | 5.4 | | 3.4 |
| C2-Phenanthrene/Anthracenes | 2.8 | | 6.1 | | 4.5 |
| C3-Phenanthrene/Anthracenes | 0.9 | | 2.6 | | 1.5 |
| C4-Phenanthrene/Anthracenes | 0.6 | | 1.4 | | 0.9 |
| Dibenzothiophene | 0.2 | | 0.4 | | 0.3 |
| C1-Dibenzothiophene | 0.5 | | 0.8 | | 0.6 |
| C2-Dibenzothiophene | 0.4 | | 1.1 | | 0.7 |
| C3-Dibenzothiophene | 0.4 | | 1.0 | | 0.7 |
| Fluoranthene | 1.9 | | 3.6 | | 2.8 |
| Pyrene | 1.7 | | 3.3 | | 2.7 |
| C1-Fluoranthenes/Pyrenes | 0.8 | | 1.9 | | 0.9 |
| C2-Fluoranthenes/Pyrenes | 1.0 | | 2.5 | | 1.2 |
| C3-Fluoranthenes/Pyrenes | 0.4 | | 1.7 | | 0.8 |
| Naphthobenzothiophene | 1.0 | | 2.6 | | 1.5 |
| C1-Naphthobenzothiophenes | 0.3 J | | 1.5 | | 1.0 |
| C2-Naphthobenzothiophenes | 0.7 | | 2.0 | | 1.2 |
| C3-Naphthobenzothiophenes | 0.5 | | 1.8 | | 0.9 |
| Benz(a)anthracene | 0.6 | | 1.4 | | 0.8 |
| Chrysene | 1.5 | | 2.9 | | 2.0 |
| C1-Chrysenes | 0.8 | | 2.2 | | 1.1 |
| C2-Chrysenes | <0.3 U | | 4.9 | | 1.9 |
| C3-Chrysenes | <0.3 U | | 2.6 | | <0.3 U |
| C4-Chrysenes | <0.3 U | | <0.3 U | | <0.3 U |
| Benzo(b)fluoranthene | 1.8 | | 3.4 | | 2.5 |
| Benzo(k)fluoranthene | 0.4 | | 0.9 | | 0.7 |
| Benzo(e)pyrene | 0.7 | | 1.7 | | 1.0 |
| Benzo(a)pyrene | 0.6 | | 1.4 | | 0.8 |
| Perylene | 5.3 | | 2.5 | | 2.0 |
| Indeno(1,2,3-c,d)pyrene | 1.2 | | 2.3 | | 1.5 |
| Dibenzo(a,h)anthracene | 0.1 J | | 0.9 | | 0.2 |
| Benzo(g,h,i)perylene | 0.8 | | 1.6 | | 1.0 |
| Total PAHs | 116 | | 176 | | 118 |
| | | | | | 176 |
| | | | | | 81.0 |
| Individual Alkyl Isomers and Hopanes | | | | | |
| 2-Methylnaphthalene | 6.0 | | 5.9 | | 4.4 |
| 1-Methylnaphthalene | 7.3 | | 6.1 | | 4.5 |
| 2,6-Dimethylnaphthalene | 7.9 | | 7.9 | | 5.9 |
| 1,6,7-Trimethylnaphthalene | 1.3 | | 2.1 | | 1.6 |
| 1-Methylphenanthrene | 1.0 | | 1.7 | | 1.2 |
| C29-Hopane | 10.5 | | 23.8 | | 17.3 |
| 18a-Oleanane | 9.8 | | 20.9 | | 14.1 |
| C30-Hopane | 16.0 | | 36.2 | | 25.6 |
| Surrogate (Su) | Su Recovery (%) | | Su Recovery (%) | | Su Recovery (%) |
| Naphthalene-d8 | 83 | | 78 | | 72 |
| Aceanaphthene-d10 | 95 | | 86 | | 89 |
| Phenanthrene-d10 | 81 | | 74 | | 69 |
| Chrysene-d12 | 89 | | 82 | | 73 |
| Perylene-d12 | 78 | | 71 | | 62 |
| | | | | | 67 |
| | | | | | 73 |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

| Sample Name | GEB0011.D | GEB0013.D | GEB0015.D | GEB0017.D | GEB0019.D |
|--------------------------------------|-------------------------------|-----------------------|-------------------------------|-----------------------|-------------------------------|
| Client Name | JUB-EBS-006 (1 of 2) | JUB-EBS-007R (1 of 2) | JUB-EBS-008 (1 of 2) | JUB-EBS-009R (1 of 2) | EBS-E1 (1 of 2) |
| Matrix | Sediment | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/09/08 | 09/10/08 | 09/10/08 | 09/10/08 | 09/11/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Extraction Date | 10/31/08 | 10/31/08 | 10/31/08 | 10/31/08 | 10/31/08 |
| Extraction Batch | ENV 1946 | ENV 1946 | ENV 1946 | ENV 1946 | ENV 1946 |
| Date Acquired | 11/06/08 | 11/06/08 | 11/06/08 | 11/06/08 | 11/06/08 |
| Method | PAH-2002 | PAH-2002 | PAH-2002 | PAH-2002 | PAH-2002 |
| Sample Dry Weight (g) | 15.3 | 15.0 | 15.0 | 15.0 | 15.0 |
| % Moisture | 68 | 71 | 77 | 70 | 36 |
| % Dry | 32 | 29 | 23 | 30 | 64 |
| Dilution | NA | NA | NA | NA | NA |
| Target Compounds | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) |
| Naphthalene | 13.9 | | 10.7 | | 7.6 |
| C1-Naphthalenes | 8.3 | | 6.7 | | 4.1 |
| C2-Naphthalenes | 18.8 | | 15.3 | | 9.7 |
| C3-Naphthalenes | 16.4 | | 14.5 | | 10.5 |
| C4-Naphthalenes | 9.2 | | 8.8 | | 6.2 |
| Benzothiophene | 0.3 | | 0.3 | | 0.1 J |
| C1-Benzothiophenes | 0.5 | | 0.3 J | | 0.3 J |
| C2-Benzothiophenes | 1.3 | | 1.4 | | 1.0 |
| C3-Benzothiophenes | 0.8 | | 0.6 | | 0.6 |
| Biphenyl | 1.8 | | 1.8 | | 1.4 |
| Aceanaphthylene | 0.7 | | 0.7 | | 0.6 |
| Aceanaphthene | 4.7 | | 4.1 | | 3.1 |
| Dibenzofuran | 3.8 | | 3.7 | | 3.0 |
| Fluorene | 3.1 | | 3.2 | | 2.4 |
| C1-Fluorenes | 3.7 | | 3.4 | | 3.4 |
| C2-Fluorenes | 4.4 | | 5.7 | | 6.1 |
| C3-Fluorenes | 4.4 | | 4.9 | | 3.7 |
| Carbazole | 0.3 J | | 0.6 | | 0.5 |
| Anthracene | 0.5 | | 0.6 | | 0.4 |
| Phenanthrene | 3.8 | | 5.1 | | 4.1 |
| C1-Phenanthrene/Anthracenes | 3.4 | | 3.7 | | 3.9 |
| C2-Phenanthrene/Anthracenes | 4.6 | | 4.8 | | 5.0 |
| C3-Phenanthrene/Anthracenes | 1.7 | | 1.7 | | 1.7 |
| C4-Phenanthrene/Anthracenes | 0.8 | | 1.2 | | 0.9 |
| Dibenzothiophene | 0.3 | | 0.4 | | 0.3 |
| C1-Dibenzothiophene | 0.6 | | 0.6 | | 0.7 |
| C2-Dibenzothiophene | 0.7 | | 1.0 | | 1.0 |
| C3-Dibenzothiophene | 0.7 | | 0.9 | | 1.0 |
| Fluoranthene | 2.1 | | 4.2 | | 2.9 |
| Pyrene | 2.4 | | 4.2 | | 2.8 |
| C1-Fluoranthenes/Pyrenes | 1.0 | | 1.5 | | 1.3 |
| C2-Fluoranthenes/Pyrenes | 0.9 | | 1.4 | | 1.7 |
| C3-Fluoranthenes/Pyrenes | 1.1 | | 1.0 | | 1.0 |
| Naphthobenzothiophene | 1.6 | | 2.6 | | 1.8 |
| C1-Naphthobenzothiophenes | 0.5 | | 0.8 | | 1.0 |
| C2-Naphthobenzothiophenes | 0.7 | | 1.3 | | 1.5 |
| C3-Naphthobenzothiophenes | 0.4 J | | 1.2 | | 1.0 |
| Benz(a)anthracene | 0.7 | | 2.0 | | 1.1 |
| Chrysene | 1.5 | | 3.0 | | 2.3 |
| C1-Chrysenes | 0.9 | | 1.6 | | 1.3 |
| C2-Chrysenes | 3.1 | | 3.7 | | 2.3 |
| C3-Chrysenes | 1.3 | <0.3 U | <0.3 U | <0.3 U | <0.3 U |
| C4-Chrysenes | <0.3 U | | <0.3 U | <0.3 U | <0.3 U |
| Benz(b)fluoranthene | 1.9 | | 3.3 | | 2.9 |
| Benz(k)fluoranthene | 0.4 | | 0.7 | | 0.5 |
| Benz(e)pyrene | 0.7 | | 1.8 | | 1.1 |
| Benz(a)pyrene | 0.6 | | 1.2 | | 0.7 |
| Perylene | 3.2 | | 2.6 | | 1.6 |
| Indeno(1,2,3-c,d)pyrene | 1.2 | | 1.9 | | 1.5 |
| Dibenzo(a,h)anthracene | 0.1 J | | 0.2 | | 0.2 |
| Benz(g,h,i)perylene | 0.8 | | 1.3 | | 1.0 |
| Total PAHs | 141 | | 148 | | 115 |
| | | | | | 120 |
| | | | | | 73.6 |
| Individual Alkyl Isomers and Hopanes | | | | | |
| 2-Methylnaphthalene | 6.2 | | 5.2 | | 3.5 |
| 1-Methylnaphthalene | 7.5 | | 5.8 | | 3.3 |
| 2,6-Dimethylnaphthalene | 8.9 | | 7.3 | | 4.6 |
| 1,6,7-Trimethylnaphthalene | 1.9 | | 1.7 | | 1.2 |
| 1-Methylphenanthrene | 1.3 | | 1.4 | | 1.4 |
| C29-Hopane | 18.7 | | 19.9 | | 20.7 |
| 18a-Oleanane | 4.6 | | 17.3 | | 17.6 |
| C30-Hopane | 17.5 | | 29.9 | | 31.6 |
| Surrogate (Su) | Su Recovery (%) | | Su Recovery (%) | | Su Recovery (%) |
| Naphthalene-d8 | 79 | | 81 | | 71 |
| Aceanaphthene-d10 | 94 | | 97 | | 84 |
| Phenanthrene-d10 | 82 | | 81 | | 79 |
| Chrysene-d12 | 92 | | 98 | | 96 |
| Perylene-d12 | 81 | | 75 | | 64 |
| | | | | | 73 |
| | | | | | 87 |
| | | | | | 72 |
| | | | | | 88 |
| | | | | | 57 |
| | | | | | 90 |
| | | | | | 97 |
| | | | | | 82 |
| | | | | | 97 |
| | | | | | 85 |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

2008 Jubilee Development Group
Ghana EBS Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

| Sample Name | GEB0021.D | GEB0023.D | GEB0025.D | GEB0027.D | GEB0029.D | | | |
|--------------------------------------|-------------------------------|------------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|--------|
| Client Name | EBS-E2 (1 of 2) | EBS-E3R (1 of 2) | EBS-T4 (1 of 2) | EBS-T5 (1 of 2) | EBS-T6 (1 of 2) | | | |
| Matrix | Sediment | Sediment | Sediment | Sediment | Sediment | | | |
| Collection Date | 09/11/08 | 09/12/08 | 09/13/08 | 09/13/08 | 09/13/08 | | | |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 | | | |
| Extraction Date | 10/31/08 | 10/31/08 | 10/31/08 | 10/31/08 | 10/31/08 | | | |
| Extraction Batch | ENV 1946 | ENV 1946 | ENV 1946 | ENV 1946 | ENV 1946 | | | |
| Date Acquired | 11/06/08 | 11/06/08 | 11/06/08 | 11/06/08 | 11/06/08 | | | |
| Method | PAH-2002 | PAH-2002 | PAH-2002 | PAH-2002 | PAH-2002 | | | |
| Sample Dry Weight (g) | 15.2 | 15.3 | 15.3 | 15.4 | 15.1 | | | |
| % Moisture | 42 | 35 | 48 | 46 | 55 | | | |
| % Dry | 58 | 65 | 52 | 54 | 45 | | | |
| Dilution | NA | NA | NA | NA | NA | | | |
| Target Compounds | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) | Q |
| Naphthalene | 3.7 | | 4.6 | | 3.5 | | 9.0 | 6.7 |
| C1-Naphthalenes | 2.6 | | 3.0 | | 2.5 | | 6.3 | 5.2 |
| C2-Naphthalenes | 6.9 | | 7.0 | | 6.8 | | 14.8 | 13.9 |
| C3-Naphthalenes | 6.9 | | 6.4 | | 6.2 | | 12.7 | 12.6 |
| C4-Naphthalenes | 4.3 | | 3.7 | | 3.6 | | 7.4 | 6.8 |
| Benzothiophene | 0.1 J | | 0.1 J | | 0.1 J | | 0.2 | 0.2 |
| C1-Benzothiophenes | 0.1 J | | 0.3 J | | 0.1 J | | 0.2 J | 0.3 J |
| C2-Benzothiophenes | 0.7 | | 0.6 | | 0.4 | | 1.0 | 0.5 |
| C3-Benzothiophenes | 0.4 | | 0.4 | | 0.4 | | 0.7 | 0.7 |
| Biphenyl | 0.7 | | 0.7 | | 0.6 | | 1.0 | 1.0 |
| Acenaphthylene | 0.3 | | 0.3 | | 0.3 | | 0.6 | 0.6 |
| Acenaphthene | 1.9 | | 1.9 | | 1.6 | | 3.8 | 3.2 |
| Dibenzofuran | 1.5 | | 1.6 | | 1.3 | | 2.8 | 2.5 |
| Fluorene | 0.9 | | 0.8 | | 0.6 | | 1.3 | 1.2 |
| C1-Fluorenes | 1.9 | | 1.5 | | 1.5 | | 2.5 | 3.2 |
| C2-Fluorenes | 2.6 | | 2.0 | | 3.9 | | 4.9 | 4.3 |
| C3-Fluorenes | 3.0 | | 1.6 | | 3.1 | | 3.5 | 3.8 |
| Carbazole | 0.2 J | | 0.1 J | | 0.3 J | | 0.3 J | 0.4 |
| Anthracene | 0.3 | | 0.2 | | 0.5 | | 0.6 | 0.8 |
| Phenanthrene | 2.1 | | 1.7 | | 2.7 | | 3.6 | 3.9 |
| C1-Phenanthrene/Anthracenes | 2.7 | | 2.3 | | 2.5 | | 3.7 | 4.1 |
| C2-Phenanthrene/Anthracenes | 4.6 | | 3.3 | | 4.5 | | 5.0 | 6.6 |
| C3-Phenanthrene/Anthracenes | 1.6 | | 0.9 | | 1.7 | | 2.3 | 3.1 |
| C4-Phenanthrene/Anthracenes | 1.3 | | 0.6 | | 1.2 | | 1.5 | 1.7 |
| Dibenzothiophene | 0.2 | | 0.2 | | 0.3 | | 0.4 | 0.5 |
| C1-Dibenzothiophene | 0.4 | | 0.4 | | 0.6 | | 0.7 | 0.9 |
| C2-Dibenzothiophene | 0.9 | | 0.5 | | 0.9 | | 1.2 | 1.5 |
| C3-Dibenzothiophene | 0.9 | | 0.5 | | 1.0 | | 1.3 | 1.5 |
| Fluoranthene | 1.6 | | 0.8 | | 5.0 | | 5.2 | 6.0 |
| Pyrene | 1.6 | | 0.8 | | 4.7 | | 5.5 | 6.2 |
| C1-Fluoranthenes/Pyrenes | 0.9 | | 0.4 | | 2.3 | | 2.5 | 3.0 |
| C2-Fluoranthenes/Pyrenes | 0.9 | | 0.6 | | 1.7 | | 2.0 | 2.4 |
| C3-Fluoranthenes/Pyrenes | 1.0 | | 0.5 | | 0.9 | | 1.1 | 1.6 |
| Naphthobenzoithiophene | 0.7 | | 0.3 | | 1.3 | | 1.7 | 1.9 |
| C1-Naphthobenzoithiophenes | 0.6 | | 0.4 J | | 0.8 | | 1.0 | 1.6 |
| C2-Naphthobenzoithiophenes | 0.9 | | 0.9 | | 1.1 | | 1.6 | 2.3 |
| C3-Naphthobenzoithiophenes | 0.5 | | 0.4 J | | 0.6 | | 1.2 | 1.0 |
| Benz(a)anthracene | 0.8 | | 0.3 | | 3.2 | | 3.3 | 3.9 |
| Chrysene | 1.1 | | 0.6 | | 3.5 | | 3.6 | 4.3 |
| C1-Chrysene | 1.0 | | 0.4 | | 2.3 | | 2.8 | 3.0 |
| C2-Chrysene | 0.7 | | 0.5 | | 1.9 | | 3.4 | 3.1 |
| C3-Chrysene | <0.3 U | | <0.3 U | | <0.3 U | | <0.3 U | <0.3 U |
| C4-Chrysene | <0.3 U | | <0.3 U | | <0.3 U | | <0.3 U | <0.3 U |
| Benz(b)fluoranthene | 1.7 | | 0.9 | | 5.1 | | 5.9 | 6.3 |
| Benz(k)fluoranthene | 0.4 | | 0.3 | | 1.3 | | 1.6 | 1.6 |
| Benz(e)pyrene | 0.9 | | 0.5 | | 2.5 | | 2.8 | 2.8 |
| Benz(a)pyrene | 0.9 | | 0.5 | | 3.3 | | 3.3 | 3.7 |
| Perylene | 2.9 | | 1.2 J | | 3.8 | | 5.2 | 5.8 |
| Indeno(1,2,3-c,d)pyrene | 1.1 | | 0.6 | | 3.0 | | 3.3 | 3.6 |
| Dibenzo(a,h)anthracene | 0.1 J | | 0.1 J | | 0.1 J | | 0.3 | 0.5 |
| Benzo(g,h,i)perylene | 0.9 | | 0.6 | | 2.9 | | 3.1 | 3.1 |
| Total PAHs | 74.9 | | 58.8 | | 104 | | 154 | 159 |
| Individual Alkyl Isomers and Hopanes | | | | | | | | |
| 2-Methylnaphthalene | 2.0 | | 2.3 | | 1.9 | | 4.6 | 3.7 |
| 1-Methylnaphthalene | 2.3 | | 2.6 | | 2.2 | | 5.7 | 4.9 |
| 2,6-Dimethylnaphthalene | 3.8 | | 3.4 | | 3.9 | | 7.6 | 7.6 |
| 1,6,7-Trimethylnaphthalene | 0.7 | | 0.6 | | 0.8 | | 1.3 | 0.8 |
| 1-Methylphenanthrene | 1.4 | | 1.2 | | 1.1 | | 1.5 | 1.6 |
| C29-Hopane | 12.0 | | 8.7 | | 19.7 | | 25.0 | 23.9 |
| 18a-Oleanane | 5.3 | | 4.3 | | 7.8 | | 10.9 | 10.7 |
| C30-Hopane | 11.6 | | 9.2 | | 20.3 | | 24.4 | 24.4 |
| Surrogate (Su) | Su Recovery (%) | Su Recovery (%) | Su Recovery (%) | Su Recovery (%) | Su Recovery (%) | Su Recovery (%) | | |
| Naphthalene-d8 | 87 | 84 | 81 | 84 | 88 | | | |
| Acenaphthene-d10 | 98 | 96 | 94 | 98 | 97 | | | |
| Phenanthrene-d10 | 81 | 82 | 87 | 85 | 93 | | | |
| Chrysene-d12 | 101 | 97 | 98 | 98 | 99 | | | |
| Perylene-d12 | 87 | 84 | 85 | 82 | 92 | | | |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

| | |
|-----------------------|------------------|
| Sample Name | ENV1946A.D |
| Client Name | Procedural Blank |
| Matrix | Sediment |
| Collection Date | NA |
| Received Date | NA |
| Extraction Date | 10/31/08 |
| Extraction Batch | ENV 1946 |
| Date Acquired | 11/05/08 |
| Method | PAH-2002 |
| Sample Dry Weight (g) | 15.0 |
| % Moisture | NA |
| % Dry | NA |
| Dilution | NA |

| Target Compounds | Su Corrected Conc. (ng/dry g) | Q | 3X MDL | Actual MDL |
|-----------------------------|-------------------------------|-----|--------|------------|
| Naphthalene | 0.2 | 0.5 | 0.2 | |
| C1-Naphthalenes | 0.1 | J | 1.0 | 0.3 |
| C2-Naphthalenes | 0.2 | J | 1.1 | 0.4 |
| C3-Naphthalenes | <0.4 | U | 1.1 | 0.4 |
| C4-Naphthalenes | <0.4 | U | 1.1 | 0.4 |
| Benzothiophene | <0.2 | U | 0.5 | 0.2 |
| C1-Benzothiophenes | <0.3 | U | 1.0 | 0.3 |
| C2-Benzothiophenes | <0.3 | U | 1.0 | 0.3 |
| C3-Benzothiophenes | <0.3 | U | 1.0 | 0.3 |
| Biphenyl | <0.1 | U | 0.4 | 0.1 |
| Acenaphthylene | <0.2 | U | 0.6 | 0.2 |
| Acenaphthene | <0.1 | U | 0.4 | 0.1 |
| Dibenzofuran | <0.2 | U | 0.6 | 0.2 |
| Fluorene | <0.2 | U | 0.6 | 0.2 |
| C1-Fluorenes | <0.4 | U | 1.2 | 0.4 |
| C2-Fluorenes | <0.4 | U | 1.2 | 0.4 |
| C3-Fluorenes | <0.4 | U | 1.2 | 0.4 |
| Carbazole | <0.3 | U | 1.0 | 0.3 |
| Anthracene | <0.2 | U | 0.6 | 0.2 |
| Phenanthrene | <0.1 | U | 0.4 | 0.1 |
| C1-Phenanthrene/Anthracenes | <0.3 | U | 0.9 | 0.3 |
| C2-Phenanthrene/Anthracenes | <0.3 | U | 0.9 | 0.3 |
| C3-Phenanthrene/Anthracenes | <0.3 | U | 0.9 | 0.3 |
| C4-Phenanthrene/Anthracenes | <0.3 | U | 0.9 | 0.3 |
| Dibenzothiophene | <0.2 | U | 0.5 | 0.2 |
| C1-Dibenzothiophene | <0.3 | U | 0.9 | 0.3 |
| C2-Dibenzothiophene | <0.3 | U | 0.9 | 0.3 |
| C3-Dibenzothiophene | <0.3 | U | 0.9 | 0.3 |
| Fluoranthene | <0.2 | U | 0.6 | 0.2 |
| Pyrene | <0.2 | U | 0.6 | 0.2 |
| C1-Fluoranthenes/Pyrenes | <0.4 | U | 1.2 | 0.4 |
| C2-Fluoranthenes/Pyrenes | <0.4 | U | 1.2 | 0.4 |
| C3-Fluoranthenes/Pyrenes | <0.4 | U | 1.2 | 0.4 |
| Naphthobenzothiophene | <0.2 | U | 0.6 | 0.2 |
| C1-Naphthobenzothiophenes | <0.4 | U | 1.2 | 0.4 |
| C2-Naphthobenzothiophenes | <0.4 | U | 1.2 | 0.4 |
| C3-Naphthobenzothiophenes | <0.4 | U | 1.2 | 0.4 |
| Benz(a)anthracene | <0.1 | U | 0.4 | 0.1 |
| Chrysene | <0.2 | U | 0.5 | 0.2 |
| C1-Chrysenes | <0.3 | U | 1.0 | 0.3 |
| C2-Chrysenes | <0.3 | U | 1.0 | 0.3 |
| C3-Chrysenes | <0.3 | U | 1.0 | 0.3 |
| C4-Chrysenes | <0.3 | U | 1.0 | 0.3 |
| Benz(b)fluoranthene | <0.3 | U | 0.9 | 0.3 |
| Benz(k)fluoranthene | <0.2 | U | 0.7 | 0.2 |
| Benz(e)pyrene | <0.3 | U | 0.9 | 0.3 |
| Benz(a)pyrene | <0.2 | U | 0.7 | 0.2 |
| Perylene | <1.4 | U | 4.1 | 1.4 |
| Indeno(1,2,3-c,d)pyrene | <0.3 | U | 0.8 | 0.3 |
| Dibenzo(a,h)anthracene | <0.2 | U | 0.5 | 0.2 |
| Benz(g,h,i)perylene | <0.1 | U | 0.4 | 0.1 |
| Total PAHs | 0.5 | | | |

Individual Alkyl Isomers and Hopane

| | | | | |
|----------------------------|------|---|-----|-----|
| 2-Methylnaphthalene | 0.1 | J | 0.6 | 0.2 |
| 1-Methylnaphthalene | 0.1 | J | 0.4 | 0.1 |
| 2,6-Dimethylnaphthalene | <0.2 | U | 0.6 | 0.2 |
| 1,6,7-Trimethylnaphthalene | <0.1 | U | 0.3 | 0.1 |
| 1-Methylphenanthrene | <0.2 | U | 0.6 | 0.2 |
| C29-Hopane | <1.1 | U | 3.3 | 1.1 |
| 18a-Oleanane | <1.1 | U | 3.3 | 1.1 |
| C30-Hopane | <1.1 | U | 3.3 | 1.1 |

| Surrogate (Su) | Su Recovery (%) |
|------------------|-----------------|
| Naphthalene-d8 | 97 |
| Acenaphthene-d10 | 98 |
| Phenanthrene-d10 | 92 |
| Chrysene-d12 | 81 |
| Perylene-d12 | 97 |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

| Sample Name | GEB0029.D | ENV1946C.D | | ENV1946D.D | | | | | | | |
|-------------------------------------|-------------------------------|----------------------|-------------------------------|-----------------------|-----------------|-------------------------------|----------------|-----|---------|---|------------------|
| Client Name | EBS-T6 (1 of 2) | MS (EBS-T6 (1 of 2)) | | MSD (EBS-T6 (1 of 2)) | | | | | | | |
| Matrix | Sediment | Sediment | | Sediment | | | | | | | |
| Collection Date | 09/13/08 | 09/13/08 | | 09/13/08 | | | | | | | |
| Received Date | 09/18/08 | 09/18/08 | | 09/18/08 | | | | | | | |
| Extraction Date | 10/31/08 | 10/31/08 | | 10/31/08 | | | | | | | |
| Extraction Batch | ENV 1946 | ENV 1946 | | ENV 1946 | | | | | | | |
| Date Acquired | 11/06/08 | 11/05/08 | | 11/05/08 | | | | | | | |
| Method | PAH-2002 | PAH-2002 | | PAH-2002 | | | | | | | |
| Sample Dry Weight (g) | 15.05 | 15.0 | | 15.2 | | | | | | | |
| % Moisture | 55 | 55 | | 55 | | | | | | | |
| % Dry | 45 | 45 | | 45 | | | | | | | |
| Dilution | NA | NA | | NA | | | | | | | |
| Target Compounds | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) | Q Recovery (%) | Q Q | Su Corrected Conc. (ng/dry g) | Q Recovery (%) | Q Q | RPD (%) | Q | Spike Amout (ng) |
| Naphthalene | 6.7 | | 13.3 | 98 | | 13.2 | 99 | | 1 | | 100 |
| C1-Naphthalenes | 5.2 | | NA | | | NA | | | | | |
| C2-Naphthalenes | 13.9 | | NA | | | NA | | | | | |
| C3-Naphthalenes | 12.6 | | NA | | | NA | | | | | |
| C4-Naphthalenes | 6.8 | | NA | | | NA | | | | | |
| Benzothiophene | 0.2 | | 6.4 | 93 | | 6.5 | 95 | | 2 | | 100 |
| C1-Benzothiophenes | 0.3 | J | NA | | | NA | | | | | |
| C2-Benzothiophenes | 0.5 | | NA | | | NA | | | | | |
| C3-Benzothiophenes | 0.7 | | NA | | | NA | | | | | |
| Biphenyl | 1.0 | | 8.2 | 108 | | 8.2 | 109 | | 0 | | 100 |
| Aceanaphthylene | 0.6 | | 7.5 | 103 | | 7.6 | 106 | | 1 | | 100 |
| Aceanaphthene | 3.2 | | 10.1 | 103 | | 9.5 | 96 | | 6 | | 100 |
| Dibenzofuran | 2.5 | | 9.2 | 100 | | 8.9 | 97 | | 3 | | 100 |
| Fluorene | 1.2 | | 8.8 | 114 | | 8.7 | 114 | | 1 | | 100 |
| C1-Fluorenes | 3.2 | | NA | | | NA | | | | | |
| C2-Fluorenes | 4.3 | | NA | | | NA | | | | | |
| C3-Fluorenes | 3.8 | | NA | | | NA | | | | | |
| Carbazole | 0.4 | | 6.7 | 94 | | 6.4 | 91 | | 5 | | 100 |
| Anthracene | 0.8 | | 7.3 | 97 | | 7.0 | 94 | | 4 | | 100 |
| Phenanthrene | 3.9 | | 9.7 | 87 | | 9.6 | 87 | | 1 | | 100 |
| C1-Phenanthrene/Anthracenes | 4.1 | | NA | | | NA | | | | | |
| C2-Phenanthrene/Anthracenes | 6.6 | | NA | | | NA | | | | | |
| C3-Phenanthrene/Anthracenes | 3.1 | | NA | | | NA | | | | | |
| C4-Phenanthrene/Anthracenes | 1.7 | | NA | | | NA | | | | | |
| Dibenzothiophene | 0.5 | | 6.5 | 90 | | 6.6 | 92 | | 2 | | 100 |
| C1-Dibenzothiophene | 0.9 | | NA | | | NA | | | | | |
| C2-Dibenzothiophene | 1.5 | | NA | | | NA | | | | | |
| C3-Dibenzothiophene | 1.5 | | NA | | | NA | | | | | |
| Fluoranthene | 6.0 | | 13.0 | 104 | | 12.4 | 97 | | 5 | | 100 |
| Pyrene | 6.2 | | 12.2 | 90 | | 12.0 | 88 | | 2 | | 100 |
| C1-Fluoranthenes/Pyrenes | 3.0 | | NA | | | NA | | | | | |
| C2-Fluoranthenes/Pyrenes | 2.4 | | NA | | | NA | | | | | |
| C3-Fluoranthenes/Pyrenes | 1.6 | | NA | | | NA | | | | | |
| Naphthobenzothiophene | 1.9 | | NA | | | NA | | | | | 100 |
| C1-Naphthobenzothiophenes | 1.6 | | NA | | | NA | | | | | |
| C2-Naphthobenzothiophenes | 2.3 | | NA | | | NA | | | | | |
| C3-Naphthobenzothiophenes | 1.0 | | NA | | | NA | | | | | |
| Benz(a)anthracene | 3.9 | | 11.3 | 111 | | 11.6 | 117 | | 3 | | 100 |
| Chrysene | 4.3 | | 10.4 | 91 | | 9.9 | 85 | | 5 | | 100 |
| C1-Chrysenes | 3.0 | | NA | | | NA | | | | | |
| C2-Chrysenes | 3.1 | | NA | | | NA | | | | | |
| C3-Chrysenes | <0.3 | U | NA | | | NA | | | | | |
| C4-Chrysenes | <0.3 | U | NA | | | NA | | | | | |
| Benz(b)fluoranthene | 6.3 | | 12.8 | 97 | | 12.3 | 92 | | 4 | | 100 |
| Benz(k)fluoranthene | 1.6 | | 8.2 | 99 | | 7.9 | 95 | | 4 | | 100 |
| Benz(e)pyrene | 2.8 | | 9.4 | 99 | | 9.3 | 99 | | 1 | | 100 |
| Benz(a)pyrene | 3.7 | | 10.4 | 100 | | 9.9 | 94 | | 5 | | 100 |
| Perylene | 5.8 | | 12.6 | 102 | | 12.2 | 97 | | 3 | | 100 |
| Indeno(1,2,3-c,d)pyrene | 3.6 | | 10.0 | 96 | | 9.8 | 94 | | 2 | | 100 |
| Dibenzo(a,h)anthracene | 0.5 | | 6.3 | 87 | | 6.1 | 85 | | 3 | | 100 |
| Benzo(g,h,i)perylene | 3.1 | | 9.1 | 90 | | 8.8 | 87 | | 3 | | 100 |
| Average % Recovery | | | | 98 | | | | | 96 | | |
| Individual Alkyl Isomers and Hopane | | | | | | | | | | | |
| 2-Methylnaphthalene | 3.7 | | 11.0 | 109 | | 10.5 | 103 | | 5 | | 100 |
| 1-Methylnaphthalene | 4.9 | | 11.9 | 105 | | 11.9 | 107 | | 0 | | 100 |
| 2,6-Dimethylnaphthalene | 7.6 | | 14.4 | 101 | | 14.8 | 110 | | 3 | | 100 |
| 1,6,7-Trimethylnaphthalene | 0.8 | | 6.2 | 81 | | 6.0 | 79 | | 3 | | 100 |
| 1-Methylphenanthrene | 1.6 | | 7.6 | 90 | | 7.5 | 89 | | 1 | | 100 |
| C29-Hopane | 23.9 | | NA | | | NA | | | | | |
| 18a-Oleanane | 10.7 | | NA | | | NA | | | | | |
| C30-Hopane | 24.4 | | NA | | | NA | | | | | |
| Surrogate (Su) | Su Recovery (%) | | Su Recovery (%) | | Su Recovery (%) | | | | | | |
| Naphthalene-d8 | 88 | | 76 | | 84 | | | | | | |
| Aceanaphthene-d10 | 97 | | 91 | | 96 | | | | | | |
| Phenanthrene-d10 | 93 | | 82 | | 86 | | | | | | |
| Chrysene-d12 | 99 | | 89 | | 99 | | | | | | |
| Perylene-d12 | 92 | | 88 | | 88 | | | | | | |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, Y=Invalid Spike, *=Outside QA limits, refer to narrative

| Sample Name | GEB0013.D | ENV1946.D | | | | | | | |
|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|---|---------|---|---|-----|-------|
| Client Name | JUB-EBS-007R (1 of 2) | Dupl. (JUB-EBS-007R (1 of 2)) | | | | | | | |
| Matrix | Sediment | Sediment | | | | | | | |
| Collection Date | 09/10/08 | 09/10/08 | | | | | | | |
| Received Date | 09/18/08 | 09/18/08 | | | | | | | |
| Extraction Date | 10/31/08 | 10/31/08 | | | | | | | |
| Extraction Batch | ENV 1946 | ENV 1946 | | | | | | | |
| Date Acquired | 11/06/08 | 11/05/08 | | | | | | | |
| Method | PAH-2002 | PAH-2002 | | | | | | | |
| Sample Dry Weight (g) | 15.0 | 15.0 | | | | | | | |
| % Moisture | 71 | 71 | | | | | | | |
| % Dry | 29 | 29 | | | | | | | |
| Dilution | NA | NA | | | | | | | |
| Target Compounds | Su Corrected Conc. (ng/dry g) | Q | Su Corrected Conc. (ng/dry g) | Q | RPD (%) | Q | Q | MDL | 2xMDL |
| Naphthalene | 10.7 | | 11.4 | | 6 | | | 0.2 | 0.3 |
| C1-Naphthalenes | 6.7 | | 6.9 | | 3 | | | 0.3 | 0.7 |
| C2-Naphthalenes | 15.3 | | 15.2 | | 1 | | | 0.4 | 0.7 |
| C3-Naphthalenes | 14.5 | | 14.1 | | 3 | | | 0.4 | 0.7 |
| C4-Naphthalenes | 8.8 | | 8.0 | | 10 | | | 0.4 | 0.7 |
| Benzothiophene | 0.3 | | 0.3 | | 0 | X | | 0.2 | 0.3 |
| C1-Benzothiophenes | 0.3 | J | 0.3 | J | 0 | X | | 0.3 | 0.7 |
| C2-Benzothiophenes | 1.4 | | 1.3 | | 7 | | | 0.3 | 0.7 |
| C3-Benzothiophenes | 0.6 | | 0.6 | | 0 | X | | 0.3 | 0.7 |
| Biphenyl | 1.8 | | 1.8 | | 0 | | | 0.1 | 0.3 |
| Acenaphthylene | 0.7 | | 0.6 | | 15 | | | 0.2 | 0.4 |
| Acenaphthene | 4.1 | | 3.8 | | 8 | | | 0.1 | 0.3 |
| Dibenzofuran | 3.7 | | 3.6 | | 3 | | | 0.2 | 0.4 |
| Fluorene | 3.2 | | 2.9 | | 10 | | | 0.2 | 0.4 |
| C1-Fluorenes | 3.4 | | 3.6 | | 6 | | | 0.4 | 0.8 |
| C2-Fluorenes | 5.7 | | 5.1 | | 11 | | | 0.4 | 0.8 |
| C3-Fluorenes | 4.9 | | 4.3 | | 13 | | | 0.4 | 0.8 |
| Carbazole | 0.6 | | 0.5 | | 18 | X | | 0.3 | 0.7 |
| Anthracene | 0.6 | | 0.5 | | 18 | | | 0.2 | 0.4 |
| Phenanthrene | 5.1 | | 4.1 | | 22 | | | 0.1 | 0.3 |
| C1-Phenanthrene/Anthracenes | 3.7 | | 3.6 | | 3 | | | 0.3 | 0.6 |
| C2-Phenanthrene/Anthracenes | 4.8 | | 4.5 | | 6 | | | 0.3 | 0.6 |
| C3-Phenanthrene/Anthracenes | 1.7 | | 1.4 | | 19 | | | 0.3 | 0.6 |
| C4-Phenanthrene/Anthracenes | 1.2 | | 1.2 | | 0 | | | 0.3 | 0.6 |
| Dibenzothiophene | 0.4 | | 0.4 | | 0 | | | 0.2 | 0.3 |
| C1-Dibenzothiophene | 0.6 | | 0.7 | | 15 | X | | 0.3 | 0.6 |
| C2-Dibenzothiophene | 1.0 | | 0.9 | | 11 | | | 0.3 | 0.6 |
| C3-Dibenzothiophene | 0.9 | | 0.9 | | 0 | | | 0.3 | 0.6 |
| Fluoranthene | 4.2 | | 3.3 | | 24 | | | 0.2 | 0.4 |
| Pyrene | 4.2 | | 3.5 | | 18 | | | 0.2 | 0.4 |
| C1-Fluoranthenes/Pyrenes | 1.5 | | 1.2 | | 22 | | | 0.4 | 0.8 |
| C2-Fluoranthenes/Pyrenes | 1.4 | | 1.2 | | 15 | | | 0.4 | 0.8 |
| C3-Fluoranthenes/Pyrenes | 1.0 | | 1.0 | | 0 | | | 0.4 | 0.8 |
| Naphthobenzothiophene | 2.6 | | 2.2 | | 17 | | | 0.2 | 0.4 |
| C1-Naphthobenzothiophenes | 0.8 | | 0.8 | | 0 | X | | 0.4 | 0.8 |
| C2-Naphthobenzothiophenes | 1.3 | | 1.3 | | 0 | | | 0.4 | 0.8 |
| C3-Naphthobenzothiophenes | 1.2 | | 1.0 | | 18 | | | 0.4 | 0.8 |
| Benz(a)anthracene | 2.0 | | 2.1 | | 5 | | | 0.1 | 0.3 |
| Chrysene | 3.0 | | 2.9 | | 3 | | | 0.2 | 0.3 |
| C1-Chrysenes | 1.6 | | 1.5 | | 6 | | | 0.3 | 0.7 |
| C2-Chrysenes | 3.7 | | 3.4 | | 8 | | | 0.3 | 0.7 |
| C3-Chrysenes | <0.3 | U | <0.3 | U | | | | 0.3 | 0.7 |
| C4-Chrysenes | <0.3 | U | <0.3 | U | | | | 0.3 | 0.7 |
| Benz(b)fluoranthene | 3.3 | | 3.0 | | 10 | | | 0.3 | 0.6 |
| Benz(k)fluoranthene | 0.7 | | 0.7 | | 0 | | | 0.2 | 0.5 |
| Benz(e)pyrene | 1.8 | | 2.2 | | 20 | | | 0.3 | 0.6 |
| Benz(a)pyrene | 1.2 | | 1.0 | | 18 | | | 0.2 | 0.4 |
| Perylene | 2.6 | | 2.7 | | 4 | X | | 1.4 | 2.8 |
| Indeno(1,2,3-c,d)pyrene | 1.9 | | 1.8 | | 5 | | | 0.3 | 0.6 |
| Dibenzo(a,h)anthracene | 0.2 | | 0.2 | | 0 | X | | 0.2 | 0.3 |
| Benzo(g,h,i)perylene | 1.3 | | 1.2 | | 8 | | | 0.1 | 0.3 |
| Total PAHs | 148 | | 141 | | 5 | | | | |
| Individual Alkyl Isomers and Hopane | | | | | | | | | |
| 2-Methylnaphthalene | 5.2 | | 5.4 | | 4 | | | 0.2 | 0.4 |
| 1-Methylnaphthalene | 5.8 | | 5.9 | | 2 | | | 0.1 | 0.3 |
| 2,6-Dimethylnaphthalene | 7.3 | | 7.6 | | 4 | | | 0.2 | 0.4 |
| 1,6,7-Trimethylnaphthalene | 1.7 | | 1.8 | | 6 | | | 0.1 | 0.2 |
| 1-Methylphenanthrene | 1.4 | | 1.4 | | 0 | | | 0.2 | 0.4 |
| C29-Hopane | 19.9 | | 22.0 | | 10 | | | 1.1 | 2.2 |
| 18a-Oleanane | 17.3 | | 17.7 | | 2 | | | 1.1 | 2.2 |
| C30-Hopane | 29.9 | | 31.5 | | 5 | | | 1.1 | 2.2 |
| Surrogate (Su) | | | | | | | | | |
| Su Recovery (%) | | | | | | | | | |
| Naphthalene-d8 | 81 | | 79 | | | | | | |
| Acenaphthene-d10 | 97 | | 90 | | | | | | |
| Phenanthrene-d10 | 81 | | 79 | | | | | | |
| Chrysene-d12 | 98 | | 84 | | | | | | |
| Perylene-d12 | 75 | | 78 | | | | | | |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, X=<2xMDL, *=Outside QA limits, refer to narrative

| | | | | | |
|-------------------------------------|-------------------------------|----------|--|-----------------------|-----------------------|
| Sample Name | ENV1946B.D | | | | |
| Client Name | SRM 1941b | | | | |
| Matrix | Sediment | | | | |
| Collection Date | NA | | | | |
| Received Date | NA | | | | |
| Extraction Date | 10/31/08 | | | | |
| Extraction Batch | ENV 1946 | | | | |
| Date Acquired | 11/05/08 | | | | |
| Method | PAH-2002 | | | | |
| Sample Dry Weight (g) | 4.0 | | | | |
| % Moisture | 2 | | | | |
| % Dry | 98 | | | | |
| Dilution | NA | | | | |
| Target Compounds | Su Corrected Conc. (ng/dry g) | Q Q1 (%) | RPD SRM 1941b Certified Conc. (ng/dry g) | -20% Conc. (ng/dry g) | +20% Conc. (ng/dry g) |
| Naphthalene | 834 | 2 | 848 | 678 | 1018 |
| C1-Naphthalenes | 243 | | | | |
| C2-Naphthalenes | 213 | | | | |
| C3-Naphthalenes | 163 | | | | |
| C4-Naphthalenes | 86.4 | | | | |
| Benzothiophene | 33.0 | | | | |
| C1-Benzothiophenes | 29.8 | | | | |
| C2-Benzothiophenes | 15.6 | | | | |
| C3-Benzothiophenes | 10.6 | | | | |
| Biphenyl | 74.2 | | | | |
| Aceanaphthylene | 80.1 | | | | |
| Aceanapthene | 34.2 | | | | |
| Dibenzofuran | 95.8 | | | | |
| Fluorene | 71.0 | | | | |
| C1-Fluorennes | 71.8 | | | | |
| C2-Fluorennes | 163 | | | | |
| C3-Fluorennes | 177 | | | | |
| Carbazole | 18.8 | | | | |
| Anthracene | 179 | 3 | 184 | 147 | 221 |
| Phanthrene | 436 | 7 | 406 | 325 | 487 |
| C1-Phenanthrene/Anthracenes | 310 | | | | |
| C2-Phenanthrene/Anthracenes | 265 | | | | |
| C3-Phenanthrene/Anthracenes | 188 | | | | |
| C4-Phenanthrene/Anthracenes | 91.9 | | | | |
| Dibenzothiophene | 53.0 | | | | |
| C1-Dibenzothiophene | 73.9 | | | | |
| C2-Dibenzothiophene | 118 | | | | |
| C3-Dibenzothiophene | 107 | | | | |
| Fluoranthene | 744 | 13 | 651 | 521 | 781 |
| Pyrene | 560 | 4 | 581 | 465 | 697 |
| C1-Fluoranthenes/Pyrenes | 338 | | | | |
| C2-Fluoranthenes/Pyrenes | 263 | | | | |
| C3-Fluoranthenes/Pyrenes | 103 | | | | |
| Naphthobenzothiophene | 141 | | | | |
| C1-Naphthobenzothiophenes | 117 | | | | |
| C2-Naphthobenzothiophenes | 104 | | | | |
| C3-Naphthobenzothiophenes | 55 | | | | |
| Benz(a)anthracene | 359 | 7 | 335 | 268 | 402 |
| Chrysene | 443 | 10 | 399 | 319 | 479 |
| C1-Chrysenes | 343 | | | | |
| C2-Chrysenes | 163 | | | | |
| C3-Chrysenes | 59.4 | | | | |
| C4-Chrysenes | 21.9 | | | | |
| Benzo(b)fluoranthene | 495 | 9 | 453 | 362 | 544 |
| Benzo(k)fluoranthene | 237 | 5 | 225 | 180 | 270 |
| Benzo(e)pyrene | 336 | 3 | 325 | 260 | 390 |
| Benzo(a)pyrene | 307 | 15 | 358 | 286 | 430 |
| Perylene | 362 | 9 | 397 | 318 | 476 |
| Indeno(1,2,3-c,d)pyrene | 361 | 6 | 341 | 273 | 409 |
| Dibenzo(a,h)anthracene | 60.9 | 14 | 53.0 | 42.4 | 63.6 |
| Benzo(g,h,i)perylene | 251 | 20 | 307 | 246 | 368 |
| Total PAHs | 10461 | | | | |
| Individual Alkyl Isomers and Hopane | | | | | |
| 2-Methylnaphthalene | 263 | | | | |
| 1-Methylnaphthalene | 129 | | | | |
| 2,6-Dimethylnaphthalene | 132 | | | | |
| 1,6,7-Trimethylnaphthalene | 20.5 | | | | |
| 1-Methylphenanthrene | 74.8 | | | | |
| C29-Hopane | 226 | | | | |
| 18a-Oleanane | 31.7 | | | | |
| C30-Hopane | 285 | | | | |
| Surrogate (Su) | Su Recovery (%) | | | | |
| Naphthalene-d8 | 72 | | | | |
| Aceanaphthene-d10 | 89 | | | | |
| Phanthrene-d10 | 72 | | | | |
| Chrysene-d12 | 75 | | | | |
| Perylene-d12 | 73 | | | | |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name MS30535B.D
Client Name SRM 1582
Matrix Petroleum
Collection Date NA
Received Date NA
Extraction Date NA
Extraction Batch ENV 1946
Date Acquired 11/05/08
Method PAH-2002
Sample Weight (g) 1.7

| Target Compounds | Su Corrected Conc. (ug/g) | Q | RPD (%) | SRM 1582 Certified Conc. (ug/g) | B&B Average | -15% Conc. (ug/g) | +15% Conc. (ug/g) |
|-------------------------------------|---------------------------|------|------------|---------------------------------|-------------|-------------------|-------------------|
| Naphthalene | 135 | 7.1 | | 145 | 123 | 167 | |
| C1-Naphthalenes | 588 | 5.6 | | 622 | 529 | 715 | |
| C2-Naphthalenes | 1040 | 13.4 | | 1189 | 1011 | 1367 | |
| C3-Naphthalenes | 1030 | 0.7 | | 1037 | 881 | 1193 | |
| C4-Naphthalenes | 660 | 13.3 | | 754 | 641 | 867 | |
| Benzothiophene | 10.5 | | | | | | |
| C1-Benzothiophenes | 21.2 | | | | | | |
| C2-Benzothiophenes | 74.5 | | | | | | |
| C3-Benzothiophenes | 137 | | | | | | |
| Biphenyl | 32.5 | 6.0 | | 34.5 | 29.3 | 39.7 | |
| Acenaphthylene | <10 U | | | | | | |
| Acenaphthene | 17.8 | 6.0 | | 18.9 | 16.1 | 21.7 | |
| Dibenzofuran | 11.1 | | | | | | |
| Fluorene | 33.3 | 7.2 | | 35.8 | 30.4 | 41.2 | |
| C1-Fluorenes | 135 | 2.2 | | 132 | 112 | 152 | |
| C2-Fluorenes | 294 | 13.8 | | 256 | 218 | 294 | |
| C3-Fluorenes | 247 | 2.0 | | 242 | 206 | 278 | |
| Carbazole | 6.9 J | | | | | | |
| Anthracene | 7.4 J | | | | | | |
| Phenanthrene | 122 | 10.5 | 100 ± 7.0 | 110 | 93.3 | 126 | |
| C1-Phenanthrene/Anthracenes | 323 | 0.9 | | 326 | 277 | 375 | |
| C2-Phenanthrene/Anthracenes | 513 | 5.7 | | 543 | 462 | 624 | |
| C3-Phenanthrene/Anthracenes | 480 | 8.4 | | 522 | 444 | 600 | |
| C4-Phenanthrene/Anthracenes | 246 | 11.1 | | 275 | 234 | 316 | |
| Dibenzothiophene | 36.5 | 2.8 | 32.9 ± 1.7 | 35.5 | 30.2 | 40.8 | |
| C1-Dibenzothiophene | 134 | 6.9 | | 125 | 106 | 144 | |
| C2-Dibenzothiophene | 226 | 12.8 | | 257 | 218 | 296 | |
| C3-Dibenzothiophene | 217 | 14.1 | | 250 | 213 | 288 | |
| Fluoranthene | 9.9 J | | | | | | |
| Pyrene | 9.4 J | | | | | | |
| C1-Fluoranthenes/Pyrenes | 60.1 | 13.5 | | 68.8 | 58.5 | 79.1 | |
| C2-Fluoranthenes/Pyrenes | 93.5 | 11.6 | | 105 | 89.3 | 121 | |
| C3-Fluoranthenes/Pyrenes | 79.2 | 7.5 | | 85.4 | 72.6 | 98.2 | |
| Naphthobenzothiophene | 39.3 | 1.3 | | 39.8 | 33.8 | 45.8 | |
| C1-Naphthobenzothiophenes | 59.3 | 0.7 | | 58.9 | 50.1 | 67.7 | |
| C2-Naphthobenzothiophenes | 73.9 | 5.5 | | 78.1 | 66.4 | 89.8 | |
| C3-Naphthobenzothiophenes | 49.5 | 10.9 | | 55.2 | 46.9 | 63.5 | |
| Benz(a)anthracene | 4.4 J | | | | | | |
| Chrysene | 22.8 | 5.4 | | 21.6 | 18.4 | 24.8 | |
| C1-Chrysenes | 75.2 | 9.5 | | 68.4 | 58.1 | 78.7 | |
| C2-Chrysenes | 119 | 4.9 | | 125 | 106 | 144 | |
| C3-Chrysenes | 78.0 | 12.6 | | 88.5 | 75.2 | 102 | |
| C4-Chrysenes | <10 U | | | | | | |
| Benz(x)fluoranthene | 3.6 J | | | | | | |
| Benz(x)fluoranthene | 1.9 J | | | | | | |
| Benz(e)pyrene | 9.1 J | | | | | | |
| Benzo(a)pyrene | 1.8 J | | | | | | |
| Perylene | 36.3 | 8.1 | 30.2 ± 1.7 | 33.5 | 28.4 | 38.5 | |
| Indeno(1,2,3-c,d)pyrene | 3.5 J | | | | | | |
| Dibenzo(a,h)anthracene | 1.0 J | | | | | | |
| Benzo(g,h,i)perylene | 1.2 J | | | | | | |
| Total PAHs | 7611 | | | | | | |
| Selected Ratios | | | | | | | |
| D2/P2 | 0.441 | 7.2 | | 0.473 | 0.402 | 0.544 | |
| D3/P3 | 0.452 | 5.8 | | 0.479 | 0.407 | 0.551 | |
| D2/C2 | 1.899 | 7.9 | | 2.056 | 1.748 | 2.364 | |
| D3/C3 | 2.782 | 1.5 | | 2.825 | 2.401 | 3.249 | |
| FI-Py2/C2 | 0.786 | 6.7 | | 0.840 | 0.714 | 0.966 | |
| FI-Py3/C3 | 1.015 | 5.1 | | 0.965 | 0.820 | 1.110 | |
| Individual Alkyl Isomers and Hopane | | | | | | | |
| 2-Methylnaphthalene | 558 | 7.6 | | 602 | 512 | 692 | |
| 1-Methylnaphthalene | 396 | 4.7 | | 415 | 353 | 477 | |
| 2,6-Dimethylnaphthalene | 552 | 8.7 | | 602 | 512 | 692 | |
| 1,6,7-Trimethylnaphthalene | 144 | 5.4 | | 152 | 129 | 175 | |
| 1-Methylphenanthrene | 91.3 | 9.1 | | 100 | 85.0 | 115 | |
| C29-Hopane | 244 | | | | | | |
| 18a-Oleanane | 19.4 | | | | | | |
| C30-Hopane | 314 | 11.1 | | 281 | 239 | 323 | |

Surrogate (Su) Su Recovery (%)

Naphthalene-d8 92
Acenaphthene-d10 96
Phenanthrene-d10 94
Chrysene-d12 97
Perylene-d12 97

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name MS30535I.D
Client Name AR-WKCC-250-025
Matrix Solution
Collection Date NA
Received Date NA
Extraction Date NA
Extraction Batch ENV 1946
Date Acquired 11/05/08
Method PAH-2000
Sample Volume (mL) 1.0

| Target Compounds | Conc. (ng/ml) | Q | RPD (%) | LCM | -15% | +15% |
|---|---------------|------------------------|---------|-------------------------------|---------------|---------------|
| | | | | Certified Conc. Conc. (ng/ml) | Conc. (ng/ml) | Conc. (ng/ml) |
| Naphthalene | 263 | 4.1 | 253 | 215 | 290 | |
| C1-Naphthalenes | NA | | | | | |
| C2-Naphthalenes | NA | | | | | |
| C3-Naphthalenes | NA | | | | | |
| C4-Naphthalenes | NA | | | | | |
| Benzothiophene | 266 | 5.9 | 251 | 213 | 288 | |
| C1-Benzothiophenes | NA | | | | | |
| C2-Benzothiophenes | NA | | | | | |
| C3-Benzothiophenes | NA | | | | | |
| Biphenyl | 261 | 4.1 | 250 | 213 | 288 | |
| Acenaphthylene | 262 | 4.6 | 250 | 213 | 288 | |
| Acenaphthene | 263 | 4.9 | 251 | 213 | 288 | |
| Dibenzofuran | 260 | 3.8 | 250 | 213 | 288 | |
| Fluorene | 258 | 2.9 | 251 | 213 | 288 | |
| C1-Fluorenes | NA | | | | | |
| C2-Fluorenes | NA | | | | | |
| C3-Fluorenes | NA | | | | | |
| Carbazole | 253 | 1.1 | 250 | 213 | 288 | |
| Anthracene | 272 | 8.3 | 250 | 213 | 288 | |
| Phenanthrene | 259 | 3.3 | 251 | 213 | 288 | |
| C1-Phenanthrene/Anthracenes | NA | | | | | |
| C2-Phenanthrene/Anthracenes | NA | | | | | |
| C3-Phenanthrene/Anthracenes | NA | | | | | |
| C4-Phenanthrene/Anthracenes | NA | | | | | |
| Dibenzothiophene | 260 | 3.8 | 250 | 213 | 288 | |
| C1-Dibenzothiophenes | NA | | | | | |
| C2-Dibenzothiophenes | NA | | | | | |
| C3-Dibenzothiophenes | NA | | | | | |
| Fluoranthene | 263 | 4.8 | 251 | 213 | 288 | |
| Pyrene | 261 | 4.1 | 251 | 213 | 288 | |
| C1-Fluoranthenes/Pyrenes | NA | | | | | |
| C2-Fluoranthenes/Pyrenes | NA | | | | | |
| C3-Fluoranthenes/Pyrenes | NA | | | | | |
| Naphthobenzothiophene | 237 | -5.5 | 251 | 213 | 288 | |
| C1-Naphthobenzothiophenes | NA | | | | | |
| C2-Naphthobenzothiophenes | NA | | | | | |
| C3-Naphthobenzothiophenes | NA | | | | | |
| Benz(a)anthracene | 243 | -3.1 | 251 | 213 | 288 | |
| Chrysene | 250 | -0.2 | 251 | 213 | 288 | |
| C1-Chrysenes | NA | | | | | |
| C2-Chrysenes | NA | | | | | |
| C3-Chrysenes | NA | | | | | |
| C4-Chrysenes | NA | | | | | |
| Benzo(b)fluoranthene | 265 | 5.7 | 250 | 213 | 288 | |
| Benzo(k)fluoranthene | 263 | 4.8 | 251 | 213 | 288 | |
| Benz(e)pyrene | 269 | 7.1 | 251 | 213 | 288 | |
| Benz(a)pyrene | 255 | 1.8 | 250 | 213 | 288 | |
| Perylene | 256 | 2.2 | 250 | 213 | 288 | |
| Indeno(1,2,3-c,d)pyrene | 270 | 7.5 | 251 | 213 | 288 | |
| Dibenzo(a,h)anthracene | 253 | 1.0 | 250 | 213 | 288 | |
| Benzo(g,h,i)perylene | 266 | 6.0 | 250 | 213 | 288 | |
| Individual Alkyl Isomers and Hopanes | | | | | | |
| 2-Methylnaphthalene | 262 | 4.4 | 251 | 213 | 288 | |
| 1-Methylnaphthalene | 266 | 6.1 | 250 | 213 | 288 | |
| 2,6-Dimethylnaphthalene | 256 | 2.2 | 251 | 213 | 288 | |
| 1,6,7-Trimethylnaphthalene | 250 | -0.2 | 250 | 213 | 288 | |
| 1-Methylphenanthrene | 253 | 1.0 | 251 | 213 | 288 | |
| C29-Hopane | NA | | | | | |
| 18a-Oleanane | NA | | | | | |
| C30-Hopane | 247 | -1.3 | 250 | 213 | 288 | |
| Surrogate (Su) | | Su Recovery (%) | | | | |
| Naphthalene-d8 | | 106 | | | | |
| Acenaphthene-d10 | | 102 | | | | |
| Phenanthrene-d10 | | 105 | | | | |
| Chrysene-d12 | | 102 | | | | |
| Perylene-d12 | | 104 | | | | |

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sulfate Data

2008 Jubilee Development Group
Ghana EBS Project
Sulfate Data
Client Submitted Samples

| | | | | | |
|------------------------|-------------|-------------|--------------|-------------|--------------|
| Sample Name | GEB0365 | GEB0366 | GEB0369 | GEB0370 | GEB0372 |
| Client Name | JUB-EBS-001 | JUB-EBS-002 | JUB-EBS-003R | JUB-EBS-004 | JUB-EBS-005R |
| Matrix | Sediment | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 | 09/10/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Sulfate | Conc. (mM) | Conc. (mM) | Conc. (mM) | Conc. (mM) | Conc. (mM) |
| | 136.5 | 94.5 | 96.4 | 182 | 135.7 |

2008 Jubilee Development Group
Ghana EBS Project
Sulfate Data
Client Submitted Samples

| Sample Name | GEB0374 | GEB0375 | GEB0377 | GEB0379 | GEB0381 |
|-----------------|-------------|--------------|-------------|--------------|----------|
| Client Name | JUB-EBS-006 | JUB-EBS-007R | JUB-EBS-008 | JUB-EBS-009R | EBS-E1 |
| Matrix | Sediment | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/09/08 | 09/10/08 | 09/10/08 | 09/10/08 | 09/11/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Conc. (mM) | 217.4 | 132.9 | 118.5 | 81.1 | 76.4 |

B&B Laboratories
Project J08704
Report 08-2181

2008 Jubilee Development Group
Ghana EBS Project
Sulfate Data
Client Submitted Samples

| Sample Name | GEB0382 | GEB0385 | GEB0386 | GEB0388 | GEB0390 |
|-----------------|----------|----------|----------|----------|----------|
| Client Name | EBS-E2 | EBS-E3R | EBS-T4 | EBS-T5 | EBS-T6 |
| Matrix | Sediment | Sediment | Sediment | Sediment | Sediment |
| Collection Date | 09/11/08 | 09/12/08 | 09/13/08 | 09/13/08 | 09/13/08 |
| Received Date | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 | 09/18/08 |
| Conc. (mM) | 71 | 65.6 | 65.3 | 84.1 | 138.6 |

Total Nitrogen/ Total Phosphorus Data

ANALYTICAL REPORT

Job Number: 600-1974-1

Job Description: B&B Laboratories Inc.

For:
B&B Laboratories
1902 Pinon Street
College Station, TX 77845
Attention: Sue McDonald



Approved for release.
Lance C Tigrett
Data Review Analyst I
10/22/2008 9:35 AM

Designee for
Dean A Joiner
Project Manager I
dean.joiner@testamericainc.com
10/22/2008

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Project Manager.

TestAmerica Houston Certifications and Approvals: TX NELAP T104704223-06-TX, ARDEQ 88-0759, LADEQ 01967, OKDEQ 9503, UT DOH GULF

TestAmerica Laboratories, Inc.

TestAmerica Houston 6310 Rothway Street, Houston, TX 77040
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Job Narrative
600-J1974-1

Comments

No additional comments.

Receipt

Samples were received out of temperature for the parameters of Total Phosphorus and Total Nitrogen.. At the clients request via e-mail on October 2, 2008, the laboratory continued with the analysis.

General Chemistry

No analytical or quality issues were noted.

Industrial Hygiene

No analytical or quality issues were noted.

EXECUTIVE SUMMARY - Detections

Client: B&B Laboratories

Job Number: 600-1974-1

| Lab Sample ID Analyte | Client Sample ID | Result / Qualifier | Reporting Limit | Units | Method |
|--------------------------|------------------|--------------------|-----------------|-------|----------------|
| 600-1974-1 | GEB0046 | | | | |
| Nitrogen, Kjeldahl | | 630 | 200 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 690 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 630 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-2 | GEB0047 | | | | |
| Nitrogen, Kjeldahl | | 850 | 200 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 570 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 850 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-3 | GEB0048 | | | | |
| Nitrogen, Kjeldahl | | 960 | 200 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 460 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 960 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-4 | GEB0049 | | | | |
| Nitrogen, Kjeldahl | | 930 | 200 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 520 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 930 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-5 | GEB0050 | | | | |
| Nitrogen, Kjeldahl | | 570 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 610 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 570 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-6 | GEB0051 | | | | |
| Nitrogen, Kjeldahl | | 720 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 560 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 720 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-7 | GEB0052 | | | | |
| Nitrogen, Kjeldahl | | 630 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 540 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 630 | 0.012 | mg/Kg | Total Nitrogen |

EXECUTIVE SUMMARY - Detections

Client: B&B Laboratories

Job Number: 600-1974-1

| Lab Sample ID Analyte | Client Sample ID | Result / Qualifier | Reporting Limit | Units | Method |
|--------------------------|------------------|--------------------|--------------------|-------|----------------|
| 600-1974-8 | GEB0053 | | | | |
| Nitrogen, Kjeldahl | | 570 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 430 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 570 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-9 | GEB0054 | | | | |
| Nitrogen, Kjeldahl | | 820 | 200 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 400 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 820 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-10 | GEB0055 | | | | |
| Nitrogen, Kjeldahl | | 450 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 810 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 450 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-11 | GEB0056 | | | | |
| Nitrogen, Kjeldahl | | 510 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 890 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 510 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-12 | GEB0057 | | | | |
| Nitrogen, Kjeldahl | | 380 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 1300 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 380 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-13 | GEB0058 | | | | |
| Nitrogen, Kjeldahl | | 540 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 900 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 540 | 0.012 | mg/Kg | Total Nitrogen |
| 600-1974-14 | GEB0059 | | | | |
| Nitrogen, Kjeldahl | | 630 | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | | 790 | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | | 630 | 0.012 | mg/Kg | Total Nitrogen |

EXECUTIVE SUMMARY - Detections

Client: B&B Laboratories

Job Number: 600-1974-1

| Lab Sample ID Analyte | Client Sample ID | Result / Qualifier | Reporting Limit | Units | Method |
|--------------------------|------------------|--------------------|--------------------|-------|----------------|
| 600-1974-15 | GEB0060 | | | | |
| Nitrogen, Kjeldahl | 620 | | 40 | mg/Kg | 351.2 |
| Phosphorus as PO4 | 790 | | 25 | mg/Kg | SM 4500 P E |
| Nitrogen, Total | 620 | | 0.012 | mg/Kg | Total Nitrogen |

METHOD SUMMARY

Client: B&B Laboratories

Job Number: 600-1974-1

| Description | | Lab Location | Method | Preparation Method |
|---|--------------|---------------------|--------------------|---------------------------|
| Matrix | Solid | | | |
| Nitrogen, Total Kjeldahl | | TAL HOU | MCAWW 351.2 | |
| Nitrogen, Nitrate-Nitrite Deionized Water Leaching Procedure | | TAL HOU | MCAWW 353.2 | ASTM DI Leach |
| Phosphorus Phosphorous, Total and Ortho | | TAL HOU | SM SM 4500 P E | SM SM 4500 P B |
| Nitrogen, Total | | TAL HOU | EPA Total Nitrogen | |

Lab References:

TAL HOU = TestAmerica Houston

Method References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

METHOD / ANALYST SUMMARY

Client: B&B Laboratories

Job Number: 600-1974-1

| Method | Analyst | Analyst ID |
|--------------------|--------------------------|------------|
| MCAWW 351.2 | Contreras, Enrique N | ENC |
| MCAWW 353.2 | Walker, Gerald (Gerry) C | GCW |
| SM SM 4500 P E | Gregory, Sharita N | SNG |
| EPA Total Nitrogen | Moody, Tracy A | TAM |

SAMPLE SUMMARY

Client: B&B Laboratories

Job Number: 600-1974-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---------------|------------------|---------------|-------------------|--------------------|
| 600-1974-1 | GEB0046 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-2 | GEB0047 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-3 | GEB0048 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-4 | GEB0049 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-5 | GEB0050 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-6 | GEB0051 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-7 | GEB0052 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-8 | GEB0053 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-9 | GEB0054 | Solid | 09/10/2008 0000 | 10/02/2008 0938 |
| 600-1974-10 | GEB0055 | Solid | 09/11/2008 0000 | 10/02/2008 0938 |
| 600-1974-11 | GEB0056 | Solid | 09/11/2008 0000 | 10/02/2008 0938 |
| 600-1974-12 | GEB0057 | Solid | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1974-13 | GEB0058 | Solid | 09/13/2008 0000 | 10/02/2008 0938 |
| 600-1974-14 | GEB0059 | Solid | 09/13/2008 0000 | 10/02/2008 0938 |
| 600-1974-15 | GEB0060 | Solid | 09/13/2008 0000 | 10/02/2008 0938 |

SAMPLE RESULTS

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1974-1

Client Sample ID: GEB0046 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-1 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 630 | Date Analyzed: mg/Kg | 10/08/2008 1112 200 | 5.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1753 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 690 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 630 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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1902 Pinon Street
College Station, TX 77845

Job Number: 600-1974-1

Client Sample ID: GEB0047 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-2 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 850 | Date Analyzed: mg/Kg | 10/08/2008 1114 200 | 5.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1756 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 570 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 850 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1974-1

Client Sample ID: GEB0048 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-3 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 960 | Date Analyzed: mg/Kg | 10/08/2008 1115 200 | 5.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1757 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 460 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 960 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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College Station, TX 77845

Job Number: 600-1974-1

Client Sample ID: GEB0049 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-4 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 930 | Date Analyzed: mg/Kg | 10/08/2008 1116 200 | 5.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1758 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 520 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 930 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1974-1

Client Sample ID: GEB0050 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-5 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 570 | Date Analyzed: mg/Kg | 10/08/2008 1100 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1759 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 610 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 570 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1974-1

Client Sample ID: GEB0051 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-6 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 720 | Date Analyzed: mg/Kg | 10/08/2008 1101 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1803 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 560 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 720 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0052 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-7 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 630 | Date Analyzed: mg/Kg | 10/08/2008 1118 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1804 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 540 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 630 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0053 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-8 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 570 | Date Analyzed: mg/Kg | 10/08/2008 1120 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1805 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 430 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 570 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0054 **Date Sampled:** 09/10/2008 0000
Lab Sample ID: 600-1974-9 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 820 | Date Analyzed: mg/Kg | 10/08/2008 1104 200 | 5.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1806 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 400 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 820 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0055 **Date Sampled:** 09/11/2008 0000
Lab Sample ID: 600-1974-10 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 450 | Date Analyzed: mg/Kg | 10/08/2008 1121 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1809 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 810 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 450 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0056 **Date Sampled:** 09/11/2008 0000
Lab Sample ID: 600-1974-11 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 510 | Date Analyzed: mg/Kg | 10/08/2008 1121 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1810 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 890 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 510 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0057 **Date Sampled:** 09/12/2008 0000
Lab Sample ID: 600-1974-12 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 380 | Date Analyzed: mg/Kg | 10/08/2008 1123 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1811 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 1300 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 380 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0058 **Date Sampled:** 09/13/2008 0000
Lab Sample ID: 600-1974-13 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 540 | Date Analyzed: mg/Kg | 10/08/2008 1124 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1812 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 900 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 540 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0059 **Date Sampled:** 09/13/2008 0000
Lab Sample ID: 600-1974-14 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 630 | Date Analyzed: mg/Kg | 10/08/2008 1125 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1815 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 790 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 630 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

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Job Number: 600-1974-1

Client Sample ID: GEB0060 **Date Sampled:** 09/13/2008 0000
Lab Sample ID: 600-1974-15 **Date Received:** 10/02/2008 0938
 Client Matrix: Solid

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|---|--|----------|
| Method: 351.2 Nitrogen, Kjeldahl | 620 | Date Analyzed: mg/Kg | 10/08/2008 1126 40 | 1.0 |
| Method: Soluble-353.2 Nitrate Nitrite as N | ND | Date Analyzed: mg/Kg | 10/10/2008 1816 0.50 | 1.0 |
| Method: SM 4500 P E Prep Method: SM 4500 P B Phosphorus as PO4 | 790 | Date Analyzed: Date Prepared: mg/Kg | 10/07/2008 1645 10/07/2008 1420 25 | 5.0 |
| Method: Total Nitrogen Nitrogen, Total | 620 | Date Analyzed: mg/Kg | 10/21/2008 1802 0.012 | 1.0 |

DATA REPORTING QUALIFIERS

Client: B&B Laboratories

Job Number: 600-1974-1

| Lab Section | Qualifier | Description |
|--------------------|------------------|---|
| General Chemistry | 4 | MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable. |

QUALITY CONTROL RESULTS

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|--------------------------------|-------------------|--------------|---------------|-------------|------------|
| General Chemistry | | | | | |
| Prep Batch: 600-3591 | | | | | |
| LCS 600-3591/2-A | Lab Control Spike | T | Solid | SM 4500 P B | |
| MB 600-3591/1-A | Method Blank | T | Solid | SM 4500 P B | |
| 600-1974-1 | GEB0046 | T | Solid | SM 4500 P B | |
| 600-1974-2 | GEB0047 | T | Solid | SM 4500 P B | |
| 600-1974-2DU | Duplicate | T | Solid | SM 4500 P B | |
| 600-1974-2MS | Matrix Spike | T | Solid | SM 4500 P B | |
| 600-1974-3 | GEB0048 | T | Solid | SM 4500 P B | |
| 600-1974-4 | GEB0049 | T | Solid | SM 4500 P B | |
| 600-1974-5 | GEB0050 | T | Solid | SM 4500 P B | |
| 600-1974-6 | GEB0051 | T | Solid | SM 4500 P B | |
| 600-1974-7 | GEB0052 | T | Solid | SM 4500 P B | |
| 600-1974-8 | GEB0053 | T | Solid | SM 4500 P B | |
| 600-1974-9 | GEB0054 | T | Solid | SM 4500 P B | |
| 600-1974-10 | GEB0055 | T | Solid | SM 4500 P B | |
| 600-1974-11 | GEB0056 | T | Solid | SM 4500 P B | |
| 600-1974-11DU | Duplicate | T | Solid | SM 4500 P B | |
| 600-1974-11MS | Matrix Spike | T | Solid | SM 4500 P B | |
| 600-1974-12 | GEB0057 | T | Solid | SM 4500 P B | |
| 600-1974-13 | GEB0058 | T | Solid | SM 4500 P B | |
| 600-1974-14 | GEB0059 | T | Solid | SM 4500 P B | |
| 600-1974-15 | GEB0060 | T | Solid | SM 4500 P B | |
| Analysis Batch:600-3591 | | | | | |
| LCS 600-3591/2-A | Lab Control Spike | T | Solid | SM 4500 P E | 600-3591 |
| MB 600-3591/1-A | Method Blank | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-1 | GEB0046 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-2 | GEB0047 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-2DU | Duplicate | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-2MS | Matrix Spike | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-3 | GEB0048 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-4 | GEB0049 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-5 | GEB0050 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-6 | GEB0051 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-7 | GEB0052 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-8 | GEB0053 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-9 | GEB0054 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-10 | GEB0055 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-11 | GEB0056 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-11DU | Duplicate | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-11MS | Matrix Spike | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-12 | GEB0057 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-13 | GEB0058 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-14 | GEB0059 | T | Solid | SM 4500 P E | 600-3591 |
| 600-1974-15 | GEB0060 | T | Solid | SM 4500 P E | 600-3591 |

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|--------------------------------|-------------------|--------------|---------------|----------|------------|
| General Chemistry | | | | | |
| Analysis Batch:600-3643 | | | | | |
| LCS 600-3643/11 | Lab Control Spike | T | Solid | 351.2 | |
| MB 600-3643/10 | Method Blank | T | Solid | 351.2 | |
| 600-1974-1 | GEB0046 | T | Solid | 351.2 | |
| 600-1974-1DU | Duplicate | T | Solid | 351.2 | |
| 600-1974-1MS | Matrix Spike | T | Solid | 351.2 | |
| 600-1974-2 | GEB0047 | T | Solid | 351.2 | |
| 600-1974-3 | GEB0048 | T | Solid | 351.2 | |
| 600-1974-4 | GEB0049 | T | Solid | 351.2 | |
| 600-1974-5 | GEB0050 | T | Solid | 351.2 | |
| 600-1974-6 | GEB0051 | T | Solid | 351.2 | |
| 600-1974-7 | GEB0052 | T | Solid | 351.2 | |
| 600-1974-8 | GEB0053 | T | Solid | 351.2 | |
| 600-1974-9 | GEB0054 | T | Solid | 351.2 | |
| 600-1974-10 | GEB0055 | T | Solid | 351.2 | |
| 600-1974-11 | GEB0056 | T | Solid | 351.2 | |
| 600-1974-11DU | Duplicate | T | Solid | 351.2 | |
| 600-1974-11MS | Matrix Spike | T | Solid | 351.2 | |
| 600-1974-12 | GEB0057 | T | Solid | 351.2 | |
| 600-1974-13 | GEB0058 | T | Solid | 351.2 | |
| 600-1974-14 | GEB0059 | T | Solid | 351.2 | |
| 600-1974-15 | GEB0060 | T | Solid | 351.2 | |
| Prep Batch: 600-3780 | | | | | |
| 600-1974-1 | GEB0046 | S | Solid | DI Leach | |
| 600-1974-1DU | Duplicate | S | Solid | DI Leach | |
| 600-1974-1MS | Matrix Spike | S | Solid | DI Leach | |
| 600-1974-2 | GEB0047 | S | Solid | DI Leach | |
| 600-1974-3 | GEB0048 | S | Solid | DI Leach | |
| 600-1974-4 | GEB0049 | S | Solid | DI Leach | |
| 600-1974-5 | GEB0050 | S | Solid | DI Leach | |
| 600-1974-6 | GEB0051 | S | Solid | DI Leach | |
| 600-1974-7 | GEB0052 | S | Solid | DI Leach | |
| 600-1974-8 | GEB0053 | S | Solid | DI Leach | |
| 600-1974-9 | GEB0054 | S | Solid | DI Leach | |
| 600-1974-9DU | Duplicate | S | Solid | DI Leach | |
| 600-1974-9MS | Matrix Spike | S | Solid | DI Leach | |
| 600-1974-10 | GEB0055 | S | Solid | DI Leach | |
| 600-1974-11 | GEB0056 | S | Solid | DI Leach | |
| 600-1974-12 | GEB0057 | S | Solid | DI Leach | |
| 600-1974-13 | GEB0058 | S | Solid | DI Leach | |
| 600-1974-14 | GEB0059 | S | Solid | DI Leach | |
| 600-1974-15 | GEB0060 | S | Solid | DI Leach | |

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|--------------------------------|------------------|--------------|---------------|----------------|------------|
| General Chemistry | | | | | |
| Analysis Batch:600-3842 | | | | | |
| 600-1974-1 | GEB0046 | S | Solid | 353.2 | |
| 600-1974-1DU | Duplicate | S | Solid | 353.2 | |
| 600-1974-1MS | Matrix Spike | S | Solid | 353.2 | |
| 600-1974-2 | GEB0047 | S | Solid | 353.2 | |
| 600-1974-3 | GEB0048 | S | Solid | 353.2 | |
| 600-1974-4 | GEB0049 | S | Solid | 353.2 | |
| 600-1974-5 | GEB0050 | S | Solid | 353.2 | |
| 600-1974-6 | GEB0051 | S | Solid | 353.2 | |
| 600-1974-7 | GEB0052 | S | Solid | 353.2 | |
| 600-1974-8 | GEB0053 | S | Solid | 353.2 | |
| 600-1974-9 | GEB0054 | S | Solid | 353.2 | |
| 600-1974-9DU | Duplicate | S | Solid | 353.2 | |
| 600-1974-9MS | Matrix Spike | S | Solid | 353.2 | |
| 600-1974-10 | GEB0055 | S | Solid | 353.2 | |
| 600-1974-11 | GEB0056 | S | Solid | 353.2 | |
| 600-1974-12 | GEB0057 | S | Solid | 353.2 | |
| 600-1974-13 | GEB0058 | S | Solid | 353.2 | |
| 600-1974-14 | GEB0059 | S | Solid | 353.2 | |
| 600-1974-15 | GEB0060 | S | Solid | 353.2 | |
| Analysis Batch:600-4409 | | | | | |
| 600-1974-1 | GEB0046 | T | Solid | Total Nitrogen | |
| 600-1974-2 | GEB0047 | T | Solid | Total Nitrogen | |
| 600-1974-3 | GEB0048 | T | Solid | Total Nitrogen | |
| 600-1974-4 | GEB0049 | T | Solid | Total Nitrogen | |
| 600-1974-5 | GEB0050 | T | Solid | Total Nitrogen | |
| 600-1974-6 | GEB0051 | T | Solid | Total Nitrogen | |
| 600-1974-7 | GEB0052 | T | Solid | Total Nitrogen | |
| 600-1974-8 | GEB0053 | T | Solid | Total Nitrogen | |
| 600-1974-9 | GEB0054 | T | Solid | Total Nitrogen | |
| 600-1974-10 | GEB0055 | T | Solid | Total Nitrogen | |
| 600-1974-11 | GEB0056 | T | Solid | Total Nitrogen | |
| 600-1974-12 | GEB0057 | T | Solid | Total Nitrogen | |
| 600-1974-13 | GEB0058 | T | Solid | Total Nitrogen | |
| 600-1974-14 | GEB0059 | T | Solid | Total Nitrogen | |
| 600-1974-15 | GEB0060 | T | Solid | Total Nitrogen | |

Report Basis

S = Soluble

T = Total

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Method Blank - Batch: 600-3643

Method: 351.2

Preparation: N/A

Lab Sample ID: MB 600-3643/10 Analysis Batch: 600-3643
Client Matrix: Solid Prep Batch: N/A
Dilution: 1.0 Units: mg/Kg
Date Analyzed: 10/08/2008 1053
Date Prepared: N/A

Instrument ID: WC07 Lachat-2
Lab File ID: N/A
Initial Weight/Volume: 20 mL
Final Weight/Volume: 20 mL

| Analyte | Result | Qual | RL |
|--------------------|--------|------|-----|
| Nitrogen, Kjeldahl | ND | | 1.0 |

Lab Control Spike - Batch: 600-3643

Method: 351.2

Preparation: N/A

Lab Sample ID: LCS 600-3643/11 Analysis Batch: 600-3643
Client Matrix: Solid Prep Batch: N/A
Dilution: 1.0 Units: mg/Kg
Date Analyzed: 10/08/2008 1054
Date Prepared: N/A

Instrument ID: WC07 Lachat-2
Lab File ID: N/A
Initial Weight/Volume: 20 mL
Final Weight/Volume: 20 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|--------------------|--------------|--------|--------|----------|------|
| Nitrogen, Kjeldahl | 10.0 | 9.96 | 100 | 90 - 110 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Matrix Spike - Batch: 600-3643

Method: 351.2

Preparation: N/A

| | | | | | |
|----------------|-----------------|-----------------|----------|------------------------|---------------|
| Lab Sample ID: | 600-1974-1 | Analysis Batch: | 600-3643 | Instrument ID: | WC07 Lachat-2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 5.0 | Units: | mg/Kg | Initial Weight/Volume: | 0.5 g |
| Date Analyzed: | 10/08/2008 1113 | | | Final Weight/Volume: | 20 mL |
| Date Prepared: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|--------------------|--------------------|--------------|--------|--------|----------|------|
| Nitrogen, Kjeldahl | 630 | 400 | 1050 | 104 | 90 - 110 | |

Matrix Spike - Batch: 600-3643

Method: 351.2

Preparation: N/A

| | | | | | |
|----------------|-----------------|-----------------|----------|------------------------|---------------|
| Lab Sample ID: | 600-1974-11 | Analysis Batch: | 600-3643 | Instrument ID: | WC07 Lachat-2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 0.5 g |
| Date Analyzed: | 10/08/2008 1123 | | | Final Weight/Volume: | 20 mL |
| Date Prepared: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|--------------------|--------------------|--------------|--------|--------|----------|------|
| Nitrogen, Kjeldahl | 510 | 400 | 937 | 106 | 90 - 110 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Duplicate - Batch: 600-3643

Method: 351.2

Preparation: N/A

Lab Sample ID: 600-1974-1
Client Matrix: Solid
Dilution: 5.0
Date Analyzed: 10/08/2008 1113
Date Prepared: N/A

Analysis Batch: 600-3643
Prep Batch: N/A
Units: mg/Kg

Instrument ID: WC07 Lachat-2
Lab File ID: N/A
Initial Weight/Volume: 0.5 g
Final Weight/Volume: 20 mL

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|--------------------|--------------------|--------|-----|-------|------|
| Nitrogen, Kjeldahl | 630 | 617 | 2 | 20 | |

Duplicate - Batch: 600-3643

Method: 351.2

Preparation: N/A

Lab Sample ID: 600-1974-11
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 10/08/2008 1122
Date Prepared: N/A

Analysis Batch: 600-3643
Prep Batch: N/A
Units: mg/Kg

Instrument ID: WC07 Lachat-2
Lab File ID: N/A
Initial Weight/Volume: 0.5 g
Final Weight/Volume: 20 mL

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|--------------------|--------------------|--------|-----|-------|------|
| Nitrogen, Kjeldahl | 510 | 607 | 17 | 20 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Matrix Spike - Batch: 600-3842

Method: 353.2

Preparation: N/A

| | | | | | |
|----------------|-----------------|-----------------|----------|------------------------|---------------|
| Lab Sample ID: | 600-1974-1 | Analysis Batch: | 600-3842 | Instrument ID: | WC05 Lachat-1 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 10/10/2008 1755 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | |
| Date Leached: | 10/10/2008 0934 | Leachate Batch: | 600-3780 | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|------------------------|--------------------|--------------|--------|--------|----------|------|
| Nitrate Nitrite as N-S | ND | 10.0 | 10.4 | 101 | 80 - 120 | |

Matrix Spike - Batch: 600-3842

Method: 353.2

Preparation: N/A

| | | | | | |
|----------------|-----------------|-----------------|----------|------------------------|---------------|
| Lab Sample ID: | 600-1974-9 | Analysis Batch: | 600-3842 | Instrument ID: | WC05 Lachat-1 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 10/10/2008 1808 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | |
| Date Leached: | 10/10/2008 0934 | Leachate Batch: | 600-3780 | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|------------------------|--------------------|--------------|--------|--------|----------|------|
| Nitrate Nitrite as N-S | ND | 10.0 | 10.5 | 102 | 80 - 120 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Duplicate - Batch: 600-3842

Method: 353.2

Preparation: N/A

| | | | | | |
|----------------|-----------------|-----------------|----------|------------------------|---------------|
| Lab Sample ID: | 600-1974-1 | Analysis Batch: | 600-3842 | Instrument ID: | WC05 Lachat-1 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 10/10/2008 1754 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | |
| Date Leached: | 10/10/2008 0934 | Leachate Batch: | 600-3780 | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|------------------------|--------------------|--------|-----|-------|------|
| Nitrate Nitrite as N-S | ND | ND | 110 | 20 | |

Duplicate - Batch: 600-3842

Method: 353.2

Preparation: N/A

| | | | | | |
|----------------|-----------------|-----------------|----------|------------------------|---------------|
| Lab Sample ID: | 600-1974-9 | Analysis Batch: | 600-3842 | Instrument ID: | WC05 Lachat-1 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 10/10/2008 1807 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | N/A | | | | |
| Date Leached: | 10/10/2008 0934 | Leachate Batch: | 600-3780 | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|------------------------|--------------------|--------|-----|-------|------|
| Nitrate Nitrite as N-S | ND | ND | 124 | 20 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Method Blank - Batch: 600-3591**Method: SM 4500 P E****Preparation: SM 4500 P B**

Lab Sample ID: MB 600-3591/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 10/07/2008 1645
Date Prepared: 10/07/2008 1420

Analysis Batch: 600-3597
Prep Batch: 600-3591
Units: mg/Kg

Instrument ID: Spectronic 20D+
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | RL |
|-------------------------------|--------|------|-------|
| Phosphorus as PO ₄ | ND | | 0.050 |

Lab Control Spike - Batch: 600-3591**Method: SM 4500 P E****Preparation: SM 4500 P B**

Lab Sample ID: LCS 600-3591/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 10/07/2008 1645
Date Prepared: 10/07/2008 1420

Analysis Batch: 600-3597
Prep Batch: 600-3591
Units: mg/Kg

Instrument ID: Spectronic 20D+
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|-------------------------------|--------------|--------|--------|----------|------|
| Phosphorus as PO ₄ | 1.53 | 1.50 | 98 | 90 - 110 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Matrix Spike - Batch: 600-3591

Method: SM 4500 P E

Preparation: SM 4500 P B

Lab Sample ID: 600-1974-11

Analysis Batch: 600-3597

Instrument ID: Spectronic 20D+

Client Matrix: Solid

Prep Batch: 600-3591

Lab File ID: N/A

Dilution: 5.0

Units: mg/Kg

Initial Weight/Volume: 0.5 g

Date Analyzed: 10/07/2008 1645

Final Weight/Volume: 50 mL

Date Prepared: 10/07/2008 1420

Analyte

Sample Result/Qual

Spike Amount

Result

% Rec.

Limit

Qual

Phosphorus as PO₄

890

153

1010

79

75 - 125

4

Matrix Spike - Batch: 600-3591

Method: SM 4500 P E

Preparation: SM 4500 P B

Lab Sample ID: 600-1974-2

Analysis Batch: 600-3597

Instrument ID: Spectronic 20D+

Client Matrix: Solid

Prep Batch: 600-3591

Lab File ID: N/A

Dilution: 5.0

Units: mg/Kg

Initial Weight/Volume: 0.5 g

Date Analyzed: 10/07/2008 1645

Final Weight/Volume: 50 mL

Date Prepared: 10/07/2008 1420

Analyte

Sample Result/Qual

Spike Amount

Result

% Rec.

Limit

Qual

Phosphorus as PO₄

570

153

704

89

75 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1974-1

Duplicate - Batch: 600-3591

Method: SM 4500 P E

Preparation: SM 4500 P B

Lab Sample ID: 600-1974-11

Analysis Batch: 600-3597

Instrument ID: Spectronic 20D+

Client Matrix: Solid

Prep Batch: 600-3591

Lab File ID: N/A

Dilution: 5.0

Units: mg/Kg

Initial Weight/Volume: 0.5 g

Date Analyzed: 10/07/2008 1645

Final Weight/Volume: 50 mL

Date Prepared: 10/07/2008 1420

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|-------------------------------|--------------------|--------|-----|-------|------|
| Phosphorus as PO ₄ | 890 | 932 | 4 | 20 | |

Duplicate - Batch: 600-3591

Method: SM 4500 P E

Preparation: SM 4500 P B

Lab Sample ID: 600-1974-2

Analysis Batch: 600-3597

Instrument ID: Spectronic 20D+

Client Matrix: Solid

Prep Batch: 600-3591

Lab File ID: N/A

Dilution: 5.0

Units: mg/Kg

Initial Weight/Volume: 0.5 g

Date Analyzed: 10/07/2008 1645

Final Weight/Volume: 50 mL

Date Prepared: 10/07/2008 1420

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|-------------------------------|--------------------|--------|-----|-------|------|
| Phosphorus as PO ₄ | 570 | 520 | 9 | 20 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

1074



**B&B Laboratories
Chain of Custody
Project J08704 SDG - 08091802
to Test America for TNT/TP Analysis**



| # | Client Name | B&B Sample ID | Client ID | Collection Date | Receive Date | Analysis | Matrix |
|----|--|---------------|--------------|-----------------|--------------|----------|--------|
| 1 | 2008 Jubilee Development Group - Ghana EBS | GEB0046 | JUB-EBS-001 | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 2 | 2008 Jubilee Development Group - Ghana EBS | GEB0047 | JUB-EBS-002 | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 3 | 2008 Jubilee Development Group - Ghana EBS | GEB0048 | JUB-EBS-003R | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 4 | 2008 Jubilee Development Group - Ghana EBS | GEB0049 | JUB-EBS-004 | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 5 | 2008 Jubilee Development Group - Ghana EBS | GEB0050 | JUB-EBS-005R | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 6 | 2008 Jubilee Development Group - Ghana EBS | GEB0051 | JUB-EBS-006 | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 7 | 2008 Jubilee Development Group - Ghana EBS | GEB0052 | JUB-EBS-007R | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 8 | 2008 Jubilee Development Group - Ghana EBS | GEB0053 | JUB-EBS-008 | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 9 | 2008 Jubilee Development Group - Ghana EBS | GEB0054 | JUB-EBS-009R | 09/10/08 | 09/18/08 | TNT/TP | SED |
| 10 | 2008 Jubilee Development Group - Ghana EBS | GEB0055 | EBS-E1 | 09/11/08 | 09/18/08 | TNT/TP | SED |
| 11 | 2008 Jubilee Development Group - Ghana EBS | GEB0056 | EBS-E2 | 09/11/08 | 09/18/08 | TNT/TP | SED |
| 12 | 2008 Jubilee Development Group - Ghana EBS | GEB0057 | EBS-E3R | 09/12/08 | 09/18/08 | TNT/TP | SED |
| 13 | 2008 Jubilee Development Group - Ghana EBS | GEB0058 | EBS-T4 | 09/13/08 | 09/18/08 | TNT/TP | SED |
| 14 | 2008 Jubilee Development Group - Ghana EBS | GEB0059 | EBS-T5 | 09/13/08 | 09/18/08 | TNT/TP | SED |
| 15 | 2008 Jubilee Development Group - Ghana EBS | GEB0060 | EBS-T6 | 09/13/08 | 09/18/08 | TNT/TP | SED |

| | | |
|------------------------|---------|---------|
| B&B Signature | 10-1-08 | 1:14 pm |
| Test America Signature | 10-2-08 | 9:38 |

Home Office
1902 Pinon
College Station, TX 77845

10/22/2008

(979) 693-3446 (O)
(979) 693-6389 (F)
www.TDI-BI.COM

Login Sample Receipt Check List

Client: B&B Laboratories

Job Number: 600-1974-1

Login Number: 1974
Creator: Trenery, Michael J
List Number: 1

List Source: TestAmerica Houston

| Question | T / F / NA | Comment |
|--|------------|----------|
| Radioactivity either was not measured or, if measured, is at or below background | True | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | False | |
| Cooler Temperature is recorded. | True | 14.4 9.1 |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |

Total Dissolved Solid Data

ANALYTICAL REPORT

Job Number: 600-1975-1

Job Description: B&B Laboratories Inc.

For:
B&B Laboratories
1902 Pinon Street
College Station, TX 77845
Attention: Sue McDonald

C. Lance Joiner

Designee for
Dean A Joiner
Project Manager I
dean.joiner@testamericainc.com
10/10/2008

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Project Manager.

TestAmerica Houston Certifications and Approvals: TX NELAP T104704223-06-TX, ARDEQ 88-0759, LADEQ 01967, OKDEQ 9503, UT DOH GULF

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Job Narrative
600-J1975-1

Comments

No additional comments.

Receipt

Samples were received out of temperature and hold time for the parameter of Total Dissolved Solids(TDS). At the clients request via e-mail on October 2, 2008, the laboratory continued with the analysis.

General Chemistry

No analytical or quality issues were noted.

EXECUTIVE SUMMARY - Detections

Client: B&B Laboratories

Job Number: 600-1975-1

| Lab Sample ID | Client Sample ID | Result / Qualifier | | | Reporting Limit | Units | Method |
|------------------------|-------------------------|---------------------------|---|-----|------------------------|--------------|---------------|
| Analyte | | | | | | | |
| 600-1975-1 | GEB0162 | | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-2 | GEB0163 | | | | | | |
| Total Dissolved Solids | | 37000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-3 | GEB0164 | | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-4 | GEB0165 | | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-5 | GEB0166 | | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-6 | GEB0167 | | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-7 | GEB0168 | | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-8 | GEB0169 | | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-9 | GEB0170 | | | | | | |
| Total Dissolved Solids | | 37000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-10 | GEB0171 | | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C | |
| 600-1975-11 | GEB0172 | | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C | |

EXECUTIVE SUMMARY - Detections

Client: B&B Laboratories

Job Number: 600-1975-1

| Lab Sample ID Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|--------------------------|------------------|--------------------|---|--------------------|-------|----------|
| 600-1975-12 | GEB0173 | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C |
| 600-1975-13 | GEB0174 | | | | | |
| Total Dissolved Solids | | 37000 | H | 100 | mg/L | SM 2540C |
| 600-1975-14 | GEB0175 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-15 | GEB0176 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-16 | GEB0177 | | | | | |
| Total Dissolved Solids | | 35000 | H | 200 | mg/L | SM 2540C |
| 600-1975-17 | GEB0178 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-18 | GEB0179 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-19 | GEB0180 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-20 | GEB0181 | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C |
| 600-1975-21 | GEB0182 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-22 | GEB0183 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |

EXECUTIVE SUMMARY - Detections

Client: B&B Laboratories

Job Number: 600-1975-1

| Lab Sample ID Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|--------------------------|------------------|--------------------|---|--------------------|-------|----------|
| 600-1975-23 | GEB0186 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-24 | GEB0187 | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C |
| 600-1975-25 | GEB0190 | | | | | |
| Total Dissolved Solids | | 38000 | H | 200 | mg/L | SM 2540C |
| 600-1975-26 | GEB0191 | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C |
| 600-1975-27 | GEB0192 | | | | | |
| Total Dissolved Solids | | 37000 | H | 200 | mg/L | SM 2540C |
| 600-1975-28 | GEB0193 | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C |
| 600-1975-29 | GEB0194 | | | | | |
| Total Dissolved Solids | | 39000 | H | 200 | mg/L | SM 2540C |
| 600-1975-30 | GEB0195 | | | | | |
| Total Dissolved Solids | | 37000 | H | 200 | mg/L | SM 2540C |

METHOD SUMMARY

Client: B&B Laboratories

Job Number: 600-1975-1

| Description | Lab Location | Method | Preparation Method |
|-------------------------------|--------------|-------------|--------------------|
| Matrix Water | | | |
| Solids, Total Dissolved (TDS) | TAL HOU | SM SM 2540C | |

Lab References:

TAL HOU = TestAmerica Houston

Method References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

METHOD / ANALYST SUMMARY

Client: B&B Laboratories

Job Number: 600-1975-1

| Method | Analyst | Analyst ID |
|---------------|----------------|-------------------|
| SM SM 2540C | Watson, Don A | DAW |

SAMPLE SUMMARY

Client: B&B Laboratories

Job Number: 600-1975-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---------------|------------------|---------------|-------------------|--------------------|
| 600-1975-1 | GEB0162 | Water | 09/11/2008 0000 | 10/02/2008 0938 |
| 600-1975-2 | GEB0163 | Water | 09/11/2008 0000 | 10/02/2008 0938 |
| 600-1975-3 | GEB0164 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-4 | GEB0165 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-5 | GEB0166 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-6 | GEB0167 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-7 | GEB0168 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-8 | GEB0169 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-9 | GEB0170 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-10 | GEB0171 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-11 | GEB0172 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-12 | GEB0173 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-13 | GEB0174 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-14 | GEB0175 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-15 | GEB0176 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-16 | GEB0177 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-17 | GEB0178 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-18 | GEB0179 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-19 | GEB0180 | Water | 09/11/2008 0000 | 10/02/2008 0938 |
| 600-1975-20 | GEB0181 | Water | 09/01/2008 0000 | 10/02/2008 0938 |
| 600-1975-21 | GEB0182 | Water | 09/11/2008 0000 | 10/02/2008 0938 |
| 600-1975-22 | GEB0183 | Water | 09/11/2008 0000 | 10/02/2008 0938 |
| 600-1975-23 | GEB0186 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-24 | GEB0187 | Water | 09/12/2008 0000 | 10/02/2008 0938 |
| 600-1975-25 | GEB0190 | Water | 09/13/2008 0000 | 10/02/2008 0938 |
| 600-1975-26 | GEB0191 | Water | 09/13/2008 0000 | 10/02/2008 0938 |
| 600-1975-27 | GEB0192 | Water | 09/13/2008 0000 | 10/02/2008 0938 |
| 600-1975-28 | GEB0193 | Water | 09/13/2008 0000 | 10/02/2008 0938 |
| 600-1975-29 | GEB0194 | Water | 09/13/2008 0000 | 10/02/2008 0938 |
| 600-1975-30 | GEB0195 | Water | 09/13/2008 0000 | 10/02/2008 0938 |

SAMPLE RESULTS

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0162 **Date Sampled:** 09/11/2008 0000
Lab Sample ID: 600-1975-1 **Date Received:** 10/02/2008 0938
 Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|-------------------------|-------------------------|-------------|-----------|-----------------|
| Method: SM 2540C | | | | |
| Total Dissolved Solids | 38000 | H | mg/L | 10/08/2008 1745 |
| | | | 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0163
Lab Sample ID: 600-1975-2

Date Sampled: 09/11/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 37000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0164
Lab Sample ID: 600-1975-3

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0165
Lab Sample ID: 600-1975-4

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|-------------------------|-------------|--|-----------------|
| Method: SM 2540C Total Dissolved Solids | 38000 | H mg/L | Date Analyzed: 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0166
Lab Sample ID: 600-1975-5

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|-------------------------|-------------|---|-----------------|
| Method: SM 2540C Total Dissolved Solids | 38000 | H | Date Analyzed: 10/08/2008 1500 mg/L | 200 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0167
Lab Sample ID: 600-1975-6

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|-------------------------|-------------|--|-----------------|
| Method: SM 2540C Total Dissolved Solids | 38000 | H mg/L | Date Analyzed: 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0168
Lab Sample ID: 600-1975-7

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|-------------------------|-------------|---------------------------------------|-----------------|
| Method: SM 2540C Total Dissolved Solids | 38000 | H mg/L | Date Analyzed: 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0169
Lab Sample ID: 600-1975-8

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0170
Lab Sample ID: 600-1975-9

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 37000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0171
Lab Sample ID: 600-1975-10

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0172
Lab Sample ID: 600-1975-11

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|-------------------------|-------------|------------------------|-----------------|
| Method: SM 2540C Total Dissolved Solids | 38000 | H mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0173
Lab Sample ID: 600-1975-12

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0174
Lab Sample ID: 600-1975-13

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 37000 H | Date Analyzed: mg/L | 10/08/2008 1500 100 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0175
Lab Sample ID: 600-1975-14

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0176
Lab Sample ID: 600-1975-15

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0177
Lab Sample ID: 600-1975-16

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 35000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0178
Lab Sample ID: 600-1975-17

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0179
Lab Sample ID: 600-1975-18

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0180
Lab Sample ID: 600-1975-19

Date Sampled: 09/11/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0181
Lab Sample ID: 600-1975-20

Date Sampled: 09/01/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0182
Lab Sample ID: 600-1975-21

Date Sampled: 09/11/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|--|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0183
Lab Sample ID: 600-1975-22

Date Sampled: 09/11/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0186
Lab Sample ID: 600-1975-23

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|-------------------------|------------------|------|--|----------|
| Method: SM 2540C | | | | |
| Total Dissolved Solids | 38000 | H | Date Analyzed: 10/08/2008 1500 mg/L 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0187
Lab Sample ID: 600-1975-24

Date Sampled: 09/12/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0190
Lab Sample ID: 600-1975-25

Date Sampled: 09/13/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 38000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0191
Lab Sample ID: 600-1975-26

Date Sampled: 09/13/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0192
Lab Sample ID: 600-1975-27

Date Sampled: 09/13/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 37000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0193
Lab Sample ID: 600-1975-28

Date Sampled: 09/13/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0194
Lab Sample ID: 600-1975-29

Date Sampled: 09/13/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 39000 H | Date Analyzed: mg/L | 10/08/2008 1745 200 | 1.0 |

Sue McDonald
B&B Laboratories
1902 Pinon Street
College Station, TX 77845

Job Number: 600-1975-1

Client Sample ID: GEB0195
Lab Sample ID: 600-1975-30

Date Sampled: 09/13/2008 0000
Date Received: 10/02/2008 0938
Client Matrix: Water

| Analyte | Result/Qualifier | Unit | RL | Dilution |
|---|------------------|------------------------|------------------------|----------|
| Method: SM 2540C Total Dissolved Solids | 37000 H | Date Analyzed: mg/L | 10/08/2008 1500 200 | 1.0 |

DATA REPORTING QUALIFIERS

Client: B&B Laboratories

Job Number: 600-1975-1

| Lab Section | Qualifier | Description |
|--------------------|------------------|--|
| General Chemistry | H | Sample was prepped or analyzed beyond the specified holding time |

QUALITY CONTROL RESULTS

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1975-1

QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|--------------------------------|-------------------|--------------|---------------|----------|------------|
| General Chemistry | | | | | |
| Analysis Batch:600-3717 | | | | | |
| LCS 600-3717/2 | Lab Control Spike | T | Water | SM 2540C | |
| MB 600-3717/1 | Method Blank | T | Water | SM 2540C | |
| 600-1975-2 | GEB0163 | T | Water | SM 2540C | |
| 600-1975-2DU | Duplicate | T | Water | SM 2540C | |
| 600-1975-4 | GEB0165 | T | Water | SM 2540C | |
| 600-1975-4DU | Duplicate | T | Water | SM 2540C | |
| 600-1975-5 | GEB0166 | T | Water | SM 2540C | |
| 600-1975-6 | GEB0167 | T | Water | SM 2540C | |
| 600-1975-7 | GEB0168 | T | Water | SM 2540C | |
| 600-1975-9 | GEB0170 | T | Water | SM 2540C | |
| 600-1975-13 | GEB0174 | T | Water | SM 2540C | |
| 600-1975-14 | GEB0175 | T | Water | SM 2540C | |
| 600-1975-15 | GEB0176 | T | Water | SM 2540C | |
| 600-1975-16 | GEB0177 | T | Water | SM 2540C | |
| 600-1975-17 | GEB0178 | T | Water | SM 2540C | |
| 600-1975-18 | GEB0179 | T | Water | SM 2540C | |
| 600-1975-19 | GEB0180 | T | Water | SM 2540C | |
| 600-1975-21 | GEB0182 | T | Water | SM 2540C | |
| 600-1975-22 | GEB0183 | T | Water | SM 2540C | |
| 600-1975-23 | GEB0186 | T | Water | SM 2540C | |
| 600-1975-24 | GEB0187 | T | Water | SM 2540C | |
| 600-1975-25 | GEB0190 | T | Water | SM 2540C | |
| 600-1975-27 | GEB0192 | T | Water | SM 2540C | |
| 600-1975-30 | GEB0195 | T | Water | SM 2540C | |
| Analysis Batch:600-3721 | | | | | |
| LCS 600-3721/2 | Lab Control Spike | T | Water | SM 2540C | |
| MB 600-3721/1 | Method Blank | T | Water | SM 2540C | |
| 600-1975-1 | GEB0162 | T | Water | SM 2540C | |
| 600-1975-1DU | Duplicate | T | Water | SM 2540C | |
| 600-1975-3 | GEB0164 | T | Water | SM 2540C | |
| 600-1975-8 | GEB0169 | T | Water | SM 2540C | |
| 600-1975-10 | GEB0171 | T | Water | SM 2540C | |
| 600-1975-11 | GEB0172 | T | Water | SM 2540C | |
| 600-1975-12 | GEB0173 | T | Water | SM 2540C | |
| 600-1975-20 | GEB0181 | T | Water | SM 2540C | |
| 600-1975-26 | GEB0191 | T | Water | SM 2540C | |
| 600-1975-28 | GEB0193 | T | Water | SM 2540C | |
| 600-1975-29 | GEB0194 | T | Water | SM 2540C | |

Report Basis

T = Total

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1975-1

Method Blank - Batch: 600-3717

Method: SM 2540C

Preparation: N/A

Lab Sample ID: MB 600-3717/1

Analysis Batch: 600-3717

Instrument ID: No Equipment Assigned

Client Matrix: Water

Prep Batch: N/A

Lab File ID: N/A

Dilution: 1.0

Units: mg/L

Initial Weight/Volume: 100 mL

Date Analyzed: 10/08/2008 1500

Final Weight/Volume: 100 mL

Date Prepared: N/A

| Analyte | Result | Qual | RL |
|------------------------|--------|------|----|
| Total Dissolved Solids | ND | | 10 |

Lab Control Spike - Batch: 600-3717

Method: SM 2540C

Preparation: N/A

Lab Sample ID: LCS 600-3717/2

Analysis Batch: 600-3717

Instrument ID: No Equipment Assigned

Client Matrix: Water

Prep Batch: N/A

Lab File ID: N/A

Dilution: 1.0

Units: mg/L

Initial Weight/Volume: 100 mL

Date Analyzed: 10/08/2008 1500

Final Weight/Volume: 100 mL

Date Prepared: N/A

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|------------------------|--------------|--------|--------|----------|------|
| Total Dissolved Solids | 1800 | 1750 | 97 | 90 - 110 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1975-1

Duplicate - Batch: 600-3717

Method: SM 2540C

Preparation: N/A

Lab Sample ID: 600-1975-2

Analysis Batch: 600-3717

Instrument ID: No Equipment Assigned

Client Matrix: Water

Prep Batch: N/A

Lab File ID: N/A

Dilution: 1.0

Units: mg/L

Initial Weight/Volume: 5 mL

Date Analyzed: 10/08/2008 1500

Final Weight/Volume: 100 mL

Date Prepared: N/A

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|------------------------|--------------------|--------|-----|-------|------|
| Total Dissolved Solids | 37000 | 37100 | 1 | 10 | |

Duplicate - Batch: 600-3717

Method: SM 2540C

Preparation: N/A

Lab Sample ID: 600-1975-4

Analysis Batch: 600-3717

Instrument ID: No Equipment Assigned

Client Matrix: Water

Prep Batch: N/A

Lab File ID: N/A

Dilution: 1.0

Units: mg/L

Initial Weight/Volume: 5 mL

Date Analyzed: 10/08/2008 1500

Final Weight/Volume: 100 mL

Date Prepared: N/A

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|------------------------|--------------------|--------|-----|-------|------|
| Total Dissolved Solids | 38000 | 38300 | 1 | 10 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: B&B Laboratories

Job Number: 600-1975-1

Method Blank - Batch: 600-3721

Method: SM 2540C

Preparation: N/A

Lab Sample ID: MB 600-3721/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/08/2008 1745
Date Prepared: N/A

Analysis Batch: 600-3721
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 100 mL
Final Weight/Volume: 100 mL

| Analyte | Result | Qual | RL |
|------------------------|--------|------|----|
| Total Dissolved Solids | ND | | 10 |

Lab Control Spike - Batch: 600-3721

Method: SM 2540C

Preparation: N/A

Lab Sample ID: LCS 600-3721/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/08/2008 1745
Date Prepared: N/A

Analysis Batch: 600-3721
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 100 mL
Final Weight/Volume: 100 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|------------------------|--------------|--------|--------|----------|------|
| Total Dissolved Solids | 1800 | 1760 | 98 | 90 - 110 | |

Duplicate - Batch: 600-3721

Method: SM 2540C

Preparation: N/A

Lab Sample ID: 600-1975-1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/08/2008 1745
Date Prepared: N/A

Analysis Batch: 600-3721
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 5 mL
Final Weight/Volume: 100 mL

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|------------------------|--------------------|--------|-----|-------|------|
| Total Dissolved Solids | 38000 | 38400 | 1 | 10 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.



B&B Laboratories
Chain of Custody
Project J08704 SDG - 08092303
to Test America for TDS analysis



1475

| # | Client Name | B&B Sample ID | Client ID | Collection Date | Receive Date | Analysis | Matrix | Comments |
|----|--|---------------|-------------|-----------------|--------------|----------|--------|---------------|
| 1 | 2008 Jubilee Development Group - Ghana EBS | GEB0162 | JUB-EBS-001 | 09/11/08 | 09/23/08 | TDS | WATER | top - 1m |
| 2 | 2008 Jubilee Development Group - Ghana EBS | GEB0163 | JUB-EBS-001 | 09/11/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 3 | 2008 Jubilee Development Group - Ghana EBS | GEB0164 | JUB-EBS-002 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 4 | 2008 Jubilee Development Group - Ghana EBS | GEB0165 | JUB-EBS-002 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 5 | 2008 Jubilee Development Group - Ghana EBS | GEB0166 | JUB-EBS-003 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 6 | 2008 Jubilee Development Group - Ghana EBS | GEB0167 | JUB-EBS-003 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 7 | 2008 Jubilee Development Group - Ghana EBS | GEB0168 | JUB-EBS-004 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 8 | 2008 Jubilee Development Group - Ghana EBS | GEB0169 | JUB-EBS-004 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 9 | 2008 Jubilee Development Group - Ghana EBS | GEB0170 | JUB-EBS-005 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 10 | 2008 Jubilee Development Group - Ghana EBS | GEB0171 | JUB-EBS-005 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 11 | 2008 Jubilee Development Group - Ghana EBS | GEB0172 | JUB-EBS-006 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 12 | 2008 Jubilee Development Group - Ghana EBS | GEB0173 | JUB-EBS-006 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 13 | 2008 Jubilee Development Group - Ghana EBS | GEB0174 | JUB-EBS-007 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 14 | 2008 Jubilee Development Group - Ghana EBS | GEB0175 | JUB-EBS-007 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 15 | 2008 Jubilee Development Group - Ghana EBS | GEB0176 | JUB-EBS-008 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 16 | 2008 Jubilee Development Group - Ghana EBS | GEB0177 | JUB-EBS-008 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 17 | 2008 Jubilee Development Group - Ghana EBS | GEB0178 | JUB-EBS-009 | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 18 | 2008 Jubilee Development Group - Ghana EBS | GEB0179 | JUB-EBS-009 | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 100m |
| 19 | 2008 Jubilee Development Group - Ghana EBS | GEB0180 | EBS-E1 | 09/11/08 | 09/23/08 | TDS | WATER | top - 1m |
| 20 | 2008 Jubilee Development Group - Ghana EBS | GEB0181 | EBS-E1 | 09/01/08 | 09/23/08 | TDS | WATER | bottom - 75m |
| 21 | 2008 Jubilee Development Group - Ghana EBS | GEB0182 | EBS-E2 | 09/11/08 | 09/23/08 | TDS | WATER | top - 1m |
| 22 | 2008 Jubilee Development Group - Ghana EBS | GEB0183 | EBS-E2 | 09/11/08 | 09/23/08 | TDS | WATER | bottom - 67m |
| 23 | 2008 Jubilee Development Group - Ghana EBS | GEB0186 | EBS-E3R | 09/12/08 | 09/23/08 | TDS | WATER | top - 1m |
| 24 | 2008 Jubilee Development Group - Ghana EBS | GEB0187 | EBS-E3R | 09/12/08 | 09/23/08 | TDS | WATER | bottom - 50m |
| 25 | 2008 Jubilee Development Group - Ghana EBS | GEB0190 | EBS-T4 | 09/13/08 | 09/23/08 | TDS | WATER | top - 1m |
| 26 | 2008 Jubilee Development Group - Ghana EBS | GEB0191 | EBS-T4 | 09/13/08 | 09/23/08 | TDS | WATER | bottom - 39m |
| 27 | 2008 Jubilee Development Group - Ghana EBS | GEB0192 | EBS-T5 | 09/13/08 | 09/23/08 | TDS | WATER | top - 1m |
| 28 | 2008 Jubilee Development Group - Ghana EBS | GEB0193 | EBS-T5 | 09/13/08 | 09/23/08 | TDS | WATER | bottom - 44m |
| 29 | 2008 Jubilee Development Group - Ghana EBS | GEB0194 | EBS-T6 | 09/13/08 | 09/23/08 | TDS | WATER | top - 1m |
| 30 | 2008 Jubilee Development Group - Ghana EBS | GEB0195 | EBS-T6 | 09/13/08 | 09/23/08 | TDS | WATER | bottom - 49m |

B&B Signature

Anauda Ayu

10-1-08 1:14 pm

Test America Signature

10-2-5 9:38

Date

Time

Home Office
1902 Pinon
College Station, TX 77845

10/10/2008

(979) 693-3446 (O)
(979) 693-6389 (F)
WWW.TDI-BI.COM

Login Sample Receipt Check List

Client: B&B Laboratories

Job Number: 600-1975-1

Login Number: 1975

List Source: TestAmerica Houston

Creator: Trenery, Michael J

List Number: 1

| Question | T / F / NA | Comment |
|--|------------|----------|
| Radioactivity either was not measured or, if measured, is at or below background | True | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | False | |
| Cooler Temperature is recorded. | True | 14.1 9.1 |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |

Infauna