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# 2013 Analysis of Soil from the Agricultural Research Area at the Brackish Groundwater National Desalination Research Facility

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**Alamogordo, New Mexico**

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# 2013 ANALYSIS OF SOIL FROM THE AGRICULTURAL RESEARCH AREA AT THE BRACKISH GROUNDWATER NATIONAL DESALINATION RESEARCH FACILITY

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## Executive Summary

The Brackish Groundwater National Desalination Research Facility (BGNDRF) is a federal facility that operates under the United States Department of Interior, Bureau of Reclamation (Reclamation). Established by an Act of Congress, the facility mission is to promote sustainable advanced water treatment research and technology development for inland brackish groundwater sources and, specifically, to conduct research for the development of cost-effective, robust desalination and alternative energy technologies that produce sustainable new supplies of water and power for municipal, industrial, agricultural, and environmental purposes. Source water for work at the facility is obtained from four wells, each accessing different geothermal water sources. Tetra Tech was contracted to provide a baseline water and soil quality analysis of parameters defined by Reclamation for the four onsite wells, three onsite ponds and soil from 7 trenches in the Agricultural Research Area. This report presents the soil chemical results analyzed by a commercial analytical laboratory from the one soil sample set in 2013.

Soil sample cores were collected at different depths from 7 trenches in the Agricultural Research Area of the BGNDRF on 31 July 2013. Samples were shipped to and analyzed by Hall Environmental Analysis Laboratory (Hall) following standard EPA and other industry accepted practices and protocols. Quality Assurance results (which are appended to this report) indicated that method blanks and spiked samples were within the acceptable range defined by the US EPA for the methods used in this analysis for most of the analytes. Selenium was not detected in any of the samples and the spike recovery was less than the advisory limits for most samples. For potassium in Trench-1 0-25 cm and Trench-4 25-50 cm, spike recovery was above the accepted recovery limits.

This report details the concentrations of the soil chemical constituents and how they varied with depth, differences between trenches and differences between the topsoil and caliche soil horizons. Caliche is a hardened deposit predominated by calcium carbonate, or sometimes calcium sulfate, plus other less soluble minerals, formed by minerals leaching from the upper layer of soil or formed by water rising through the soil by capillary action, evaporating and leaving behind minerals. The presence of the caliche soil horizon is important agriculturally because caliche can be impermeable and decrease drainage which can cause accumulation of salts that make the surrounding soil basic and can lead to nutrient deficiencies in plants.

Relative to topsoil concentrations, calcium and magnesium were more concentrated and pH more basic in the caliche layer as expected, however, only magnesium and pH were statistically significantly more concentrated in the caliche layer. Nitrate and phosphorus as well as organic matter were significantly less in the caliche layer. Specific conductance, sodium, sodium adsorption ratio, potassium and arsenic concentrations tended to be less in the caliche layer, although these differences were not statistically significant.

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## Acronyms and Abbreviations

* - Value exceeds Maximum Contaminant Level
µg/L- micrograms per liter
mg/L- milligrams per liter
mg/Kg- milligrams per kilogram
µmhos/cm- micromhos per centimeter
Act ± Unc (MDC)- Actual value plus or minus the Uncertainty value
AR- Acceptable Range
B- Analyte detected in the associated Method Blank
DF- Dilution Factor
E- Value above quantitation range or Estimated value
H-Holding times for preparation or analysis exceeded
j - Analyte detected below quantitation limits
MCL- EPA's Maximum Contaminant Level
MDC- Minimum Detectable Concentration
MDL- Method Detection Limit
mg/L- milligrams per liter
MRL – Minimum Reporting Level
ND- Not Detected at the Reporting Limit
Qual - Qualifier
R - RPD outside accepted recovery limits
RPD - Relative Percentage Difference
S - Spike recovery outside accepted recovery limits
SPK ref - Spike Reference
SPK Va - Spike Value
U – Concentration not detected at reporting limit
v – Verified concentration
X – Value exceeds maximum contaminant level
Z – Not Defined, or Zero

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# Analysis of Soil from the Agricultural Research Area at the Brackish Groundwater National Desalination Research Facility

## Introduction

The Brackish Groundwater National Desalination Research Facility (BGNDRF) is a federal facility that operates under the United States Department of Interior, Bureau of Reclamation (Reclamation). Established by an Act of Congress, the facility mission is to promote sustainable advanced water treatment research and technology development for inland brackish groundwater sources. The Alamogordo area was chosen as the optimal site based on the wide range of brackish water sources.

The mission of BGNDRF is to conduct research for the development of cost-effective, robust desalination, and alternative energy technologies that produce sustainable new supplies of water and power for municipal, industrial, agricultural, and environmental purposes. The facility includes a Central Research Building, a Renewable Energy Application Area and a 5-acre Agricultural Research Area all located on a 40-acre site. Source water for work at the facility is obtained from four wells, each accessing different geothermal water sources. The available water sources have been characterized[1] as including one low-concentration total dissolved solids (TDS) well (1,000 – 1,200 mg/L) at 40 ºC, for which a cooling tower is available, and three mid-concentration TDS wells (3,450 – 6,400 mg/L) at 21 ºC (Tetra Tech 2012[2]). In addition, high-concentration TDS (≥10,000 mg/L) groundwater can be imported to the site. The facility includes evaporative ponds and water from the wells can be discharged directly to the series of three evaporation ponds, for example, when flushing the wells, or following research activities using the water within the BGNDRF.

Tetra Tech was contracted in 2013 to provide a baseline water and soil quality analysis of parameters defined by Reclamation for the four onsite wells, three onsite ponds and soil from 7 trenches in the Agricultural Research Area. This report presents the results of the soil chemical analyses by Hall Environmental Analysis Laboratory (Hall) from the one soil sample set in 2013. It provides an interpretation of the parameter relationships observed.

## Methods

Prior to digging the soil sampling trenches to extract soil samples from the Agricultural Research Area, this 5-acre area was surveyed and elevation data at the locations for the proposed trenches

[1] http://www.usbr.gov/pmts/water/research/tularosa.html

[2] Tetra Tech, Inc. 2012. 2012 Analysis of Water From Four Wells and Three Evaporation Ponds at the National Brackish Groundwater Desalination Research Facility. Bureau of Reclamation 2012

recorded. Subsequently, BGNDRF staff used a backhoe to dig these soil trenches. A total of seven trenches, approximately 3-feet wide, 30-feet long (maximum) and 4-feet deep were dug at predetermined locations within the Agricultural Research Area (Appendix A). Following soil sample extraction instructions provided by Dr. Manoj K. Shukla and Dr. April Ulery and additional sample storage and shipping procedures defined by Hall (Appendix B), a New Mexico State University (NMSU) researcher collected soil samples on 31 July 2013 for chemical analysis by Hall and physical property analysis at the NMSU Soil Physics Laboratory. Four to nine soil sample cores were collected from different depths from each trench for a total of 40 samples and placed in bags and jars supplied by Hall. Appropriate field records of the sample collection efforts were submitted by NMSU to BGNDRF. The presence of the caliche soil horizon, a hardened deposit of calcium carbonate, was determined visually in the field and depth to caliche was recorded for each trench. Each soil sample was classified as either top soil or caliche. Soil physical analyses included texture by hydrometer (Table 3, Figure 8) to determine clay, silt and sand by percent (Gee and Bauder 1986)[3]. Additional soil physical properties determined included bulk density, soil porosity, hydraulic conductivity and a soil water retention curve, using test methods in "Soil Science Society of America" Book 5, 2002. BGNDRF staff prepared the chemical analysis samples for shipping using the instructions supplied by Hall, placing samples into coolers, packing them on ice, completing the chains-of-custody form, and shipping the samples to Hall in Albuquerque, NM.

The samples were received by the laboratory on 2 August 2013, where the chain-of-custody forms were transferred and reviewed (Appendix D), the samples logged in, and sample processing and analyses initiated. The most current method for performing the specified tests was used. Sample analysis methods are presented in Appendix E. The Quality Assurance Plan followed by Hall is presented in Appendix F.

Hall provided Tetra Tech with the soil chemical results for compilation and data analysis. Tetra Tech analyzed the data to determine potential variation in concentrations of the chemical constituents by depth, significant differences in the chemical constituents between topsoil and caliche, and potential similarities and differences between soil trenches (Tables 1-2 and Figures 2-7). XLSTAT software was used to perform t-tests to determine potential significant differences in chemical constituents between the topsoil and caliche soil horizons. Analysis of Variance (ANOVA) was performed using SYSTAT software to determine potential significant differences in analyte concentrations in the topsoil samples and in the caliche samples among trenches (Appendix C).

[3] Gee, G.W. and J. W. Bauder, 1986. Particle Size Analysis pp383-411 in Klute. A. (Ed) Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, Agronomy Monograph No 9 (2nd Edition). American Society of Agronomy, Madison.

## Results and Discussion

The results from the laboratory analyses of the soil samples are presented in the laboratory report from Hall in Appendix G, which also includes the QA reports from the analytical laboratory. The printout of the Electronic Data Deliverable (EDD) Excel file is included in Appendix H. The EDD includes results from the sample analysis and from the QA analysis. A CD is included with this report that holds this complete data file in Excel format, a PDF of the laboratory report, and additional MS Word, MS Excel, and PDF files of this report related to the production of its tables and figures.

Table 1 summarizes the results from the laboratory analyses for the 2013 sampling from the seven trenches. It includes a list of parameters analyzed, the analytical methods used, reporting units, and data quality flags for the results presented. Table 2 summarizes the average analyte concentration in the topsoil and caliche layers of each trench. The table shows a comparison of analyte concentrations among trenches and indicates the trenches having the maximum and minimum average concentrations for each chemical constituent in each layer. Table 3 and Figure 8, prepared by NMSU; present the results of their soil particle size analyses. Figure 1 shows the elevation of the natural grade for each trench, the elevation of the caliche layer, and the depth to the caliche layer. Figures 2 through 7 present plots of the analytes from each trench and depth sampled, topsoil samples are represented by blue bars and caliche samples by red bars. The results of the statistical analyses comparing the concentrations of chemical constituents in the caliche layer to the topsoil and the differences in analyte concentrations of the caliche and topsoil layers among trenches are presented in Appendix C. The data did not necessarily always meet the assumptions of equal variance and normality of the statistical analyses performed; compliance to such relationships is important when using statistical analysis where deductively generalized relationships need to be applied, but less critical for examination of relationships for sample comparisons where inductively generalized relationships can be applied.

Quality Assurance results presented in Appendices F and G indicate that method blanks and spiked samples were within the acceptable range defined by the US EPA for the methods used in this analysis for most of the analytes. Depending on the specific method, most US EPA methods specify that spike recovery should fall within ±10 to ±15 percent. Selenium was not detected in any of the samples and the spike recovery was less than the advisory limits for most samples. For potassium in Trench-1 0-25 cm and Trench-4 25-50 cm, spike recovery was above the accepted recovery limits.

The soil data set includes only a single sample for each depth in each trench with no replication of samples for the sampling date or depth. However, the soil sample core, in effect, produced a composite soil sample within each core yielding sample results that could be viewed as providing average conditions through the core. Also, the multiple samples across depths within the trench at a location can be viewed as replicate samples for that location's topsoil and caliche chemistry. It is important to recognize that soil samples from equal depths across the trenches do not

necessarily come from the same soil strata because the depth from the soil surface to the caliche soil horizon varied with each trench. The caliche soil horizon ranged from 75 cm below the natural grade in Trench-1 to 120 cm in Trenches-3, -4 and -7. For example, the 75-100 cm sample in Trench-2 was topsoil whereas the 75-100 cm sample in Trench-1 was caliche. Thus, soil sample comparisons require cautious characterization. Added caution is required for such comparisons since samples also were not taken at the same depths in each trench. Additionally, there was not the same number of topsoil or caliche samples collected across the trenches. Due largely to the great difficulty in sampling at depth in the very hard caliche layer, Trenches-1, -3 and -5 had only a single sample from the caliche layer and there were no caliche samples from trenches-6 and -7.

The depth to the caliche layer was subtracted from the natural grade elevation of the trench to determine the elevation of the caliche layer in each trench. The natural grade elevation ranged from 4,274.71 feet for Trench-1 to 4,280.49 feet for Trench-7. Less variation existed for the elevation of the caliche soil horizon in each trench, relative to that for the natural grade elevation; caliche elevations ranged from 4,272.21 to 4,276.49 feet. As such, the elevation of the caliche layer was plotted versus the natural grade elevation and depth to caliche to determine how the depth of the caliche layer may be influenced by the natural grade. For example, a low area might accumulate more water that could influence the depth of the caliche or the chemical properties of the caliche layer. The depth to the caliche soil horizon was greatest in the higher elevation trenches and the elevation of the caliche horizon followed the elevation of the natural grade (Figure 1).

Differences between trenches for a specific sample depth or elevation were not analyzed statistically. Instead, the concentrations of the soil chemical constituents were plotted against depth for each trench (Figures 2 to 7) to allow visualization of similarities and differences among chemical concentrations and depths, differences among trenches, and differences between the topsoil (blue bars) and caliche (red bars) soil horizons. For many analytes, concentration varied with depth and it was apparent that the relationship between concentration and depth was weak. Therefore regression analysis was not performed, but generalizations about the relationship of analyte concentration with depth were made by interpreting the plots of concentration versus depth. Again, average analyte values were calculated for each analyte in both the topsoil and caliche layers in each trench to allow determination of trenches having highest and lowest analyte concentrations (Table 2) and ANOVA was performed to determine the significance of these differences among trenches (Appendix C). All topsoil samples and all caliche samples were averaged for each analyte and t-tests performed to determine differences between the topsoil and caliche layers (Appendix C), as described in the following.

## Soil Chemical Analysis

### *pH*

Topsoil pH ranged from 7.45 to 8.26 and 7.81 to 8.19 in the caliche (Table 1). Average pH of the topsoil of Trench-3 and -7 (7.97) were slightly but significantly greater (more basic) than Trench-5 (7.59). Average caliche pH was greatest in Trench-2 (8.05) and least in Trench-1 and 5 (7.88) (Table 2). pH generally became more basic with depth. The caliche of all trenches combined had a significantly greater mean pH (7.98) than the topsoil (7.79) ($p=0.001$) (Figure 2).

### *Specific Conductance*

Topsoil specific conductance ranged from 900 to 9,300 µmhos/c in the topsoil and 1,400 to 7,100 µmhos/c in the caliche. Average topsoil specific conductance was greatest in Trench-4 (6,920 µmhos/c) and least in Trench-7 (1775 µmhos/c), which was also statistically significant. Trenches -2, -4, and -5 had significantly greater topsoil average specific conductance than Trenches -3, -6, and -7. Trench-4 also had statistically significantly greater topsoil average specific conductance than Trench-1. Average conductance was greatest in the caliche of Trench-2 (4,120 µmhos/c) and least in Trench-3 (1,400 µmhos/c). Specific conductance for Trench-1 and Trench-2 weakly increased with depth in the topsoil and decreased with depth in the topsoil of the other trenches. Specific conductance tended to increase with depth in the caliche. In total, the specific conductance means of topsoil (3978.57 µmhos/c) and caliche (3,375.00 µmhos/c) did not differ significantly ($p=0.421$) (Figure 2). It is important to note that these values are based on analyses which determined electrical conductivity by directly measuring the saturated soil-paste rather than the saturated soil-paste ***extract***. The values obtained by measuring the saturated soil-paste ***extract*** were generally 2 to 5 times higher than the values determined by directly measuring the saturated soil-paste (Table 1). The values obtained by the two different methods also do not show the same trends with depth. While both methods used soil obtained from the same location within the soil trenches, the soil obtained at each depth was not homogenized before it was divided, therefore there could be some differences in the soil samples used for the different electrical conductivity analyses.

### *Magnesium*

Magnesium concentrations were 7,000 to 16,000 mg/Kg in the topsoil and 6,700 to 23,000 mg/Kg in the caliche. Average magnesium was the most concentrated in Trench-3 topsoil (13,229 mg/Kg) and Trench-1 caliche (23,000 mg/Kg) and least concentrated in Trench-5 topsoil (8,267 mg/Kg) and Trench-4 caliche (12,175 mg/Kg). No relationship with depth stood out for magnesium in the topsoil. The caliche layer had a significantly greater mean magnesium concentration (16,058.33 mg/Kg) compared to the topsoil (9,964.29 mg/Kg) ($p<0.0001$) (Figure 3).

### *Calcium*

Topsoil calcium concentrations ranged from 61,000 to 190,000 mg/Kg and 130,000 to 190,000 mg/Kg in the caliche. Average calcium was the greatest in Trench-1 topsoil (170,000 mg/Kg) and least in Trench-7 topsoil (104,250 mg/Kg). Trench-3 caliche (190,000 mg/Kg) was significantly greater than Trench-5 caliche (130,000 mg/Kg), which had the minimum calcium concentration. Trench-3 average caliche calcium concentration was also significantly greater than Trenches -2 and -4. Calcium increased somewhat with depth in the top soil, while the calcium concentration in the caliche layer was rather consistent with depth. The caliche layer across the trenches had a greater mean calcium concentration (146,666.67 mg/Kg) compared to the topsoil (128,750.00 mg/Kg), although the difference was not significant (p=0.081) (Figure 3). For the pH range of the caliche samples (7.88-8.05) the calcium is more likely to be present as calcium carbonate rather than calcium sulfate (Brookins 1988)[4].

***Sodium***

Sodium concentrations ranged from 180 to 3,000 mg/Kg in the topsoil and 250 to 2,100 mg/Kg in the caliche. Average Sodium was greatest in the topsoil of Trench-4 (2,340 mg/Kg) and least inTrench-6 (308 mg/Kg); the difference was also statistically significant. Trench-4 average topsoil sodium was statistically significantly greater than Trenches -1, -3, -5, -6, and -7 and the Trench-2 topsoil concentration was significantly greater than Trenches -3, -6, and -7. Sodium was greatest in the caliche layer of Trench-2 (1,246 mg/Kg) and least in Trench-3 (250 mg/Kg). Sodium, for the most part, decreased with depth in the topsoil. In the caliche, sodium increased with depth. The mean topsoil sodium concentration of all trenches (1,056.79 mg/Kg) did not differ significantly from that of the caliche (965 mg/Kg) (p=0.732) (Figure 4).

***Sodium Adsorption Ratio***

Topsoil Sodium Adsorption Ratio (SAR) ranged from 0.66 to 27 mg/L in the topsoil and 1.2 to 30 mg/L in the caliche soil horizon. SAR was greatest in Trench-4 topsoil (21 mg/L) and least in the topsoil of Trench-6 (3 mg/L). Trench-4 average topsoil SAR was significantly greater than Trenches -1, -3, -5, -6, and -7. Trench-2 average topsoil SAR was significantly greater than Trenches -3, -6, and -7 and Trench-5 was significantly greater than -6 and -7. The caliche layer of Trench-2 had the greatest SAR (19 mg/L) and least in Trench-3 (1 mg/L). SAR decreased with depth (except for Trench-4) in the topsoil. SAR increased with depth in the caliche layer. Topsoil (9.37 mg/L) and caliche (13.11 mg/L) did not have significantly different means across the trenches (unequal variance) (p=0.202) (Figure 4).

***Organic Matter***

Percent organic matter only occurred in the top soil and decreased with depth. Percent organic matter ranged from 4.2 to 0% in the topsoil. Trench-2 had the greatest average organic matter (2.1%) whereas Trench-7 had the least percent organic matter (1.0%) (Figure 5).

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[4] Brookins, D. G. (1988) Eh-pH Diagrams for Geochemistry. New York, NY: Springer-Verlag

### *Nitrate as Nitrogen*

Topsoil nitrate concentrations were 1.1 to 290 mg/Kg and caliche ranged from 0.45 to 5.3 mg/Kg. Trench-1 topsoil (3.3 mg/Kg) and caliche (1.2 mg/Kg) had the minimum average nitrate concentration of the trenches and the maximum concentration was in Trench-5 (138 mg/Kg) topsoil and Trench-3 caliche (4.8 mg/Kg). Nitrate was primarily found in the top two layers of top soil (0-25cm and 25-50cm). Nitrogen decreased precipitously with depth and was significantly greater in the topsoil (50.25 mg/Kg) than the caliche (2.10 mg/Kg) ($p<0.028$). Minimal nitrate, if any, was found in the caliche (Figure 5).

### *Phosphorus*

Phosphorus was 1 to 22 mg/Kg in the topsoil and 0-5 in the caliche layer. Average phosphorus was greatest in Trench-6 topsoil (16 mg/Kg) and Trench-5 caliche (2 mg/Kg). Trench-1 topsoil (5 mg/Kg) had the least phosphorus and the caliche layer of Trenches 1 and 3 held no detectable phosphorus. Phosphorus decreased with depth in the topsoil (except for trench 7). The caliche layer had very little phosphorus (1.33 mg/Kg) which decreased with depth and was significantly less than the topsoil (8.750 mg/Kg) ($p<0.0001$) (Figure 6).

### *Potassium*

Potassium in the topsoil was between 10 and 730 mg/Kg and 46 and 180 mg/Kg in the caliche. Average potassium was greatest in both the topsoil (373 mg/Kg) and caliche (180 mg/Kg) layers of Trench-5 and minimum in the topsoil of Trench-7 (41 mg/Kg) and caliche of Trench-3 (46 mg/Kg). Trench-5 and -4 average topsoil potassium was significantly greater than Trench-3. Potassium decreased with depth in the topsoil, and had a slight increase with depth in the caliche. Topsoil had a greater mean potassium concentration (180.50 mg/Kg) than caliche (119.08 mg/Kg), although not statistically significant (unequal variances made this test problematic) ($p=0.284$) (Figure 6).

### *Arsenic*

Topsoil arsenic values ranged from 2.3 to 3.6 mg/Kg and 0.7 to 3 mg/Kg in the caliche. Average arsenic was statistically significantly greater in the topsoil of Trench-2 (3.2 mg/Kg) than in Trench-5 topsoil (2.5 mg/Kg) and Trench-7 (2.6 mg/Kg) and the caliche layer of Trench-2 (2.2 mg/Kg) was greater than Trench-3 (1.4 mg/Kg). Arsenic had no real pattern with depth, as it seemed to increase up to a depth of 50-75 cm, then decrease from there. The arsenic concentration of the caliche layer (1.79 mg/Kg) was significantly less than that of the top soil (2.86 mg/Kg) ($p<0.0001$) (Figure 7).

### *Selenium*

Selenium was not detected in any sample in the topsoil or caliche layers of any of the soil trenches.

## CONCLUSIONS

The natural grade of the trenches appeared to have little correlation with analyte concentrations as the highest or lowest elevation trenches did not correspond to the greatest or least of the analyte concentrations. Where there were statistical differences among the average analyte values of the trenches, Trench-3 and -4 topsoil analyte concentrations tended to be greater for some analytes (pH, specific conductance, sodium and sodium adsorption ratio) and these trenches had a higher elevation than the other trenches, with the exception of Trench-7 which had the highest elevation. However, Trench-7 had the minimum topsoil values for specific conductance, calcium, organic matter and potassium (Figure 1).

The soil particle size analysis indicated that Trench-3 had more sand in the topsoil than the topsoil of the other trenches. In general there was more clay in the topsoil than the caliche (Table 3). The topsoil was significantly less basic and specific conductance, sodium, SAR, potassium and arsenic were more concentrated in the topsoil layer, although these relationships were not statistically significant. Additionally, nitrate and phosphorus nutrients as well as organic matter concentrations were significantly greater in the topsoil layer. This is expected as the source of these constituents tends to be at the soil surface. These nutrients are taken up during biological processes so older and deeper layers of soil tend to be nutrient depleted and newly deposited layers of soil tend to have greater nutrient concentrations.

Caliche is defined as a hardened deposit of calcium carbonate, or sometimes calcium sulfate, plus other less soluble minerals, formed by minerals leaching from the upper layer of soil or formed by water rising through the soil by capillary action, evaporating, and leaving behind minerals. Caliche can be impermeable and can decrease drainage and cause accumulation of salts. This increase in salinity can also make the surrounding soil more basic. As expected, Calcium and magnesium were more concentrated and pH more basic in the caliche, however only magnesium and pH was statistically significantly greater in the caliche layer

The presence of the caliche soil horizon is important agriculturally because as salinity increases, the ability of vegetation to extract water from the soil decreases because salinity increases the soil-water osmotic pressure. This increases the amount of energy a plant must use to extract the water from the soil and the increase in osmotic pressure can cause xylem cells to cavitate, thus killing the plant (Pockman and Sperry, 2000)[5]. Soil pH influences the solubility of nutrients and the activity of microorganisms and therefore nutrient availability to plants. In general, the optimal pH for plants ranges from pH 6 to 7, although some plants may require a soil pH outside of this range. When soil pH is below 5.5 there is generally a low availability of calcium, magnesium, and phosphorus while aluminum, iron and boron solubility is high. When the pH is 7.8 or greater, calcium and magnesium are soluble but iron, manganese, copper, zinc,

[5] Pockman, W.T. and J.S. Sperry. 2000. Vulnerability to xylem cavitation and the distribution of Sonoran Desert vegetation. American Journal of Botany, Vol. 87 (9); pp. 1287-1299

phosphorus and boron may be unavailable (SS NRCS USDA 2011[6]). The topsoil pH of the Agricultural Research Area of the BGNDRF ranged from 7.45-8.26 and 7.8 to 8.19 in the caliche layer. According to the USDA Natural Resources Conservation Service classification the soil is slightly alkaline (pH7.4 – 7.8) to moderately alkaline (pH7.9 – 8.4).

[6] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Series Classification Database (SS NRCS USDA). Available online at http://soils.usda.gov/technical/classification/scfile/index.htm. Accessed [08/24/2011]

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Table 1. Summary of laboratory analytical results for soil samples collected 31 July 2013 from the seven soil trenches in the Agricultural Research Area of the the Brackish Groundwater National Desalination Research Facility

| | | Trench-1 | | | | Trench-2 | | | | | | | | | Trench-3 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-25 cm | 25-50 cm | 50-75 cm | 75-100 cm | 0-25 cm | 25-50 cm | 50-75 cm | 75-100 cm | 100-125 cm | 125-150 cm | 150-175 cm | 175-200 cm | 213-243 cm | 0-25 cm | 25-50 cm | 50-75 cm | 75-100 cm | 100-125 cm | 121-152 cm |
| | Reporting | TS | TS | TS | C | TS | TS | TS | TS | C | C | C | C | C | TS | TS | TS | TS | TS | C |
| Parameter Name | Units | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | Sample 7 | Sample 8 | Sample 9 | Sample 10 | Sample 11 | Sample 12 | Sample 13 | Sample 14 | Sample 15 | Sample 16 | Sample 17 | Sample 18 | Sample 19 |
| pH | pH Units | 7.69 | 7.81 | 7.66 | 7.88 | 7.82 | 7.69 | 7.77 | 7.95 | 7.98 | 7.96 | 8.09 | 8.1 | 8.11 | 7.83 | 7.85 | 8.12 | 7.91 | 7.92 | 7.99 |
| Specific conductance * | µmhos/c | 4100 | 3700 | 4400 | 3500 | 5100 | 6700 | 6800 | 3100 | 2300 | 3300 | 2700 | 7100 | 5200 | 3500 | 2300 | 1400 | 1000 | 1400 | 1400 |
| Specific conductance ** | µmhos/c | 19200 | 14900 | 18200 | 12400 # | 43400 | 28000 | 25700 | 16900 # | | | | | | 10700 | 3100 | 2200 | 3300 # | | |
| Magnesium | mg/Kg | 9800 | 7200 | 14000 | 23000 | 11000 | 11000 | 11000 | 8100 | 16000 | 18000 | 19000 | 14000 | 18000 | 12000 | 9900 | 10000 | 9700 | 16000 | 15000 |
| Calcium | mg/Kg | 130000 | 190000 | 190000 | 160000 | 110000 | 120000 | 120000 | 170000 | 160000 | 130000 | 140000 | 130000 | 150000 | 120000 | 100000 | 130000 | 180000 | 170000 | 190000 |
| Sodium | mg/Kg | 1500 | 640 | 620 | 570 | 2100 | 1900 | 2000 | 670 | 630 | 1200 | 600 | 2100 | 1700 | 650 | 380 | 320 | 260 | 330 | 250 |
| Sodium Adsoprtion Ratio | | 16 | 8.2 | 4.5 | 3.9 | 19 | 15 | 15 | 11 | 6.4 | 16 | 14 | 30 | 27 | 5 | 2.8 | 2.4 | 1.8 | 1.5 | 1.2 |
| Organic Matter | % | 2.1 | 1 | 0.61 | ND | 4.2 | 2.1 | 1.6 | 0.46 | ND | ND | ND | ND | ND | 3.1 | 2.4 | 1.6 | 0.81 | 0.51 | ND |
| Nitrate (NO3 as N) | mg/Kg | 7.6 | 1.1 J | 1.2 J | 1.2 J | 9.7 | 1.9 | 2 | 2.3 | 1.1 | 2.2 | 0.45 | 1.9 | 5.3 | 170 | 79 | 21 | 5.5 | 4.3 | 4.8 |
| Phosphorus, NaHCO3 extractable | mg/kg | 10 | 3 | 2 | ND | 13 | 9 | 8 | 5 | 5 | 2 | ND | ND | ND | 11 | 10 | 10 | 9 | 1 | ND |
| Potassium | mg/L | 420 | 130 | 100 | 130 | 350 | 310 | 310 | 130 | 110 | 100 | 100 | 170 | 160 | 72 | 21 | 18 | 18 | 28 | 46 |
| Arsenic | mg/kg | 3.6 | 2.7 | 2.8 | 1.6 | 3 | 3.3 | 3.4 | 3.2 | 3 | 2.5 | 1.6 | 1.6 | 2.1 | 3.2 | 2.9 | 3.2 | 3.3 | 2.7 | 1.4 |
| Selenium | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| | | Trench-4 | | | | | | | | | Trench-5 | | | | Trench-6 | | | | Trench-7 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-25 cm | 25-50 cm | 50-75 cm | 75-100 cm | 100-125 cm | 125-150 cm | 150-175 cm | 175-200 cm | 213-243 cm | 0-25 cm | 25-50 cm | 50-75 cm | 91-121 cm | 0-25 cm | 25-50 cm | 50-75 cm | 75-100 cm | 0-25 cm | 25-50 cm | 50-75 cm | 75-100 cm |
| | Reporting | TS | TS | TS | TS | TS | C | C | C | C | TS | TS | TS | C | TS | TS | TS | TS | TS | TS | TS | TS |
| Parameter Name | Units | Sample 20 | Sample 21 | Sample 22 | Sample 23 | Sample 24 | Sample 25 | Sample 26 | Sample 27 | Sample 28 | Sample 29 | Sample 30 | Sample 31 | Sample 32 | Sample 33 | Sample 34 | Sample 35 | Sample 36 | Sample 37 | Sample 38 | Sample 39 | Sample 40 |
| pH | pH Units | 7.68 | 7.45 | 7.69 | 7.84 | 7.8 | 7.87 | 7.81 | 7.98 | 8.19 | 7.51 | 7.51 | 7.75 | 7.88 | 7.76 | 7.84 | 7.72 | 7.69 | 7.73 | 7.86 | 8.01 | 8.26 |
| Specific conductance * | µmhos/c | 9300 | 6900 | 6500 | 5800 | 6100 | 2300 | 2300 | 3800 | 4200 | 7700 | 5400 | 5000 | 2400 | 2000 | 3000 | 1500 | 1600 | 2700 | 2300 | 1200 | 900 |
| Specific conductance ** | µmhos/c | 20300 | 28500 | 29400 | 7400 # | | | | | | 26200 | 26100 | 30600 | 4700 # | | | | | | | | |
| Magnesium | mg/Kg | 13000 | 12000 | 9400 | 7900 | 8300 | 14000 | 16000 | 6700 | 12000 | 9800 | 7000 | 8000 | 21000 | 11000 | 8700 | 7400 | 7000 | 10000 | 12000 | 8800 | 9000 |
| Calcium | mg/Kg | 120000 | 97000 | 61000 | 150000 | 160000 | 150000 | 130000 | 150000 | 140000 | 110000 | 130000 | 170000 | 130000 | 100000 | 100000 | 120000 | 140000 | 110000 | 110000 | 99000 | 98000 |
| Sodium | mg/Kg | 3000 | 2500 | 2200 | 1900 | 2100 | 510 | 660 | 1200 | 1500 | 1700 | 1100 | 780 | 660 | 420 | 420 | 210 | 180 | 520 | 570 | 330 | 290 |
| Sodium Adsoprtion Ratio | | 21 | 21 | 15 | 21 | 27 | 4.9 | 7.8 | 25 | 16 | 13 | 10 | 9.2 | 5.1 | 3 | 5.8 | 1.1 | 0.66 | 4 | 3.8 | 2.7 | 1.8 |
| Organic Matter | % | 2.7 | 1.5 | 1 | ND | ND | ND | ND | ND | ND | 2.2 | 1.2 | ND | ND | 2.4 | 1.6 | 0.9 | ND | ND | 1.9 | 1.2 | 0.76 |
| Nitrate (NO3 as N) | mg/Kg | 190 | 62 | 24 | 6.7 | 5.8 | 0.67 | 1.1 | 1.1 | 2.6 | 290 | 100 | 24 | 2.8 | 37 | 54 | 2.9 | 3.7 | 130 | 140 | 29 | 2.4 |
| Phosphorus, NaHCO3 extractable | mg/kg | 11 | 8 | 7 | 5 | 5 | 5 | 2 | ND | ND | 9 | 5 | 4 | 2 | 22 | 22 | 12 | 6 | 9 | 10 | 10 | 9 |
| Potassium | mg/L | 730 | 380 | 270 | 150 | 160 | 84 | 99 | 120 | 130 | 670 | 190 | 260 | 180 | 120 | 28 | 10 | 16 | 60 | 41 | 32 | 30 |
| Arsenic | mg/kg | 2.9 | 2.7 | 3.4 | 2.8 | 2.5 | 1.8 | 1.7 | 0.7 | 1.6 | 2.8 | 2.3 | 2.4 | 1.9 | 2.6 | 2.9 | 2.4 | 2.9 | 2.5 | 2.7 | 2.3 | 2.7 |
| Selenium | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

J = analyte detected below quantification limit
ND= Not Detecd at the Reporting Limit
#= Actual sample depth 76-106 cm
* Results based on analyses conducted by Hall Environmental. The analytical method was a modified Bureau of Soils method by which electrical conductivity was determined by direct measurement of the saturated soil-paste.
** Results based on analyses conducted by NMSU. The analytical method used determined electrical conductivity by measurement of the saturated soil-paste ***extract.***

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Table 2. Summary of average concentration of chemical constituents in the topsoil and caliche layers of each trench and comparison of analyte concentration between trenches

| Trench | Soil | pH | Specific conductance | Magnesium | Calcium | Sodium | Sodium Adsoprtion Ratio | Organic Matter | N | Phosphorus | Potassium | Arsenic | Selenium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | pH Units | µmhos/c | mg/Kg | mg/Kg | mg/Kg | mg/L | % | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| Trench-1 | topsoil | 7.72 | 4067 | 10333 | 170000 | 920 | 10 | 1.2 | 3.3 | 5 | 217 | 3.0 | ND |
| Trench-2 | topsoil | 7.81 | 5425 | 10275 | 130000 | 1668 | 15 | 2.1 | 4.0 | 9 | 275 | 3.2 | ND |
| Trench-3 | topsoil | 7.97 | 2703 | 13229 | 141714 | 698 | 8 | 1.2 | 41.0 | 6 | 64 | 2.8 | ND |
| Trench-4 | topsoil | 7.69 | 6920 | 10120 | 117600 | 2340 | 21 | 1.0 | 57.7 | 7 | 338 | 2.9 | ND |
| Trench-5 | topsoil | 7.59 | 6033 | 8267 | 136667 | 1193 | 11 | 1.1 | 138.0 | 6 | 373 | 2.5 | ND |
| Trench-6 | topsoil | 7.75 | 2025 | 8525 | 115000 | 308 | 3 | 1.2 | 24.4 | 16 | 44 | 2.7 | ND |
| Trench-7 | topsoil | 7.97 | 1775 | 9950 | 104250 | 428 | 3 | 1.0 | 75.4 | 10 | 41 | 2.6 | ND |
| MIN | | 7.59 | 1775 | 8267 | 104250 | 308 | 3 | 1.0 | 3.3 | 5 | 41 | 2.5 | ND |
| MAX | | 7.97 | 6920 | 13229 | 170000 | 2340 | 21 | 2.1 | 138.0 | 16 | 373 | 3.2 | ND |
| Trench-1 | caliche | 7.88 | 3500 | 23000 | 160000 | 570 | 4 | ND | 1.2 | ND | 130 | 1.6 | ND |
| Trench-2 | caliche | 8.05 | 4120 | 17000 | 142000 | 1246 | 19 | ND | 2.2 | 1 | 128 | 2.2 | ND |
| Trench-3 | caliche | 7.99 | 1400 | 15000 | 190000 | 250 | 1 | ND | 4.8 | ND | 46 | 1.4 | ND |
| Trench-4 | caliche | 7.96 | 3150 | 12175 | 142500 | 968 | 13 | ND | 1.4 | 2 | 108 | 1.5 | ND |
| Trench-5 | caliche | 7.88 | 2400 | 21000 | 130000 | 660 | 5 | ND | 2.8 | 2 | 180 | 1.9 | ND |
| MIN | | 7.88 | 1400 | 12175 | 130000 | 250 | 1 | ND | 1.2 | ND | 46 | 1.4 | ND |
| MAX | | 8.05 | 4120 | 23000 | 190000 | 1246 | 19 | ND | 4.8 | 2 | 180 | 2.2 | ND |

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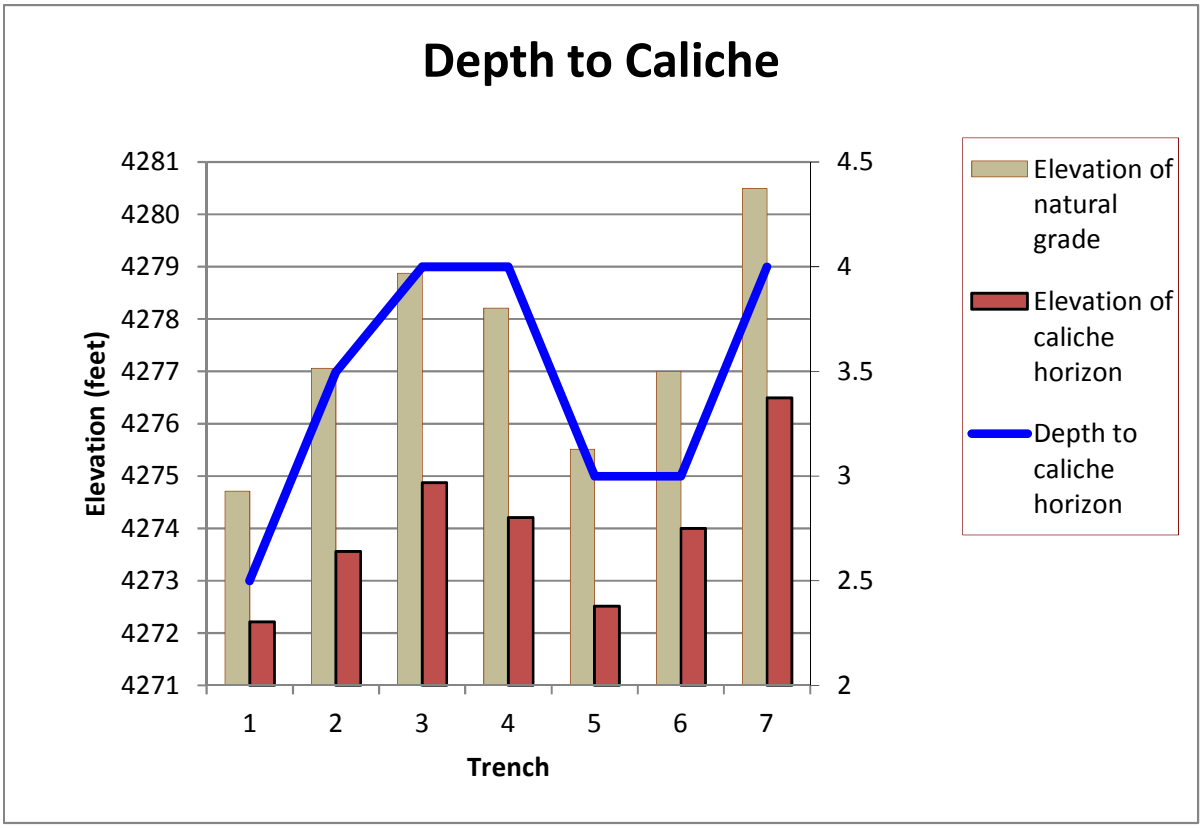
Table 3. Summary of soil texture analysis collected 31 July 2013 from the seven soil trenches in the Agricultural Research Area of the the Brackish Groundwater National Desalination Research Facility

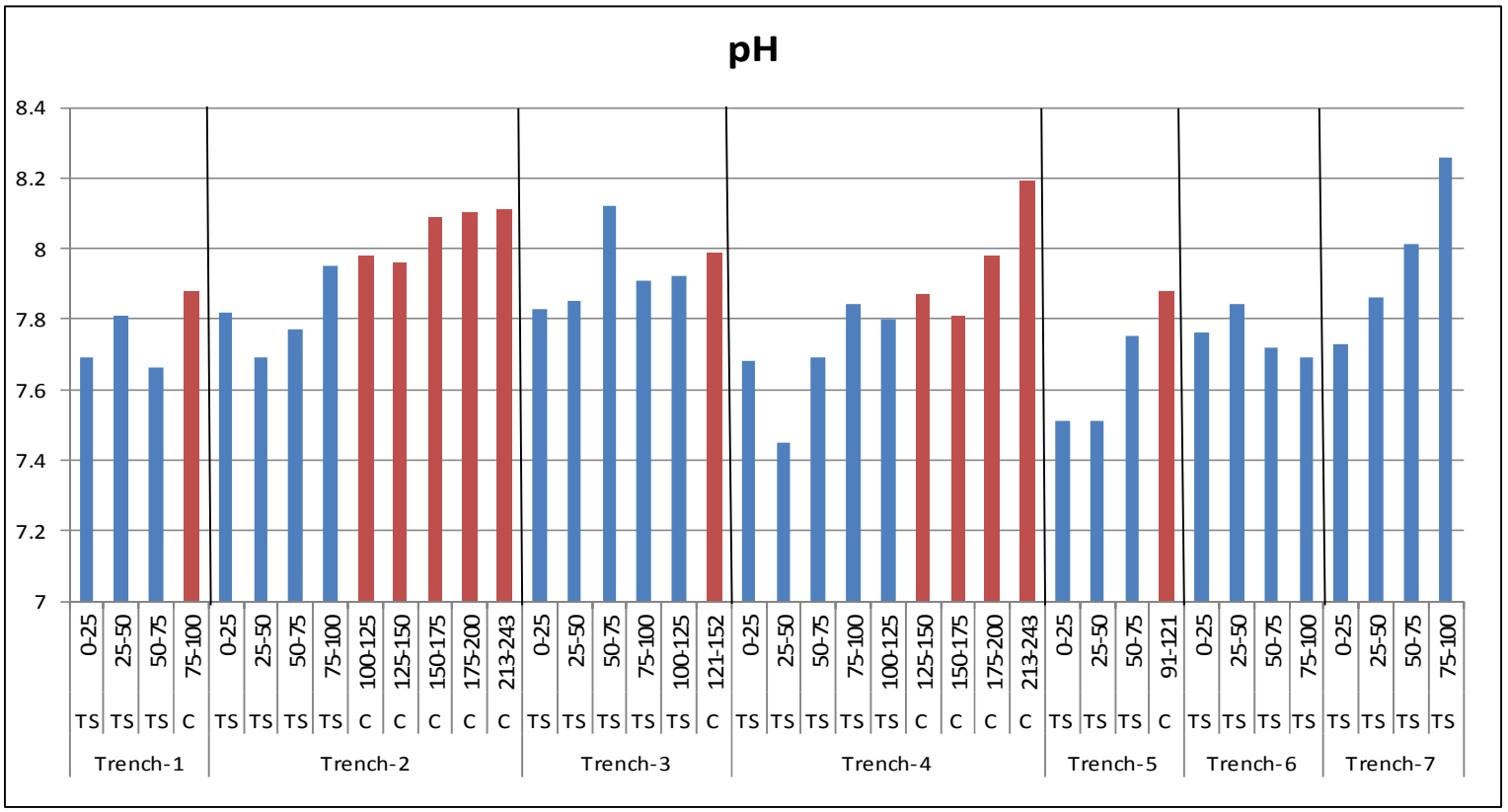
| No. | Sample # | Trench | Depth (cm) | Time | Hydrometer Reading | Temp (°C) | Temp (°F) | Soil Horizon | Sand | Silt | Clay | Soil Classification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 0-25 | 40 sec | 36 | 21.5 | 70.7 | topsoil | 30.92 | 30 | 39.08 | clay loam |
| | | | | 3 hrs | 21 | 21.5 | 70.7 | | | | | |
| 2 | 2 | 1 | 25-50 | 40 sec | 32 | 21.5 | 70.7 | topsoil | 38.92 | 58 | 3.08 | silt loam |
| | | | | 3 hrs | 3 | 21.5 | 70.7 | | | | | |
| 3 | 3 | 1 | 50-75 | 40 sec | 34 | 21.5 | 70.7 | topsoil | 34.92 | 62 | 3.08 | silt loam |
| | | | | 3 hrs | 3 | 21.5 | 70.7 | | | | | |
| 4 | 4 | 1 | 76-106 | 40 sec | 36 | 21.5 | 70.7 | caliche | 30.92 | 66 | 3.08 | silt loam |
| | | | | 3 hrs | 3 | 21.5 | 70.7 | | | | | |
| 5 | 11 | 2 | 0-25 | 40 sec | 40 | 20.5 | 68.9 | topsoil | 23.64 | 29.64 | 46.72 | clay loam |
| | | | | 3 hrs | 25 | 21 | 69.8 | | | | | |
| 6 | 12 | 2 | 25-50 | 40 sec | 38 | 20.5 | 68.9 | topsoil | 27.64 | 17.64 | 54.72 | clay |
| | | | | 3 hrs | 29 | 21 | 69.8 | | | | | |
| 7 | 13 | 2 | 50-75 | 40 sec | 40 | 20.5 | 68.9 | topsoil | 23.64 | 23.64 | 52.72 | clay |
| | | | | 3 hrs | 28 | 21 | 69.8 | | | | | |
| 8 | 14 | 2 | 75-100 | 40 sec | 38 | 20.5 | 68.9 | topsoil | 27.64 | 63.64 | 8.72 | silt loam |
| | | | | 3 hrs | 6 | 21 | 69.8 | | | | | |
| 9 | 15 | 2 | 100-125 | 40 sec | 38 | 20.5 | 68.9 | caliche | 27.64 | 59.64 | 12.72 | silt loam |
| | | | | 3 hrs | 8 | 21 | 69.8 | | | | | |
| 10 | 15 | 2 | 125-150 | 40 sec | 34 | 20.5 | 68.9 | caliche | 35.64 | 55.64 | 8.72 | silt loam |
| | | | | 3 hrs | 6 | 21 | 69.8 | | | | | |
| 11 | 17 | 2 | 150-175 | 40 sec | 28 | 20.5 | 68.9 | caliche | 47.64 | 43.64 | 8.72 | loam |
| | | | | 3 hrs | 6 | 21 | 69.8 | | | | | |
| 12 | 18 | 2 | 175-200 | 40 sec | 35 | 20.5 | 68.9 | caliche | 33.64 | 57.64 | 8.72 | silt loam |
| | | | | 3 hrs | 6 | 21 | 69.8 | | | | | |
| 13 | | 2 | 213-243 | 40 sec | 40 | 20 | 68 | caliche | 24 | 71.28 | 4.72 | silt loam |
| | | | | 3 hrs | 4 | 21 | 69.8 | | | | | |
| 14 | 27 | 3 | 0-25 | 40 sec | 23 | 20 | 68 | topsoil | 58 | 9.28 | 32.72 | sandy clay loam |
| | | | | 3 hrs | 18 | 21 | 69.8 | | | | | |
| 15 | 28 | 3 | 25-50 | 40 sec | 26 | 20 | 68 | topsoil | 52 | 9.28 | 38.72 | sandy clay |
| | | | | 3 hrs | 21 | 21 | 69.8 | | | | | |
| 16 | 29 | 3 | 50-75 | 40 sec | 29 | 20 | 68 | topsoil | 46 | 7.28 | 46.72 | sandy clay |
| | | | | 3 hrs | 25 | 21 | 69.8 | | | | | |
| 17 | | 3 | 75-100 | 40 sec | 34 | 20 | 68 | topsoil | 36 | 15.28 | 48.72 | clay |
| | | | | 3 hrs | 26 | 21 | 69.8 | | | | | |
| 18 | | 3 | 100-125 | 40 sec | 39 | 20 | 68 | topsoil | 26 | 69.28 | 4.72 | silt loam |
| | | | | 3 hrs | 4 | 21 | 69.8 | | | | | |
| 19 | | 3 | 121-152 | 40 sec | 37 | 20 | 68 | caliche | 30 | 65.28 | 4.72 | silt loam |
| | | | | 3 hrs | 4 | 21 | 69.8 | | | | | |
| 20 | 19 | 4 | 0-25 | 40 sec | 37 | 20.5 | 68.9 | topsoil | 29.64 | 41.64 | 28.72 | clay loam |
| | | | | 3 hrs | 16 | 21 | 69.8 | | | | | |
| 21 | 20 | 4 | 25-50 | 40 sec | 33 | 20.5 | 68.9 | topsoil | 37.64 | 19.64 | 42.72 | clay |
| | | | | 3 hrs | 23 | 21 | 69.8 | | | | | |
| 22 | 21 | 4 | 50-75 | 40 sec | 38 | 20.5 | 68.9 | topsoil | 27.64 | 27.64 | 44.72 | clay |
| | | | | 3 hrs | 24 | 21 | 69.8 | | | | | |
| 23 | 22 | 4 | 75-100 | 40 sec | 38 | 20.5 | 68.9 | topsoil | 27.64 | 63.64 | 8.72 | silt loam |
| | | | | 3 hrs | 6 | 21 | 69.8 | | | | | |
| 24 | 23 | 4 | 100-125 | 40 sec | 38 | 20.5 | 68.9 | topsoil | 27.64 | 63.64 | 8.72 | silt loam |
| | | | | 3 hrs | 6 | 21 | 69.8 | | | | | |
| 25 | 24 | 4 | 125-150 | 40 sec | 40 | 20.5 | 68.9 | caliche | 23.64 | 69.64 | 6.72 | silt loam |
| | | | | 3 hrs | 5 | 21 | 69.8 | | | | | |
| 26 | 25 | 4 | 150-175 | 40 sec | 42 | 20.5 | 68.9 | caliche | 19.64 | 35.64 | 44.72 | clay |
| | | | | 3 hrs | 24 | 21 | 69.8 | | | | | |
| 27 | 26 | 4 | 175-200 | 40 sec | 28 | 20 | 68 | caliche | 48 | 49.28 | 2.72 | sandy loam |
| | | | | 3 hrs | 3 | 21 | 69.8 | | | | | |
| 28 | | 4 | 213-243 | 40 sec | 39 | 20 | 68 | caliche | 26 | 69.28 | 4.72 | silt loam |
| | | | | 3 hrs | 4 | 21 | 69.8 | | | | | |
| 29 | 6 | 5 | 0-25 | 40 sec | 29 | 21.5 | 70.7 | topsoil | 44.92 | 20 | 35.08 | clay loam |
| | | | | 3 hrs | 19 | 21.5 | 70.7 | | | | | |
| 30 | 7 | 5 | 25-50 | 40 sec | 35 | 21.5 | 70.7 | topsoil | 32.92 | 30 | 37.08 | clay loam |
| | | | | 3 hrs | 20 | 21.5 | 70.7 | | | | | |
| 31 | 8 | 5 | 50-75 | 40 sec | 35 | 21.5 | 70.7 | topsoil | 32.92 | 18 | 49.08 | clay |
| | | | | 3 hrs | 26 | 21.5 | 70.7 | | | | | |
| 32 | 9 | 5 | 91-121 | 40 sec | 37 | 21.5 | 70.7 | caliche | 28.92 | 68 | 3.08 | silt loam |
| | | | | 3 hrs | 3 | 21.5 | 70.7 | | | | | |

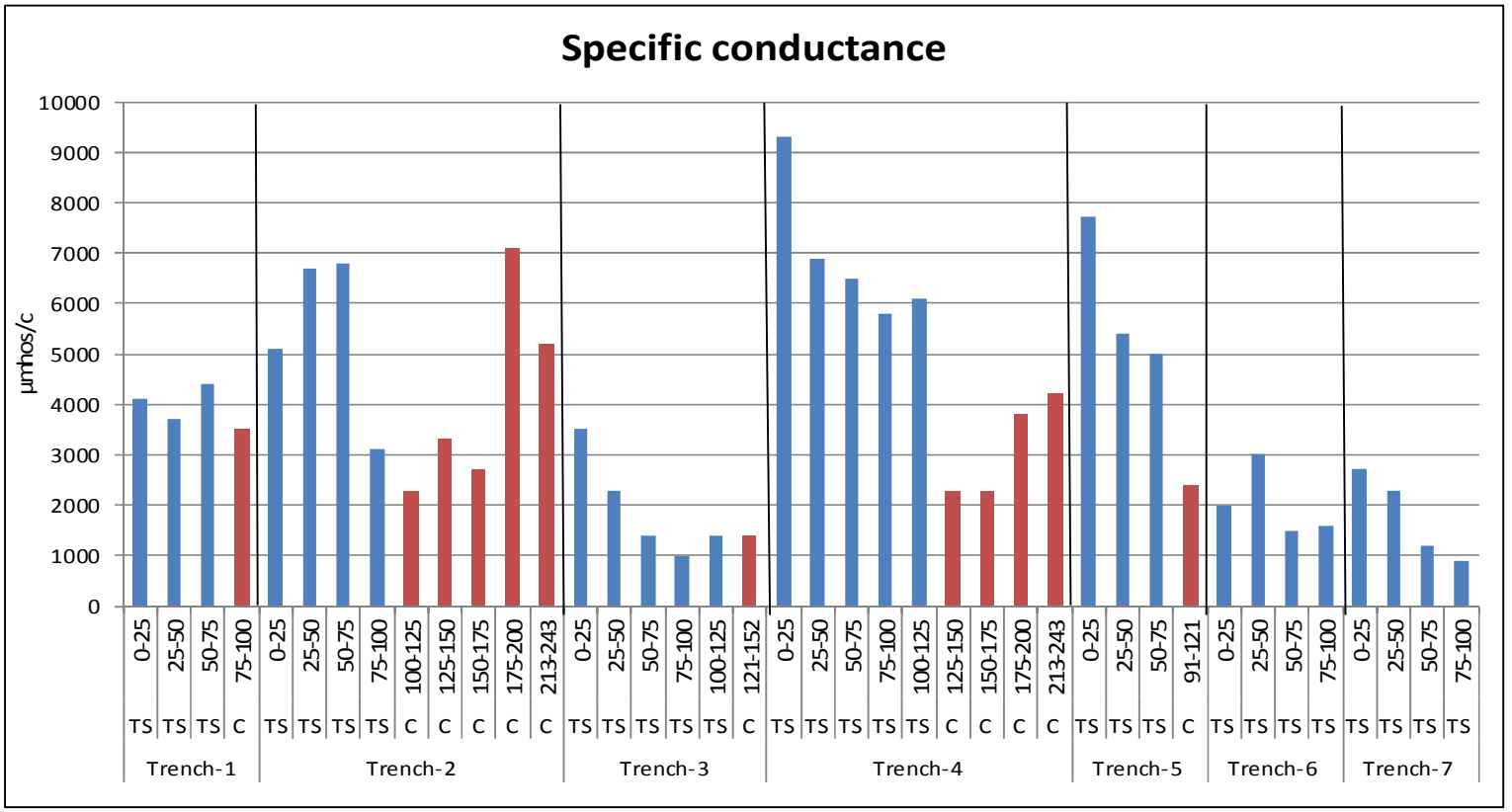
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | | 6 | 0-25 | 40 sec | 37 | 20 | 68 | topsoil | 30 | 35.28 | 34.72 | clay loam |
| | | | | 3 hrs | 19 | 21 | 69.8 | | | | | |
| 34 | | 6 | 25-50 | 40 sec | 35 | 20 | 68 | topsoil | 34 | 23.28 | 42.72 | clay |
| | | | | 3 hrs | 23 | 21 | 69.8 | | | | | |
| 35 | | 6 | 50-75 | 40 sec | 38 | 20 | 68 | topsoil | 28 | 49.28 | 22.72 | loam |
| | | | | 3 hrs | 13 | 21 | 69.8 | | | | | |
| 36 | | 6 | 75-100 | 40 sec | 38 | 20 | 68 | topsoil | 28 | 67.28 | 4.72 | silt loam |
| | | | | 3 hrs | 4 | 21 | 69.8 | | | | | |
| 37 | 10 | 7 | 0-25 | 40 sec | 32 | 21.5 | 70.7 | topsoil | 38.92 | 18 | 43.08 | clay |
| | | | | 3 hrs | 23 | 21.5 | 70.7 | | | | | |
| 38 | | 7 | 25-50 | 40 sec | 32 | 20 | 68 | topsoil | 40 | 11.28 | 48.72 | clay |
| | | | | 3 hrs | 26 | 21 | 69.8 | | | | | |
| 39 | 5 | 7 | 50-75 | 40 sec | 28 | 21.5 | 70.7 | topsoil | 46.92 | 6 | 47.08 | sandy clay |
| | | | | 3 hrs | 25 | 21.5 | 70.7 | | | | | |
| 40 | | 7 | 75-100 | 40 sec | 39 | 20 | 68 | topsoil | 26 | 21.28 | 52.72 | clay |
| | | | | 3 hrs | 28 | 21 | 69.8 | | | | | |

**Figure 1. Elevation of natural grade, elevation of caliche soil horizon and depth to caliche.**



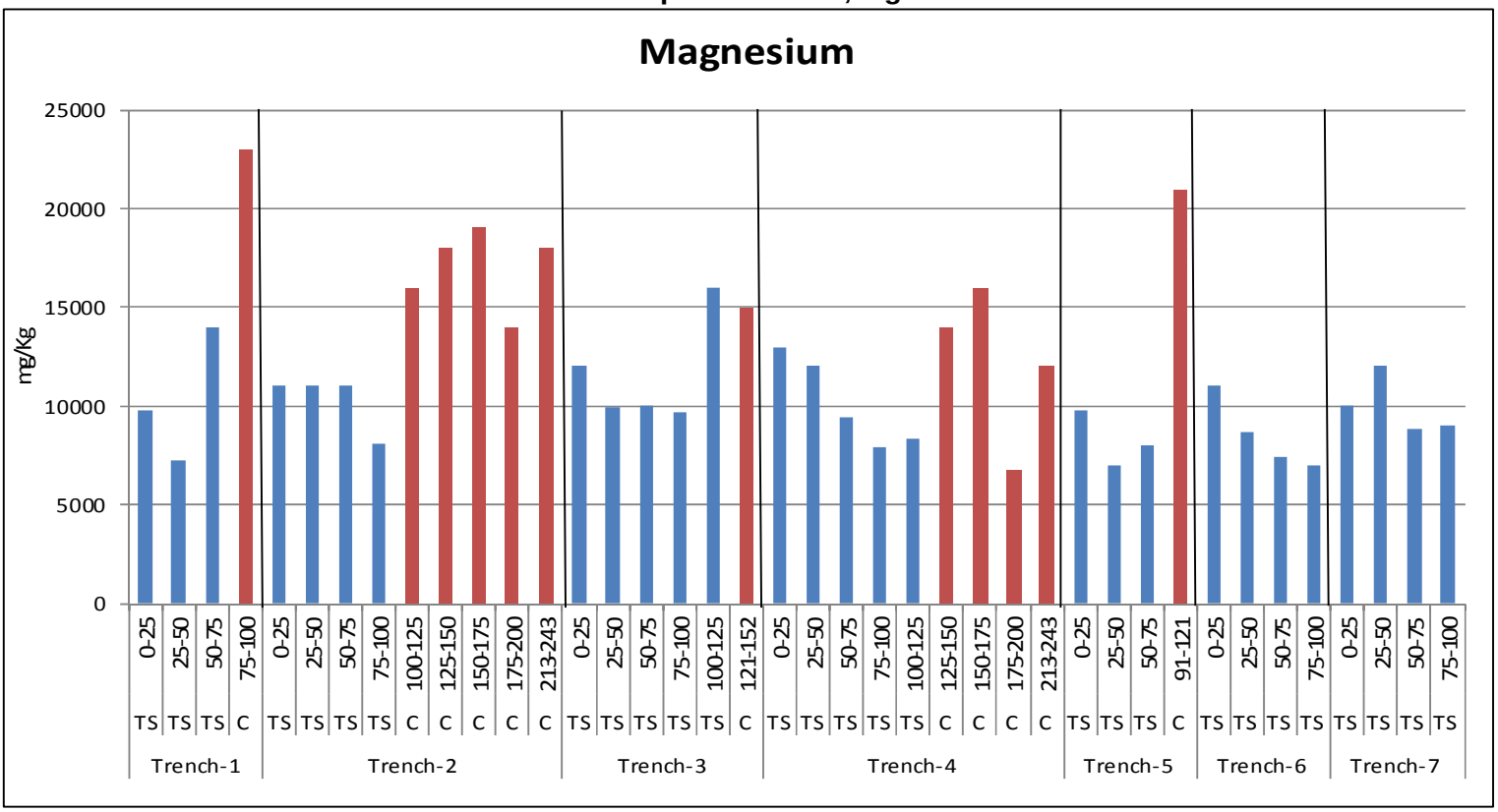
## Plots of reportable data, Figure 2

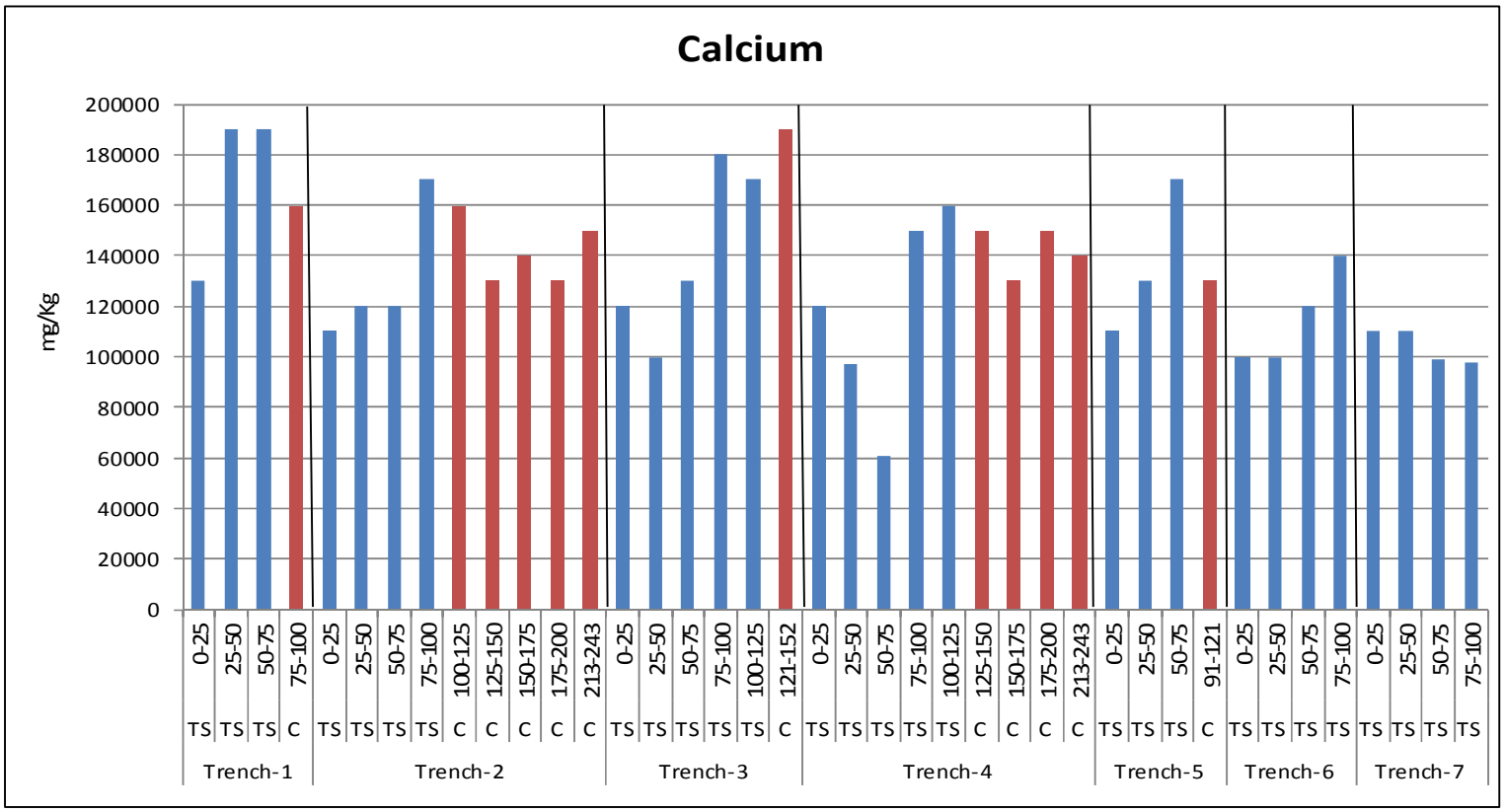



**TS= topsoil, C= Caliche**

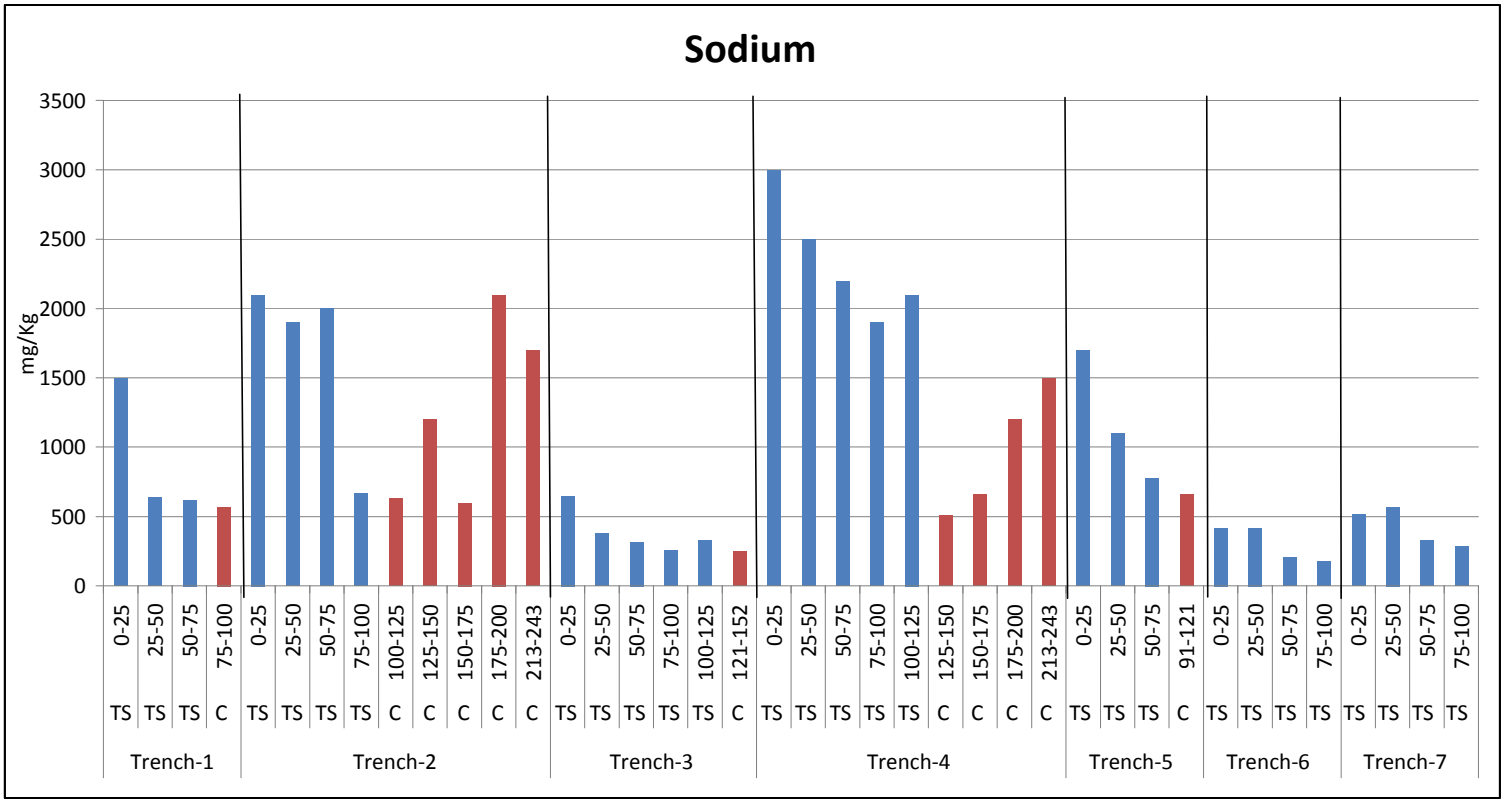
**Plots of reportable data, Figure 3**

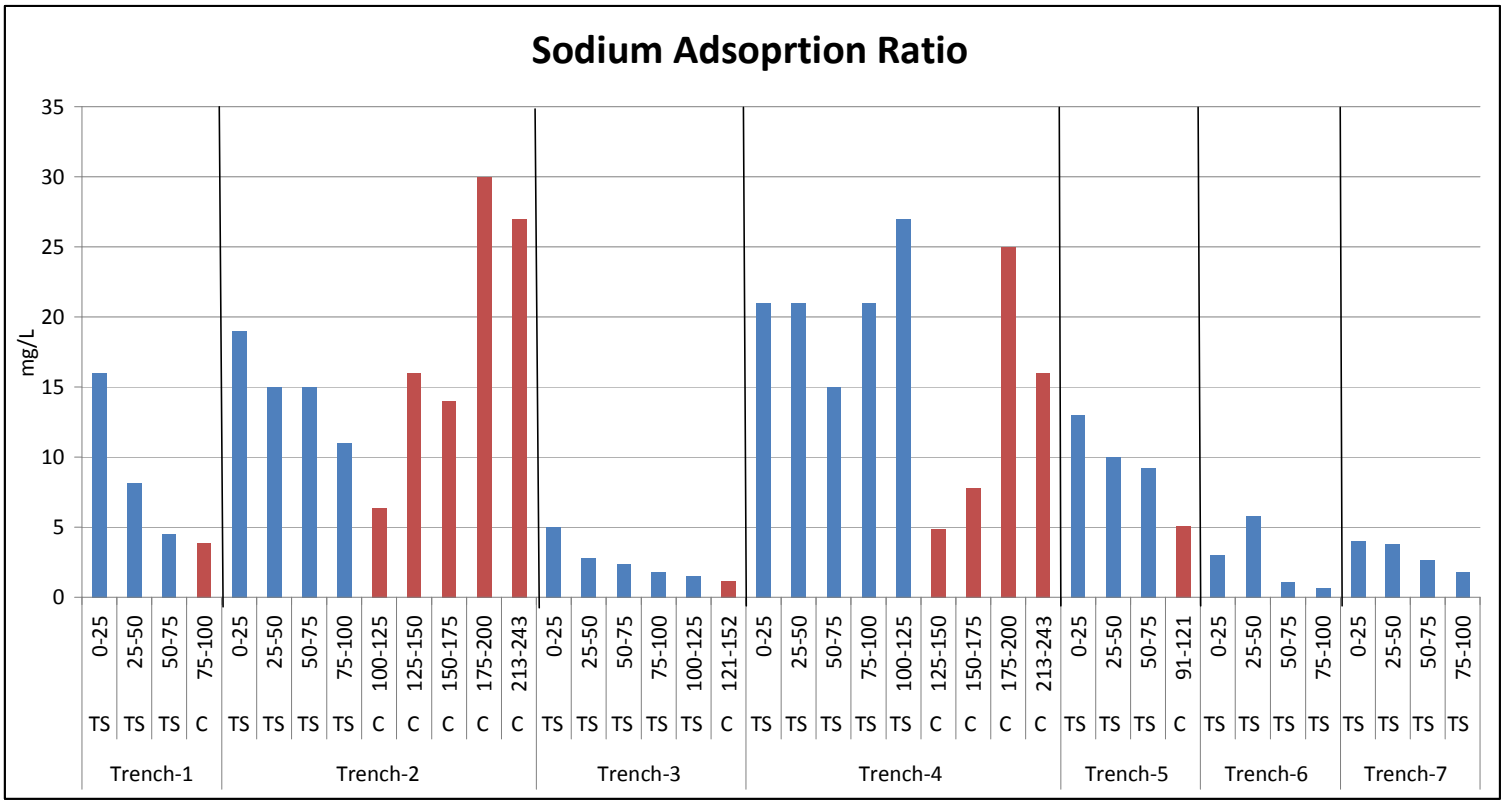



**TS= topsoil, C= Caliche**

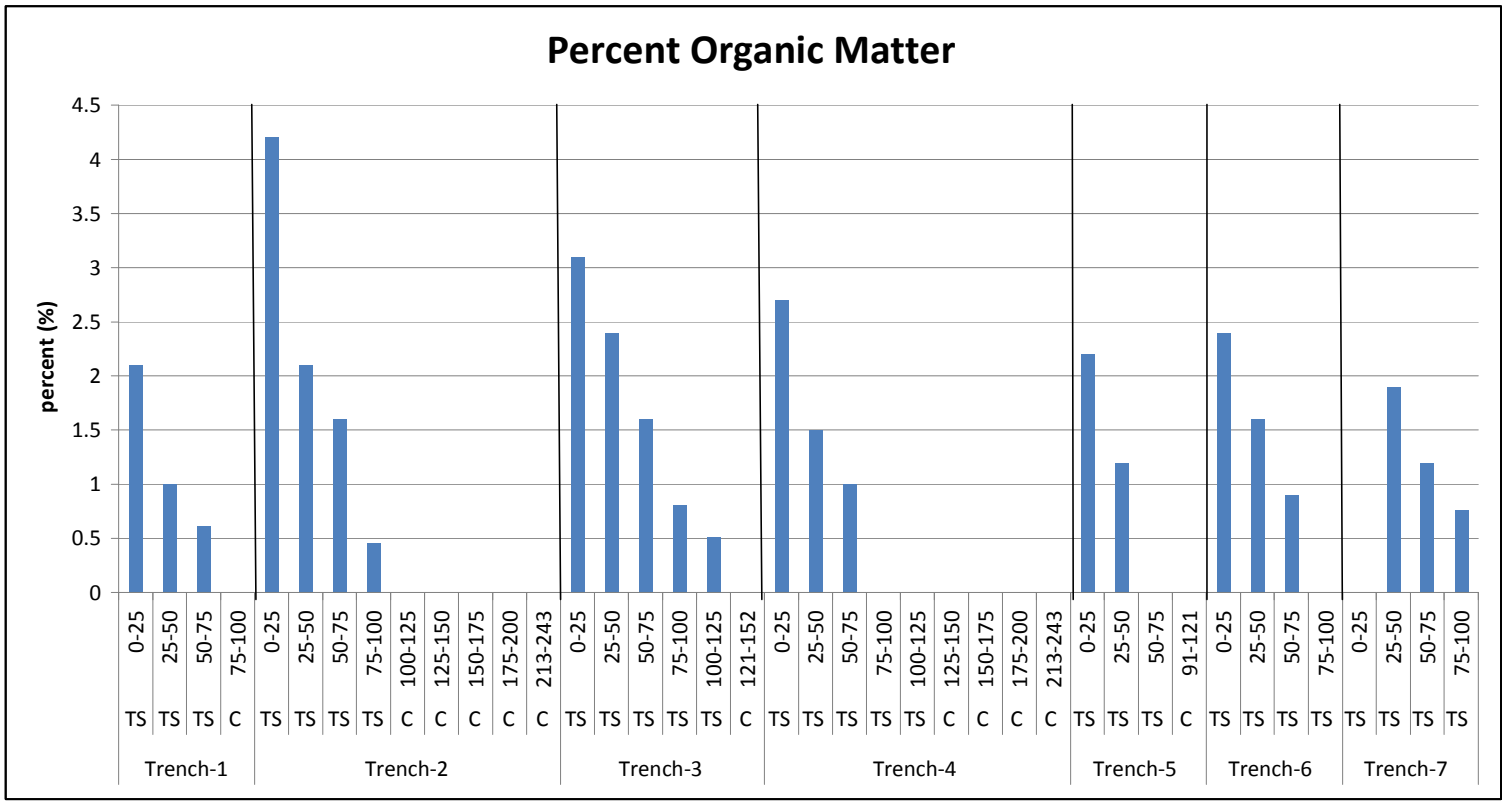
**Plots of reportable data, Figure 4**

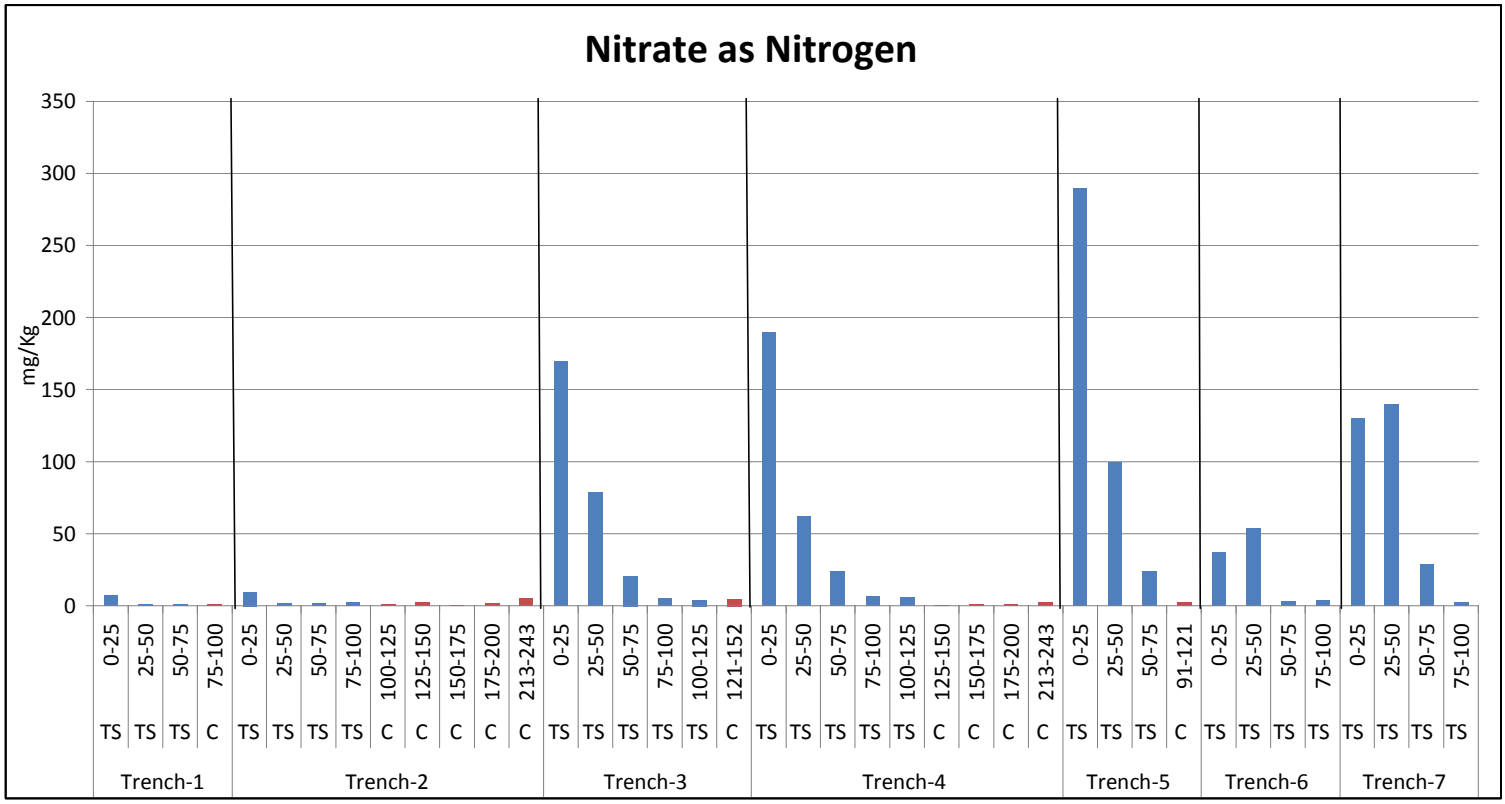



**TS= topsoil, C= Caliche**

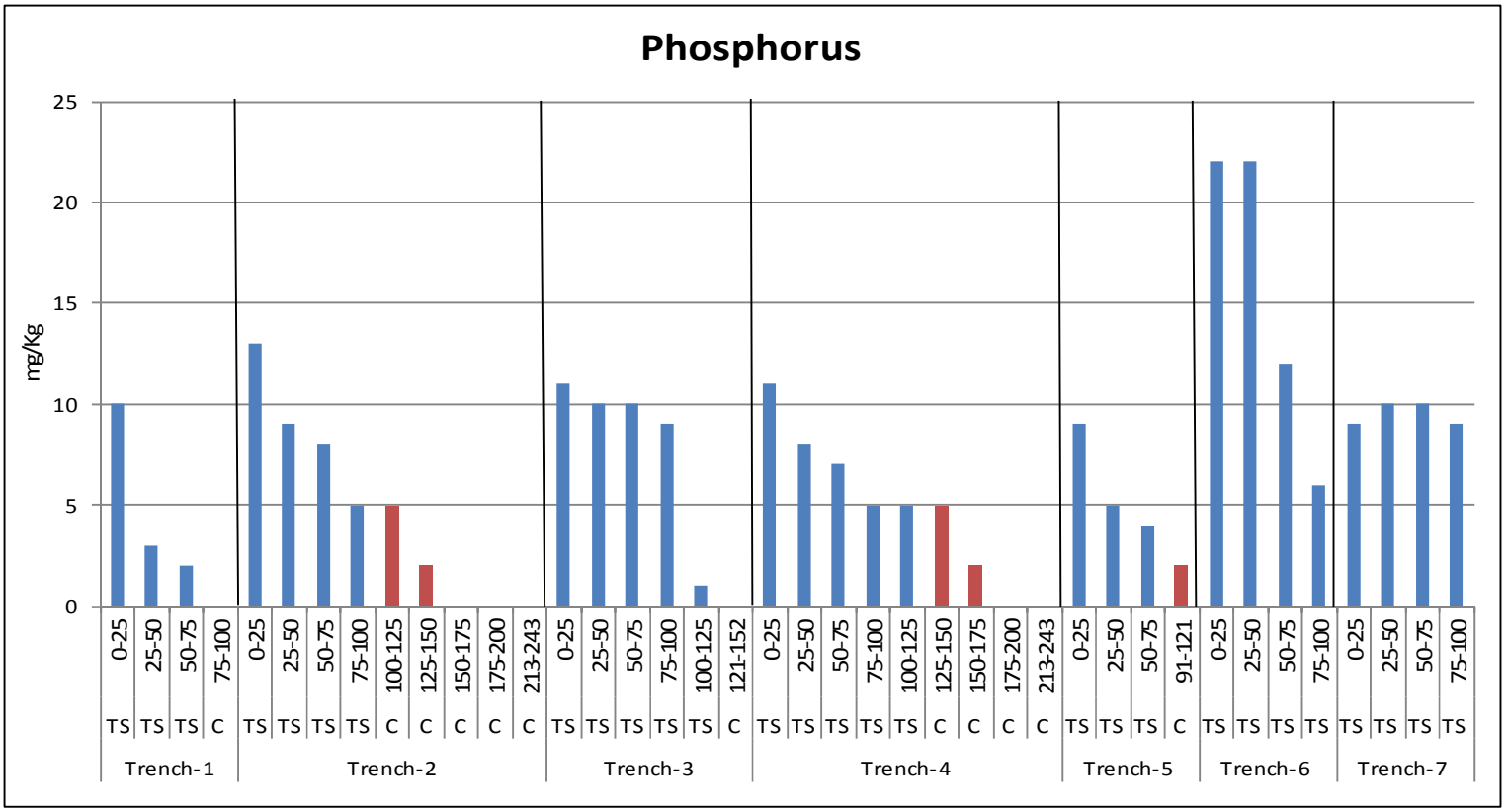
**Plots of reportable data, Figure 5**

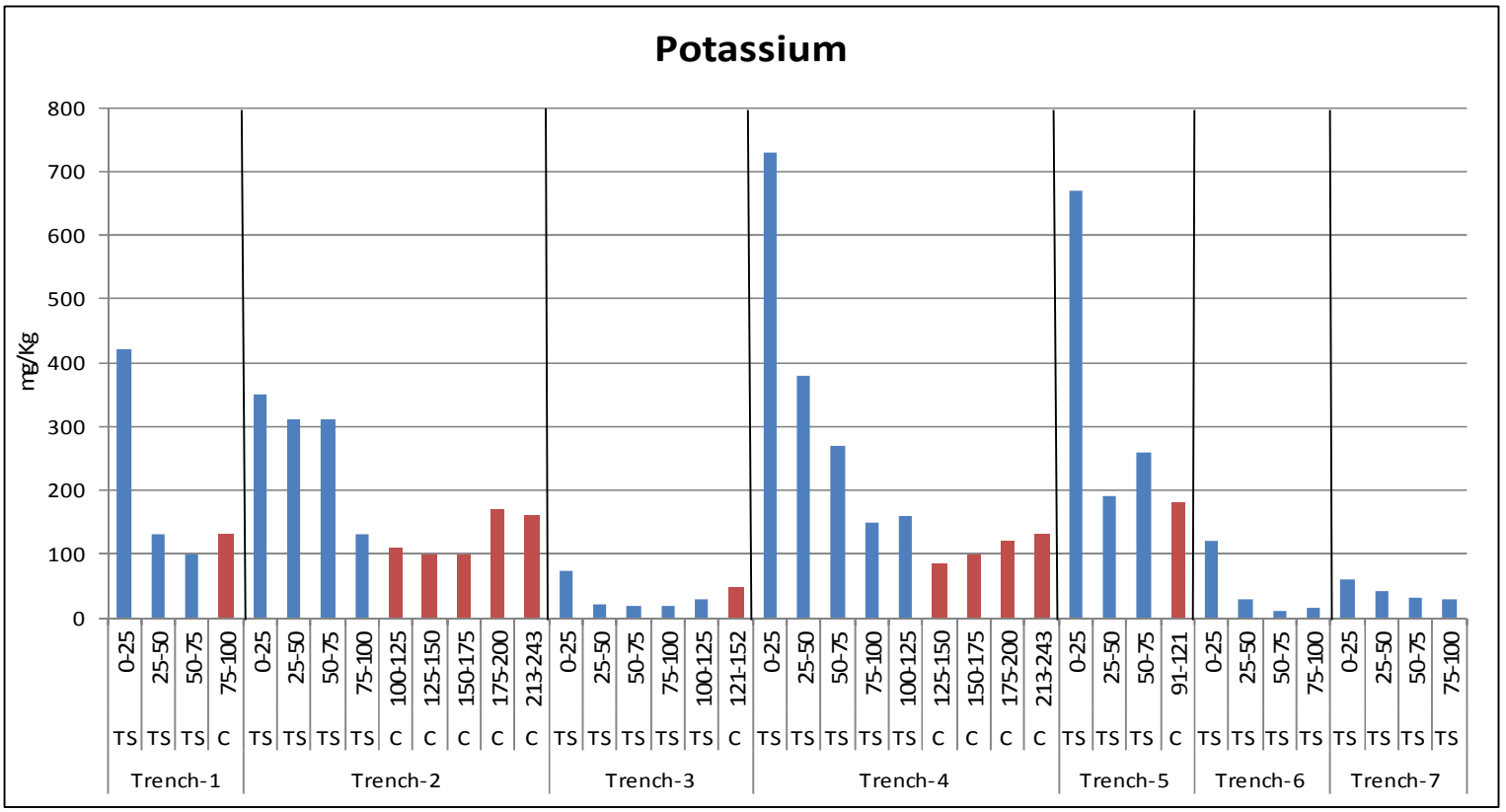



**TS= topsoil, C= Caliche**

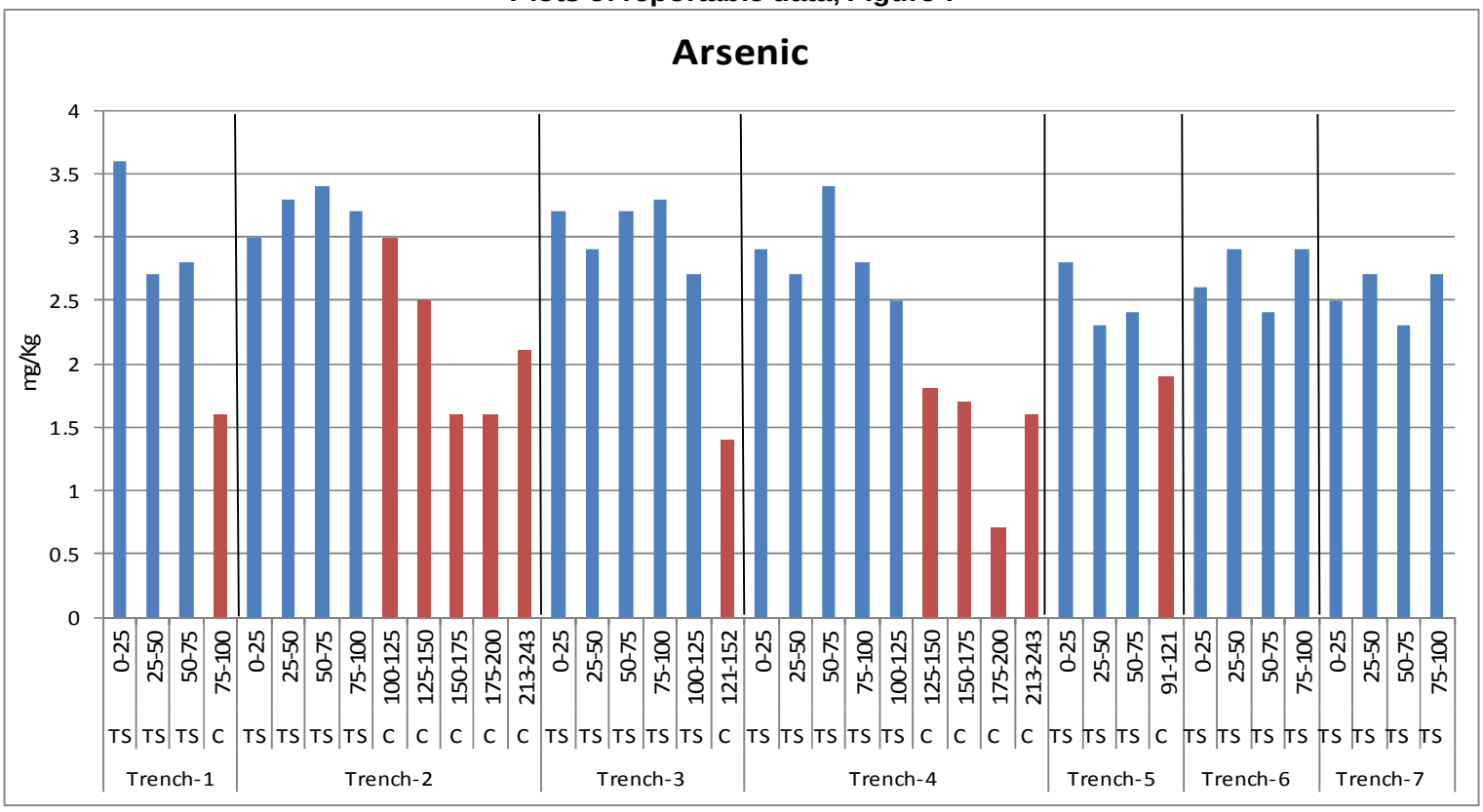
**Plots of reportable data, Figure 6**



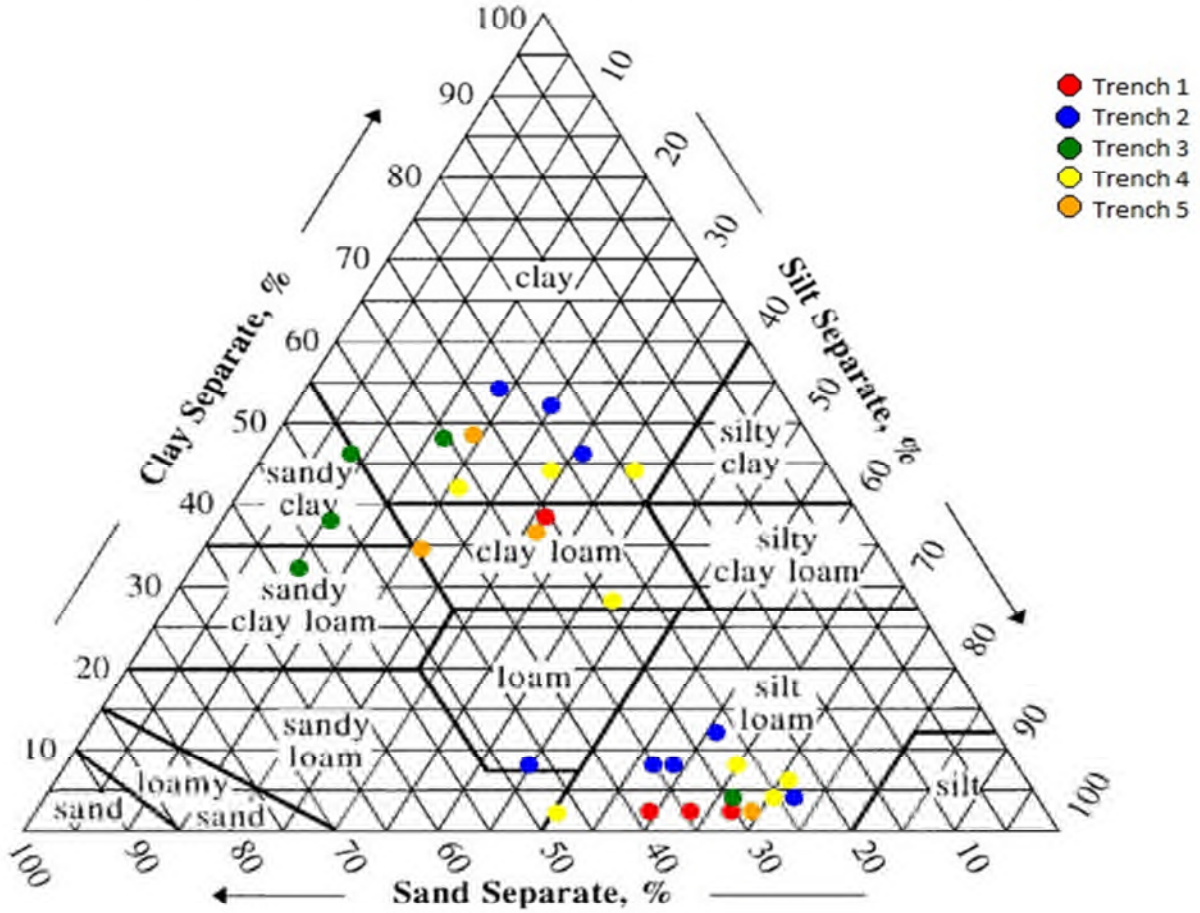

**TS= topsoil, C= Caliche**

**Plots of reportable data, Figure 7**




**TS= topsoil, C= Caliche**

Figure 8. Results of soil particle analysis performed by NMSU (prepared by NMSU and provided by BGNDRF)



# Appendix A

## Facility Map and Sampling Locations

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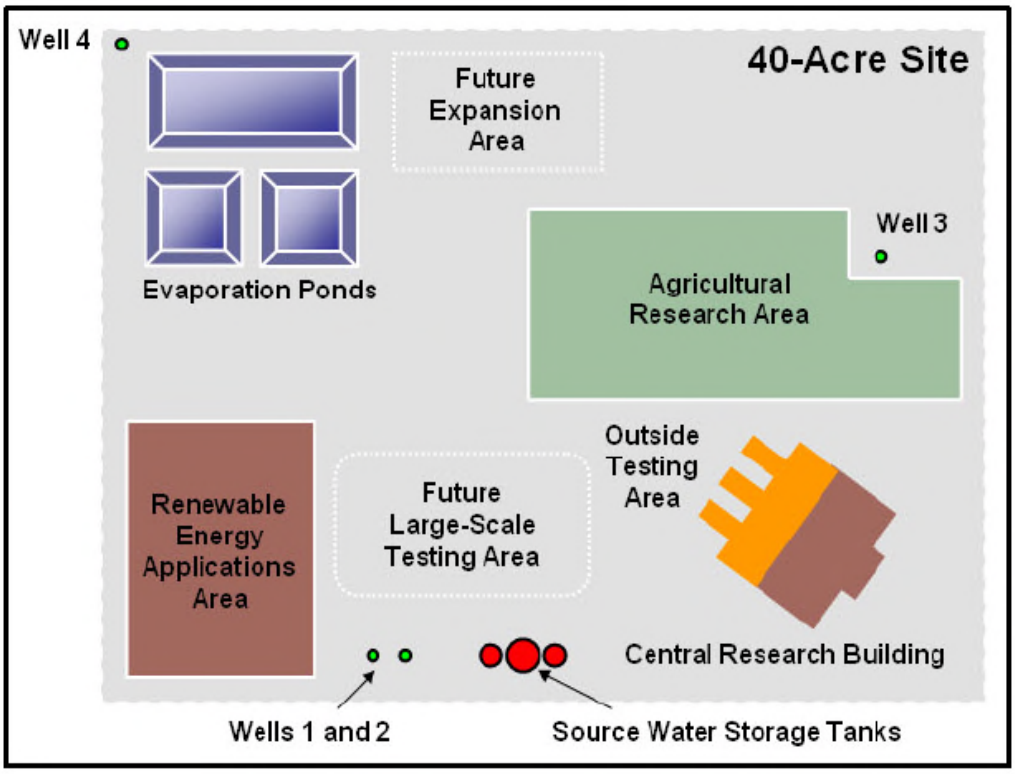
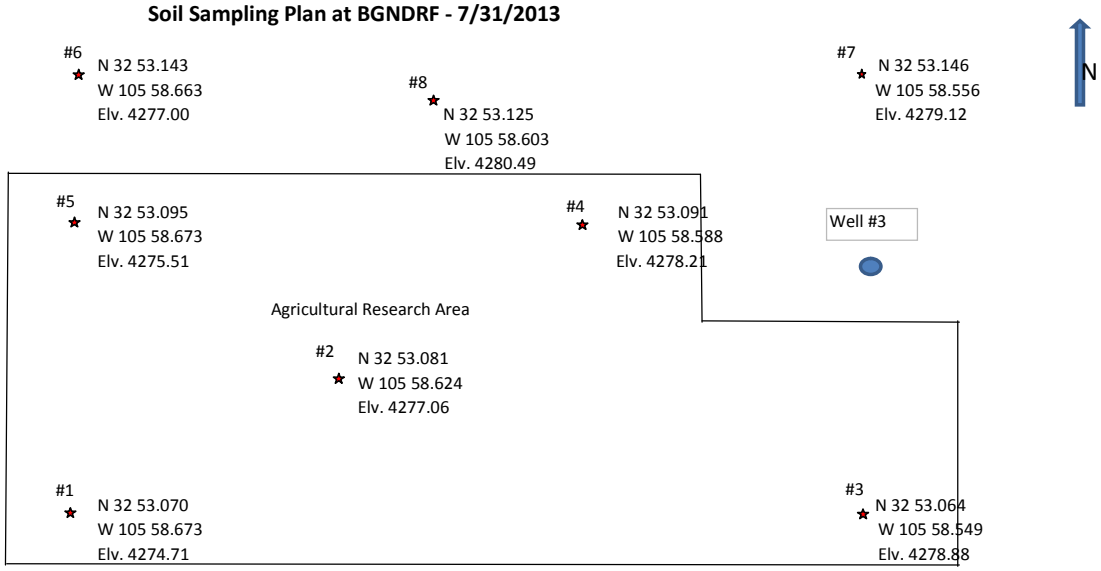



**Location of the Agricultural Research Area at the Brackish Groundwater National Desalination Research Facility.**
**(http://www.usbr.gov/research/AWT/BGNDRF/index.html)**

## Soil Sampling Plan at BGNDRF - 7/31/2013




| Trench | Depth to Caliche | | No. of Samples Above Caliche | No. of Samples in Caliche | No. of Samples Augered in Caliche | Augered Sample Depth 1 | | Total |
|---|---|---|---|---|---|---|---|---|
| | ft | cm | | | | ft | cm | |
| 1 | 2.5 | 75 | 3 | 0 | 1 | 2.5-3.5 | 76-106 | 4 |
| 2 | 3.5 | 105 | 4 | 4 | 1 | 7-8 | 213-243 | 9 |
| 3 | 4 | 120 | 5 | 0 | 1 | 4-5 | 121-152 | 6 |
| 4 | 4 | 120 | 5 | 3 | 1 | 7-8 | 213-243 | 9 |
| 5 | 3 | 90 | 3 | 0 | 1 | 3-4 | 91-121 | 4 |
| 6 | 3 | 90 | 4 | 0 | 0 | n/a | n/a | 4 |
| 7 | 4 | 120 | 4 | 0 | 0 | n/a | n/a | 4 |
| 8 | 3.5 | 105 | 0 | 0 | 0 | n/a | n/a | 0 |
| Total | | | 28 | 7 | 5 | | | 40 |

# Appendix B

# Field Sampling Procedures

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**Analysis of Water Sampled from Four Wells at the Brackish Groundwater National Desalination Research Facility: Testing Cycle #1**

**Sampling Instructions:**

Samples should be collected on a Monday, Tuesday, or Wednesday and received by the laboratory the following day. Samples must be kept on ice with sample temperature <6°C until received at the laboratory. Many of the sample bottles are preserved with acids. Take caution not to spill or overfill the bottles. Make sure the lids are screwed on tightly.

**For 40mL VOAs-** Fill the voas all the way up so that there is **no headspace**. There should be no air bubbles visible when you turn the voas upside down. Make sure the lids are screwed on tightly.

There are special sampling instructions for **filtering the Dissolved Metals. See attached** instructions.

Labels and Chain of Custody forms will be included with the bottle kit. Please place a label on each bottle with the date, time of collection, collected by, and Sample Name. You should use the same time for all of the samples from one well. Use the time you begin collection at that well. **Please include the Sample Temp for each sample at time of collection in the Remarks section of the COC.**

Please fill out the Chain of Custody completely. Make sure the information matches what is listed on the sample label. The Sample Request ID will be the Sample Name from the label. For Analysis Request, please reference Quotation # 354 and state, "see attached list". Please include the Project Name, Sampler, and a Project Manager on the Chain of Custody. The Project Manager should be Mike Marcus. The Chain of Custody must have a date, time, and signature when the samples are relinquished.

Please call us at (505)345-3975 if you have any questions. Thank you.

Hall Environmental Analysis Laboratory
4901 Hawkins NE , Suite D
Albuquerque, NM 87109 phone: (505)345-3975 fax: (505)345-4107

**Sampling Instructions for Dissolved Metals (125mL $HNO_3$ preserved)**

- Pull the plunger out of the 50mL syringe.
- Insert the tip of the syringe into the filter (on the side with the blue lettering)
- Fill the syringe with the sample and replace the plunger.

- **Prime** the filter **before** placing it on top of the bottle. Carefully push the plunger until several drops of the sample come through the filter. You will discard this liquid.

- After the filter is primed, carefully rest the filter on top of the 125mL $HNO_3$ preserved bottle.
- Filter the sample into the bottle.
- You will need to refill the syringe and filter additional sample to reach the 125mL of sample volume needed for the analysis.

Please call us at (505)345-3975 if you have any questions. Thank you.

Hall Environmental Analysis Laboratory
4901 Hawkins NE , Suite D
Albuquerque, NM 87109 phone: (505)345-3975 fax: (505)345-4107

**Brackish Groundwater National Desalination Research Facility –Soil Sampling Instructions**

For each sample you will fill 1-8oz jar and 1 1 gallon Ziploc bag.

1. Fill the jar all the way

2. Fill the Ziploc bag at least ¾ of the way full

3. Label both the jar and Ziploc bag with the provided labels. Include date and time of collection and sample name. The date and time for the jar and bag should be the same.

4. Fill out chain-of-custody so that the date and time of collection and sample name corresponds to each set of samples. For Analysis requested put "Quote # 326" and include a copy of the quote for reference.

5. Wrap soil jar securely with bubble bag.

6. Return samples on ice.

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# Appendix C

# Statistical Analysis

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XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 11:09:07 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$O$22:$O$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

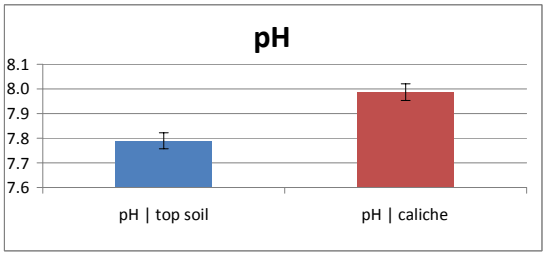
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| pH \| top soil | 28 | 0 | 28 | 7.450 | 8.260 | 7.790 | 0.173 | 0.032619 |
| pH \| caliche | 12 | 0 | 12 | 7.810 | 8.190 | 7.987 | 0.116 | 0.033537 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] -0.307 , -0.086 [

| | |
|---|---|
| Difference | -0.197 |
| t (Observed value) | -3.600 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | 0.001 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.
The risk to reject the null hypothesis H0 while it is true is lower than 0.09%.

---

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 11:06:47 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$N$22:$N$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

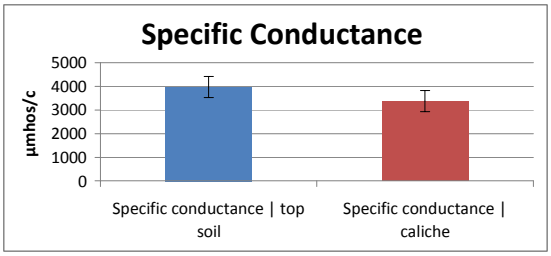
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Specific conductance \| t | 28 | 0 | 28 | 900.000 | 9300.000 | 3978.571 | 2350.312 | 444.1673 |
| Specific conductance \| c | 12 | 0 | 12 | 1400.000 | 7100.000 | 3375.000 | 1562.705 | 451.1139 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] -899.681 , 2106.824 [

| | |
|---|---|
| Difference | 603.571 |
| t (Observed value) | 0.813 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | 0.421 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.

As the computed p-value is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 42.14%.

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 10:55:16 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$J$22:$J$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

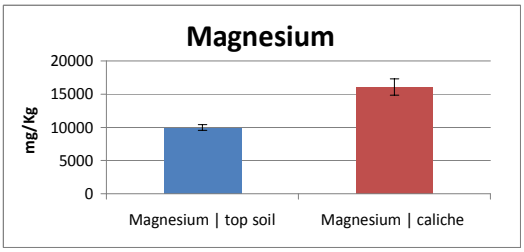
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Magnesium \| top soil | 28 | 0 | 28 | 7000.000 | 16000.000 | 9964.286 | 2187.035 | 413.3107 |
| Magnesium \| caliche | 12 | 0 | 12 | 6700.000 | 23000.000 | 16058.333 | 4290.043 | 1238.429 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] -8157.368 , -4030.728 [

| | |
|---|---|
| Difference | -6094.048 |
| t (Observed value) | -5.979 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | < 0.0001 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.
The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

---

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 9:53:52 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$I$22:$I$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

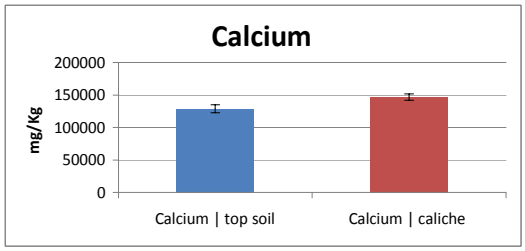
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Calcium \| top soil | 28 | 0 | 28 | 61000.000 | 190000.000 | 128750.000 | 32484.327 | 6138.961 |
| Calcium \| caliche | 12 | 0 | 12 | 130000.000 | 190000.000 | 146666.667 | 17752.507 | 5124.707 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] -38172.628 , 2339.295 [

| | |
|---|---|
| Difference | -17916.667 |
| t (Observed value) | -1.791 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | 0.081 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.

As the computed p-value is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 8.13%.

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 10:57:50 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$K$22:$K$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

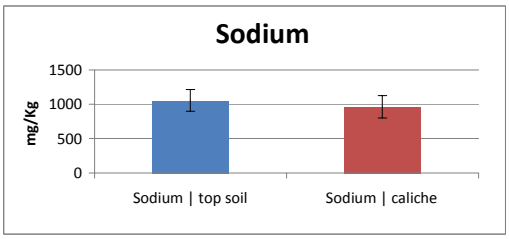
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Sodium \| top soil | 28 | 0 | 28 | 180.000 | 3000.000 | 1056.786 | 841.612 | 159.0498 |
| Sodium \| caliche | 12 | 0 | 12 | 250.000 | 2100.000 | 965.000 | 566.561 | 163.552 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] -447.537 , 631.108 [

| | |
|---|---|
| Difference | 91.786 |
| t (Observed value) | 0.345 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | 0.732 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.

As the computed p-value is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 73.24%.

---

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 11:04:05 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$M$22:$M$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

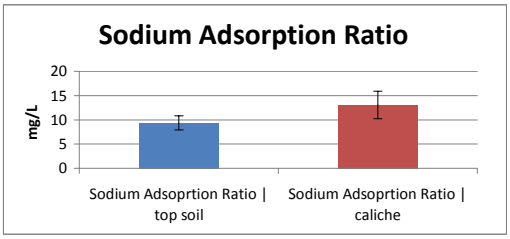
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Sodium Adsoprtion Rati | 28 | 0 | 28 | 0.660 | 27.000 | 9.366 | 7.647 | 1.445224 |
| Sodium Adsoprtion Rati | 12 | 0 | 12 | 1.200 | 30.000 | 13.108 | 9.856 | 2.845157 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] -9.572 , 2.088 [

| | |
|---|---|
| Difference | -3.742 |
| t (Observed value) | -1.299 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | 0.202 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.

As the computed p-value is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 20.17%.

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/25/2013 at 4:55:41 PM
Data: Workbook = Soil table.xlsm / Sheet = caliche / Range = caliche!$E$2:$E$42 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = caliche / Range = caliche!$C$2:$C$42 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

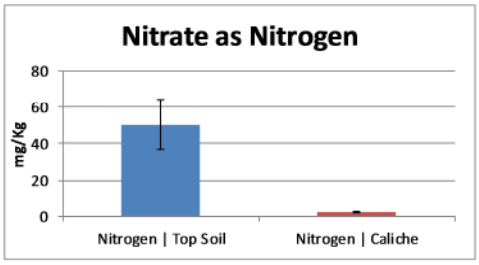
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Nitrogen \| Top Soil | 28 | 0 | 28 | 1.100 | 290.000 | 50.254 | 72.525 | 13.70584 |
| Nitrogen \| Caliche | 12 | 0 | 12 | 0.450 | 5.300 | 2.102 | 1.564 | 0.451407 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] 5.448, 90.856 [

| | |
|---|---|
| Difference | 48.152 |
| t (Observed value) | 2.283 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | 0.028 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
As the computed p-

The risk to reject the null hypothesis H0 while it is true is lower than 2.81%.

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 10:50:46 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$Q$22:$Q$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

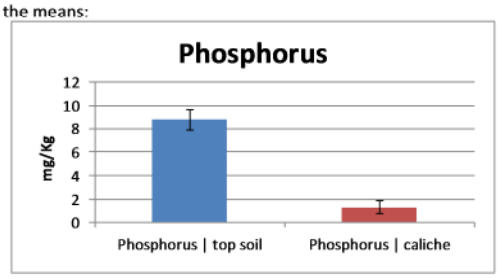
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Phosphorus \| top soil | 28 | 0 | 28 | 1.000 | 22.000 | 8.750 | 4.820 | 0.910876 |
| Phosphorus \| caliche | 12 | 0 | 12 | 0.000 | 5.000 | 1.333 | 1.923 | 0.55505 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] 4.488, 10.345 [

| | |
|---|---|
| Difference | 7.417 |
| t (Observed value) | 5.127 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | < 0.0001 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.
The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 11:01:18 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$L$22:$L$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

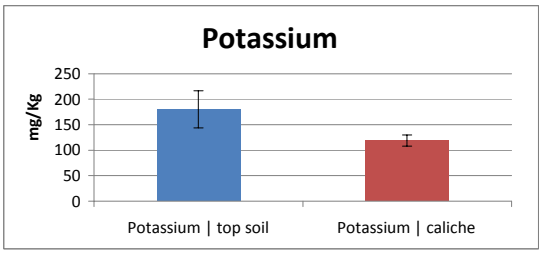
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Potassium \| top soil | 28 | 0 | 28 | 10.000 | 730.000 | 180.500 | 192.773 | 36.43061 |
| Potassium \| caliche | 12 | 0 | 12 | 46.000 | 180.000 | 119.083 | 38.142 | 11.01064 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] -52.984 , 175.817 [

| | |
|---|---|
| Difference | 61.417 |
| t (Observed value) | 1.087 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | 0.284 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.

As the computed p-value is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 28.40%.

---

XLSTAT 2013.4.05 - Two-sample t-test and z-test - on 11/13/2013 at 11:14:28 AM
Data: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$R$22:$R$62 / 40 rows and 1 column
Sample identifiers: Workbook = Soil table.xlsm / Sheet = Soil Data / Range = 'Soil Data'!$G$22:$G$62 / 40 rows and 1 column
Hypothesized difference (D): 0
Significance level (%): 5
Population variances for the t-test: Assume equality

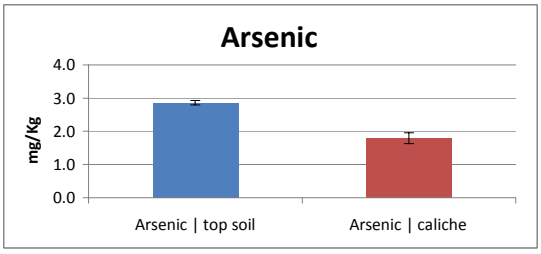
Summary statistics:

| Variable | Observations | Obs. with missing data | Obs. without missing data | Minimum | Maximum | Mean | Std. deviation | SE |
|---|---|---|---|---|---|---|---|---|
| Arsenic \| top soil | 28 | 0 | 28 | 2.300 | 3.600 | 2.861 | 0.355 | 0.067129 |
| Arsenic \| caliche | 12 | 0 | 12 | 0.700 | 3.000 | 1.792 | 0.570 | 0.164436 |

t-test for two independent samples / Two-tailed test:

95% confidence interval on the difference between the means:
] 0.770, 1.368 [

| | |
|---|---|
| Difference | 1.069 |
| t (Observed value) | 7.231 |
| \|t\| (Critical value) | 2.024 |
| DF | 38 |
| p-value (Two-tailed) | < 0.0001 |
| alpha | 0.05 |




Test interpretation:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.
The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

| ANOVA tests for Topsoil and Caliche (Comparing means of each analyte for each soil type-- see ANOVA and KW tests from SYSTAT word document for tables and figures) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***pH*** | ***Specific conductance*** | ***Magnesium*** | ***Calcium*** | ***Sodium*** | ***Sodium Adsoprtion Ratio*** | ***Organic Matter*** | ***Nitrogen*** | ***Potassium*** | ***Arsenic*** | ***Phosphorus*** | ***Selenium*** |
| Topsoil | | | | | | | | | | | | |
| **normality** | yes | yes | yes | yes | yes | yes | yes | no | no | yes | yes | na |
| **equal variances** | yes | yes | yes | yes | no | yes | yes | no | no | yes | no | na |
| **p value** | **0.014** | **0.0001** | 0.419 | 0.146 | **0.0001** | **0.0001** | 0.764 | 0.206 | **0.007** | **0.015** | 0.053 | na |
| Caliche | | | | | | | | | | | | |
| **normality** | yes | yes | yes | yes | yes | yes | na | no | yes | yes | yes | na |
| **equal variances** | yes | yes | yes | yes | yes | yes | na | yes | no | yes | yes | na |
| **p value** | 0.596 | 0.604 | 0.06 | **0.039** | 0.536 | 0.371 | na | 0.4 | 0.101 | 0.442 | 0.913 | na |
| | | | | | | | | | | | | |
| **Kruskal-wallis tests for variables that are not normally distributed and have unequal variances** | | | | | | | | | | | | |
| Topsoil | | | | | | | | | | | | |
| **p value** | | | | | 0.001 | | | 0.058 | **0.002** | | **0.021** | na |
| Caliche | | | | | | | | | | | | |
| **p value** | | | | | | | | 0.476 | 0.217 | | | na |

## Kruskal-Wallis One-way Analysis of Variance for 40 Cases

Data for the following results were selected according to
SELECT (SOIL = **Top Soil**)

| Dependent variable | N |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 16.000 |
| 2 | 4 | 26.000 |
| 3 | 5 | 82.000 |
| 4 | 5 | 87.500 |
| 5 | 3 | 67.500 |
| 6 | 4 | 54.000 |
| 7 | 4 | 73.000 |

Kruskal-Wallis Test Statistic : 12.172
p-value is 0.058 assuming Chi-square Distribution with 6 df

| Dependent variable | MAGN |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 44.500 |
| 2 | 4 | 68.500 |
| 3 | 5 | 98.500 |
| 4 | 5 | 75.000 |
| 5 | 3 | 22.000 |
| 6 | 4 | 35.000 |
| 7 | 4 | 62.500 |

Kruskal-Wallis Test Statistic : 6.767
p-value is 0.343 assuming Chi-square Distribution with 6 df

| Dependent variable | SODIUM |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 46.000 |
| 2 | 4 | 85.000 |
| 3 | 5 | 37.500 |
| 4 | 5 | 127.000 |
| 5 | 3 | 55.000 |
| 6 | 4 | 22.000 |
| 7 | 4 | 33.500 |

Kruskal-Wallis Test Statistic : 22.806
p-value is 0.001 assuming Chi-square Distribution with 6 df

| Dependent variable | POTASS |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 54.500 |
| 2 | 4 | 84.500 |
| 3 | 5 | 30.500 |
| 4 | 5 | 109.000 |
| 5 | 3 | 66.000 |
| 6 | 4 | 23.500 |
| 7 | 4 | 38.000 |

Kruskal-Wallis Test Statistic : 20.734
p-value is 0.002 assuming Chi-square Distribution with 6 df

| Dependent variable | SAR |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 50.000 |
| 2 | 4 | 84.000 |
| 3 | 5 | 34.500 |
| 4 | 5 | 127.000 |
| 5 | 3 | 52.000 |
| 6 | 4 | 26.000 |
| 7 | 4 | 32.500 |

Kruskal-Wallis Test Statistic : 22.349
p-value is 0.001 assuming Chi-square Distribution with 6 df

| Dependent variable | SC |
|---|---|

| Dependent variable | SC |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 48.000 |
| 2 | 4 | 81.000 |
| 3 | 5 | 34.500 |
| 4 | 5 | 120.000 |
| 5 | 3 | 65.000 |
| 6 | 4 | 33.000 |
| 7 | 4 | 24.500 |

Kruskal-Wallis Test Statistic : 21.735
p-value is 0.001 assuming Chi-square Distribution with 6 df

| Dependent variable | PH |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 27.500 |
| 2 | 4 | 63.500 |
| 3 | 5 | 113.000 |
| 4 | 5 | 48.000 |
| 5 | 3 | 17.000 |
| 6 | 4 | 50.000 |
| 7 | 4 | 87.000 |

Kruskal-Wallis Test Statistic : 14.847
p-value is 0.021 assuming Chi-square Distribution with 6 df

| Dependent variable | OM |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 42.000 |
| 2 | 4 | 73.500 |
| 3 | 5 | 86.500 |
| 4 | 5 | 60.500 |
| 5 | 3 | 40.500 |
| 6 | 4 | 56.500 |
| 7 | 4 | 46.500 |

Kruskal-Wallis Test Statistic : 2.464
p-value is 0.873 assuming Chi-square Distribution with 6 df

| Dependent variable | ARS |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 52.000 |
| 2 | 4 | 93.000 |
| 3 | 5 | 96.000 |
| 4 | 5 | 73.500 |
| 5 | 3 | 19.000 |
| 6 | 4 | 45.500 |
| 7 | 4 | 27.000 |

Kruskal-Wallis Test Statistic : 13.764
p-value is 0.032 assuming Chi-square Distribution with 6 df

| Dependent variable | PHOSPH |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 25.000 |
| 2 | 4 | 59.000 |
| 3 | 5 | 79.500 |
| 4 | 5 | 58.000 |
| 5 | 3 | 25.500 |
| 6 | 4 | 89.000 |
| 7 | 4 | 70.000 |

Kruskal-Wallis Test Statistic : 8.254
p-value is 0.220 assuming Chi-square Distribution with 6 df

| Dependent variable | CAL |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 3 | 73.000 |
| 2 | 4 | 61.500 |
| 3 | 5 | 88.000 |
| 4 | 5 | 60.000 |
| 5 | 3 | 51.500 |
| 6 | 4 | 46.000 |
| 7 | 4 | 26.000 |

Kruskal-Wallis Test Statistic : 10.255
p-value is 0.114 assuming Chi-square Distribution with 6 df

## Kruskal-Wallis One-way Analysis of Variance for 40 Cases

Data for the following results were selected according to
SELECT (SOIL = **Caliche**)

| Dependent variable | N |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 6.000 |
| 2 | 5 | 32.000 |
| 3 | 1 | 11.000 |
| 4 | 4 | 19.000 |
| 5 | 1 | 10.000 |

Kruskal-Wallis Test Statistic : 3.515
p-value is 0.476 assuming Chi-square Distribution with 4 df

| Dependent variable | MAGN |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 12.000 |
| 2 | 5 | 37.000 |
| 3 | 1 | 5.000 |
| 4 | 4 | 13.000 |
| 5 | 1 | 11.000 |

Kruskal-Wallis Test Statistic : 7.700
p-value is 0.103 assuming Chi-square Distribution with 4 df

| Dependent variable | SODIUM |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 3.000 |
| 2 | 5 | 40.500 |
| 3 | 1 | 1.000 |
| 4 | 4 | 27.000 |
| 5 | 1 | 6.500 |

Kruskal-Wallis Test Statistic : 4.303
p-value is 0.367 assuming Chi-square Distribution with 4 df

| Dependent variable | POTASS |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 8.500 |
| 2 | 5 | 36.000 |
| 3 | 1 | 1.000 |
| 4 | 4 | 20.500 |
| 5 | 1 | 12.000 |

Kruskal-Wallis Test Statistic : 5.772
p-value is 0.217 assuming Chi-square Distribution with 4 df

| Dependent variable | SAR |
|---|---|

| Dependent variable | SAR |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 2.000 |
| 2 | 5 | 43.500 |
| 3 | 1 | 1.000 |
| 4 | 4 | 27.500 |
| 5 | 1 | 4.000 |

Kruskal-Wallis Test Statistic : 6.292
p-value is 0.178 assuming Chi-square Distribution with 4 df

| Dependent variable | SC |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 8.000 |
| 2 | 5 | 39.000 |
| 3 | 1 | 1.000 |
| 4 | 4 | 25.000 |
| 5 | 1 | 5.000 |

Kruskal-Wallis Test Statistic : 3.390
p-value is 0.495 assuming Chi-square Distribution with 4 df

| Dependent variable | PH |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 3.500 |
| 2 | 5 | 41.500 |
| 3 | 1 | 8.000 |
| 4 | 4 | 21.500 |
| 5 | 1 | 3.500 |

Kruskal-Wallis Test Statistic : 3.216
p-value is 0.522 assuming Chi-square Distribution with 4 df

| Dependent variable | OM |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 6.500 |
| 2 | 5 | 32.500 |
| 3 | 1 | 6.500 |
| 4 | 4 | 26.000 |
| 5 | 1 | 6.500 |

Kruskal-Wallis Test Statistic : 0.000
p-value is 1.000 assuming Chi-square Distribution with 4 df

| Dependent variable | ARS |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 4.500 |
| 2 | 5 | 42.000 |
| 3 | 1 | 2.000 |
| 4 | 4 | 20.500 |
| 5 | 1 | 9.000 |

Kruskal-Wallis Test Statistic : 4.473
p-value is 0.346 assuming Chi-square Distribution with 4 df

| Dependent variable | PHOSPH |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 4.000 |
| 2 | 5 | 32.500 |
| 3 | 1 | 4.000 |
| 4 | 4 | 28.500 |
| 5 | 1 | 9.000 |

Kruskal-Wallis Test Statistic : 1.986
p-value is 0.738 assuming Chi-square Distribution with 4 df

| Dependent variable | CAL |
|---|---|
| Grouping variable | TRENCH |

| Group | Count | Rank Sum |
|---|---|---|
| 1 | 1 | 10.500 |
| 2 | 5 | 29.000 |
| 3 | 1 | 12.000 |
| 4 | 4 | 24.000 |
| 5 | 1 | 2.500 |

Kruskal-Wallis Test Statistic : 5.353
p-value is 0.253 assuming Chi-square Distribution with 4 df

# ANOVA on TOP SOIL

Data for the following results were selected according to
SELECT (SOIL = **Top Soil**)

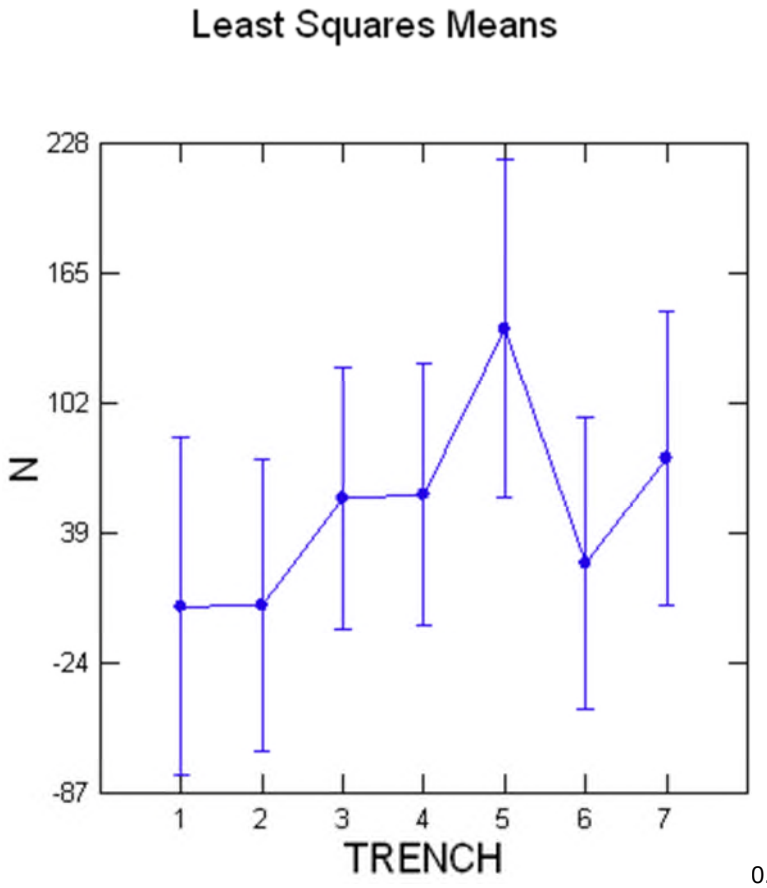
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| Dependent Variable | N |
|---|---|
| N | 28 |
| Multiple R | 0.556 |
| Squared Multiple R | 0.309 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 43,912.060 | 6 | 7,318.677 | 1.567 | 0.206 |
| Error | 98,102.669 | 21 | 4,671.556 | | |




0.206

WARNING

Case 29 is an Outlier (Studentized Residual : 3.305)

| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 4.260 | 0.006 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.176 | 0.026 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.024 |
| First Order Autocorrelation | -0.039 |

| Information Criteria | |
|---|---|
| AIC | 323.984 |
| AIC (Corrected) | 331.563 |
| Schwarz's BIC | 334.642 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = **top soil**)

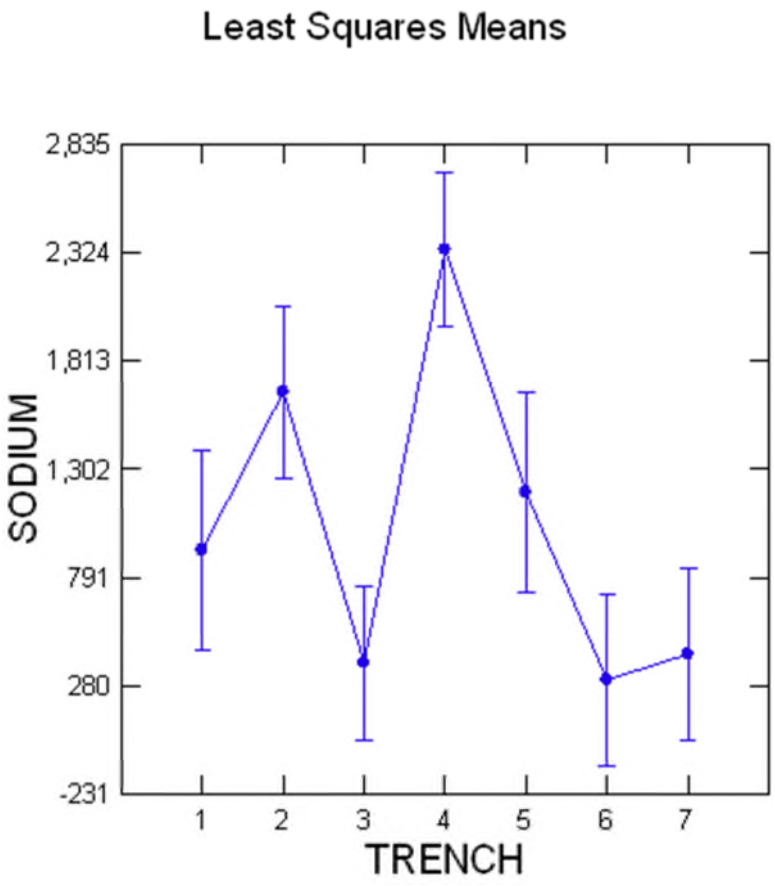
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| Dependent Variable | SODIUM |
|---|---|
| N | 28 |
| Multiple R | 0.912 |
| Squared Multiple R | 0.832 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 15,903,239.048 | 6 | 2,650,539.841 | 17.280 | 0.000 |
| Error | 3,221,171.667 | 21 | 153,389.127 | | |



WARNING

Case 8 is an Outlier (Studentized Residual : -3.742)

| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 2.880 | 0.033 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.128 | 0.273 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.236 |
| First Order Autocorrelation | -0.173 |

| Information Criteria | |
|---|---|
| AIC | 421.746 |
| AIC (Corrected) | 429.325 |
| Schwarz's BIC | 432.404 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = top soil)

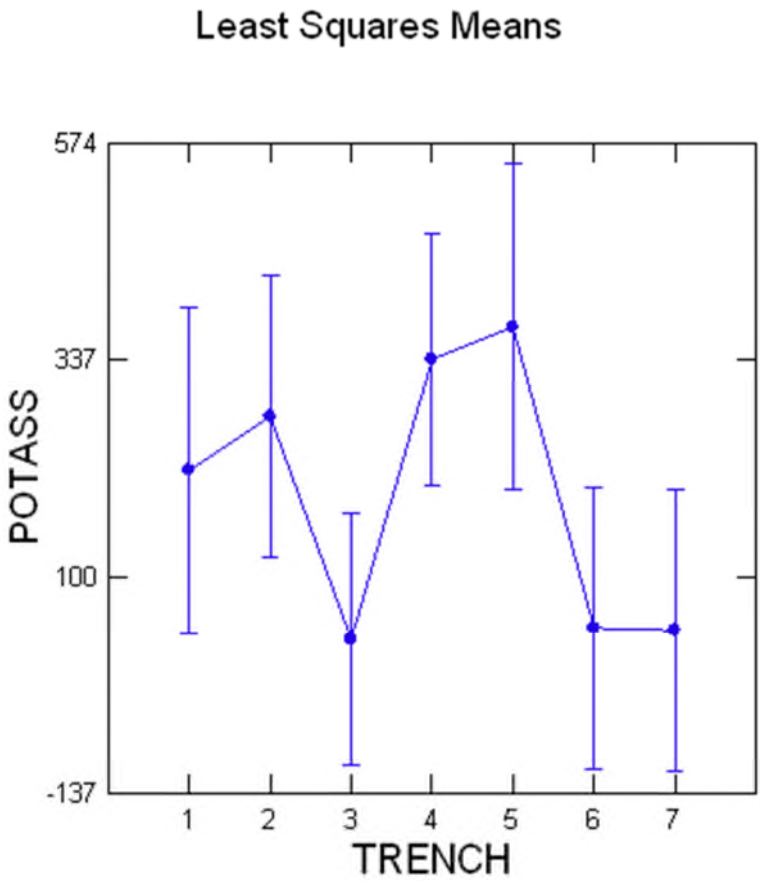
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| | |
|---|---|
| Dependent Variable | POTASS |
| N | 28 |
| Multiple R | 0.733 |
| Squared Multiple R | 0.538 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 539,580.717 | 6 | 89,930.119 | 4.072 | 0.007 |
| Error | 463,774.283 | 21 | 22,084.490 | | |



WARNING

Case 20 is an Outlier (Studentized Residual : 3.760)
Case 29 is an Outlier (Studentized Residual : 2.821)

| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 4.393 | 0.005 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.196 | 0.007 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.170 |
| First Order Autocorrelation | -0.130 |

| Information Criteria | |
|---|---|
| AIC | 367.479 |
| AIC (Corrected) | 375.058 |
| Schwarz's BIC | 378.137 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 1)

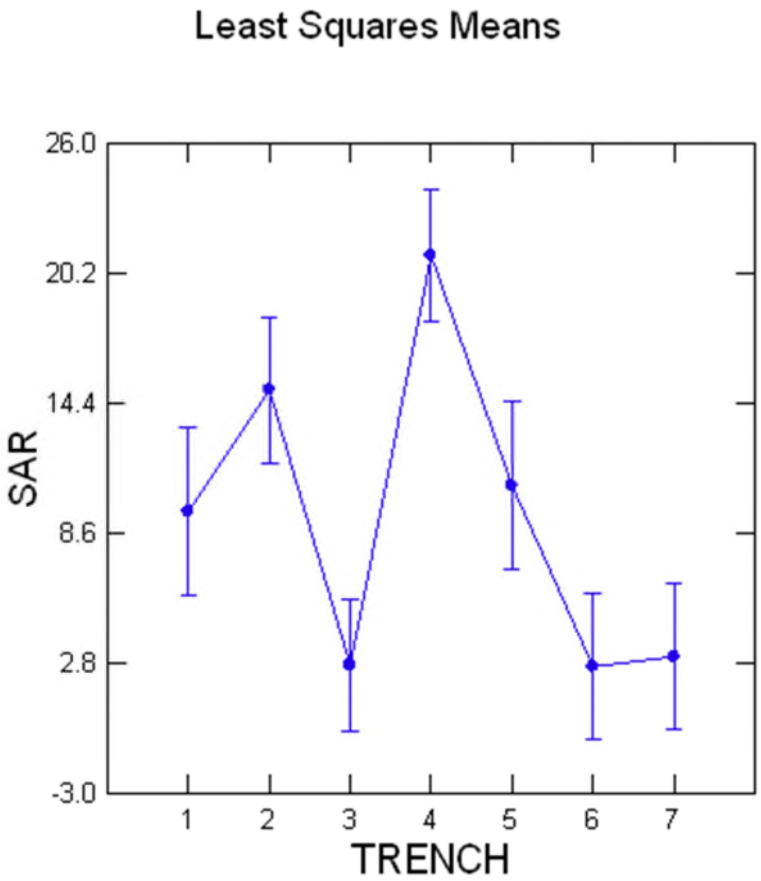
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| | |
|---|---|
| Dependent Variable | SAR |
| N | 28 |
| Multiple R | 0.932 |
| Squared Multiple R | 0.868 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 1,370.888 | 6 | 228.481 | 23.051 | 0.000 |
| Error | 208.148 | 21 | 9.912 | | |



WARNING

Case 1 is an Outlier (Studentized Residual : 2.916)

| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 1.200 | 0.345 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.164 | 0.051 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.975 |
| First Order Autocorrelation | -0.091 |

| Information Criteria | |
|---|---|
| AIC | 151.630 |
| AIC (Corrected) | 159.209 |
| Schwarz's BIC | 162.287 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 1)

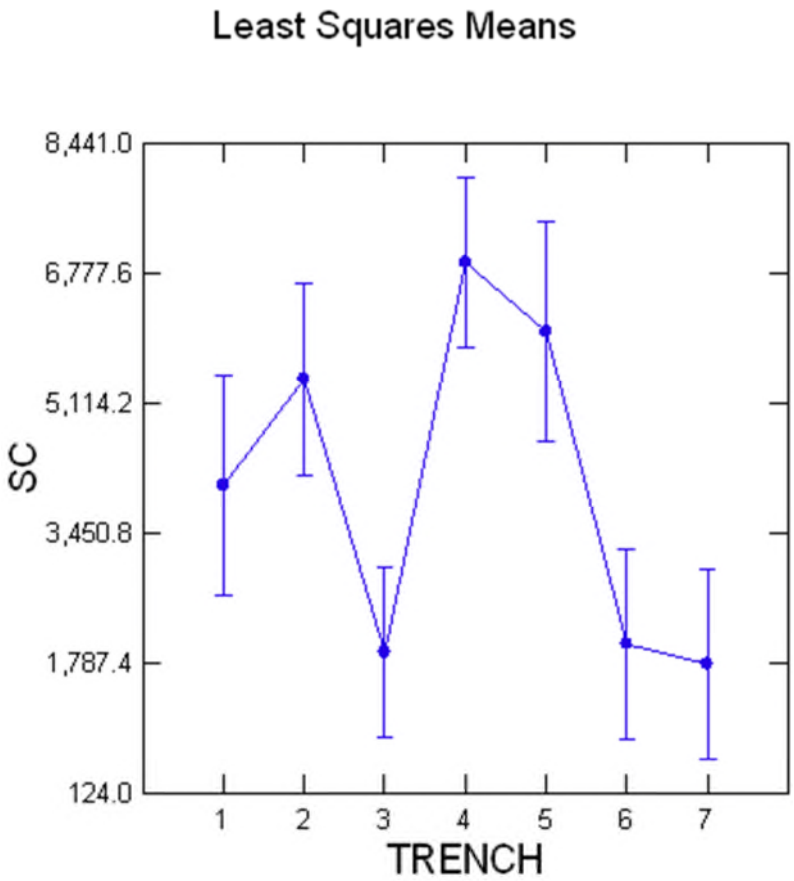
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| | |
|---|---|
| Dependent Variable | SC |
| N | 28 |
| Multiple R | 0.898 |
| Squared Multiple R | 0.806 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 1.202E+008 | 6 | 20,032,551.587 | 14.530 | 0.000 |
| Error | 28,951,833.333 | 21 | 1,378,658.730 | | |



| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 1.345 | 0.282 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.159 | 0.068 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.392 |
| First Order Autocorrelation | -0.209 |

| Information Criteria | |
|---|---|
| AIC | 483.231 |
| AIC (Corrected) | 490.810 |
| Schwarz's BIC | 493.889 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 1)

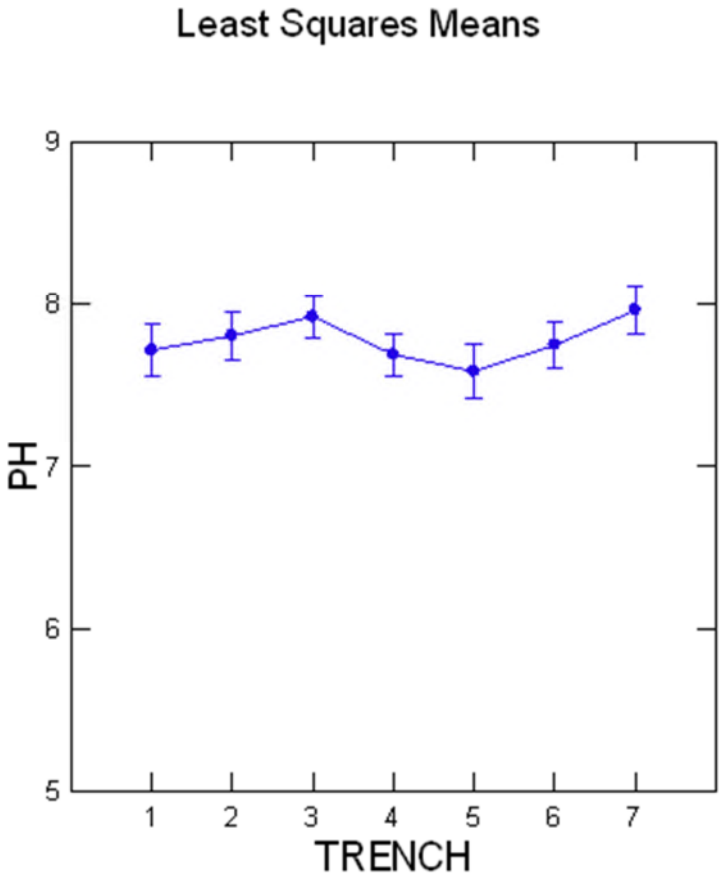
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| Dependent Variable | PH |
|---|---|
| N | 28 |
| Multiple R | 0.709 |
| Squared Multiple R | 0.503 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 0.405 | 6 | 0.067 | 3.541 | 0.014 |
| Error | 0.400 | 21 | 0.019 | | |



WARNING

Case 40 is an Outlier (Studentized Residual : 2.859)

| Test for Homogeneity | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 1.086 | 0.402 |

| Test for Normality | Test Statistic | p-value |
|---|---|---|
| K-S Test (Lilliefors) | 0.138 | 0.186 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.692 |
| First Order Autocorrelation | 0.044 |

| Information Criteria | |
|---|---|
| AIC | -23.508 |
| AIC (Corrected) | -15.929 |
| Schwarz's BIC | -12.850 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 1)

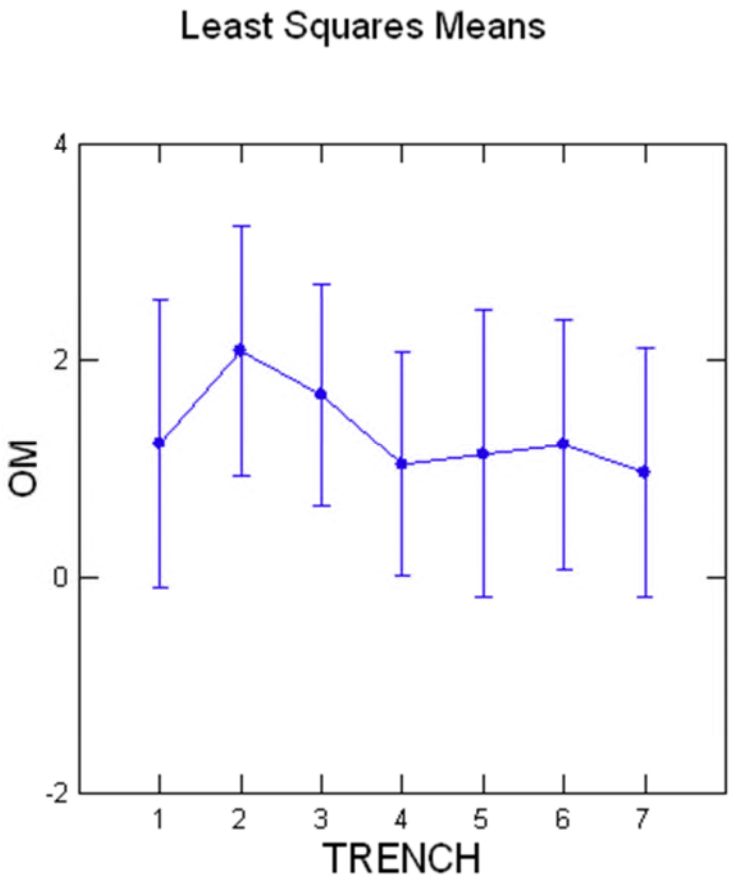
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| Dependent Variable | OM |
|---|---|
| N | 28 |
| Multiple R | 0.369 |
| Squared Multiple R | 0.136 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 4.063 | 6 | 0.677 | 0.551 | 0.764 |
| Error | 25.799 | 21 | 1.229 | | |



| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 0.294 | 0.933 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.100 | 0.686 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.138 |
| First Order Autocorrelation | -0.084 |

| Information Criteria | |
|---|---|
| AIC | 93.168 |
| AIC (Corrected) | 100.747 |
| Schwarz's BIC | 103.826 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 1)

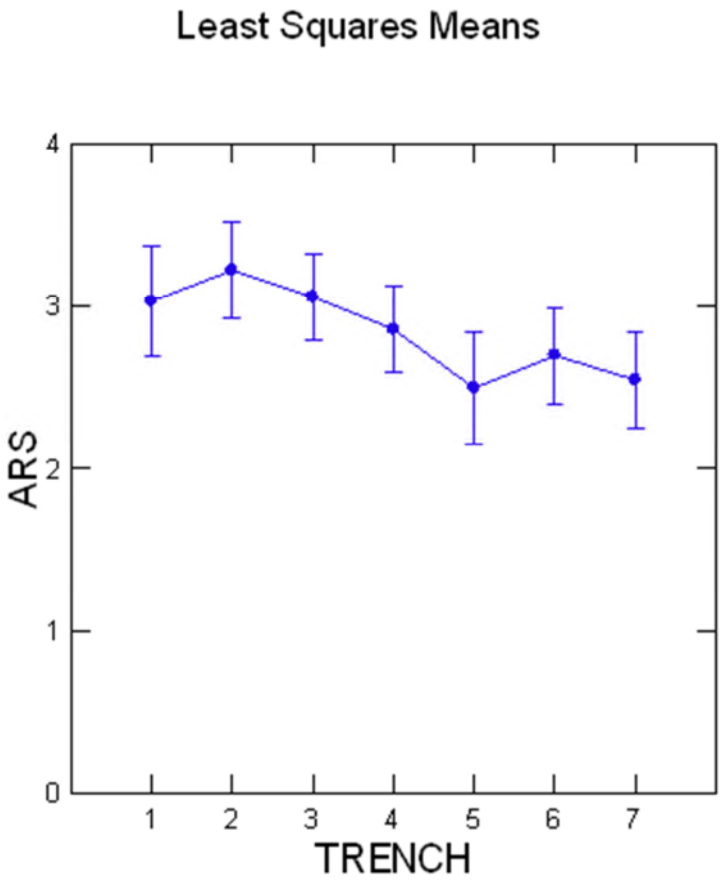
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| | |
|---|---|
| Dependent Variable | ARS |
| N | 28 |
| Multiple R | 0.706 |
| Squared Multiple R | 0.499 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 1.699 | 6 | 0.283 | 3.480 | 0.015 |
| Error | 1.708 | 21 | 0.081 | | |



WARNING

Case 1 is an Outlier (Studentized Residual : 2.803)

| Test for Homogeneity | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 1.264 | 0.315 |

| Test for Normality | Test Statistic | p-value |
|---|---|---|
| K-S Test (Lilliefors) | 0.104 | 0.617 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.567 |
| First Order Autocorrelation | -0.384 |

| Information Criteria | |
|---|---|
| AIC | 17.151 |
| AIC (Corrected) | 24.730 |
| Schwarz's BIC | 27.808 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 1)

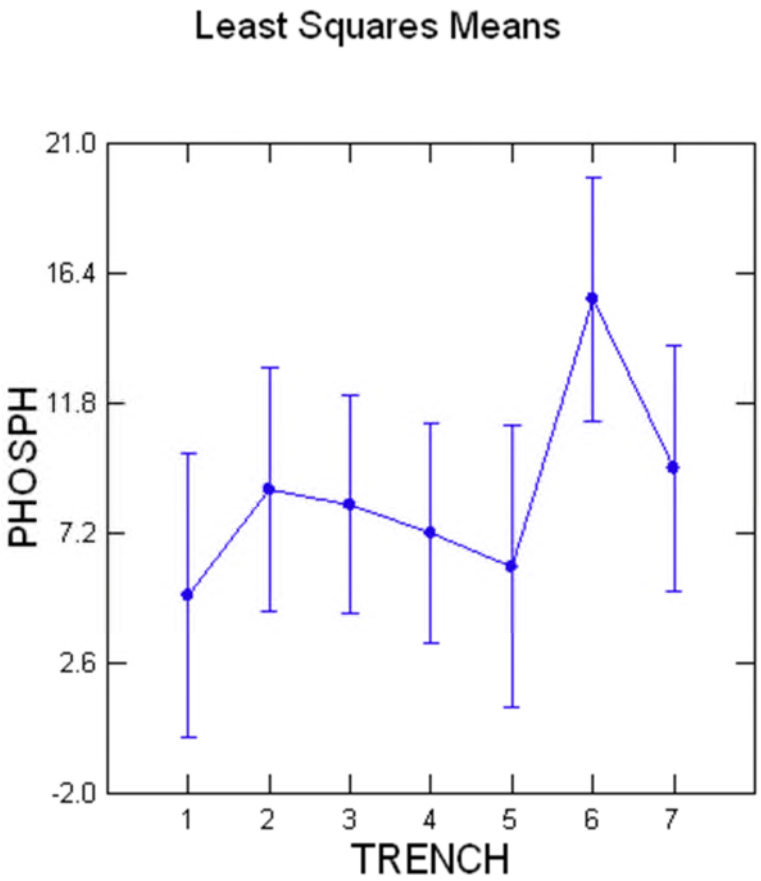
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| Dependent Variable | PHOSPH |
|---|---|
| N | 28 |
| Multiple R | 0.647 |
| Squared Multiple R | 0.419 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 262.900 | 6 | 43.817 | 2.525 | 0.053 |
| Error | 364.350 | 21 | 17.350 | | |



WARNING

Case 36 is an Outlier (Studentized Residual : -3.140)

| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 4.199 | 0.006 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.096 | 0.761 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.943 |
| First Order Autocorrelation | -0.006 |

| Information Criteria | |
|---|---|
| AIC | 167.306 |
| AIC (Corrected) | 174.885 |
| Schwarz's BIC | 177.964 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 1)

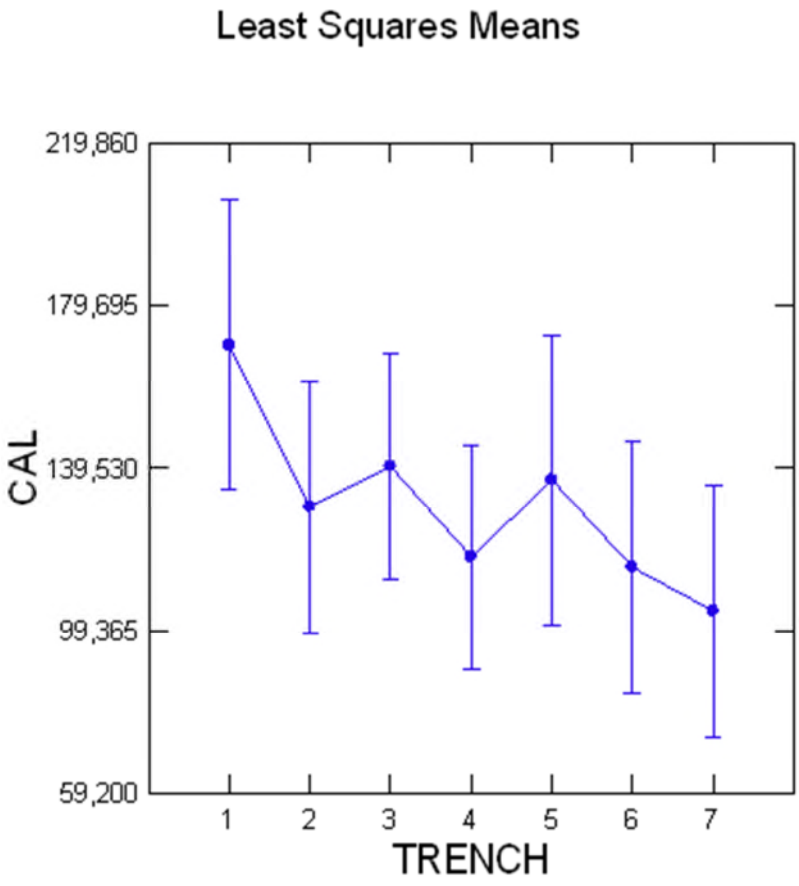
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (7 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |
| | 6.000 | 7.000 | | | |

| Dependent Variable | CAL |
|---|---|
| N | 28 |
| Multiple R | 0.584 |
| Squared Multiple R | 0.341 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 9.711E+009 | 6 | 1.618E+009 | 1.810 | 0.146 |
| Error | 1.878E+010 | 21 | 8.943E+008 | | |



| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 1.732 | 0.163 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.115 | 0.446 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.933 |
| First Order Autocorrelation | -0.010 |

| Information Criteria | |
|---|---|
| AIC | 664.529 |
| AIC (Corrected) | 672.108 |
| Schwarz's BIC | 675.187 |

# ANOVA on Caliche

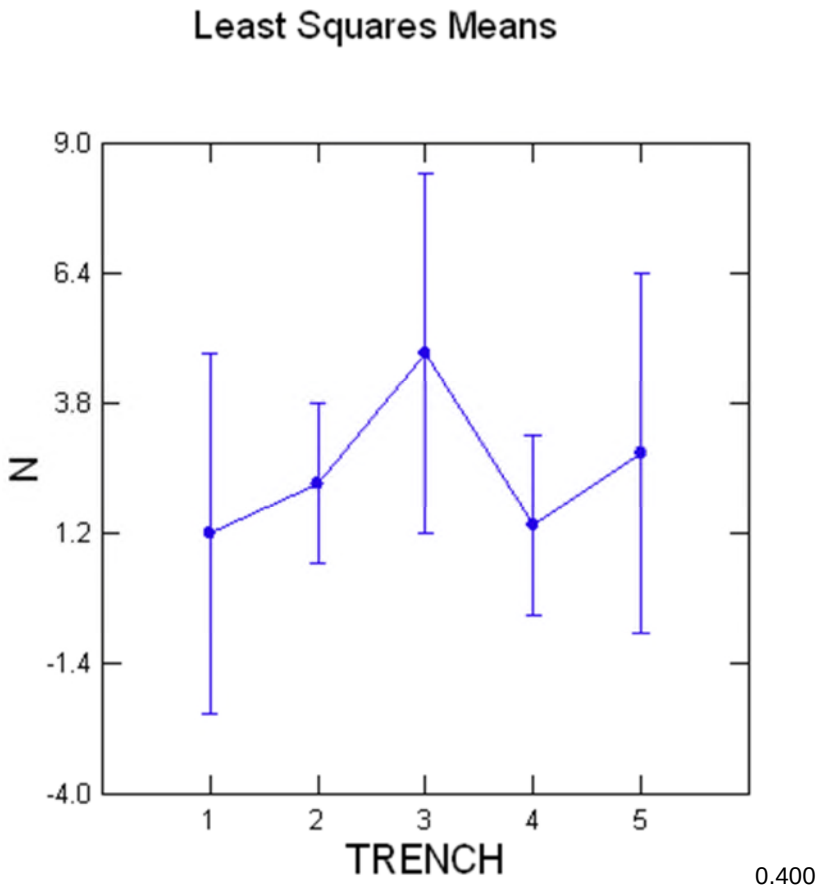
Data for the following results were selected according to
SELECT (SOIL = 2)

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| Dependent Variable | N |
|---|---|
| N | 12 |
| Multiple R | 0.633 |
| Squared Multiple R | 0.401 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 10.777 | 4 | 2.694 | 1.170 | 0.400 |
| Error | 16.121 | 7 | 2.303 | | |




0.400

WARNING

Case 13 is an Outlier (Studentized Residual : 4.242)

| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 0.768 | 0.578 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.330 | 0.001 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.062 |
| First Order Autocorrelation | -0.031 |

| Information Criteria | |
|---|---|
| AIC | 49.597 |
| AIC (Corrected) | 66.397 |
| Schwarz's BIC | 52.506 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

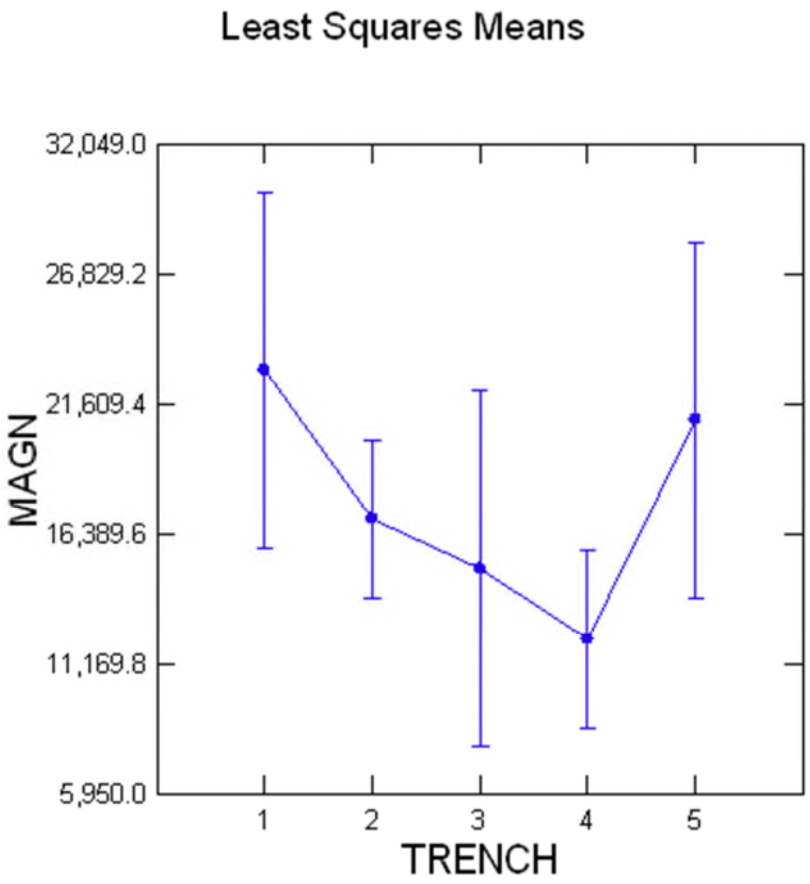
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| | |
|---|---|
| Dependent Variable | MAGN |
| N | 12 |
| Multiple R | 0.827 |
| Squared Multiple R | 0.684 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 1.385E+008 | 4 | 34,620,416.667 | 3.789 | 0.060 |
| Error | 63,967,500.000 | 7 | 9,138,214.286 | | |



WARNING

Case 27 is an Outlier (Studentized Residual : -3.161)

| Test for Homogeneity | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 1.244 | 0.375 |

| Test for Normality | Test Statistic | p-value |
|---|---|---|
| K-S Test (Lilliefors) | 0.221 | 0.109 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.657 |
| First Order Autocorrelation | -0.328 |

| Information Criteria | |
|---|---|
| AIC | 231.922 |
| AIC (Corrected) | 248.722 |
| Schwarz's BIC | 234.832 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

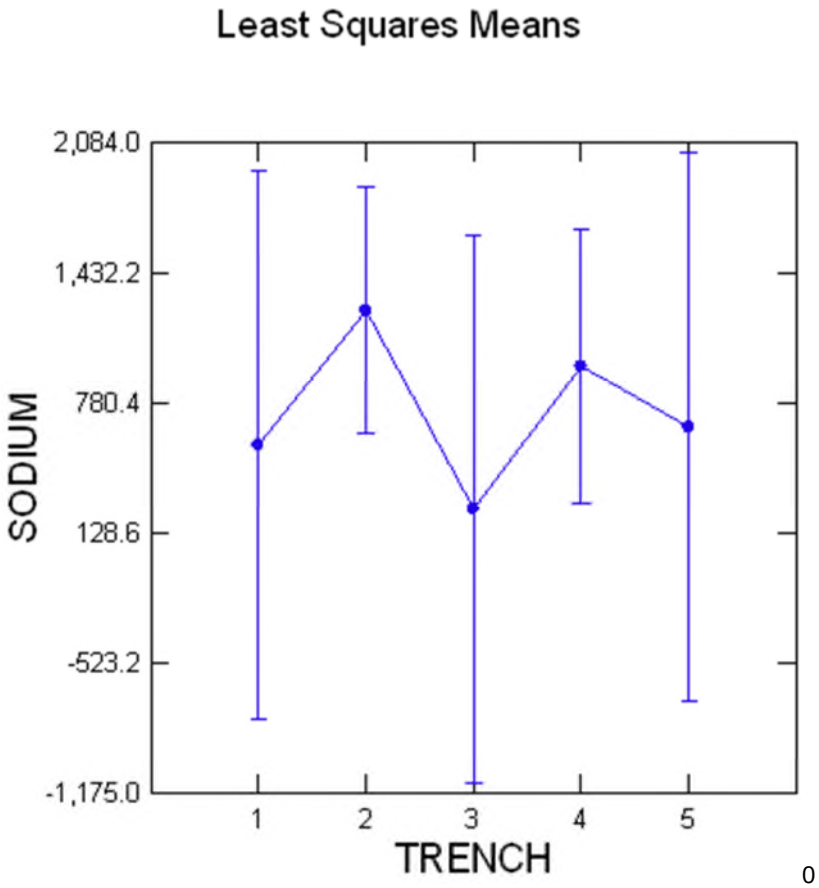
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| | |
|---|---|
| Dependent Variable | SODIUM |
| N | 12 |
| Multiple R | 0.572 |
| Squared Multiple R | 0.327 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 1,155,105.000 | 4 | 288,776.250 | 0.851 | 0.536 |
| Error | 2,375,795.000 | 7 | 339,399.286 | | |




0

**Test for Homogeneity**

| | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 2.163 | 0.176 |

| Test for Normality | | |
|---|---|---|
| | Test Statistic | p-value |
| K-S Test (Lilliefors) | 0.167 | 0.517 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.927 |
| First Order Autocorrelation | 0.037 |

| Information Criteria | |
|---|---|
| AIC | 192.406 |
| AIC (Corrected) | 209.206 |
| Schwarz's BIC | 195.315 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

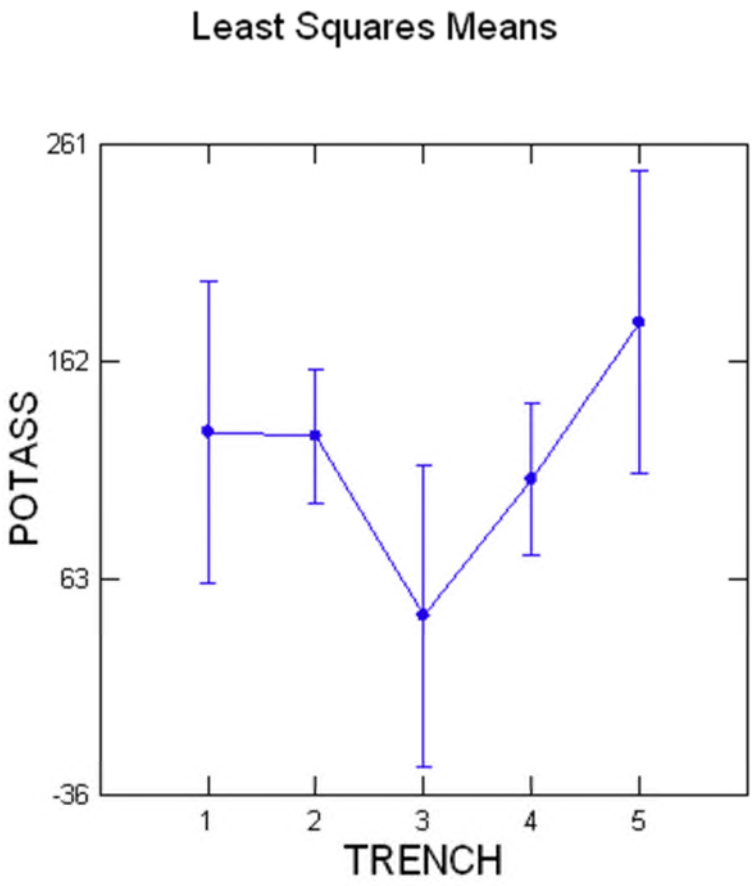
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| Dependent Variable | POTASS |
|---|---|
| N | 12 |
| Multiple R | 0.792 |
| Squared Multiple R | 0.627 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 10,038.167 | 4 | 2,509.542 | 2.945 | 0.101 |
| Error | 5,964.750 | 7 | 852.107 | | |




**Test for Homogeneity**

| | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 6.258 | 0.018 |

| Test for Normality | | |
|---|---|---|
| | Test Statistic | p-value |
| K-S Test (Lilliefors) | 0.167 | 0.517 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.387 |
| First Order Autocorrelation | 0.306 |

| Information Criteria | |
|---|---|
| AIC | 120.559 |
| AIC (Corrected) | 137.359 |
| Schwarz's BIC | 123.469 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

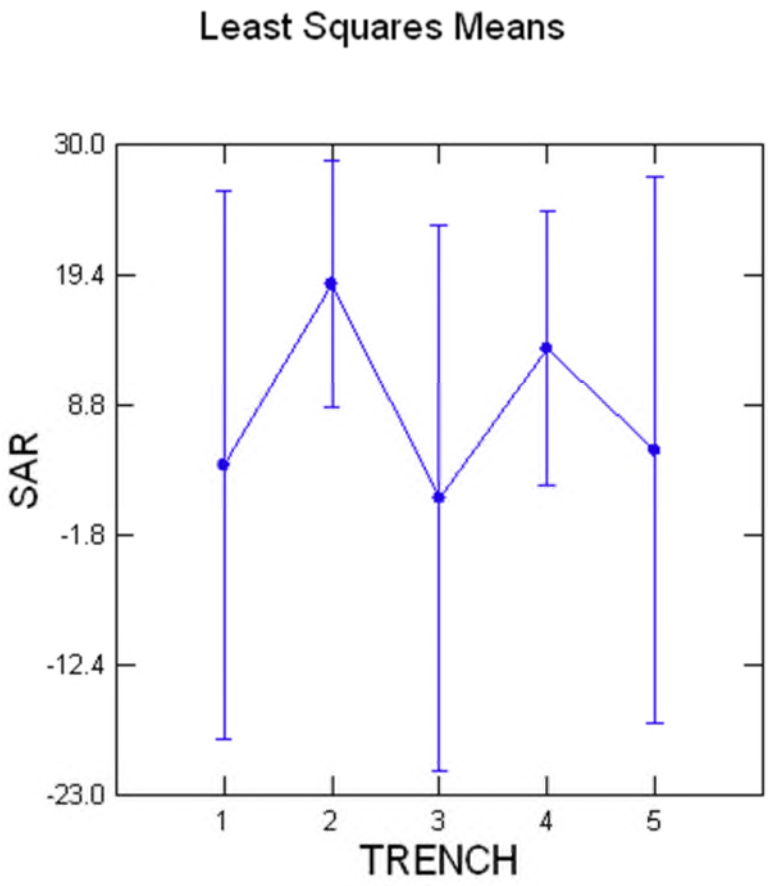
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| | |
|---|---|
| Dependent Variable | SAR |
| N | 12 |
| Multiple R | 0.646 |
| Squared Multiple R | 0.418 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 446.354 | 4 | 111.588 | 1.255 | 0.371 |
| Error | 622.175 | 7 | 88.882 | | |




**Test for Homogeneity**

| | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 1.979 | 0.202 |

| Test for Normality | | |
|---|---|---|
| | Test Statistic | p-value |
| K-S Test (Lilliefors) | 0.167 | 0.517 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.681 |
| First Order Autocorrelation | 0.160 |

| Information Criteria | |
|---|---|
| AIC | 93.434 |
| AIC (Corrected) | 110.234 |
| Schwarz's BIC | 96.344 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

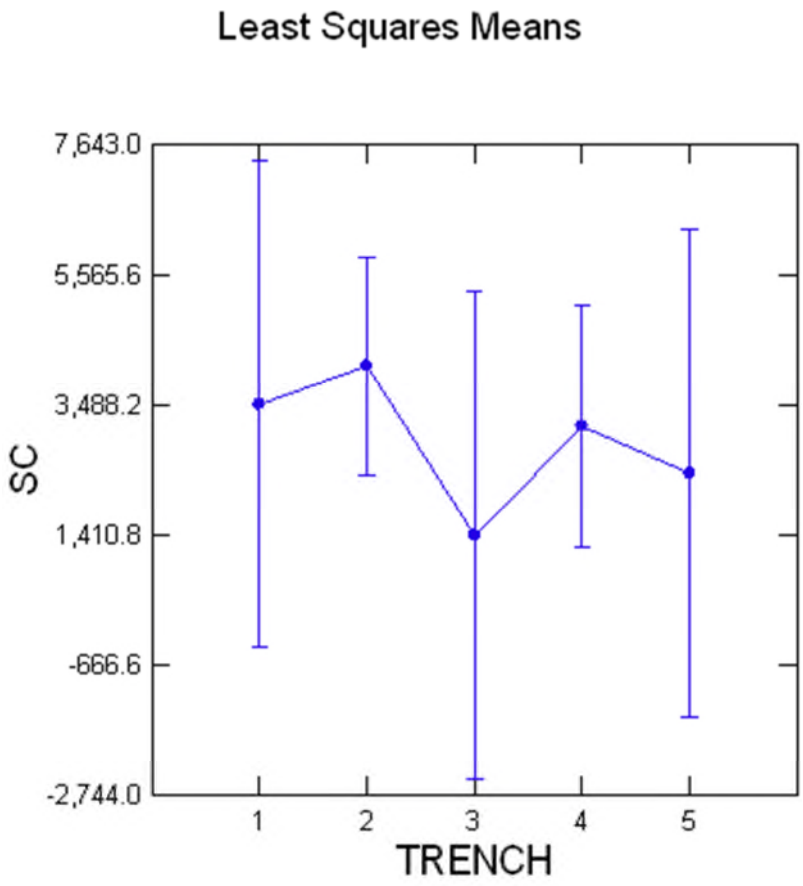
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| | |
|---|---|
| Dependent Variable | SC |
| N | 12 |
| Multiple R | 0.540 |
| Squared Multiple R | 0.292 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 7,844,500.000 | 4 | 1,961,125.000 | 0.722 | 0.604 |
| Error | 19,018,000.000 | 7 | 2,716,857.143 | | |




WARNING

Case 12 is an Outlier (Studentized Residual : 2.900)

| Test for Homogeneity | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 2.986 | 0.098 |

| Test for Normality | Test Statistic | p-value |
|---|---|---|
| K-S Test (Lilliefors) | 0.167 | 0.517 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.738 |
| First Order Autocorrelation | 0.131 |

| Information Criteria | |
|---|---|
| AIC | 217.366 |
| AIC (Corrected) | 234.166 |
| Schwarz's BIC | 220.276 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

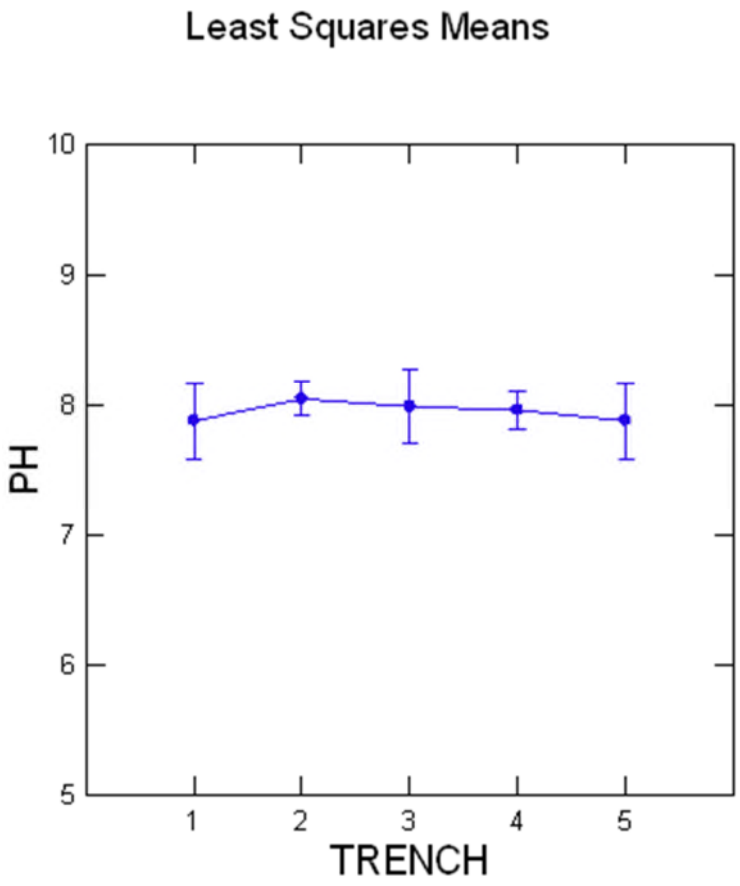
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels |
|---|---|
| TRENCH (5 levels) | 1.000 2.000 3.000 4.000 5.000 |

| | |
|---|---|
| Dependent Variable | PH |
| N | 12 |
| Multiple R | 0.544 |
| Squared Multiple R | 0.296 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 0.044 | 4 | 0.011 | 0.735 | 0.596 |
| Error | 0.105 | 7 | 0.015 | | |




WARNING

Case 28 is an Outlier (Studentized Residual : 3.413)

| Test for Homogeneity | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| Levene's Test | 1.808 | 0.232 |

| Test for Normality | | |
|---|---|---|
| | **Test Statistic** | **p-value** |
| K-S Test (Lilliefors) | 0.179 | 0.382 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.558 |
| First Order Autocorrelation | 0.221 |

| Information Criteria | |
|---|---|
| AIC | -10.861 |
| AIC (Corrected) | 5.939 |
| Schwarz's BIC | -7.951 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

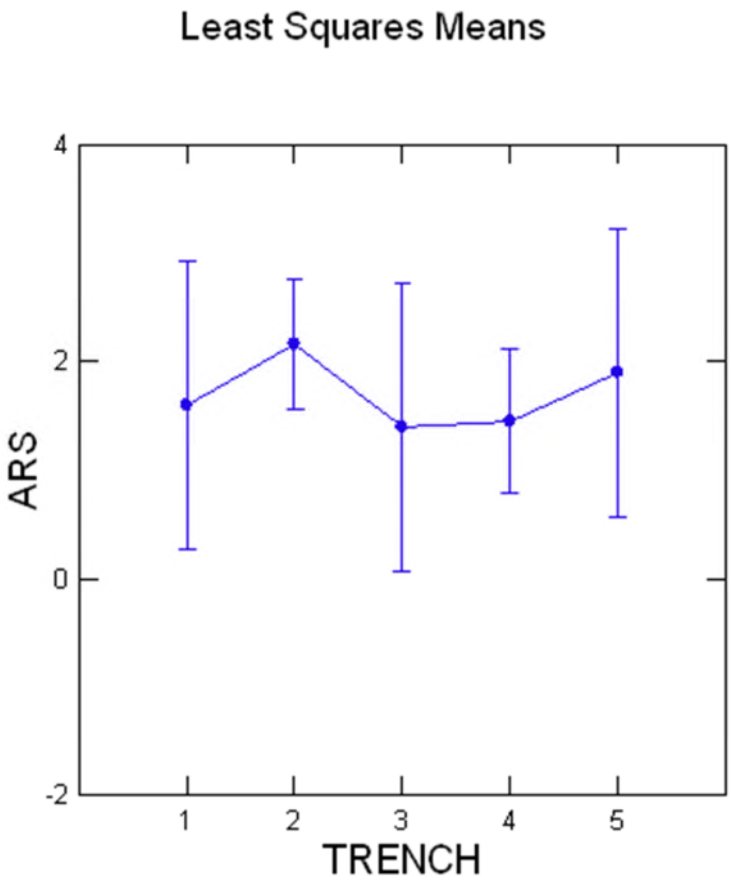
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| | |
|---|---|
| Dependent Variable | ARS |
| N | 12 |
| Multiple R | 0.614 |
| Squared Multiple R | 0.377 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 1.347 | 4 | 0.337 | 1.061 | 0.442 |
| Error | 2.222 | 7 | 0.317 | | |




**Test for Homogeneity**

| | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 1.395 | 0.328 |

| Test for Normality | | |
|---|---|---|
| | Test Statistic | p-value |
| K-S Test (Lilliefors) | 0.197 | 0.234 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.793 |
| First Order Autocorrelation | 0.103 |

| Information Criteria | |
|---|---|
| AIC | 25.817 |
| AIC (Corrected) | 42.617 |
| Schwarz's BIC | 28.726 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

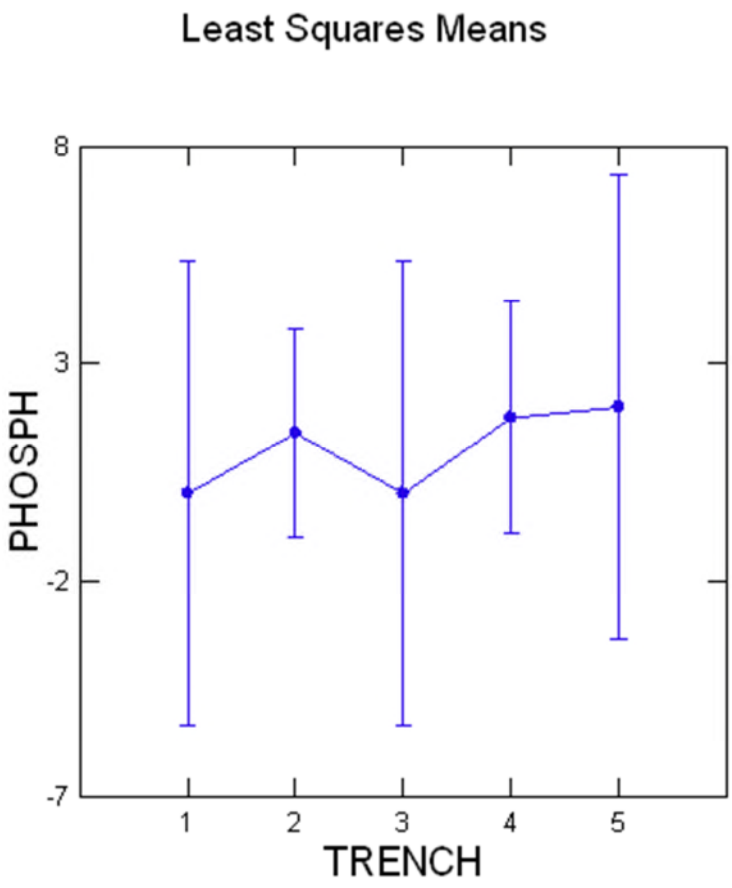
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| | |
|---|---|
| Dependent Variable | PHOSPH |
| N | 12 |
| Multiple R | 0.341 |
| Squared Multiple R | 0.116 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 4.717 | 4 | 1.179 | 0.230 | 0.913 |
| Error | 35.950 | 7 | 5.136 | | |




WARNING

Case 9 is an Outlier (Studentized Residual : 2.218)

| Test for Homogeneity | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 1.204 | 0.388 |

| Test for Normality | Test Statistic | p-value |
|---|---|---|
| K-S Test (Lilliefors) | 0.203 | 0.193 |

| | |
|---|---|
| Durbin-Watson D Statistic | 1.517 |
| First Order Autocorrelation | 0.241 |

| Information Criteria | |
|---|---|
| AIC | 59.221 |
| AIC (Corrected) | 76.021 |
| Schwarz's BIC | 62.131 |

## ▼Analysis of Variance

Data for the following results were selected according to
SELECT (SOIL = 2)

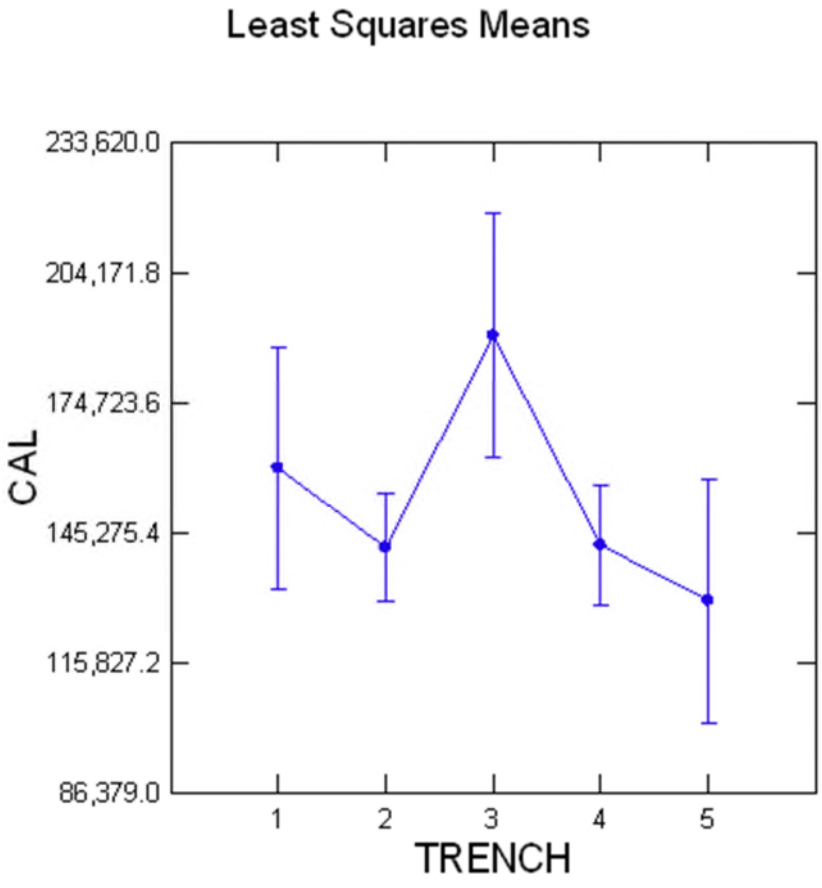
Effects coding used for categorical variables in model.
The categorical values encountered during processing are

| Variables | Levels | | | | |
|---|---|---|---|---|---|
| TRENCH (5 levels) | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 |

| | |
|---|---|
| Dependent Variable | CAL |
| N | 12 |
| Multiple R | 0.851 |
| Squared Multiple R | 0.725 |

**Analysis of Variance**

| Source | Type III SS | df | Mean Squares | F-ratio | p-value |
|---|---|---|---|---|---|
| TRENCH | 2.512E+009 | 4 | 6.279E+008 | 4.603 | 0.039 |
| Error | 9.550E+008 | 7 | 1.364E+008 | | |




0.039

**Test for Homogeneity**

| | Test Statistic | p-value |
|---|---|---|
| Levene's Test | 1.900 | 0.215 |

| Test for Normality | | |
|---|---|---|
| | Test Statistic | p-value |
| K-S Test (Lilliefors) | 0.167 | 0.517 |

| | |
|---|---|
| Durbin-Watson D Statistic | 2.985 |
| First Order Autocorrelation | -0.492 |

| Information Criteria | |
|---|---|
| AIC | 264.362 |
| AIC (Corrected) | 281.162 |
| Schwarz's BIC | 267.272 |

# Appendix D

# Chain-of-Custody Forms

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**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: Tetra Tech, Inc. Work Order Number: 1308113 RcptNo: 1

Received by/date: AF 08/02/13

Logged By: Anne Thorne 8/2/2013 9:00:00 AM Anne Thorne

Completed By: Anne Thorne 8/2/2013 Anne Thorne

Reviewed By: JMS 8/5/13

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| 2. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 3. How was the sample delivered? | FedEx | | |

## Log In

| | | | |
|---|---|---|---|
| 4. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 5. Were all samples received at a temperature of >0° C to 6.0°C | Yes ☑ | No ☐ | NA ☐ |
| 6. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 7. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 8. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 9. Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 10. VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA Vials ☑ |
| 11. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 13. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 14. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 8 | 4.2 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.
Mailing Address: NE Stu. 205
ABQ NM 87710

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name: BGNDRF
Soil Samples 7/31/2013

Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados
On Ice: ☑ Yes ☐ No
Sample Temperature: 4.2 °C


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No 1308113 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions ($F,Cl,NO_3,NO_2,PO_4,SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote # 326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 830 AM | Soil | BGNDRF Trench 1 0-25 cm DBG | | | -001 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 830 AM | | BGNDRF Trench 1 25-50 cm DBG | | | -002 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 830 AM | | BGNDRF Trench 1 50-75 cm DBG | | | -003 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 830 AM | | BGNDRF Trench 1 75-100 cm DBG | | | -004 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 0-25 cm DBG | | | -005 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 25-50 cm DBG | | | -006 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 50-75 cm DBG | | | -007 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 75-100 cm DBG | | | -008 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 100-125 cm DBG | | | -009 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 125-150 cm DBG | | | -010 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 150-175 cm DBG | | | -011 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | ↓ | BGNDRF Trench 2 175-200 cm DBG | | | -012 | | | | | | | | | | | | X | | | | |

| Relinquished by: | Received by: | Date | Time |
|---|---|---|---|
| | | 7/31/2013 | 930 AM |
| Relinquished by: | Received by: | 8/2/13 | 0900 |

Remarks: Quote # 326

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.

Mailing Address: NE Stu. 205

ABQ NM 87710

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other

☐ EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: BGNDRF

Soil Samples 7/31/2013

Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.2 °C


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No 1308115 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote # 326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 930 AM | Soil | BGNDRF Trench 2 213-243 cm DBG | | | -013 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 0-25 cm DBG | | | -014 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 25-50 cm DBG | | | -015 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 50-75 cm DBG | | | -016 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 75-100 cm DBG | | | -017 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 100-125 cm DBG | | | -018 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 121-152 cm DBG | | | -019 -019 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 0-25 cm DBG | | | -020 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 25-50 cm DBG | | | -021 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 50-75 cm DBG | | | -022 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 75-100 cm DBG | | | -023 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | ↓ | BGNDRF Trench 4 100-125 cm DBG | | | -024 | | | | | | | | | | | | X | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | Relinquished by: | Received by: | Date | Time |
| 7/31/2013 | 1130 AM | | | 8/1/13 | 0900 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

Remarks: Quote # 326

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.
Mailing Address: NE Stu. 205
ABQ NM 87710

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name: BGNDRF
Soil Samples 7/31/2013
Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados
On Ice: ☑ Yes ☐ No
Sample Temperature: 4.2 °C


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | 8/02/13 Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No 1308113 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions (F,Cl,$NO_3$,$NO_2$,$PO_4$,$SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote #326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 1130 AM | Soil | BGNDRF Trench 4 125-150 cm DBG | | | -025 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 150-175 cm DBG | | | -026 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 175-200 cm DBG | | | -027 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 213-243 cm DBG | | | -028 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 0-25 cm DBG | | | -029 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 25-50 cm DBG | | | -030 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 50-75 cm DBG | | | -031 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 91-121 cm DBG | | | -032 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 0-25 cm DBG | | | -033 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 25-50 cm DBG | | | -034 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 50-75 cm DBG | | | -035 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 75-100 cm DBG | | | -036 | | | | | | | | | | | | X | | | | |

| Date | Time | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 7/31/2013 | 130 PM | Steve Holland | | 8/1/13 | 0900 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

Remarks: Quote # 326

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.
Mailing Address: NE Stu. 205
ABQ NM 87710

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name: BGNDRF
Soil Samples 7/31/2013

Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados
On Ice: ☒ Yes ☐ No
Sample Temperature: 4.2


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
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Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix (AT 8/2/13) | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1308113 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote 326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 130 PM | Soil | BGNDRF Trench 7 0-25 cm DBG | | | -037 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 7 25-50 cm DBG | | | -038 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 7 50-75 cm DBG | | | -039 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | ↓ | BGNDRF Trench 7 75-100 cm DBG | | | -040 | | | | | | | | | | | | X | | | | |

| | | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 7/31/2013 | 130 PM | Steve Holland | | 8/2/13 | 0900 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

Remarks: Quote # 326

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

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# Appendix E

# Sample Analysis Methods

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| No. | Water Analysis Test | Method Reference | No. of Trenches | Test per Trench | Testing Cycles in 2013 | Total Tests in 2013 |
|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | |
| **Soil Testing Using a Saturated Soil Paste Extract** | | | | | | |
| 1 | pH | M4500-H+B ** | 7 | 4-9 | 1 | 40 |
| 2 | Specific Conductance (direct measurement of saturated soil paste) | Modified Bureau of Soils and E120.1 method** | 7 | 4-9 | 1 | 40 |
| 3 | Magnesium | SW6010B ** | 7 | 4-9 | 1 | 40 |
| 4 | Calcium | SW6010B ** | 7 | 4-9 | 1 | 40 |
| 5 | Sodium | SW6010B ** | 7 | 4-9 | 1 | 40 |
| **Other Soil Testing** | | | | | | |
| 6 | Sodium Adsorption Ratio | N173 ** | 7 | 4-9 | 1 | 40 |
| 7 | Organic Matter | Walkley-Black Method | 7 | 4-9 | 1 | 40 |
| 8 | Nitrate (NO3 as N) | E300 ** | 7 | 4-9 | 1 | 40 |
| 9 | Phosphorus, NaHCO3 extractable | E365.2 ** | 7 | 4-9 | 1 | 40 |
| 10 | Potassium | SW6010B ** | 7 | 4-9 | 1 | 40 |
| 11 | Arsenic | SW6020 ** | 7 | 4-9 | 1 | 40 |
| 12 | Selenium | SW6020 ** | 7 | 4-9 | 1 | 40 |
| **Totals:** | | | | | | **480** |

** method updated by lab

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# Appendix F

# Quality Assurance Plan

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# Hall Environmental Analysis Laboratory

## QUALITY ASSURANCE PLAN

## Effective Date: February 2nd 2010

## Revision 9.2

www.hallenvironmental.com

**Control Number: 0000095**

Approved By:

1/20/11

Andy Freeman
Laboratory Manager

Date

# Table of Contents

**Appendix C TCEQ Accreditation**
Full list of approved analytes, methods, analytical techniques and fields of testing
**Reserved, available upon request**

**Appendix D Utah ELCP Accreditation**
Full list of approved analytes, methods, analytical techniques and fields of testing
**Reserved, available upon request**

**Appendix E ADHS Accreditation**
Full list of approved analytes, methods, analytical techniques and fields of testing
**Reserved, available upon request**

**Appendix F NMED-DWB Certification**
**Reserved, available upon request**

**Appendix G NM DOH Certification**
**Reserved, available upon request**

**Appendix H Terms and Definitions**
**Reserved, available upon request**

**Appendix I Chain of Custody Record**
**Reserved, available upon request**

**Appendix J HEAL Forms**
Analyst Ethics and Data Integrity Agreement
IDOC Certificate
ADOCP Certificate
Training Forms
Corrective Action Report
**Reserved, available upon request**

## 3.0 Introduction

### Purpose of Document

The purpose of this Quality Assurance Plan is to formally document the quality assurance policies and procedures of Hall Environmental Analysis Laboratory, Inc. (HEAL), for the benefit of its employees, clients, and accrediting organizations. HEAL continually implements all aspects of this plan as an essential and integral part of laboratory operations in order to ensure that high quality data is produced in an efficient and effective manner.

### Objectives

The objective of HEAL is to achieve and maintain excellence in environmental testing. This is accomplished by developing, incorporating and documenting the procedures and policies specified by each of our accrediting authorities and outlined in this plan. A laboratory staff that is analytically competent, well qualified, and highly trained carries out these activities. An experienced management team, knowledgeable in their area of expertise, monitors them. Finally, a comprehensive quality assurance program governs laboratory practices and ensures that the analytical results are valid, defensible, reproducible, reconstructable and of the highest quality.

HEAL establishes and thoroughly documents its activities to ensure that all data generated and processed will be scientifically valid and of known and documented quality. Routine laboratory activities are detailed in method specific standard operating procedures (SOP). All data reported meets the applicable requirements for the specific method that is referenced, ORELAP, TCEQ, EPA, client specific requirements and/or State Bureaus. In the event that these requirements are ever in contention with each other, it is HEAL's policy to always follow the most prudent requirement available. For specific method requirements refer to HEAL's Standard Operating Procedures (SOP's), EPA methods, Standard Methods 20$^{th}$ edition, ASTM methods or state specific methods.

HEAL management ensures that this document is correct in terms of required accuracy, data reproducibility, and that the procedures contain proper quality control measures. HEAL management additionally ensures that all equipment is reliable, well maintained and appropriately calibrated. The procedures and practices of the laboratory are geared towards not only strictly following our regulatory requirements but also allowing the flexibility to conform to client specific specifications. Meticulous records are maintained for all samples and their respective analyses so that results are well documented and defensible in a court of law.

The HEAL Quality Assurance/Quality Control Officer (QA/QCO) and upper management are responsible for supervising and administering this quality assurance program, and ensuring each individual is responsible for its proper implementation. All HEAL management remains committed to the encouragement of excellence in analytical testing and will continue to provide the necessary resources and environment conducive to its achievement.

## Policies

Understanding that quality cannot be mandated, it is the policy of this laboratory to provide an environment that encourages all staff members to take pride in the quality of their work. In addition to furnishing proper equipment and supplies, HEAL stresses the importance of continued training and professional development. Further, HEAL recognizes the time required for data interpretation. Therefore, no analyst should feel pressure to sacrifice data quality for data quantity. Each staff member must perform with the highest level of integrity and professional competence, always being alert to problems that could compromise the quality of their technical work.

Management and senior personnel supervise analysts closely in all operations. Under no circumstance is the willful act or fraudulent manipulation of analytical data condoned. Such acts must be reported immediately to HEAL management. Reported acts will be assessed on an individual basis and resulting actions could result in dismissal. The laboratory staff is encouraged to speak with lab managers or senior management if they feel that there are any undo commercial, financial, or other pressures, which might adversely affect the quality of their work; or in the event that they suspect that data quality has been compromised in any way. HEAL's Quality Assurance/Quality Control Officer is available if any analyst and/or manager wishes to anonymously report any suspected or known breaches in data integrity.

All proprietary rights and client information at HEAL (including national security concerns) are considered confidential. No information will be given out without the express verbal or written permission of the client. All reports generated will be held in the strictest of confidence.

This is a controlled document. Each copy is assigned a unique tracking number and when released to a client or accrediting agency the QA/QCO keeps the tracking number on file. This document is reviewed on an annual basis to ensure that it is valid and representative of current practices at HEAL.

## 4.0 Organization and Responsibility

### Company

HEAL is accredited in accordance with the 2003 NELAC standard (see NELAC accredited analysis list in the appendix), through ORELAP and TCEQ and by the Arizona Department of Health Services. Additionally, HEAL is qualified as defined under the State of New Mexico Water Quality Control Commission regulations and the New Mexico State Drinking Water Bureau. HEAL is a locally owned small business that was established in 1991. HEAL is a full service environmental analysis laboratory with analytical capabilities that include both organic and inorganic methodologies and has performed analyses of soil, water, air as well as various other matrices for many sites in the region. HEAL's client base includes local, state and federal agencies, private consultants, commercial industries as well as individual homeowners. HEAL has performed as a subcontractor to the state of New Mexico and to the New Mexico Department of Transportation. HEAL has been acclaimed by its customers as producing quality results and as being adaptive to client-specific needs.

The laboratory is divided into an organic section, and an inorganic section. Each section has a designated manager/technical director. The technical directors report directly to the laboratory manager, who oversees all operations.

### Certifications

ORELAP – NELAC Oregon Primary accrediting authority.

TCEQ – NELAC Texas Secondary accrediting authority.

The Arizona Department of Health Services

The New Mexico Drinking Water Bureau

The New Mexico Department of Health

See appendix B-E for copies of current licenses and licensed parameters, or refer to our current list of certifications online at www.hallenvironmental.com.

In the event of a certification being revoked or suspended HEAL will notify, in writing, those clients that require the effected certification.

## Personnel

HEAL management ensures the competence of all who operate equipment, perform environmental tests, evaluate results, and sign test reports. Personnel performing specific tasks shall be qualified on the basis of appropriate education, training, experience and /or demonstrated skills.

All personnel shall be responsible for complying with HEAL's quality assurance/quality control requirements that pertain to their technical function. Each technical staff member must have a combination of experience and education to adequately demonstrate specific knowledge of their particular function and a general knowledge of laboratory operations, test methods, quality assurance/quality control procedures and records management.
All employees training certificates and diplomas are kept on file with demonstrations of capability for each method they perform. An Organizational Chart can be found in Appendix A.

## Laboratory Director

The Laboratory Director is responsible for overall technical direction and business leadership of HEAL. The Laboratory Manager, the Project Manager and Quality Assurance/Quality Control Officer report directly to the Laboratory Director. Someone with a minimum of 7 years of directly related experience and a bachelor's degree in a scientific or engineering discipline should fill this position.

## Laboratory Manager/Lead Technical Director

The Laboratory Manager shall exercise day–to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results. The Laboratory Manager shall be experienced in the fields of accreditation for which the laboratory is approved or seeking accreditation. The Laboratory Manager shall certify that personnel with appropriate educational and/or technical background perform all tests for which HEAL is accredited. Such certification shall be documented.

The Laboratory Manager shall monitor standards of performance in quality control and quality assurance and monitor the validity of the analyses performed and data generated at HEAL to assure reliable data.

The Laboratory Manager is responsible for the daily operations of the laboratory. The Laboratory Manager is the lead technical director of the laboratory and in conjunction with the section technical directors is responsible for coordinating activities within the laboratory with the overall goal of efficiently producing high quality data with in a reasonable time frame.

In events where employee scheduling or current workload is such that new work cannot be incorporated, with out missing hold times, the Laboratory Manager has authority to modify employee scheduling, re-schedule projects or, when appropriate, allocate the work to approved subcontracting laboratories.

Additionally, the laboratory manager reviews and approves new analytical procedures and methods, and performs a final review of most analytical results. The Laboratory Manager provides technical support to both customers and HEAL staff.

The Laboratory Manager also observes the performance of supervisors to ensure good laboratory practices and proper techniques are being taught and utilized, assisting in overall quality control implementation, and strategic planning for the future of the company. Other duties include assisting in establishing laboratory policies which lead to the fulfillment of requirements for various certification programs, assuring that all Quality Assurance and Quality Control documents are reviewed and approved, and assisting in conducting Quality Assurance Audits.

The laboratory manager addresses questions or complaints that cannot be answered by the section managers.

The Laboratory Manager shall have a bachelor's degree in a chemical, environmental, biological sciences, physical sciences or engineering field, and at least five years of experience in the environmental analysis of representative inorganic and organic analytes for which the laboratory seeks or maintains accreditation.

**Quality Assurance Quality Control Officer**

The Quality Assurance/Quality Control Officer (QA/QCO) serves as the focal point for QA/QC and shall be responsible for the oversight and/or review of quality control data. The QA/QCO functions independently from laboratory operations and shall be empowered to halt unsatisfactory work and/or prevent the reporting of results generated from an out-of-control measurement system. The QA/QCO shall objectively evaluate data and perform assessments without any outside/managerial influence. The QA/QCO shall have direct access to the highest level of management at which decisions are made on laboratory policy and/or resources. The QA/QCO shall notify laboratory management of deficiencies in the quality system in periodic, independent reports.

The QA/QCO shall have general knowledge of the analytical test methods, for which data review is performed, have documented training and/or experience in QA/QC procedures and in the laboratory's quality system. The QA/QCO will have a minimum of a BS in a scientific or related field and a minimum of three years of related experience.

The QA/QCO shall schedule and conduct internal audits as per the Internal Audit SOP at least annually, monitor and trend Corrective Action Reports as per the Data Validation SOP, periodically review control charts for out of control conditions and initiate any appropriate corrective actions.

The QA/QCO shall oversee the analysis of proficiency testing in accordance with our standards and monitor any corrective actions issued as a result of this testing.

The QA/QCO reviews all standard operating procedures and statements of work in order to assure their accuracy and compliance to method and regulatory requirements.

The QA/QCO shall be responsible for maintaining and updating this quality manual.

**Business/Project Manager**

The role of the business/project manager is to act as a liaison between HEAL and our clients. The project manager reviews reports, updates clients on the status of projects in-house, prepares quotations for new work, and is responsible for HEAL's marketing effort.

All new work is assessed by the project manager and reviewed with the other managers so as to not exceed the laboratories capacity. In events where employee scheduling or current workload is such that new work cannot be incorporated with out missing hold times, the Project Manager has authority to re-schedule projects.

It is also the duty of the project manager to work with the Laboratory Manager and QA/QCO to insure that before new work is undertaken the resources required and accreditations requested are available to meet the client's specific needs.

Additionally, the Project Manager can initiate the review of the need for new analytical procedures and methods, and performs a final review of some analytical results. The Project Manager provides technical support to customers. Someone with a minimum of 2 years of directly related experience and a bachelor's degree in a scientific or engineering discipline should fill this position.

**Section Manager/Technical Directors**

The Section Manager/Technical Directors are full-time members of the staff at HEAL who exercise day-to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results for their department within HEAL. A Technical Director's duties shall include, but not be limited to, monitoring standards of performance in quality control and quality assurance; monitoring the validity of the analyses performed and the data generated in their sections to ensure reliable data, overseeing training and supervising departmental staff, schedule incoming work for their sections and monitor laboratory personnel to ensure that proper procedures and techniques are being utilized. They supervise and implement new Quality Control procedures as directed by the QA/QCO, update and maintain quality control records including, but not limited to, training forms, IDOCs, ADOCPs, MDLs and evaluate laboratory personnel in their Quality Control activities. In addition technical directors are responsible for upholding the spirit and intent of HEAL's data integrity procedures.

They are the technical director of the associated section and review analytical data to acknowledge that data meets all criteria set forth for good Quality Assurance practices. Someone with a minimum of 2 years of experience in the environmental analysis of

representative analytes for which HEAL seeks or maintains accreditation and a bachelor's degree in a scientific or related discipline should fill this position.

**Health and Safety / Chemical Hygiene Officer**

Refer to the most recent version of the Health and Safety and Chemical Hygiene Plans for the rolls, responsibilities and basic requirements of the Health and Safety Officer (H&SO) and the Chemical Hygiene Officer (CHO). These jobs can be executed by the same employee.

**Chemist I, II and III**

Chemists are responsible for the analysis of various sample matrices including, but not limited to, solid, aqueous, and air as well as the generation of high quality data in accordance with the HEAL SOPs and QA/QC guidelines in a reasonable time as prescribed by standard turnaround schedules or as directed by the Section Manager or Laboratory Manager.

Chemists are responsible for making sure all data generated is entered in the database in the correct manner and the raw data is reviewed, signed and delivered to the appropriate peer for review. A Chemist reports daily to the section manager and will inform them as to material needs of the section specifically pertaining to the analyses performed by the chemist. Additional duties may include preparation of samples for analysis, maintenance of lab instruments or equipment, cleaning and providing technical assistance to lower level laboratory staff.

The senior chemist in the section may be asked to perform supervisory duties as related to operational aspects of the section. The chemist may perform all duties of a lab technician.

The position of Chemist is a full or part time hourly position and is divided into three levels, Chemist I, II, and III. All employees hired into a Chemist position at HEAL must begin as a Chemist I and remain there at a minimum of three months regardless of their education and experience. Chemist I must have a minimum of an AA in a related field or equivalent experience (equivalent experience means years of related experience can be substituted for the education requirement). A Chemist I is responsible for analysis, instrument operation and data reduction. Chemist II must have a minimum of an AA in a related field or equivalent experience and must have documented and demonstrated aptitude to perform all functions of a Chemist II. A Chemist II is responsible for the full analysis of their test methods, routine instrument maintenance, purchase of consumables as dictated by their Technical Director, advanced data reduction and basic data review. Chemist II may also assist Chemist III in method development and, as dictated by their Technical Director, may be responsible for the review and/or revision of their method specific SOPs. Chemist III must have Bachelors degree or equivalent experience and must have documented and demonstrated aptitude to perform all functions of a Chemist III. A Chemist III is responsible for all tasks completed by a Chemist I and II as well as advanced

data review, non-routine instrument maintenance, assisting their technical director in basic supervisory duties and method development.

### Laboratory Technician

A laboratory technician is responsible for providing support in the form of sample preparation, basic analysis, general laboratory maintenance, glassware washing, chemical inventories and sample kit preparation. This position can be filled by someone without the education and experience necessary to obtain a position as a chemist.

### Sample Control Manager

The sample control manager is responsible for receiving samples and reviewing the sample login information after it has been entered into the computer. The sample control manager also checks the samples against the chain-of-custody for any sample and/or labeling discrepancies prior to distribution.

The sample control manager is responsible for sending out samples to the sub-contractors along with the review and shipping of field sampling bottle kits. The sample control manager acts as a liaison between the laboratory and field sampling crew to ensure that the appropriate analytical test is assigned. If a discrepancy is noted the sample control manager or sample custodian will contact the customer to resolve any questions or problems. The sample control manager is an integral part of the customer service team.

This position should be filled by someone with a high school diploma and a minimum of 2 years of related experience and can also be filled by a senior manager.

### Sample Custodians

Sample Custodians work directly under the Sample Control Manager. They are responsible for sample intake into the laboratory and into the LIMS. Sample Custodians take orders from our clients and prepare appropriate bottle kits to meet the client's needs. Sample Custodians work directly with the clients in properly labeling and identifying samples as well as properly filling out legal COCs. When necessary, Sample Custodians contact clients to resolve any questions or problems associated with their samples. Sample Custodians are responsible for distributing samples throughout the laboratory and are responsible for notifying analysts of special circumstances such as short holding times or improper sample preservation upon receipt.

## Delegations in the Absence of Key Personnel

Planned absences shall be preceded by notification to the Laboratory Manager. The appropriate staff members shall be informed of the absence. In the case of unplanned absences, the organizational superior shall either assume the responsibilities and duties or delegate the responsibilities and duties to another appropriately qualified employee.

In the event that the Laboratory Manager is absent for a period of time exceeding fifteen consecutive calendar days, another full-time staff member meeting the basic qualifications and competent to temporarily perform this function will be designated. If this absence exceeds thirty-five consecutive calendar days, HEAL will notify ORELAP in writing of the absence and the pertinent qualifications of the temporary laboratory manager.

## Laboratory Personnel Qualification and Training

All personnel joining HEAL shall undergo orientation and training. During this period the new personnel shall be introduced to the organization and their responsibilities, as well as the policies and procedures of the company. They shall also undergo on the job training and shall work with trained staff. They will be shown required tasks and be observed while performing them.

When utilizing staff undergoing training, appropriate supervision shall be dictated and overseen by the appropriate section technical director. Prior to analyzing client samples, a new employee, or an employee new to a procedure, must meet the following basic requirements. The SOP and Method for the analysis must be read and signed by the employee indicating that they read, understood and intend to comply with the requirements of the documents. The employee must undergo documented training. Training is conducted by a senior analyst familiar with the procedure and overseen by the section Technical Director. This training is documented by any means deemed appropriate by the trainer and section Technical Director, and kept on file in the employees file located in the QA/QCO's office. The employee must perform a successful Initial Demonstration of Proficiency (IDOC). See Appendix H for the training documents and checklists utilized at HEAL to ensure that all of these requirements are met. Once all of the above requirements are met it is incumbent upon the section Technical Director to determine at which point the employee can begin to perform the test unsupervised. A Certification to Complete Work Unsupervised (see Appendix H) is them filled out by the employee and technical director.

All IDOCs shall be documented through the use of the certification form which can be found in Appendix H. IDOCs are performed by analyzing four Laboratory Control Spikes (LCSs). Using the results of the LCSs the mean recovery is calculated in the appropriate reporting units and the standard deviations of the population sample (n-1) (in the same units) as well as the relative percent difference for each parameter of interest. When it is not possible or pertinent to determine mean and standard deviations HEAL assesses performance against establish and documented criteria dictated in the method SOP. The mean and standard deviation are compared to the corresponding acceptance criteria for

precision and accuracy in the test method (if applicable) or in laboratory-generated acceptance criteria. In the event that the HEAL SOP or test method fail to establish the pass/fail criteria the default limits of +/- 20% for calculated recovery and <20% relative percent difference based on the standard deviation will be utilized. If all parameters meet the acceptance criteria, the IDOC is successfully completed. If any one of the parameters do not meet the acceptance criteria, the performance is unacceptable for that parameter and the analyst must either locate and correct the source of the problem and repeat the test for all parameters of interest or repeat the test for all parameters that failed to meet criteria. Repeat failure, however, confirms a general problem with the measurement system. If this occurs the source of the problem must be identified and the test repeated for all parameters of interest.

New employees that do not have prior analysis experience will not be allowed to perform analysis until they have demonstrated attention to detail with minimal errors in the assigned tasks. To ensure a sustained level of quality performance among staff members, continuing demonstration of capability shall be performed at least once a year. These are as an Annual Documentation of Continued Proficiency (ADOCP).

At least once per year an ADOCP must be completed by: the acceptable performance of a blind sample (this is typically done using a PT sample but can be a single blind sample to the analyst), by performing another IDOC, or by summarizing the data of four consecutive laboratory control samples with acceptable levels of precision and accuracy (these limits are those currently listed in the LIMS for an LCS using the indicated test method.) ADOCPs are documented using a standard form and are kept on file in each analysts employee folder.

Each new employee shall be provided with data integrity training as a formal part of their new employee orientation. Each new employee will sign an ethics and data integrity agreement to ensure that they understand that data quality is our main objective. Every HEAL employee recognizes that although turn around time is important, quality is put above any pressure to complete the task expediently. Analysts are not compensated for passing QC parameters nor are incentives given for the quantity of work produced. Data Integrity and Ethics training are performed on an annual basis in order to remind all employees of HEAL's policy on data quality. Employees are required to understand that any infractions of the laboratory data integrity procedures will result in a detailed investigation that could lead to very serious consequences including immediate termination, debarment or civil/criminal prosecution.

Training for each member of HEAL's technical staff is further established and maintained through documentation that each employee has read, understood, and is using the latest version of this Quality Assurance Manual. Training courses or workshops on specific equipment, analytical techniques or laboratory procedures are documented through attendance sheets, certificates of attendance, training forms or quizzes. This training documentation is located in either analyst specific employee folders in the QA/QCO Office or in the current years group training folder, also located in the QA/QCO Office. On the front of all methods, SOPs and procedures for HEAL there is a signoff sheet that is signed by all pertinent employees, indicating that they have read, understood and agreed to perform the most recent version of the document.

## 5.0 Receipt and Handling of Samples

### Sampling

#### Procedures

HEAL does not provide field sampling for any projects. Sample kits are prepared and provided for clients upon request. The sample kits contain the appropriate sampling containers (with a preservative when necessary), labels, blue ice (The use of "blue ice" by anyone except HEAL personnel is discouraged because it generally does not maintain the appropriate temperature of the sample. If blue ice is used, it should be completely frozen at the time of use, the sample should be chilled before packing, and special notice taken at sample receipt to be certain the required temperature has been maintained.), a cooler, chain-of-custody forms, plastic bags, bubble wrap, and any special sampling instructions. Sample kits are reviewed prior to shipment for accuracy and completeness.

#### Containers

Containers which are sent out for sampling are purchased by HEAL from a commercial source. Glass containers are certified "EPA Cleaned" QA level 1. Plastic containers are certified clean when required. These containers are received with a Certificate of Analysis verifying that the containers have been cleaned according to the EPA wash procedure. Containers are used once and discarded. If the samples are collected and stored in inappropriate containers the laboratory may not be able to accurately quantify the amount of the desired components. In this case re-sampling may be required.

#### Preservation

If sampling for an analyte(s) requires preservation, the sample custodians fortify the containers prior to shipment to the field, or provide the preservative for the sampler to add in the field. The required preservative is introduced into the vials in uniform amounts and done so rapidly to minimize the risk of contamination. Vials that contain a preservative are labeled appropriately. If the samples are stored with inappropriate preservatives the laboratory may not be able to accurately quantify the amount of the desired components. In this case re-sampling may be required.

Refer to the current Login SOP and/or the current price book for detailed sample receipt and handling procedures, appropriate preservation and holding time requirements.

## Sample Custody

### Chain-of-Custody Form

A Chain-of-Custody (COC) form is used to provide a record of sample chronology from the field to receipt at the laboratory. HEAL's COC contains the client's name, address, phone and fax numbers, the project name and number, the project manager's name, and the field sampler's name. It also identifies the date and time of sample collection, sample matrix, field sample ID number, number/volume of sample containers, sample temperature upon receipt, and any sample preservative information.

There is also a space to record the HEAL ID number assigned to samples after they are received. Next to the sample information is a space for the client to indicate the desired analyses to be performed. There is a section for the client to indicate the data package level as well as any accreditation requirements. Finally, there is a section to track the actual custody of the samples. The custody section contains lines for signatures, dates and times when samples are relinquished and received. The COC form also includes a space to record special sample related instructions, sampling anomalies, time constraints, and any sample disposal considerations.

It is paramount that all COCs arrive at HEAL complete and accurate so that the samples can be processed and allocated for testing in a timely and efficient manor. A sample chain-of-custody form can be found in Appendix G or on line at www.hallenvironmental.com.

### Receiving Samples

Samples are received by authorized HEAL personnel. Upon arrival, the COC is compared to the respective samples. After the samples and COC have been determined to be complete and accurate, the sampler signs over the COC. The HEAL staff member in turn signs the chain-of-custody, also noting the current date, time and sample temperature. This relinquishes custody of the samples from the sampler and delegates sample custody to HEAL. The third (pink) copy of the COC form is given to the person who has relinquished custody of the samples.

### Logging in Samples and Storage

Standard Operating Procedures have been established for the receiving and tracking of all samples (refer to the current HEAL Login SOP). These procedures ensure that samples are received and properly logged into the laboratory, and that all associated documentation, including chain of custody forms, are complete and consistent with the samples received. Each sample set is given a unique HEAL tracking ID number. Individual sample locations within a defined sample set are given a unique sample ID suffix-number. Labels with the HEAL numbers, and tests requested, are generated and

placed on their respective containers. The pH of preserved, non-volatile samples is checked and noted if out of compliance. Due to the nature of the samples, the pHs of volatiles samples are checked after analysis. Samples are reviewed prior to being distributed for analysis.

Samples are distributed for analysis based upon the requested tests. In the event that sample volume is limited and different departments at HEAL are required to share the sample, volatile work takes precedence and will always be analyzed first before the sample is sent to any other department for analysis.

Each project (sample set) is entered into the Laboratory Information Management System (LIMS) with a unique ID that will be identified on every container. The ID tag includes the Lab ID, Client ID, date and time of collection, and the analysis/analyses to be performed. The LIMS continually updates throughout the lab. Therefore, at any time, an analyst or manager may inquire about a project and/or samples status. For more information about the login procedures, refer to the Sample Login SOP.

**Disposal of Samples**

Samples are held at HEAL for a minimum of thirty days and then transferred to the HEAL warehouse for disposal. Analytical results are used to characterize their respective sample contamination level(s) so that the proper disposal can be performed. These wastes will be disposed of according to their hazard as well as their type and level of contamination. Refer to the Hall Environmental Analysis Laboratory Chemical Hygiene Plan and current Sample Disposal SOP for details regarding waste disposal.

Waste drums are provided by an outside agency. These drums are removed by the outside agency and disposed of in a proper manner.

The wastes that are determined to be non-hazardous are disposed of as non-hazardous waste in accordance with the Chemical Hygiene Plan and Sample Disposal SOP.

## 6.0 Analytical Procedures

All analytical methods used at HEAL incorporate necessary and sufficient Quality Assurance and Quality Control practices. A Standard Operating Procedure (SOP) is used for each method to provide the necessary criteria to yield acceptable results. These procedures are reviewed at least annually and revised as necessary and are attached as a pdf file in the Laboratory Information Management System (LIMS) for easy access by each analyst. The sample is often consumed or altered during the analytical process. Therefore, it is important that each step in the analytical process be correctly followed in order to yield valid data.

When unforeseen problems arise, the analyst, technical director, and, when necessary, laboratory manager meet to discuss the factors involved. The analytical requirements are evaluated and a suitable corrective action or resolution is established. The client is notified in the case narrative with the final report or before, if the validity of their result is in question.

### List of Procedures Used

Typically, the procedures used by HEAL are EPA approved methodologies or 20th edition Standard Methods. However, proprietary methods for client specific samples are sometimes used. The following tables list EPA and Standard Methods Method numbers with their corresponding analytes and/or instrument classification.

**Methods Utilized at HEAL**

Drinking Water(DW) Non-Potable Water (NPW) Solids (S)

| Methodology | Matrix | Title of Method |
|---|---|---|
| 120.1 | DW NPW | "Conductance(Specific Conductance, *u*ohms at 25 ° C)" |
| 180.1 | DW NPW | "Turbidity (Nephelometric)" |
| 200.2 | DW NPW | "Sample Preparation Procedure For Spectrochemical Determination of Total Recoverable Elements" |
| 200.7 | DW NPW | "Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry" |
| 200.8 | DW NPW | "Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry." |
| 245.1 | DW NPW | "Mercury (Manual Cold Vapor Technique)" |
| 300.0 | DW NPW S | "Determination of Inorganic Anions by Ion Chromatography" |
| 413.2 | NPW S | "Oil and Grease" |
| 418.1 | NPW S | "Petroleum Hydrocarbons (Spectrophotometric, Infrared)" |
| 504.1 | DW | "EDB, DBCP and 123TCP in Water by Microextraction and Gas Chromatography" |

| | | |
|---|---|---|
| 505 | DW | "Analysis of Organohalide Pesticides and Commercial Polychlorinated Biphenyl (PCB) Products in Water by Microextraction and Gas Chromatography" |
| 515.1 | DW | "Determination of Chlorinated Acids in Water by Gas Chromatography with an Electron Capture Detector" |
| 524.2 | DW | "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry" |
| 531.1 | DW | "Measurement of N-Methylcarbomoyloximes and N-Methylcarbamates in Water by Direct Aqueous Injection HPLC with Post Column Dervivatization" |
| 547 | DW | "Determination of Glyphosate in Drinking Water by Direct-Aqueous Injection HPLC, Post-Column Derivatization, and Fluorescence Detection" |
| 552.1 | DW | "Determination of Haloacetic Acids and Dalapon in Drinking Water by Ion-Exchange Liquid-Solid Extraction and Gas Chromatography with an Electron Capture Detector" |
| 1311 | S | "Toxicity Characteristic Leaching Procedure" |
| 1311ZHE | S | "Toxicity Characteristic Leaching Procedure" |
| 3005A | NPW | "Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by FLAA or ICP Spectroscopy" |
| 3010A | S | "Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy" |
| 3050B | S | "Acid Digestion of Sediment, Sludge, and Soils" |
| 3510C | DW<br>NPW | "Separatory Funnel Liquid-Liquid Extraction" |
| 3540 | S | "Soxhlet Extraction" |
| 3545 | S | "Pressurized Fluid Extraction(PFE)" |
| 3665 | NPW<br>S | "Sulfuric Acid/Permanganate Cleanup" |
| 5030B | NPW | "Purge-and-Trap for Aqueous Samples" |
| 5035 | S | "Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples" |
| 6010B | NPW<br>S | "Inductively Coupled Plasma-Atomic Emission Spectrometry" |
| 6020 | NPW<br>S | "Inductively Coupled Plasma-Mass Spectrometry" |
| 7470A | NPW | "Mercury in Liquid Waste (Manual Cold-Vapor Technique)" |
| 7471A | S | "Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)" |
| 8021B | NPW<br>S | "Aromatic and Halogenated Volatiles By Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors" |
| 8015B | NPW<br>S | "Nonhalogenated Volatile Organics by Gas Chromatography" (Gasoline Range and Diesel Range Organics) |

| | | |
|---|---|---|
| 8015AZ | S | "C10-C32 Hydrocarbons in Soil-8015AZ" |
| 8081A | NPW S | "Organochlorine Pesticides by Gas Chromatography" |
| 8082 | NPW S | "Polychlorinated Biphenyls (PCBs) by Gas Chromatography" |
| 8260B | NPW S | "Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)" |
| 8270C | NPW S | "Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)" |
| 8310 | NPW S | "Polynuclear Aromatic Hydrocarbons" |
| 9045C | S | "Soil and Waste pH" |
| 9060 | NPW | "Total Organic Carbon" |
| 9067 | NPW S | "Phenolics (Spectrophotometric, MBTH With Distillation)" |
| 9095 | S | Paint Filter |
| Walkley/Black | S | FOC/TOC WB |
| SM2320 B | DW NPW | "Alkalinity" |
| SM2540 B | NPW | "Total Solids Dried at 103-105° C" |
| SM2540 C | DW NPW | "Total Dissolved Solids Dried at 180° C" |
| SM2540 D | NPW | "Total Suspended Solids Dried at 103-105° C" |
| SM4500-H+B | DW NPW | "pH Value" |
| SM4500-NH3 C | NPW S | "4500-NH3" Ammonia |
| SM4500-Norg C | NPW S | "4500-Norg" Total Kjeldahl Nitrogen (TKN) |
| SM5310 B | DW | "5310" Total Organic Carbon (TOC) |
| 8000B | NPW S | "Determinative Chromatographic Separations" |
| 8000C | NPW S | "Determinative Chromatographic Separations" |

## Criteria for Standard Operating Procedures

HEAL has Standard Operating Procedures (SOPs) for each of the test methods listed above. These SOPs are based upon the listed methods and detail the specific procedure and equipment utilized as well as the quality requirements necessary to prove the integrity of the data. SOPs are reviewed or revised every twelve months or sooner if necessary. The review/revision is documented in the Master SOP Logbook filed in the QA/QC Office. All SOPs are available in the LIMS linked under the specific test method. Administrative SOPs, which are not linked in the LIMS, are available on desktops throughout the laboratory in the link to administrative SOPs folder.

Each HEAL test method SOP shall include or reference the following topics where applicable:

Identification of the test method;
Applicable matrix or matrices;
Limits of detection and quantitation;
Scope and application, including parameters to be analyzed;
Summary of the test method;
Definitions;
Interferences;
Safety;
Equipment and supplies;
Reagents and standards;
Sample collection, preservation, shipment and storage;
Quality control parameters;
Calibration and standardization;
Procedure;
Data analysis and calculations;
Method performance;
Pollution prevention;
Data assessment and acceptance criteria for quality control measures;
Corrective actions for out-of-control data;
Contingencies for handling out-of-control or unacceptable data;
Waste management;
References; and
Any tables, diagrams, flowcharts and validation data.

## 7.0 Calibration

All equipment and instrumentation used at HEAL are operated, maintained and calibrated according to manufacturers guidelines, as well as criteria set forth in applicable analytical methodology. Personnel who have been properly trained in their procedures perform operation and calibration. Brief descriptions of the calibration processes for our major laboratory equipment and instruments are found below.

### Thermometers

The thermometers in the laboratory are used to measure the temperatures of the refrigerators/freezers, ovens, water baths, hot blocks, ambient laboratory conditions, TCLP Extractions, digestion blocks and samples at the time of log-in. All NIST traceable thermometers are either removed from use upon their documented expiration date or they are checked annually with a NIST certified thermometer and a correction factor is noted on each thermometer log. See the most current Login SOP for detailed procedures on this calibration procedure.

Dickson Data Loggers are used to record sample and standard storage refrigerators over the weekend when the appropriate staff is not available to record the temperatures. These data loggers are shipped back to the manufacturer once a year to be re-calibrated.

### Refrigerators/Freezers

Each laboratory refrigerator or freezer contains a thermometer capable of measuring to a minimum precision of 1°C. The thermometers are kept with the bulb immersed in liquid. Each workday, the temperatures of the refrigerators are recorded in a designated logbook to insure that the refrigerators are within the required designated range. Samples are stored separately from the standards to reduce the risk of contamination.

See the current catastrophic Failure SOP for the procedure regarding how to handle failed refrigerators or freezers.

### Ovens

The ovens contain thermometers graduated by 1° C. The ovens are calibrated quarterly against NIST thermometers and checked daily as required and in which ever way is dictated by or appropriate for the method in use.

## Analytical and Table Top Balances

The table top balances are capable of weighing to a minimum precision of 0.01 grams. The analytical balances are capable of weighing to a minimum precision of 0.0001 grams. Records are kept of daily calibration checks for the balances in use. Working weights are used in these checks. The balances are annually certified by an outside source and the certifications are on file with the QA/QCO.

Balances, unless otherwise indicated by method specific SOPs, will be checked daily with at least two weights that will bracket the working range of the balance for the day. Daily balance checks will be done using working weights that are calibrated annually against Class S weights. Class S weights are calibrated as required by an external provider. The Class S weights are used once a year or more frequently if required, to assign values to the Working Weights. During the daily balance checks the working weights are compared to their assigned values and must pass in order to validate the calibration of the balance. The assigned values for the working weights, as well as the daily checks, are recorded in the balance logbook for each balance.

## Instrument Calibration

An instrument calibration is the relationship between the known concentrations of a set of calibration standards introduced into an analytical instrument and the measured response they produce. Calibration curve standards are a prepared series of aliquots at various known concentrations levels from a primary source reference standard. Specific mathematical types of calibration techniques are outlined in SW-846 8000B and/or 8000C. The entire initial calibration must be performed prior to sample analyses.

The lowest standard in the calibration curve must be at or below the required reporting limit.

Refer to the current SOP to determine the minimum requirement for calibration points.

Most compounds tend to be linear and a linear approach should be favored when linearity is suggested by the calibration data. Non-linear calibration should be considered only when a linear approach cannot be applied. It is not acceptable to use an alternate calibration procedure when a compound fails to perform in the usual manner. When this occurs it is indicative of instrument issues or operator error.

If a non-linear calibration curve fit is employed, a minimum of six calibration levels must be used for second-order (quadratic) curves.

When more than 5 levels of standards are analyzed in anticipation of using second-order calibration curves, all calibration points MUST be used regardless of the calibration option employed. The highest or lowest calibration point may be excluded for the purpose of

narrowing the calibration range, and meeting the requirements for a specific calibration option. Otherwise, unjustified exclusion of calibration data is expressly forbidden.

Analytical methods vary in QC acceptance criteria. HEAL follows the method specific guidelines for QC acceptance. The specific acceptance criteria are outlined in the analytical methods and its corresponding SOP.

**pH Meter**

The pH meter measures to a precision of 0.01 pH units. The pH calibration logbook contains the calibration before each use, or each day, if used more than once per day. It is calibrated using a minimum of 3 certified buffers. Also available with the pH meter is a magnetic stirrer with a temperature sensor. See the current pH SOP (SM4500 H+ B) for specific details regarding calibration of the pH probe.

**Other Analytical Instrumentation and Equipment**

The conductivity probe is calibrated as needed and checked daily when in use.

Eppendorf (or equivalent brands) pipettes are checked gravimetrically prior to use.

**Standards**

All of the source reference standards used are ordered from a reliable commercial vendor. A Certificate of Analysis (CoA), which verifies the quality of the standard, accompanies the standards from the vendor. The Certificates of Analysis are dated and stored on file by the Technical Directors or their designee. These standards are traceable to the National Institute of Standards (NIST). When salts are purchased and used as standards the certificate of purity must be obtained from the vendor and filed with the CoAs.

All standard solutions, calibration curve preparations, and all other quality control solutions are labeled in a manner that can be traced back to the original source reference standard. All source reference standards are entered into the LIMS with an appropriate description of the standard. Dilutions of the source reference standard (or any mixes of the source standards) are fully tracked in the LIMS. Standards are labeled with the date opened for use, and an expiration date.

As part of the quality assurance procedures at HEAL, analysts strictly adhere to manufacture recommendations for storage times/expiration dates and policies of analytical standards and quality control solutions.

**Reagents**

HEAL ensures that the reagents used are of acceptable quality for their intended purpose. This is accomplished by ordering high quality reagents and adhering to good laboratory practices so as to minimize contamination or chemical degradation. All reagents must meet any specifications noted in the analytical method. Refer to the current Purchase of Consumables SOP for details on how this is accomplished and documented.

Upon receipt, all reagents are assigned a separate ID number, and logged into the LIMS. All reagents shall be labeled with the date received into the laboratory and again with the date opened for use. Recommended shelf life shall be documented and controlled. Dilutions or solutions prepared shall be clearly labeled, dated, and initialed. These solutions are traceable back to their primary reagents.

All gases used with an instrument shall meet specifications of the manufacturer. All safety requirements that relate to maximum and/or minimum allowed pressure, fitting types, and leak test frequency, shall be followed. When a new tank of gas is placed in use, it shall be checked for leaks and the date put in use will be written in the instrument maintenance logbook.

HEAL continuously monitors the quality of the reagent water and provides the necessary indicators for maintenance of the purification systems in order to assure that the quality of laboratory reagent water meets established criteria for all analytical methods.

Reagent blank samples are also analyzed to ensure that no contamination is present at detectable levels. The frequency of reagent blank analysis is typically the same as calibration verification samples. Refrigerator storage blanks are stored in the volatiles refrigerator for a period of one week and analyzed and replaced once a week.

## 8.0 Maintenance

Maintenance logbooks are kept for each major instrument and all support equipment in order to document all repair and maintenance. In the front of the logbook, the following information is included:

Unique name of the item or equipment
Manufacturer
Type of Instrument
Model Number
Serial Number
Date received and date placed into service
Location of Instrument
Condition of instrument upon receipt

For routine maintenance, the following information shall be included in the log:

Maintenance Date
Maintenance Description
Maintenance Performed by Initials

A manufacturer service agreement (or equivalent) covers most major instrumentation to assure prompt and reliable response to maintenance needs beyond HEAL instrument operator capabilities.

Refer to the current Maintenance and Troubleshooting SOP for each section in the laboratory for further information.

## 9.0 Data Integrity

For HEAL's policy on ethics and data integrity see section 3.0 of this document. Upon being hired and annually there after, all employees at HEAL undergo documented data integrity training. All new employees sign an Ethics and Data Integrity Agreement, documenting their understanding of the high standards of integrity required at HEAL and outlining their responsibilities in regards to ethics and data integrity. See Appendix H for a copy of this agreement.

In instances of ethical concern analysts are required to report the known or suspected concern to their Technical Director, the Laboratory Manager or the QA/QCO. This will be done in a confidential and receptive environment, allowing all employees to privately discuss ethical issues or report items of ethical concern.

Once reported and documented the ethical concern will be immediately elevated to the Laboratory Manager and the need for an investigation, analyst remediation or termination will be determined on a case by case basis.

All reported instances of ethical concern will be thoroughly documented and handled in a manner sufficient to rectify any breaches in data integrity with an emphasis on preventing similar incidences from happening in the future.

## 10.0 Quality Control

### Internal Quality Control Checks

HEAL utilizes various internal quality control checks, including duplicates, matrix spikes, matrix spike duplicates, method blanks, laboratory control spikes, laboratory control spike duplicates, surrogates, internal standards, calibration standards, quality control charts, proficiency tests and calculated measurement uncertainty.

Refer to the current method SOP to determine the frequency and requirements of all quality controls. In the event that the frequency of analysis is not indicated in the method specific SOP, duplicate samples, laboratory control spikes (LCS), Method Blanks (MB) and matrix spikes and matrix spike duplicates (MS/MSD) are analyzed for every batch of twenty samples.

When sample volume is limited on a test that requires an MS/MSD an LCSD shall be analyzed to demonstrate precision and accuracy and when possible a sample duplicate will be analyzed.

Duplicates are identical tests repeated for the same sample or matrix spike in order to determine the precision of the test method. A Relative Percent Difference (RPD) is calculated as a measure of this precision. Unless indicated in the SOP, the default acceptance limit is </= 20%.

Matrix Spikes and Matrix Spike Duplicates are spiked samples (MS/MSD) that are evaluated with a known added quantity of a target compound. This is to help determine the accuracy of the analyses and to determine the matrix affects on analyte recovery. A percent recovery is calculated to assess the quality of the accuracy. In the event that the acceptance criteria is not outlined in the SOP, a default limits of 70-130% will be utilized. When an MSD is employed an RPD is calculated and when not indicated in the SOP shall be acceptable at </= 30%.

When appropriate for the method, a Method Blank should be analyzed with each batch of samples processed to assess contamination levels in the laboratory. MBs consist of all the reagents measured and treated as they are with samples, except without the samples. This enables the laboratory to ensure clean reagents and procedures. Guidelines should be in place for accepting or rejecting data based on the level of contamination in the blank. In the event that these guidelines are not dictated by the SOP or in client specific work plans, the MB should be less than the MDL reported for the analyte being reported.

A Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) are reagent blanks, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is generally used to establish intra-laboratory or analyst-specific precision and bias or to assess the performance of all or a portion of the measurement system. Guidelines are outlined in each

SOP for the frequency and pass fail requirements for LCS and LCSDs. These limits can be set utilizing control charts as discussed below.

Surrogates are utilized when dictated by method and are substances with properties that mimic the analytes of interest. The surrogate is an analyte that is unlikely to be found in environmental samples. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for surrogates.

Internal Standards are utilized when dictated by the method and are known amounts of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for Internal Standards.

Proficiency Test (PT) Samples are samples provided by an unbiased third party. They are typically analyzed twice a year, or at any other interval defined in the method SOP. They contain a pre-determined concentration of the target compound, which is unknown to HEAL. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates and other procedures as used when analyzing routine samples.

With regards to analyzing PT Samples HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seek accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall not attempt to obtain the assigned value of any PT sample from the PT Provider.

Calibration standards are standards run to calibrate. Once the calibration is established the same standards can be analyzed as Continuing Calibration Verifications (CCV), used to confirm the consistency of the instrumentation. Calibration standards can be utilized at the beginning and end of each batch, or more frequently as required. Typically Continuing Calibration Blanks (CCB) are run in conjunction with CCVs. Refer to the current method SOP for frequency and pass/fail requirements of CCVs and CCBs.

Control Limits are limits of acceptable ranges of the values of quality control checks. If a value falls outside the appropriate range, immediate evaluation and assessment of the procedure is required. Data generated with laboratory control samples that fall outside of the established control limits are judged to be generated during an "out-of-control" situation. These data are considered suspect and shall be repeated or reported with qualifiers.

Control limits should be established and updated according to the requirements of the method being utilized. When the method does not specify, and control limits are to be generated or updated for a test, the following guidelines shall be utilized.

Control Limits should be updated periodically and at least annually. The Limits should be generated utilizing the most recent 20-40 data values and Control Charts should be printed when these limits are updated in the LIMS. The data values used shall not reuse values that were included in the previous Control Limit update. The data values shall also be reviewed by the LIMS for any Grubbs Outliers, and if identified, the outliers must be removed prior to generating new limits. Once new Control Limits have been established and updated in the LIMS, the printed Control Chart shall be reviewed by the appropriate technical director and primary analyst performing the analysis for possible trends and compared to the previous Control Charts. The technical director initials the control charts, indicating that they have reviewed and determined the updated Limits to be accurate and appropriate. These initialed charts are then filed in the QA/QCO office.

Calculated Measurement Uncertainty is calculated annually using LCSs in order to determine the laboratory specific uncertainty associated with each test method. These uncertainty values are available to our clients upon request and are utilized as a trending tool internally to determine the effectiveness of new variables introduced into the procedure over time.

## Precision, Accuracy, Detection Levels

### Precision

The laboratory uses sample duplicates, laboratory control spike duplicates and matrix spike duplicates to assess precision in terms of relative percent difference (RPD). HEAL requires the RPD to fall within the 99% confidence interval of established control charts or an RPD of less than 30% if control charts are not available. RPD's greater than these limits are considered out-of-control and require an appropriate response.

$$RPD = 2 \frac{x \text{ (Sample Result – Duplicate Result)}}{\text{(Sample Result + Duplicate Result)}} X\ 100$$

### Accuracy

The accuracy of an analysis refers to the difference between the calculated value and the actual value of a measurement. The accuracy of a laboratory result is evaluated by comparing the measured amount of QC reference material recovered from a sample and the known amount added. Control limits can be established for each analytical method and sample matrix. Recoveries are assessed to determine the method efficiency and/or the matrix effect.

Analytical accuracy is expressed as the percent recovery (%R) of an analyte or parameter. A known amount of analyte is added to an environmental sample before the sample is prepared and subsequently analyzed. The equation used to calculate percent recovery is:

%Recovery = {(concentration* recovered)/(concentration* added)} X 100

*or amount

HEAL requires that the Percent Recovery to fall within the 99 % confidence interval of established control limits. A value that falls outside of the confidence interval requires a warning and process evaluation. The confidence intervals are calculated by determining the mean and sample standard deviation. If control limits are not available, the range of 70 to 130% is used unless the specific method dictates otherwise. Percent Recoveries outside of this range mandate additional action such as analyses by Method of Standard Additions, additional sample preparation(s) where applicable, method changes, out-of-control action or data qualification.

**Detection Limit**

Current practices at HEAL define the Detection Limit (DL) as the smallest amount that can be detected above the baseline noise in a procedure within a stated confidence level.

HEAL presently utilizes an Instrument Detection Limit (IDL), a Method Detection Limit (MDL), and a Practical Quantitation Limit (PQL). The relationship between these levels is approximately
IDL: MDL: PQL = 1:5:5.

The IDL is a measure of the sensitivity of an analytical instrument. The IDL is the amount which, when injected, produces a detectable signal in 99% of the analyses at that concentration. An IDL can be considered the minimum level of analyte concentration that is detectable above random baseline noise.

The MDL is a measure of the sensitivity of an analytical method. An MDL determination (as required in 40CFR part 136 Appendix B) consists of replicate spiked samples carried through all necessary preparation steps. The spike concentration is three times the standard deviation of three replicates of spikes. At least seven replicates are spiked and analyzed and their standard deviation (s) calculated. Routine variability is critical in passing the 10 times rule and is best achieved by running the MDLs over different days and when possible over several calibration events. The method detection limit (MDL) can be calculated using the standard deviation according to the formula:

$$MDL = s * t\ (99\%)$$

Where t (99%) is the student's t value for the 99% confidence interval. It depends on the number of trials used in calculating the sample standard deviation, so choose the appropriate value according to the number of trials.

| Number of Trials | t(99%) |
|---|---|
| 6 | 3.36 |
| 7 | 3.14 |
| 8 | 3.00 |
| 9 | 2.90 |

The calculated MDL must not be less than 10 times the spiked amount or the study must be performed again with a lower concentration.

The PQL is significant because different laboratories can produce different MDLs although they may employ the same analytical procedures, instruments and sample matrices. The PQL is about two to five times the MDL and represents a practical, and routinely achievable, reporting level with a good certainty that the reported value is reliable. It is often determined by regulatory limits. The reported PQL for a sample is dependent on the dilution factor utilized during sample analysis.

## Quality Control Parameter Calculations

### Mean

The sample mean is also known as the arithmetic average. It can be calculated by adding all of the appropriate values together, and dividing this sum by the number of values.

$$Average = (\Sigma x_i) / n$$

$x_i$ = the value x in the $i^{th}$ trial
n = the number of trials

### Standard Deviation

The sample standard deviation, represented by s, is a measure of dispersion. The dispersion is considered to be the difference between the average and each of the values $x_i$. The variance, $s^2$, can be calculated by summing the squares of the

differences and dividing by the number of differences. The sample standard deviation, s, can be found by taking the square root of the variance.

$$\text{Standard deviation} = s = [\Sigma (x_i - \text{average})^2 / (n - 1)]^{1/2}$$

**Percent Recovery (MS, MSD, LCS and LCSD)**

$$\text{Percent Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{(\text{Spike Added})} \times 100$$

**Control Limits**

Control Limits are calculated by the LIMS using the average percent recovery (x), and the standard deviation (s).

$$\text{Upper Control Limit} = x + 3s$$
$$\text{Lower Control Limit} = x - 3s$$

These control limits approximate a 99% confidence interval around the mean recovery.

**RPD (Relative Percent Difference)**

Analytical precision is expressed as a percentage of the difference between the results of duplicate samples for a given analyst. Relative percent difference (RPD) is calculated as follows:

$$\text{RPD} = \frac{2 \times (\text{Sample Result} - \text{Duplicate Result})}{(\text{Sample Result} + \text{Duplicate Result})} \times 100$$

**Uncertainty Measurements**

Uncertainty, as defined by ISO, is the parameter associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement. Ultimately uncertainty measurements are used to state how good a test result is and to allow the end user of data to properly interpret their reported data. All procedures allow for some uncertainty. For most analyses the components and estimates of uncertainty are reduced by following well established test methods. To further reduce uncertainty, results are generally not reported below

the lowest calibration point (PQL) or above the highest calibration point (UQL). Understanding that there are many influence quantities affecting a measurement result, so many in fact that it is impossible to identify all of them, HEAL calculates measurement uncertainty at least annually using LCSs. These estimations of measurement uncertainty are kept on file in the method folders in the QA/QC office.

Measurement Uncertainty contributors are those that may be determined statistically. These shall be generated by estimating the overall uncertainty in the entire analytical process by measuring the dispersion of values obtained from laboratory control samples over time. At least 20 of the most recent LCS data points are gathered. The standard deviation (s) is calculated using these LCSs data points. Since it can be assumed that the possible estimated values of the spikes are approximately normally distributed with approximate standard deviation (s), the unknown value of the spike is believed to lie in 95% confidence interval, corresponding to an uncertainty range of +/- 2(s).

Calculate standard deviation (s) and 95% confidence interval according to the following formulae:

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{(n-1)}}$$

Where: s = standard deviation
x = number in series
$\bar{x}$ = calculated mean of series
$n$ = number of samples taken

$$95\%\ confidence = 2 \times s$$

Example: Assuming that after gathering 20 of the most recent LCS results for Bromide, we have calculated the standard deviations of the values and achieved a result of 0.0326, our measurement uncertainty for Bromide (at 95% confidence = 2 x s) is 0.0652.

**Calibration Calculations**

1. Response Factor or Calibration Factor:

$RF = ((A_x)(C_{is}))/((A_{is})(C_x))$ $CF=(A_x)/(C_x)$

a. Average RF or CF

$RF_{AVE} = \Sigma RF_i / n$

b. Standard Deviation

$s = SQRT \{ [ \Sigma (RF_i - RF_{AVE} )^2 ] / (n-1) \}$

c. Relative Standard Deviation

$RSD = s / RF_{AVE}$

Where:
$A_x$ = Area of the compound
$C_x$ = Concentration of the compound
$A_{is}$ = Area of the internal standard
$C_{is}$ = Concentration of the internal standard
n = number of pairs of data
$RF_i$ = Response Factor (or other determined value)
$RF_{AVE}$ = Average of all the response factors
$\Sigma$ = the sum of all the individual values

2. Linear Regression

$y=mx+b$

a. Slope (m)

$m =( n\Sigma x_i y_i - (n\Sigma x_i)*(n\Sigma y_i) ) / (n\Sigma x_i^2 - (\Sigma x_i)^2)$

b. Intercept (b)

$b =y_{AVE} - m*(x_{AVE})$

c. Correlation Coefficient (cc)

$CC (r) =\{ \Sigma((x_i-x_{ave})*(y_i-y_{ave})) \} / \{ SQRT((\Sigma(x_i-x_{ave})^2)*(\Sigma(y_i-y_{ave})^2)) \}$

Or

$CC\ (r) = [(\Sigma w * \Sigma wxy) - (\Sigma wx * \Sigma wy)] / (sqrt( ( [(\Sigma w * \Sigma wx^2) - (\Sigma wx * \Sigma wx)] * [(\Sigma w * \Sigma wy^2) - (\Sigma wy * \Sigma wy)])))]$

d. Coefficient of Determination

$COD\ (r^2) = CC*CC$

Where:
y = Response (Area) Ratio $A_x/A_{is}$
x = Concentration Ratio $C_x/C_{is}$
m = slope
b = intercept
n = number of replicate x,y pairs
$x_i$ = individual values for independent variable
$y_i$ = individual values for dependent variable
$\Sigma$ = the sum of all the individual values
$x_{ave}$ = average of the x values
$y_{ave}$ = average of the y values
w = weighting factor, for equal weighting w=1

3. Quadratic Regression

$y = ax^2 + bx + c$

a. Coefficient of Determination

$$COD\ (r^2) = ( \Sigma(y_i-y_{ave})^2 - \{[(n-1)/(n-p)] * [\Sigma(y_i-Y_i)^2]\} ) / \Sigma(y_i-y_{ave})^2$$

Where:
y = Response (Area) Ratio $A_x/A_{is}$
x = Concentration Ratio $C_x/C_{is}$
a = $x^2$ coefficient
b = x coefficient
c = intercept
$y_i$ = individual values for each dependent variable
$x_i$ = individual values for each independent variable
$y_{ave}$ = average of the y values
n = number of pairs of data
p = number of parameters in the polynomial equation (I.e., 3 for third order, 2 for second order)
Yi = $((2*a*(C_x/C_{is})\text{^}2)-b\text{^}2+b+(4*a*c))/(4a)$

b. Coefficients (a,b,c) of a Quadratic Regression

$$a = S_{(x2y)}S_{(xx)}-S_{(xy)}S_{(xx2)} / S_{(xx)}S_{(x2x2)}-[S_{(xx2)}]^2$$

$$b = S_{(xy)}S_{(x2x2)}-S_{(x2y)}S_{(xx2)} / S_{(xx)}S_{(x2x2)}-[S_{(xx2)}]^2$$

$$c = [(\Sigma yw)/n] - b*[(\Sigma xw)/n] - a*[\Sigma(x^2w)/n]$$

Where:
n = number of replicate x,y pairs
x = x values
y = y values
$w = S^{-2} / (\Sigma S^{-2}/n)$
$S_{(xx)} = (\Sigma x^2w) - [(\Sigma xw)^2 / n]$
$S_{(xy)} = (\Sigma xyw) - [(\Sigma xw)*(\Sigma yw) / n]$
$S_{(xx2)} = (\Sigma x^3w) - [(\Sigma xw)*(\Sigma x^2w) / n]$
$S_{(x2y)} = (\Sigma x^2yw) - [(\Sigma x^2w)*(\Sigma yw) / n]$
$S_{(x2x2)} = (\Sigma x^4w) - [(\Sigma x^2w)^2 / n]$
Or If unweighted calibration, w=1
S(xx) = (Sx2) - [(Sx)2 / n]
S(xy) = (Sxy) - [(Sx)*(Sy) / n]
S(xx2) = (Sx3) - [(Sx)*(Sx2) / n]
S(x2y) = (Sx2y) - [(Sx2)*(Sy) / n]
S(x2x2) = (Sx4) - [(Sx2)2 / n]

## 11.0 Data Reduction, Validation, Reporting, and Record Keeping

All data reported must be of the highest possible accuracy and quality. During the processes of data reduction, validation, and report generation, all work is thoroughly checked to insure that error is minimized.

### Data Reduction

The analyst who generated the data usually performs the data reduction. The calculations include evaluation of surrogate recoveries (where applicable), and other miscellaneous calculations related to the sample quantitation.

If the results are computer generated, then the formulas must be confirmed by hand calculations, at minimum, one per batch.

See the current Data Validation SOP for details regarding data reduction.

### Validation

A senior analyst, most often the section supervisor, validates the data. All data undergoes peer review. If an error is detected it is brought to the analyst attention to rectify and further checks ensure that all data for that batch is sound. Previous and/or common mistakes are stringently monitored throughout the validation process. Data is reported using appropriate significant figure criteria. In most cases, two significant digits are utilized, but three significant digits can be used in QC calculations. Significant digits are not rounded until after the last step of a sample calculation. All final reports undergo a review by the laboratory manager, or the project manager or their designee, to provide a logical review of all results before they are released to the client.

If data is to be manually transferred from one medium to another, the transcribed data is checked by a peer. This includes data typing, computer data entry, chromatographic data transfer, data table inclusion to a cover letter, or when data results are combined with other data fields.

All hand written data from run logs, analytical standard logbooks, hand entered data logbooks, or on instrument generated chromatograms, are systematically archived should the need for future retrieval arise.

See the current Data Validation SOP for detail regarding data validation.

## Reports and Records

All records at HEAL are retained and maintained through the procedures outlined in the most recent version of the Records Control SOP.

The reports are compiled by the Laboratory Information Management System (LIMS). Most data is transferred directly from the instruments to the LIMS. After being processed by the analyst and reviewed by a data reviewer, final reports are approved and signed by the senior laboratory management. A comparative analysis of the data is performed at this point. For example, if TKN and NH3 are analyzed on the same sample the NH3 result should never be greater than the TKN result. Lab results and reports are released only to appropriately designated individuals. Release of the data can be by fax, email, electronic deliverables or mailed hard copy.

When a project is completed, the project file folder is stored with a hard copy of the report, relevant supporting data, and the quality assurance/control worksheets. These folders are kept on file and are arranged by project number. Additionally, all electronic data is backed up daily on the HEAL main server. The backup includes raw data, chromatograms and report documents. Hard copies of chromatograms are stored separately according to the instrument and the analysis date. All records and analytical data reports are retained in a secure location as permanent records for a minimum period of five years (unless specified otherwise in a client contract). Access to archived information shall be documented with an access log. Access to archived electronic reports and data will be protected by a project manager password. In the event that HEAL transfers ownership or terminates business practices, complete records will be maintained or transferred according to the client's instructions.

After issuance, the original report shall remain unchanged. If a correction to the report is necessary, then an additional document shall be issued. This document shall have a title of "Addendum to Test Report or Correction to Original Report", or equivalent. Demonstration of original report integrity comes in two forms. First, the report date is included on each page of the final report. Second, each page is numbered in sequential order, making the addition or omission of any data page(s) readily detectable.

## 12.0 Corrective Action

Refer to the most recent version of the Data Validation SOP for the procedure utilized in filling out a Corrective Action Report. A blank copy of the corrective action report is available in the Appendix.

The limits that have been defined for data acceptability also form the basis for corrective action initiation. Initiation of corrective action occurs when the data generated from continuing calibration standard, sample surrogate recovery, laboratory control spike, matrix spike or sample duplicates exceed acceptance criteria. If corrective action is necessary, the analyst or the section supervisor will coordinate to take the following steps to determine and correct the measurement system deficiency:

Check all calculations and data measurements systems (Calibrations, reagents, instrument performance checks etc.).

Assure that proper procedures were followed.

Unforeseen problems that arise during sample preparation and/or sample analysis that lead to treating a sample differently from documented procedures shall be documented with a corrective action report. The section supervisor and laboratory manager shall be made aware of the problem at the time of the occurrence. See the appropriate SOP regarding departures from documented procedures.

Continuing calibration standards below acceptance criteria can not be used for reporting analytical data unless method specific criteria states otherwise.

Continuing calibration standards above acceptance criteria can be used to report data so long as the failure is isolated to a single standard and the corresponding samples are non-detect for the failing analyte.

Samples with non-compliant surrogate recoveries should be reanalyzed unless deemed un-necessary by the supervisor for matrix, historical data or other analysis related anomalies.

Laboratory and Matrix Spike acceptance criteria vary significantly depending on method and matrix. Analysts and supervisors meet and discuss appropriate corrective action measures as spike failures occur.

Sample duplicates with RPD values outside control limits require supervisor evaluation and possible reanalysis.

A second mechanism for initiation of corrective action is that resulting from Quality Assurance performance audits, system audits, inter and intra-laboratory comparison studies. Corrective Actions initiated through this mechanism will be monitored and coordinated by the laboratory QA/QCO.

All corrective action forms are entered in the LIMS and included with the raw data for peer review, signed by the technical director of the section and included in the case narrative to the client whose samples were affected. All Corrective action forms in the LIMS are reviewed by the QA/QCO.

## 13.0 Quality Assurance Audits, Reports and Complaints

### Internal/External Systems' Audits, Performance Evaluations, and Complaints

Several procedures are used to assess the effectiveness of the quality control system. One of these methods includes internal performance evaluations, which are conducted by the use of control samples, replicate measurements and control charts. Another method is external performance audits, which are conducted by the use of inter-laboratory checks, such as participation in laboratory evaluation programs and performance evaluation samples available from a NELAC accredited Proficiency Standard Vendor.

Proficiency samples will be obtained twice per year from an appropriate vendor for all tests and matrices for which we are accredited and for which there are PTs available. HEAL participates in soil, waste water, drinking water and underground storage tank PT studies. Copies of results are available upon request. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates and other procedures as used when analyzing routine samples.

With regards to analyzing PT Samples HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seeks accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall no attempt to obtain the assigned value of any PT sample from the PT Provider.

Internal Audits are performed annually by the QA/QCO in accordance with the current Internal Audit SOP. They are performed using the guidelines outlined below:

The system audit consists of a qualitative inspection of the QA system in the laboratory and an assessment of the adequacy of the physical facilities for sampling, calibration, and measurement. This audit includes a careful evaluation and review of laboratory quality control procedures. Including but not limited to:

1. Review of staff qualifications, demonstration of capability, and personnel training programs
2. Storage and handling of reagents, standards and samples
3. Standard preparation logbook and LIMS procedures
4. Extraction logbooks
5. Raw data logbooks
6. Analytical logbooks or batch printouts and instrument maintenance logbooks

7. Data review procedures
8. Corrective action procedures
9. Review of data packages is performed regularly by the lab manager/QA Officer.

The QA/QCO will conduct these audits on an annual basis.

**Management Reviews**

HEAL management shall periodically, and at least annually, conduct a review of the laboratory's quality system and environmental testing activities to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements. The review shall take account of:

1. the suitability and implementation of policies and procedures
2. reports from managerial and supervisory personnel
3. the outcome of recent internal audits
4. corrective and preventive actions
5. assessments by external bodies
6. the results of inter-laboratory comparisons or proficiency tests
7. changes in volume and type of work
8. client feed back
9. complaints
10. other relevant factors, such as laboratory health and safety, QC activities, resources and staff training.

Findings from management reviews and the actions that arise from them shall be recorded and any corrective actions that arise shall be completed in an appropriate and agreed upon timescale.

**Complaints**

Complaints from clients are documented and given to the laboratory manager. The lab manager shall review the information and contact the client. If doubt is raised concerning the laboratories policies or procedures, then an audit of the section or sections may be performed. All records of complaints and subsequent actions shall be maintained in the client compliant logbook for 5 years unless otherwise stated.

**Internal and External Reports**

The QA/QCO is responsible for preparation and submission of quality assurance reports to the appropriate management personnel as problems and issues arise. These reports include the assessment of measurement systems, data precision and accuracy, and the results of performance and system audits. Additionally, they also include significant QA

problems, corrective actions, and recommended resolution measures. Reports of these Quality Assurance Audits describe the particular activities audited, procedures utilized in the examination and evaluation of laboratory records, and data validation procedures. Finally, there are procedures for evaluating the performance of Quality Control and Quality Assurance activities, and laboratory deficiencies and the implementation of corrective actions with the review requirements.

**References (Analytical Protocols Utilized at HEAL)**


1. Standard Methods for the Examination of Water and Wastewater: AOHA, AWWA, and WPCG; 20th Edition, 1999.

2. Methods for Chemical Analysis of Water and Wastes, USEPA, EPA-600/4-79-020, March 1979 and as amended December, 1982 (EPA-600/4-82-055)

3. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, USEPA SW-846, 3rd Edition, Updates I, II, IIA, IIB, III, December, 1996.

4. Methods of Soil Analysis: Parts 1 & 2, 2nd Edition, Agronomy Society of America, Monograph 9

5. Diagnosis & Improvement of Saline & Alkali Soils, Agriculture Handbook No. 60, USDA, 1954

6. Handbook on Reference Methods for Soil Testing, The Council on Soil Testing & Plant Analysis, 1980 and 1992

7. Field and Laboratory Methods Applicable to Overburdens and Mine Soils, USEPA, EPA-600/2-78-054, March 1978

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10. Manual of Operating Procedures for the Analysis of Selected Soil, Water, Plant Tissue and Wastes Chemical and physical Parameter. Soil, Water, and Plant Analysis Laboratory, Dept. of Soil and Water Science, The University of Arizona, August 1989

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14. Methods for the Determination of Metals in Environmental Samples, USEPA, EPA-600/4-91-010, June 1991

15. The Merck Index, Eleventh Edition, Merck & Co., Inc. 1989.

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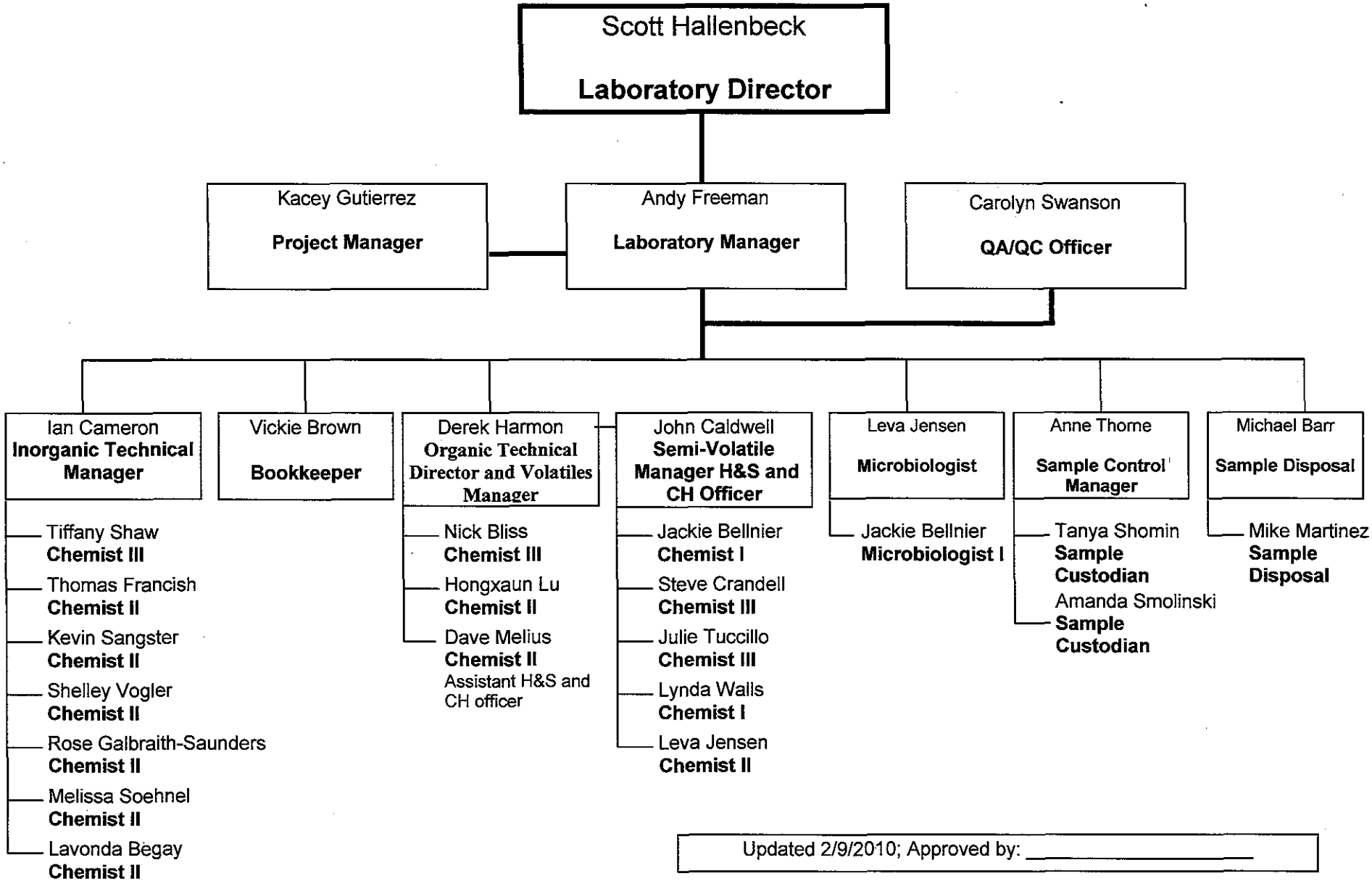
20. Quality Systems for Analytical Services, Revision 2.2, U.S. Department of Energy, October 2006.

21. Manual for the Certification of Laboratories Analyzing Drinking Water, Criteria and procedures Quality Assurance Fifth Edition, U.S. Environmental Protection Agency, January 2005.

22. Technical Notes on Drinking Water Methods, U.S. Environmental Protection Agency, October 1994.

# Appendix A
## Personnel Chart / Organizational Structure

# Diagram of Organizational Structure




Updated 2/9/2010; Approved by: _____

# Appendix G

# Laboratory Analyses Report

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*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

September 10, 2013

Michael Marcus

Tetra Tech, Inc.
6121 Indian School Road NE
Ste. 205
Albuquerque, NM 87110
TEL: (505)881-3188
FAX (505) 881-3283

RE: BGNDRF Soil Samples 7/31/2013 OrderNo.: 1308113

Dear Michael Marcus:

Hall Environmental Analysis Laboratory received 40 sample(s) on 8/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-001
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 7.6 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 7:24:10 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 5000 | | mg/Kg | 50 | 8/20/2013 11:18:02 AM | 8804 |
| Magnesium | 9800 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 9:22:20 AM | 8804 |
| Sodium | 1500 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 9:22:20 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 420 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 16 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 4100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.1 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-002
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.48 | 1.5 | J | mg/Kg | 5 | 8/5/2013 7:48:59 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 190000 | 24 | 5000 | | mg/Kg | 50 | 8/20/2013 11:20:28 AM | 8804 |
| Magnesium | 7200 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 9:31:23 AM | 8804 |
| Sodium | 640 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 9:29:07 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 8.2 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.81 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.0 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-003
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.2 | 0.48 | 1.5 | J | mg/Kg | 5 | 8/5/2013 8:13:49 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 190000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:23:01 AM | 8804 |
| Magnesium | 14000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 9:35:54 AM | 8804 |
| Sodium | 620 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 9:35:54 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 100 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 4.5 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 4400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.66 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.61 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-004
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.2 | 0.48 | 1.5 | J | mg/Kg | 5 | 8/5/2013 8:38:38 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 160000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:25:27 AM | 8804 |
| Magnesium | 23000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 9:40:30 AM | 8804 |
| Sodium | 570 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 9:38:12 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 3.9 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.88 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-005 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 9.7 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 9:03:28 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:35:56 AM | 8804 |
| Magnesium | 11000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 9:52:00 AM | 8804 |
| Sodium | 2100 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 9:52:00 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 350 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 19 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.82 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 4.2 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-006 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.9 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 9:53:06 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:38:23 AM | 8804 |
| Magnesium | 11000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 9:56:38 AM | 8804 |
| Sodium | 1900 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 9:56:38 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 310 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 15 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.1 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-007
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.0 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 10:17:56 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:40:49 AM | 8804 |
| Magnesium | 11000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:02:20 AM | 8804 |
| Sodium | 2000 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:02:20 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 310 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 15 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6800 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.77 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.6 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-008
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.3 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 10:42:46 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 170000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:43:18 AM | 8804 |
| Magnesium | 8100 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:06:52 AM | 8804 |
| Sodium | 670 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:06:52 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 11 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.95 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.46 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 100-125 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-009
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 9:35:15 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 160000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:45:45 AM | 8804 |
| Magnesium | 16000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:11:25 AM | 8804 |
| Sodium | 630 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:11:25 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 110 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 6.4 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.98 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 125-150 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-010
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.2 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 11:32:26 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:48:12 AM | 8804 |
| Magnesium | 18000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:22:49 AM | 8804 |
| Sodium | 1200 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:22:49 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 100 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 16 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.96 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 150-175 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-011
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 0.45 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 12:16:40 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 140000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:50:45 AM | 8804 |
| Magnesium | 19000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:27:24 AM | 8804 |
| Sodium | 600 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 10:25:06 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 100 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 14 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.09 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 175-200 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-012
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.9 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 1:43:32 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:53:12 AM | 8804 |
| Magnesium | 14000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:31:59 AM | 8804 |
| Sodium | 2100 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:31:59 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 170 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 30 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 7100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.10 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 213-243 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-013
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 5.3 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 1:55:57 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:55:41 AM | 8804 |
| Magnesium | 18000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:36:34 AM | 8804 |
| Sodium | 1700 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 10:34:16 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 160 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 27 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5200 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.11 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-014
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 170 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 2:33:13 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:58:09 AM | 8804 |
| Magnesium | 12000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:41:05 AM | 8804 |
| Sodium | 650 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:41:05 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 72 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 5.0 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.83 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 3.1 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-015
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 79 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 2:58:03 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 100000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:03:26 PM | 8804 |
| Magnesium | 9900 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:52:26 AM | 8804 |
| Sodium | 380 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:52:26 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 21 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 2.8 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.85 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.4 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-016
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 21 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 3:10:27 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 1:06:16 PM | 8804 |
| Magnesium | 10000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:57:06 AM | 8804 |
| Sodium | 320 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:57:06 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 18 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 2.4 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.12 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.6 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-017
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 5.5 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 4:00:04 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 180000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:08:27 PM | 8804 |
| Magnesium | 9700 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 11:01:42 AM | 8804 |
| Sodium | 260 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 11:01:42 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 18 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 1.8 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.91 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.81 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 100-125 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-018
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 4.3 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 4:24:54 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 170000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:10:42 PM | 8804 |
| Magnesium | 16000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 11:06:19 AM | 8804 |
| Sodium | 330 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 11:06:19 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 28 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 1.5 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.92 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.51 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 121-152 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-019
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 4.8 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 4:49:43 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 190000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:12:52 PM | 8804 |
| Magnesium | 15000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 11:10:58 AM | 8804 |
| Sodium | 250 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 11:08:38 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 46 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 1.2 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.99 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-020
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 190 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 5:51:47 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 1:17:21 PM | 8804 |
| Magnesium | 13000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 1:15:04 PM | 8804 |
| Sodium | 3000 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 1:15:04 PM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 730 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 21 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 9300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.68 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.7 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-021
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 62 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 6:41:26 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 97000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:15:11 PM | 8808 |
| Magnesium | 12000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 11:45:25 AM | 8808 |
| Sodium | 2500 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 11:45:25 AM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 380 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 21 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6900 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.45 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.5 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-022
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 24 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 6:53:51 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 61000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:17:26 PM | 8808 |
| Magnesium | 9400 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 11:56:10 AM | 8808 |
| Sodium | 2200 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 11:56:10 AM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 270 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 15 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.0 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-023 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 6.7 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 7:18:41 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:19:37 PM | 8808 |
| Magnesium | 7900 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:01:36 PM | 8808 |
| Sodium | 1900 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:01:36 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 150 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 21 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5800 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.84 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 100-125 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-024 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 5.8 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 7:43:30 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 160000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:21:47 PM | 8808 |
| Magnesium | 8300 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:07:04 PM | 8808 |
| Sodium | 2100 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:07:04 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 160 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 27 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.80 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 125-150 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-025
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 0.67 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 8:08:21 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:23:58 PM | 8808 |
| Magnesium | 14000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:24:36 PM | 8808 |
| Sodium | 510 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:24:36 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 84 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 4.9 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.87 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 150-175 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-026
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 8:58:00 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:26:08 PM | 8808 |
| Magnesium | 16000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:30:05 PM | 8808 |
| Sodium | 660 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:30:05 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 99 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 7.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.81 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 175-200 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-027
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 6:36:00 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:28:21 PM | 8808 |
| Magnesium | 6700 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:35:30 PM | 8808 |
| Sodium | 1200 | 0.88 | 25 | | mg/Kg | 1 | 8/14/2013 12:32:46 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 120 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 25 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3800 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.98 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 213-243 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-028 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.6 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 7:00:49 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 140000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:30:38 PM | 8808 |
| Magnesium | 12000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:40:54 PM | 8808 |
| Sodium | 1500 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:40:54 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 16 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 4200 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.19 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-029
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 290 | 1.9 | 6.0 | | mg/Kg | 20 | 8/7/2013 9:42:07 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:32:50 PM | 8808 |
| Magnesium | 9800 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:46:24 PM | 8808 |
| Sodium | 1700 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:46:24 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 670 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 13 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 7700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.51 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.2 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-030
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 100 | 1.9 | 6.0 | | mg/Kg | 20 | 8/7/2013 10:06:56 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:43:29 PM | 8808 |
| Magnesium | 7000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:02:06 PM | 8808 |
| Sodium | 1100 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:02:06 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 190 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 10 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.51 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.2 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-031
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 24 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 8:15:16 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 170000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:45:46 PM | 8808 |
| Magnesium | 8000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:07:38 PM | 8808 |
| Sodium | 780 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:07:38 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 260 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 9.2 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.75 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 91-121 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-032 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.8 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 8:40:04 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:47:58 PM | 8808 |
| Magnesium | 21000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:13:09 PM | 8808 |
| Sodium | 660 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:13:09 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 180 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 5.1 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.88 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-033 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 37 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 4:59:29 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 100000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:52:32 PM | 8808 |
| Magnesium | 11000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 2:50:10 PM | 8808 |
| Sodium | 420 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 2:50:10 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 120 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 3.0 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.76 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.4 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-034 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 54 | 1.9 | 6.0 | | mg/Kg | 20 | 8/7/2013 10:56:34 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 100000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:54:44 PM | 8808 |
| Magnesium | 8700 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:23:59 PM | 8808 |
| Sodium | 420 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:23:59 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 28 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 5.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.84 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.6 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-035 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.9 | 0.096 | 0.30 | | mg/Kg | 1 | 8/8/2013 10:59:28 AM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:56:55 PM | 8808 |
| Magnesium | 7400 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:37:50 PM | 8808 |
| Sodium | 210 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:37:50 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 10 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 1.1 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.72 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.90 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-036 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 3.7 | 0.096 | 0.30 | | mg/Kg | 1 | 8/8/2013 11:24:18 AM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 140000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:59:06 PM | 8808 |
| Magnesium | 7000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:43:15 PM | 8808 |
| Sodium | 180 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:43:15 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 16 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 0.66 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1600 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-037
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 130 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 12:01:32 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 3:01:22 PM | 8808 |
| Magnesium | 10000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:48:46 PM | 8808 |
| Sodium | 520 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:48:46 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 60 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 4.0 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.73 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-038 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 140 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 1:16:02 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 3:15:38 PM | 8808 |
| Magnesium | 12000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 3:13:14 PM | 8808 |
| Sodium | 570 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 3:13:14 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 41 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 3.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.86 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.9 | 0.39 | 0.39 | | % | 1 | 8/19/2013 5:30:00 PM | 8928 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-039 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 29 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 1:40:51 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 99000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 3:17:50 PM | 8808 |
| Magnesium | 8800 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:59:43 PM | 8808 |
| Sodium | 330 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:59:43 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 32 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 2.7 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1200 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.01 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.2 | 0.39 | 0.39 | | % | 1 | 8/19/2013 5:30:00 PM | 8928 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-040 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.4 | 0.096 | 0.30 | | mg/Kg | 1 | 8/8/2013 1:53:16 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 98000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 3:22:25 PM | 8808 |
| Magnesium | 9000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 3:20:02 PM | 8808 |
| Sodium | 290 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 3:20:02 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 30 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 1.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 900 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.26 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.76 | 0.39 | 0.39 | | % | 1 | 8/19/2013 5:30:00 PM | 8928 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-001
**Client Sample ID** 1308113-001B, BGNDRF Trench 1 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:29 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:06 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:06 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-002
**Client Sample ID** 1308113-002B, BGNDRF Trench 1 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 3 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:34 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:47 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:47 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-003
**Client Sample ID** 1308113-003B, BGNDRF Trench 1 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:35 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.8 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:50 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:50 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-004
**Client Sample ID** 1308113-004B, BGNDRF Trench 1 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:36 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:53 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:53 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-005
**Client Sample ID** 1308113-005B, BGNDRF Trench 2 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 13 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:38 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.0 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:56 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:56 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-006
**Client Sample ID** 1308113-006B, BGNDRF Trench 2 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:39 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.3 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:09 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:09 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-007
**Client Sample ID** 1308113-007B, BGNDRF Trench 2 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 8 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:41 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.4 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:12 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:12 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-008
**Client Sample ID** 1308113-008B, BGNDRF Trench 2 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:42 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.2 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:15 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:15 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-009
**Client Sample ID** 1308113-009B, BGNDRF Trench 2 100-125 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:44 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.0 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:18 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:18 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-010
**Client Sample ID** 1308113-010B, BGNDRF Trench 2 125-150 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:45 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.5 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:21 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:21 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-011
**Client Sample ID** 1308113-011B, BGNDRF Trench 2 150-175 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:49 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:23 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:23 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-012
**Client Sample ID** 1308113-012B, BGNDRF Trench 2 175-200 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:53 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:26 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:26 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-013
**Client Sample ID** 1308113-013B, BGNDRF Trench 2 213-243 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:55 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.1 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:29 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:29 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-014
**Client Sample ID** 1308113-014B, BGNDRF Trench 3 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 11 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:56 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.2 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:32 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:32 / jjw |

**Report Definitions:** RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-015
**Client Sample ID** 1308113-015B, BGNDRF Trench 3 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:58 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:34 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:34 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-016
**Client Sample ID** 1308113-016B, BGNDRF Trench 3 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:59 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.2 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:37 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:37 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-017
**Client Sample ID** 1308113-017B, BGNDRF Trench 3 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:00 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.3 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:51 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:51 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-018
**Client Sample ID** 1308113-018B, BGNDRF Trench 3 100-125 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 1 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:02 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:54 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:54 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-019
**Client Sample ID** 1308113-019B, BGNDRF Trench 3 121-152 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:03 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.4 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:57 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:57 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-020
**Client Sample ID** 1308113-020B, BGNDRF Trench 4 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 11 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:05 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/09/13 05:00 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 05:00 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-021
**Client Sample ID** 1308113-021B, BGNDRF Trench 4 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 8 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:09 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:48 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:48 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-022
**Client Sample ID** 1308113-022B, BGNDRF Trench 4 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 7 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:13 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.4 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:51 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:51 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-023
**Client Sample ID** 1308113-023B, BGNDRF Trench 4 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:14 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.8 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:54 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:54 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-024
**Client Sample ID** 1308113-024B, BGNDRF Trench 4 100-125 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:16 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.5 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:57 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:57 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-025
**Client Sample ID** 1308113-025B, BGNDRF Trench 4 125-150 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:17 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.8 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:12 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:12 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-026
**Client Sample ID** 1308113-026B, BGNDRF Trench 4 150-175 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:19 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:15 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:15 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-027
**Client Sample ID** 1308113-027B, BGNDRF Trench 4 175-200 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:20 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 0.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:18 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:18 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-028
**Client Sample ID** 1308113-028B, BGNDRF Trench 4 213-243 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:21 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:21 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:21 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-029
**Client Sample ID** 1308113-029B, BGNDRF Trench 5 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:23 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.8 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:24 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:24 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-030
**Client Sample ID** 1308113-030B, BGNDRF Trench 5 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:24 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.3 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:01 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:01 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-031
**Client Sample ID** 1308113-031B, BGNDRF Trench 5 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 4 | mg/kg | | 1 | | ASA24-5 | 08/15/13 16:09 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.4 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:04 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:04 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-032
**Client Sample ID** 1308113-032B, BGNDRF Trench 5 91-121 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 16:13 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.9 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:07 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:07 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-033
**Client Sample ID** 1308113-033B, BGNDRF Trench 6 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 22 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:34 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.6 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:10 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:10 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-034
**Client Sample ID** 1308113-034B, BGNDRF Trench 6 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 22 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:36 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:13 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:13 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-035
**Client Sample ID** 1308113-035B, BGNDRF Trench 6 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 12 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:37 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.4 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:16 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:16 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-036
**Client Sample ID** 1308113-036B, BGNDRF Trench 6 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 6 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:38 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:19 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:19 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-037
**Client Sample ID** 1308113-037B, BGNDRF Trench 7 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:40 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.5 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:22 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:22 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-038
**Client Sample ID** 1308113-038B, BGNDRF Trench 7 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:41 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:25 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:25 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-039
**Client Sample ID** 1308113-039B, BGNDRF Trench 7 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:43 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.3 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:39 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:39 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-040
**Client Sample ID** 1308113-040B, BGNDRF Trench 7 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:44 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:42 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:42 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated

**Report Date:** 08/14/13
**Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | Analytical Run: ICPMS202-B_130808A | |
| **Sample ID:** QCS | 2 | Initial Calibration Verification Standard | | | | | | | 08/08/13 09:54 | |
| Arsenic | | 0.0517 | mg/L | 0.0010 | 103 | 90 | 110 | | | |
| Selenium | | 0.0527 | mg/L | 0.0010 | 105 | 90 | 110 | | | |
| **Sample ID:** ICSAB | 2 | Interference Check Sample AB | | | | | | | 08/08/13 10:10 | |
| Arsenic | | 0.0111 | mg/L | 0.0010 | 111 | 70 | 130 | | | |
| Selenium | | 0.0103 | mg/L | 0.0010 | 103 | 70 | 130 | | | |
| **Sample ID:** ICSA | 2 | Interference Check Sample A | | | | | | | 08/08/13 10:15 | |
| Arsenic | | 5.00E-05 | mg/L | 0.0010 | | | | | | |
| Selenium | | -0.000100 | mg/L | 0.0010 | | | | | | |
| **Method:** SW6020 | | | | | | | | | Batch: 73467 | |
| **Sample ID:** MB-73467 | 2 | Method Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 02:05 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |
| **Sample ID:** B13080376-001ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:08 | |
| Arsenic | | 4.09 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| Selenium | | ND | mg/kg | 1.0 | | 0 | 0 | | 10 | |
| **Sample ID:** LFB-73467 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:11 | |
| Arsenic | | 47.3 | mg/kg | 1.0 | 95 | 80 | 120 | | | |
| Selenium | | 46.9 | mg/kg | 1.0 | 94 | 80 | 120 | | | |
| **Sample ID:** SRM-73467 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:28 | |
| Arsenic | | 332 | mg/kg | 1.0 | 96 | 71 | 120 | | | |
| Selenium | | 206 | mg/kg | 1.0 | 119 | 80 | 127 | | | |
| **Sample ID:** B13080376-001APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:31 | |
| Arsenic | | 11.5 | mg/kg | 1.0 | 97 | 75 | 125 | | | |
| Selenium | | 7.04 | mg/kg | 1.0 | 85 | 75 | 125 | | | |
| **Sample ID:** B13080376-001AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:33 | |
| Arsenic | | 62.1 | mg/kg | 1.0 | 87 | 75 | 125 | | | |
| Selenium | | 49.0 | mg/kg | 1.0 | 72 | 75 | 125 | | | S |
| **Sample ID:** B13080376-001AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:36 | |
| Arsenic | | 60.5 | mg/kg | 1.0 | 85 | 75 | 125 | 2.6 | 20 | |
| Selenium | | 48.0 | mg/kg | 1.0 | 72 | 75 | 125 | 2.1 | 20 | S |
| **Method:** SW6020 | | | | | | | | | Batch: 73468 | |
| **Sample ID:** MB-73468 | 2 | Method Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:44 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |
| **Sample ID:** B13080376-020ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:03 | |
| Arsenic | | 3.50 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| Selenium | | 0.330 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |

**Qualifiers:**

RL - Analyte reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental **Report Date:** 08/14/13

**Project:** Not Indicated **Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | Batch: 73468 | |
| **Sample ID:** B13080376-020ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:03 | |
| **Sample ID:** LFB-73468 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:05 | |
| Arsenic | | 46.0 | mg/kg | 1.0 | 92 | 80 | 120 | | | |
| Selenium | | 45.5 | mg/kg | 1.0 | 91 | 80 | 120 | | | |
| **Sample ID:** SRM-73468 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:08 | |
| Arsenic | | 329 | mg/kg | 1.0 | 97 | 71 | 120 | | | |
| Selenium | | 206 | mg/kg | 1.0 | 122 | 80 | 127 | | | |
| **Sample ID:** B13080376-020APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:11 | |
| Arsenic | | 5.60 | mg/kg | 1.0 | 75 | 75 | 125 | | | |
| Selenium | | 2.10 | mg/kg | 1.0 | 58 | 75 | 125 | | | S |
| **Sample ID:** B13080376-020AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:14 | |
| Arsenic | | 56.2 | mg/kg | 1.0 | 76 | 75 | 125 | | | |
| Selenium | | 41.4 | mg/kg | 1.0 | 59 | 75 | 125 | | | S |
| **Sample ID:** B13080376-020AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:16 | |
| Arsenic | | 57.2 | mg/kg | 1.0 | 78 | 75 | 125 | 1.8 | 20 | |
| Selenium | | 41.9 | mg/kg | 1.0 | 60 | 75 | 125 | 1.2 | 20 | S |

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental **Report Date:** 08/14/13

**Project:** Not Indicated **Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | Analytical Run: ICPMS202-B_130813A | |
| **Sample ID:** QCS | 2 | Initial Calibration Verification Standard | | | | | | | 08/13/13 09:32 | |
| Arsenic | | 0.0500 | mg/L | 0.0010 | 100 | 90 | 110 | | | |
| Selenium | | 0.0520 | mg/L | 0.0010 | 104 | 90 | 110 | | | |
| **Sample ID:** ICSA | 2 | Interference Check Sample A | | | | | | | 08/13/13 09:41 | |
| Arsenic | | 6.00E-05 | mg/L | 0.0010 | | | | | | |
| Selenium | | 0.000290 | mg/L | 0.0010 | | | | | | |
| **Sample ID:** ICSAB | 2 | Interference Check Sample AB | | | | | | | 08/13/13 09:44 | |
| Arsenic | | 0.00991 | mg/L | 0.0010 | 99 | 70 | 130 | | | |
| Selenium | | 0.00938 | mg/L | 0.0010 | 94 | 70 | 130 | | | |
| **Method:** SW6020 | | | | | | | | | Batch: 73573 | |
| **Sample ID:** SRM-73573 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130813A | | | 08/13/13 20:32 | |
| Arsenic | | 305 | mg/kg | 1.0 | 89 | 71 | 120 | | | |
| Selenium | | 190 | mg/kg | 1.0 | 110 | 80 | 127 | | | |
| **Sample ID:** MB-73573 | 2 | Method Blank | | | | Run: ICPMS202-B_130813A | | | 08/13/13 21:46 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |
| **Sample ID:** B13080376-029ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:27 | |
| Arsenic | | 3.98 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| Selenium | | 0.361 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| **Sample ID:** LFB-73573 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:29 | |
| Arsenic | | 50.6 | mg/kg | 1.0 | 101 | 80 | 120 | | | |
| Selenium | | 49.6 | mg/kg | 1.0 | 99 | 80 | 120 | | | |
| **Sample ID:** B13080376-029APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:32 | |
| Arsenic | | 5.73 | mg/kg | 1.0 | 78 | 75 | 125 | | | |
| Selenium | | 2.21 | mg/kg | 1.0 | 60 | 75 | 125 | | | S |
| **Sample ID:** B13080376-029AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:35 | |
| Arsenic | | 61.4 | mg/kg | 1.0 | 78 | 75 | 125 | | | |
| Selenium | | 44.6 | mg/kg | 1.0 | 59 | 75 | 125 | | | S |
| **Sample ID:** B13080376-029AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:38 | |
| Arsenic | | 60.1 | mg/kg | 1.0 | 78 | 75 | 125 | 2.1 | 20 | |
| Selenium | | 44.0 | mg/kg | 1.0 | 60 | 75 | 125 | 1.4 | 20 | S |
| **Method:** SW6020 | | | | | | | | | Batch: 73574 | |
| **Sample ID:** SRM-73574 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130813A | | | 08/13/13 20:35 | |
| Arsenic | | 310 | mg/kg | 1.0 | 90 | 71 | 120 | | | |
| Selenium | | 195 | mg/kg | 1.0 | 113 | 80 | 127 | | | |
| **Sample ID:** MB-73574 | 2 | Method Blank | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:58 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated

**Report Date:** 08/14/13
**Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | | Batch: 73574 |
| **Sample ID:** MB-73574 | 2 | Method Blank | | | | Run: ICPMS202-B_130813A | | | | 08/13/13 22:58 |
| **Sample ID:** B13080583-001ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130813A | | | | 08/13/13 23:57 |
| Arsenic | | ND | mg/kg | 1.0 | | 0 | 0 | | 10 | |
| Selenium | | ND | mg/kg | 1.0 | | 0 | 0 | | 10 | |
| **Sample ID:** LFB-73574 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:00 |
| Arsenic | | 50.6 | mg/kg | 1.0 | 101 | 80 | 120 | | | |
| Selenium | | 48.5 | mg/kg | 1.0 | 97 | 80 | 120 | | | |
| **Sample ID:** B13080583-001APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:03 |
| Arsenic | | 5.00 | mg/kg | 1.0 | 89 | 75 | 125 | | | |
| Selenium | | 4.59 | mg/kg | 1.0 | 82 | 75 | 125 | | | |
| **Sample ID:** B13080583-001AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:06 |
| Arsenic | | 49.5 | mg/kg | 1.0 | 88 | 75 | 125 | | | |
| Selenium | | 43.2 | mg/kg | 1.0 | 77 | 75 | 125 | | | |
| **Sample ID:** B13080583-001AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:08 |
| Arsenic | | 48.5 | mg/kg | 1.0 | 88 | 75 | 125 | 2.1 | 20 | |
| Selenium | | 42.3 | mg/kg | 1.0 | 77 | 75 | 125 | 2.2 | 20 | |

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated

**Report Date:** 08/16/13
**Work Order:** B13080376

| Analyte | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **Method:** ASA24-5 | | | | | | | | | Batch: 130815023 |
| **Sample ID:** LCS<br>Phosphorus, Olsen | Laboratory Control Sample<br>14.2 | mg/kg | 1.0 | 106 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 14:24 |
| **Sample ID:** B13080376-001ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>9.42 | mg/kg | 1.0 | | Run: FIA201-B_130815A | | 11 | 30 | 08/15/13 14:31 |
| **Sample ID:** B13080376-001AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>20.2 | mg/kg | 1.0 | 93 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 14:32 |
| **Sample ID:** B13080376-011ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>ND | mg/kg | 1.0 | | Run: FIA201-B_130815A | | | 30 | 08/15/13 14:50 |
| **Sample ID:** B13080376-011AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>11.5 | mg/kg | 1.0 | 110 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 14:52 |
| **Sample ID:** B13080376-021ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>8.07 | mg/kg | 1.0 | | Run: FIA201-B_130815A | | 2.9 | 30 | 08/15/13 15:10 |
| **Sample ID:** B13080376-021AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>19.5 | mg/kg | 1.0 | 106 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 15:12 |
| **Sample ID:** B13080376-031ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>4.11 | mg/kg | 1.0 | | Run: FIA201-B_130815A | | 11 | 30 | 08/15/13 16:11 |
| **Sample ID:** B13080376-031AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>15.3 | mg/kg | 1.0 | 111 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 16:12 |

**ualifiers:**

- - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **MB-8731** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8731** | | RunNo: | **12430** | | | | |
| Prep Date: | **8/5/2013** | Analysis Date: | **8/5/2013** | | SeqNo: | **353758** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8731** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8731** | | RunNo: | **12430** | | | | |
| Prep Date: | **8/5/2013** | Analysis Date: | **8/5/2013** | | SeqNo: | **353759** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.6 | 0.30 | 7.500 | 0 | 101 | 90 | 110 | | | |

| Sample ID | **MB-8742** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354684** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8742** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354685** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.6 | 0.30 | 7.500 | 0 | 101 | 90 | 110 | | | |

| Sample ID | **1308113-019AMS** | SampType: | **MS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 3 1** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354713** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 12 | 0.30 | 7.500 | 4.771 | 103 | 65.9 | 112 | | | |

| Sample ID | **1308113-019AMSD** | SampType: | **MSD** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 3 1** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354714** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 12 | 0.30 | 7.500 | 4.771 | 103 | 65.9 | 112 | 0.0409 | 20 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **MB-8760** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355718** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8760** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355719** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.6 | 0.30 | 7.500 | 0 | 102 | 90 | 110 | | | |

| Sample ID | **1308113-028AMS** | SampType: | **MS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355749** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 9.9 | 0.30 | 7.500 | 2.600 | 97.8 | 65.9 | 112 | | | |

| Sample ID | **1308113-028AMSD** | SampType: | **MSD** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355750** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 10 | 0.30 | 7.500 | 2.600 | 101 | 65.9 | 112 | 2.69 | 20 | |

| Sample ID | **MB-8772** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8772** | | RunNo: | **12511** | | | | |
| Prep Date: | **8/8/2013** | Analysis Date: | **8/8/2013** | | SeqNo: | **356428** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8772** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8772** | | RunNo: | **12511** | | | | |
| Prep Date: | **8/8/2013** | Analysis Date: | **8/8/2013** | | SeqNo: | **356429** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.4 | 0.30 | 7.500 | 0 | 98.5 | 90 | 110 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **1308113-019ADUP** | SampType: | **DUP** | | TestCode: | **CONDUCTANCE** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 3 1** | Batch ID: | **R12542** | | RunNo: | **12542** | | | | |
| Prep Date: | | Analysis Date: | **8/7/2013** | | SeqNo: | **357224** | Units: | **µmhos/cm** | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 1400 | 1.0 | | | | | | 0.737 | 20 | |

| Sample ID | **1308113-028ADUP** | SampType: | **DUP** | | TestCode: | **CONDUCTANCE** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **R12545** | | RunNo: | **12545** | | | | |
| Prep Date: | | Analysis Date: | **8/7/2013** | | SeqNo: | **357247** | Units: | **µmhos/cm** | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 4200 | 1.0 | | | | | | 1.64 | 20 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **LCS-8804** | SampType: | **LCS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8804** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358671** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 2500 | 100 | 2500 | 0 | 100 | 80 | 120 | | | |
| Magnesium | 2500 | 25 | 2500 | 0 | 99.2 | 80 | 120 | | | |
| Potassium | 2400 | 50 | 2500 | 0 | 96.0 | 80 | 120 | | | |
| Sodium | 2500 | 25 | 2500 | 0 | 98.3 | 80 | 120 | | | |

| Sample ID | **LCS-8808** | SampType: | **LCS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8808** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358673** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 2500 | 100 | 2500 | 0 | 100 | 80 | 120 | | | |
| Magnesium | 2500 | 25 | 2500 | 0 | 99.1 | 80 | 120 | | | |
| Potassium | 2400 | 50 | 2500 | 0 | 96.4 | 80 | 120 | | | |
| Sodium | 2500 | 25 | 2500 | 0 | 98.4 | 80 | 120 | | | |

| Sample ID | **MB-8804** | SampType: | **MBLK** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8804** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358674** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 33 | 100 | | | | | | | | J |
| Magnesium | 0.62 | 25 | | | | | | | | J |
| Potassium | 18 | 50 | | | | | | | | J |
| Sodium | ND | 25 | | | | | | | | |

| Sample ID | **MB-8808** | SampType: | **MBLK** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8808** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358675** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 73 | 100 | | | | | | | | J |
| Magnesium | 0.90 | 25 | | | | | | | | J |
| Potassium | ND | 50 | | | | | | | | |
| Sodium | ND | 25 | | | | | | | | |

| Sample ID | **1308113-001AMS** | SampType: | **MS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 1 0** | Batch ID: | **8804** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358695** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID **1308113-001AMS** | SampType: **MS** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12597** |
| Prep Date: **8/12/2013** | Analysis Date: **8/13/2013** | SeqNo: **358695** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 13000 | 130 | 2480 | 9823 | 108 | 75 | 125 | | | |
| Sodium | 3900 | 130 | 2480 | 1548 | 93.0 | 75 | 125 | | | |

| Sample ID **1308113-001AMSD** | SampType: **MSD** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12597** |
| Prep Date: **8/12/2013** | Analysis Date: **8/13/2013** | SeqNo: **358696** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 12000 | 120 | 2485 | 9823 | 103 | 75 | 125 | 0.968 | 20 | |
| Sodium | 3800 | 120 | 2485 | 1548 | 91.4 | 75 | 125 | 0.859 | 20 | |

| Sample ID **1308113-021AMS** | SampType: **MS** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 4 2** | Batch ID: **8808** | RunNo: **12624** |
| Prep Date: **8/12/2013** | Analysis Date: **8/14/2013** | SeqNo: **359553** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 14000 | 120 | 2486 | 11600 | 83.9 | 75 | 125 | | | |
| Sodium | 4700 | 120 | 2486 | 2515 | 89.0 | 75 | 125 | | | |

| Sample ID **1308113-021AMSD** | SampType: **MSD** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 4 2** | Batch ID: **8808** | RunNo: **12624** |
| Prep Date: **8/12/2013** | Analysis Date: **8/14/2013** | SeqNo: **359554** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 14000 | 120 | 2482 | 11600 | 81.2 | 75 | 125 | 0.508 | 20 | |
| Sodium | 4800 | 120 | 2482 | 2515 | 90.3 | 75 | 125 | 0.617 | 20 | |

| Sample ID **1308113-001AMS** | SampType: **MS** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12747** |
| Prep Date: **8/12/2013** | Analysis Date: **8/20/2013** | SeqNo: **363080** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 11000 | 250 | 2480 | 7907 | 145 | 75 | 125 | | | S |

| Sample ID **1308113-001AMSD** | SampType: **MSD** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12747** |
| Prep Date: **8/12/2013** | Analysis Date: **8/20/2013** | SeqNo: **363081** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 12000 | 250 | 2485 | 7907 | 150 | 75 | 125 | 1.13 | 20 | S |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **1308113-021AMS** | SampType: | **MS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8808** | | RunNo: | **12747** | | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/20/2013** | | SeqNo: | **363618** | Units: | **mg/Kg** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | |
| Potassium | 13000 | 250 | 2486 | 8814 | 161 | 75 | 125 | | | S | |

| Sample ID | **1308113-021AMSD** | SampType: | **MSD** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8808** | | RunNo: | **12747** | | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/20/2013** | | SeqNo: | **363619** | Units: | **mg/Kg** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | |
| Potassium | 12000 | 250 | 2482 | 8814 | 137 | 75 | 125 | 4.76 | 20 | S | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **1308113-003ADUP** | SampType: | **DUP** | | | TestCode: | **SM4500-H+B: pH** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 1 5** | Batch ID: | **R12687** | | | RunNo: | **12687** | | | |
| Prep Date: | | Analysis Date: | **8/18/2013** | | | SeqNo: | **361285** | Units: | **pH Units** | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| pH | 7.66 | 1.68 | | | | | | | | |

| Sample ID | **1308113-028ADUP** | SampType: | **DUP** | | | TestCode: | **SM4500-H+B: pH** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **R12722** | | | RunNo: | **12722** | | | |
| Prep Date: | | Analysis Date: | **8/19/2013** | | | SeqNo: | **362190** | Units: | **pH Units** | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| pH | 8.13 | 1.68 | | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# QUOTATION

Quote#: **326**
Date: **4/10/2013**

| | | | |
|---|---|---|---|
| Company: | Tetra Tech, Inc. | Project: | BGNDRF soils |
| Contact: | Michael Marcus | TAT: | 12 working days |
| Address: | 6121 Indian School Road NE Ste. 205 | QC Level: | LEVEL II |
| | Albuquerque, NM 87110 | Project Manager: | Andy Freeman |
| Phone: | (505)881-3188 | Sales Rep: | Andy Freeman |
| Fax: | | Quote Expires: | 5/29/2014 |

| Item Description | Test | Matrix | Remarks | Qty | Unit Price | % Disc. | Net Price | Total |
|---|---|---|---|---|---|---|---|---|
| SM4500-H+B: pH | M4500-H+B | Soil | | 40 | 25.00 | 10.00% | 22.50 | 900.00 |
| CONDUCTANCE | E120.1 | Soil | | 40 | 25.00 | 10.00% | 22.50 | 900.00 |
| EPA Method 6010B: Soil Metals | SW6010B | Soil | Mg,Ca,Na, *K | 40 | 66.00 | 10.00% | 59.40 | 2,376.00 |
| SAR Soluble Cations | N173 | Soil | | 40 | 40.00 | 10.00% | 36.00 | 1,440.00 |
| TOC by Walkley Black | Walkley Black | Soil | Report as %OM | 40 | 60.00 | 10.00% | 54.00 | 2,160.00 |
| EPA Method 300.0: Anions | E300 | Soil | Nitrate | 40 | 25.00 | 10.00% | 22.50 | 900.00 |
| Phosphorous soil (Brey) | E365.2 | Soil | | 40 | 35.00 | 10.00% | 31.50 | 1,260.00 |
| EPA Method 6020: Total Metals | SW6020 | Soil | **As and Se | 40 | 55.00 | 10.00% | 49.50 | 1,980.00 |

| | |
|---|---|
| Sub Total: | $11,916.00 |
| Misc: | $0.00 |
| Surcharge: | 0.00% |
| **TOTAL:** | **$11,916.00** |

**Comments:** *Potassium result will be taken using the saturated paste.
**Arsenic and Selenium will be digested by EPA Method 3050B and analyzed by 6020B

Sincerely,

Karen Stasiunas
Project Manager
Phone: 505-345-3975
Email: kms@hallenvironmental.com

**Terms and Conditions:**

Hall Environmental Analysis Laboratory (HEAL) will provide all sampling containers, coolers, chains of custody and labels. A standard data deliverables package and QC package will be provided with this report, including lab spikes and lab spike duplicates. NM State tax has not been included in this quotation. Thank you, for the opportunity to bid on this project. Please feel free to call with any questions (505) 345-3975.. Invoices can be paid via Visa, Master Card, American Express, Company Check or Cash.

# Appendix H

## Electronic Data Deliverable (EDD) File Printout

**(Note: This printout has some non-essential columns hidden to allow a readable printout to be presented in this appendix; the CD included with this report holds this complete data file in Excel format.)**

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| ClientID | ProjectName | SampID | ClientSampID | AnalDate | TestCode | BatchID | CAS | Analyte | Rslt | PQL | MDL | DF | Units | R_Qual | DateCollected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MB-8731 | | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8731 | | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | MB-8742 | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8742 | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-019AMS | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 12 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-019AMSD | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 12 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | MB-8760 | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8760 | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-028AMS | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 9.9 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-028AMSD | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 10 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | MB-8772 | | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8772 | | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.4 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-019ADUP | | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | |
| | | 1308113-028ADUP | | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 4200 | 1 | 0 | 1 | µmhos/cm | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 2500 | 100 | 6.9713 | 1 | mg/L | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 2500 | 25 | 0.4651 | 1 | mg/L | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | 2400 | 50 | 17.3925 | 1 | mg/L | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2500 | 25 | 8.4278 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 2500 | 100 | 6.9713 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 2500 | 25 | 0.4651 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | 2400 | 50 | 17.3925 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2500 | 25 | 8.4278 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | < 100 | 100 | 6.9713 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | < 25 | 25 | 0.4651 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | < 50 | 50 | 17.3925 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | < 25 | 25 | 8.4278 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | < 100 | 100 | 6.9713 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | < 25 | 25 | 0.4651 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | < 50 | 50 | 17.3925 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | < 25 | 25 | 8.4278 | 1 | mg/L | | |
| | | 1308113-001AMS | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 13000 | 125.0084056 | 2.325656377 | 5 | mg/Kg | | |
| | | 1308113-001AMS | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 3900 | 125.0084056 | 42.14183362 | 5 | mg/Kg | | |
| | | 1308113-001AMSD | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 12000 | 124.9920755 | 2.325352573 | 5 | mg/Kg | | |
| | | 1308113-001AMSD | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 3800 | 124.9920755 | 42.13632856 | 5 | mg/Kg | | |
| | | 1308113-021AMS | | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 14000 | 125 | 2.3255 | 5 | mg/Kg | | |
| | | 1308113-021AMS | | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 4700 | 125 | 42.139 | 5 | mg/Kg | | |
| | | 1308113-021AMSD | | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 14000 | 125 | 2.3255 | 5 | mg/Kg | | |
| | | 1308113-021AMSD | | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 4800 | 125 | 42.139 | 5 | mg/Kg | | |
| | | 1308113-003ADUP | | 8/18/2013 | PH_S | R12687 | pH | pH | 7.66 | 1.68 | 0.1 | 1 | pH Units | | |
| | | 1308113-028ADUP | | 8/19/2013 | PH_S | R12722 | pH | pH | 8.13 | 1.68 | 0.1 | 1 | pH Units | | |
| | | 1308113-001AMS | | 8/20/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | 11000 | 250 | 86.9625 | 5 | mg/Kg | S | |
| | | 1308113-001AMSD | | 8/20/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | 12000 | 250 | 86.9625 | 5 | mg/Kg | S | |
| | | 1308113-021AMS | | 8/20/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | 13000 | 249.9824262 | 86.95638697 | 5 | mg/Kg | S | |
| | | 1308113-021AMSD | | 8/20/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | 12000 | 249.9881406 | 86.95837469 | 5 | mg/Kg | S | |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 2.1 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 4100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 9800 | 125.0127163 | 1.720174976 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1500 | 125.0127163 | 4.395447105 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 5000 | 24.325 | 50 | mg/Kg | | 7/31/2013 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 420 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 16 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001B | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001B | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001B | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 1.5 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 1.0 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 640 | 25.00210868 | 0.879074141 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 7200 | 125.0105434 | 1.720145077 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.81 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 190000 | 5000 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 8.2 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002B | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 3.0 | 1 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002B | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002B | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 1.5 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.61 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 4400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 14000 | 125.0121762 | 1.720167544 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 620 | 125.0121762 | 4.395428115 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.66 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 190000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 100 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 4.5 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003B | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003B | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003B | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 1.5 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 570 | 24.99945801 | 0.878980944 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 23000 | 124.9972901 | 1.719962711 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.88 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 160000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 3.9 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004B | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004B | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004B | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 9.7 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 4.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 5100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 11000 | 124.991833 | 1.719887623 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2100 | 124.991833 | 4.394712849 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.82 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 110000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 350 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 19 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005B | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 13 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005B | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.0 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005B | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.9 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 2.1 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 6700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 11000 | 124.9927004 | 1.719899558 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1900 | 124.9927004 | 4.394743347 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 310 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 15 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006B | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006B | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006B | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.0 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 1.6 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 6800 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 11000 | 125.0121512 | 1.7201672 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2000 | 125.0121512 | 4.395427236 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.77 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 310 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 15 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007B | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 8.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007B | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007B | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.3 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.46 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 8100 | 125.002205 | 1.720030341 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 670 | 125.002205 | 4.395077529 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.95 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 170000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 11 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008B | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008B | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.2 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008B | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/6/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.1 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 16000 | 124.988681 | 1.719844251 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 630 | 124.988681 | 4.394602025 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.98 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 110 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 6.4 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 160000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009B | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009B | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.0 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009B | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.2 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 18000 | 125.0115386 | 1.720158771 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1200 | 125.0115386 | 4.395405696 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.96 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 100 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 16 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010B | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010B | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.5 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010B | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 0.45 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 2700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 600 | 24.9998 | 0.878992968 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 19000 | 124.999 | 1.71998624 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.09 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 140000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 100 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 14 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011B | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011B | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011B | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.9 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 7100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 14000 | 124.997925 | 1.719971448 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2100 | 124.997925 | 4.394927044 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.10 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 170 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 30 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012B | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012B | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012B | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 5.3 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 5200 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1700 | 24.99836661 | 0.87894257 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 18000 | 124.991833 | 1.719887623 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.11 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 150000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 160 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 27 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013B | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013B | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.1 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013B | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 170 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 3.1 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 12000 | 124.9933004 | 1.719907813 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 650 | 124.9933004 | 4.394764441 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.83 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 72 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 5.0 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014B | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 11 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014B | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.2 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014B | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 79 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 2.4 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 9900 | 124.9955752 | 1.719939114 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 380 | 124.9955752 | 4.394844423 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.85 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 21 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 2.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 100000 | 1249.955752 | 24.32413893 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015B | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015B | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015B | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 21 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 1.6 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 10000 | 125.0059828 | 1.720082323 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 320 | 125.0059828 | 4.395210355 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.12 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 18 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 2.4 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 1250.059828 | 24.32616425 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016B | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016B | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.2 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016B | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 5.5 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.81 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 9700 | 124.9981 | 1.719973856 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 260 | 124.9981 | 4.394933197 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.91 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 18 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 1.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 180000 | 1249.981 | 24.32463027 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017B | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017B | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017B | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 4.3 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.51 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 16000 | 124.9927804 | 1.719900659 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 330 | 124.9927804 | 4.394746159 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.92 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 170000 | 1249.927804 | 24.32359507 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 28 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 1.5 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018B | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018B | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018B | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 4.8 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 250 | 24.99749925 | 0.878912074 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 15000 | 124.9874963 | 1.719827948 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.99 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 190000 | 1249.874963 | 24.32256677 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 46 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 1.2 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019B | BGNDRF Trench 3 121-152 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019B | BGNDRF Trench 3 121-152 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019B | BGNDRF Trench 3 121-152 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 190 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 9300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.68 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 2.7 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 13000 | 250.00001 | 3.440000138 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 3000 | 250.00001 | 8.790000352 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250.00005 | 24.32500097 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 730 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 21 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020B | BGNDRF Trench 4 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 11 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020B | BGNDRF Trench 4 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020B | BGNDRF Trench 4 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 62 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 6900 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 12000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2500 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.45 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.5 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 97000 | 1249.968526 | 24.32438751 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 380 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 21 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021B | BGNDRF Trench 4 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 8.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021B | BGNDRF Trench 4 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021B | BGNDRF Trench 4 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 24 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 6500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 9400 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2200 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.0 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 61000 | 1250.01805 | 24.32535126 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 270 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 15 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022B | BGNDRF Trench 4 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 7.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022B | BGNDRF Trench 4 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022B | BGNDRF Trench 4 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 6.7 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 5800 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7900 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1900 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.84 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 150000 | 1250.093007 | 24.32680991 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 150 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 21 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023B | BGNDRF Trench 4 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023B | BGNDRF Trench 4 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023B | BGNDRF Trench 4 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 5.8 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 6100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8300 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2100 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.80 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 160000 | 1249.898508 | 24.32302497 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 160 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 27 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024B | BGNDRF Trench 4 100-125 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024B | BGNDRF Trench 4 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.5 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024B | BGNDRF Trench 4 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 0.67 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 14000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 510 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.87 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 150000 | 1250.0149 | 24.32528996 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 84 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 4.9 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025B | BGNDRF Trench 4 125-150 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025B | BGNDRF Trench 4 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025B | BGNDRF Trench 4 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.1 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 16000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 660 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.81 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 130000 | 1250.098608 | 24.32691891 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 99 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 7.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026B | BGNDRF Trench 4 150-175 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026B | BGNDRF Trench 4 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026B | BGNDRF Trench 4 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.1 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 3800 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1200 | 25 | 0.879 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 6700 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.98 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 150000 | 1249.877512 | 24.32261638 | 50 | mg/Kg | | 7/31/2013 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 120 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 25 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027B | BGNDRF Trench 4 175-200 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027B | BGNDRF Trench 4 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 0.70 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027B | BGNDRF Trench 4 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.6 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 4200 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 12000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1500 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 8.19 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 140000 | 1250.071004 | 24.32638174 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 16 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028B | BGNDRF Trench 4 213-243 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028B | BGNDRF Trench 4 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028B | BGNDRF Trench 4 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 290 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 7700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 9800 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1700 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.51 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 2.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 110000 | 1249.889885 | 24.32285716 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 670 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 13 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029B | BGNDRF Trench 5 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029B | BGNDRF Trench 5 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029B | BGNDRF Trench 5 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 100 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 5400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1100 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.51 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 130000 | 1249.949002 | 24.32400758 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 190 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 10 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030B | BGNDRF Trench 5 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030B | BGNDRF Trench 5 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030B | BGNDRF Trench 5 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 24 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 5000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 780 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.75 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 170000 | 1249.944202 | 24.32391418 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 260 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 9.2 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031B | BGNDRF Trench 5 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 4.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031B | BGNDRF Trench 5 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031B | BGNDRF Trench 5 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.8 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 21000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 660 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.88 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 130000 | 1249.941753 | 24.32386651 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 180 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 5.1 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032B | BGNDRF Trench 5 91-121 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032B | BGNDRF Trench 5 91-121 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032B | BGNDRF Trench 5 91-121 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/8/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 37 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.76 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 2.4 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 11000 | 249.9786218 | 3.439705836 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 420 | 249.9786218 | 8.789248343 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 100000 | 1249.893109 | 24.3229199 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 120 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 3.0 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033B | BGNDRF Trench 6 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 22 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033B | BGNDRF Trench 6 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033B | BGNDRF Trench 6 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 54 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 3000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8700 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 420 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.84 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.6 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 100000 | 1250.030001 | 24.32558381 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 28 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 5.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034B | BGNDRF Trench 6 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 22 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034B | BGNDRF Trench 6 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034B | BGNDRF Trench 6 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.9 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 1500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7400 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 210 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.72 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 0.90 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 120000 | 1250.115211 | 24.327242 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 10 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 1.1 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035B | BGNDRF Trench 6 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 12 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035B | BGNDRF Trench 6 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035B | BGNDRF Trench 6 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 3.7 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 1600 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 180 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/19/2013 | TOC_WB | 8920 | .35 | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 140000 | 1249.881336 | 24.3226908 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 16 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 0.66 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036B | BGNDRF Trench 6 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 6.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036B | BGNDRF Trench 6 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036B | BGNDRF Trench 6 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 130 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 10000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 520 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.73 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | 2.49 | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 110000 | 1250.115211 | 24.327242 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 60 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 4.0 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037B | BGNDRF Trench 7 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037B | BGNDRF Trench 7 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.5 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037B | BGNDRF Trench 7 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 140 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.86 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/19/2013 | TOC_WB | 8928 | | Organic Matter | 1.9 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 12000 | 250.0040301 | 3.440055454 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 570 | 250.0040301 | 8.790141697 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 110000 | 1250.02015 | 24.32539213 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 41 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 3.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038B | BGNDRF Trench 7 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038B | BGNDRF Trench 7 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038B | BGNDRF Trench 7 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 29 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 1200 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8800 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 330 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 8.01 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/19/2013 | TOC_WB | 8928 | | Organic Matter | 1.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 99000 | 1249.905632 | 24.3231636 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 32 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 2.7 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039B | BGNDRF Trench 7 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039B | BGNDRF Trench 7 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039B | BGNDRF Trench 7 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.4 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 900 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 8.26 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/19/2013 | TOC_WB | 8928 | | Organic Matter | 0.76 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 9000 | 250.0162811 | 3.440224027 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 290 | 250.0162811 | 8.790572442 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 98000 | 1250.081405 | 24.32658415 | 50 | mg/Kg | | 7/31/2013 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 30 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 1.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040B | BGNDRF Trench 7 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040B | BGNDRF Trench 7 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040B | BGNDRF Trench 7 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |

**Analysis of Water Sampled from Four Wells at the Brackish Groundwater National Desalination Research Facility: Testing Cycle #1**

**Sampling Instructions:**

Samples should be collected on a Monday, Tuesday, or Wednesday and received by the laboratory the following day. Samples must be kept on ice with sample temperature <6°C until received at the laboratory. Many of the sample bottles are preserved with acids. Take caution not to spill or overfill the bottles. Make sure the lids are screwed on tightly.

**For 40mL VOAs-** Fill the voas all the way up so that there is **no headspace**. There should be no air bubbles visible when you turn the voas upside down. Make sure the lids are screwed on tightly.

There are special sampling instructions for **filtering the Dissolved Metals. See attached** instructions.

Labels and Chain of Custody forms will be included with the bottle kit. Please place a label on each bottle with the date, time of collection, collected by, and Sample Name. You should use the same time for all of the samples from one well. Use the time you begin collection at that well. **Please include the Sample Temp for each sample at time of collection in the Remarks section of the COC.**

Please fill out the Chain of Custody completely. Make sure the information matches what is listed on the sample label. The Sample Request ID will be the Sample Name from the label. For Analysis Request, please reference Quotation # 354 and state, "see attached list". Please include the Project Name, Sampler, and a Project Manager on the Chain of Custody. The Project Manager should be Mike Marcus. The Chain of Custody must have a date, time, and signature when the samples are relinquished.

Please call us at (505)345-3975 if you have any questions. Thank you.

Hall Environmental Analysis Laboratory
4901 Hawkins NE , Suite D
Albuquerque, NM 87109 phone: (505)345-3975 fax: (505)345-4107

**Sampling Instructions for Dissolved Metals (125mL $HNO_3$ preserved)**

- Pull the plunger out of the 50mL syringe.
- Insert the tip of the syringe into the filter (on the side with the blue lettering)
- Fill the syringe with the sample and replace the plunger.

- **Prime** the filter **before** placing it on top of the bottle. Carefully push the plunger until several drops of the sample come through the filter. You will discard this liquid.

- After the filter is primed, carefully rest the filter on top of the 125mL $HNO_3$ preserved bottle.
- Filter the sample into the bottle.
- You will need to refill the syringe and filter additional sample to reach the 125mL of sample volume needed for the analysis.

Please call us at (505)345-3975 if you have any questions. Thank you.

Hall Environmental Analysis Laboratory
4901 Hawkins NE , Suite D
Albuquerque, NM 87109 phone: (505)345-3975 fax: (505)345-4107

**Brackish Groundwater National Desalination Research Facility –Soil Sampling Instructions**

For each sample you will fill 1-8oz jar and 1 1 gallon Ziploc bag.

1. Fill the jar all the way

2. Fill the Ziploc bag at least ¾ of the way full

3. Label both the jar and Ziploc bag with the provided labels. Include date and time of collection and sample name. The date and time for the jar and bag should be the same.

4. Fill out chain-of-custody so that the date and time of collection and sample name corresponds to each set of samples. For Analysis requested put "Quote # 326" and include a copy of the quote for reference.

5. Wrap soil jar securely with bubble bag.

6. Return samples on ice.

# Proposed Baseline Sampling and Testing of Soils in the Agriculture Research Area of the Brackish Groundwater National Desalination Research Facility (BGNDRF)

3/20/2013

Prepared by: Randy Shaw, BGNDRF Facility Manager

BGNDRF has identified a 5-acre area within the 40 acre complex for agriculture research. Researchers interested in utilizing this area will need to know the baseline properties of the soil. The purpose of this paper is to present the proposed soil sampling and testing plan. An NMSU student will be hired to collect soil samples from excavated trenches and perform some testing at the NMSU soil physics laboratory. A contract with another laboratory will be used for remaining soil testing.

**Soil Sampling**

1. BGNDRF recently acquired a backhoe. Trenching will be accomplished by BGNDRF staff.
2. A total of 5 trenches, approximately 3 feet wide, 30 feet in length (maximum) and 4 feet in depth will be placed at predetermined locations within the agriculture area. A trenching plan is attached.
3. Five to ten samples will be obtained from each trench for a total of 50 samples (maximum). The NMSU student will create appropriate field records of the samples and submit copies to BGNDRF. The student will follow sampling instructions provided by Dr. Manoj K. Shukla and Dr April Ulery. Cost for using the student is not to exceed $2,500 including all taxes and fees.
4. Samples will be prepared for shipping by BGNDRF staff using instructions supplied by the laboratory performing the tests.

**Soil Tests**

1. Soil Texture
    a. Texture by hydrometer to determine clay, silt and sand by percent; Gee and Bauder (1986); (Testing by NMSU student at NMSU Soil Physics Laboratory)

2. Soil Physical Properties (NMSU Student at NMSU Soil Physics Laboratory using test methods in "Soil Science Society of America" Book 5, 2002)
    a. Bulk Density
    b. Soil Porosity
    c. Hydraulic Conductivity
    d. Soil Water Retention Curve

3. Soil Chemical Properties (Contracted Laboratory.)
    a. pH of saturated soil paste (USSL Staff, 1954)
    b. Electrical conductivity (ECe) of a saturated soil paste extract, dS/m or mS/m
    c. Magnesium in saturated soil paste extract, mg/L
    d. Calcium in saturated soil paste extract, mg/L
    e. Sodium in saturated soil paste extract, mg/L
    f. Sodium Adsorption Ratio (SAR) calculated from the concentrations (mmol/L) of sodium, calcium, and magnesium in a saturation soil paste extract analyzed by Inductively Coupled Plasma (ICP) – Optical Emission Spectroscopy
    g. Organic Matter using the Walkley-Black Method (Nelson and Sommers, 1982), %
    h. Nitrate ($NO_3$-N) using 1:5 soil to water extract ratio and Cadmium Reduction Column; Ludwick and Reuss, (1974), mg/L
    i. Phosphorus, $NaHCO_3$ extractable; Olsen Method (Olsen et al., 1954), mg/kg
    j. Potassium using 1:5 soil to water extract ratio and analyzed by ICP (Cihacek, 1983), mg/kg
    k. Arsenic
    l. Selenium

All test results will be reviewed by the Reclamation and NMSU Ag Project Team and upon approval will be posted on the BGNDRF website.

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: Tetra Tech, Inc. Work Order Number: 1308113 RcptNo: 1

Received by/date: AF 08/02/13

Logged By: Anne Thorne 8/2/2013 9:00:00 AM Anne Thorne

Completed By: Anne Thorne 8/2/2013 Anne Thorne

Reviewed By: JMS 8/5/13

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| 2. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 3. How was the sample delivered? | FedEx | | |

## Log In

| | | | |
|---|---|---|---|
| 4. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 5. Were all samples received at a temperature of >0° C to 6.0°C | Yes ☑ | No ☐ | NA ☐ |
| 6. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 7. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 8. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 9. Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 10. VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA Vials ☑ |
| 11. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 13. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 14. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 8 | 4.2 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.
Mailing Address: NE Stu. 205
ABQ NM 87710

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name: BGNDRF
Soil Samples 7/31/2013

Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados
On Ice: ☑ Yes ☐ No
Sample Temperature: 4.2 °C


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No 1308113 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions ($F,Cl,NO_3,NO_2,PO_4,SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote # 326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 830 AM | Soil | BGNDRF Trench 1 0-25 cm DBG | | | -001 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 830 AM | | BGNDRF Trench 1 25-50 cm DBG | | | -002 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 830 AM | | BGNDRF Trench 1 50-75 cm DBG | | | -003 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 830 AM | | BGNDRF Trench 1 75-100 cm DBG | | | -004 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 0-25 cm DBG | | | -005 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 25-50 cm DBG | | | -006 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 50-75 cm DBG | | | -007 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 75-100 cm DBG | | | -008 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 100-125 cm DBG | | | -009 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 125-150 cm DBG | | | -010 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | | BGNDRF Trench 2 150-175 cm DBG | | | -011 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 930 AM | ↓ | BGNDRF Trench 2 175-200 cm DBG | | | -012 | | | | | | | | | | | | X | | | | |

| Relinquished by: | Received by: | Date | Time |
|---|---|---|---|
| | | 7/31/2013 | 930 AM |
| Relinquished by: | Received by: | 8/2/13 | 0900 |

Remarks: Quote # 326

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.

Mailing Address: NE Stu. 205

ABQ NM 87710

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other

☐ EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: BGNDRF

Soil Samples 7/31/2013

Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.2 °C


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No 1308115 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote # 326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 930 AM | Soil | BGNDRF Trench 2 213-243 cm DBG | | | -013 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 0-25 cm DBG | | | -014 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 25-50 cm DBG | | | -015 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 50-75 cm DBG | | | -016 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 75-100 cm DBG | | | -017 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 100-125 cm DBG | | | -018 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1030 AM | | BGNDRF Trench 3 121-152 cm DBG | | | -019 -019 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 0-25 cm DBG | | | -020 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 25-50 cm DBG | | | -021 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 50-75 cm DBG | | | -022 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 75-100 cm DBG | | | -023 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | ↓ | BGNDRF Trench 4 100-125 cm DBG | | | -024 | | | | | | | | | | | | X | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | Relinquished by: | Received by: | Date | Time |
| 7/31/2013 | 1130 AM | | | 8/1/13 | 0900 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

Remarks: Quote # 326

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.
Mailing Address: NE Stu. 205
ABQ NM 87710

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name: BGNDRF
Soil Samples 7/31/2013
Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados
On Ice: ☑ Yes ☐ No
Sample Temperature: 4.2 °C


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | 8/02/13 Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No 1308113 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions (F,Cl,$NO_3$,$NO_2$,$PO_4$,$SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote #326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 1130 AM | Soil | BGNDRF Trench 4 125-150 cm DBG | | | -025 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 150-175 cm DBG | | | -026 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 175-200 cm DBG | | | -027 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1130 AM | | BGNDRF Trench 4 213-243 cm DBG | | | -028 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 0-25 cm DBG | | | -029 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 25-50 cm DBG | | | -030 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 50-75 cm DBG | | | -031 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 1230 PM | | BGNDRF Trench 5 91-121 cm DBG | | | -032 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 0-25 cm DBG | | | -033 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 25-50 cm DBG | | | -034 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 50-75 cm DBG | | | -035 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 6 75-100 cm DBG | | | -036 | | | | | | | | | | | | X | | | | |

| Date | Time | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 7/31/2013 | 130 PM | Steve Holland | | 8/1/13 | 0900 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

Remarks: Quote # 326

# Chain-of-Custody Record

Client: Tetra Tech Inc

6121 Indian School Rd.
Mailing Address: NE Stu. 205
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Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
X Standard ☐ Rush

Project Name: BGNDRF
Soil Samples 7/31/2013

Project #:

Project Manager: Mike Marcus

Sampler: Steve Holland/Bobby Granados
On Ice: ☒ Yes ☐ No
Sample Temperature: 4.2


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Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix (AT 8/2/13) | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1308113 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH (8310 or 8270SIMS) | RCRA 8 Metals | Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Quote 326 | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2013 | 130 PM | Soil | BGNDRF Trench 7 0-25 cm DBG | | | -037 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 7 25-50 cm DBG | | | -038 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | | BGNDRF Trench 7 50-75 cm DBG | | | -039 | | | | | | | | | | | | X | | | | |
| 7/31/2013 | 130 PM | ↓ | BGNDRF Trench 7 75-100 cm DBG | | | -040 | | | | | | | | | | | | X | | | | |

| | | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 7/31/2013 | 130 PM | Steve Holland | | 8/2/13 | 0900 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

Remarks: Quote # 326

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Hall Environmental Analysis Laboratory

## QUALITY ASSURANCE PLAN

## Effective Date: February 2nd 2010

## Revision 9.2

www.hallenvironmental.com

**Control Number: 0000095**

Approved By:

1/20/11

Andy Freeman
Laboratory Manager

Date

# Table of Contents

**Appendix C TCEQ Accreditation**
Full list of approved analytes, methods, analytical techniques and fields of testing
**Reserved, available upon request**

**Appendix D Utah ELCP Accreditation**
Full list of approved analytes, methods, analytical techniques and fields of testing
**Reserved, available upon request**

**Appendix E ADHS Accreditation**
Full list of approved analytes, methods, analytical techniques and fields of testing
**Reserved, available upon request**

**Appendix F NMED-DWB Certification**
**Reserved, available upon request**

**Appendix G NM DOH Certification**
**Reserved, available upon request**

**Appendix H Terms and Definitions**
**Reserved, available upon request**

**Appendix I Chain of Custody Record**
**Reserved, available upon request**

**Appendix J HEAL Forms**
Analyst Ethics and Data Integrity Agreement
IDOC Certificate
ADOCP Certificate
Training Forms
Corrective Action Report
**Reserved, available upon request**

## 3.0 Introduction

### Purpose of Document

The purpose of this Quality Assurance Plan is to formally document the quality assurance policies and procedures of Hall Environmental Analysis Laboratory, Inc. (HEAL), for the benefit of its employees, clients, and accrediting organizations. HEAL continually implements all aspects of this plan as an essential and integral part of laboratory operations in order to ensure that high quality data is produced in an efficient and effective manner.

### Objectives

The objective of HEAL is to achieve and maintain excellence in environmental testing. This is accomplished by developing, incorporating and documenting the procedures and policies specified by each of our accrediting authorities and outlined in this plan. A laboratory staff that is analytically competent, well qualified, and highly trained carries out these activities. An experienced management team, knowledgeable in their area of expertise, monitors them. Finally, a comprehensive quality assurance program governs laboratory practices and ensures that the analytical results are valid, defensible, reproducible, reconstructable and of the highest quality.

HEAL establishes and thoroughly documents its activities to ensure that all data generated and processed will be scientifically valid and of known and documented quality. Routine laboratory activities are detailed in method specific standard operating procedures (SOP). All data reported meets the applicable requirements for the specific method that is referenced, ORELAP, TCEQ, EPA, client specific requirements and/or State Bureaus. In the event that these requirements are ever in contention with each other, it is HEAL's policy to always follow the most prudent requirement available. For specific method requirements refer to HEAL's Standard Operating Procedures (SOP's), EPA methods, Standard Methods 20$^{th}$ edition, ASTM methods or state specific methods.

HEAL management ensures that this document is correct in terms of required accuracy, data reproducibility, and that the procedures contain proper quality control measures. HEAL management additionally ensures that all equipment is reliable, well maintained and appropriately calibrated. The procedures and practices of the laboratory are geared towards not only strictly following our regulatory requirements but also allowing the flexibility to conform to client specific specifications. Meticulous records are maintained for all samples and their respective analyses so that results are well documented and defensible in a court of law.

The HEAL Quality Assurance/Quality Control Officer (QA/QCO) and upper management are responsible for supervising and administering this quality assurance program, and ensuring each individual is responsible for its proper implementation. All HEAL management remains committed to the encouragement of excellence in analytical testing and will continue to provide the necessary resources and environment conducive to its achievement.

## Policies

Understanding that quality cannot be mandated, it is the policy of this laboratory to provide an environment that encourages all staff members to take pride in the quality of their work. In addition to furnishing proper equipment and supplies, HEAL stresses the importance of continued training and professional development. Further, HEAL recognizes the time required for data interpretation. Therefore, no analyst should feel pressure to sacrifice data quality for data quantity. Each staff member must perform with the highest level of integrity and professional competence, always being alert to problems that could compromise the quality of their technical work.

Management and senior personnel supervise analysts closely in all operations. Under no circumstance is the willful act or fraudulent manipulation of analytical data condoned. Such acts must be reported immediately to HEAL management. Reported acts will be assessed on an individual basis and resulting actions could result in dismissal. The laboratory staff is encouraged to speak with lab managers or senior management if they feel that there are any undo commercial, financial, or other pressures, which might adversely affect the quality of their work; or in the event that they suspect that data quality has been compromised in any way. HEAL's Quality Assurance/Quality Control Officer is available if any analyst and/or manager wishes to anonymously report any suspected or known breaches in data integrity.

All proprietary rights and client information at HEAL (including national security concerns) are considered confidential. No information will be given out without the express verbal or written permission of the client. All reports generated will be held in the strictest of confidence.

This is a controlled document. Each copy is assigned a unique tracking number and when released to a client or accrediting agency the QA/QCO keeps the tracking number on file. This document is reviewed on an annual basis to ensure that it is valid and representative of current practices at HEAL.

## 4.0 Organization and Responsibility

### Company

HEAL is accredited in accordance with the 2003 NELAC standard (see NELAC accredited analysis list in the appendix), through ORELAP and TCEQ and by the Arizona Department of Health Services. Additionally, HEAL is qualified as defined under the State of New Mexico Water Quality Control Commission regulations and the New Mexico State Drinking Water Bureau. HEAL is a locally owned small business that was established in 1991. HEAL is a full service environmental analysis laboratory with analytical capabilities that include both organic and inorganic methodologies and has performed analyses of soil, water, air as well as various other matrices for many sites in the region. HEAL's client base includes local, state and federal agencies, private consultants, commercial industries as well as individual homeowners. HEAL has performed as a subcontractor to the state of New Mexico and to the New Mexico Department of Transportation. HEAL has been acclaimed by its customers as producing quality results and as being adaptive to client-specific needs.

The laboratory is divided into an organic section, and an inorganic section. Each section has a designated manager/technical director. The technical directors report directly to the laboratory manager, who oversees all operations.

### Certifications

ORELAP – NELAC Oregon Primary accrediting authority.

TCEQ – NELAC Texas Secondary accrediting authority.

The Arizona Department of Health Services

The New Mexico Drinking Water Bureau

The New Mexico Department of Health

See appendix B-E for copies of current licenses and licensed parameters, or refer to our current list of certifications online at www.hallenvironmental.com.

In the event of a certification being revoked or suspended HEAL will notify, in writing, those clients that require the effected certification.

## Personnel

HEAL management ensures the competence of all who operate equipment, perform environmental tests, evaluate results, and sign test reports. Personnel performing specific tasks shall be qualified on the basis of appropriate education, training, experience and /or demonstrated skills.

All personnel shall be responsible for complying with HEAL's quality assurance/quality control requirements that pertain to their technical function. Each technical staff member must have a combination of experience and education to adequately demonstrate specific knowledge of their particular function and a general knowledge of laboratory operations, test methods, quality assurance/quality control procedures and records management.
All employees training certificates and diplomas are kept on file with demonstrations of capability for each method they perform. An Organizational Chart can be found in Appendix A.

## Laboratory Director

The Laboratory Director is responsible for overall technical direction and business leadership of HEAL. The Laboratory Manager, the Project Manager and Quality Assurance/Quality Control Officer report directly to the Laboratory Director. Someone with a minimum of 7 years of directly related experience and a bachelor's degree in a scientific or engineering discipline should fill this position.

## Laboratory Manager/Lead Technical Director

The Laboratory Manager shall exercise day–to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results. The Laboratory Manager shall be experienced in the fields of accreditation for which the laboratory is approved or seeking accreditation. The Laboratory Manager shall certify that personnel with appropriate educational and/or technical background perform all tests for which HEAL is accredited. Such certification shall be documented.

The Laboratory Manager shall monitor standards of performance in quality control and quality assurance and monitor the validity of the analyses performed and data generated at HEAL to assure reliable data.

The Laboratory Manager is responsible for the daily operations of the laboratory. The Laboratory Manager is the lead technical director of the laboratory and in conjunction with the section technical directors is responsible for coordinating activities within the laboratory with the overall goal of efficiently producing high quality data with in a reasonable time frame.

In events where employee scheduling or current workload is such that new work cannot be incorporated, with out missing hold times, the Laboratory Manager has authority to modify employee scheduling, re-schedule projects or, when appropriate, allocate the work to approved subcontracting laboratories.

Additionally, the laboratory manager reviews and approves new analytical procedures and methods, and performs a final review of most analytical results. The Laboratory Manager provides technical support to both customers and HEAL staff.

The Laboratory Manager also observes the performance of supervisors to ensure good laboratory practices and proper techniques are being taught and utilized, assisting in overall quality control implementation, and strategic planning for the future of the company. Other duties include assisting in establishing laboratory policies which lead to the fulfillment of requirements for various certification programs, assuring that all Quality Assurance and Quality Control documents are reviewed and approved, and assisting in conducting Quality Assurance Audits.

The laboratory manager addresses questions or complaints that cannot be answered by the section managers.

The Laboratory Manager shall have a bachelor's degree in a chemical, environmental, biological sciences, physical sciences or engineering field, and at least five years of experience in the environmental analysis of representative inorganic and organic analytes for which the laboratory seeks or maintains accreditation.

**Quality Assurance Quality Control Officer**

The Quality Assurance/Quality Control Officer (QA/QCO) serves as the focal point for QA/QC and shall be responsible for the oversight and/or review of quality control data. The QA/QCO functions independently from laboratory operations and shall be empowered to halt unsatisfactory work and/or prevent the reporting of results generated from an out-of-control measurement system. The QA/QCO shall objectively evaluate data and perform assessments without any outside/managerial influence. The QA/QCO shall have direct access to the highest level of management at which decisions are made on laboratory policy and/or resources. The QA/QCO shall notify laboratory management of deficiencies in the quality system in periodic, independent reports.

The QA/QCO shall have general knowledge of the analytical test methods, for which data review is performed, have documented training and/or experience in QA/QC procedures and in the laboratory's quality system. The QA/QCO will have a minimum of a BS in a scientific or related field and a minimum of three years of related experience.

The QA/QCO shall schedule and conduct internal audits as per the Internal Audit SOP at least annually, monitor and trend Corrective Action Reports as per the Data Validation SOP, periodically review control charts for out of control conditions and initiate any appropriate corrective actions.

The QA/QCO shall oversee the analysis of proficiency testing in accordance with our standards and monitor any corrective actions issued as a result of this testing.

The QA/QCO reviews all standard operating procedures and statements of work in order to assure their accuracy and compliance to method and regulatory requirements.

The QA/QCO shall be responsible for maintaining and updating this quality manual.

**Business/Project Manager**

The role of the business/project manager is to act as a liaison between HEAL and our clients. The project manager reviews reports, updates clients on the status of projects in-house, prepares quotations for new work, and is responsible for HEAL's marketing effort.

All new work is assessed by the project manager and reviewed with the other managers so as to not exceed the laboratories capacity. In events where employee scheduling or current workload is such that new work cannot be incorporated with out missing hold times, the Project Manager has authority to re-schedule projects.

It is also the duty of the project manager to work with the Laboratory Manager and QA/QCO to insure that before new work is undertaken the resources required and accreditations requested are available to meet the client's specific needs.

Additionally, the Project Manager can initiate the review of the need for new analytical procedures and methods, and performs a final review of some analytical results. The Project Manager provides technical support to customers. Someone with a minimum of 2 years of directly related experience and a bachelor's degree in a scientific or engineering discipline should fill this position.

**Section Manager/Technical Directors**

The Section Manager/Technical Directors are full-time members of the staff at HEAL who exercise day-to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results for their department within HEAL. A Technical Director's duties shall include, but not be limited to, monitoring standards of performance in quality control and quality assurance; monitoring the validity of the analyses performed and the data generated in their sections to ensure reliable data, overseeing training and supervising departmental staff, schedule incoming work for their sections and monitor laboratory personnel to ensure that proper procedures and techniques are being utilized. They supervise and implement new Quality Control procedures as directed by the QA/QCO, update and maintain quality control records including, but not limited to, training forms, IDOCs, ADOCPs, MDLs and evaluate laboratory personnel in their Quality Control activities. In addition technical directors are responsible for upholding the spirit and intent of HEAL's data integrity procedures.

They are the technical director of the associated section and review analytical data to acknowledge that data meets all criteria set forth for good Quality Assurance practices. Someone with a minimum of 2 years of experience in the environmental analysis of

representative analytes for which HEAL seeks or maintains accreditation and a bachelor's degree in a scientific or related discipline should fill this position.

**Health and Safety / Chemical Hygiene Officer**

Refer to the most recent version of the Health and Safety and Chemical Hygiene Plans for the rolls, responsibilities and basic requirements of the Health and Safety Officer (H&SO) and the Chemical Hygiene Officer (CHO). These jobs can be executed by the same employee.

**Chemist I, II and III**

Chemists are responsible for the analysis of various sample matrices including, but not limited to, solid, aqueous, and air as well as the generation of high quality data in accordance with the HEAL SOPs and QA/QC guidelines in a reasonable time as prescribed by standard turnaround schedules or as directed by the Section Manager or Laboratory Manager.

Chemists are responsible for making sure all data generated is entered in the database in the correct manner and the raw data is reviewed, signed and delivered to the appropriate peer for review. A Chemist reports daily to the section manager and will inform them as to material needs of the section specifically pertaining to the analyses performed by the chemist. Additional duties may include preparation of samples for analysis, maintenance of lab instruments or equipment, cleaning and providing technical assistance to lower level laboratory staff.

The senior chemist in the section may be asked to perform supervisory duties as related to operational aspects of the section. The chemist may perform all duties of a lab technician.

The position of Chemist is a full or part time hourly position and is divided into three levels, Chemist I, II, and III. All employees hired into a Chemist position at HEAL must begin as a Chemist I and remain there at a minimum of three months regardless of their education and experience. Chemist I must have a minimum of an AA in a related field or equivalent experience (equivalent experience means years of related experience can be substituted for the education requirement). A Chemist I is responsible for analysis, instrument operation and data reduction. Chemist II must have a minimum of an AA in a related field or equivalent experience and must have documented and demonstrated aptitude to perform all functions of a Chemist II. A Chemist II is responsible for the full analysis of their test methods, routine instrument maintenance, purchase of consumables as dictated by their Technical Director, advanced data reduction and basic data review. Chemist II may also assist Chemist III in method development and, as dictated by their Technical Director, may be responsible for the review and/or revision of their method specific SOPs. Chemist III must have Bachelors degree or equivalent experience and must have documented and demonstrated aptitude to perform all functions of a Chemist III. A Chemist III is responsible for all tasks completed by a Chemist I and II as well as advanced

data review, non-routine instrument maintenance, assisting their technical director in basic supervisory duties and method development.

### Laboratory Technician

A laboratory technician is responsible for providing support in the form of sample preparation, basic analysis, general laboratory maintenance, glassware washing, chemical inventories and sample kit preparation. This position can be filled by someone without the education and experience necessary to obtain a position as a chemist.

### Sample Control Manager

The sample control manager is responsible for receiving samples and reviewing the sample login information after it has been entered into the computer. The sample control manager also checks the samples against the chain-of-custody for any sample and/or labeling discrepancies prior to distribution.

The sample control manager is responsible for sending out samples to the sub-contractors along with the review and shipping of field sampling bottle kits. The sample control manager acts as a liaison between the laboratory and field sampling crew to ensure that the appropriate analytical test is assigned. If a discrepancy is noted the sample control manager or sample custodian will contact the customer to resolve any questions or problems. The sample control manager is an integral part of the customer service team.

This position should be filled by someone with a high school diploma and a minimum of 2 years of related experience and can also be filled by a senior manager.

### Sample Custodians

Sample Custodians work directly under the Sample Control Manager. They are responsible for sample intake into the laboratory and into the LIMS. Sample Custodians take orders from our clients and prepare appropriate bottle kits to meet the client's needs. Sample Custodians work directly with the clients in properly labeling and identifying samples as well as properly filling out legal COCs. When necessary, Sample Custodians contact clients to resolve any questions or problems associated with their samples. Sample Custodians are responsible for distributing samples throughout the laboratory and are responsible for notifying analysts of special circumstances such as short holding times or improper sample preservation upon receipt.

## Delegations in the Absence of Key Personnel

Planned absences shall be preceded by notification to the Laboratory Manager. The appropriate staff members shall be informed of the absence. In the case of unplanned absences, the organizational superior shall either assume the responsibilities and duties or delegate the responsibilities and duties to another appropriately qualified employee.

In the event that the Laboratory Manager is absent for a period of time exceeding fifteen consecutive calendar days, another full-time staff member meeting the basic qualifications and competent to temporarily perform this function will be designated. If this absence exceeds thirty-five consecutive calendar days, HEAL will notify ORELAP in writing of the absence and the pertinent qualifications of the temporary laboratory manager.

## Laboratory Personnel Qualification and Training

All personnel joining HEAL shall undergo orientation and training. During this period the new personnel shall be introduced to the organization and their responsibilities, as well as the policies and procedures of the company. They shall also undergo on the job training and shall work with trained staff. They will be shown required tasks and be observed while performing them.

When utilizing staff undergoing training, appropriate supervision shall be dictated and overseen by the appropriate section technical director. Prior to analyzing client samples, a new employee, or an employee new to a procedure, must meet the following basic requirements. The SOP and Method for the analysis must be read and signed by the employee indicating that they read, understood and intend to comply with the requirements of the documents. The employee must undergo documented training. Training is conducted by a senior analyst familiar with the procedure and overseen by the section Technical Director. This training is documented by any means deemed appropriate by the trainer and section Technical Director, and kept on file in the employees file located in the QA/QCO's office. The employee must perform a successful Initial Demonstration of Proficiency (IDOC). See Appendix H for the training documents and checklists utilized at HEAL to ensure that all of these requirements are met. Once all of the above requirements are met it is incumbent upon the section Technical Director to determine at which point the employee can begin to perform the test unsupervised. A Certification to Complete Work Unsupervised (see Appendix H) is them filled out by the employee and technical director.

All IDOCs shall be documented through the use of the certification form which can be found in Appendix H. IDOCs are performed by analyzing four Laboratory Control Spikes (LCSs). Using the results of the LCSs the mean recovery is calculated in the appropriate reporting units and the standard deviations of the population sample (n-1) (in the same units) as well as the relative percent difference for each parameter of interest. When it is not possible or pertinent to determine mean and standard deviations HEAL assesses performance against establish and documented criteria dictated in the method SOP. The mean and standard deviation are compared to the corresponding acceptance criteria for

precision and accuracy in the test method (if applicable) or in laboratory-generated acceptance criteria. In the event that the HEAL SOP or test method fail to establish the pass/fail criteria the default limits of +/- 20% for calculated recovery and <20% relative percent difference based on the standard deviation will be utilized. If all parameters meet the acceptance criteria, the IDOC is successfully completed. If any one of the parameters do not meet the acceptance criteria, the performance is unacceptable for that parameter and the analyst must either locate and correct the source of the problem and repeat the test for all parameters of interest or repeat the test for all parameters that failed to meet criteria. Repeat failure, however, confirms a general problem with the measurement system. If this occurs the source of the problem must be identified and the test repeated for all parameters of interest.

New employees that do not have prior analysis experience will not be allowed to perform analysis until they have demonstrated attention to detail with minimal errors in the assigned tasks. To ensure a sustained level of quality performance among staff members, continuing demonstration of capability shall be performed at least once a year. These are as an Annual Documentation of Continued Proficiency (ADOCP).

At least once per year an ADOCP must be completed by: the acceptable performance of a blind sample (this is typically done using a PT sample but can be a single blind sample to the analyst), by performing another IDOC, or by summarizing the data of four consecutive laboratory control samples with acceptable levels of precision and accuracy (these limits are those currently listed in the LIMS for an LCS using the indicated test method.) ADOCPs are documented using a standard form and are kept on file in each analysts employee folder.

Each new employee shall be provided with data integrity training as a formal part of their new employee orientation. Each new employee will sign an ethics and data integrity agreement to ensure that they understand that data quality is our main objective. Every HEAL employee recognizes that although turn around time is important, quality is put above any pressure to complete the task expediently. Analysts are not compensated for passing QC parameters nor are incentives given for the quantity of work produced. Data Integrity and Ethics training are performed on an annual basis in order to remind all employees of HEAL's policy on data quality. Employees are required to understand that any infractions of the laboratory data integrity procedures will result in a detailed investigation that could lead to very serious consequences including immediate termination, debarment or civil/criminal prosecution.

Training for each member of HEAL's technical staff is further established and maintained through documentation that each employee has read, understood, and is using the latest version of this Quality Assurance Manual. Training courses or workshops on specific equipment, analytical techniques or laboratory procedures are documented through attendance sheets, certificates of attendance, training forms or quizzes. This training documentation is located in either analyst specific employee folders in the QA/QCO Office or in the current years group training folder, also located in the QA/QCO Office. On the front of all methods, SOPs and procedures for HEAL there is a signoff sheet that is signed by all pertinent employees, indicating that they have read, understood and agreed to perform the most recent version of the document.

## 5.0 Receipt and Handling of Samples

### Sampling

#### Procedures

HEAL does not provide field sampling for any projects. Sample kits are prepared and provided for clients upon request. The sample kits contain the appropriate sampling containers (with a preservative when necessary), labels, blue ice (The use of "blue ice" by anyone except HEAL personnel is discouraged because it generally does not maintain the appropriate temperature of the sample. If blue ice is used, it should be completely frozen at the time of use, the sample should be chilled before packing, and special notice taken at sample receipt to be certain the required temperature has been maintained.), a cooler, chain-of-custody forms, plastic bags, bubble wrap, and any special sampling instructions. Sample kits are reviewed prior to shipment for accuracy and completeness.

#### Containers

Containers which are sent out for sampling are purchased by HEAL from a commercial source. Glass containers are certified "EPA Cleaned" QA level 1. Plastic containers are certified clean when required. These containers are received with a Certificate of Analysis verifying that the containers have been cleaned according to the EPA wash procedure. Containers are used once and discarded. If the samples are collected and stored in inappropriate containers the laboratory may not be able to accurately quantify the amount of the desired components. In this case re-sampling may be required.

#### Preservation

If sampling for an analyte(s) requires preservation, the sample custodians fortify the containers prior to shipment to the field, or provide the preservative for the sampler to add in the field. The required preservative is introduced into the vials in uniform amounts and done so rapidly to minimize the risk of contamination. Vials that contain a preservative are labeled appropriately. If the samples are stored with inappropriate preservatives the laboratory may not be able to accurately quantify the amount of the desired components. In this case re-sampling may be required.

Refer to the current Login SOP and/or the current price book for detailed sample receipt and handling procedures, appropriate preservation and holding time requirements.

## Sample Custody

### Chain-of-Custody Form

A Chain-of-Custody (COC) form is used to provide a record of sample chronology from the field to receipt at the laboratory. HEAL's COC contains the client's name, address, phone and fax numbers, the project name and number, the project manager's name, and the field sampler's name. It also identifies the date and time of sample collection, sample matrix, field sample ID number, number/volume of sample containers, sample temperature upon receipt, and any sample preservative information.

There is also a space to record the HEAL ID number assigned to samples after they are received. Next to the sample information is a space for the client to indicate the desired analyses to be performed. There is a section for the client to indicate the data package level as well as any accreditation requirements. Finally, there is a section to track the actual custody of the samples. The custody section contains lines for signatures, dates and times when samples are relinquished and received. The COC form also includes a space to record special sample related instructions, sampling anomalies, time constraints, and any sample disposal considerations.

It is paramount that all COCs arrive at HEAL complete and accurate so that the samples can be processed and allocated for testing in a timely and efficient manor. A sample chain-of-custody form can be found in Appendix G or on line at www.hallenvironmental.com.

### Receiving Samples

Samples are received by authorized HEAL personnel. Upon arrival, the COC is compared to the respective samples. After the samples and COC have been determined to be complete and accurate, the sampler signs over the COC. The HEAL staff member in turn signs the chain-of-custody, also noting the current date, time and sample temperature. This relinquishes custody of the samples from the sampler and delegates sample custody to HEAL. The third (pink) copy of the COC form is given to the person who has relinquished custody of the samples.

### Logging in Samples and Storage

Standard Operating Procedures have been established for the receiving and tracking of all samples (refer to the current HEAL Login SOP). These procedures ensure that samples are received and properly logged into the laboratory, and that all associated documentation, including chain of custody forms, are complete and consistent with the samples received. Each sample set is given a unique HEAL tracking ID number. Individual sample locations within a defined sample set are given a unique sample ID suffix-number. Labels with the HEAL numbers, and tests requested, are generated and

placed on their respective containers. The pH of preserved, non-volatile samples is checked and noted if out of compliance. Due to the nature of the samples, the pHs of volatiles samples are checked after analysis. Samples are reviewed prior to being distributed for analysis.

Samples are distributed for analysis based upon the requested tests. In the event that sample volume is limited and different departments at HEAL are required to share the sample, volatile work takes precedence and will always be analyzed first before the sample is sent to any other department for analysis.

Each project (sample set) is entered into the Laboratory Information Management System (LIMS) with a unique ID that will be identified on every container. The ID tag includes the Lab ID, Client ID, date and time of collection, and the analysis/analyses to be performed. The LIMS continually updates throughout the lab. Therefore, at any time, an analyst or manager may inquire about a project and/or samples status. For more information about the login procedures, refer to the Sample Login SOP.

**Disposal of Samples**

Samples are held at HEAL for a minimum of thirty days and then transferred to the HEAL warehouse for disposal. Analytical results are used to characterize their respective sample contamination level(s) so that the proper disposal can be performed. These wastes will be disposed of according to their hazard as well as their type and level of contamination. Refer to the Hall Environmental Analysis Laboratory Chemical Hygiene Plan and current Sample Disposal SOP for details regarding waste disposal.

Waste drums are provided by an outside agency. These drums are removed by the outside agency and disposed of in a proper manner.

The wastes that are determined to be non-hazardous are disposed of as non-hazardous waste in accordance with the Chemical Hygiene Plan and Sample Disposal SOP.

## 6.0 Analytical Procedures

All analytical methods used at HEAL incorporate necessary and sufficient Quality Assurance and Quality Control practices. A Standard Operating Procedure (SOP) is used for each method to provide the necessary criteria to yield acceptable results. These procedures are reviewed at least annually and revised as necessary and are attached as a pdf file in the Laboratory Information Management System (LIMS) for easy access by each analyst. The sample is often consumed or altered during the analytical process. Therefore, it is important that each step in the analytical process be correctly followed in order to yield valid data.

When unforeseen problems arise, the analyst, technical director, and, when necessary, laboratory manager meet to discuss the factors involved. The analytical requirements are evaluated and a suitable corrective action or resolution is established. The client is notified in the case narrative with the final report or before, if the validity of their result is in question.

### List of Procedures Used

Typically, the procedures used by HEAL are EPA approved methodologies or 20th edition Standard Methods. However, proprietary methods for client specific samples are sometimes used. The following tables list EPA and Standard Methods Method numbers with their corresponding analytes and/or instrument classification.

**Methods Utilized at HEAL**

Drinking Water(DW) Non-Potable Water (NPW) Solids (S)

| Methodology | Matrix | Title of Method |
|---|---|---|
| 120.1 | DW NPW | "Conductance(Specific Conductance, *u*ohms at 25 ° C)" |
| 180.1 | DW NPW | "Turbidity (Nephelometric)" |
| 200.2 | DW NPW | "Sample Preparation Procedure For Spectrochemical Determination of Total Recoverable Elements" |
| 200.7 | DW NPW | "Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry" |
| 200.8 | DW NPW | "Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry." |
| 245.1 | DW NPW | "Mercury (Manual Cold Vapor Technique)" |
| 300.0 | DW NPW S | "Determination of Inorganic Anions by Ion Chromatography" |
| 413.2 | NPW S | "Oil and Grease" |
| 418.1 | NPW S | "Petroleum Hydrocarbons (Spectrophotometric, Infrared)" |
| 504.1 | DW | "EDB, DBCP and 123TCP in Water by Microextraction and Gas Chromatography" |

| | | |
|---|---|---|
| 505 | DW | "Analysis of Organohalide Pesticides and Commercial Polychlorinated Biphenyl (PCB) Products in Water by Microextraction and Gas Chromatography" |
| 515.1 | DW | "Determination of Chlorinated Acids in Water by Gas Chromatography with an Electron Capture Detector" |
| 524.2 | DW | "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry" |
| 531.1 | DW | "Measurement of N-Methylcarbomoyloximes and N-Methylcarbamates in Water by Direct Aqueous Injection HPLC with Post Column Dervivatization" |
| 547 | DW | "Determination of Glyphosate in Drinking Water by Direct-Aqueous Injection HPLC, Post-Column Derivatization, and Fluorescence Detection" |
| 552.1 | DW | "Determination of Haloacetic Acids and Dalapon in Drinking Water by Ion-Exchange Liquid-Solid Extraction and Gas Chromatography with an Electron Capture Detector" |
| 1311 | S | "Toxicity Characteristic Leaching Procedure" |
| 1311ZHE | S | "Toxicity Characteristic Leaching Procedure" |
| 3005A | NPW | "Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by FLAA or ICP Spectroscopy" |
| 3010A | S | "Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy" |
| 3050B | S | "Acid Digestion of Sediment, Sludge, and Soils" |
| 3510C | DW<br>NPW | "Separatory Funnel Liquid-Liquid Extraction" |
| 3540 | S | "Soxhlet Extraction" |
| 3545 | S | "Pressurized Fluid Extraction(PFE)" |
| 3665 | NPW<br>S | "Sulfuric Acid/Permanganate Cleanup" |
| 5030B | NPW | "Purge-and-Trap for Aqueous Samples" |
| 5035 | S | "Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples" |
| 6010B | NPW<br>S | "Inductively Coupled Plasma-Atomic Emission Spectrometry" |
| 6020 | NPW<br>S | "Inductively Coupled Plasma-Mass Spectrometry" |
| 7470A | NPW | "Mercury in Liquid Waste (Manual Cold-Vapor Technique)" |
| 7471A | S | "Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)" |
| 8021B | NPW<br>S | "Aromatic and Halogenated Volatiles By Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors" |
| 8015B | NPW<br>S | "Nonhalogenated Volatile Organics by Gas Chromatography" (Gasoline Range and Diesel Range Organics) |

| | | |
|---|---|---|
| 8015AZ | S | "C10-C32 Hydrocarbons in Soil-8015AZ" |
| 8081A | NPW S | "Organochlorine Pesticides by Gas Chromatography" |
| 8082 | NPW S | "Polychlorinated Biphenyls (PCBs) by Gas Chromatography" |
| 8260B | NPW S | "Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)" |
| 8270C | NPW S | "Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)" |
| 8310 | NPW S | "Polynuclear Aromatic Hydrocarbons" |
| 9045C | S | "Soil and Waste pH" |
| 9060 | NPW | "Total Organic Carbon" |
| 9067 | NPW S | "Phenolics (Spectrophotometric, MBTH With Distillation)" |
| 9095 | S | Paint Filter |
| Walkley/Black | S | FOC/TOC WB |
| SM2320 B | DW NPW | "Alkalinity" |
| SM2540 B | NPW | "Total Solids Dried at 103-105° C" |
| SM2540 C | DW NPW | "Total Dissolved Solids Dried at 180° C" |
| SM2540 D | NPW | "Total Suspended Solids Dried at 103-105° C" |
| SM4500-H+B | DW NPW | "pH Value" |
| SM4500-NH3 C | NPW S | "4500-NH3" Ammonia |
| SM4500-Norg C | NPW S | "4500-Norg" Total Kjeldahl Nitrogen (TKN) |
| SM5310 B | DW | "5310" Total Organic Carbon (TOC) |
| 8000B | NPW S | "Determinative Chromatographic Separations" |
| 8000C | NPW S | "Determinative Chromatographic Separations" |

## Criteria for Standard Operating Procedures

HEAL has Standard Operating Procedures (SOPs) for each of the test methods listed above. These SOPs are based upon the listed methods and detail the specific procedure and equipment utilized as well as the quality requirements necessary to prove the integrity of the data. SOPs are reviewed or revised every twelve months or sooner if necessary. The review/revision is documented in the Master SOP Logbook filed in the QA/QC Office. All SOPs are available in the LIMS linked under the specific test method. Administrative SOPs, which are not linked in the LIMS, are available on desktops throughout the laboratory in the link to administrative SOPs folder.

Each HEAL test method SOP shall include or reference the following topics where applicable:

Identification of the test method;
Applicable matrix or matrices;
Limits of detection and quantitation;
Scope and application, including parameters to be analyzed;
Summary of the test method;
Definitions;
Interferences;
Safety;
Equipment and supplies;
Reagents and standards;
Sample collection, preservation, shipment and storage;
Quality control parameters;
Calibration and standardization;
Procedure;
Data analysis and calculations;
Method performance;
Pollution prevention;
Data assessment and acceptance criteria for quality control measures;
Corrective actions for out-of-control data;
Contingencies for handling out-of-control or unacceptable data;
Waste management;
References; and
Any tables, diagrams, flowcharts and validation data.

## 7.0 Calibration

All equipment and instrumentation used at HEAL are operated, maintained and calibrated according to manufacturers guidelines, as well as criteria set forth in applicable analytical methodology. Personnel who have been properly trained in their procedures perform operation and calibration. Brief descriptions of the calibration processes for our major laboratory equipment and instruments are found below.

### Thermometers

The thermometers in the laboratory are used to measure the temperatures of the refrigerators/freezers, ovens, water baths, hot blocks, ambient laboratory conditions, TCLP Extractions, digestion blocks and samples at the time of log-in. All NIST traceable thermometers are either removed from use upon their documented expiration date or they are checked annually with a NIST certified thermometer and a correction factor is noted on each thermometer log. See the most current Login SOP for detailed procedures on this calibration procedure.

Dickson Data Loggers are used to record sample and standard storage refrigerators over the weekend when the appropriate staff is not available to record the temperatures. These data loggers are shipped back to the manufacturer once a year to be re-calibrated.

### Refrigerators/Freezers

Each laboratory refrigerator or freezer contains a thermometer capable of measuring to a minimum precision of 1°C. The thermometers are kept with the bulb immersed in liquid. Each workday, the temperatures of the refrigerators are recorded in a designated logbook to insure that the refrigerators are within the required designated range. Samples are stored separately from the standards to reduce the risk of contamination.

See the current catastrophic Failure SOP for the procedure regarding how to handle failed refrigerators or freezers.

### Ovens

The ovens contain thermometers graduated by 1° C. The ovens are calibrated quarterly against NIST thermometers and checked daily as required and in which ever way is dictated by or appropriate for the method in use.

## Analytical and Table Top Balances

The table top balances are capable of weighing to a minimum precision of 0.01 grams. The analytical balances are capable of weighing to a minimum precision of 0.0001 grams. Records are kept of daily calibration checks for the balances in use. Working weights are used in these checks. The balances are annually certified by an outside source and the certifications are on file with the QA/QCO.

Balances, unless otherwise indicated by method specific SOPs, will be checked daily with at least two weights that will bracket the working range of the balance for the day. Daily balance checks will be done using working weights that are calibrated annually against Class S weights. Class S weights are calibrated as required by an external provider. The Class S weights are used once a year or more frequently if required, to assign values to the Working Weights. During the daily balance checks the working weights are compared to their assigned values and must pass in order to validate the calibration of the balance. The assigned values for the working weights, as well as the daily checks, are recorded in the balance logbook for each balance.

## Instrument Calibration

An instrument calibration is the relationship between the known concentrations of a set of calibration standards introduced into an analytical instrument and the measured response they produce. Calibration curve standards are a prepared series of aliquots at various known concentrations levels from a primary source reference standard. Specific mathematical types of calibration techniques are outlined in SW-846 8000B and/or 8000C. The entire initial calibration must be performed prior to sample analyses.

The lowest standard in the calibration curve must be at or below the required reporting limit.

Refer to the current SOP to determine the minimum requirement for calibration points.

Most compounds tend to be linear and a linear approach should be favored when linearity is suggested by the calibration data. Non-linear calibration should be considered only when a linear approach cannot be applied. It is not acceptable to use an alternate calibration procedure when a compound fails to perform in the usual manner. When this occurs it is indicative of instrument issues or operator error.

If a non-linear calibration curve fit is employed, a minimum of six calibration levels must be used for second-order (quadratic) curves.

When more than 5 levels of standards are analyzed in anticipation of using second-order calibration curves, all calibration points MUST be used regardless of the calibration option employed. The highest or lowest calibration point may be excluded for the purpose of

narrowing the calibration range, and meeting the requirements for a specific calibration option. Otherwise, unjustified exclusion of calibration data is expressly forbidden.

Analytical methods vary in QC acceptance criteria. HEAL follows the method specific guidelines for QC acceptance. The specific acceptance criteria are outlined in the analytical methods and its corresponding SOP.

**pH Meter**

The pH meter measures to a precision of 0.01 pH units. The pH calibration logbook contains the calibration before each use, or each day, if used more than once per day. It is calibrated using a minimum of 3 certified buffers. Also available with the pH meter is a magnetic stirrer with a temperature sensor. See the current pH SOP (SM4500 H+ B) for specific details regarding calibration of the pH probe.

**Other Analytical Instrumentation and Equipment**

The conductivity probe is calibrated as needed and checked daily when in use.

Eppendorf (or equivalent brands) pipettes are checked gravimetrically prior to use.

**Standards**

All of the source reference standards used are ordered from a reliable commercial vendor. A Certificate of Analysis (CoA), which verifies the quality of the standard, accompanies the standards from the vendor. The Certificates of Analysis are dated and stored on file by the Technical Directors or their designee. These standards are traceable to the National Institute of Standards (NIST). When salts are purchased and used as standards the certificate of purity must be obtained from the vendor and filed with the CoAs.

All standard solutions, calibration curve preparations, and all other quality control solutions are labeled in a manner that can be traced back to the original source reference standard. All source reference standards are entered into the LIMS with an appropriate description of the standard. Dilutions of the source reference standard (or any mixes of the source standards) are fully tracked in the LIMS. Standards are labeled with the date opened for use, and an expiration date.

As part of the quality assurance procedures at HEAL, analysts strictly adhere to manufacture recommendations for storage times/expiration dates and policies of analytical standards and quality control solutions.

**Reagents**

HEAL ensures that the reagents used are of acceptable quality for their intended purpose. This is accomplished by ordering high quality reagents and adhering to good laboratory practices so as to minimize contamination or chemical degradation. All reagents must meet any specifications noted in the analytical method. Refer to the current Purchase of Consumables SOP for details on how this is accomplished and documented.

Upon receipt, all reagents are assigned a separate ID number, and logged into the LIMS. All reagents shall be labeled with the date received into the laboratory and again with the date opened for use. Recommended shelf life shall be documented and controlled. Dilutions or solutions prepared shall be clearly labeled, dated, and initialed. These solutions are traceable back to their primary reagents.

All gases used with an instrument shall meet specifications of the manufacturer. All safety requirements that relate to maximum and/or minimum allowed pressure, fitting types, and leak test frequency, shall be followed. When a new tank of gas is placed in use, it shall be checked for leaks and the date put in use will be written in the instrument maintenance logbook.

HEAL continuously monitors the quality of the reagent water and provides the necessary indicators for maintenance of the purification systems in order to assure that the quality of laboratory reagent water meets established criteria for all analytical methods.

Reagent blank samples are also analyzed to ensure that no contamination is present at detectable levels. The frequency of reagent blank analysis is typically the same as calibration verification samples. Refrigerator storage blanks are stored in the volatiles refrigerator for a period of one week and analyzed and replaced once a week.

## 8.0 Maintenance

Maintenance logbooks are kept for each major instrument and all support equipment in order to document all repair and maintenance. In the front of the logbook, the following information is included:

Unique name of the item or equipment
Manufacturer
Type of Instrument
Model Number
Serial Number
Date received and date placed into service
Location of Instrument
Condition of instrument upon receipt

For routine maintenance, the following information shall be included in the log:

Maintenance Date
Maintenance Description
Maintenance Performed by Initials

A manufacturer service agreement (or equivalent) covers most major instrumentation to assure prompt and reliable response to maintenance needs beyond HEAL instrument operator capabilities.

Refer to the current Maintenance and Troubleshooting SOP for each section in the laboratory for further information.

## 9.0 Data Integrity

For HEAL's policy on ethics and data integrity see section 3.0 of this document. Upon being hired and annually there after, all employees at HEAL undergo documented data integrity training. All new employees sign an Ethics and Data Integrity Agreement, documenting their understanding of the high standards of integrity required at HEAL and outlining their responsibilities in regards to ethics and data integrity. See Appendix H for a copy of this agreement.

In instances of ethical concern analysts are required to report the known or suspected concern to their Technical Director, the Laboratory Manager or the QA/QCO. This will be done in a confidential and receptive environment, allowing all employees to privately discuss ethical issues or report items of ethical concern.

Once reported and documented the ethical concern will be immediately elevated to the Laboratory Manager and the need for an investigation, analyst remediation or termination will be determined on a case by case basis.

All reported instances of ethical concern will be thoroughly documented and handled in a manner sufficient to rectify any breaches in data integrity with an emphasis on preventing similar incidences from happening in the future.

## 10.0 Quality Control

### Internal Quality Control Checks

HEAL utilizes various internal quality control checks, including duplicates, matrix spikes, matrix spike duplicates, method blanks, laboratory control spikes, laboratory control spike duplicates, surrogates, internal standards, calibration standards, quality control charts, proficiency tests and calculated measurement uncertainty.

Refer to the current method SOP to determine the frequency and requirements of all quality controls. In the event that the frequency of analysis is not indicated in the method specific SOP, duplicate samples, laboratory control spikes (LCS), Method Blanks (MB) and matrix spikes and matrix spike duplicates (MS/MSD) are analyzed for every batch of twenty samples.

When sample volume is limited on a test that requires an MS/MSD an LCSD shall be analyzed to demonstrate precision and accuracy and when possible a sample duplicate will be analyzed.

Duplicates are identical tests repeated for the same sample or matrix spike in order to determine the precision of the test method. A Relative Percent Difference (RPD) is calculated as a measure of this precision. Unless indicated in the SOP, the default acceptance limit is </= 20%.

Matrix Spikes and Matrix Spike Duplicates are spiked samples (MS/MSD) that are evaluated with a known added quantity of a target compound. This is to help determine the accuracy of the analyses and to determine the matrix affects on analyte recovery. A percent recovery is calculated to assess the quality of the accuracy. In the event that the acceptance criteria is not outlined in the SOP, a default limits of 70-130% will be utilized. When an MSD is employed an RPD is calculated and when not indicated in the SOP shall be acceptable at </= 30%.

When appropriate for the method, a Method Blank should be analyzed with each batch of samples processed to assess contamination levels in the laboratory. MBs consist of all the reagents measured and treated as they are with samples, except without the samples. This enables the laboratory to ensure clean reagents and procedures. Guidelines should be in place for accepting or rejecting data based on the level of contamination in the blank. In the event that these guidelines are not dictated by the SOP or in client specific work plans, the MB should be less than the MDL reported for the analyte being reported.

A Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) are reagent blanks, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is generally used to establish intra-laboratory or analyst-specific precision and bias or to assess the performance of all or a portion of the measurement system. Guidelines are outlined in each

SOP for the frequency and pass fail requirements for LCS and LCSDs. These limits can be set utilizing control charts as discussed below.

Surrogates are utilized when dictated by method and are substances with properties that mimic the analytes of interest. The surrogate is an analyte that is unlikely to be found in environmental samples. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for surrogates.

Internal Standards are utilized when dictated by the method and are known amounts of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for Internal Standards.

Proficiency Test (PT) Samples are samples provided by an unbiased third party. They are typically analyzed twice a year, or at any other interval defined in the method SOP. They contain a pre-determined concentration of the target compound, which is unknown to HEAL. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates and other procedures as used when analyzing routine samples.

With regards to analyzing PT Samples HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seek accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall not attempt to obtain the assigned value of any PT sample from the PT Provider.

Calibration standards are standards run to calibrate. Once the calibration is established the same standards can be analyzed as Continuing Calibration Verifications (CCV), used to confirm the consistency of the instrumentation. Calibration standards can be utilized at the beginning and end of each batch, or more frequently as required. Typically Continuing Calibration Blanks (CCB) are run in conjunction with CCVs. Refer to the current method SOP for frequency and pass/fail requirements of CCVs and CCBs.

Control Limits are limits of acceptable ranges of the values of quality control checks. If a value falls outside the appropriate range, immediate evaluation and assessment of the procedure is required. Data generated with laboratory control samples that fall outside of the established control limits are judged to be generated during an "out-of-control" situation. These data are considered suspect and shall be repeated or reported with qualifiers.

Control limits should be established and updated according to the requirements of the method being utilized. When the method does not specify, and control limits are to be generated or updated for a test, the following guidelines shall be utilized.

Control Limits should be updated periodically and at least annually. The Limits should be generated utilizing the most recent 20-40 data values and Control Charts should be printed when these limits are updated in the LIMS. The data values used shall not reuse values that were included in the previous Control Limit update. The data values shall also be reviewed by the LIMS for any Grubbs Outliers, and if identified, the outliers must be removed prior to generating new limits. Once new Control Limits have been established and updated in the LIMS, the printed Control Chart shall be reviewed by the appropriate technical director and primary analyst performing the analysis for possible trends and compared to the previous Control Charts. The technical director initials the control charts, indicating that they have reviewed and determined the updated Limits to be accurate and appropriate. These initialed charts are then filed in the QA/QCO office.

Calculated Measurement Uncertainty is calculated annually using LCSs in order to determine the laboratory specific uncertainty associated with each test method. These uncertainty values are available to our clients upon request and are utilized as a trending tool internally to determine the effectiveness of new variables introduced into the procedure over time.

## Precision, Accuracy, Detection Levels

### Precision

The laboratory uses sample duplicates, laboratory control spike duplicates and matrix spike duplicates to assess precision in terms of relative percent difference (RPD). HEAL requires the RPD to fall within the 99% confidence interval of established control charts or an RPD of less than 30% if control charts are not available. RPD's greater than these limits are considered out-of-control and require an appropriate response.

$$RPD = 2 \frac{x \text{ (Sample Result – Duplicate Result)}}{\text{(Sample Result + Duplicate Result)}} X\ 100$$

### Accuracy

The accuracy of an analysis refers to the difference between the calculated value and the actual value of a measurement. The accuracy of a laboratory result is evaluated by comparing the measured amount of QC reference material recovered from a sample and the known amount added. Control limits can be established for each analytical method and sample matrix. Recoveries are assessed to determine the method efficiency and/or the matrix effect.

Analytical accuracy is expressed as the percent recovery (%R) of an analyte or parameter. A known amount of analyte is added to an environmental sample before the sample is prepared and subsequently analyzed. The equation used to calculate percent recovery is:

%Recovery = {(concentration* recovered)/(concentration* added)} X 100

*or amount

HEAL requires that the Percent Recovery to fall within the 99 % confidence interval of established control limits. A value that falls outside of the confidence interval requires a warning and process evaluation. The confidence intervals are calculated by determining the mean and sample standard deviation. If control limits are not available, the range of 70 to 130% is used unless the specific method dictates otherwise. Percent Recoveries outside of this range mandate additional action such as analyses by Method of Standard Additions, additional sample preparation(s) where applicable, method changes, out-of-control action or data qualification.

**Detection Limit**

Current practices at HEAL define the Detection Limit (DL) as the smallest amount that can be detected above the baseline noise in a procedure within a stated confidence level.

HEAL presently utilizes an Instrument Detection Limit (IDL), a Method Detection Limit (MDL), and a Practical Quantitation Limit (PQL). The relationship between these levels is approximately
IDL: MDL: PQL = 1:5:5.

The IDL is a measure of the sensitivity of an analytical instrument. The IDL is the amount which, when injected, produces a detectable signal in 99% of the analyses at that concentration. An IDL can be considered the minimum level of analyte concentration that is detectable above random baseline noise.

The MDL is a measure of the sensitivity of an analytical method. An MDL determination (as required in 40CFR part 136 Appendix B) consists of replicate spiked samples carried through all necessary preparation steps. The spike concentration is three times the standard deviation of three replicates of spikes. At least seven replicates are spiked and analyzed and their standard deviation (s) calculated. Routine variability is critical in passing the 10 times rule and is best achieved by running the MDLs over different days and when possible over several calibration events. The method detection limit (MDL) can be calculated using the standard deviation according to the formula:

$$MDL = s * t\ (99\%)$$

Where t (99%) is the student's t value for the 99% confidence interval. It depends on the number of trials used in calculating the sample standard deviation, so choose the appropriate value according to the number of trials.

| Number of Trials | t(99%) |
|---|---|
| 6 | 3.36 |
| 7 | 3.14 |
| 8 | 3.00 |
| 9 | 2.90 |

The calculated MDL must not be less than 10 times the spiked amount or the study must be performed again with a lower concentration.

The PQL is significant because different laboratories can produce different MDLs although they may employ the same analytical procedures, instruments and sample matrices. The PQL is about two to five times the MDL and represents a practical, and routinely achievable, reporting level with a good certainty that the reported value is reliable. It is often determined by regulatory limits. The reported PQL for a sample is dependent on the dilution factor utilized during sample analysis.

## Quality Control Parameter Calculations

### Mean

The sample mean is also known as the arithmetic average. It can be calculated by adding all of the appropriate values together, and dividing this sum by the number of values.

$$Average = (\Sigma x_i) / n$$

$x_i$ = the value x in the $i^{th}$ trial
n = the number of trials

### Standard Deviation

The sample standard deviation, represented by s, is a measure of dispersion. The dispersion is considered to be the difference between the average and each of the values $x_i$. The variance, $s^2$, can be calculated by summing the squares of the

differences and dividing by the number of differences. The sample standard deviation, s, can be found by taking the square root of the variance.

$$\text{Standard deviation} = s = [\Sigma (x_i - \text{average})^2 / (n - 1)]^{1/2}$$

**Percent Recovery (MS, MSD, LCS and LCSD)**

$$\text{Percent Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{(\text{Spike Added})} \times 100$$

**Control Limits**

Control Limits are calculated by the LIMS using the average percent recovery (x), and the standard deviation (s).

$$\text{Upper Control Limit} = x + 3s$$
$$\text{Lower Control Limit} = x - 3s$$

These control limits approximate a 99% confidence interval around the mean recovery.

**RPD (Relative Percent Difference)**

Analytical precision is expressed as a percentage of the difference between the results of duplicate samples for a given analyst. Relative percent difference (RPD) is calculated as follows:

$$\text{RPD} = \frac{2 \times (\text{Sample Result} - \text{Duplicate Result})}{(\text{Sample Result} + \text{Duplicate Result})} \times 100$$

**Uncertainty Measurements**

Uncertainty, as defined by ISO, is the parameter associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement. Ultimately uncertainty measurements are used to state how good a test result is and to allow the end user of data to properly interpret their reported data. All procedures allow for some uncertainty. For most analyses the components and estimates of uncertainty are reduced by following well established test methods. To further reduce uncertainty, results are generally not reported below

the lowest calibration point (PQL) or above the highest calibration point (UQL). Understanding that there are many influence quantities affecting a measurement result, so many in fact that it is impossible to identify all of them, HEAL calculates measurement uncertainty at least annually using LCSs. These estimations of measurement uncertainty are kept on file in the method folders in the QA/QC office.

Measurement Uncertainty contributors are those that may be determined statistically. These shall be generated by estimating the overall uncertainty in the entire analytical process by measuring the dispersion of values obtained from laboratory control samples over time. At least 20 of the most recent LCS data points are gathered. The standard deviation (s) is calculated using these LCSs data points. Since it can be assumed that the possible estimated values of the spikes are approximately normally distributed with approximate standard deviation (s), the unknown value of the spike is believed to lie in 95% confidence interval, corresponding to an uncertainty range of +/- 2(s).

Calculate standard deviation (s) and 95% confidence interval according to the following formulae:

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{(n-1)}}$$

Where: s = standard deviation
x = number in series
$\bar{x}$ = calculated mean of series
$n$ = number of samples taken

$$95\%\ confidence = 2 \times s$$

Example: Assuming that after gathering 20 of the most recent LCS results for Bromide, we have calculated the standard deviations of the values and achieved a result of 0.0326, our measurement uncertainty for Bromide (at 95% confidence = 2 x s) is 0.0652.

**Calibration Calculations**

1. Response Factor or Calibration Factor:

$RF = ((A_x)(C_{is}))/((A_{is})(C_x))$ $CF=(A_x)/(C_x)$

a. Average RF or CF

$RF_{AVE} = \Sigma RF_i / n$

b. Standard Deviation

$s = SQRT \{ [ \Sigma (RF_i - RF_{AVE} )^2 ] / (n-1) \}$

c. Relative Standard Deviation

$RSD = s / RF_{AVE}$

Where:
$A_x$ = Area of the compound
$C_x$ = Concentration of the compound
$A_{is}$ = Area of the internal standard
$C_{is}$ = Concentration of the internal standard
n = number of pairs of data
$RF_i$ = Response Factor (or other determined value)
$RF_{AVE}$ = Average of all the response factors
$\Sigma$ = the sum of all the individual values

2. Linear Regression

$y=mx+b$

a. Slope (m)

$m =( n\Sigma x_i y_i - (n\Sigma x_i)*(n\Sigma y_i) ) / (n\Sigma x_i^2 - (\Sigma x_i)^2)$

b. Intercept (b)

$b =y_{AVE} - m*(x_{AVE})$

c. Correlation Coefficient (cc)

$CC (r) =\{ \Sigma((x_i-x_{ave})*(y_i-y_{ave})) \} / \{ SQRT((\Sigma(x_i-x_{ave})^2)*(\Sigma(y_i-y_{ave})^2)) \}$

Or

$CC\ (r) = [(\Sigma w * \Sigma wxy) - (\Sigma wx * \Sigma wy)] / (sqrt( ( [(\Sigma w * \Sigma wx^2) - (\Sigma wx * \Sigma wx)] * [(\Sigma w * \Sigma wy^2) - (\Sigma wy * \Sigma wy)])))]$

d. Coefficient of Determination

$COD\ (r^2) = CC*CC$

Where:
y = Response (Area) Ratio $A_x/A_{is}$
x = Concentration Ratio $C_x/C_{is}$
m = slope
b = intercept
n = number of replicate x,y pairs
$x_i$ = individual values for independent variable
$y_i$ = individual values for dependent variable
$\Sigma$ = the sum of all the individual values
$x_{ave}$ = average of the x values
$y_{ave}$ = average of the y values
w = weighting factor, for equal weighting w=1

3. Quadratic Regression

$y = ax^2 + bx + c$

a. Coefficient of Determination

$$COD\ (r^2) = ( \Sigma(y_i-y_{ave})^2 - \{[(n-1)/(n-p)] * [\Sigma(y_i-Y_i)^2]\} ) / \Sigma(y_i-y_{ave})^2$$

Where:
y = Response (Area) Ratio $A_x/A_{is}$
x = Concentration Ratio $C_x/C_{is}$
a = $x^2$ coefficient
b = x coefficient
c = intercept
$y_i$ = individual values for each dependent variable
$x_i$ = individual values for each independent variable
$y_{ave}$ = average of the y values
n = number of pairs of data
p = number of parameters in the polynomial equation (I.e., 3 for third order, 2 for second order)
Yi = $((2*a*(C_x/C_{is})\text{^}2)-b\text{^}2+b+(4*a*c))/(4a)$

b. Coefficients (a,b,c) of a Quadratic Regression

$$a = S_{(x2y)}S_{(xx)}-S_{(xy)}S_{(xx2)} / S_{(xx)}S_{(x2x2)}-[S_{(xx2)}]^2$$

$$b = S_{(xy)}S_{(x2x2)}-S_{(x2y)}S_{(xx2)} / S_{(xx)}S_{(x2x2)}-[S_{(xx2)}]^2$$

$$c = [(\Sigma yw)/n] - b*[(\Sigma xw)/n] - a*[\Sigma(x^2w)/n]$$

Where:
n = number of replicate x,y pairs
x = x values
y = y values
$w = S^{-2} / (\Sigma S^{-2}/n)$
$S_{(xx)} = (\Sigma x^2w) - [(\Sigma xw)^2 / n]$
$S_{(xy)} = (\Sigma xyw) - [(\Sigma xw)*(\Sigma yw) / n]$
$S_{(xx2)} = (\Sigma x^3w) - [(\Sigma xw)*(\Sigma x^2w) / n]$
$S_{(x2y)} = (\Sigma x^2yw) - [(\Sigma x^2w)*(\Sigma yw) / n]$
$S_{(x2x2)} = (\Sigma x^4w) - [(\Sigma x^2w)^2 / n]$
Or If unweighted calibration, w=1
S(xx) = (Sx2) - [(Sx)2 / n]
S(xy) = (Sxy) - [(Sx)*(Sy) / n]
S(xx2) = (Sx3) - [(Sx)*(Sx2) / n]
S(x2y) = (Sx2y) - [(Sx2)*(Sy) / n]
S(x2x2) = (Sx4) - [(Sx2)2 / n]

## 11.0 Data Reduction, Validation, Reporting, and Record Keeping

All data reported must be of the highest possible accuracy and quality. During the processes of data reduction, validation, and report generation, all work is thoroughly checked to insure that error is minimized.

### Data Reduction

The analyst who generated the data usually performs the data reduction. The calculations include evaluation of surrogate recoveries (where applicable), and other miscellaneous calculations related to the sample quantitation.

If the results are computer generated, then the formulas must be confirmed by hand calculations, at minimum, one per batch.

See the current Data Validation SOP for details regarding data reduction.

### Validation

A senior analyst, most often the section supervisor, validates the data. All data undergoes peer review. If an error is detected it is brought to the analyst attention to rectify and further checks ensure that all data for that batch is sound. Previous and/or common mistakes are stringently monitored throughout the validation process. Data is reported using appropriate significant figure criteria. In most cases, two significant digits are utilized, but three significant digits can be used in QC calculations. Significant digits are not rounded until after the last step of a sample calculation. All final reports undergo a review by the laboratory manager, or the project manager or their designee, to provide a logical review of all results before they are released to the client.

If data is to be manually transferred from one medium to another, the transcribed data is checked by a peer. This includes data typing, computer data entry, chromatographic data transfer, data table inclusion to a cover letter, or when data results are combined with other data fields.

All hand written data from run logs, analytical standard logbooks, hand entered data logbooks, or on instrument generated chromatograms, are systematically archived should the need for future retrieval arise.

See the current Data Validation SOP for detail regarding data validation.

## Reports and Records

All records at HEAL are retained and maintained through the procedures outlined in the most recent version of the Records Control SOP.

The reports are compiled by the Laboratory Information Management System (LIMS). Most data is transferred directly from the instruments to the LIMS. After being processed by the analyst and reviewed by a data reviewer, final reports are approved and signed by the senior laboratory management. A comparative analysis of the data is performed at this point. For example, if TKN and NH3 are analyzed on the same sample the NH3 result should never be greater than the TKN result. Lab results and reports are released only to appropriately designated individuals. Release of the data can be by fax, email, electronic deliverables or mailed hard copy.

When a project is completed, the project file folder is stored with a hard copy of the report, relevant supporting data, and the quality assurance/control worksheets. These folders are kept on file and are arranged by project number. Additionally, all electronic data is backed up daily on the HEAL main server. The backup includes raw data, chromatograms and report documents. Hard copies of chromatograms are stored separately according to the instrument and the analysis date. All records and analytical data reports are retained in a secure location as permanent records for a minimum period of five years (unless specified otherwise in a client contract). Access to archived information shall be documented with an access log. Access to archived electronic reports and data will be protected by a project manager password. In the event that HEAL transfers ownership or terminates business practices, complete records will be maintained or transferred according to the client's instructions.

After issuance, the original report shall remain unchanged. If a correction to the report is necessary, then an additional document shall be issued. This document shall have a title of "Addendum to Test Report or Correction to Original Report", or equivalent. Demonstration of original report integrity comes in two forms. First, the report date is included on each page of the final report. Second, each page is numbered in sequential order, making the addition or omission of any data page(s) readily detectable.

## 12.0 Corrective Action

Refer to the most recent version of the Data Validation SOP for the procedure utilized in filling out a Corrective Action Report. A blank copy of the corrective action report is available in the Appendix.

The limits that have been defined for data acceptability also form the basis for corrective action initiation. Initiation of corrective action occurs when the data generated from continuing calibration standard, sample surrogate recovery, laboratory control spike, matrix spike or sample duplicates exceed acceptance criteria. If corrective action is necessary, the analyst or the section supervisor will coordinate to take the following steps to determine and correct the measurement system deficiency:

Check all calculations and data measurements systems (Calibrations, reagents, instrument performance checks etc.).

Assure that proper procedures were followed.

Unforeseen problems that arise during sample preparation and/or sample analysis that lead to treating a sample differently from documented procedures shall be documented with a corrective action report. The section supervisor and laboratory manager shall be made aware of the problem at the time of the occurrence. See the appropriate SOP regarding departures from documented procedures.

Continuing calibration standards below acceptance criteria can not be used for reporting analytical data unless method specific criteria states otherwise.

Continuing calibration standards above acceptance criteria can be used to report data so long as the failure is isolated to a single standard and the corresponding samples are non-detect for the failing analyte.

Samples with non-compliant surrogate recoveries should be reanalyzed unless deemed un-necessary by the supervisor for matrix, historical data or other analysis related anomalies.

Laboratory and Matrix Spike acceptance criteria vary significantly depending on method and matrix. Analysts and supervisors meet and discuss appropriate corrective action measures as spike failures occur.

Sample duplicates with RPD values outside control limits require supervisor evaluation and possible reanalysis.

A second mechanism for initiation of corrective action is that resulting from Quality Assurance performance audits, system audits, inter and intra-laboratory comparison studies. Corrective Actions initiated through this mechanism will be monitored and coordinated by the laboratory QA/QCO.

All corrective action forms are entered in the LIMS and included with the raw data for peer review, signed by the technical director of the section and included in the case narrative to the client whose samples were affected. All Corrective action forms in the LIMS are reviewed by the QA/QCO.

## 13.0 Quality Assurance Audits, Reports and Complaints

### Internal/External Systems' Audits, Performance Evaluations, and Complaints

Several procedures are used to assess the effectiveness of the quality control system. One of these methods includes internal performance evaluations, which are conducted by the use of control samples, replicate measurements and control charts. Another method is external performance audits, which are conducted by the use of inter-laboratory checks, such as participation in laboratory evaluation programs and performance evaluation samples available from a NELAC accredited Proficiency Standard Vendor.

Proficiency samples will be obtained twice per year from an appropriate vendor for all tests and matrices for which we are accredited and for which there are PTs available. HEAL participates in soil, waste water, drinking water and underground storage tank PT studies. Copies of results are available upon request. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates and other procedures as used when analyzing routine samples.

With regards to analyzing PT Samples HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seeks accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall no attempt to obtain the assigned value of any PT sample from the PT Provider.

Internal Audits are performed annually by the QA/QCO in accordance with the current Internal Audit SOP. They are performed using the guidelines outlined below:

The system audit consists of a qualitative inspection of the QA system in the laboratory and an assessment of the adequacy of the physical facilities for sampling, calibration, and measurement. This audit includes a careful evaluation and review of laboratory quality control procedures. Including but not limited to:

1. Review of staff qualifications, demonstration of capability, and personnel training programs
2. Storage and handling of reagents, standards and samples
3. Standard preparation logbook and LIMS procedures
4. Extraction logbooks
5. Raw data logbooks
6. Analytical logbooks or batch printouts and instrument maintenance logbooks

7. Data review procedures
8. Corrective action procedures
9. Review of data packages is performed regularly by the lab manager/QA Officer.

The QA/QCO will conduct these audits on an annual basis.

**Management Reviews**

HEAL management shall periodically, and at least annually, conduct a review of the laboratory's quality system and environmental testing activities to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements. The review shall take account of:

1. the suitability and implementation of policies and procedures
2. reports from managerial and supervisory personnel
3. the outcome of recent internal audits
4. corrective and preventive actions
5. assessments by external bodies
6. the results of inter-laboratory comparisons or proficiency tests
7. changes in volume and type of work
8. client feed back
9. complaints
10. other relevant factors, such as laboratory health and safety, QC activities, resources and staff training.

Findings from management reviews and the actions that arise from them shall be recorded and any corrective actions that arise shall be completed in an appropriate and agreed upon timescale.

**Complaints**

Complaints from clients are documented and given to the laboratory manager. The lab manager shall review the information and contact the client. If doubt is raised concerning the laboratories policies or procedures, then an audit of the section or sections may be performed. All records of complaints and subsequent actions shall be maintained in the client compliant logbook for 5 years unless otherwise stated.

**Internal and External Reports**

The QA/QCO is responsible for preparation and submission of quality assurance reports to the appropriate management personnel as problems and issues arise. These reports include the assessment of measurement systems, data precision and accuracy, and the results of performance and system audits. Additionally, they also include significant QA

problems, corrective actions, and recommended resolution measures. Reports of these Quality Assurance Audits describe the particular activities audited, procedures utilized in the examination and evaluation of laboratory records, and data validation procedures. Finally, there are procedures for evaluating the performance of Quality Control and Quality Assurance activities, and laboratory deficiencies and the implementation of corrective actions with the review requirements.

**References (Analytical Protocols Utilized at HEAL)**


1. Standard Methods for the Examination of Water and Wastewater: AOHA, AWWA, and WPCG; 20th Edition, 1999.

2. Methods for Chemical Analysis of Water and Wastes, USEPA, EPA-600/4-79-020, March 1979 and as amended December, 1982 (EPA-600/4-82-055)

3. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, USEPA SW-846, 3rd Edition, Updates I, II, IIA, IIB, III, December, 1996.

4. Methods of Soil Analysis: Parts 1 & 2, 2nd Edition, Agronomy Society of America, Monograph 9

5. Diagnosis & Improvement of Saline & Alkali Soils, Agriculture Handbook No. 60, USDA, 1954

6. Handbook on Reference Methods for Soil Testing, The Council on Soil Testing & Plant Analysis, 1980 and 1992

7. Field and Laboratory Methods Applicable to Overburdens and Mine Soils, USEPA, EPA-600/2-78-054, March 1978

8. Laboratory Procedures for Analyses of Oilfield Waste. Department of Natural Resources, Office of Conservation, Injection and Mining Division, Louisiana, August 1988

9. Soil Testing Methods Used at Colorado State University for the Evaluation of Fertility, Salinity and Trace Element Toxicity, Technical Bulletin LT B88-2 January, 1988

10. Manual of Operating Procedures for the Analysis of Selected Soil, Water, Plant Tissue and Wastes Chemical and physical Parameter. Soil, Water, and Plant Analysis Laboratory, Dept. of Soil and Water Science, The University of Arizona, August 1989

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12. Procedures for Collecting Soil Samples and Methods of Analysis for Soil Survey. USDA Soil Conservation Service, SSIR No. 1.

13. Soil Survey Laboratory Methods Manual. Soil Survey Laboratory Staff. Soil Survey Investigations Report No. 42, version 2.0, August 1992.

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15. The Merck Index, Eleventh Edition, Merck & Co., Inc. 1989.

16. Handbook of Chemistry and Physics, 62nd Edition, CRC Press, Inc. 1981-1982.

17. Analytical Chemistry of PCB's. Erickson, Mitchell D., CRC Press, Inc. 1992.

18. Environmental Perspective on the Emerging Oil Shale Industry, EPA Oil & Shale Research Group.

19. Polycyclic Aromatic Hydrocarbons in Water Systems, CRC Press, Inc.

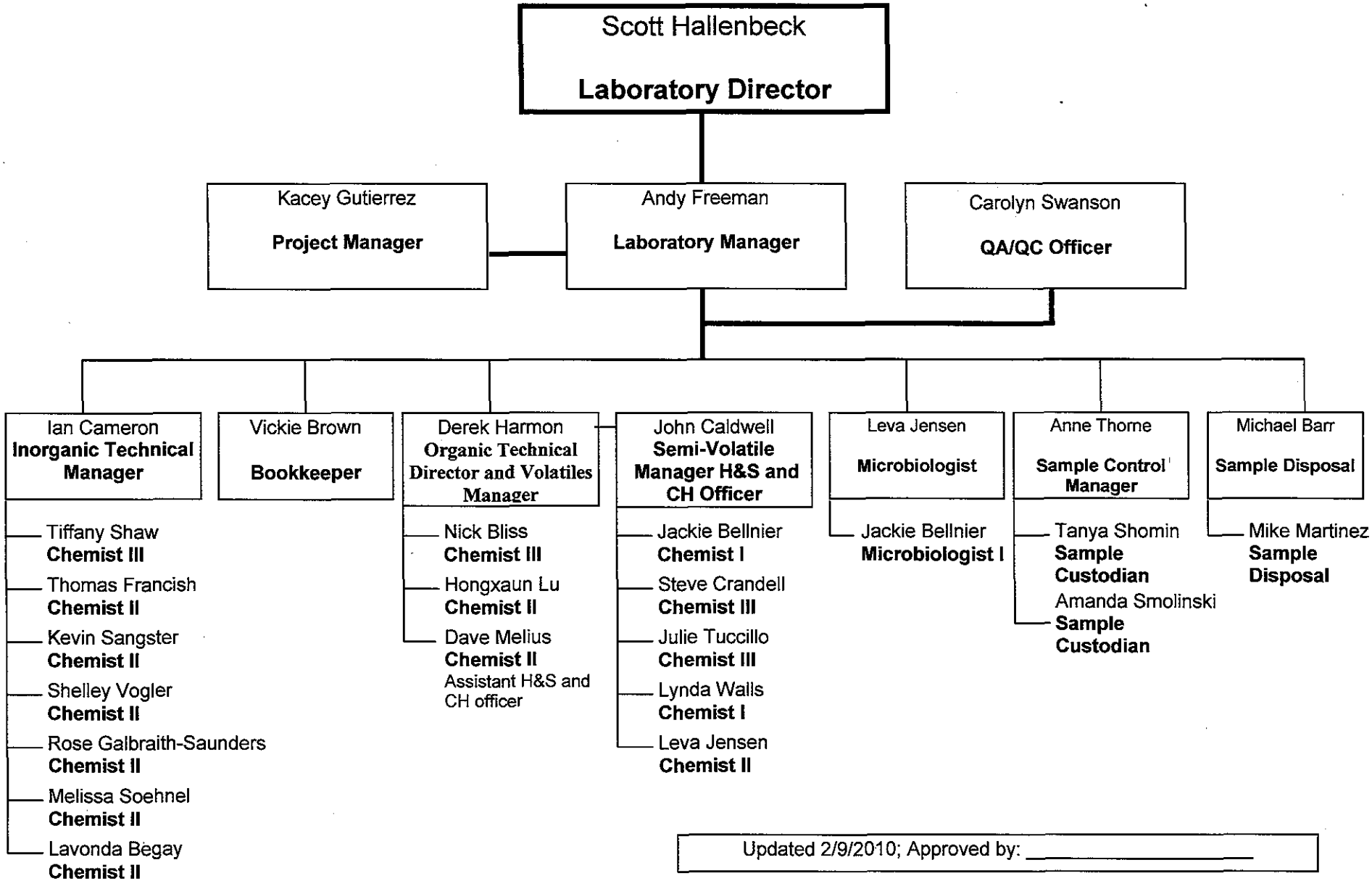
20. Quality Systems for Analytical Services, Revision 2.2, U.S. Department of Energy, October 2006.

21. Manual for the Certification of Laboratories Analyzing Drinking Water, Criteria and procedures Quality Assurance Fifth Edition, U.S. Environmental Protection Agency, January 2005.

22. Technical Notes on Drinking Water Methods, U.S. Environmental Protection Agency, October 1994.

# Appendix A
## Personnel Chart / Organizational Structure

# Diagram of Organizational Structure




Updated 2/9/2010; Approved by: _____

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

September 10, 2013

Michael Marcus

Tetra Tech, Inc.
6121 Indian School Road NE
Ste. 205
Albuquerque, NM 87110
TEL: (505)881-3188
FAX (505) 881-3283

RE: BGNDRF Soil Samples 7/31/2013 OrderNo.: 1308113

Dear Michael Marcus:

Hall Environmental Analysis Laboratory received 40 sample(s) on 8/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-001
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 7.6 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 7:24:10 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 5000 | | mg/Kg | 50 | 8/20/2013 11:18:02 AM | 8804 |
| Magnesium | 9800 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 9:22:20 AM | 8804 |
| Sodium | 1500 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 9:22:20 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 420 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 16 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 4100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.1 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-002
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.48 | 1.5 | J | mg/Kg | 5 | 8/5/2013 7:48:59 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 190000 | 24 | 5000 | | mg/Kg | 50 | 8/20/2013 11:20:28 AM | 8804 |
| Magnesium | 7200 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 9:31:23 AM | 8804 |
| Sodium | 640 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 9:29:07 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 8.2 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.81 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.0 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-003
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.2 | 0.48 | 1.5 | J | mg/Kg | 5 | 8/5/2013 8:13:49 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 190000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:23:01 AM | 8804 |
| Magnesium | 14000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 9:35:54 AM | 8804 |
| Sodium | 620 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 9:35:54 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 100 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 4.5 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 4400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.66 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.61 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 1 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 8:30:00 AM
**Lab ID:** 1308113-004
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.2 | 0.48 | 1.5 | J | mg/Kg | 5 | 8/5/2013 8:38:38 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 160000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:25:27 AM | 8804 |
| Magnesium | 23000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 9:40:30 AM | 8804 |
| Sodium | 570 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 9:38:12 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 3.9 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.88 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-005 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 9.7 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 9:03:28 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:35:56 AM | 8804 |
| Magnesium | 11000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 9:52:00 AM | 8804 |
| Sodium | 2100 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 9:52:00 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 350 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 19 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.82 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 4.2 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-006 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.9 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 9:53:06 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:38:23 AM | 8804 |
| Magnesium | 11000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 9:56:38 AM | 8804 |
| Sodium | 1900 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 9:56:38 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 310 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 15 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.1 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-007
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.0 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 10:17:56 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:40:49 AM | 8804 |
| Magnesium | 11000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:02:20 AM | 8804 |
| Sodium | 2000 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:02:20 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 310 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 15 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6800 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.77 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.6 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-008
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.3 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 10:42:46 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 170000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:43:18 AM | 8804 |
| Magnesium | 8100 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:06:52 AM | 8804 |
| Sodium | 670 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:06:52 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 11 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.95 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.46 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 100-125 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-009
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 9:35:15 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 160000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:45:45 AM | 8804 |
| Magnesium | 16000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:11:25 AM | 8804 |
| Sodium | 630 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:11:25 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 110 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 6.4 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.98 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 125-150 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-010
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.2 | 0.48 | 1.5 | | mg/Kg | 5 | 8/5/2013 11:32:26 PM | 8731 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:48:12 AM | 8804 |
| Magnesium | 18000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:22:49 AM | 8804 |
| Sodium | 1200 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:22:49 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 100 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 16 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.96 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 150-175 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-011
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 0.45 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 12:16:40 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 140000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:50:45 AM | 8804 |
| Magnesium | 19000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:27:24 AM | 8804 |
| Sodium | 600 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 10:25:06 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 100 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 14 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.09 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 175-200 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-012
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.9 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 1:43:32 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:53:12 AM | 8804 |
| Magnesium | 14000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:31:59 AM | 8804 |
| Sodium | 2100 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:31:59 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 170 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 30 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 7100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.10 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 2 213-243 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 9:30:00 AM
**Lab ID:** 1308113-013
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 5.3 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 1:55:57 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:55:41 AM | 8804 |
| Magnesium | 18000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:36:34 AM | 8804 |
| Sodium | 1700 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 10:34:16 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 160 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 27 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5200 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.11 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-014
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 170 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 2:33:13 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 11:58:09 AM | 8804 |
| Magnesium | 12000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:41:05 AM | 8804 |
| Sodium | 650 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:41:05 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 72 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 5.0 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.83 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 3.1 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-015
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 79 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 2:58:03 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 100000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:03:26 PM | 8804 |
| Magnesium | 9900 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 10:52:26 AM | 8804 |
| Sodium | 380 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 10:52:26 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 21 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 2.8 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.85 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.4 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-016
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 21 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 3:10:27 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 1:06:16 PM | 8804 |
| Magnesium | 10000 | 1.7 | 130 | | mg/Kg | 5 | 8/13/2013 10:57:06 AM | 8804 |
| Sodium | 320 | 4.4 | 130 | | mg/Kg | 5 | 8/13/2013 10:57:06 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 18 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 2.4 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.12 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.6 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-017
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 5.5 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 4:00:04 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 180000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:08:27 PM | 8804 |
| Magnesium | 9700 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 11:01:42 AM | 8804 |
| Sodium | 260 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 11:01:42 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **JLF** | |
| Potassium | 18 | 0.33 | 1.0 | | mg/L | 1 | 8/15/2013 12:24:00 PM | 8833 |
| Sodium Adsorption Ratio | 1.8 | 0 | 0 | | | 1 | 8/15/2013 12:24:00 PM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.91 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.81 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 100-125 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-018
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 4.3 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 4:24:54 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 170000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:10:42 PM | 8804 |
| Magnesium | 16000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 11:06:19 AM | 8804 |
| Sodium | 330 | 4.4 | 120 | | mg/Kg | 5 | 8/13/2013 11:06:19 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 28 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 1.5 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.92 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.51 | 0.39 | 0.39 | | % | 1 | 8/9/2013 11:00:00 AM | 8794 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 3 121-152 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 10:30:00 AM
**Lab ID:** 1308113-019
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 4.8 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 4:49:43 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 190000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 1:12:52 PM | 8804 |
| Magnesium | 15000 | 1.7 | 120 | | mg/Kg | 5 | 8/13/2013 11:10:58 AM | 8804 |
| Sodium | 250 | 0.88 | 25 | | mg/Kg | 1 | 8/13/2013 11:08:38 AM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 46 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 1.2 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.99 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-020
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 190 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 5:51:47 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 1:17:21 PM | 8804 |
| Magnesium | 13000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 1:15:04 PM | 8804 |
| Sodium | 3000 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 1:15:04 PM | 8804 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 730 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8833 |
| Sodium Adsorption Ratio | 21 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8833 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 9300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 5:39:00 PM | R12542 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.68 | 0.100 | 1.68 | | pH Units | 1 | 8/18/2013 2:16:00 PM | R12687 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.7 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-021
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 62 | 1.9 | 6.0 | | mg/Kg | 20 | 8/6/2013 6:41:26 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 97000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:15:11 PM | 8808 |
| Magnesium | 12000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 11:45:25 AM | 8808 |
| Sodium | 2500 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 11:45:25 AM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 380 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 21 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6900 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.45 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.5 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-022
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 24 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 6:53:51 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 61000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:17:26 PM | 8808 |
| Magnesium | 9400 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 11:56:10 AM | 8808 |
| Sodium | 2200 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 11:56:10 AM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 270 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 15 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.0 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-023 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 6.7 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 7:18:41 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:19:37 PM | 8808 |
| Magnesium | 7900 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:01:36 PM | 8808 |
| Sodium | 1900 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:01:36 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 150 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 21 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5800 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.84 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 100-125 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-024 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 5.8 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 7:43:30 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 160000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:21:47 PM | 8808 |
| Magnesium | 8300 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:07:04 PM | 8808 |
| Sodium | 2100 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:07:04 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 160 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 27 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 6100 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.80 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 125-150 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-025
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 0.67 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 8:08:21 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:23:58 PM | 8808 |
| Magnesium | 14000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:24:36 PM | 8808 |
| Sodium | 510 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:24:36 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 84 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 4.9 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.87 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 150-175 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-026
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.096 | 0.30 | | mg/Kg | 1 | 8/6/2013 8:58:00 PM | 8742 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:26:08 PM | 8808 |
| Magnesium | 16000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:30:05 PM | 8808 |
| Sodium | 660 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:30:05 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 99 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 7.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.81 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 175-200 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-027
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 1.1 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 6:36:00 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 150000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:28:21 PM | 8808 |
| Magnesium | 6700 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:35:30 PM | 8808 |
| Sodium | 1200 | 0.88 | 25 | | mg/Kg | 1 | 8/14/2013 12:32:46 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 120 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 25 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3800 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.98 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 4 213-243 cm
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 11:30:00 AM
**Lab ID:** 1308113-028 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.6 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 7:00:49 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 140000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:30:38 PM | 8808 |
| Magnesium | 12000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:40:54 PM | 8808 |
| Sodium | 1500 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:40:54 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 130 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 16 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 4200 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.19 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-029
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 290 | 1.9 | 6.0 | | mg/Kg | 20 | 8/7/2013 9:42:07 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:32:50 PM | 8808 |
| Magnesium | 9800 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 12:46:24 PM | 8808 |
| Sodium | 1700 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 12:46:24 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 670 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 13 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 7700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.51 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.2 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-030
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 100 | 1.9 | 6.0 | | mg/Kg | 20 | 8/7/2013 10:06:56 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:43:29 PM | 8808 |
| Magnesium | 7000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:02:06 PM | 8808 |
| Sodium | 1100 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:02:06 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 190 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 10 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.51 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.2 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-031
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 24 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 8:15:16 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 170000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:45:46 PM | 8808 |
| Magnesium | 8000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:07:38 PM | 8808 |
| Sodium | 780 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:07:38 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 260 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 9.2 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 5000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.75 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 5 91-121 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 12:30:00 PM
**Lab ID:** 1308113-032 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.8 | 0.096 | 0.30 | | mg/Kg | 1 | 8/7/2013 8:40:04 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 130000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:47:58 PM | 8808 |
| Magnesium | 21000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:13:09 PM | 8808 |
| Sodium | 660 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:13:09 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 180 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 5.1 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2400 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.88 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-033 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 37 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 4:59:29 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 100000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:52:32 PM | 8808 |
| Magnesium | 11000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 2:50:10 PM | 8808 |
| Sodium | 420 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 2:50:10 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 120 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 3.0 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.76 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 2.4 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-034 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 54 | 1.9 | 6.0 | | mg/Kg | 20 | 8/7/2013 10:56:34 PM | 8760 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 100000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:54:44 PM | 8808 |
| Magnesium | 8700 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:23:59 PM | 8808 |
| Sodium | 420 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:23:59 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 28 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 5.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 3000 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.84 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.6 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-035 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.9 | 0.096 | 0.30 | | mg/Kg | 1 | 8/8/2013 10:59:28 AM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 120000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 2:56:55 PM | 8808 |
| Magnesium | 7400 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:37:50 PM | 8808 |
| Sodium | 210 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:37:50 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 10 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 1.1 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1500 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.72 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.90 | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 6 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-036 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 3.7 | 0.096 | 0.30 | | mg/Kg | 1 | 8/8/2013 11:24:18 AM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 140000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 2:59:06 PM | 8808 |
| Magnesium | 7000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:43:15 PM | 8808 |
| Sodium | 180 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:43:15 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 16 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 0.66 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1600 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.69 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 0-25 cm DB
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-037
**Matrix:** SOIL
**Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 130 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 12:01:32 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 3:01:22 PM | 8808 |
| Magnesium | 10000 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:48:46 PM | 8808 |
| Sodium | 520 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:48:46 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 60 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 4.0 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2700 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.73 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | ND | 0.39 | 0.39 | | % | 1 | 8/19/2013 1:30:00 PM | 8920 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 25-50 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-038 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 140 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 1:16:02 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 110000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 3:15:38 PM | 8808 |
| Magnesium | 12000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 3:13:14 PM | 8808 |
| Sodium | 570 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 3:13:14 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 41 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 3.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 2300 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 7.86 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.9 | 0.39 | 0.39 | | % | 1 | 8/19/2013 5:30:00 PM | 8928 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| O | RSD is greater than RSDlimit |
| R | RPD outside accepted recovery limits |
| S | Spike Recovery outside accepted recovery limits |
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| P | Sample pH greater than 2 for VOA and TOC only. |
| RL | Reporting Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 50-75 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-039 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 29 | 1.9 | 6.0 | | mg/Kg | 20 | 8/8/2013 1:40:51 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 99000 | 24 | 1200 | | mg/Kg | 50 | 8/20/2013 3:17:50 PM | 8808 |
| Magnesium | 8800 | 1.7 | 120 | | mg/Kg | 5 | 8/14/2013 1:59:43 PM | 8808 |
| Sodium | 330 | 4.4 | 120 | | mg/Kg | 5 | 8/14/2013 1:59:43 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 32 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 2.7 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 1200 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.01 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 1.2 | 0.39 | 0.39 | | % | 1 | 8/19/2013 5:30:00 PM | 8928 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Tetra Tech, Inc.
**Client Sample ID:** BGNDRF Trench 7 75-100 cm D
**Project:** BGNDRF Soil Samples 7/31/2013
**Collection Date:** 7/31/2013 1:30:00 PM
**Lab ID:** 1308113-040 **Matrix:** SOIL **Received Date:** 8/2/2013 9:00:00 AM

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JRR** | |
| Nitrogen, Nitrate (As N) | 2.4 | 0.096 | 0.30 | | mg/Kg | 1 | 8/8/2013 1:53:16 PM | 8772 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | | Analyst: **ELS** | |
| Calcium | 98000 | 24 | 1300 | | mg/Kg | 50 | 8/20/2013 3:22:25 PM | 8808 |
| Magnesium | 9000 | 3.4 | 250 | | mg/Kg | 10 | 8/20/2013 3:20:02 PM | 8808 |
| Sodium | 290 | 8.8 | 250 | | mg/Kg | 10 | 8/20/2013 3:20:02 PM | 8808 |
| **SAR SOLUBLE CATIONS** | | | | | | | Analyst: **ELS** | |
| Potassium | 30 | 0.33 | 1.0 | | mg/L | 1 | 8/21/2013 5:34:00 AM | 8821 |
| Sodium Adsorption Ratio | 1.8 | 0 | 0 | | | 1 | 8/21/2013 5:34:00 AM | 8821 |
| **CONDUCTANCE** | | | | | | | Analyst: **JML** | |
| Specific Conductance | 900 | 0 | 1.0 | | µmhos/c | 1 | 8/7/2013 7:17:00 PM | R12545 |
| **SM4500-H+B: PH** | | | | | | | Analyst: **KS** | |
| pH | 8.26 | 0.100 | 1.68 | | pH Units | 1 | 8/19/2013 12:36:00 PM | R12722 |
| **TOC BY WALKLEY BLACK** | | | | | | | Analyst: **IDC** | |
| Organic Matter | 0.76 | 0.39 | 0.39 | | % | 1 | 8/19/2013 5:30:00 PM | 8928 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-001
**Client Sample ID** 1308113-001B, BGNDRF Trench 1 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:29 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:06 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:06 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-002
**Client Sample ID** 1308113-002B, BGNDRF Trench 1 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 3 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:34 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:47 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:47 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-003
**Client Sample ID** 1308113-003B, BGNDRF Trench 1 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:35 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.8 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:50 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:50 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-004
**Client Sample ID** 1308113-004B, BGNDRF Trench 1 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 08:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:36 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:53 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:53 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-005
**Client Sample ID** 1308113-005B, BGNDRF Trench 2 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 13 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:38 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.0 | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:56 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 03:56 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-006
**Client Sample ID** 1308113-006B, BGNDRF Trench 2 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:39 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.3 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:09 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:09 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-007
**Client Sample ID** 1308113-007B, BGNDRF Trench 2 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 8 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:41 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.4 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:12 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:12 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-008
**Client Sample ID** 1308113-008B, BGNDRF Trench 2 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:42 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.2 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:15 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:15 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-009
**Client Sample ID** 1308113-009B, BGNDRF Trench 2 100-125 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:44 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.0 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:18 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:18 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-010
**Client Sample ID** 1308113-010B, BGNDRF Trench 2 125-150 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:45 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.5 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:21 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:21 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-011
**Client Sample ID** 1308113-011B, BGNDRF Trench 2 150-175 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:49 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:23 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:23 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-012
**Client Sample ID** 1308113-012B, BGNDRF Trench 2 175-200 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:53 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:26 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:26 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-013
**Client Sample ID** 1308113-013B, BGNDRF Trench 2 213-243 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 09:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:55 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.1 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:29 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:29 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-014
**Client Sample ID** 1308113-014B, BGNDRF Trench 3 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 11 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:56 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.2 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:32 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:32 / jjw |

**Report Definitions:** RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-015
**Client Sample ID** 1308113-015B, BGNDRF Trench 3 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:58 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:34 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:34 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-016
**Client Sample ID** 1308113-016B, BGNDRF Trench 3 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 14:59 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.2 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:37 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:37 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-017
**Client Sample ID** 1308113-017B, BGNDRF Trench 3 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:00 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.3 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:51 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:51 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-018
**Client Sample ID** 1308113-018B, BGNDRF Trench 3 100-125 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 1 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:02 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:54 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:54 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-019
**Client Sample ID** 1308113-019B, BGNDRF Trench 3 121-152 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 10:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:03 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.4 | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:57 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 04:57 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-020
**Client Sample ID** 1308113-020B, BGNDRF Trench 4 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 11 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:05 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/09/13 05:00 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/09/13 05:00 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-021
**Client Sample ID** 1308113-021B, BGNDRF Trench 4 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 8 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:09 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:48 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:48 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-022
**Client Sample ID** 1308113-022B, BGNDRF Trench 4 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 7 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:13 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 3.4 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:51 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:51 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-023
**Client Sample ID** 1308113-023B, BGNDRF Trench 4 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:14 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.8 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:54 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:54 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-024
**Client Sample ID** 1308113-024B, BGNDRF Trench 4 100-125 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:16 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.5 | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:57 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 21:57 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-025
**Client Sample ID** 1308113-025B, BGNDRF Trench 4 125-150 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:17 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.8 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:12 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:12 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-026
**Client Sample ID** 1308113-026B, BGNDRF Trench 4 150-175 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:19 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:15 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:15 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-027
**Client Sample ID** 1308113-027B, BGNDRF Trench 4 175-200 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:20 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 0.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:18 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:18 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-028
**Client Sample ID** 1308113-028B, BGNDRF Trench 4 213-243 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 11:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | ND | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:21 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.6 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:21 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:21 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-029
**Client Sample ID** 1308113-029B, BGNDRF Trench 5 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:23 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.8 | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:24 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 22:24 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-030
**Client Sample ID** 1308113-030B, BGNDRF Trench 5 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 5 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:24 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.3 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:01 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:01 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-031
**Client Sample ID** 1308113-031B, BGNDRF Trench 5 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 4 | mg/kg | | 1 | | ASA24-5 | 08/15/13 16:09 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.4 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:04 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:04 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-032
**Client Sample ID** 1308113-032B, BGNDRF Trench 5 91-121 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 12:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 2 | mg/kg | | 1 | | ASA24-5 | 08/15/13 16:13 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 1.9 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:07 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:07 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-033
**Client Sample ID** 1308113-033B, BGNDRF Trench 6 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 22 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:34 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.6 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:10 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:10 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-034
**Client Sample ID** 1308113-034B, BGNDRF Trench 6 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 22 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:36 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:13 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:13 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-035
**Client Sample ID** 1308113-035B, BGNDRF Trench 6 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 12 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:37 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.4 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:16 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:16 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-036
**Client Sample ID** 1308113-036B, BGNDRF Trench 6 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 6 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:38 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.9 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:19 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:19 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-037
**Client Sample ID** 1308113-037B, BGNDRF Trench 7 0-25 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:40 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.5 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:22 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:22 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-038
**Client Sample ID** 1308113-038B, BGNDRF Trench 7 25-50 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:41 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:25 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:25 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-039
**Client Sample ID** 1308113-039B, BGNDRF Trench 7 50-75 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 10 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:43 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.3 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:39 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:39 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated
**Lab ID:** B13080376-040
**Client Sample ID** 1308113-040B, BGNDRF Trench 7 75-100 cm DBG

**Report Date:** 08/16/13
**Collection Date:** 07/31/13 13:30
**DateReceived:** 08/06/13
**Matrix:** Soil

| Analyses | Result | Units | Qualifiers | RL | MCL/ QCL | Method | Analysis Date / By |
|---|---|---|---|---|---|---|---|
| **CHEMICAL CHARACTERISTICS** | | | | | | | |
| Phosphorus, Olsen | 9 | mg/kg | | 1 | | ASA24-5 | 08/15/13 15:44 / srm |
| **METALS, TOTAL - EPA SW846** | | | | | | | |
| Arsenic | 2.7 | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:42 / jjw |
| Selenium | ND | mg/kg | | 0.5 | | SW6020 | 08/13/13 23:42 / jjw |

**Report Definitions:**
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated

**Report Date:** 08/14/13
**Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | Analytical Run: ICPMS202-B_130808A | |
| **Sample ID:** QCS | 2 | Initial Calibration Verification Standard | | | | | | | 08/08/13 09:54 | |
| Arsenic | | 0.0517 | mg/L | 0.0010 | 103 | 90 | 110 | | | |
| Selenium | | 0.0527 | mg/L | 0.0010 | 105 | 90 | 110 | | | |
| **Sample ID:** ICSAB | 2 | Interference Check Sample AB | | | | | | | 08/08/13 10:10 | |
| Arsenic | | 0.0111 | mg/L | 0.0010 | 111 | 70 | 130 | | | |
| Selenium | | 0.0103 | mg/L | 0.0010 | 103 | 70 | 130 | | | |
| **Sample ID:** ICSA | 2 | Interference Check Sample A | | | | | | | 08/08/13 10:15 | |
| Arsenic | | 5.00E-05 | mg/L | 0.0010 | | | | | | |
| Selenium | | -0.000100 | mg/L | 0.0010 | | | | | | |
| **Method:** SW6020 | | | | | | | | | Batch: 73467 | |
| **Sample ID:** MB-73467 | 2 | Method Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 02:05 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |
| **Sample ID:** B13080376-001ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:08 | |
| Arsenic | | 4.09 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| Selenium | | ND | mg/kg | 1.0 | | 0 | 0 | | 10 | |
| **Sample ID:** LFB-73467 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:11 | |
| Arsenic | | 47.3 | mg/kg | 1.0 | 95 | 80 | 120 | | | |
| Selenium | | 46.9 | mg/kg | 1.0 | 94 | 80 | 120 | | | |
| **Sample ID:** SRM-73467 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:28 | |
| Arsenic | | 332 | mg/kg | 1.0 | 96 | 71 | 120 | | | |
| Selenium | | 206 | mg/kg | 1.0 | 119 | 80 | 127 | | | |
| **Sample ID:** B13080376-001APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:31 | |
| Arsenic | | 11.5 | mg/kg | 1.0 | 97 | 75 | 125 | | | |
| Selenium | | 7.04 | mg/kg | 1.0 | 85 | 75 | 125 | | | |
| **Sample ID:** B13080376-001AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:33 | |
| Arsenic | | 62.1 | mg/kg | 1.0 | 87 | 75 | 125 | | | |
| Selenium | | 49.0 | mg/kg | 1.0 | 72 | 75 | 125 | | | S |
| **Sample ID:** B13080376-001AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:36 | |
| Arsenic | | 60.5 | mg/kg | 1.0 | 85 | 75 | 125 | 2.6 | 20 | |
| Selenium | | 48.0 | mg/kg | 1.0 | 72 | 75 | 125 | 2.1 | 20 | S |
| **Method:** SW6020 | | | | | | | | | Batch: 73468 | |
| **Sample ID:** MB-73468 | 2 | Method Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 03:44 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |
| **Sample ID:** B13080376-020ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:03 | |
| Arsenic | | 3.50 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| Selenium | | 0.330 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |

**Qualifiers:**

RL - Analyte reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental **Report Date:** 08/14/13

**Project:** Not Indicated **Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | Batch: 73468 | |
| **Sample ID:** B13080376-020ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:03 | |
| **Sample ID:** LFB-73468 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:05 | |
| Arsenic | | 46.0 | mg/kg | 1.0 | 92 | 80 | 120 | | | |
| Selenium | | 45.5 | mg/kg | 1.0 | 91 | 80 | 120 | | | |
| **Sample ID:** SRM-73468 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:08 | |
| Arsenic | | 329 | mg/kg | 1.0 | 97 | 71 | 120 | | | |
| Selenium | | 206 | mg/kg | 1.0 | 122 | 80 | 127 | | | |
| **Sample ID:** B13080376-020APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:11 | |
| Arsenic | | 5.60 | mg/kg | 1.0 | 75 | 75 | 125 | | | |
| Selenium | | 2.10 | mg/kg | 1.0 | 58 | 75 | 125 | | | S |
| **Sample ID:** B13080376-020AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:14 | |
| Arsenic | | 56.2 | mg/kg | 1.0 | 76 | 75 | 125 | | | |
| Selenium | | 41.4 | mg/kg | 1.0 | 59 | 75 | 125 | | | S |
| **Sample ID:** B13080376-020AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130808A | | | 08/09/13 05:16 | |
| Arsenic | | 57.2 | mg/kg | 1.0 | 78 | 75 | 125 | 1.8 | 20 | |
| Selenium | | 41.9 | mg/kg | 1.0 | 60 | 75 | 125 | 1.2 | 20 | S |

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental **Report Date:** 08/14/13

**Project:** Not Indicated **Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | Analytical Run: ICPMS202-B_130813A | |
| **Sample ID:** QCS | 2 | Initial Calibration Verification Standard | | | | | | | 08/13/13 09:32 | |
| Arsenic | | 0.0500 | mg/L | 0.0010 | 100 | 90 | 110 | | | |
| Selenium | | 0.0520 | mg/L | 0.0010 | 104 | 90 | 110 | | | |
| **Sample ID:** ICSA | 2 | Interference Check Sample A | | | | | | | 08/13/13 09:41 | |
| Arsenic | | 6.00E-05 | mg/L | 0.0010 | | | | | | |
| Selenium | | 0.000290 | mg/L | 0.0010 | | | | | | |
| **Sample ID:** ICSAB | 2 | Interference Check Sample AB | | | | | | | 08/13/13 09:44 | |
| Arsenic | | 0.00991 | mg/L | 0.0010 | 99 | 70 | 130 | | | |
| Selenium | | 0.00938 | mg/L | 0.0010 | 94 | 70 | 130 | | | |
| **Method:** SW6020 | | | | | | | | | Batch: 73573 | |
| **Sample ID:** SRM-73573 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130813A | | | 08/13/13 20:32 | |
| Arsenic | | 305 | mg/kg | 1.0 | 89 | 71 | 120 | | | |
| Selenium | | 190 | mg/kg | 1.0 | 110 | 80 | 127 | | | |
| **Sample ID:** MB-73573 | 2 | Method Blank | | | | Run: ICPMS202-B_130813A | | | 08/13/13 21:46 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |
| **Sample ID:** B13080376-029ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:27 | |
| Arsenic | | 3.98 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| Selenium | | 0.361 | mg/kg | 1.0 | | 0 | 0 | | 10 | N |
| **Sample ID:** LFB-73573 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:29 | |
| Arsenic | | 50.6 | mg/kg | 1.0 | 101 | 80 | 120 | | | |
| Selenium | | 49.6 | mg/kg | 1.0 | 99 | 80 | 120 | | | |
| **Sample ID:** B13080376-029APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:32 | |
| Arsenic | | 5.73 | mg/kg | 1.0 | 78 | 75 | 125 | | | |
| Selenium | | 2.21 | mg/kg | 1.0 | 60 | 75 | 125 | | | S |
| **Sample ID:** B13080376-029AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:35 | |
| Arsenic | | 61.4 | mg/kg | 1.0 | 78 | 75 | 125 | | | |
| Selenium | | 44.6 | mg/kg | 1.0 | 59 | 75 | 125 | | | S |
| **Sample ID:** B13080376-029AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:38 | |
| Arsenic | | 60.1 | mg/kg | 1.0 | 78 | 75 | 125 | 2.1 | 20 | |
| Selenium | | 44.0 | mg/kg | 1.0 | 60 | 75 | 125 | 1.4 | 20 | S |
| **Method:** SW6020 | | | | | | | | | Batch: 73574 | |
| **Sample ID:** SRM-73574 | 2 | Standard Reference Material | | | | Run: ICPMS202-B_130813A | | | 08/13/13 20:35 | |
| Arsenic | | 310 | mg/kg | 1.0 | 90 | 71 | 120 | | | |
| Selenium | | 195 | mg/kg | 1.0 | 113 | 80 | 127 | | | |
| **Sample ID:** MB-73574 | 2 | Method Blank | | | | Run: ICPMS202-B_130813A | | | 08/13/13 22:58 | |
| Arsenic | | ND | mg/kg | 0.08 | | | | | | |
| Selenium | | ND | mg/kg | 0.06 | | | | | | |

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated

**Report Date:** 08/14/13
**Work Order:** B13080376

| Analyte | Count | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method:** SW6020 | | | | | | | | | | Batch: 73574 |
| **Sample ID:** MB-73574 | 2 | Method Blank | | | | Run: ICPMS202-B_130813A | | | | 08/13/13 22:58 |
| **Sample ID:** B13080583-001ADIL | 2 | Serial Dilution | | | | Run: ICPMS202-B_130813A | | | | 08/13/13 23:57 |
| Arsenic | | ND | mg/kg | 1.0 | | 0 | 0 | | 10 | |
| Selenium | | ND | mg/kg | 1.0 | | 0 | 0 | | 10 | |
| **Sample ID:** LFB-73574 | 2 | Laboratory Fortified Blank | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:00 |
| Arsenic | | 50.6 | mg/kg | 1.0 | 101 | 80 | 120 | | | |
| Selenium | | 48.5 | mg/kg | 1.0 | 97 | 80 | 120 | | | |
| **Sample ID:** B13080583-001APDS1 | 2 | Post Digestion/Distillation Spike | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:03 |
| Arsenic | | 5.00 | mg/kg | 1.0 | 89 | 75 | 125 | | | |
| Selenium | | 4.59 | mg/kg | 1.0 | 82 | 75 | 125 | | | |
| **Sample ID:** B13080583-001AMS3 | 2 | Sample Matrix Spike | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:06 |
| Arsenic | | 49.5 | mg/kg | 1.0 | 88 | 75 | 125 | | | |
| Selenium | | 43.2 | mg/kg | 1.0 | 77 | 75 | 125 | | | |
| **Sample ID:** B13080583-001AMSD3 | 2 | Sample Matrix Spike Duplicate | | | | Run: ICPMS202-B_130813A | | | | 08/14/13 00:08 |
| Arsenic | | 48.5 | mg/kg | 1.0 | 88 | 75 | 125 | 2.1 | 20 | |
| Selenium | | 42.3 | mg/kg | 1.0 | 77 | 75 | 125 | 2.2 | 20 | |

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Hall Environmental
**Project:** Not Indicated

**Report Date:** 08/16/13
**Work Order:** B13080376

| Analyte | Result | Units | RL | %REC | Low Limit | High Limit | RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **Method:** ASA24-5 | | | | | | | | | Batch: 130815023 |
| **Sample ID:** LCS<br>Phosphorus, Olsen | Laboratory Control Sample<br>14.2 | mg/kg | 1.0 | 106 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 14:24 |
| **Sample ID:** B13080376-001ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>9.42 | mg/kg | 1.0 | | Run: FIA201-B_130815A | | 11 | 30 | 08/15/13 14:31 |
| **Sample ID:** B13080376-001AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>20.2 | mg/kg | 1.0 | 93 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 14:32 |
| **Sample ID:** B13080376-011ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>ND | mg/kg | 1.0 | | Run: FIA201-B_130815A | | | 30 | 08/15/13 14:50 |
| **Sample ID:** B13080376-011AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>11.5 | mg/kg | 1.0 | 110 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 14:52 |
| **Sample ID:** B13080376-021ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>8.07 | mg/kg | 1.0 | | Run: FIA201-B_130815A | | 2.9 | 30 | 08/15/13 15:10 |
| **Sample ID:** B13080376-021AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>19.5 | mg/kg | 1.0 | 106 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 15:12 |
| **Sample ID:** B13080376-031ADUP<br>Phosphorus, Olsen | Sample Duplicate<br>4.11 | mg/kg | 1.0 | | Run: FIA201-B_130815A | | 11 | 30 | 08/15/13 16:11 |
| **Sample ID:** B13080376-031AMS<br>Phosphorus, Olsen | Sample Matrix Spike<br>15.3 | mg/kg | 1.0 | 111 | Run: FIA201-B_130815A<br>50 | 150 | | | 08/15/13 16:12 |

**ualifiers:**

- - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **MB-8731** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8731** | | RunNo: | **12430** | | | | |
| Prep Date: | **8/5/2013** | Analysis Date: | **8/5/2013** | | SeqNo: | **353758** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8731** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8731** | | RunNo: | **12430** | | | | |
| Prep Date: | **8/5/2013** | Analysis Date: | **8/5/2013** | | SeqNo: | **353759** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.6 | 0.30 | 7.500 | 0 | 101 | 90 | 110 | | | |

| Sample ID | **MB-8742** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354684** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8742** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354685** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.6 | 0.30 | 7.500 | 0 | 101 | 90 | 110 | | | |

| Sample ID | **1308113-019AMS** | SampType: | **MS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 3 1** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354713** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 12 | 0.30 | 7.500 | 4.771 | 103 | 65.9 | 112 | | | |

| Sample ID | **1308113-019AMSD** | SampType: | **MSD** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 3 1** | Batch ID: | **8742** | | RunNo: | **12460** | | | | |
| Prep Date: | **8/6/2013** | Analysis Date: | **8/6/2013** | | SeqNo: | **354714** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 12 | 0.30 | 7.500 | 4.771 | 103 | 65.9 | 112 | 0.0409 | 20 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **MB-8760** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355718** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8760** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355719** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.6 | 0.30 | 7.500 | 0 | 102 | 90 | 110 | | | |

| Sample ID | **1308113-028AMS** | SampType: | **MS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355749** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 9.9 | 0.30 | 7.500 | 2.600 | 97.8 | 65.9 | 112 | | | |

| Sample ID | **1308113-028AMSD** | SampType: | **MSD** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8760** | | RunNo: | **12484** | | | | |
| Prep Date: | **8/7/2013** | Analysis Date: | **8/7/2013** | | SeqNo: | **355750** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 10 | 0.30 | 7.500 | 2.600 | 101 | 65.9 | 112 | 2.69 | 20 | |

| Sample ID | **MB-8772** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8772** | | RunNo: | **12511** | | | | |
| Prep Date: | **8/8/2013** | Analysis Date: | **8/8/2013** | | SeqNo: | **356428** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |

| Sample ID | **LCS-8772** | SampType: | **LCS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8772** | | RunNo: | **12511** | | | | |
| Prep Date: | **8/8/2013** | Analysis Date: | **8/8/2013** | | SeqNo: | **356429** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Nitrogen, Nitrate (As N) | 7.4 | 0.30 | 7.500 | 0 | 98.5 | 90 | 110 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **1308113-019ADUP** | SampType: | **DUP** | | TestCode: | **CONDUCTANCE** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 3 1** | Batch ID: | **R12542** | | RunNo: | **12542** | | | | |
| Prep Date: | | Analysis Date: | **8/7/2013** | | SeqNo: | **357224** | Units: | **µmhos/cm** | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 1400 | 1.0 | | | | | | 0.737 | 20 | |

| Sample ID | **1308113-028ADUP** | SampType: | **DUP** | | TestCode: | **CONDUCTANCE** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **R12545** | | RunNo: | **12545** | | | | |
| Prep Date: | | Analysis Date: | **8/7/2013** | | SeqNo: | **357247** | Units: | **µmhos/cm** | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 4200 | 1.0 | | | | | | 1.64 | 20 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **LCS-8804** | SampType: | **LCS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8804** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358671** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 2500 | 100 | 2500 | 0 | 100 | 80 | 120 | | | |
| Magnesium | 2500 | 25 | 2500 | 0 | 99.2 | 80 | 120 | | | |
| Potassium | 2400 | 50 | 2500 | 0 | 96.0 | 80 | 120 | | | |
| Sodium | 2500 | 25 | 2500 | 0 | 98.3 | 80 | 120 | | | |

| Sample ID | **LCS-8808** | SampType: | **LCS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **8808** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358673** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 2500 | 100 | 2500 | 0 | 100 | 80 | 120 | | | |
| Magnesium | 2500 | 25 | 2500 | 0 | 99.1 | 80 | 120 | | | |
| Potassium | 2400 | 50 | 2500 | 0 | 96.4 | 80 | 120 | | | |
| Sodium | 2500 | 25 | 2500 | 0 | 98.4 | 80 | 120 | | | |

| Sample ID | **MB-8804** | SampType: | **MBLK** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8804** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358674** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 33 | 100 | | | | | | | | J |
| Magnesium | 0.62 | 25 | | | | | | | | J |
| Potassium | 18 | 50 | | | | | | | | J |
| Sodium | ND | 25 | | | | | | | | |

| Sample ID | **MB-8808** | SampType: | **MBLK** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **8808** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358675** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Calcium | 73 | 100 | | | | | | | | J |
| Magnesium | 0.90 | 25 | | | | | | | | J |
| Potassium | ND | 50 | | | | | | | | |
| Sodium | ND | 25 | | | | | | | | |

| Sample ID | **1308113-001AMS** | SampType: | **MS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 1 0** | Batch ID: | **8804** | | RunNo: | **12597** | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/13/2013** | | SeqNo: | **358695** | Units: | **mg/Kg** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID **1308113-001AMS** | SampType: **MS** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12597** |
| Prep Date: **8/12/2013** | Analysis Date: **8/13/2013** | SeqNo: **358695** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 13000 | 130 | 2480 | 9823 | 108 | 75 | 125 | | | |
| Sodium | 3900 | 130 | 2480 | 1548 | 93.0 | 75 | 125 | | | |

| Sample ID **1308113-001AMSD** | SampType: **MSD** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12597** |
| Prep Date: **8/12/2013** | Analysis Date: **8/13/2013** | SeqNo: **358696** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 12000 | 120 | 2485 | 9823 | 103 | 75 | 125 | 0.968 | 20 | |
| Sodium | 3800 | 120 | 2485 | 1548 | 91.4 | 75 | 125 | 0.859 | 20 | |

| Sample ID **1308113-021AMS** | SampType: **MS** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 4 2** | Batch ID: **8808** | RunNo: **12624** |
| Prep Date: **8/12/2013** | Analysis Date: **8/14/2013** | SeqNo: **359553** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 14000 | 120 | 2486 | 11600 | 83.9 | 75 | 125 | | | |
| Sodium | 4700 | 120 | 2486 | 2515 | 89.0 | 75 | 125 | | | |

| Sample ID **1308113-021AMSD** | SampType: **MSD** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 4 2** | Batch ID: **8808** | RunNo: **12624** |
| Prep Date: **8/12/2013** | Analysis Date: **8/14/2013** | SeqNo: **359554** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 14000 | 120 | 2482 | 11600 | 81.2 | 75 | 125 | 0.508 | 20 | |
| Sodium | 4800 | 120 | 2482 | 2515 | 90.3 | 75 | 125 | 0.617 | 20 | |

| Sample ID **1308113-001AMS** | SampType: **MS** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12747** |
| Prep Date: **8/12/2013** | Analysis Date: **8/20/2013** | SeqNo: **363080** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 11000 | 250 | 2480 | 7907 | 145 | 75 | 125 | | | S |

| Sample ID **1308113-001AMSD** | SampType: **MSD** | TestCode: **EPA Method 6010B: Soil Metals** |
|---|---|---|
| Client ID: **BGNDRF Trench 1 0** | Batch ID: **8804** | RunNo: **12747** |
| Prep Date: **8/12/2013** | Analysis Date: **8/20/2013** | SeqNo: **363081** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 12000 | 250 | 2485 | 7907 | 150 | 75 | 125 | 1.13 | 20 | S |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **1308113-021AMS** | SampType: | **MS** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8808** | | RunNo: | **12747** | | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/20/2013** | | SeqNo: | **363618** | Units: | **mg/Kg** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | |
| Potassium | 13000 | 250 | 2486 | 8814 | 161 | 75 | 125 | | | S | |

| Sample ID | **1308113-021AMSD** | SampType: | **MSD** | | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **8808** | | RunNo: | **12747** | | | | | |
| Prep Date: | **8/12/2013** | Analysis Date: | **8/20/2013** | | SeqNo: | **363619** | Units: | **mg/Kg** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | |
| Potassium | 12000 | 250 | 2482 | 8814 | 137 | 75 | 125 | 4.76 | 20 | S | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1308113**

***10-Sep-13***

**Client:** Tetra Tech, Inc.

**Project:** BGNDRF Soil Samples 7/31/2013

| Sample ID | **1308113-003ADUP** | SampType: | **DUP** | | | TestCode: | **SM4500-H+B: pH** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 1 5** | Batch ID: | **R12687** | | | RunNo: | **12687** | | | |
| Prep Date: | | Analysis Date: | **8/18/2013** | | | SeqNo: | **361285** | Units: | **pH Units** | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| pH | 7.66 | 1.68 | | | | | | | | |

| Sample ID | **1308113-028ADUP** | SampType: | **DUP** | | | TestCode: | **SM4500-H+B: pH** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BGNDRF Trench 4 2** | Batch ID: | **R12722** | | | RunNo: | **12722** | | | |
| Prep Date: | | Analysis Date: | **8/19/2013** | | | SeqNo: | **362190** | Units: | **pH Units** | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| pH | 8.13 | 1.68 | | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2 for VOA and TOC only. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# QUOTATION

Quote#: **326**
Date: **4/10/2013**

| | | | |
|---|---|---|---|
| Company: | Tetra Tech, Inc. | Project: | BGNDRF soils |
| Contact: | Michael Marcus | TAT: | 12 working days |
| Address: | 6121 Indian School Road NE Ste. 205 | QC Level: | LEVEL II |
| | Albuquerque, NM 87110 | Project Manager: | Andy Freeman |
| Phone: | (505)881-3188 | Sales Rep: | Andy Freeman |
| Fax: | | Quote Expires: | 5/29/2014 |

| Item Description | Test | Matrix | Remarks | Qty | Unit Price | % Disc. | Net Price | Total |
|---|---|---|---|---|---|---|---|---|
| SM4500-H+B: pH | M4500-H+B | Soil | | 40 | 25.00 | 10.00% | 22.50 | 900.00 |
| CONDUCTANCE | E120.1 | Soil | | 40 | 25.00 | 10.00% | 22.50 | 900.00 |
| EPA Method 6010B: Soil Metals | SW6010B | Soil | Mg,Ca,Na, *K | 40 | 66.00 | 10.00% | 59.40 | 2,376.00 |
| SAR Soluble Cations | N173 | Soil | | 40 | 40.00 | 10.00% | 36.00 | 1,440.00 |
| TOC by Walkley Black | Walkley Black | Soil | Report as %OM | 40 | 60.00 | 10.00% | 54.00 | 2,160.00 |
| EPA Method 300.0: Anions | E300 | Soil | Nitrate | 40 | 25.00 | 10.00% | 22.50 | 900.00 |
| Phosphorous soil (Brey) | E365.2 | Soil | | 40 | 35.00 | 10.00% | 31.50 | 1,260.00 |
| EPA Method 6020: Total Metals | SW6020 | Soil | **As and Se | 40 | 55.00 | 10.00% | 49.50 | 1,980.00 |

| | |
|---|---|
| Sub Total: | $11,916.00 |
| Misc: | $0.00 |
| Surcharge: | 0.00% |
| **TOTAL:** | **$11,916.00** |

**Comments:** *Potassium result will be taken using the saturated paste.
**Arsenic and Selenium will be digested by EPA Method 3050B and analyzed by 6020B

Sincerely,

Karen Stasiunas
Project Manager
Phone: 505-345-3975
Email: kms@hallenvironmental.com

**Terms and Conditions:**

Hall Environmental Analysis Laboratory (HEAL) will provide all sampling containers, coolers, chains of custody and labels. A standard data deliverables package and QC package will be provided with this report, including lab spikes and lab spike duplicates. NM State tax has not been included in this quotation. Thank you, for the opportunity to bid on this project. Please feel free to call with any questions (505) 345-3975.. Invoices can be paid via Visa, Master Card, American Express, Company Check or Cash.

| ClientID | ProjectName | SampID | ClientSampID | AnalDate | TestCode | BatchID | CAS | Analyte | Rslt | PQL | MDL | DF | Units | R_Qual | DateCollected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MB-8731 | | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8731 | | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | MB-8742 | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8742 | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-019AMS | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 12 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-019AMSD | | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 12 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | MB-8760 | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8760 | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-028AMS | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 9.9 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-028AMSD | | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 10 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | MB-8772 | | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 0.30 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | LCS-8772 | | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.4 | 0.3 | 0.0965 | 1 | mg/Kg | | |
| | | 1308113-019ADUP | | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | |
| | | 1308113-028ADUP | | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 4200 | 1 | 0 | 1 | µmhos/cm | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 2500 | 100 | 6.9713 | 1 | mg/L | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 2500 | 25 | 0.4651 | 1 | mg/L | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | 2400 | 50 | 17.3925 | 1 | mg/L | | |
| | | LCS-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2500 | 25 | 8.4278 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 2500 | 100 | 6.9713 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 2500 | 25 | 0.4651 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | 2400 | 50 | 17.3925 | 1 | mg/L | | |
| | | LCS-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2500 | 25 | 8.4278 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | < 100 | 100 | 6.9713 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | < 25 | 25 | 0.4651 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | < 50 | 50 | 17.3925 | 1 | mg/L | | |
| | | MB-8804 | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | < 25 | 25 | 8.4278 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | < 100 | 100 | 6.9713 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | < 25 | 25 | 0.4651 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | < 50 | 50 | 17.3925 | 1 | mg/L | | |
| | | MB-8808 | | 8/13/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | < 25 | 25 | 8.4278 | 1 | mg/L | | |
| | | 1308113-001AMS | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 13000 | 125.0084056 | 2.325656377 | 5 | mg/Kg | | |
| | | 1308113-001AMS | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 3900 | 125.0084056 | 42.14183362 | 5 | mg/Kg | | |
| | | 1308113-001AMSD | | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 12000 | 124.9920755 | 2.325352573 | 5 | mg/Kg | | |
| | | 1308113-001AMSD | | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 3800 | 124.9920755 | 42.13632856 | 5 | mg/Kg | | |
| | | 1308113-021AMS | | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 14000 | 125 | 2.3255 | 5 | mg/Kg | | |
| | | 1308113-021AMS | | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 4700 | 125 | 42.139 | 5 | mg/Kg | | |
| | | 1308113-021AMSD | | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 14000 | 125 | 2.3255 | 5 | mg/Kg | | |
| | | 1308113-021AMSD | | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 4800 | 125 | 42.139 | 5 | mg/Kg | | |
| | | 1308113-003ADUP | | 8/18/2013 | PH_S | R12687 | pH | pH | 7.66 | 1.68 | 0.1 | 1 | pH Units | | |
| | | 1308113-028ADUP | | 8/19/2013 | PH_S | R12722 | pH | pH | 8.13 | 1.68 | 0.1 | 1 | pH Units | | |
| | | 1308113-001AMS | | 8/20/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | 11000 | 250 | 86.9625 | 5 | mg/Kg | S | |
| | | 1308113-001AMSD | | 8/20/2013 | METALS_SOIL | 8804 | 7440-09-7 | Potassium | 12000 | 250 | 86.9625 | 5 | mg/Kg | S | |
| | | 1308113-021AMS | | 8/20/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | 13000 | 249.9824262 | 86.95638697 | 5 | mg/Kg | S | |
| | | 1308113-021AMSD | | 8/20/2013 | METALS_SOIL | 8808 | 7440-09-7 | Potassium | 12000 | 249.9881406 | 86.95837469 | 5 | mg/Kg | S | |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 7.6 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 2.1 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 4100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 9800 | 125.0127163 | 1.720174976 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1500 | 125.0127163 | 4.395447105 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 5000 | 24.325 | 50 | mg/Kg | | 7/31/2013 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 420 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001A | BGNDRF Trench 1 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 16 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001B | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001B | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-001B | BGNDRF Trench 1 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 1.5 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 1.0 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 640 | 25.00210868 | 0.879074141 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 7200 | 125.0105434 | 1.720145077 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.81 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 190000 | 5000 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002A | BGNDRF Trench 1 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 8.2 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002B | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 3.0 | 1 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002B | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-002B | BGNDRF Trench 1 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 1.5 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.61 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 4400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 14000 | 125.0121762 | 1.720167544 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 620 | 125.0121762 | 4.395428115 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.66 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 190000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 100 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003A | BGNDRF Trench 1 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 4.5 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003B | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003B | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-003B | BGNDRF Trench 1 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | < 1.5 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 570 | 24.99945801 | 0.878980944 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 23000 | 124.9972901 | 1.719962711 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.88 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 160000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004A | BGNDRF Trench 1 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 3.9 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004B | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004B | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-004B | BGNDRF Trench 1 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 9.7 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 4.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 5100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 11000 | 124.991833 | 1.719887623 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2100 | 124.991833 | 4.394712849 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.82 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 110000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 350 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005A | BGNDRF Trench 2 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 19 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005B | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 13 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005B | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.0 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-005B | BGNDRF Trench 2 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.9 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 2.1 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 6700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 11000 | 124.9927004 | 1.719899558 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1900 | 124.9927004 | 4.394743347 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 310 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006A | BGNDRF Trench 2 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 15 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006B | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006B | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-006B | BGNDRF Trench 2 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.0 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 1.6 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 6800 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 11000 | 125.0121512 | 1.7201672 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2000 | 125.0121512 | 4.395427236 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.77 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 310 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007A | BGNDRF Trench 2 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 15 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007B | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 8.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007B | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-007B | BGNDRF Trench 2 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.3 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.46 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 8100 | 125.002205 | 1.720030341 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 670 | 125.002205 | 4.395077529 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.95 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 170000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008A | BGNDRF Trench 2 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 11 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008B | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008B | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.2 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-008B | BGNDRF Trench 2 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/6/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.1 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 16000 | 124.988681 | 1.719844251 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 630 | 124.988681 | 4.394602025 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.98 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 110 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 6.4 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009A | BGNDRF Trench 2 100-125 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 160000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009B | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009B | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.0 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-009B | BGNDRF Trench 2 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/5/2013 | 300_S | 8731 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.2 | 1.5 | 0.4825 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 18000 | 125.0115386 | 1.720158771 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1200 | 125.0115386 | 4.395405696 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.96 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 100 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010A | BGNDRF Trench 2 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 16 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010B | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010B | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.5 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-010B | BGNDRF Trench 2 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 0.45 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 2700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 600 | 24.9998 | 0.878992968 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 19000 | 124.999 | 1.71998624 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.09 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 140000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 100 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011A | BGNDRF Trench 2 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 14 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011B | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011B | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-011B | BGNDRF Trench 2 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.9 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 7100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 14000 | 124.997925 | 1.719971448 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 2100 | 124.997925 | 4.394927044 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.10 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 170 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012A | BGNDRF Trench 2 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 30 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012B | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012B | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-012B | BGNDRF Trench 2 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 5.3 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 5200 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 1700 | 24.99836661 | 0.87894257 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 18000 | 124.991833 | 1.719887623 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.11 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 150000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 160 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013A | BGNDRF Trench 2 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 27 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013B | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013B | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.1 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-013B | BGNDRF Trench 2 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 170 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 3.1 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 3500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 12000 | 124.9933004 | 1.719907813 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 650 | 124.9933004 | 4.394764441 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.83 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250 | 24.325 | 50 | mg/Kg | | 7/31/2013 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 72 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014A | BGNDRF Trench 3 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 5.0 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014B | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 11 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014B | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.2 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-014B | BGNDRF Trench 3 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 79 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 2.4 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 9900 | 124.9955752 | 1.719939114 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 380 | 124.9955752 | 4.394844423 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.85 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 21 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 2.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015A | BGNDRF Trench 3 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 100000 | 1249.955752 | 24.32413893 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015B | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015B | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-015B | BGNDRF Trench 3 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 21 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 1.6 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 10000 | 125.0059828 | 1.720082323 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 320 | 125.0059828 | 4.395210355 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 8.12 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 18 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 2.4 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016A | BGNDRF Trench 3 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 130000 | 1250.059828 | 24.32616425 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016B | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016B | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.2 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-016B | BGNDRF Trench 3 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 5.5 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.81 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 9700 | 124.9981 | 1.719973856 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 260 | 124.9981 | 4.394933197 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.91 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 18 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/15/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 1.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017A | BGNDRF Trench 3 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 180000 | 1249.981 | 24.32463027 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017B | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017B | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-017B | BGNDRF Trench 3 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 4.3 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | TOC_WB | 8794 | | Organic Matter | 0.51 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 16000 | 124.9927804 | 1.719900659 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 330 | 124.9927804 | 4.394746159 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.92 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 170000 | 1249.927804 | 24.32359507 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 28 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018A | BGNDRF Trench 3 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 1.5 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018B | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018B | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-018B | BGNDRF Trench 3 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 4.8 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 1400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 250 | 24.99749925 | 0.878912074 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/13/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 15000 | 124.9874963 | 1.719827948 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.99 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 190000 | 1249.874963 | 24.32256677 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 46 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019A | BGNDRF Trench 3 121-152 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 1.2 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019B | BGNDRF Trench 3 121-152 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019B | BGNDRF Trench 3 121-152 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-019B | BGNDRF Trench 3 121-152 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 190 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/7/2013 | EC_S | R12542 | eC | Specific Conductance | 9300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/18/2013 | PH_S | R12687 | pH | pH | 7.68 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 2.7 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7439-95-4 | Magnesium | 13000 | 250.00001 | 3.440000138 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-23-5 | Sodium | 3000 | 250.00001 | 8.790000352 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8804 | 7440-70-2 | Calcium | 120000 | 1250.00005 | 24.32500097 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 7440-09-7 | Potassium | 730 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020A | BGNDRF Trench 4 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8833 | 1101 | Sodium Adsorption Ratio | 21 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020B | BGNDRF Trench 4 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 11 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020B | BGNDRF Trench 4 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-020B | BGNDRF Trench 4 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 62 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 6900 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 12000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2500 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.45 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.5 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 97000 | 1249.968526 | 24.32438751 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 380 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021A | BGNDRF Trench 4 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 21 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021B | BGNDRF Trench 4 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 8.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021B | BGNDRF Trench 4 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-021B | BGNDRF Trench 4 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 24 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 6500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 9400 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2200 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.0 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 61000 | 1250.01805 | 24.32535126 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 270 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022A | BGNDRF Trench 4 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 15 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022B | BGNDRF Trench 4 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 7.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022B | BGNDRF Trench 4 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 3.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-022B | BGNDRF Trench 4 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 6.7 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 5800 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7900 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1900 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.84 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 150000 | 1250.093007 | 24.32680991 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 150 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023A | BGNDRF Trench 4 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 21 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023B | BGNDRF Trench 4 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023B | BGNDRF Trench 4 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-023B | BGNDRF Trench 4 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 5.8 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 6100 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8300 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 2100 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.80 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 160000 | 1249.898508 | 24.32302497 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 160 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024A | BGNDRF Trench 4 100-125 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 27 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024B | BGNDRF Trench 4 100-125 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024B | BGNDRF Trench 4 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.5 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-024B | BGNDRF Trench 4 100-125 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 0.67 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 14000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 510 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.87 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 150000 | 1250.0149 | 24.32528996 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 84 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025A | BGNDRF Trench 4 125-150 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 4.9 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025B | BGNDRF Trench 4 125-150 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025B | BGNDRF Trench 4 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-025B | BGNDRF Trench 4 125-150 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/6/2013 | 300_S | 8742 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.1 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 16000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 660 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.81 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 130000 | 1250.098608 | 24.32691891 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 99 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026A | BGNDRF Trench 4 150-175 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 7.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026B | BGNDRF Trench 4 150-175 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026B | BGNDRF Trench 4 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-026B | BGNDRF Trench 4 150-175 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 1.1 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 3800 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1200 | 25 | 0.879 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 6700 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.98 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 150000 | 1249.877512 | 24.32261638 | 50 | mg/Kg | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 120 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027A | BGNDRF Trench 4 175-200 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 25 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027B | BGNDRF Trench 4 175-200 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027B | BGNDRF Trench 4 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 0.70 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-027B | BGNDRF Trench 4 175-200 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.6 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 4200 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 12000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1500 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 8.19 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 140000 | 1250.071004 | 24.32638174 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 130 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028A | BGNDRF Trench 4 213-243 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 16 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028B | BGNDRF Trench 4 213-243 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | < 1.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028B | BGNDRF Trench 4 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-028B | BGNDRF Trench 4 213-243 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 290 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 7700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 9800 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1700 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.51 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 2.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 110000 | 1249.889885 | 24.32285716 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 670 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029A | BGNDRF Trench 5 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 13 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029B | BGNDRF Trench 5 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029B | BGNDRF Trench 5 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.8 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-029B | BGNDRF Trench 5 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 100 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 5400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 1100 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.51 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 130000 | 1249.949002 | 24.32400758 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 190 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030A | BGNDRF Trench 5 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 10 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030B | BGNDRF Trench 5 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 5.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030B | BGNDRF Trench 5 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-030B | BGNDRF Trench 5 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 24 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 5000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 780 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.75 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 170000 | 1249.944202 | 24.32391418 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 260 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031A | BGNDRF Trench 5 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 9.2 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031B | BGNDRF Trench 5 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 4.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031B | BGNDRF Trench 5 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-031B | BGNDRF Trench 5 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.8 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2400 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 21000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 660 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.88 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 130000 | 1249.941753 | 24.32386651 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 180 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032A | BGNDRF Trench 5 91-121 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 5.1 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032B | BGNDRF Trench 5 91-121 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 2.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032B | BGNDRF Trench 5 91-121 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 1.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-032B | BGNDRF Trench 5 91-121 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/8/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 37 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.76 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 2.4 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 11000 | 249.9786218 | 3.439705836 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 420 | 249.9786218 | 8.789248343 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 100000 | 1249.893109 | 24.3229199 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 120 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033A | BGNDRF Trench 6 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 3.0 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033B | BGNDRF Trench 6 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 22 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033B | BGNDRF Trench 6 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.6 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-033B | BGNDRF Trench 6 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/7/2013 | 300_S | 8760 | 7727-37-9 | Nitrogen, Nitrate (As N) | 54 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 3000 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8700 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 420 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.84 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 1.6 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 100000 | 1250.030001 | 24.32558381 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 28 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034A | BGNDRF Trench 6 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 5.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034B | BGNDRF Trench 6 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 22 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034B | BGNDRF Trench 6 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-034B | BGNDRF Trench 6 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.9 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 1500 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7400 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 210 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.72 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/19/2013 | TOC_WB | 8920 | | Organic Matter | 0.90 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 120000 | 1250.115211 | 24.327242 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 10 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035A | BGNDRF Trench 6 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 1.1 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035B | BGNDRF Trench 6 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 12 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035B | BGNDRF Trench 6 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.4 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-035B | BGNDRF Trench 6 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 3.7 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 1600 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 7000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 180 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.69 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/19/2013 | TOC_WB | 8920 | .35 | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 140000 | 1249.881336 | 24.3226908 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 16 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036A | BGNDRF Trench 6 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 0.66 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036B | BGNDRF Trench 6 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 6.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036B | BGNDRF Trench 6 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.9 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-036B | BGNDRF Trench 6 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 130 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2700 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 10000 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 520 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.73 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/19/2013 | TOC_WB | 8920 | 2.49 | Organic Matter | < 0.39 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 110000 | 1250.115211 | 24.327242 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 60 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037A | BGNDRF Trench 7 0-25 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 4.0 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037B | BGNDRF Trench 7 0-25 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037B | BGNDRF Trench 7 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.5 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-037B | BGNDRF Trench 7 0-25 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 140 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 2300 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 7.86 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/19/2013 | TOC_WB | 8928 | | Organic Matter | 1.9 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 12000 | 250.0040301 | 3.440055454 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 570 | 250.0040301 | 8.790141697 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 110000 | 1250.02015 | 24.32539213 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 41 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038A | BGNDRF Trench 7 25-50 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 3.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038B | BGNDRF Trench 7 25-50 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038B | BGNDRF Trench 7 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-038B | BGNDRF Trench 7 25-50 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 29 | 6 | 1.93 | 20 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 1200 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 8800 | 125 | 1.72 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/14/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 330 | 125 | 4.395 | 5 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 8.01 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/19/2013 | TOC_WB | 8928 | | Organic Matter | 1.2 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 99000 | 1249.905632 | 24.3231636 | 50 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 32 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039A | BGNDRF Trench 7 50-75 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 2.7 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039B | BGNDRF Trench 7 50-75 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 10 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039B | BGNDRF Trench 7 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.3 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-039B | BGNDRF Trench 7 50-75 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/8/2013 | 300_S | 8772 | 7727-37-9 | Nitrogen, Nitrate (As N) | 2.4 | 0.3 | 0.0965 | 1 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/7/2013 | EC_S | R12545 | eC | Specific Conductance | 900 | 1 | 0 | 1 | µmhos/cm | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/19/2013 | PH_S | R12722 | pH | pH | 8.26 | 1.68 | 0.1 | 1 | pH Units | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/19/2013 | TOC_WB | 8928 | | Organic Matter | 0.76 | 0.39 | 0.39 | 1 | % | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7439-95-4 | Magnesium | 9000 | 250.0162811 | 3.440224027 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-23-5 | Sodium | 290 | 250.0162811 | 8.790572442 | 10 | mg/Kg | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/20/2013 | METALS_SOIL | 8808 | 7440-70-2 | Calcium | 98000 | 1250.081405 | 24.32658415 | 50 | mg/Kg | | 7/31/2013 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 7440-09-7 | Potassium | 30 | 1 | 0.3265 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040A | BGNDRF Trench 7 75-100 cm DBG | 8/21/2013 | SAR_SOIL | 8821 | 1101 | Sodium Adsorption Ratio | 1.8 | 0 | 0 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040B | BGNDRF Trench 7 75-100 cm DBG | 8/9/2013 | PHOS_SOIL | R13375 | | Phosphorous, Olsen | 9.0 | 1 | 1 | 1 | | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040B | BGNDRF Trench 7 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7440-38-2 | Arsenic | 2.7 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |
| Tetra Tech, Inc. | BGNDRF Soil Samples 7/31/2013 | 1308113-040B | BGNDRF Trench 7 75-100 cm DBG | 8/9/2013 | 6020_TOTAL | R13375 | 7782-49-2 | Selenium | < 0.50 | 0.5 | 0 | 1 | mg/L | | 7/31/2013 |