GULFPORT FERTILIZER GULFPORT, MS HARRISON COUNTY Site Assessment Report October 1999

# SITE CHARACTERIZATION REPORT

FORMER GULFPORT FERTILIZER PLANT SITE 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI

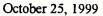


PREPARED FOR THE HANCOCK BANK COMMERCIAL LOAN DEPARTMENT 2510 14<sup>TH</sup> STREET GULFPORT, MS 39501



PREPARED BY BUTLER SERVICES OF MISSISSIPPI, INC. PO Box 1164 PASCAGOULA, MISSISSIPPI 39568-1164 (228) 769-6983





Butler Services of Mississippi, Inc.

- Environmental Consulting Services -

October 25, 1999

Mr. Tony Russell, Chief Uncontrolled Sites Section Mississippi Department of Environmental Quality P.O. Box 10385 Jackson, Mississippi 39289-0385

ATTN: Ms. Penelope "Penny" A. Johnston, Project Officer

RE: Site Characterization Report – Gulfport Fertilizer Plant 33<sup>rd</sup> Street, Gulfport, Harrison County, Mississippi

Dear Tony:

We are transmitting herewith the Site Characterization Report prepared on behalf of the Hancock Bank for your review and comments. The work was conducted pursuant to the Revised Site Characterization Work Plan submitted and approved by your office on July 9, 1999.

If you should have any questions or require any additional information, please do not hesitate to contact me or in my absence Louis Foitenberry at (228) 769-6983.

Sincerely yours.

BUTLER SERVICES OF MISSISSIPPI, INC.

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William D. Bates, P.E. Project Manager

WDB:ib

Attachments: Site Characterization Report dated October 25, 1999

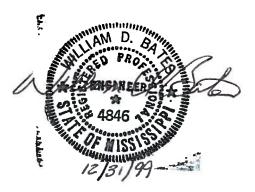
cc: Mr. Charles E, Webb, Executive Vice President, Hancock Bank w/ attachments

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October 25, 1999

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# SITE CHARACTERIZATION REPORT FORMER GULFPORT FERTILIZER COMPANY 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI

# 1.0 <u>Executive Summary</u>

The subject property is a 33.06-acre parcel of land located on 33<sup>rd</sup> Street approximately one block west of its intersection with State Highway 49 in Gulfport, Mississippi. The Gulfport Fertilizer Company, which closed for business in circa 1960, was formerly located on the subject property. The Fertilizer Company reportedly manufactured sulfuric acid and superphosphate fertilizer. Improvements to the land once consisted of concrete buildings, surfaced roads and railroad spurs, but the improvements have been largely destroyed.

Background information contained in the Phase I Environmental Assessment conducted by Covington & Associates, Inc. (Covington) and reviewed by Butler Services of Mississippi, Inc. (Butler Services) revealed that the subject site was used predominately for the production of phosphate fertilizer. There was no evidence of activities that would generate hazardous substances from the other operations that were briefly located at the site over the fifty or so years the site was utilized for industrial and manufacturing purposes other than the phosphate fertilizer operations.

A subsurface investigation was conducted by Covington for a potential purchaser in May and June of 1998. The investigation focused on an area approximately 720 feet (ft.) by 720 ft. in the northern half of the 33.06-acre parcel. Exploratory soil pits and two 4-inch diameter monitoring wells were installed during this investigation. The results of soil samples collected by Covington at the site indicated that elevated levels of lead (ranging up to 11,000 milligrams per kilogram (mg/kg)) and arsenic (ranging up to 1,310 mg/kg) contamination exists in the subsurface soils. Contamination at low levels was shown to exist in the groundwater, as well.

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A portion (approximately 7.9 acres) along the eastern perimeter of the subject property was the subject of a previous Site Characterization Report prepared by Butler Services. It was the intent of the Hancock Bank at that time to partition or subdivide the subject property for the purpose of leasing a portion of the property to a potential purchaser. A Work Plan for characterizing the remaining portion of the 33.06 acres was submitted to and approved by the Mississippi Department of Environmental Quality (MDEQ) on July 9, 1999. This Site Characterization Report addresses work completed for both portions of the subject property and is intended to characterize the vertical and horizontal extent of contamination for the entire 33.06-acre site.

A total of 260 soil samples were analyzed to define the horizontal and vertical extent of arsenic and lead in the underlying soils on the 33.06-acre subject property. Of these 112 soil samples were collected during the first sampling event on September 30 and October 1, 1998 and 148 soil samples were collected during the second sampling event on July 19 and July 23, 1999. Iso-concentration maps prepared from both sampling events for the 33.06-acre subject property revealed four identifiable source areas and one isolated area with arsenic and lead contaminants on the northern portion of the property. Two of these source areas are located along the western property boundary. The one isolated area with elevated levels of arsenic and lead contaminants is located near the railroad tracks along the eastern property boundary. The maximum level of contaminants in the apparent source areas ranged from 348 mg/kg to 5982 mg/kg for lead and 113 mg/kg to 702 mg/kg for arsenic. *The source area with the highest contaminant level of 5982 mg/kg is located at N 30° 23' 66" and W 89° 05' 85"*.

A total of twenty-four (24) soil samples identified in the Work Plan were evaluated to establish background concentrations of arsenic (As) in the native soils, resulting from naturally occurring or anthropogenic sources. The statistical analysis of this data was performed using the Shapiro-Wilk W Test for evaluating normality of data sets. The upper background limits for arsenic at the two foot and four foot depth interval from this

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data set are 1.25 and 0.85 milligrams per kilogram (mg/kg), respectively. These background limits did not appear to be representative of the actual conditions in the native soils when compared to the potential hazardous waste source areas with elevated arsenic levels and areas delineated on the arsenic iso-concentration maps. Hence, the data set was expanded to include all perimeter sample locations considered to be on the northern half while eliminating sample locations considered being on the southern half of the property. The upper background limits for arsenic at the two foot and four foot depth intervals from the expanded data set are 3.82 and 3.36 mg/kg, respectively.

The leachability of arsenic and lead contaminates in the soil underlying the property was also evaluated during this second sampling event for site characterization. A total of five (5) soil samples with the highest concentrations of lead and/or arsenic were analyzed for hazardous waste toxicity characteristics as defined in the Resources Conservation and Recovery Act (RCRA) using the Toxicity Characteristics Leachate Procedure (TCLP). The leachate for lead from two of the samples exceeded the TCLP Regulatory Limits for toxicity characteristics of 5.0 milligrams per liter (mg/l). Leachates for arsenic from all five samples were well below the Regulatory Limit of 5.0 mg/l for this contaminant.

The two monitoring wells, MW-1 and MW-2, installed as a part of a limited Phase II Environmental Assessment were to be sampled as a part of this second sampling event on July 23, 1999. Monitoring well MW-1 was purged and sampled in accordance with the procedures outlined in the Work Plan. The groundwater from monitoring well MW-2 contained a blackish suspended and settleable matter that could not be purged from the groundwater for sampling after several hours of pumping. Of the three contaminants analyzed in the groundwater, Arsenic (As), Lead (Pb) and Chromium (Cr), only lead at a level of 37 micrograms per liter ( $\mu$ g/l) or 0.037 ppm exceeded the Maximum Contaminant Level (MCL) for drinking water of 0.015 ppm. The additional contaminant chromium (Cr) was tested since it was included in the initial round of samples collected and analyzed by Covington during the limited Phase II Site Investigation. The following is a summary of the findings and conclusions of the data developed from the subsurface sampling and background information contained hereinafter:

- Arsenic and lead contaminants in the underlying soil in the identified source areas exceed MDEQ action levels for an unrestricted residential use site of 0.426 mg/kg and 400 mg/kg, respectively and for a deed restricted industrial use site of 3.20 mg/kg (up-gradient) and 1700 mg/kg, respectively.
- The upper background soil limits for arsenic in the native soils of 3.82 and 3.36 mg/kg at depth intervals 2 feet and 4 feet bgs, respectively. These limits are based on the expanded perimeter sampling data set and the USEPA guidance document for determination of inorganic background concentrations. These limits appear to be more representative of actual conditions of the underlying soils on the northern portion of the property.
- There are two apparent contaminant source areas located adjacent to the western property line that have elevated levels of arsenic in the underlying soils at 2 feet and 4 feet bgs where contaminants may have migrated off-site. To adequately address the potential migration of contaminants, additional borings should be advanced and samples collected on the adjoining vacant parcel with the consent and approval of the adjacent property.
- The isolated area adjacent to the railroad right-of-way along the eastern property boundary that has elevated levels of arsenic and lead contaminants is confined to property. Additional borings and samples were collected in February of 1999 to evaluate the off-site migration in this area.
- The constituents of concern, arsenic and lead, appear to be "bound-up" in the soil matrix as evidenced by the fact that only the lead leachate for two of the five soil

samples tested nominally exceed the TCLP regulatory limit. Further, these two soil samples are located in an area of suspect low soil pH.

- Of the three contaminants analyzed in the groundwater sample collected from monitoring well, MW-1, only lead at 0.37 ppm exceeded the Maximum Contaminant Level (MCL) for drinking water of 0.015 ppm. However, perimeter groundwater samples collected during the first sampling event, using Geoprobe were below laboratory detection limits of 0.005 milligrams per liter (mg/l) with the exception of samples in an area near the former railroad spur. The samples in this isolated area correlates with the elevated levels found in the soil in this same area.
- The groundwater from monitoring well MW-2 contained a blackish suspended and settleable matter that could not be purged from the groundwater after several hours of pumping. This well appears to be damaged or there is an intrusion into the well by a substance in the immediate area, and therefore, it should be abandoned and replaced.
- In order to adequately address existing and future groundwater underlying the site, MW-2 should be replaced at the proposed location shown on Figure 7 (MW-3). And a third monitoring well (MW-4) installed to access groundwater flow conditions (i.e. slope of gradient and direction of site groundwater) and contaminant migration, if any.

A work plan will be prepared to access the groundwater underlying the property. Further, once any additional site characterization work is completed to access migration of any contaminants off-site as a result of the two source areas along the western property boundary, a Corrective Action Plan (CAP) will be prepared and submitted to the MDEQ for review and approval.

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## 2.0 <u>Introduction</u>

The subject property is a 33.06-acre parcel of land located on 33<sup>rd</sup> Street approximately one block west of its intersection with State Highway 49 in Gulfport, Mississippi. The Gulfport Fertilizer plant, which closed for business in circa 1960, was formerly located on the subject property. The plant reportedly manufactured sulfuric acid and superphosphate fertilizer. Improvements to the land once consisted of concrete buildings, surfaced roads and railroad spurs, but the improvements have been largely destroyed.

When the phosphate fertilizer plant was in operation the type of phosphate commonly manufactured at that time was normal superphosphate. Normal superphosphate is manufactured by introducing sulfuric acid to phosphate rock (tri-calcium-phosphate). According to a local fertilizer manufacturer located on the Gulf Coast, typically the phosphorous pentoxide, referred to as P205 and the calcium oxide content of the rock used in production at the time the plant was operating was about 33% and 48%, respectively. The remainder of the constituents in the phosphate rock consisted of lead and arsenic as well as a low percentage of other compounds such as aluminum, iron, carbon dioxide, fluorine and miscellaneous trace elements. Hence, based upon the foregoing and the results of the Phase I Environmental Assessment and limited Phase II subsurface investigation performed at the site by others, lead and arsenic were identified as the constituents of concern.

A portion (approximately 7.9 acres) along the eastern perimeter of the subject property was the subject of a previous Site Characterization Report. It was the intent of the Hancock Bank at that time to partition or subdivide the subject property for the purpose of leasing a portion of the property to a potential purchaser. A Work Plan for characterizing the remaining portion of the 33.06 acres was submitted to and approved by the Mississippi Department of Environmental Quality (MDEQ) on July 9, 1999. This Site Characterization Report addresses work completed for both portions of the subject

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property and is intended to characterize the vertical and horizontal extent of contamination for the entire 33.06-acre site.

The objectives of the Work Plan for the remainder of the 33.06-acre site were to (1) delineate the extent of subsurface contamination in the soils of the remainder of the approximate 33 acre subject property; (2) develop background concentration levels for determining action levels, and (3) collect soil samples in the southern half of the subject property to mitigate any future questions as to the levels of constituents in this area. Discreet (depth specific sampling intervals) soil samples were collected at depths in the source areas to supplement the exploratory pit and composite surface samples collected by Covington. The purpose of the discreet samples was to better define the horizontal and vertical extent of contamination in the source areas.

# 2.1 Property Background

The immediate adjacent properties to the north and west include vacant land and a low to middle income residential subdivision. The Illinois Central Railroad borders the property on the east. Commercial facilities including a soft drink bottling facility, aluminum recycling plant and United States Department of Agriculture (USDA) Laboratory are located east of the railroad tracks. A moving and storage facility and 33<sup>rd</sup> Street are located south of the property.

A 1929 Harrison Country Tax Assessors Map, the "Gulfport, North" Topographic Quadrangle Map and the series of aerial photography examined by others, beginning in 1940 to 1990, was used to determine past use of the adjacent lands and the subject property to its present day status. According to a 1940 aerial photograph, the facility that bounds the subject site on the south side appears to have been the site of the hangers for the first Gulfport Airport. The immediate adjacent lands were vacant at that time. Subsequent photography examined, beginning in the year 1956, indicates light industrial use of the properties east of the railroad. A plastic production facility on the south side of the subject property is also visible in the 1956 photography.

It appears that the subject property was an active commercial site from approximately 1904 to sometime between about 1972 and 1978 (+/-68 years). The first recorded indication of industrial use of the property found is a Warranty Deed dated July 6, 1903 from J.T. Jones to the Gulfport Cotton Oil, Fertilizer & Manufacturing Co., and which covered file subject (Deed Book 56@ Page 404). The instrument stated that "The grantee must complete the oil mill plant by January 1, 1904. On September 21, 1908 Gulfport Cotton Oil Fertilizer & Manufacturing Co., conveyed the same to the Exporters Cotton Oil Company (Deed Book 88 @ Page 248). A site sketch and survey was included with this recorded instrument. The site sketch shows six dummy rail lines from the Illinois Central Railroad, what appears to be a sulfuric acid manufacturing configuration and a phosphate fertilizer production facility, several oil tanks and other facilities used in connection with raw cotton bulk product handling.

The exact period that the cotton oil and product facility operated from 1904 to 1920 was not determined from the records. However, the existence of a "refinery shed" is noted in the conveyance records. The conveyance records show that for a period of about two years beginning in 1920, the cotton product facility was used as "The Continental Tire & Rubber Co.", manufacturers of automobile tires & tubes. A Sanborn Insurance Map dated 1921 further corroborates the land records with a sketch indicating the production configuration at that time. The land records, a 1929 Sanborn map and aerial photography dated after 1922 reviewed indicate the cessation of and the dismantling of the tire and rubber manufacturing facility. The site was not used for this purpose again.

Both a 1940 aerial photograph and a 1950 Sanborn Fire Insurance Map indicate the presence of a cotton ginning facility in the southeast corner of the property. There was no evidence of this facility in subsequent Sanborn and aerial photography examined.

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As previously noted above, records indicate that at least the upper half of the subject tract was being used in connection with the production of sulfuric acid and superphosphate The land records also show that The Gulfport Cotton Oil, Fertilizer & fertilizer. Manufacturing Co. used this area from approximately 1904 until exporters Cotton Oil Company took over the operations in 1908. In 1914, the Exporters Cotton Oil. Lost the property through foreclosure. It is believed that from 1914 to approximately 1920, Gulfport Fertilizer Company operated the production facilities for Mell R. Wilkinson, The Lowery National Bank of Atlanta, or both. A 1921 Sanborn Fire Insurance Map also indicates that Gulfport Fertilizer Company was operating the facility at that time. By the year 1925, Gulfport Fertilizer Co. was the sole owner and operator of the facilities. Sanborn Fire Insurance maps from 1929 and 1950 indicate that the fertilizer manufacturing facilities were in full operation. In 1960 the Gulfport Fertilizer Co. relinquished ownership of the subject lands unto H & F Engineering Co., Inc., which lost the property through foreclosure to Deposit Guaranty National Bank, within two years. On June 10, 1995 Mr. R. W Hyde, III, son of R.W. Hyde, Jr., who was the owner of H&F Engineering Co., stated that his father was in the sewerage and drainage business and that he was never in the fertilizer business. No evidence that the site was used for any commercial purpose from approximately 1960 when H & F Engineering Co., owned the property for about two years, and during the period when Deposit Guaranty National Bank owned the property for about two years. In the year 1966, the Deposit Guaranty National Bank sold the subject lands to Ernest Yeager & Sons, Inc. Mr. Leroy Yeager, who was secretary treasurer of Ernest Yeager & Sons, Inc., in 1966, stated on June 9, 1995 that Ernest Yeager and Sons, Inc. acquired the property for investment purposes only and that they were never involved with any process activity at the site. A Sanborn Map from 1967 also indicates that the site was inactive at that time. In 1972 Ernest Yeager & Sons, Inc., granted a 15-year lease, which covered approximately 4.00 acres to Best Concrete Products, Inc., for the purpose of manufacturing concrete block and masonry. It appears from a 1975 aerial photograph that the site in fact was probably

being used for the manufacture of concrete block and masonry. However, several unrecognizable small objects were also noted in the 1975 photograph. In or about the year 1982 the Hancock Bank secured the property through foreclosure proceedings. Since the year 1982 the property has not been occupied or operated for industrial or commercial purposes. Both the 1982 and 1990 aerial photographs examined indicated that the site was vacant except for a few remaining abandoned structures.

It appears that the remainder of the property was used for residential and office purposes. The mapping and/or photograph references herein indicate the presence of four dwellings on the North end of the property, two garages, and an office. There are four additional dwellings on the South end of the subject property.

# 2.2 **Previous Investigation**

Covington and Associates Corporation (Covington) conducted a Preliminary Subsurface Investigation of the subject property in May and June 1998, on behalf of a potential purchaser. Exploratory soil pits and two 4-inch diameter monitoring wells were installed during this investigation. The results of soil samples collected by Covington at the site indicated that elevated levels of lead (ranging up to 11,000 mg/kg) and arsenic (ranging up to 1,310 mg/kg) contamination exists in the subsurface soils. Contamination at low levels was shown to exist in the groundwater, as well. The samples were collected from an area approximately 720 feet by 720 feet, in the northern half of the property.

## 3.0 Investigative Activities

On September 30 and October 1, 1998, Butler Services performed soil and groundwater sampling in connection with the 7.9 acre portion of the subject property that was to be subdivided and leased by the bank, referred to herein as the first sampling event. The project was overseen and performed by Butler's Senior Project Manager, William D. Bates, P.E. Singley Construction Company provided equipment to advance the borings and collect groundwater samples. Soil and groundwater samples were submitted to Micro-Methods Laboratory, Inc. of Ocean Springs, Mississippi for analysis.

Soil samples were collected on a 100-foot grid north and south of the proposed radial conveyor line to be installed on the 7.9-acre parcel. Additional soil sampling was conducted in an isolated area adjacent to the former railroad spur on October 21, 1998 and February 12, 1999. The soil sampling locations are identified in Figure No. 2 and the analytical results of this first sampling event in connection with the subject property are listed in Table 1. Groundwater samples were also collected in the borings along the eastern and western perimeter of the 7.9-acre parcel. The groundwater sampling analytical results is listed in Table 12.

Fifty-six (56) soil borings were advanced to depths of four (4) feet below ground surface (bgs) using a track mounted direct-push Geoprobe 5400 unit and a total of 112 soil samples collected at the site on September 30 and October 1, 1998. Four additional borings were advanced and six additional samples collected in the isolated hot spot area adjacent to the railroad track on October 21, 1998 and February 12, 1999. Soil samples were collected at depths of two and four feet in each boring and the analytical results listed in Table 1. Groundwater was encountered at approximately four feet bgs. There were no unusual conditions or complications encountered during the drilling operations.

During the period between from July 19 to July 23, 1999, Butler Services performed soil and groundwater sampling in connection with the remainder of the 33.06-acre subject

property, referred to herein as the second sampling event. The project was overseen and performed by Butler Services' Senior Project Manager, William D. Bates, P.E. Environmental Management Services, Inc. (EMS) of Hattiesburg, Mississippi provided labor and equipment to advance the borings and collect groundwater samples. Soil and groundwater samples were submitted to Micro-Methods Laboratory, Inc. in Ocean Springs, Mississippi, for analyses. Ms. Penelope A. Johnston, Project Officer, of the MDEQ Uncontrolled Sites Section was on site during the subsurface investigation.

Mississippi One Call System, Inc. was contacted to mark the location of gas, water and sewer and buried electrical lines at the site prior to initiating the subsurface investigation. Access to the work area was restricted to 40 hour Health and safety trained personnel during the investigation

The areas to be investigated were measured and staked in a grid pattern with flags placed at the specific grid points to mark where soil borings were to be advanced. A 100-foot horizontal grid, established during the first sampling event for the 7.9-acre portion of the subject property, was extended from the east to the west in the area of the former plant operations on the northern half of the property. In addition, a 200-foot grid pattern was extended east to the west to the southern property line on the southern half of the property. Although, there had been no evidence developed that any significant industrial/manufacturing activities had occurred in the southern portion of the subject property, Butler had been requested by the bank to collect soil samples in this area to mitigate any future questions as to the levels of constituents in this area. The soil sampling locations are identified in Figure No. 2.

Seventy-two (72) soil borings were advanced to depths of four (4) feet below ground surface (bgs) at the site on July 19 and July 23, 1999. A total of 148 soil samples were collected from the borings at sampling depths of two and four feet. Forty-eight (48) of the borings were located on the northern half and twenty-four (24) on the southern half of

the property and are listed in Tables 2 and 3. Groundwater was encountered at approximately four feet bgs. There were no unusual conditions or complications encountered during the drilling operations.

The soil borings from both sampling events were advanced using Geoprobe's Macro-core soil sampler, a 48-inch long by 2-inch diameter soil sampler capable of recovering a sample that measures up to 1300 ml in volume in the form of a 46-inch x 1.5-inch core. A releasable probe point was attached to the bottom of the sampling tube to prevent soil from entering the tube until the sampling depth was reached. The sampler was pushed into the soil with connected 4-foot long hollow probe rods. Once the sample depth was reached the point was released and the sampling tube was driven into undisturbed soil. Soil samples were collected using new clear PVC sample collection liners that are approximately 46-inch long by 1.75-inches in diameter. Soil samples collected were logged at two-foot intervals to a maximum depth of four feet below ground surface (bgs) or until groundwater was encountered, whichever occurred first. After the samples had been collected from the soil cores, the remaining soil was drummed for disposal off-site in a permitted facility. The boring were then sealed to the ground surface with Bentonite.

The sampler and sample tubes were cleaned using tap water and Liquinox. A brush was used, as necessary, to remove particulate matter and surface films during cleaning. The equipment was then triple rinsed thoroughly with tap water, analyte free water and pesticide-grade isopropanol followed by a final rinse of analyte free water. Once the equipment had been cleaned it was removed from the decontamination area and covered with aluminum foil when not in use. Equipment stored overnight was wrapped in aluminum foil and covered with clean, unused plastic. The rinsate was containerized and transferred to drums for disposal off-site in a permitted facility.

A total of 148 soil samples were collected during the second sampling event for independent laboratory analysis. As a part of the field Quality Assurance and Quality

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Control (QA/QC) program, replicate samples and daily equipment field blank samples were prepared similarly for delivery to the laboratory. The samples were transferred to new laboratory furnished glass sample jars, sealed with a teflon-lined cap and then labeled. The samples were placed in an ice chest and delivered to Micro-Methods Laboratory, Inc. in Ocean Springs, Mississippi in a chilled condition for analyses. A chain-of-custody was maintained to trace sample custody.

### 3.1 Property Soil and Vadose Zone Characteristic

A total of twenty-four (24) soil samples at depths of two and four feet from twelve (12) borings were evaluated to establish background concentrations of arsenic (As) in the native soils, resulting from naturally occurring or anthropogenic sources. The samples were analyzed using United States Environmental Protection Agency (USEPA) Method SW 846, 6010A-ICP. Of the twenty-four (24) samples, sixteen were from eight borings randomly selected prior to the current investigative activities and eight of the samples were selected from four borings advanced during the first sampling event. All of the background samples analyzed and evaluated are located along the perimeter of the subject property and are listed in Tables 5 and 8. This soil data was evaluated to develop background limits based on guidance from USEPA Engineering Forum Issue: "Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites", December 1995 and statistical tables from Statistical Methods for Environmental Pollution Monitoring by Richard O. Gilbert. The statistical analysis of this data was performed using the Shapiro-Wilk W Test for evaluating normality of data sets and are presented in Table 5 through Table 11.

The upper background limit for arsenic at the two foot and four foot depth interval from the twelve perimeter boring data set is 1.25 and 0.85 milligrams per kilogram (mg/kg), respectively. Background sample RC10 was eliminated from the analysis due to the elevated level of arsenic found at both depth intervals. The moisture content of the soil in borings S71 and S128 prevented the collection of samples for analysis at the four foot depth interval. It was also necessary to eliminate sample 31N38 with an arsenic concentration of 1.6 mg/kg from the four foot depth interval data set to achieve normality. The analysis of the data sets using the Shapiro-Wilk W Test for normality are presented in Table 5 for the two foot depth interval and Table 8 and Table 9 for the four foot depth interval.

The upper arsenic background limits determined from the twelve perimeter boring data set does not appear to be representative of the actual conditions in the native soils when compared to the potential hazardous waste source areas with elevated arsenic levels and areas delineated on the arsenic iso-concentration maps, herein. Further, the type(s) of soil underlying the 33-acre property on the northern and southern portion and their characteristics appeared to vary as noted on the boring logs (Appendix D). Hence, the data set was expanded to include all perimeter sample locations considered to be on the northern half while eliminating sample locations considered being on the southern half of the property. The area of former fertilizer plant operations identified in previous site assessments and investigations is located within the northern half. This data set includes thirty-eight perimeter sample locations and extends from perimeter borings 31S61 and S60 on the south to perimeter borings 33N31 and N40 on the north.

The upper background limit for arsenic at the two foot and four foot depth interval from the thirty-eight perimeter boring data set is 3.82 and 3.36 mg/kg, respectively. Background samples N20, RC10, S20, S50, 31S61 and 31S51 were eliminated from the data set analysis due to either the elevated level of arsenic found at the depth intervals or due to their geographic proximity to areas with elevated levels of arsenic. Other background samples, identified in the Tables, were statistically eliminated from the data set to achieve normality. The analysis of the data sets using the Shapiro-Wilk W Test for normality are presented in Table 6 and Table 7 for the two foot depth interval and Table 10 and Table 11 for the four foot depth interval.

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The upper background soil limits of 3.82 and 3.36 mg/kg for arsenic in the native soils appears to be more representative of actual conditions on the northern portion of the property.

The leachability of arsenic and lead contaminates in the soil underlying the property was also evaluated during this second sampling event for site characterization. A total of five (5) soil samples were selected from the grid delineation samples and the additional samples collected in the previous test pit sampling areas at the locations and depths with the highest concentrations of total lead and total arsenic for leachate analyses. The samples with the highest concentrations of lead and/or arsenic were analyzed for hazardous waste toxicity characteristics as defined in the Resources Conservation and Recovery Act (RCRA) using the Toxicity Characteristics Leachate Procedure (TCLP), EPA Method SW 846, Section 1311

The additional sample locations selected for leachability analysis was based he analytical results of the previous sampling conducted by Covington during the limited Phase II Site Assessment. The subsurface soils at the identified locations were re-sampled as a part of this second sampling event at the same sampling intervals bgs as the grid delineation soil samples and analyzed for total lead (Pb) and total arsenic (As). The additional samples, identified with a "T' preceding the sample number, are shown on the Figure No. 2 and the sample results are listed in Table 2.

The leachate for lead from samples S18 at the four foot depth interval and S19 at the two foot depth interval exceeded the TCLP Regulatory Limits for toxicity characteristics of 5.0 milligrams per liter (mg/l). However, it should also be noted that the leachate from two of the samples analyzed, RC6 and RC7 at the two foot depth interval, with the highest concentration of total lead were less than 1.0 mg/l. Leachates for arsenic from four of the samples were less than the laboratory detection limits of 0.1 mg/l and 0.29

mg/l for the remaining sample well below the Regulatory Limit of 5.0 mg/l for this contaminant.

## 3.2 Property Groundwater/Acquifer Characteristics

During the first sampling event from September 30 and October 1, 1998, twenty-five (25) groundwater samples were collected in connection with the 7.9 acre portion of the subject property that was to be subdivided and leased by the bank. The samples were collected using a Screen Point 15 Groundwater sampler as manufactured by Geoprobe. Of the twenty-five groundwater samples collected, eighteen were from borings located along the eastern property boundary and western perimeter of the 7.9-acre portion. The remaining samples were collected from borings along the western and southern property boundary of the remaining 33.06-acre site. Groundwater was encountered approximately four feet bgs. The groundwater samples were delivered in a chilled preserved condition, under chain-of-custody documentation to Micro-Methods laboratory, Inc. in Ocean Springs, Mississippi for analysis.

The groundwater samples collected during the first sampling event on September 30 and October 1, 1998 were submitted for analysis of lead (Pb) and arsenic (As) concentrations by EPA Method 200.7-ICP. However, due to the amount of sediment in the groundwater samples collected on September 30, 1998 (sample identifications beginning with the number "30") originally submitted to the laboratory for analysis it was necessary to re-establish these sampling locations and collect additional groundwater samples for analysis. The groundwater was re-sampled on October 21, 1998 using a Geoprobe groundwater sampler. The groundwater analytical results of the October 1 and re-sampling on October 21, 1998 are included in Appendix A and listed in Table 12.

The Geoprobe's Screen Point 15 Groundwater sampler, consisting of a 1.5-inch OD x 52inch sheath with expendable point, was driven to the required depth and then pulled back approximately 44 inches to expose a stainless steel 1-inch x 41-inch.004 slot size screen

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to collect groundwater samples. The groundwater was pumped using a peristaltic pump through new 3/8-inch x  $\frac{1}{4}$ -inch ID polyethylene tubing directed to the bottom of the screen. Prior to collecting the samples, the groundwater was pumped until a clear flow of water was achieved, approximately1 to 2 quarts.

The two monitoring wells installed by Covington as a part of a limited Phase II Environmental Assessment of a portion of the site, identified on Figure 7 as MW-1 and MW-2, were to be sampled as a part of this second sampling event on July 23, 1999. Monitoring well MW-1 was purged and sampled in accordance with the procedures outlined in USEPA, Region IV's *"Environmental Investigations Standard Operating Procedures and Quality Assurance Manual"* (EISOPQAM). The groundwater from monitoring well MW-2 contained a blackish suspended and settleable matter that could not be purged from the groundwater after several hours of pumping.

A licensed land surveyor surveyed the wells in to a benchmark of known elevation above mean sea level. The depth to groundwater was measured in each well using a Solinst water level meter, originating at a specific point on the well casing prior to collecting groundwater samples.

Monitoring well MW-1 was purged using a slow purge method. Sampling was performed after the well had achieved at least 80 percent (%) recharge and the temperature, pH and conductivity of the groundwater had stabilized as indicated by three consecutive instrument readings within 10 % and the water was free of suspended and settleable matter. An unfiltered and filtered groundwater sample were collected from the well, using a new 1 liter, laboratory furnished and nitric acid preserved, plastic sample containers. The groundwater samples were delivered under chain-of-custody in a chilled condition to Micro-Methods Laboratory, Inc. in Ocean Springs, Mississippi for analyses. The samples were analyzed for lead (Pb), arsenic (As), and chromium (Cr) using USEPA

Methods 239.2, 206.2 and 218.2 - Furnace, respectively. The groundwater sampling analytical results is listed in Table 13.

Of the three contaminants analyzed, only lead exceeded the Maximum Contaminant Level (MCL) for drinking water of 0.015 ppm. Lead in the unfiltered and filtered sample contained 35 micrograms per liter ( $\mu$ g/l) and 37  $\mu$ g/l or 0.035 ppm and 0.037 ppm, respectively. The additional contaminant chromium (Cr) was tested since it was included in the initial round of samples collected and analyzed by Covington during the limited Phase II Site Investigation.

### 4.0 <u>Property Physical Characteristics</u>

Topographically, the site is astride one of the many coastal, east/west parallel trending buried beach ridges. Elevations at the site vary from slightly above 25 feet mean sea level near the center of the site to at or just below 25 feet mean sea level near the northern limit of the property.

### 4.1 Surface Water

The nearest major body of water is the Mississippi Sound located about 1.75 miles to the south. Surface drainage off-site appears to be sufficient and is generally to the north into a low wetlands area. There is some drainage to the southwest where additional wetlands are suspected. Drainage from the northern wetlands is northwest via several drainage ditches into Turkey Creek. The drainage Southward is via a collection ditch that eventually discharges into the western extremities of Brickyard Bayou.

# 4.2 Regional and Property Geology

The general geology of the site is similar to that of the region, all part of the northern Gulf Coast margin. The stratigraphic column consists primarily of a wedge of Mesozoic and Cenozoic sediments derived from continental interior drainage. Sediment supply in most of the area exceeded the subsidence rate, resulting in the seaward progradation of the Gulf continental margin (Knox, 1994).

Geologically, the side is located within a series of east/west, coastal trending beach ridges. Specifically, the site is astride a buried beach ridge, which comprise a part of the Gulfport ridge complex. As a result, there is variation of soil types due to drainage and modified hydrologic patterns.

The three distinctive soil types within the boundaries of the subject property are the Harleston, Atmore, and Plummer series according to soil survey information available from the Natural Resources Conservation Service, Soil Series Survey. The predominate soil type underlying 90 to 95 percent (%) of the subject property is the Harleston series. The Atmore and the Plummer soil types are located along the eastern and northern property boundary, respectively.

The Harleston series, a non-hydric soil type, is a yellowish-brown to pale-brown loamy sand overlain by 0 to 8-inches of very dark grayish brown loamy sand. These soil characteristics were observed during the subsurface investigation of the 7.9-acre portion of the subject property conducted by Butler. These soil characteristics were noted down to the water-bearing zone, which was encountered approximately 4-feet below ground surface at the site.

### 5.0 Nature and Extent of Contamination

Action levels for the contaminants of concern, according to previous conversations with the Uncontrolled Sites Section and the Brownfield's Section of the MDEQ for an unrestricted residential use site are 0.426 mg/kg for arsenic and 400 mg/kg for lead in the underlying soil. Further, for a site with deed restrictions including but not limited to limiting the property to certain future uses such as Industrial, the action levels are 3.20 mg/kg (up-gradient) for arsenic and 1700 mg/kg for lead in the underlying soil. Site specific action levels may be higher in either case if the background concentrations in the native soils, resulting from naturally occurring or anthropogenic sources are shown to be higher than the established action levels.

Groundwater action levels for an unrestricted site are 50 ppb for arsenic and 15 ppb for lead. Action levels for groundwater on a deed restricted site for the contaminants of concern, arsenic and lead, is determined base upon site specific conditions and the limit is set at the property boundary.

### 5.1 Soils and Vadose Zone

The soil sampling analytical results of the 112 soil samples collected during the first sampling event on September 30 and October 1, 1998 are listed in Table 1. The six additional samples collected in the isolated hot spot area adjacent to the railroad track on October 21, 1998 and February 12, 1999 are also listed in Table 1. The soil samples were analyzed by the laboratory for lead (Pb) and arsenic (As) using USEPA Method SW 846, 6010A.

Total lead in the soil samples ranged in concentrations from 0.2 milligrams per kilogram (mg/kg) to 306 mg/kg at the 2 foot depth interval below ground surface (bgs) and from <0.1 mg/kg to 22.8 mg/kg at the 4 foot depth interval with the exception of an isolated area adjacent to the former railroad spur (Sample No. 31S51). The lead concentrations in the subsurface soils in this isolated area located approximately 800 ft south of the

northeast corner of the subject property ranged from 539 mg/kg at 2 feet to 1241 mg/kg at 4 feet bgs.

Arsenic concentrations in the soils ranged from <0.1 mg/kg to 10.2 mg/kg at the 2 foot depth interval bgs and from <0.1 mg/kg to 6.7 mg/kg at the 4 foot depth interval with the exception of two distinct areas within the 7.9-acre parcel. One of the areas coincides with the isolated area adjacent to the former railroad spur (Sample No. 31S51) that contained elevated levels of lead concentrations. Arsenic concentrations in the subsurface soils in this area were 57.6 mg/kg at 2 feet and 74.5 at 4 feet bgs. The second area with elevated levels of arsenic, encompasses an area approximately 150 feet by 300 feet and is located approximately 400 feet south and 300 feet west of the northeast corner of the subject property. In this second area, arsenic concentrations range from 106 mg/kg at 2 feet to 23.4 mg/kg at 4 feet bgs.

The soil sampling analytical results of the 148 soil samples collected during the second sampling event on July 19 and July 23, 1999 are listed in Table 2 for the northern half and Table 3 for the southern half of the remaining 33.06-acre site. The soil samples were analyzed by the laboratory for lead (Pb) and arsenic (As) using USEPA Method SW 846, 6010A.

The lead contaminant in the soil samples on the northern half ranged in concentrations from less than the minimum quantifiable level (MQL) for the sample dilution factor of 0.20 mg/kg to 5982 mg/kg at the 2 foot depth interval bgs and from less than the minimum quantifiable level (MQL) for the sample dilution factor of 0.2 mg/kg and 0.6 mg/kg to 3657 mg/kg at the 4 foot depth interval. Elevated levels of lead were encountered in isolated areas along the western property boundary in the northern half of 348 mg/kg (Sample RC10) and 597 mg/kg (Sample S50) at 2 feet and 492 mg/kg (Sample S40) at 4 feet bgs. Total lead in the soil samples on the southern half ranged in concentrations from less than the minimum quantifiable level (MQL) for the sample

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dilution factor of 0.2 milligrams per kilogram (mg/kg) to 63.4 mg/kg at a depth of two feet bgs and to 5.94 mg/kg at four feet bgs.

The arsenic contaminant in the soil samples on the northern half ranged in concentrations from less than the minimum quantifiable level (MQL) for the sample dilution factor of 0.07 mg/kg, 0.05 mg/kg and 0.1 to 691 mg/kg at the 2 foot depth interval bgs and from less than the minimum quantifiable level (MQL) for the sample dilution factor of 0.06 mg/kg and 0.05mg/kg to 242 mg/kg at the 4 foot depth interval. Elevated levels of arsenic were encountered in isolated areas along the western property boundary in the northern half of 127 mg/kg (Sample RC10) and 702 mg/kg (Sample S50) at 2 feet and 175 mg/kg (Sample RC10) and 113 mg/kg (Sample S50) at 4 feet bgs. Total arsenic in the soil samples on the southern half ranged in concentrations from less than the minimum quantifiable level (MQL) for the sample dilution factor of 0.05 mg/kg at the 2 foot depth interval.

Iso-concentration maps, Figures 3 through 6, prepared from both sampling events for the 33.06-acre subject property revealed four identifiable source areas and one isolated area with arsenic and lead contaminants on the northern portion of the property. Two of these source areas are located along the western property boundary. The one isolated area with elevated levels of arsenic and lead contaminants is located near the railroad tracks along the eastern property boundary at sampling locations 31S51 and 31S61.

# 5.2 Groundwater

Lead and Arsenic levels in the groundwater samples collected during the first sampling event on September 30, October 1, and October 21, 1998 are listed in Table 12. The groundwater samples collected along the eastern property boundary and western perimeter of the 7.9 acre portion of the property were all less than the laboratory detection limits of 0.005 milligrams per liter (mg/l) with the exception of samples in an

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area near the former railroad spur. The samples in this isolated area correlates with the elevated levels found in the soil in this same area.

The groundwater analytical results form monitoring well MW-1 sampled during the second sampling event on July 23, 1999 are listed in Table 13. Of the three contaminants analyzed, only lead exceeded the Maximum Contaminant Level (MCL) for drinking water of 0.015 ppm. Lead in the unfiltered and filtered sample contained 35 micrograms per liter ( $\mu$ g/l) and 37  $\mu$ g/l or 0.035 ppm and 0.037 ppm, respectively. The additional contaminant chromium (Cr) was tested since it was included in the initial round of samples collected and analyzed by Covington during the limited Phase II Site Investigation.

#### 6.0 <u>Summary and Conclusions</u>

A total of 260 soil samples were analyzed to define the horizontal and vertical extent of arsenic and lead in the underlying soils on the 33.06-acre subject property. Of these 112 soil samples were collected during the first sampling event on September 30 and October 1, 1998 and 148 soil samples were collected during the second sampling event on July 19 and July 23, 1999. Iso-concentration maps prepared from both sampling events for the 33.06-acre subject property revealed four identifiable source areas and one isolated area with arsenic and lead contaminants on the northern portion of the property. Two of these source areas are located along the western property boundary. The one isolated area with elevated levels of arsenic and lead contaminants is located near the railroad tracks along the eastern property boundary. The maximum level of contaminants in the apparent source areas ranged from 348 mg/kg to 5982 mg/kg for lead and 113 mg/kg to 702 mg/kg for arsenic. *The source area with the highest contaminant level of 5982 mg/kg is located at N 30° 23' 66" and W 89° 05' 85"*.

- Arsenic and lead contaminants in the underlying soil in the identified source areas exceed MDEQ action levels for an unrestricted residential use site of 0.426 mg/kg and 400 mg/kg, respectively and for a deed restricted industrial use site of 3.20 mg/kg (up-gradient) and 1700 mg/kg, respectively.
- The upper background soil limits for arsenic in the native soils of 3.82 and 3.36 mg/kg at depth intervals 2 feet and 4 feet bgs, respectively. These limits are based on the expanded perimeter sampling data set and the USEPA guidance document for determination of inorganic background concentrations. These limits appear to be more representative of actual conditions of the underlying soils on the northern portion of the property.
- There are two apparent contaminant source areas located adjacent to the western property line that have elevated levels of arsenic in the underlying soils at 2 feet and 4

feet bgs where contaminants may have migrated off-site. To adequately address the potential migration of contaminants, additional borings should be advanced and samples collected on the adjoining vacant parcel with the consent and approval of the adjacent property.

- The isolated area adjacent to the railroad right-of-way along the eastern property boundary that has elevated levels of arsenic and lead contaminants is confined to property. Additional borings and samples were collected in February of 1999 to evaluate the off-site migration in this area.
- The constituents of concern, arsenic and lead, appear to be "bound-up" in the soil matrix as evidenced by the fact that only the lead leachate for two of the five soil samples tested nominally exceed the TCLP regulatory limit. Further, these two soil samples are located in an area of suspect low soil pH.
- Of the three contaminants analyzed in the groundwater sample collected from monitoring well, MW-1, only lead at 0.37 ppm exceeded the Maximum Contaminant Level (MCL) for drinking water of 0.015 ppm. However, perimeter groundwater samples collected during the first sampling event, using Geoprobe were below laboratory detection limits of 0.005 milligrams per liter (mg/l) with the exception of samples in an area near the former railroad spur. The samples in this isolated area correlates with the elevated levels found in the soil in this same area.
- The groundwater from monitoring well MW-2 contained a blackish suspended and settleable matter that could not be purged from the groundwater after several hours of pumping. This well appears to be damaged or there is an intrusion into the well by a substance in the immediate area, and therefore, it should be abandoned and replaced.

• In order to adequately address existing and future groundwater underlying the site, MW-2 should be replaced at the proposed location shown on Figure 7 (MW-3). And a third monitoring well (MW-4) installed to access groundwater flow conditions (i.e. slope of gradient and direction of site groundwater) and contaminant migration, if any. The existing and proposed locations for the monitoring wells are shown on Figure 7, herein.

A work plan will be prepared to access the groundwater underlying the property. This work will also include proposed future monitoring requirements. The groundwater work plan will be submitted to the Mississippi Department of Environmental Quality (MDEQ) for review and approved prior to initiating any field activities. Upon completion of the work proposed in the approved work plan, a report of the findings will be prepared and will be submitted to the MDEQ for review. Further, once any additional site characterization work is completed to access migration of any contaminants off-site as a result of the two source areas along the western property boundary, a Corrective Action Plan (CAP) will be prepared and submitted to the MDEQ for review and approval.

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Butler Services of Mississippi, Inc. **TABLES** 

#### TABLE 1 FIRST SAMPLING EVENT SOIL SAMPLING ANALYTICAL RESULTS Sept. 30, Oct .1 & Oct. 21, 1998 FORMER GULFPORT FERTILIZER PLANT 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI Page 1 of 3

Sample Number	Sample Location	Sample Depth 2ft		Sample Depth 4ft		REMARKS
Hambol		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)	
30N31	300 ft North of Radial Conveyor Line	2.0	11.8	0.1	0.2	Adjacent to rail spur
30N32	300 ft North of Radial Conveyor Line	6.6	170	0.3	5.2	
30N33	300 ft North of Radial Conveyor Line	0.6	2.7	0.5	5.1	
30N34	300 ft North of Radial Conveyor Line	0.9	28.3	<0.1	3.9	
30N35	300 ft North of Radial Conveyor Line	0.6	2.4	2.5	0.6	
31 N36	300 ft North of Radial Conveyor Line	1.5	4.8	0.3	5.1	
31N37	300 ft North of Radial Conveyor Line	4.5	12.9	0.1	2.1	
31N38	300 ft North of Radial Conveyor Line	0.5	5.4	1.8	2.8	
31N39	300 ft North of Radial Conveyor Line	1.6	7.3	<0.1	2.3	Ξ.
30N21	200 ft North of Radial Conveyor Line	0.6	3.2	1.3	4.8	Adjacent to rail spur
30N22	200 ft North of Radial Conveyor Line	0.6	15.0	3.6	6.0	
30N23	200 ft North of Radial Conveyor Line	0.7	3.2	0.4	0.2	
30N24	200 ft North of Radial Conveyor Line	0.8	0.8	2.5	22.8	
30N25	200 ft North of Radial Conveyor Line	1.2	2.2	1.4	1.1	
31N26	200 ft North of Radial Conveyor Line	0.7	1.5	<0.1	2.1	
31N27	200 ft North of Radial Conveyor Line	4.6	3.8	0.9	8.0	
31N28	200 ft North of Radial Conveyor Line	1.1	5.3	0.2	0.1	
31N29	200 ft North of Radial Conveyor Line	1.2	6.5	20.2	16.5	
30N11	100 ft North of Radial Conveyor Line	0.1	0.2	2.7	6.5	Adjacent to rail spur
30N12	100 ft North of Radial Conveyor Line	1.1	8.4	0.8	5.9	
30N13	100 ft North of Radial Conveyor Line	2.0	3.0	1.0	3.2	
30N14	100 ft North of Radial Conveyor Line	1.3	3.8	1.0	2.5	
30N15	100 ft North of Radial Conveyor Line	1.8	3.3	1.5	2.6	
30N19	100 ft North of Radial Conveyor Line	9.5	42.3	66.5	14.0	
30RC1	Radial Conveyor Line	0.8	6.1	0.6	2.8	Adjacent to rall spur
30RC2	Radial Conveyor Line	0.6	4.9	0.6	6.4	
30RC3	Radial Conveyor Line	3.4	30.7	0.9	5.6	
30RC4	Radial Conveyor Line	3.1	7.2	3.7	15.8	

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# TABLE 1FIRST SAMPLING EVENTSOIL SAMPLING ANALYTICAL RESULTSSept. 30, Oct.1 & Oct. 21, 1998FORMER GULFPORT FERTILIZER PLANT33<sup>RD</sup> STREETGULFPORT, MISSISSIPPIPage 2 of 3

Sample Number	Sample Location	Sample	e Depth 2ft	Sample	Depth 4ft	REMARKS	
Namber		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)		
30RC5	Radial Conveyor Line	26.8	20.3	1.8	4.2		
31511	100 ft South of Radial Conveyor Line	2.4	8.3	0.4	5.2	Adjacent to rail spur	
31S12	100 ft South of Radial Conveyor Line	0.2	7.0	2.6	8.3		
31513	100 ft South of Radial Conveyor Line	10.2	4.9	2.6	4.1		
31514	100 ft South of Radial Conveyor Line	106	4.9	6.7	1.8		
31\$15	100 ft South of Radial Conveyor Line	42.7	17.0	23.4	3.6		
31S21	200 ft South of Radlal Conveyor Line	3.8	12.8	2.3	6.7	Adjacent to rail spur	
31 S22	200 ft South of Radial Conveyor Line	<0.1	6.2	0.1	4.8		
31 823	200 ft South of Radial Conveyor Line	2.2	3.6	0.8	2.9		
31 \$24	200 ft South of Radial Conveyor Line	35.7	306	4.8	0.8		
31 S25	200 ft South of Radial Conveyor Line	21.2	21.3	1.3	2.9		
31 \$31	300 ft South of Radial Conveyor Line	1.9	3.0	0.2	3.0	Adjacent to rail spur	
31 \$32	300 ft South of Radial Conveyor Line	0.5	3.4	0.8	4.8		
31833	300 ft South of Radial Conveyor Line	8.6	55.1	1.4	1.8		
31\$34	300 ft South of Radial Conveyor Line	0.6	1.6	0.5	3.5		
31\$35	300 ft South of Radial Conveyor Line	19.0	5.3	1.7	1.2		
31 \$39	300 ft South of Radial Conveyor Line	7.1	6.2	1.4	1.7		
31 \$41	400 ft South of Radial Conveyor Line	1.9	3.5	0.4	0.6	Adjacent to rall spur	
31 \$42	400 ft South of Radial Conveyor Line	2.4	5.8	0.9	1.9		
31543	400 ft South of Radial Conveyor Line	<0.1	4.5	0.9	6.1		
31 \$51	500 ft South of Radial Conveyor Line	57.6	70.5	74.5	1241	Adjacent to rail spur	
21851	500 ft South of Radial Conveyor Line	-	-	1.2	27.5	5 ft West of 31 S51	
12851	500 ft South of Radial Conveyor Line	1.5	10	0.9	1.9	25 ft East of 31 S51	
31852	500 ft South of Radial Conveyor Line	0.7	3.2	0.2	2.4		
31853	500 ft South of Radial Conveyor Line	1.4	0.5	0.4	0.4		
31 \$61	600 ft South of Radial Conveyor Line	10.4	539	0.4	4.0	Adjacent to rail spur	
21861	600 ft South of Radial Conveyor Line	1 <u>1</u> 1	-	1.5	2.6	5 ft West of 31 S61	
12861	600 ft South of Radial Conveyor Line	2.2	5.9	0.76	<0.06	25 ft East of 31 S61	

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# TABLE 1FIRST SAMPLING EVENTSOIL SAMPLING ANALYTICAL RESULTSSept. 30, Oct.1 & Oct. 21, 1998FORMER GULFPORT FERTILIZER PLANT33<sup>RD</sup> STREETGULFPORT, MISSISSIPPIPage 3 of 3

Sample	Sample Location	Sample Depth 2ft		Sample Depth 4ft		REMARKS
Number		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)	
31\$62	600 ft South of Radial Conveyor Line	0.5	6.5	0.9	2.5	
31862		1.9	2.3	-	-	Field Duplicate
31863	600 ft South of Radial Conveyor Line	1.5	3.2	0.8	0.4	
31879	700 ft South of Radial Conveyor Line	1.8	43.9	1.1	1.6	Southern portion of property
					-	

ee Appendix for actual laboratory analysis sheets.

### Method References:

(1) Arsenic (As), SW 846, 6010A - ICP

(2) Lead (Pb), SW846, 6010A - ICP

NA : Not Analyzed.

- ND : Not detected at a value greater than reporting limit.
- < ; less than

(mg/kg) : milligrams per kilogram (ppm)

ppm : parts per million

### NOTES:

1. Sample 31S79 is located in the south half of the property.

2. Re-sampled west of the "hot spot" near the railroad track on October21, 1998, Sample No. 21S51 and 21S61.

3. Re-sampled east of the "hot spot" near railroad track on January 21, 1999, Sample No. 12851 and 12861.

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### TABLE 2 SECOND SAMPLING EVENT NORTHERN HALF SOIL SAMPLING ANALYTICAL RESULTS July 19, July 23, 1999 FORMER GULFPORT FERTILIZER PLANT 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI Page 1 of 3

Sample Number	Sample Location	Sample Depth 2ft		Sample Depth 4ft		REMARKS
i tuining:		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)	
N40	400 ft North of Radial Conveyor Line	0.11	0.79	0.05	1.50	
N20	100 ft North of Radial Conveyor Line	12.4	98.0	0.39	4.35	
N16	100 ft North of Radial Conveyor Line	0.65	672	0.24	44.6	
N17	100 ft North of Radial Conveyor Line	<0.07	3.45	<0.08	<0.6	
N18	100 ft North of Radial Conveyor Line	13.2	298	-	-	
RC6	Radial Conveyor Line	691	5982	0.29	9.50	
RC7	Radial Conveyor Line	78.1	5280	34.9	8.74	
RC8	Radial Conveyor Line	17.4	62.7	1.10	5.25	
RC9	Radial Conveyor Line	145	474	8.11	26.9	
RC10	Radial Conveyor Line	127	348	175	22.8	
S16	100 ft South of Radial Conveyor Line	90.4	291	18.4	9.69	
S17	100 ft South of Radial Conveyor Line	0.69	11.6	3.57	11.1	
S18	100 ft South of Radial Conveyor Line	6.06	640	29.0	3657	
S19	100 ft South of Radial Conveyor Line	45.0	1507	1.88	378	
S20	100 ft South of Radial Conveyor Line	12.6	5.24	<0.1	2.73	
S26	200 ft South of Radial Conveyor Line	0.28	<0.2	5.25	<0.2	
S27	200 ft South of Radial Conveyor Line	1.64	15.12	1.67	3.08	
S28	200 ft South of Radial Conveyor Line	1.23	5.76	1.08	<0.2	
S29	200 ft South of Radial Conveyor Line	3.93	2.59	2,49	4.00	
S30	200 ft South of Radial Conveyor Line	0.74	4.50	1.24	2.74	
S34	300 ft South of Radial Conveyor Line	0.39	0.91	0.18	0.67	
S36	300 ft South of Radial Conveyor Line	0.98	7.83	1.52	1.41	
\$37	300 ft South of Radial Conveyor Line	5.34	6.74	1.35	4.59	
S38	300 ft South of Radial Conveyor Line	0.50	2.34	0.31	2.09	
S40	300 ft South of Radial Conveyor Line	1.27	2.38	3.50	492	
S40	300 ft South of Radial Conveyor Line	1.60	3.52	3.57	<0.2	Field Duplicate
) 544	400 ft South of Radial Conveyor Line	8.08	73.2	0.68	<0.2	

Butler Services of Mississippi, Inc.

# TABLE 2SECOND SAMPLING EVENTNORTHERN HALFSOIL SAMPLING ANALYTICAL RESULTSJuly 19, July 23, 1999FORMER GULFPORT FERTILIZER PLANT33<sup>RD</sup> STREETGULFPORT, MISSISSIPPIPage 2 of 3

Sample Number	Sample Location	Sample Depth 2ft		Sample Depth 4ft		REMARKS	
Number		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)		
S45	400 ft South of Radial Conveyor Line	4.24	303	23.6	72.2		
S46	400 ft South of Radial Conveyor Line	2.98	183	0.77	3.20		
S47	400 ft South of Radial Conveyor Line	0.69	43.0	0.23	2.55		
S48	400 ft South of Radial Conveyor Line	0.55	45.0	0.58	4.69		
S49	400 ft South of Radial Conveyor Line	1.19	4.47	0.32	4.51		
S50	400 ft South of Radial Conveyor Line	702	597	113	12.6		
S54	500 ft South of Radial Conveyor Line	<0.05	2.58	<0.05	3.70		
S55	500 ft South of Radial Conveyor Line	0.07	4.02	<0.05	2.25		
S55	500ft South of Radial Conveyor Line	0.05	4.58	<0.05	2.82	Field Duplicate	
S56	500 ft South of Radial Conveyor Line	0.44	4.45	<0.05	0.80		
S57	500 ft South of Radial Conveyor Line	1.05	<0.2	<0.05	7.89		
S58	500 ft South of Radial Conveyor Line	3.09	32.1	0.65	2.79		
S59	500 ft South of Radial Conveyor Line	0.40	6.90	<0.05	1.72		
S60	500 ft South of Radial Conveyor Line	0.84	5.74	0.42	7.25		
						Covington Tost Bit	
T <b>450N</b>	50 ft North of Test Pit 4	21.3	147		64.4	Covington Test Pit	
T450S	50 ft South of Test Pit 4	6.99	40.9	4.53	64.4	Covington Test Pit	
T450E	50 ft East of Test Pit 4	11.7	1076	0.22	780	Covington Test Pit	
T4100E	100 ft East of Test Pit 4	0.69	298	14.3	23.4	Covington Test Pit	
T5	Test Pit 5	47.2	28.6	242	28.1	Covington Test Pit	
T550N	50 ft North of Test Pit 5	359	226	146	703	Covington Test Pit	
T5100E	100 ft East of Test Pit 5	<0.1	293	0.37	3.50	Covington Test Pit	
T7100E	100 ft East of Test Pit 7	<0.1	2.86	0.20	11.6	Covington Test Pit	
T9100W	100 ft West of Test Pit 9	0.52	32.7	1.74	3.56	Covington Test Pit	

Butler Services of Mississippi, Inc.

## TABLE 2 SECOND SAMPLING EVENT NORTHERN HALF SOIL SAMPLING ANALYTICAL RESULTS July 19, July 23, 1999 FORMER GULFPORT FERTILIZER PLANT 33<sup>RD</sup> STREET **GULFPORT, MISSISSIPPI** Page 3 of 3

Sample Number	Sample Location	Sample Depth 2ft		Sample Depth 4ft		REMARKS
		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)	

# See Appendix for actual laboratory analysis sheets.

Method References:

(1) Arsenic (As), SW 846, 6010A - ICP

(2) Lead (Pb), SW846, 6010A - ICP

Not Analyzed. NA

Not detected at a value greater than reporting limit. ND

< less than

milligrams per kilogram (ppm) (mg/kg) : parts per million

ppm

OTES:

- 1. Results of laboratory duplicate samples performed for quality control purposes are reported in Appendix "A", Laboratory Analytical Results, Report of Analyses.
- 2. Discrete (@2 ft and 4 ft) samples, identified with a "T" and noted under remarks as "Covington Test Pit", were collected during this sampling event in the approximate location of the previous limited Phase II Site Assessment exploratory test pits.

### TABLE 3 SECOND SAMPLING EVENT SOUTHERN HALF SOIL SAMPLING ANALYTICAL RESULTS July 23, 1999 FORMER GULFPORT FERTILIZER PLANT 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI Page 1 of 2

Sample	Sample Location	Sample	Depth 2ft	Sample	Depth 4ft	REMARKS	
Number		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)		
S71	700 ft South of Radial Conveyor Line	<0.05	0.98	-	-		
S72	700 ft South of Radial Conveyor Line	<0.05	63.4	<0.05	8.34		
S73	700 ft South of Radial Conveyor Line	0.20	0.72	<0.05	0.25		
S74	700 ft South of Radial Conveyor Line	<0.05	0.78	<0.05	0.60		
S75	700 ft South of Radial Conveyor Line	<0.05	2.00	<0.05	2.92		
S75	a a a a	<0.05	0.83	-	-	Field Duplicate	
S76	700 ft South of Radial Conveyor Line	0.60	1.80	<0.05	0.95		
S77	700 ft South of Radial Conveyor Line	0.07	1.95	<0.05	1.11		
S78	700 ft South of Radial Conveyor Line	0.21	4.05	<0.05	2.94		
S80	700 ft South of Radial Conveyor Line	<0.05	2.82	1.02	3.92		
S92	900 ft South of Radial Conveyor Line	0.39	3.61	<0.05	1.28		
S94	900 ft South of Radial Conveyor Line	<0.05	1.99	<0.05	1.07		
S96	900 ft South of Radial Conveyor Line	0.19	0.58	<0.05	0.65		
S98	900 ft South of Radial Conveyor Line	0.11	<0.20	0.06	0.57		
S98	а и <u>к</u> и и	<0.05	4.29	-	-	Field Duplicate	
S910	900 ft South of Radial Conveyor Line	0.28	2.95	<0.05	0.56		
S112	1100 ft South Radial Conveyor Line	0.10	2.01	<0.05	1.07		
S112	a u a a a a	<0.05	2.35	-	-	Field Duplicate	
S114	1100 ft South Radial Conveyor Line	<0.05	1.79	0.07	0.72		
S116	0	0.62	2.19	<0.05	1.04		
S118	1100 ft South Radial Conveyor Line	0.20	13.1	0.21	5.94		
S1110	1100 ft South Radial Conveyor Line	<0.05	1.76	<0.05	2.51		
S122	1200 ft South Radial Conveyor Line	<0.05	1.39	<0.05	<0.2		
S124	1200 ft South Radial Conveyor Line	<0.05	0.44	<0.05	1.13		
S126	1200 ft South Radial Conveyor Line	0.40	6.23	0.24	1.97		
S128	1200 ft South Radial Conveyor Line	<0.05	0.32	-	-		
S128	es es es es es	<0.05	2.07	-	-	Field Duplicate	
S1210	1200 ft South Radial Conveyor Line	0.22	<0.2	0.24	3.87		

Butler Services of Mississippi, Inc.

# TABLE 3 SECOND SAMPLING EVENT SOUTHERN HALF SOIL SAMPLING ANALYTICAL RESULTS July 23, 1999 FORMER GULFPORT FERTILIZER PLANT 38<sup>RD</sup> STREET GULFPORT, MISSISSIPPI Page 2 of 2

Sample	Sample Location	Sample Depth 2ft		Sample Depth 4ft		REMARKS
Number		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/kg)	Lead Pb (mg/kg)	

See Appendix for actual laboratory analysis sheets.

Method References:

(1) Arsenic (As), SW 846, 6010A - ICP

(2) Lead (Pb), SW846, 6010A - ICP

NÁ : Not Analyzed.

ND : Not detected at a value greater than reporting limit.

< :

(mg/kg) : milligrams per kilogram (ppm)

: parts per million

less than

NOTES:

)pm

1. Results of laboratory duplicate samples performed for quality control purposes are reported in Appendix "A", Laboratory Analytical Results, Report of Analyses.

# TABLE 4 SECOND SAMPLING EVENT NORTHERN HALF SOIL LEACHABILITY ANALYSIS July 19, July 23, 1999 FORMER GULFPORT FERTILIZER PLANT 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI Page 1 of 1

Sample Number	Sample Location	Total Metals		TCLP		REMARKS	
Humber		Arsenic As (mg/kg)	Lead Pb (mg/kg)	Arsenic As (mg/i)	Lead Pb (mg/l)		
Maximum C	oncentration of Contaminant for Toxicity C	haracteristic (n	5.0	5.0			
RC6 - 2'	Radial Conveyor Line	691	5982	<0.1	0.43		
RC7 – 2'	Radial Conveyor Line	78.1	5280	<0.1	0.46		
S18 – 4'	100 ft South of Radial Conveyor Line	29.0	3657	<0.1	27.7	Pb exceeds TCLP Regulatory Level	
S19 – 2'	100 ft South of Radial Conveyor Line	45.0	1507	<0.1	7.8	Pb exceeds TCLP Regulatory Level	
S <b>50 – 2'</b>	400 ft South of Radial Conveyor Line	702	597	0.29	5		

See Appendix for actual laboratory analysis sheets.

Method References:

(1) Arsenic (As), SW 846, 6010A – ICP (2) Lead (Pb), SW846, 6010A – ICP (3) TCLP, SW 846, Sec. 1311

TCLP	:	Toxicity Characteristics Leachate Precedure
NA	:	Not Analyzed.
ND	:	Not detected at a value greater than reporting limit.
<	:	less than
(mg/kg)	:	milligrams per kilogram (ppm)
(mg/l)	:	milligrams per liter (ppm)
ppm	:	parts per million

# TABLE 5 ARSENIC (As) BACKGROUND CONCENTRATIONS @ 2-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI

BACKGR	OUND SAMP	LES	SHAPIR	O-WILK TI	EST FOR NOP	RMAL DISTR	BUTION
n	Number	Results (mg/kg)	X(i)	X(n-l=1)	X(n-l+1)-X(l)	a(n-l+1)	b(i)
1	30N33	0.6	0.025	0.9	0.875	0.5601	0.4901
2	30N34	0.9	0.025	0.8	0.775	0.3315	0.2569
3	30RC1	0.8	0.025	0.6	0.575	0.2260	0.1300
4	31N38	0.5	0.025	0.5	0.475	0.1429	0.0679
5	N40	0.11	0.11	0.28	0.170	0.0695	0.0118
6	S71	<0.05	0.22	0.22	0.000	0.0000	0.0000
7	S910	0.28	0.28	0.11	-0.170		
8	S122	<0.05	0.5	0.025	-0.475		
9	S124	<0.05	0.6	0.025	-0.575		
10	S128	<0.05	0.8	0.025	-0.775		
11	S1210	0.22	0.9	0.025	-0.875		
12	RC10	127					

			Upper Background Limit	=	1.25 mg/kg
W(0.05)	=	Shapiro-Wilk critical value			
a(ni+1)	=	Coefficients for W normality test	W(0.5)	=	0.850
n		Number of Samples	W	=	0.949
SD	=	Standard Deviation	b	Ŧ	0.9566
b	=	Eb(I)	n	=	11
b(l)	=	(Xni+1-Xi) x a(ni=1)	SD	=	0.311
W	=	The Shapiro-Wilk Test Statistic	Average	=	0.319

$$W = \frac{b}{SD\sqrt{n-1}}^2$$

v

### Statistical References:

- (1) Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Sites, USEPA Engineering Forum Issue, R.P. Breckenridge and A.B. Crockett, December 1995.
- (2) Coefficients a(I) and W Test for Normality, Shapiro and Wilk, 1965.

- 1 Samples were analized for total metals with results reported in milligrams per kilogram (mg/kg).
- 2 Samples 30N33, 30N34, 31N38 and 30RC1 were collected as part of previous investigation.
- 3 Samples N40, S71, S910, S122, S124, S128, S1210 and RC10 were collected as part of the most recent sampling activities.
- 4 Background sample RC10 was eliminated from analysis due to the elevated level of arsenic found.
- 5 Calculated W value of data set is greater than Shapiro-Wilk critical value, W(0.05), therefore the data is considered normally distributed.
- 6 Upper background is based upon mean background concentration plus three standard deviations.

# TABLE 6 ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF @ 2-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE

33RD STREET, GULFPORT, MISSISSIPPI

PE	RIMETER SAM	IPLES	1	SHAPIF	O-WILK T	EST FOR NO	RMAL DISTR	BUTION
n	Number	Results (mg/kg)		X(i)	X(n-i=1)	X(n-l+1)-X(l)	a(n-l+1)	b(i)
1	30RC1	0.8	1	0.1	6.6	6.500	0.4734	3.0771
2	30N11	0.1		0.11	4.5	4.390	0.3211	1.4096
3	30N21	0.6		0.5	3.8	3.300	0.2565	0.8465
4	30N31	2.0		0.6	2.4	1.800	0.2085	0.3753
5	30N32	6.6		0.6	2.0	1.400	0.1686	0.2360
6	30N33	0.6		0.6	1. <del>9</del>	1.300	0.1334	0.1734
7	30N34	0.9		0.74	1.9	1.160	0.1013	0.1175
8	30N35	0.6		0.8	1.6	0.800	0.0711	0.0569
9	31N36	1.5		0.84	1.60	0.760	0.0422	0.0321
10	31N37	4.5		0.9	1.5	0.600	0.0140	0.0084
11	31N38	0.5		1.5	0.9	-0.600		
12	31N39	1.6		1.6	0.84	-0.760		
13	N40	0.11		1.60	0.8	-0.800		
14	N20	12.4		1.9	0.74	-1.160		
15	RC10	127		1.9	0.6	-1.300		
16	S20	12.6		2.0	0.6	-1.400		
17	S30	0.74		2.4	0.6	-1.800		
18	S40	1.60		3.8	0.5	-3.300		
19	S50	702		4.5	0.11	-4.390		
20	S60	0.84		6.6	0.1	-6.500		
33	<b>31S61</b>	10.4						
34	31S51	57.6						
35	31S41	1.9						
36	31S31	1.9						
37	31S21	3.8						
38	31S11	2.4						

W	=	The Shapiro-Wilk Test Statistic	Average	=	1.680
b(I)	=	(Xni+1-Xi) x a(ni≕1)	SD	=	1.838
b	Ξ	Eb(I)	n	=	20
SD	=	Standard Deviation	b	=	6.3328
n	=	Number of Samples	. w	=	0.625
a(ni+1)	=	Coefficients for W normality test	W(0.5)	=	0.905
W(0.05)	=	Shapiro-Wilk critical value			
			Upper Background Limit	-	7.19 mg/kg

 $W = \frac{b}{SD\sqrt{n-1}}^2$ 

## TABLE 6 (Continued) ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF @ 2-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI Page 2 of 2

### Statistical References:

- Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Sites, USEPA Engineering Forum Issue, R.P. Breckenridge and A.B. Crockett, December 1995.
  - (2) Coefficients a(I) and W Test for Normality, Shapiro and Wilk, 1965.

- 1 Samples were analized for total metals with results reported in milligrams per kilogram (mg/kg).
- 2 Samples 30RC1, 30N11, 30N21, 30N31, 30N32, 30N33, 30N34, 30N35, 31N36, 31N37, 31N38, 31N39, 31S61, 31S51, 31S41, 31S31, 31S21 and 31S11 were collected as part of previous investigation.
- Samples N40, N20, RC10, S20, S40, S50 and S60 were collected as part of the most recent sampling activities.
- 4 Perimeter samples RC10, S50 and 31S51 were eliminated from analysis due to the elevated level of. arsenic found.
- 5 Perimeter samples N20, S20 and 31S61 were eliminated from analysis due to their geographic proximity to areas with elevated levels of arsenic.
- 6 Calculated W value of data set is less than Shapiro-Wilk critical value, W(0.05), therefore the data is not considered normally distributed.
- 7 Upper background is based upon mean background concentration plus three standard deviations.

# TABLE 7 ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF @ 2-FOOT DEPTH INTERVAL Shapiro Wilk W Test

FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI

	IMETER SAN	AMPLES		SHAPIRO-WILK TEST FOR NORMAL DISTRIBU					
n	Number	Results (mg/kg)		X(i)	X(n-l=1)	X(n-l+1)-X(l)	a(n-l+1)		
1	30RC1	0.8		0.5	3.8	3.300	0.5056		
2	30N11	0.1		0.6	2.4	1.800	0.3290		
3	30N21	0.6		0.6	2.0	1.400	0.2521		
4	30N31	2.0		0.6	1.9	1.300	0.1939		
5	30N32	6.6		0.74	1.9	1.160	0.1447		
6	30N33	0.6		0.8	1.6	0.800	0.1005		
7	30N34	0.9		0.84	1.60	0.760	0.0593		
8	30N35	0.6		0.9	1.5	0.600	0.0196		
9	31N36	1.5		1.5	0.9	-0.600			
10	31N37	4.5		1.6	0.84	-0.760			
11	31N38	0.5		1.60	0.8	-0.800			
12	31N39	1.6		1.9	0.74	-1.160			
13	N40	0.11		1.9	0.6	-1.300			
14	N20	12.4		2.0	0.6	-1.400			
15	RC10	127		2.4	0.6	-1.800			
16	S20	12.6		3.8	0.5	-3.300			
17	S30	0.74							
18	S40	1.60							
19	S50	702							
20	S60	0.84							
33	<b>31S61</b>	10.4							
34	31851	57.6							
35	31S41	1.9							
36	31\$31	1.9							
37	31S21	3.8							
38	31511	2.4							

W	=	The Shapiro-Wilk Test Statistic	Average	=	1.393			
b(l)	=	(Xni+1-Xi) x a(ni=1)	SD	=	0.810			
Ь	Ξ	Eb(I)	n	÷	16			
SD	=	Standard Deviation	b	=	3.1708			
n	=	Number of Samples	W	Ξ	1.022			
a(ni+1)	Ξ	Coefficients for W normality test	W(0.5)	÷	0.887			
W(0.05)	=	Shapiro-Wilk critical value						
			Upper Background Limit = 3.82 mg/k					

$$W = \frac{b}{SD\sqrt{n-1}}^2$$

## TABLE 7 (Continued) ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF (2-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI Page 2 of 2

### Statistical References:

- Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Sites, USEPA Engineering Forum Issue, R.P. Breckenridge and A.B. Crockett, December 1995.
  - (2) Coefficients a(I) and W Test for Normality, Shapiro and Wilk, 1965.

- 1 Samples were analized for total metals with results reported in milligrams per kilogram (mg/kg).
- 2 Samples 30RC1, 30N11, 30N21, 30N31, 30N32, 30N33, 30N34, 30N35, 31N36, 31N37, 31N38, 31N39, 31S61, 31S51, 31S41, 31S31, 31S21 and 31S11 were collected as part of previous investigation.
- 3 Samples N40, N20, RC10, S20, S40, S50 and S60 were collected as part of the most recent sampling activities.
- 4 Perimeter samples RC10, S50 and 31S51 were eliminated from analysis due to the elevated level of. arsenic found.
- 5 Perimeter samples N20, S20 and 31S61 were eliminated from analysis due to their geographic proximity to areas with elevated levels of arsenic.
- 6 Perimeter samples 30N11, 30N32, 31N37 and N40 were eliminated from the data set in Table 6, since they exceed the average plus standard deviation of the data set.
- 7 Calculated W value of data set is greater than Shapiro-Wilk critical value, W(0.05), therefore the data is considered normally distributed.
- 8 Upper background is based upon mean background concentration plus three standard deviations.

## TABLE 8 ARSENIC (As) BACKGROUND CONCENTRATIONS @ 4-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI

BACKGR	OUND SAMP	LES	SHAPIRO-WILK TEST FOR NORMAL DISTRIBUTION						
n	Number	Results (mg/kg)	X(i)	X(n-i=1)	X(n-i+1)-X(i)	a(n-l+1)	b(i)		
1	30N33	0.5	0.0125	1.8	1.7875	0.5888	1.0525		
2	30N34	<0.1	0.0125	0.6	0.5875	0.3244	0.1906		
3	30RC1	0.6	0.0125	0.5	0.4875	0.1976	0.0963		
4	31N38	1.8	0.025	0.22	0.195	0.0947	0.0185		
5	N40	0.05	0.05	0.05	0.000	0.0000	0.0000		
6	S71	-	0.22	0.025	-0.195				
7	S910	<0.05	0.5	0.0125	-0.488				
8	S122	<0.05	0.6	0.0125	-0.5875				
9	S124	<0.05	1.8	0.0125	-1.7875				
10	S128	-							
11	S1210	0.22							
12	RC10	175							

			Upper Background Limit	=	2.23 mg/kg
N(0.05)	=	Shapiro-Wilk critical value			
a(ni+1)	=	Coefficients for W normality test	W(0.5)	=	0.829
n	=	Number of Samples	W	=	0.592
SD	=	Standard Deviation	b	=	1.3579
b	=	Eb(I)	n	=	9
b(l)	=	(Xni+1-Xi) x a(ni=1)	SD	=	0.624
W	=	The Shapiro-Wilk Test Statistic	Average	=	0.359

$$V = \frac{b}{SD\sqrt{n-1}}^2$$

### Statistical References:

- Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Sites, USEPA Engineering Forum Issue, R.P. Breckenridge and A.B. Crockett, December 1995.
- (2) Coefficients a(I) and W Test for Normality, Shapiro and Wilk, 1965.

- 1 Samples were analized for total metals with results reported in milligrams per kilogram (mg/kg).
- 2 Samples 30N33, 30N34, 31N38 and 30RC1 were collected as part of previous investigation.
- 3 Samples N40, S910, S122, S124, S1210 and RC10 were collected as part of the most recent sampling activities.
- 4 The moisture content of the soil in sample locations S71 and S128 prevented the collection of samples for analysis at 4-foot depth.
- 5 Background sample RC10 was eliminated from analysis due to the elevated level of arsenic found.
- 6 More than 50 percent of the background analytical values are below the detection limit (DL), therefore the Continuity Correction procedure (0.25 x DL) with the t-test (EPA 1983) was used for DL values.
- 7 Calculated W value of data set is less than Shapiro-Wilk critical value, W(0.05), therefore the data is not considered normally distributed.
- 8 Upper background is based upon mean background concentration plus three standard deviations.

# TABLE 9 ARSENIC (As) BACKGROUND CONCENTRATIONS @ 4-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI

BACKGR	OUND SAMP	PLES	SHAPIR	O-WILK TI	EST FOR NO	RMAL DISTR	RIBUTION
n	Number	Results (mg/kg)	X(i)	X(n-1=1)	X(n-l+1)-X(l)	a(n-l+1)	b(i)
1	30N33	0.5	0.0125	0.6	0.5875	0.6052	0.3556
2	30N34	<0.1	0.0125	0.5	0.4875	0.3164	0.1542
3	30RC1	0.6	0.0125	0.22	0.2075	0.1743	0.0362
4	31N38	1.8	0.025	0.05	0.025	0.0561	0.0014
5	N40	0.05	0.05	0.025	-0.025		
6	S71	-	0.22	0.0125	-0.2075		
7	S910	<0.05	0.5	0.0125	-0.488		
8	S122	<0.05	0.6	0.0125	-0.5875		
9	S124	<0.05					
10	S128	-					
11	S1210	0.22					
12	RC10	175					

W	=	The Shapiro-Wilk Test Statistic	Average	=	0.179
b(l)	=	(Xni+1-Xi) x a(ni=1)	SD	=	0.223
b	=	Eb(I)	n	=	8
SD	=	Standard Deviation	b	=	0.5474
n	=	Number of Samples	W	=	0.860
a(ni+1)	=	Coefficients for W normality test	W(0.5)	=	0.818
W(0.05)	=	Shapiro-Wilk critical value			
			<b>Upper Background Limit</b>	=	0.85 mg/kg

$$W = \left| \frac{b}{SD\sqrt{n-1}} \right|^2$$

Statistical References:

- (1) Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Sites, USEPA Engineering Forum Issue, R.P. Breckenridge and A.B. Crockett, December 1995.
- (2) Coefficients a(I) and W Test for Normality, Shapiro and Wilk, 1965.

- 1 Samples were analized for total metals with results reported in milligrams per kilogram (mg/kg).
- 2 Samples 30N33, 30N34, 31N38 and 30RC1 were collected as part of previous investigation.
- 3 Samples N40, S910, S122, S124, S1210 and RC10 were collected as part of the most recent sampling activities.
- 4 The moisture content of the soil in sample locations S71 and S128 prevented the collection of samples for analysis at 4-foot depth.
- 5 Background sample RC10 was eliminated from analysis due to the elevated level of arsenic found.
- 6 More than 50 percent of the background analytical values are below the detection limit (DL), therefore the Continuity Correction procedure (0.25 x DL) with the t-test (EPA 1983) was used for DL values.
- 7 Background sample, 31N38, was eliminated from data set in Table 8 to test for normality, since it exceeds the average plus the Standard deviation of the data set.
- 8 Calculated W value of data set is greater than Shapiro-Wilk critical value, W(0.05), therefore the data is considered normally distributed.
- 9 Upper background is based upon mean background concentration plus three standard deviations.

# TABLE 10 ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF @ 4-FOOT DEPTH INTERVAL Shapiro Wilk W Test

FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI

PERI	METER SAN	<b>IPLES</b>		SHAPIRO-WILK TEST FOR NORMAL DISTRIBUT							
n	Number	Results (mg/kg)		X(i)	X(n-l=1)	X(n-l+1)-X(l)	a(n-l+1)	<b>b(</b> i)			
1	30RC1	0.6	1	0.05	3.57	3.520	0.4542	1.5988			
2	30N11	2.7		0.05	2.7	2.650	0.3126	0.8284			
3	30N21	1.3		0.05	2.5	2.450	0.2563	0.6279			
4	30N31	0.1		0.05	2.3	2.250	0.2139	0.4813			
5	30N32	0.3		0.1	1.8	1.700	0.1787	0.3038			
6	30N33	0.5		0.1	1.3	1.200	0.1480	0.1776			
7	30N34	<0.1		0.2	1.24	1.040	0.1201	0.1249			
8	30N35	2.5		0.3	0.6	0.300	0.0941	0.0282			
9	31N36	0.3		0.3	0.5	0.200	0.0696	0.0139			
10	31N37	0.1	1	0.39	0.42	0.030	0.0459	0.0014			
11	31N38	1.8		0.4	0.4	0.000	0.0228	0.0000			
12	31N39	<0.1		0.4	0.4	0.000	0.0000	0.0000			
13	N40	0.05		0.4	0.4	0.000					
14	N20	0.39		0.42	0.39	-0.030					
15	RC10	175		0.5	0.3	-0.200					
16	S20	<0.1		0.6	0.3	-0.300					
17	S30	1.24		1.24	0.2	-1.040					
18	S40	3.57		1.3	0.1	-1.200					
19	S50	113		1.8	0.1	-1.700					
20	S60	0.42		2.3	0.05	-2.250					
33	31S61	0.4		2.5	0.05	-2.450					
34	31S51	74.5		2.7	0.05	-2.650					
35	31S41	0.4		3.57	0.05	-3.520					
36	31S31	0.2									
37	31S21	2.3									
38	31S11	0.4									

W	=	The Shapiro-Wilk Test Statistic	Average	=	0.857
b(l)	=	(Xni+1-Xi) x a(ni=1)	SD	=	1.169
b	Ξ	Eb(I)	n	=	23
SD	=	Standard Deviation	b	=	4.1862
n	=	Number of Samples	W	=	0.582
a(ni+1)	=	Coefficients for W normality test	W(0.5)	=	0.914
W(0.05)	=	Shapiro-Wilk critical value			
			Upper Background Limit	=	4.37 mg/kg

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 $W = \frac{b}{SD\sqrt{n-1}}^2$ 

# TABLE 10 (Continued) ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF @ 4-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI Page 2 of 2

### Statistical References:

- Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Sites, USEPA Engineering Forum Issue, R.P. Breckenridge and A.B. Crockett, December 1995.
- (2) Coefficients a(I) and W Test for Normality, Shapiro and Wilk, 1965.

- 1 Samples were analized for total metals with results reported in milligrams per kilogram (mg/kg).
- 2 Samples 30RC1, 30N11, 30N21, 30N31, 30N32, 30N33, 30N34, 30N35, 31N36, 31N37, 31N38, 31N39, 31S61, 31S51, 31S41, 31S31, 31S21 and 31S11 were collected as part of previous investigation.
- 3 Samples N40, N20, RC10, S20, S40, S50 and S60 were collected as part of the most recent sampling activities.
- 4 Perimeter samples RC10, S50 and 31S51 were eliminated from analysis due to the elevated level of. arsenic found.
- 5 Calculated W value of data set is less than Shapiro-Wilk critical value, W(0.05), therefore the data is not considered normally distributed.
- 6 Upper background is based upon mean background concentration plus three standard deviations.

# TABLE 11 ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF @ 4-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE

33RD STREET, GULFPORT, MISSISSIPPI

PER	IMETER SAM	IPLES	SHAPIF	O-WILK T	EST FOR NO		BUTION
n	Number	Results (mg/kg)	X(i)	X(n-l=1)	X(n-l+1)-X(l)	a(n-l+1)	b(i)
1	30RC1	0.6	0.3	2.7	2.400	0.5251	1.2602
2	30N11	2.7	0.39	2.5	2.110	0.3318	0.7001
3	30N21	1.3	0.4	2.3	1.900	0.2460	0.4674
4	30N31	0.1	0.4	1.8	1.400	0.1802	0.2523
5	30N32	0.3	0.4	1.3	0.900	0.1240	0.1116
6	30N33	0.5	0.42	1.24	0.820	0.0727	0.0596
7	30N34	<0.1	0.5	0.6	0.100	0.0240	0.0024
8	30N35	2.5	0.6	0.5	-0.100		
9	31N36	0.3	1.24	0.42	-0.820		
10	31N37	0,1	1.3	0.4	-0.900		
11	31N38	1.8	1.8	0.4	-1.400		
12	31N39	<0.1	2.3	0.4	-1.900		
13	N40	0.05	2.5	0.39	-2.110		
14	N20	0.39	2.7	0.3	-2.400		
15	RC10	175					
16	S20	<0.1					
17	S30	1.24					
18	S40	3.57					
19	S50	113					
20	S60	0.42					
33	31S61	0.4					
34	31851	74.5					
35	<b>31S4</b> 1	0.4					
36	31S31	0.2					
37	31S21	2.3					
38	31S11	0.4					

W	=	The Shapiro-Wilk Test Statistic	Average	=	1.089
b(l)	=	(Xni+1-Xi) x a(ni=1)	SD	=	0.758
ь	=	Eb(I)	n	=	14
SD	=	Standard Deviation	b	=	2.8536
n	=	Number of Samples	W	=	1.089
a(ni+1)	Ξ	Coefficients for W normality test	W(0.5)	=	0.874
W(0.05)	=	Shapiro-Wilk critical value			
		-	Upper Background Limit	=	3.36 mg/kg

$$W = \frac{b}{SD\sqrt{n-1}}^2$$

# TABLE 11 (Continued) ARSENIC (As) BACKGROUND CONCENTRATIONS NORTHER HALF @ 4-FOOT DEPTH INTERVAL Shapiro Wilk W Test FORMER GULFPORT FERTILIZER PLANT SITE 33RD STREET, GULFPORT, MISSISSIPPI Page 2 of 2

### Statistical References:

- (1) Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Sites, USEPA Engineering Forum Issue, R.P. Breckenridge and A.B. Crockett, December 1995.
- (2) Coefficients a(I) and W Test for Normality, Shapiro and Wilk, 1965.

- 1 Samples were analized for total metals with results reported in milligrams per kilogram (mg/kg).
- 2 Samples 30RC1, 30N11, 30N21, 30N31, 30N32, 30N33, 30N34, 30N35, 31N36, 31N37, 31N38, 31N39, 31S61, 31S51, 31S41, 31S31, 31S21 and 31S11 were collected as part of previous investigation.
- 3 Samples N40, N20, RC10, S20, S40, S50 and S60 were collected as part of the most recent sampling activities.
- 4 Perimeter samples RC10, S50 and 31S51 were eliminated from analysis due to the elevated level of. arsenic found.
- 5 Perimeter samples 30N31, 30N34, 31N36, 31N37, 31N39, N40, S20, S40, and 31S31 were eliminated from the data set in Table 10, since they exceed the average plus standard deviation of the data set.
- 6 Calculated *W* value of data set is greater than Shapiro-Wilk critical value, *W*(0.05), therefore the data is considered normally distributed.
- 7 Upper background is based upon mean background concentration plus three standard deviations.

# TABLE 12 FIRST SAMPLING EVENT GROUNDWATER SAMPLING ANALYTICAL RESULTS Sept. 30, Oct. 1 & Oct. 21, 1998 FORMER GULFPORT FERTILIZER PLANT 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI

### Page 1 of 1

Sample Number	Sample Location	Sample	Parameters	REMARKS	
		Arsenic As (µg/l)	Lead Pb (µg/l)		
30N31	300 ft North of Radial Conveyor Line	-5	<5	Geoprobe Groundwater sample, Adjacent to rail spur	
31N34	300 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample	
31N21	200 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample, Adjacent to rail spur	
31 N 24	200 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample	
31N12	100 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample	
31N14	100 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample	
31RC1	Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample, Adjacent to rail spur	
31RC4	Radial Conveyor Line	<5	4	Geoprobe Groundwater sample	
31511	100 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample, Adjacent to rail spur	
31S14	100 ft North of Radial Conveyor Line	<5	\$	Geoprobe Groundwater sample	
31S21	200 ft North of Radial Conveyor Line	ব	<5	Geoprobe Groundwater sample, Adjacent to rail spur	
31524	200 ft North of Radial Conveyor Line	<5	\$	Geoprobe Groundwater sample	
31531	300 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample, Adjacent to rail spur	
31534	300 ft North of Radial Conveyor Line	<5	<5	Geoprobe Groundwater sample	
31541	400 ft North of Radial Conveyor Line	~5	<5	Geoprobe Groundwater sample, Adjacent to rail spur	
31 851	500 ft North of Radial Conveyor Line	78.9	7.31	Geoprobe Groundwater sample, Adjacent to rail spur	
21851	500 ft North of Radial Conveyor Line	13	<5	Geoprobe Groundwater sample, 20 ft west of 31 S51	
31561	600 ft North of Radial Conveyor Line	-5	<5	Geoprobe Groundwater sample, Adjacent to rail spur	

See Appendix for actual laboratory analysis sheets.

 Method References:

 (1) Arsenic (As), EPA 200.7-ICP

 (2) Lead (Pb), EPA 200.7-ICP

 NA
 : Not Analyzed.

 ND
 : Not detected at a value greater than reporting limit.

 <</td>
 : Less than

 (µg/l)
 : micrograms per liter (ppb).

 ppb
 : Parts per billion

# TABLE 13 SECOND SAMPLING EVENT GROUNDWATER SAMPLING ANALYTICAL RESULTS Sept. 30, Oct. 1 & Oct. 21, 1998 FORMER GULFPORT FERTILIZER PLANT 33<sup>RD</sup> STREET GULFPORT, MISSISSIPPI

### Page 1 of 1

Sample Number	Sample Location	Sample Parameters			REMARKS
		Arsenic As (µg/l)	Lead Pb (µg/l)	Chromium Cr (µg/l)	
Drinking Water Maximum	Contaminant Level (MCL)	0.05 ppm	0.015 ppm	0.1 ppm	
MW1-01U (Unfiltered)	Monitoring Well, MW-1	33	35		Pb exceeds MCL
MW1-01F (Filtered)	Monitoring Well, MW-1	28	37	15	Pb exceeds MCL

See Appendix for actual laboratory analysis sheets.

Method References:

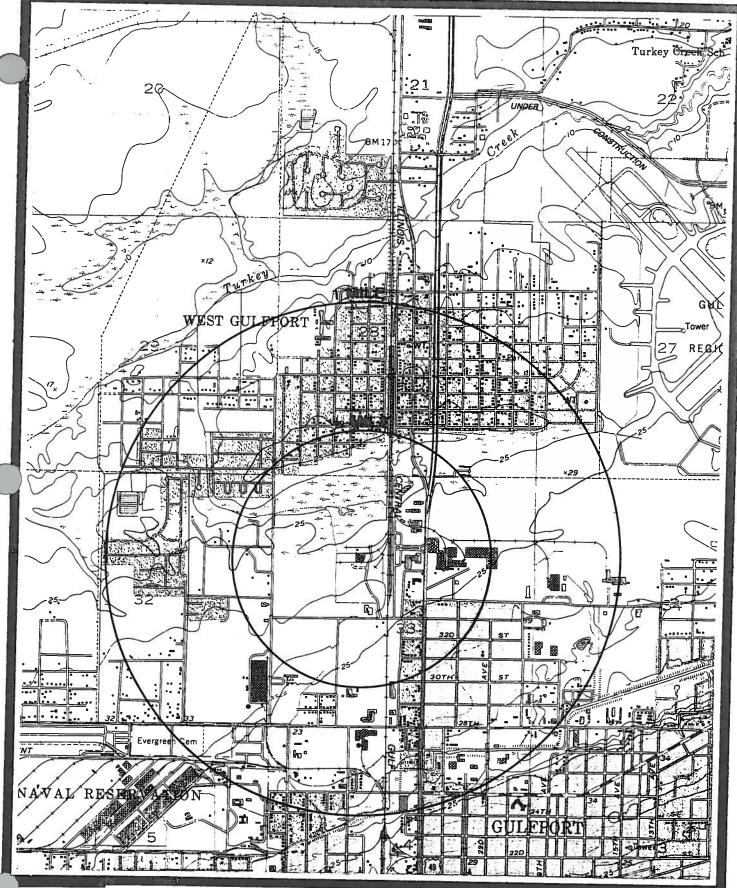
(1) Arsenic (As), EPA 206.2-Fumance (2) Lead (Pb), EPA 239.2-Fumace

(3) Chromium (Cr), EPA 218.2-Furnance

Minimum Detection Limits (MDLs) for Sampling parameters: <5  $\mu$ g/l

NA	:	Not Analyzed.
ND	:	Not detected at a value greater than reporting limit.
<	3 <u>8</u>	Less than
(µ <b>g/i</b> )	:	micrograms per liter (ppb).
ppb	:	Parts per billion
ppm	:	Parts per million

**FIGURES** 



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APPENDICES

# **APPENDIX A**

# LABORATORY ANALYTICAL RESULTS

# Micro-Methods Laboratory, Inc. Report of Analyses

Lab File # 176-BS-10-98 Lab File # 177-BS-10-98 Lab File #288-BS-10-98 Lab File #143-BS-02-99 Lab File #190-BS-07-99 Lab File #269-BS-07-99 Lab File #277-BS-07-99 Lab File #278-BS-08-99 Lab File #110-EM-08-99

# ANALYTICAL SERVICE COMPANY

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October 15, 1998

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry

# REPORT OF ANALYSES

The results of the analyses of the samples received date and description as shown, lab file #176-BS-10-98, are as attached.

If we can be of further assistance, please contact the office.

Sincerely 2120 Thomas J. Wilson, Sr.

TJW/dd

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GULFPORT FERTILIZER COMPANY 9/30/98 SOIL SAMPLES				
SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg	
30RC1-2	67327	0.8	6.1	
30RC1-4	67328	0.6	2.8	
30RC2-2	67329	0.6	4.9	
30RC2-4	67330	0.6	6.4	
30RC3-2	67331	3.4	30.7	
30RC3-4	67332	0.9	5.6	
30RC4-2	67333	3.1	7.2	
30RC4-4	67334	3.7	15.8	
30RC5-2	67335	26.8	20.3	
30RC5-4	67336	1.8	4.2	
30N11-2	67337	0.1	0.2	
30N11-4	67338	2.7	6.5	
30N12-2	67339	1.1	8.4	
30N12-4	67340	0.8	5.9	
30N13-2	67341	2.0	3.0	
30N13-4	67342	1.0	3.2	
30N14-2	67343	1.3	3.8	
30N14-4	67344	1.0	2.5	

METHODOLOGY SW 846, 6010A - ICP

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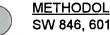
# GULFPORT FERTILIZER COMPANY 9/30/98 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
30N15-2	67345	1.8	3.3
30N15-4	67346	1.5	2.6
30N21-2	67347	0.6	3.2
30N21-4	67348	1.3	4.8
30N22-2	67349	0.6	15.0
30N22-4	67350	3.6	6.0
30N23-2	67351	0.7	3.2
30N23-4	67352	0.4	0.2
30N24-2	67353	0.8	0.8
30N24-4	67354	2.5	22.8
30N25-2	67355	1.2	2.2
30N25-4	67356	1.4	1.1
30N31-2	67357	2.0	11.8
30N31-4	67358	0.1	0.2
30N32-2	67359	6.6	170
30N32-4	67360	0.3	5.2
30N33-2	67361	0.6	2.7
30N33-4	67362	0.5	5.1
30N34-2	67363	0.9	28.3

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# **GULFPORT FERTILIZER COMPANY** 9/30/98 SOIL SAMPLES

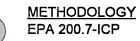
SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
30N34-4	67364	<0.1	3.9
30N35-2	67365	0.6	2.4
30N35-4	67366	2.5	0.6



METHODOLOGY SW 846, 6010A - ICP

# GULFPORT FERTILIZER COMPANY 9/30/98 WATER SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC µg/l	LEAD µg/l
30RC1	67367	<5	14.5
30RC4	67368	<5	9.3
30N11	67369	<5	22.5
30N14	67370	<5	63.3
30N21	67371	<5	41.4
30N24	67372	<5	21.5
30N31	67373	<5	6.1
30N34	67374	<5	36.6



# MICRO-METHODS, INC. 6500 SUNPLEX DRIVE OCEAN SPRINGS, MS 39564

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# QA/QC METALS

TO: Butler Services

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LAB FILE # 176-BS-10-98

ARSENIC				LEA	D	
MM#	Spiked with 50 µg conc. found	Calculated Conc. spl + 50	% REC.	Spiked with 50 µg conc. found	Calculated Conc. spl + 50	% REC.
67330	40.9	54.1	75.6	66	92	71.7
67337	30.9	51	60	70	77.6	90.2
67344	42.2	58.2	72.5	72	65.4	110
67351	42.1	53	79.4	52	66	78.8
67358	38.5	51	75.5	76	90.3	84.2
67365	44.3	52.8	83.9	48	63.6	75.5



# ANALYTICAL SERVICE COMPANY

October 15, 1998

Butler Services P. O. Box 1164 Pascagoula, MS 39567

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ATTN: Louis Fortenberry

# **REPORT OF ANALYSES**

The results of the analyses of the samples received date and description as shown, lab file #177-BS-10-98, are as attached.

If we can be of further assistance, please contact the office.

Sincerel

Thomas J. Wilson, Sr

TJW/dd

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# FROM: Micro-Methods, Inc. Lab File #177-BS-10-98

# GULFPORT FERTILIZER COMPANY 10/1/98 SOIL SAMPLES

SAMPLE DESCRIPTION 31S11-2	MM# 67532	mg/kg 2.4	mg/kg 8.3
	87533		
31511-4	67533	0.4	5.2
31812-2	67534	0.2	7.0
31S12-4	67535	2.6	8.3
31S13-2	67536	10.2	4.9
31\$13-4	67537	2.6	4.1
31S14-2	67538	106	4.9
31514-4	67539	6.7	1.8
31\$15-2	67540	42.7	17.0
31S15-4	67541	23.4	3.6
31521-2	67542	3.8	12.8
31S21-4	67543	2.3	6.7
31822-2	67544	<0.1	6.2
31522-4	67545	0.1	4.8
31523-2	67546	2.2	3.6
31523-4	67547	0.8	2.9
31524-2	67548	35.7	306
31S24-4	67549	4.8	0.8
31825-2	67550	21.2	21.3

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# FROM: Micro-Methods, Inc. Lab File #177-BS-10-98

# GULFPORT FERTILIZER COMPANY 10/1/98 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
31S25-4	67551	1.3	2.9
31531-2	67552	1.9	3.0
31831-4	67553	0.2	3.0
31832-2	67554	0.5	3.4
31S32-4	67555	0.8	4.8
31533-2	67556	8.6	55.1
31833-4	67558	1.4	1.8
31834-2	67559	0.6	1.6
31834-4	67560	0.5	3.5
31835-2	67561	19.0	5.3
31535-4	67562	1.7	1.2
31541-2	67563	1.9	3.5
31541-4	67564	0.4	0.6
31842-2	67585	2.4	5.8
31542-4	67566	0.9	1.9
31543-2	67567	<0.1	4.5
31543-4	67568	0.9	6.1

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# FROM: Micro-Methods, Inc. Lab File #177-BS-10-98

# GULFPORT FERTILIZER COMPANY 10/1/98 SOIL SAMPLES

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SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
31S51-2	67569	57.6	70.5
31S51-4	67570	74.5	1241
31S52-2	67571	0.7	3.2
31852-4	67572	0.2	2.4
31853-2	67573	1.4	0.5
31853-4	67574	0.4	0.4
31561-2	67575	10.4	539
31861-4	67576	0.4	4.0
31862-2	67577	0.5	6.5
31S62-2 DUPLICATE	67578	1.9	2.3
31862-4	67579	0.9	2.5
31863-2	67580	1.5	3.2
31\$63-4	87581	0.8	0.4
31N36-2	67591	1.5	4.8
31N36-4	67592	0.3	5.1
31N37-2	67593	4.5	12.9
31N38-4	67594	1.8	2.8

METHODOLOGY SW 846, 6010A - ICP

# FROM: Micro-Methods, Inc. Lab File #177-BS-10-98

# GULFPORT FERTILIZER COMPANY 10/1/98 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
31N39-2	67595	1.6	7.3
31N26-2	67597	0.7	1.5
31N26-4	67598	<0.1	2.1
31N27-2	67599	4.6	3.8
31N27-4	67600	0.9	8.0
31N28-2	67601	1.1	5.3
31N28-4	67602	0.2	0.1
31N29-2	67603	1.2	6.5
31N29-4	67604	20.2	16.5
31N19-2	67605	9.5	42.3
31N19-4	67606	66.5	14.0
31539-2	67607	7.1	6.2
31539-4	67608	1.4	1.7
31579-2	67609	1.8	43.9
31579-4	67610	1.1	1.6
31N39	67611	<0.1	2.3
31N37-4	67649	0.1	2.1
31N38-2	67650	0.5	5.4

METHODOLOGY SW 846, 6010A - ICP

#### FROM: Micro-Methods, Inc. Lab File #177-BS-10-98

### GULFPORT FERTILIZER COMPANY 10/1/98 WATER SAMPLES

		ARSENIC	LEAD
SAMPLE DESCRIPTION	MM#	µg/l	hð\[
31511	67582	<5	<5
31514	67583	<5	<\$
31821	67584	<5	<5
31524	67585	<5	<5
31831	67588	<5	<5
31834	67587	<5	<5
31541	67588	<5	<5
31851	67589	78.9	7.31
31561	67590	<5	<5
31N39-4	67596	<5	5.35
31839	67612	18.8	<5
31879	67613	<\$	<5
315149	67614	<5	<5
315146	67615	<5	<5
315143	67616	<5	<5

METHODOLOGY EPA 200.7-ICP

## MICRO-METHODS, INC. 6500 SUNPLEX DRIVE OCEAN SPRINGS, MS 39564

### QA/QC METALS

**TO: Butler Services** 

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LAB FILE # 177-BS-10-98

	ARSENIC			
MM#	Spiked with 50 µg conc. found	Calculated Conc. spl + 50	% REC.	Spiked Calculated with 50 µg Conc. % conc. found spl + 50 REC.
67538	572	590.5	96.9	85 90.6 93.8
67545	31.7	50.6	62.6	68 76.8 88.4
67552	46	63.4	72.5	68 70.6 96.3
67559	37.1	52.8	70.2	71 59.6 119
67566	35.1	55	63.8	56 62.2 90
67573	44.2	55.8	79.2	51 52.9 96.4
67580	25	54.8	45.6	44 65.2 67.5
67602	46.4	51	90.9	49 78.6 62.3
67609	39.7	60.4	65.7	451 339.7 132.7

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ORA

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OR

October 23, 1998

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry

### REPORT OF ANALYSES

The results of the analyses of the samples received date and description as shown, lab file #288-BS-10-98, are as attached.

If we can be of further assistance, please contact the office.

Sincerely,

zull -01. TJW/dd

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#### FROM: Micro-Methods, Inc. Lab File #288-BS-10-98

### GULFPORT FERTILIZER COMPANY 10/21/98 WATER SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC µg/l	LEAD µg/l
RC1	68217	<5	<5
RC 4	68218	<5	<5
N 12	68219	<5	<5
N 14	68220	<5	<5
N 21	68221	<5	<5
N 24	68222	<5	<5
N 31	68223	<5	<5
N 34	68224	<5	<5
S 39	68225	16.7	8
S 51	68226	13	<5

METHODOLOGY EPA 206.2-Furnace - Arsenic EPA 239.2-Furnace - Lead

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FROM: Micro-Methods, Inc. Lab File #288-BS-10-98

### GULFPORT FERTILIZER COMPANY 10/21/98 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
S 51	68227	1.2	27.5
S 61	68228	1.5	2.6

METHODOLOGY SW 846, 7060A-Furnace - Arsenic SW 846, 7421-Furnace - Lead

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12-Feb-99

Butler Services ATTN: Louis Fortenberry P O Box 1164 Pascagoula, MS 39567

RE: LF #176-BS-10-98 LF #177-BS-10-98

Dear Mr. Fortenberry:

As per your request, the lower limits for reporting arsenic and lead in soil is <0.1 mg/kg and arsenic and lead in water is <5  $\mu$ g/l for the above referenced project. If further information is needed, please contact the office.

Sincerely,

P. Gomer

Harry P. Howell

HPH/tt



February 17, 1999

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry

#### REPORT OF ANALYSES

The results of the analyses of the samples received 2/12/99, description as shown, lab file #143-BS-02-99, are as attached.

If we can be of further assistance, please contact the office.

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Sincerely,

P. Howell

Harry **A**. Howell President

)			)		
2/17/99 1:29 pm		MICRO-METHODS, I 6500 Sunplex Dri Ocean Springs, MS (601) 875-6420	<b>CRO-METHODS, INC.</b> 00 Sunplex Drive n Springs, MS 39564 (601) 875-6420	564	Lab File#: 143-BS-02-99 MM#: 71305 Page: 1
		Inorganics/Organics Analysis Data Sheet	a Analysis	Data Sheet	
<b>Client:</b> Butler Services (BUTL)	er Services	(BUTL)		Sample ID:	<b>Sample ID:</b> 0212 S-5-1 2' DEEP 25' EAST GULFPORT FERTILIZER PLANT
GENERAL INFORMATION	DRMATION	COLLECTION DATA	REMARKS		
Received: Container: Tef.Top : Preserved: Completed:	2/12/99 gls clr Yes No 2/17/99	<b>Date:</b> 2/12/99 <b>Time:</b> 09:00 <b>By:</b> Client	Results	Results reported in Dry Weight.	ry Weight.
Index	Parameter		Units	Value 1	Value 2
<b>Total:Metals</b> 1-01-07-0002 1-01-07-0081	Arsenic Lead		mg/kg	1.5 10	

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2/17/99 1:30 pm	MICRO-MET 6500 Sunp Ocean Sprin (601) 8	MICRO-METHODS, INC. 6500 Sunplex Drive Ocean Springs, MS 39564 (601) 875-6420	Lab File#: 143-BS-02-99 MM#: 71306 Page: 1
	Inorganics/Organics Analysis Data Sheet	s Analysis Data	Sheet
Client: Butler Services (BUTL)	vices (BUTL)	Sam	<b>Sample ID:</b> 0212 S-5-1 4' DEEP 25' EAST
GENERAL INFORMATION	ON COLLECTION DATA	REMARKS	
Received: 2/12/99 Container: gls clr Tef.Top : Yes Preserved: No Completed: 2/17/99	99 <b>Date:</b> 2/12/99 r <b>Time:</b> 09:15 <b>By:</b> Client 99	Results report	Results reported in Dry Weight.
Index Parameter	eter	Units Value 1	1 Value 2

.9 1.9

mg/kg

Arsenic Lead

**Total:Metals** 1-01-07-0002 1-01-07-0081

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Lab File#: 143-BS-02-99 MM#: 71307 Page: 1		<b>Sample ID:</b> 0212 S-6-1 2' DEEP 25' EAST			Value 2	
3. 9564	s Data Shee	Sample			Value 1	2.2 5.9
MICRO-METHODS, INC. 6500 Sunplex Drive Ocean Springs, MS 39564 (601) 875-6420	cs Analysi:		REMARKS		Units	mg/kg mg/kg
MICRO-MI 6500 Sur Ocean Spri (601)	Inorganics/Organics Analysis Data Sheet	(BUTL)	COLLECTION DATA	<b>Date:</b> 2/12/99 <b>Time:</b> 09:30 <b>By:</b> Client		
		er Services	DRMATION	2/12/99 gls clr Yes No 2/17/99	Parameter	Arsenic Lead
2/17/99 1:31 pm		<b>Client:</b> Butler Services (BUTL)	GENERAL INFORMATION	Received: Container: Tef.Top : Preserved: Completed:	Index	<b>Total:Metals</b> 1-01-07-0002 1-01-07-0081

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2/17/99 1:32 pm	MICRO-MET 6500 Sunp Ocean Sprin		Lab File#: 143-BS-02-99 NM#: 71308
	(601) 8	(601) 875-6420	Page: 1
	Inorganics/Organics	Organics Analysis Data Sheet	
<b>Client:</b> Butler Services (BUTL)	(BUTL)	<b>Sample ID:</b> 0212 S-6-1 4' DEEP 25' EAST	4' DEEP 25' EAST
GENERAL INFORMATION	COLLECTION DATA	REMARKS	
Received: 2/12/99 Container: gls clr Tef.Top : Yes Preserved: No Completed: 2/17/99	<b>Date:</b> 2/12/99 <b>Time:</b> 09:45 <b>By:</b> Client		

Value 2

Value 1

Units

Parameter

Index

1

Arsenic Lead

**Total:Metals** 1-01-07-0002 1-01-07-0081

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.76 < .06

mg/kg mg/kg

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## MICRO-METHODS, INC. 6500 SUNPLEX DRIVE OCEAN SPRINGS, MS 39564

QA/QC METALS

TO: Butler Services

LAB FILE # 143-BS-02-99

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	ARSE	ENIC		LEA	D	
MM#	Spiked with 10 µg conc. found	Calculated Conc. spl + 50	% REC.	Spiked with 10 µg conc. found	Calculated Conc. spl + 50	% REC
71307	22.98	27.47	83.65	30	32.5	92.3

	5. 8:				R			
		мтс	RO - METHO	DS				
	2/17/99		nformation			Time	: 1:29 pm	a
$\bigcirc$	Micro-Methods Inc. P.O. Box 849 6500 Sunplex Dr. Ocean Springs, MS 39564					(601) 8	375-6420 375-6423	
		******	*******	*****	* *			
	M-M Lab#: Client: Butler Ser Contact: Louis Fort Sample ID: Sample Date: Current Status: Comp	enberry Time: Analysis	Tel.: D Completic	M Date Rec On Date:	atrix: Soi eived: 2/	1 12/99	13:27	
	Sample Taken By: Client Sample Iced: Yes Amb.	Temp (C)	Preserve :	ed: No				
	Container Correctly Rec Container Size-Type: gl	eived: Ye s clr	s Suppli Teflc	ed By: on Top:	Micro-Meth Yes	ods		
	Extraction Procedure: Sample Volume Extracted Conc./Dilution Factor:	:	Extraction Units: ********			у:		
	2/17/99 Wet Lab	Sample In	MICRO - M fo. Report		M Lab #:		Page 1	
)	Client Samp	le Descri	ption:					
		Init	Date	Time	Method			
	Inorganics/Organics							
	Total : Metals							
	Arsenic 1-01-07-0002	PD	2/15/99	14:33	SW 846, 7	060A		
	Lead 1-01-07-0081	PD	2/17/99	08:45	SW 846, 7	420		

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MICRO - METHODS

2/17/99

Page

2

Client Sample Description:

Hanny P. Hawell

Completed By: U

Harry P. Howell President

Results reported in Dry Weight.

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July 28, 1999

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry

#### **REPORT OF ANALYSES**

The results of the analyses of the samples received date and description as shown, lab file #190-BS-07-99, are as attached.

If we can be of further assistance, please contact the office.

Sincerely,

P. Hawell Harry P. Howell

HPH/dd

encl.

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### GULFPORT FERTILIZER COMPANY 7/19/99 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
N16-2'	75754	0.65	672
N16-4'	75755	0.24	44.6
RC6-2'	75756	691	5982
RC6-4'	75757	0.29	9.50
N17-2' Duplicate	75758	<0.07 0.27	3.45 3.91
N17-4'	75759	<0.08	<0.6
N18-2'	75760	13.2	298
N20-2'	75761	12.4	98.0
N20-4'	75762	0.39	4.35
RC10-2' Duplicate	75763	127 108	348
RC10-4'	75764	175	22.8
RC9-2'	75765	145	474
RC9-4'	75766	8.11	26.9
RC8-2'	75767	17.4	62.7
RC8-4' Duplicate	75768	1.10 0.43	5.25 4.27
RC7-2'	75769	78.1	5280
RC7-4'	75770	34.9	8.74

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### GULFPORT FERTILIZER COMPANY 7/19/99 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
S16-2'	75771	90.4	291
S16-4'	75772	18.4	9.69
S17-2'	75773	0.69	11.6
S17-4' Duplicate	75774	3.57 1.38	11.1 10.1
S18-2'	75775	6.06	640
S18-4'	75776	29.0	3657
S19-2'	75777	45.0	1507
S19-4'	75778	1.88	378
S20-2'	75779	12.6	5.24
S20-4' Duplicate	75780	<.1 <.1	2.73 2.30
T4100E-2'	75781	0.69	298
T4100E-4'	75782	14.3	23.4
T450N-2'	75783	21.3	147
T5-2'	75784	47.2	28.6
T5-4'	75785	242	28.1
T550N-2'	75786	359	226
T550N-4'	75787	146	703

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### GULFPORT FERTILIZER COMPANY 7/19/99 SOIL SAMPLES

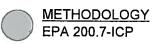
		ARSENIC	LEAD
SAMPLE DESCRIPTION	MM#	mg/kg	mg/kg
T5100E-2'	75788	<.1	293
T5100E-4'	75789	0.37	3.50
T450S-2'	75790	6.99	40.9
T450S-4'	75791	4.53	64.4



METHODOLOGY SW 846, 6010A - ICP

### GULFPORT FERTILIZER COMPANY 7/19/99 WATER SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC µg/l	LEAD µg/l
RS-7-19-99	75792	<5	<5
FB-7-19-99	75793	<5	<5
TB-7-19-99	75794	<5	<5



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August 3, 1999

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry

## REPORT OF ANALYSES

The results of the analyses of the samples received date and description as shown, lab file #269-BS-07-99, are as attached.

If we can be of further assistance, please contact the office.

Sincerely,

ing P. Hawell

Harry P. Howell

HPH/dd

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#### GULFPORT FERTILIZER COMPANY 7/19/99 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
T450E-2'	75823	11.7	1076
14502-2	10020		1010
T45OE-4'	75824	0.22	780
S26-2'	75825	0.28	<0.2
Duplicate		7.68	<0.2
S26-4'	75826	5.25	<0.2
S28-2'	75827	1.23	5.76
S28-4'	75828	1.08	<0.2
Duplicate		1.62	4.19
	75000	0.00	0.50
S29-2'	75829	3.93	2.59
000 //	76000	2.49	4.00
S29-4'	75830	2.49	4.00
S30-2'	75831	.74	4.50
Duplicate	75051	1.04	4.08
Duplicate		1.04	4.00
S30-4'	75832	1.24	2.74
S27-2'	75833	1.64	15.12
S27-4'	75834	1.67	3.08
Duplicate		1.87	1.87
T7100E-2'	75835	<.1	2.86
	75000	0.00	44.0
T7100E-4'	75836	0.20	11.6





August 12, 1999

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry

#### REPORT OF ANALYSES

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The results of the analyses of the samples received date and description as shown, lab file #277-BS-07-99, are as attached.

If we can be of further assistance, please contact the office.

Sincerely, Juing P. Hawell

Harry P. Howell

HPH/dd

encl.

### GULFPORT FERTILIZER COMPANY 7/23/99 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
S40-2' DUPLICATE	75923	1.60	3.52
S40-4' DUPLICATE	75924	3.57	<0.2
S57-2'	75925	1.05	<0.2
S57-4'	75926	<0.05	7.89
S58-2' Duplicate	75927	3.09 3.41	32.1 29.2
S58-4'	75928	0.65	2.79
S59-2'	75929	0.40	6.90
S59-4'	75930	<0.05	1.72
S60-2'	75931	0.84	5.74
S60-4' Duplicate	75932	0.42 0.26	7.25 1.97
S36-2'	75933	0.98	7.83
S36-4'	75934	1.52	1.41
S38-2'	75935	0.50	2.34
S38-4'	75936	0.31	2.09
T9100W-2' Duplicate	75937	0.52 0.50	32.7 10.75
T9100W-4'	75938	1.74	3.56
S50-2'	75939	702	597
S50-4'	75940	113	12.6

METHODOLOGY

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SW 846, 7060A-Furnace - Arsenic SW 846, 7420-Direct - Lead

### GULFPORT FERTILIZER COMPANY 7/23/99 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
S40-2'	75941	1.27	2.38
S-40-4' Duplicate	75942	3.50 4.54	492 287
S126-2'	75943	0.40	6.23
S126-4'	75944	0.24	1.97
S98-2'	75945	0.11	<0.20
S98-4'	75946	0.06	0.57
S77-2' Duplicate	75947	0.07 <0.05	1.95 1.79
S77-4'	75948	<0.05	1.11
S96-2'	75949	0.19	0.58
S96-4'	75950	<0.05	0.65
S94-2'	75951	<0.05	1.99
S94-4' Duplicate	75952	<0.05 <0.05	1.07 0.05
N40-2'	75953	0.11	0.79
N40-4'	75954	0.05	1.50
S49-2'	75955	1.19	4.47
S49-4'	75956	0.32	4.51
S48-2' Duplicate	75957	0.55 0.37	45.0 28.4

METHODOLOGY SW 846, 7060A-Furnace - Arsenic SW 846, 7420-Direct - Lead .

### GULFPORT FERTILIZER COMPANY 7/23/99 SOIL SAMPLES

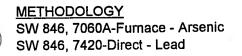
1		ARSENIC	LEAD
SAMPLE DESCRIPTION	MM#	mg/kg	mg/kg
S48-4'	75958	0.58	4.69
S47-2'	75959	0.69	43.0
S47-4'	75960	0.23	2.55
S37-2'	75961	5.34	6.74
S37-4'	75962	1.35	4.59
	,	2.87	1.98
Duplicate		2.0.	
S56-2'	75963	0.44	4.45
S56-4'	75964	<0.05	0.80
S55-2'	75965	0.07	4.02
S55-4'	75966	<0.05	2.25
S55-2' DUPLICATE	75967	0.05	4.58
Duplicate			4.13
S55-4' DUPLICATE	75968	<0.05	2.82
S54-2'	75969	<0.05	2.58
S54-4'	75970	<0.05	3.70
S45-2'	75971	4.24	303
	75070	00 C	72.2
S45-4'	75972	23.6	
Duplicate		17.9	49.0
S1110-2'	75973	<0.05	1.76
S1110-4'	75974	<0.05	2.51

METHODOLOGY SW 846, 7060A-Furnace - Arsenic SW 846, 7420-Direct - Lead  $\mathbf{r}$ 

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### GULFPORT FERTILIZER COMPANY 7/23/99 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
S80-2'	75975	< 0.05	2.82
S80-4'	75976	1.02	3.92
S75-4' Duplicate	75977	<0.05 <0.05	2.92 3.17
S124-2'	75978	<0.05	0.44
S124-4'	75979	<0.05	1.13
S112-2' DUPLICATE	75980	<0.05	2.35
S98-2' DUPLICATE	75981	<0.05	4.29
S71-2' Duplicate	75982	<0.05 <0.05	0.98 3.30
S1210-2'	75983	0.22	<0.2
S1210-4'	75984	0.24	3.87
S128-2'	75985	<0.05	0.32
S122-2'	75986	<0.05	1.39
S122-4' Duplicate	75987	<0.05 <0.05	<0.2 <0.2
S128-2' DUPLICATE	75988	<0.05	2.07
S44-2'	75989	8.08	73.2
S44-4'	75990	0.68	<0.2
S46-2'	75991	2.98	183



#### **GULFPORT FERTILIZER COMPANY** 7/23/99 SOIL SAMPLES

SAMPLE DESCRIPTION	MM#	ARSENIC mg/kg	LEAD mg/kg
S46-4'	75992	0.77	3.20
Duplicate		0.05	2.26
S34-2'	75993	0.39	0.91
S34-4'	75994	0.18	0.67
S74-2'	75995	<0.05	0.78
S74-4'	75996	<0.05	0.60
S72-2'	75997	<0.05	63.4
Duplicate		0.14	69.4
S72-4'	75998	<0.05	8.34
S73-2'	75999	0.20	0.72
S73-4'	76000	<0.05	0.25
S76-2'	76001	0.60	1.80
S76-4'	76002	<0.05	0.95
Duplicate	10002	<0.05	1.52
S75-2'	76003	<0.05	2.00
S75-2' DUPLICATE	76004	<0.05	0.83
S116-2'	76005	0.62	2.19
S116-4'	76006	<0.05	1.04
S178-2' Duplicate	76007	0.21	4.05 2.28
S78-4'	76008	<0.05	2.94







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FROM: Micro-Methods, Inc. Lab File #277-BS-07-99

### GULFPORT FERTILIZER COMPANY 7/23/99 SOIL SAMPLES

i		ARSENIC	LEAD
SAMPLE DESCRIPTION	MM#	mg/kg	mg/kg
S92-2'	76009	0.39	3.61
S92-4'	76010	<0.05	1.28
S114-2'	76011	<0.05	1.79
S114-4' Duplicate	76012	0.07	0.72 0.70
S112-2'	76013	0.10	2.01
S112-4'	76014	<0.05	1.07
S118-2'	76015	0.20	13.1
S118-4'	76016	0.21	5.94
S910-2'	76017	0.28	2.95
Duplicate		0.31	4.66
S910-4'	76018	<0.05	0.56

METHODOLOGY SW 846, 7060A-Furnace - Arsenic SW 846, 7420-Direct - Lead

### FROM: Micro-Methods, Inc. Lab File #277-BS-07-99

## GULFPORT FERTILIZER COMPANY 7/23/99 WATER SAMPLES

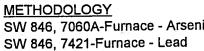
SAMPLE DESCRIPTION	MM#	ARSENIC µg/I	LEAD µg/l	Chromium µg/l
MW1-01U	76019	33	35	
MW1-01F	76020	28	37	15
FIELD BLANK	76022	<5	<5	
Duplicate		<5	<5	
RINSATE	76023	<5	<5	
TRIP BLANK	76024	<5	<5	

METHODOLOGY EPA 206.2-Furnace - Arsenic EPA 239.2-Furnace - Lead

FROM: Micro-Methods, Inc. Lab File #277-BS-07-99

### **GULFPORT FERTILIZER COMPANY** 7/23/99 FILTER SAMPLES

÷		ARSENIC	LEAD
SAMPLE DESCRIPTION	MM#	Тµд	Тµд
MW1-01 FILTER	76021	800	250



SW 846, 7060A-Furnace - Arsenic



18-Aug-99

DETECTION LIDIT

Butler Services ATTN: Louis Fortenberry P O Box 1164 Pascagoula, MS 39567

RE: LF #269-BS-07-99 LF #190-BS-07-99 LF #277-BS-07-99

Dear Mr. Fortenberry:

As per your request concerning the lower limits for the above referenced reports, based on sample size, the lower limits achieved for arsenic in soil is <0.05 mg/kg and lead is <0.2 mg/kg. The lower limits for arsenic and lead in water is <5  $\mu$ g/l. If further information is needed, please contact the office.

Sincerely, Hang P. Amuel

Harry P. Howell

HPH/tt

RO-

BORA

September 2, 1999

TCLP

HODS

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry RE: Lab File #278-BS-08-99

# **REPORT OF ANALYSES**

Please find enclosed the additional analyses requested on the above mentioned lab file

If we can be of further assistance, please contact the office.

Sincerely,

P. Howeld

Harry 9. Howell

HPH/dd

9/02/99 2:02 pm		MICRO-METHODS, I 6500 Sunplex Dri Ocean Springs, MS	MICRO-METHODS, INC. 6500 Sunplex Drive ean Springs, MS 39564	264	6 
		(bUL) B Inorganics/Organics	s Analysis	(601) 875-6420 <b>rganics Analysis Data Sheet</b>	Page: 1
Client: Butler Services (BUTL)	r Services	(BUTL)		Sample ID: S	S50-2' GULFPORT FERTILIZER PLT
GENERAL INFORMATION	RMATION	COLLECTION DATA	REMARKS		
Received: 7 Container: 9 Tef.Top : Ye Preserved: No Completed: 9	7/23/99 gls cont Yes No 9/02/99	<b>Date:</b> 7/23/99 <b>Time:</b> 10:00 <b>By:</b> Client	TCLP Reg	TCLP Regulatory Limit Sheet Enclosed	Sheet Enclosed.
Index	Parameter		Units	Value 1	Value 2
<b>Tclp:Metals</b> 1-02-07-0002 1-02-07-0081	Arsenic Lead		mg/1 mg/1	. 29 5	

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9/02/99 2:05 pm		MICRO-METHODS, INC. 6500 Sunplex Drive Ocean Springs, MS 39564 (601) 875-6420	MICRO-METHODS, INC. 6500 Sunplex Drive (ean Springs, MS 395 (601) 875-6420	64	Lab File#: 278-BS-08-99 MM#: 75777 Page: 1
		Inorganics/Organics	s Analysis	rganics Analysis Data Sheet	
Client: Butl	Client: Butler Services (BUTL)	(BUTL)		Sample ID: S1	<b>Sample ID:</b> S19-2' GP FERTILIZER PLANT
GENERAL INFORMATION	ORMATION	COLLECTION DATA	REMARKS		
Received: Container: Tef.Top : Preserved: Completed:	7/19/99 gls cont Yes No 7/28/99	<b>Date:</b> 7/19/99 <b>Time:</b> 11:55 <b>By:</b> Client	TCLP Regr exceeds	ılatory Limit Sł rCLP Regulatory	TCLP Regulatory Limit Sheet Enclosed. This sample exceeds TCLP Regulatory Limits for Lead.
Index	Parameter		Units	Value 1	Value 2
<b>Tclp:Metals</b> 1-02-07-0002 1-02-07-0081	Arsenic Lead		mg/1 mg/1	< .1 7.8	

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9/02/99 2:06 pm		MICRO-METHODS, INC. 6500 Sunplex Drive Ocean Springs, MS 39564 (601) 875-6420	<b>CRO-METHODS, INC.</b> 00 Sunplex Drive n Springs, MS 395 (601) 875-6420	564	Lab File#: 278-BS-08-99 MM#: 75776 · Page: 1
		Inorganics/Organics Analysis Data Sheet	aiaysis	Data Sheet	
<b>Client:</b> Butler Services (BUTL)	rvices	(BUTL)		<b>Sample ID:</b> S18-4'	S18-4' GP FERTILIZER PLANT
GENERAL INFORMATION	NOI	COLLECTION DATA	REMARKS		
Received: 7/19/99 Container: gls cont Tef.Top : Yes Preserved: No Completed: 7/28/99	)/99 cont 3/99	Date: 7/19/99 Time: 11:45 By: Client	TCLP Reg exceeds	ulatory Limit TCLP Regulator	TCLP Regulatory Limit Sheet Enclosed. This sample exceeds TCLP Regulatory Limits for Lead.
Index Para	Parameter		Units	Value 1	Value 2
<b>Tclp:Metals</b> 1-02-07-0002 Arsenic 1-02-07-0081 Lead	enic		mg/1 mg/1	< .1 27.7	

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9/02/99 2:07 pm	MICRO-METHODS, I 6500 Sunplex Dri Ocean Springs, MS (601) 875-6420	MICRO-METHODS, INC. 6500 Sunplex Drive ean Springs, MS 39564 (601) 875-6420	564	Lab File#: 278-BS-08-99 MM#: 75769 . Page: 1
	Inorganics/Organics Analysis Data Sheet	s Analysis	Data Sheet	
<b>Client:</b> Butler Services (BUTL)	ces (BUTL)		Sample ID: RC7-2'	RC7-2' GP FERTILZER PLANT
GENERAL INFORMATION	COLLECTION DATA	REMARKS		
Received: 7/19/99 Container: gls cont Tef.Top : Yes Preserved: No Completed: 7/28/99	<b>Date:</b> 7/19/99 <b>Time:</b> 11:10 <b>By:</b> Client	TCLP Reg	ulatory Limit	TCLP Regulatory Limit Sheet Enclosed.
Index Parameter	er	Units	Value 1	Value 2
<b>Tclp:Metals</b> 1-02-07-0002 Arsenic 1-02-07-0081 Lead		mg/1 mg/1	< .1 .46	

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9/02/99 2:08 pm		MICRO-MET 6500 Sunp Ocean Sprin	MICRO-METHODS, INC. 6500 Sunplex Drive ean Springs, MS 3956	4	Lab File#: 278-BS-08-99 MM#: 75756 ·
		(601) 8	(601) 875-6420		Page: 1
		Inorganics/Organics Analysis Data Sheet	: Analysis D	ata Sheet	
Client: Butler Services (BUTL)	ervices	(BUTL)		Sample ID:	Sample ID: RC6-2' GP FERTILIZER PLANT
GENERAL INFORMATION	RMATION	COLLECTION DATA	REMARKS		
Received: Container: g Tef.Top : Y Preserved: N Completed:	7/19/99 gls cont Yes No 7/28/99	Date: 7/19/99 Time: 08:55 By: Client	TCLP Regul	atory Limit	TCLP Regulatory Limit Sheet Enclosed.
Index	Parameter		Units V	Value 1	Value 2
<b>Tclp:Metals</b> 1-02-07-0002 1-02-07-0081	Arsenic Lead		mg/l < mg/l	<ul><li>.1</li><li>.43</li></ul>	

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- CLIENT: Butler Services
- SAMPLE ID: S-50-2' Gulfport Fertilizer Plant
- LAB FILE #: 278-BS-08-99
- MM#: 75739

			SPIKE	
	SPIKE	SAMPLE	SAMPLE	SPIKE
	ADDED	RESULT	RESULT	%
PARAMETERS	mg/l	mg/l	mg/l	RECOVERY
Arsenic	0.2	0.294	0.527	116

- CLIENT: Butler Services
- SAMPLE ID: S-19-2' Gulfport Fertilizer Plant
- LAB FILE #: 278-BS-08-99
- MM#: 75777

			SPIKE	
	SPIKE	SAMPLE	SAMPLE	SPIKE
	ADDED	RESULT	RESULT	%
PARAMETERS	mg/l	mg/l	mg/l	RECOVERY
Arsenic	0.2	0.028	0.245	108

- CLIENT: Butler Services
- SAMPLE ID: S-18-4' Gulfport Fertilizer Plant
- LAB FILE #: 278-BS-08-99
- MM#: 75776

			SPIKE	
	SPIKE	SAMPLE	SAMPLE	SPIKE
	ADDED	RESULT	RESULT	%
PARAMETERS	mg/l	mg/l	mg/l	RECOVERY
Arsenic	0.2	0.001	0.226	112

- CLIENT: Butler Services
- SAMPLE ID: RC6-2' Gulfport Fertilizer Plant
- LAB FILE #: 278-BS-08-99

MM#: 75756

			SPIKE	
	SPIKE	SAMPLE	SAMPLE	SPIKE
	ADDED	RESULT	RESULT	%
PARAMETERS	mg/l	mg/l	mg/l	RECOVERY
Arsenic	0.2	0.004	0.224	112
Lead	0.2	0.4367	0.5932	78

## QA/QC METALS

- CLIENT: Butler Services
- SAMPLE ID: RC7-2' Gulfport Fertilizer Plant
- LAB FILE #: 278-BS-08-99

#### MM#: 75769

			SPIKE	
	SPIKE	SAMPLE	SAMPLE	SPIKE
	ADDED	RESULT	RESULT	%
PARAMETERS	mg/l	mg/l	mg/l	RECOVERY
Arsenic	0.2	0.043	0.270	113
Lead	0.2	0.4619	0.5650	52

2	9/02/99		CRO - METHO Informatior			Time	: 2:02 pm
$\bigcirc$	Micro-Methods Inc. P.O. Box 849 6500 Sunplex Dr. Ocean Springs, MS 39564				FAX:		875-6420 875-6423
	*	*******	* * * * * * * * * * * *	* * * * * * * * *	* *		
	M-M Lab#: Client: Butler Serv Contact: Louis Forte Sample ID: . Sample Date: Current Status: Comp	enberry	Tel.:	Ma	trix soi	1	14:01
	Sample Taken By: Client Sample Iced: Yes Amb.T			ed: No			
	Container Correctly Rece Container Size-Type: gls					nods	
	Extraction Procedure: Sample Volume Extracted: Conc./Dilution Factor: *			:		Зу:	
$\bigcirc$	9/02/99 Wet Lab S Client Sample	-	_		1 Lab #:		Page 1
		Init	Date	Time	Method		
	Inorganics/Organics	_					
	Tclp : Metals						
	Arsenic 1-02-07-0002	CSS	9/02/99	13:00	SW 846, 7	060A/13	311
	Lead 1-02-07-0081	KL	9/02/99	13:30	SW 846, 6	010A/13	311

9/02/99

Client Sample Description:

Completed By:

P. Howell Hamy

Harry Q. Howell President

TCLP Regulatory Limit Sheet Enclosed.

# TCLP REGULATORY LIMITS

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TCLP METALS Arsenic Barium Cadmium Chromium Lead Mercury	mg/l 5.0 100.0 1.0 5.0 5.0 0.2
Selenium Silver	1.0 5.0
VOLATILE TARGET COMP Benzene Carbon Tetrachloride Chlorobenzene Chloroform 1,2 Dichloroethane 1,1 Dichloroethene Methyl Ethyl Ketone Tetrachloroethene Trichloroethene Vinyl Chloride	mg/l 0.5 0.5 100.0 6.0 0.5 0.7 200.0 0.7 0.5 0.2
SEMI-VOLATILE TARGET 1,4 Dichlorobenzene 2,4 Dinitrotoluene 2,4,5 Trichlorophenol 2,4,6 Trichlorophenol Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentachlorophenol Pyridine m-Cresol o-Cresol p-Cresol	 mg/l 7.5 0.13 400.0 2.0 0.13 0.5 3.0 2.0 100.0 5.0 200.0 200.0

TCLP - Toxicity Characteristics Leachate Procedure, SW 846, Sec. 1311



# ANALYTICAL SERVICE COMPANY

DISPUL

September 9, 1999

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry

#### REPORT OF ANALYSES

The results of the analyses of the samples received 8/05/99, description as shown, lab file #110-EM-08-99, are as attached.

If we can be of further assistance, please contact the office.

Sincerely,

Hanny P. Hannel

Harry P. Howell President

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8/30/99 10:29 am		ອີ ເຊິ່ຍ ເດີຍ ເຊີຍ ເຊີຍ ເດີຍ ເດີຍ ເດີຍ ເດີຍ ເດີຍ ເດີຍ ເດີຍ ເດ	ម.ម.ស្ន	<b>NC .</b> Ve 39564	Lab File#: 110-EM-08-9 MM#: 76356
		(201)	375-6420		Page:
		Inorganics/Organics	s Analysis	Data Sheet	
<b>Client:</b> Envi	<b>Client:</b> Environmental Mgmt.	nt. Services (EMS)		Sample ID:	DECON/PURGE WATER-1 GULFPORT FERTILIZER PLANT
GENERAL INF	INFORMATION	COLLECTION DATA	REMARKS		
Received: Container: Tef.Top : Preserved: Completed:	8/05/99 pls cont No Yes 8/13/99	<b>Date:</b> 8/05/99 <b>Time:</b> 10:00 <b>By:</b> Client	Value 2 -	= Duplicate Analysis	nalysis
Index	Parameter		Units	Value 1	Value 2
<b>Total:Metals</b> 1-01-07-0002 1-01-07-0080 1-01-07-0081	Arsenic Chromium Lead		mg/1 mg/1 mg/1	<pre>&lt; .005 .01 .18</pre>	<pre>&lt; .005 .01 .17</pre>

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8/30/99 1:09 pm		MICRO-METHODS, INC. 6500 Sunplex Drive Ocean Springs, MS 39564 (601) 875-6420	MICRO-METHODS, INC. 6500 Sunplex Drive ean Springs, MS 395 (601) 875-6420	• 564	Lab File#: 110-EM-08+9 MM#: 76357 Page:
		Inorganics/Organics	s Analysis	Organics Analysis Data Sheet	
<b>Client:</b> Envi.	ronmental Mg	<b>Client:</b> Environmental Mgmt. Services (EMS)		Sample ID:	Sample ID: SOIL CUTTINGS-1 GULFPORT FERTILIZER PLANT
GENERAL INFORMATION	ORMATION	COLLECTION DATA	REMARKS		
Received: Container: Tef.Top : Preserved: 1 Completed:	8/05/99 gls clr Yes No 8/13/99	<b>Date:</b> 8/05/99 <b>Time:</b> 10:00 <b>By:</b> Client	Results	Results reported in Dry Weight.	ry Weight.
Index	Parameter		Units	Value 1	Value 2
<b>Total:Metals</b> 1-01-07-0002 1-01-07-0081	Arsenic Lead		gy/kg mg/kg	2.25 122	

8/30/99 1:10 pm		MICRO-ME 6500 Sun	MICRO-METHODS, INC. 6500 Sunplex Drive	ບັບ	Lab File#: 110-EM-08-99 MM#: 76358
		Ocean Springs, MS 39564 (601) 875-6420	Ings, MS 3 875-6420	9564	
		Inorganics/Organics Analysis Data Sheet	s Analysi	s Data Sheet	
<b>Client:</b> Envi	ronmental Mgm	<b>Client:</b> Environmental Mgmt. Services (EMS)		Sample ID:	Sample ID: TRIP BLANK 8/2/99
GENERAL INFORMATION	ORMATION	COLLECTION DATA	REMARKS	2	
Received: Container: Tef.Top : Preserved: Completed:	8/05/99 pls cont No Yes 8/13/99	<b>Date:</b> 8/02/99 <b>Time:</b> 08:00 <b>By:</b> Micro-Methods			
Index	Parameter		Units	Value 1	Value 2
<b>Total:Metals</b> 1-01-07-0002 1-01-07-0081	Arsenic Lead		mg/1 mg/1	<ul><li>&lt; 005</li><li>&lt; 05</li></ul>	

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	8/30/99		ICRO - METH Informatio		rt Time: 10:29 a	<b>a</b> 1
$\bigcirc$	Micro-Methods Inc. P.O. Box 849 6500 Sunplex Dr. Ocean Springs, MS 39564	4			TEL: (601) 875-6420 FAX: (601) 875-6423 BBS: Call	
		******	*******	******	* * *	
	M-M Lab#: 76356 Client: Environmer Contact: Winston Ru Sample ID: DECON/H Sample Date: 8/05/9 Current Status: Comp	issell PURGE WAT 99 Time:	Tel.: ER-1 GULFP 10:00	(601)5 ORT Date Pe	Matrix, water	
	Sample Taken By: Client Sample Iced: Yes Amb.	: Temp (C)	Preserv :	ed: Yes		
	Container Correctly Rec Container Size-Type: pl	eived: Ye s cont	es Suppl Tefl	ied By: on Top:	Micro-Methods No	
	Extraction Procedure: Sample Volume Extracted Conc./Dilution Factor:	:	Extraction Units	:	-1.	
		*****	* * * * * * * * * * *	* * * * * * * *	* * *	
	8/30/99 Wet Lab	Sample Ir	MICRO - M nfo. Report	METHODS For M	-M Lab #: 76356 Page 1	
	Client Sample	e Descrip	otion: DECO	)N/PURGI	E WATER-1 GULFPORT	
		Init	Date	Time	Method	
	Inorganics/Organics					
	Total : Metals					
	Arsenic 1-01-07-0002	KL	8/13/99	11:50	EPA 206.2-Furnace	
	Chromium 1-01-07-0080	KL	8/13/99	09:30	EPA 218.2-Furnace	
	Lead 1-01-07-0081	KL	8/13/99	10:20	EPA 200.7-ICP	

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8/30/99

Client Sample Description: DECON/PURGE WATER-1 GULFPORT

Completed By:

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Harry'-P. Howell President

Value 2 = Duplicate Analysis

	8/30/99	MICRO - METHOD Sample Information		Time: 1:05 pm
$\bigcirc$	Micro-Methods Inc. P.O. Box 849 6500 Sunplex Dr. Ocean Springs, MS 39564		FAX	: (601) 875-6420 : (601) 875-6423 : Call
	*	* * * * * * * * * * * * * * * * * * * *	* * * * * * *	
	M-M Lab#: 76357 Client: Environmenta Contact: Winston Russ Sample ID: SOIL CUT Sample Date: 8/05/99 Current Status: Comp	TINGS-1 GULFPORT Time: 10:00 Da	Matrix: so te Received: 8	bil 3/05/99
	Sample Taken By: Client Sample Iced: Yes Amb.Te		: No	
	Container Correctly Receir Container Size-Type: gls			hods
	Extraction Procedure: Sample Volume Extracted: Conc./Dilution Factor:			By:
4		MICRO - ME	THODS	
$\bigcirc$	8/30/99 Wet Lab Sa	ample Info. Report	For M-M Lab #:	76357 Page 1
$\bigcirc$	Client Sampl	le Description: SOI	L CUTTINGS-1 GU	ILFPORT
		Init Date '	Time Method	
	Inorganics/Organics			
	Total : Metals			
	Arsenic 1-01-07-0002		SW 846,	7060A
	Lead 1-01-07-0081		SW 846,	7421

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8/30/99

Client Sample Description: SOIL CUTTINGS-1 GULFPORT

Completed By:

Howell Harry P. I President

Results reported in Dry Weight.

	8/30/99		ICRO - METHO Information		Time	: 1:05 pm
$\bigcirc$	Micro-Methods P.O. Box 849 6500 Sunplex Ocean Springs	Dr.			TEL: (601) 8 FAX: (601) 8 BBS: Call	
		*****	* * * * * * * * * * * * *	* * * * * * * * * *		
	Contact: Sample ID: Sample Date:	76358 Environmental Mgm Winston Russell TRIP BLANK 8/2 8/02/99 Time us: Comp Analys	Tel.: /99 : 08:00 I	(601)544-30 Matr: Date Receive	ix: water ed: 8/05/99	13:04
		By: Micro-Methods Yes Amb.Temp (C		d: Yes		
		rectly Received: e-Type: pls cont			ro-Methods	
	Extraction Pr Sample Volume Conc./Dilutio	Extracted: on Factor:	Extractior Units:	:	By:	
$\bigcirc$	8/30/99	Wet Lab Sample :	_	For M-M La		Page 1
		Client Sample	Description	I: TRIP BLAN	NK 8/2/99	
		Init	Date	Time Met	chod	
	Inorganics/Or	ganics				
	Total : Metal	s				
	Arsenic 1-01-07-0002			2		
	Lead 1-01-07-0081					

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8/30/99

Wet Lab Sample Info. Report For M-M Lab #: 76358 Page 2

Client Sample Description: TRIP BLANK 8/2/99

P. Hawell kan Completed By: Harry P. Howell

President

# ANALYTICAL SERVICE COMPANY

RO -

BORA

HODS

September 20, 1999

Butler Services P. O. Box 1164 Pascagoula, MS 39567

ATTN: Louis Fortenberry RE: Lab File #110-EM-08-99

# **REPORT OF ANALYSES**

Please find enclosed the additional analyses results requested for the above referenced lab file. Please replace these sheets with your original report.

If we can be of further assistance, please contact the office.

Sincerely,

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Jamy P. Hawell

Harry P. Howell

HPH/dd

encl.

MICRO - METHODS Wet Lab Sample Info. Report For M-M Lab #: 76357 9/20/99 Page Client Sample Description: SOIL CUTTINGS-1 GULFPORT Init Date Time Method \_ \_ \_ \_ ---------------Inorganics/Organics \_ \_ \_ \_ \_ \_ . . . . . . . -----Tclp : Metals Lead 9/16/99 11:30 SW 846, 6010A/1311 1-02-07-0081 CSS well Completed By; Harty P. Howell President

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Results reported in Dry Weight.

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	9/20/99		CRO - METH Informatic		rt	Time:	9:29 ar
$\bigcirc$	Micro-Methods Inc. P.O. Box 849 6500 Sunplex Dr. Ocean Springs, MS 3956	4			FAX :	: (601) 8 : (601) 8 : Call	
		* * * * * * * *	* * * * * * * * * *	******	* * *		
	M-M Lab#: 76357 Client: Butler Ser Contact: Louis Fort Sample ID: SOIL CU Sample Date: 8/05/9 Current Status: Comp	rvices (B cenberry JTTINGS-1 99 Time: Analysia	UTL) Tel.: GULFPORT 10:00 5 Completi	(228)7 Date Re on Date	69-6983 Matrix: sc ceived: 8 : 9/20/99	Ext.: il /05/99 Time: (	09:14
	Sample Taken By: Client Sample Iced: Yes Amb.	: Temp (C)	Preserv :	ed: No			
	Container Correctly Rec Container Size-Type: gl	eived: Ye s clr	es Suppl Tefl	ied By: on Top:	Micro-Met Yes	hods	
	Extraction Procedure: Sample Volume Extracted Conc./Dilution Factor:	l:	Extraction Units	:		By:	
$\bigcirc$	9/20/99 Wet Lab			E For M			age 1
	Client Sam	pie Descr	iption: So	JIL CUI".	LINGS-1 GUI	LFPORT	
		Init	Date	Time	Method		
	Inorganics/Organics Total : Metals						
	Arsenic 1-01-07-0002				SW 846, 7	7060A	
	Lead 1-01-07-0081				SW 846, 7	421	
	Tclp : Metals						
	Arsenic 1-02-07-0002	CSS	9/16/99	11:30	SW 846, 6	010A/131	L

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9/20/99 9:33 am		MICRO-METHODS, I 6500 Sunplex Dri Ocean Springs, MS	)-METHODS, INC. Sunplex Drive iprings, MS 395	<b>NC.</b> Ve 39564	Lab File#: 110-EM-08-99 MM#: 76357
		(601)	875-6420		Page: :
		Inorganics/Organics Analysis	s Analysis	Data Sheet	
Client: Butler Services		(BUTL)		Sample ID:	ID: SOIL CUTTINGS-1 GULFPORT FERTILIZED DIANT
GENERAL INFORMATION	ORMATION	COLLECTION DATA	REMARKS		
Received: Container: Tef.Top : Preserved: Completed:	8/05/99 gls clr Yes No 9/20/99	<b>Date:</b> 8/05/99 <b>Time:</b> 10:00 <b>By:</b> Client	Results	Results reported in Dry Weight.	y Weight.
Index	Parameter		Units	Value 1	Value 2
<b>Total:Metals</b> 1-01-07-0002 1-01-07-0081	Arsenic Lead		ду/рш шд/кд	2.25 122	
<b>Tclp:Metals</b> 1-02-07-0002 1-02-07-0081	Arsenic Lead		mg∕l mg/1	<1 .1	

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# QA/QC METALS

- CLIENT: Butler Services
- SAMPLE ID: Soil Cuttingas-1 Gulfport Fertilizer Plant
- LAB FILE #: 110-EM-08-99

76357

MM#:

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		SPIKE	
SPIKE	SAMPLE	SAMPLE	SPIKE
ADDED	RESULT	RESULT	%
mg/l	mg/l	mg/l	RECOVERY
0.2	-0.2073	0.2497	125
0.2	0.0933	0.2400	73
	ADDED mg/l 0.2	ADDED         RESULT           mg/l         mg/l           0.2         -0.2073	SPIKESAMPLESAMPLEADDEDRESULTRESULTmg/lmg/lmg/l0.2-0.20730.2497

**APPENDIX B** 

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# ANALYSIS REQUEST AND CHAIN OF CUSTODY

2 10	Analysis Request and Chain of Custody Record		COMPANC	Project No.	7, ms 300998		REMARKS	Coprod a	r	\$	Ŷ	4	4,	4	8	<, ,	7	Intact			Intact	10/1 4 Laboratory No.	ent volte 92	The Daruth
Page	ld Chain		I ZEZ Q		JOUNT													Date:	Tme: Date:	Time:	Date:	Date:	mol elect	0.0
	sis Request an	ect Name	GULFBRT FERTILIZER	۲Ŋ	33 RD STREET GULTHOLT, MS	ANALYSIS REQUESTED	METHOD															aborany: / () ()		
	Analy	Client/Project Name	CULF	CURENN	5.85	ANALYSIS	_	1/C					47	ول	*	*	~	Received by: (Signature)	Bacalvad hv	(Signature)	Received by: (Signature)	Received for laborativy	Data Results to:	
	pi, Inc.			Lev. Perti	Phone (228) 765 - 6583		TEST	Lead, Arsenic	5 5	s //	4	4 12	4	، ر	~	· (,	1	Date: JOI 9	Time Co C		Date:	TIme:		
	ssissip	la, Mississipp 983		Contact	Phone		Preservative	- 4	l	١	١		-	١	١	1		Da		Time:	DB			
	vices of Mi	Post Office Box 1164 • Pascagoula, Mississippi Telephone (601) 769-6983	FURTENBERNY		Sur	Sample Type		5010	4	۶	\$	4	4	6	د)	()	47	extroubern's						
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BUTLER SERVICES	ERUJ CES	Å	PASCAGOULA, MB	ы	Phon	<sup>2</sup> hona <b>(228)769-69</b> 83	50	33 RD STREET, GULFPORT, MS	FORT, MS	300998
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ER	SERVICES		PASCAGEOULA	5w ' <del>v</del> -	Phon	Phone: (228) 769 - 6983	83 33 RD 5T	STREET, GULFPORT, NG	NS 300998
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	sippi, Inc.	sissippi		Contact L. W. FORTENBERRY	Phone: (228) 769.6983			LEAD, AR	=	11	=	-	1					/ Date: 11/2/93	TIME: MED AW	Date:	Time:	Date: Time:	
	Butler Services of Mississippi,	Post Office Box 1164 • Pascagoula, Mississippi	lelephone (601) 769-6983 民民人		ŚŴ		(Llquid, Soil Preservative Sludge, Etc.)	2014	1	1	1	1	1					I. FORTENBERRY	torte lenn.	P			
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Company BUTLER SE	SERVICES	Address PAS CRGEDULA, MS	SW , MS	Contact L.N.	FORT		Project Location 33RD STREET, GULFPORT, MS	<u> </u>	roject No. 300 9 9 8
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Company	•		Address		Conte	Contact / 1 1 20 77-20 Seven S		10		Project No
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BUTLER SERUICES	PULCES		MARCOUCH , MA	SIM	Phon	Phone: (23)7(5-6983		30- 3100 - 100- 100- 100- 100-	S(00' 1 30)	97 7 700
Field Sample No./ Identification	Date and Time	Grab	କ୍ଟ୍ର Sample ପ୍ର Container (Size/Mat')	Sample Type (Liquid, Soil Sludge, Etc.)	Preservative	TEST	ANALYSIS REQUESTED	TED METHOD		REMARKS
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			Butler Services of Missi	vices of Mi	ISSISSI	issippi, Inc.	Analysis Request and C	Analysis Request and Chain of Custody Record
			Post Office	Post Office Box 1164 • Pascagoula, Mississippi	ula, Mississ	ippi		
	-			Telephone (601) 769-6983	6983		2	
sample submitted by: _	11	3	· FURIENISERKY	SERKY			GULFPORT FERTILIZER	PLANT
Company			Address		Conte	act L.W. FORTE	Contact L.W. FORTENBERRY Project Location	Project No.
BUTLER 5	SERVICES		PASCAGOULA	Y, MS	Phon	Phone: (228) 769-6983	183 33AD STREET, GULFPORT, NS	LE PORT, NG 300998
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REMARKS	METHOD	TEST	Т	Preservative	(Liquid, Soil Sludge, Etc.)	<b>a</b>	Grat	and Time	Sample No./ Idenilfication
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	33RD STREET, GULFPORT, MS		Phone: <b>(228) 76</b> 9	Pho	A, M5	PASCAGOUL		SERVICES	BUTLER
Project No.	61	FORTENBERRY	Contact L.W. For	Con		Address	A		Company
PLANT	FERTILIZER	GULFPORT			ERRY	FORTENBERRY	L.W. 1		Sample submitted by:
		Client/Project Name	sippi	goula, Missis 9-6983	Post Office Box 1164 • Pascagoula, Mississippi Telephone (601) 769-6983	Post Office			
f Custody Record	nalysis Request and Chain of Custody Record	Analys	ippi, Inc.	lississ	Butler Services of Mississippi, Inc.	Sutter Sci			
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	Butler Services of Mississ	Post Office Box 1164 • Pascagoula, Mississippi	Denten Bates / C. Duy	Address	See above address Phone:	Sample Sample Type	er (Liquid, Soil (1) Sludge, Etc.)	8 oz Soil ILLE										Relinquished by: (Signature)	(Signature) (Signature)	Ş			
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	Butler Services of Mississippi, Inc.	Post Office Box 1164 • Pascagoula, Mississippi	Denten Bartes / Callin Duy	Address Contact	See above address Phone:	e Sample Type	Container (Liquid, Soll Preservative (Size/Mai'l) Sludge, Etc.)	Bozglass Soil (Jee)	دخهام 202						allon Day Ems	Relinquished by: (Signature)	Relinquished by: (Signature)			
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	Butler de	Post Offic	W. Denten Bates	Address	Servic See above	Date A E Sample and B E Container Time G Size/Mat'l)	7-19-49 2 Plustic	1-19-99 Plustic	7-16-99						 Eme	Y Relinquished (Signature)	Relinquished by: (Signature)		
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	Butler Services of Mississippi, Inc.	Collin Day /Dorton Bates	Address Contact	SEE ANKES ANNE Phone:	Sample Sample Type Container (Liquid, Soll Prese	(Size/Maril) Sludge, Etc.)	AN AN AN ANA							(Signature) (Clun, Don	Relinquished by: (Signature)	Relinquished by: (Signature)		
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Page	hain of Custody Record	Part	Project No.	984B001	REMARKS					M sont e molested	83/99	N. Waruth				Date: JaOrff Intact	Date: 3.7.7 hntact	Time:	Date: Intact Time:	Dale 20 2 Raboratory No. Time: 1 410	
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	Butler Services of Mississippi, Inc.	Post Office Box 1164 • Pascagoula, Mississippi Telephone (601) 769-6983	Ŭ	above	Sample Type (Liquid, Soli Sludge, Etc.)	Soil (Tee)	/ (								$\rightarrow$ $\rightarrow$	· Que		1 DAUN			
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~	Butler Services of Missis.	Post Office Box 1164 • Pascagoula, Mississippi	Butes/Cullin Day	Co	abure address		Container (Liquid, Soli Preservative (Size/Mart) Sludge, Etc.)	- glass Soil fee									$\wedge$	Well Con	me he				
	Butler	Pc	Sample submitted by: Dcn + B	Address	Services	Dale D	and Time Grai		·		1, 7-23-99 1-23# 1030 X	1 7-23-99 X		-		_	7-23-99 X	BERS: (Signature) · Day Ems	Artilitation	Polindushed by (Signature)	EMARKS:		
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Page 5 of 12	ain of Custody Record		Fertilizar Plant	t. ms Project No.			REMARKS			-			current and afed		1010mut			Dates 23-45 Intact	lime: <b>ZOW</b> , Intect	Time:	Dale: Inlact Time:	Dale: 7.33.99 Laboratory No. Time: 9.38.3.2	
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	Butler Services of Mississippi, Inc.	Post Office Box 1164 • Pascagoula, Mississippi Telenhone (601) 760 600	Derta Butes/C.D.	Address	Sec abuse	Sample	Container (Liquid, Soll (Size/Mat'l) Siudge, Etc.)	202 glass Soil	2								1 1	Relinquished by: (Signature)		Panelly Over Dire	Relinguished by: (Sigrature)		
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Page 8 of 12	Analysis Request and Chain of Custody Record		じょってい きょう やくおう う	DAS HE COOJ		D REMARKS					wint endeled	0	1 was and			Time: 30.00	Date: Intact Time:	Dale: Intact Time:	Dale: 7.33.99 Laboratory No. Time: 9.30.44	
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	ississippi, Inc.	ula, Mississippi 6983		Contact Phone: 228		Preservative	NA AS.								$\checkmark$	D <sup>B18:</sup> アーころ…ぐら TIM8: <b>2</b> 040 /	Date: 7.20 Au	Date: Time:		
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Page 7 of 22.	Butler Services of Mississippi, Inc. Analysis Request and Chain of Custody Record	Post Office Box 1164 • Pascagoula, Mississippi Telephone (601) 769-6983 Glient/Project Name どんデタびパフ デビルアバンティア のよりフ	BSS Contact Del Del Del Project Location	ERUICES SEE ABOOK ADDRESS Phone: 228 765-6583 GUUFPERTINS 98H8001	Sample Sample Type ANALYSIS RECUESTED	ମୁମ୍ ତି Container ଓ Size/Mar'i)	1-23-99 X glass Soil NA As Pb	3 X	7-23-99 X 15.30 X	7-23-49 X   530 X	1-23-99 X T-23-99 X	7-23-79 X 3/13/29	7-23-99 X 1640 X 10. WOULDA		7712 X KI KI KI KI KI STED PERVIOUSIY ON PARK S	7-23-99 X V V V V V V V V V V V V V V V V V V	1244 (Signatury) Allow And And Times 7-23-99 Becarved by:	Relinguation by	() (N) (N) (N) (N) (N) (1000 (1000) (	Received by: Signature) Time: (Signature) Time: (Signature)	Received for laboratory	Data Results to:
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	ippi, Inc.	ssippi		Contact DELYTON BATES		e TEST											Date: <b>7-23-9</b> 9 Time: <b>2040</b>	Date: 7-27.95	Dale: Time:		
	ଌୄଌ୲ଡ଼ୄ	ıla, Missi	5983			Preservative												1	6		
	Butler Services of Mississippi,	Post Office Box 1164 • Pascagoula, Mississippi	telephone (601) 769-6	KBOCK ADDRES	Sample Type												Un Day	de la			
a.	Butler Ser	Post Office	Telephone (601) 76 Sample submitted by: DEHTON BATES/COLUM DAFS	Address SEE #BOU	Sample	Container (Size/Mai'i)						30	-					Islam All us	Reinfquened by: (Signature)		
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			Sample submi	Company BUTLEN SCAULCA	Fleid	Sample No./ Identification	592.2'	S92-4'	S14-2'	S114-400 M	5112-21	S112-4'	5118-21	5118-4"	9-5910-2	2910-41	Samplers:	Att		SAMPLER REMARKS:	Seal #

12 of 12	Analysis Request and Chain of Custody Record	r Plant		98HBOOV	REMARKS									Date: 7_2_2_dmaci	Time: / & / 8	Dale'7 25-99 Intact	Time: 40 Pu, Date: Interi		Dale: 7-33-99 Laboratory No. Time: 9:30 a a		
Page	sis Request and Chai	oci Name Gulfport Fertilizer	Project Location	Gulfport, MS	ANALYSIS REQUESTED				ţ,					1.0.1.11	Actin DA			Time:	J. Somek		
		Client/Proje	of Penton Bates	Phone: <b>228/ 765 - 6983</b>	TEST	11	LPZd, AISMIC, (NOME	У И	Hold For Instructions					Date: 7-23-59 Received by:		,	Date: 2040 Received by:	B PU	Received for aboraton (Signature)	Data Results to:	
	Butler Services of Mississippi, Inc.	Post Office Box 1164 • Pascagoula, Mississippi Telephone (601) 769-6983	Cor	<i>eboue</i> Pho	Sample Type (Liquid, Soli Preservative	Sludge, Etc.)	Liguid	И	Fi/Her	- Liguid Wed					JT.S.	Oll Gas	tran bat	the	Ł	)	
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		Sample submitted by:	Сотрапу	Butler Services			divit statt hig-IMM	MW1-01 F 11	MWI-01 FUJER 11	LillBlock 1746	Bunate 7-23-99	710 Blan 799		Samplers: (Signature)	Tay Mart	AHILATAA	E		SAMPLER REMARKS:	Seal #	

RD Page _ of	CRIPTION		TOTAL Condition on Receipt		3			by want prover	111001 0001 041	(- 	Containers:	UDDUCY NUND MUTHOD ZSFS 3U) (Name) (Organization) (DaterTime)	(Name) (Organization) (Date/Time)
CHAIN-OF-CUSTODY RECORD	SAMPLE CONTAINER DESCRIPTION		<u>ر</u>								Airbill/invoice no. Total Number of Sampler of Sampler Pransfer (Retain original with samples	EMS 6487 3:YoReceived by: U.	(Organization) (Date/Time) received by: (AntTohniso IS: Ant ビンTOA
Project No.: CLU FIDET FERTILIZES RANT Location: CVU FIDET MS Shipping Container ID: Sampler(s): R CATES J CANNY IN		OF MISSISSIPPI Sublear Data Del See Required		TACON/BRASE LATTER BS. 39 10:00 1	Soil Cumikes 7 8599 10:00 2	METALS TRIP BANK 8397 COSICO 1						1. Relinquished by: Jeffrey. Conserved. E. ((Name)) 2. Baltranished by:	tes: SECOND Sul (Name)

## **APPENDIX C**

## **GEOPROBE DAILY FIELD LOGS**

3		NHAM GULFPORT		NO.743	P.2/6
JUL. 28	3.1999 2:49PM CAVE				
र					
1				540U G	EOPROBE
6	-		Nices Inc	DAILY FIE	ELD LOG
		ntal Management Ser			
	600 N. 26th	, MS 39401			•
The second	Hamesburg	1. 1413 30-101			
				. 9	
<b>.</b> .	et: <u>GP Fertilizer</u>	Plant	Date:	7-20-99	
Proje	CC GF TEFTITIZET		Weather:		Pat
Locati	on: <u>Gulfport</u> MS				
		DESCR	IPTION OF DAIL	YACTIVITIES	
	illitary):			FFice For mobiliz	ation
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075	2 Ems	personnel arr	ive at GI	D Fertilizer Plant	5176.
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TIMES	UMMARY:				
	Employee	Office (hrs)	Field (hrs)	Travel (hrs)	Total
4	John Dobson	1 .	11	<b>4.</b>	12
1.					12
2.	Jeff Gonsoulin				12
3.	Collin Day				12-
4.	Robbic Gates		11		
EQUIP	MENT AND SUPPLIES SUM	MARY:		D	Amount
Code	34 200 ·	Amount	Code	Description	Amount
				Basistakia firma	
320	Survey Equipment		340	Peristaltic Pump Sample Tubing 1/4 in.	
322	GPS Unit			Sample Tubing 3/8 In.	
325	Water Level Indicator	······		PVC Well Riser	
326	pH/Conductivity Meter			PVC Weil Screen	
	Geoprobe Truck/Milesge			Core Liner (macro)	33
	Support Vehicle Milesge Camera - Video			Core Liner (smali)	
333	Camera - 35mm		342	Per Diem	
		·	345	Health and Safety Supis.	
176	CONTRACTOR OF THE IN ST				
335	Camera - Digital Metal Detector		346	Specialized Health/Safety	
337	Metal Detector		346 Other	4 gallons HPLC water	
337 338	Metal Detector Flame Ionization (FID)		Other	4 gallons HPLC water	3.3

28.1999	2:49PM CAVENHAM	GULFPORT		а : Ся		. Jr U
	Environmental N 600 N. 26th Ave Hattiesburg, MS		ces, Inc.		540U GEOF ILY FIELC	
	P Fertilizer Pl			7-20-99		
Location: <u>G</u>	ulfport, MS		vveather	loudy and ra		
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EQUIPMENT AND Code	D SUPPLIES SUMMARY	r: Amount	Code	Description	A	Amount
	Description					
320 SI	urvey Equipment		340	Peristaitic Pump		day
	PS Unit			Sample Tubing 1/4 in		
	later Level Indicator			Sample Tubing 3/8 in		
	/Conductivity Meter			PVC Well Riser PVC Well Screen		
	eoprobe Truck/Milesge			Core Liner (macro)		
	upport Vehicle Mileege amera - Video	<u></u> ,		Core Liner (smail)		
	amera - 35mm		342	Per Diem		
	amera - Digitai		345	Health and Safety Su		
337 M	etal Detector		346	Specialized Health/Sa	nety	

Other

1 day on \$ 15/day

Flame Ionization (FID) Combustible Gas Indicator

Soil Conductivity Probe

Peristellie pump

328

339

		2:49PM	CHARIN	GULFPORT			
1	.28.1999						
						540U GE	OPROBE
				•		DAILY FIE	
		Er	vironmental M	lanagement Servi	ices, Inc.		
		60	N. 26th Ave	nue			
	• • • • • محمد	Ha Ha	attiesburg, MS	39401			x
		AD T	ectilizer	Plat	Date:	7-21-99	
Ρ	roject:	<u>6P</u> F	CHILL ZER	1 that i	Weather; C	lear + warm	
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-			and the second secon	DESCRI	TION OF DAILY	ACTIVITIES	1 L
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	1 2 3	T. Dok J. Gons R. Gat	<u>ison</u> <u>iouln</u> <u>ios</u>		Field (hrs) / / /		
	1 2 3	T. Dok J. Dok J. Gons R. Gat	PLIES SUMMA		Field (hrs)	Travel (hrs)	Total 
	1 2 3	T. Dok J. Dok J. Gons R. Gat	<u>ison</u> <u>iouln</u> <u>ios</u>		I I	Description	
	1	T. Dok J. Cons R. Gat AND SUPP Des	PLIES SUMMA		I I	Description Peristaltic Pump	
	1	T. Dok J. Dok R. Gat AND SUPF Des Survey Equ	PLIES SUMMA		I	Description Peristaltic Pump Sample Tubing 1/4 In.	
	1	T. Dok J. Dok R. Gat AND SUPF Des Survey Equ GPS Unit	PLIES SUMMA cription		I	Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in.	
	1	Emplo J. Dok J. Gons R. Gat F AND SUPF Des Survey Equ GPS Unit Water Leve	PLIES SUMMA cription		I	Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser	
	1	Emplo T, Dok T, Cons R, Cat AND SUPF Des Survey Equ GPS Unit Water Lew pH/Conduc Geoprobe	PLIES SUMMA cription		I	Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser PVC Well Screen	
	1	Emplo T. Dol R. Gat R. Gat AND SUPP Des Survey Equ GPS Unit Water Leve pH/Conduct Geoprobe Support Vo	PLIES SUMMA cription		I	Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser	
	1	Emplo J. Dok J. Gons R. Gat AND SUPF Des Survey Equ GPS Unit Water Lew pH/Conduc Geoprobe Support Vo Camera - V	PLIES SUMMA cription		I	Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser PVC Well Screen Core Liner (macro) Core Liner (small) Per Diem	<u>†</u> 
	1	Emplo J. Dok J. Gons R. Gat AND SUPF Des Survey Equ GPS Unit Water Lew pH/Conduc Geoprobe Support Vo Camera - 1 Camera - 1	PLIES SUMMA cription		  	Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser PVC Well Screen Core Liner (macro) Core Liner (smail) Per Diem Health and Safety Supis.	<u>†</u> 
	1	Emplo J. Dok J. Gons R. Gat AND SUPF Des Survey Equ GPS Unit Water Leve pH/Conduc Geoprobe Support Vo Camera - Camera -	PLIES SUMMA cription ulpment al Indicator ctivity Metar Truck/Mileage anicle Mileage Video 35mm Digital			Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser PVC Well Screen Core Liner (macro) Core Liner (small) Per Diem	
	1	Emplo J. Dole J. Gons R. Gat AND SUPF Des Survey Equ GPS Unit Water Lew pH/Conduc Geoprobe Support Vi Camera - V Camera - Metal Dete	2 Son 2 Son 2 Son 2 Lies Summa cription ulpment al Indicator ctivity Meter Truck/Milesge ahicle Milesge wideo 35mm Digital actor			Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser PVC Well Screen Core Liner (macro) Core Liner (smail) Per Diem Health and Safety Supis.	
	1	Emplo J. Dole J. Gons R. Gat AND SUPF Des Survey Equ GPS Unit Water Lew pH/Candur Geoprote Support Vi Camera - Camera - Metal Deta Flame Ion	PLIES SUMMA cription ulpment al Indicator ctivity Metar Truck/Mileage anicle Mileage Video 35mm Digital			Description Peristaltic Pump Sample Tubing 1/4 In. Sample Tubing 3/8 in. PVC Well Riser PVC Well Screen Core Liner (macro) Core Liner (smail) Per Diem Health and Safety Supis.	

## 540U GEOPROBE DAILY FIELD LOG



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Environmental Management Services, Inc. 600 N. 26th Avenue Hattiesburg, MS 39401

	<u>P</u> Fertilizer Pl. GulFeert MS		Nees Ir	10	
Project (	P Fertilizer PL	ant -Butler	Serv Date:	7-23-99	
	C. E. at M.C.		Weather	plear to Durthy (	rlandy
	GulFport, MS		••••••••••••••••••••••••••••••••••••••	Clear to partly ( Rain + Thunderstorm	5 4-6 pm
	and the second secon	DESCO		LY ACTIVITIES	
TIME (military)	);				5. F.
<u>Air</u>			rrive at	Gulfport OFF	ice rec
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060	Ems	arrive at	GP Ferti	lizer Plant site	
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0730-05				40 roution an	
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<u> </u>	<u> </u>	porsennel	depart_s	ite due to r	ain
	and Mou	<u>e semplin</u>	1/1099109	to gulfport of	TFice
2000	R, Gate	s J. Go	nsoulin ar	JJ. Dobson d	epart Ems offic
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TIME SUMMA	RY:				
	Employee	Office (hrs)	Field (hrs)	Travel (hr <del>s</del> )	Total
1. 3	. Dobson	1	14	-	15
			14		15
2	F. Gonsoulin	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	14		16
<u>    3                                </u>	. Day		<u> </u>		16
and the second	R. Gates	n a gan an da la san a san		therea and a second	
EQUIPMENT A	ND SUPPLIES SUMMA				0 mount
Ccde	Description	Amount	Code	Description	Amount 45
	Lamothe turbidmeter	\$15.00/day	1 6 d = 7 340	MC Core catchers Peristaltic Pump	1 day
320	Survey Equipment	. <u></u>	340	Sample Tubing 1/4 in.	·
322	GPS Unit			Sample Tubing 3/8 in.	32 F+
325 328	Water Level Indicator pH/Conductivity Mater	<u> </u>		PVC Well Riser	
520	Geoprobe Truck/Mileage			PVC Well Screen	
	Support Vehicle Mileage			Core Liner (macro)	45
333	Camera - Video			Core Liner (smali)	
334	Camera - 35mm		342	Per Diem	a have aitile al
335	Camera - Digital		345	Health and Safety Supis.	2 boxes nitrile glove
237	Metal Detector		346	Specialized Health/Satery	\$ 15.00
238	Fleme Ionization (FID)		Other	Turbidity meter Aluminum Foil Rolls	
339	Combustible Gas Indicator			1 Gallan Plastic b	es 4 boxes
	Soil Conductivity Probe			1 Galler preside D	V
THE OWNER WITH THE	55 galla steeldrug			And the second se	11

boxes

Lov Q & 19 SGLI

2

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00

Nitrile gloves

2

Ice bags HPLC water

8 quillons

**APPENDIX D** 

1

## SOIL BORING DRILLING LOGS

3			EMS DRILLI	NG LOG	7-	19-99		0-7710	a a f
1	PROJECT	GP	Fertilizer Plant OB		Day		SHEET 10F	1	
	DEPTH. (FT)	USCS GRAPHIC	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS		
				FIELD SCREENING RESULTS			REMARKS		

1		EMS DRILL	ING LOG	7-19-	99	HOLE NUMBER T450 S
	PROJECT GP-F			. Day		SHEET LOFI
	DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
		0-0.9 SM Black ( Silty sand W/brick Fragments . dry 0.9 - 4 SC Gley (7/108) Sandy cluy Very moist; wet at	NA	T4505-2' Split DEQ	>	Recover= 3.81 Probe 4 Ft
		3.8 - 4 Ft or 0.2 Ft From bottom of sampler.		T4505-4 Spiit DEQ	7	TD = 484
			1	8		

· · · · · · · · · · · · · · · · · · ·				7-19-99	HOLE NUMBER	
PROJECT C	EMS DRILL P-Fertilizer Plant °	EOLOOIST	. Day		SHEET 1 0 F/	5
DEPTH. USCS	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE	ANALYTICAL SAMPLE NO.	REMARKS	
	C DESCRIPTION OF MATERIALS O - 1.7 Gley (7/N) SMS ilty sand, Dry 1.7 - 4.0 Brown (10) R 3/2) Sandy Clay w/ brick Fragments and wood Chips. 1 mottled		GEOTECHISAMPLE OR CORE BOX NO. THSO-2' CD 7-19-99 CD 7-19-99 SPII-1-DEQ	SAMPLE NO.		
		8				

<b>—</b> —		EMS DRILLI	NG LOG		7-19-0	79	HOLE NUMBER 745	2
PROJECT	GP F			Dey			SHEET 10F	1
DEPTH. (FT)	USCS GRAPHIC	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
DEPTH	USCS	ertilizer Plant Project Description of MATERIALS O-0.45 Red (IOR 3/3) SC Sandy Clay with brick Fragments Dry drnd locse to O.45 Ft. O.45 Ft. O.45 Ft. O.45 - 4 Ft gley (4/N) (SM) silty Sand and (SC) sandy Clay. Saturated O.45 - 4 Ft. Collected only 0-2 Ft Sample due to sat. at rest of interval.	FELD SCREEMING RESULTS	GEOTECH SAMPLE	SAMPLE NO.	"Rec	SHEET 10F	/  

				EMS DRI		NG LOG		7-19-90	7	HOLE NUMBER	5
	PROJECT	GP-	Fertiliza				ay			SHEET 10F	
	DEPTH. (FT)	USCS GRAPHIC LOG	DESC	REPTION OF MATERIALS		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
(	2 3 4 1		1-2 bric Fr Sundy o	Dark gray (S y Sand .: Dry N) gley Red (IOR 3) ingments and clay. Moist Gley (G/N) Sand Satur 3-14 Ft 3-	/3)		NA	T5-2'	،ن در €	obe = 4ff ccaver 3ff stact uter at <b>2</b> Ft. ID= 4Ff	
			trom -			1					

r		E	MS DRILLI	NG LOG	٦	- 19 - 99	HOLE NUMBER TSSON	
PROJECT GP	- F	ertilizer Pte	ant Projector	L. J TEROLE			SHEET IOF	
(FD) OR	LISCS	DESCRIPTION OF M		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
2		0-0.2 Ft F brick Fragm Sandy clay 0.2 - 2.2 brown (10) Mottled W/ SM/SC Sundy clay	ents and Yellow-se (R 6/16) (loyr 6/2) Silly sund	NA	NA	TS50N- 2' 	Probe 4 Ft Recover 3.5F Contact water at 1.3 Ft TD=4Ft	
		Sundy clay throughout i	n terval					

		EMS DRILLI	NG LOG	7	-19-99	HOLE NUMBER
	PROJECT G-P-F		T.J TEIDOLO	Day		SHEET 10F1
	DEPTH USCS (FD) GRAPHIC	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
(		6-1.7 mettles red (10 R/3/3) and gra brick Fragments W/ ble silty send: Color 1.7 - 4 yellow brown SC Sandy clay (107 R 6/4) mottled with 7.57 R 6/6 brown. Saturated bettom 1 Ft of		OR CORE BOX NO.	T5100E-2	O. E
		Sample				

			EMS DRILI			7-19	-99	HOLE NUMBER	16
	PROJECT	3P Fer	tilizer Plant	GEOLOGIST Col	In Da			SHEET O	FI
	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
			0-1.4 Black (10YR3 SM Silty Send becoming sendice at	NA		N 16-2		be 4 Ft over 3.11	
	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	14	depth. Dry to slight moist 1.4 - 2 Colur chan noted at 1.4 Ft						
	4		(lorr 3/2) and white (# 8107)			N16-4	IT_	)= 4 Ft	
- - 	11111		(gley). Silty send moderately to postly sorted sund 2-4 Yellow brown						
			(10YR 6/16) Silty Sand Moistur increasing w/ depth Saturated at	z					
			Saturated at approx 3 Ft below SurFace c						
	111111								
	uluulu								
	Luulu			е <sup>. С</sup>					

			EMS DRILLI	NG LOG		7-19-	99	HOLE NUMBER N 1	7 7
	PROJECT	Gp		CLOOIST C.	Day			SHEET	
	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
$\left( \right)$			0-2 SM brown (10 YR 4/2) silty			N17-21	Prol Fec	be 4Ft cuer 2.3F	+
			Sand 2-4 SP Sellow brown (6/44) 108R (6/6) moderately Surted Sand Vory moist to Saturated at bottom O.S Ft OF Sampler			N17-41	TD=	<u>4 Ft</u>	
				P	÷			τ.	

85 8				3.1	
	EMS DRILL			7-19-9	
PROJECT GP-	Fertilizer Plant	GEOLOOIST <u>C</u> .	Day	······	SHEET / OF (
DEPTH. USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	SM Silty Sendy t-p soil From 0-1.4 ft (gley C/N Dry w/white mottling 1.4-4 SC Yellow brown (10YR 6/8) Sandy clay. sut. at bottom 0.4 ft of sampler.	NA		SAMPLE NO.	REMARKS Probe 4 1 Recover 3.1 Ff Contacted unter at $\sim 3.6$ Ft TD=4 Ft
	5	2			

÷.

	r		EMS DRILL	INC LOC		7-19-99	HOLE NUMBER PRC-6
	PROJECT	GP.			)a¥	<u> </u>	SHEET
	DEPTH		DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
$\left( \right)$		LOG	0-2 SM brown	NA	<u></u>		F
		USCS GRAPHIC LOO		NA		RC-6-2' RC-6-4'	

r			EMS DR	шл	NG LOG		7-19-9	9	HOLE NUMBER RO	7
PROJECT	GP F	ertilizer				Day	······································		SHEET JOF	
DEPTH. (FT)	USCS		RIPTION OF MATERIALS		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
	USCS GRAPHIC LOG	0-0.6 silty w/org 0.6-4 Sunder Wet/ at to of su	Bark brown SENJ topson Oley 7/1 (SM/Su Saturated Dotton 0.2 mpler. Ve 2-2.3		FIELD SCREENING RESULTS	GEOTECH SAMPLE			<u> </u>	

×7.	ENC DDITT		<u></u>	7-19-9	9 HOLE NUMBER RC 8
PROJECT GP	EMS DRILLI Fertilizer Plant "	EOLOGIST	. Dav	<u>, i i i (</u>	SHEET IOFI
DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	0-4 SC glay (5/N) Sandy clay wet 2-4 Et	NA	NA	RC8-2'	Probe 4 Ft E Recover 3 Ft
2	wet 2-4 Ft. In sampler		V	Rc8-4	
nhunhunhunhunhu					
		đ			

r	EMS DRILL	ING LOG	<u> </u>	7-19-9	9 HOLE NUMBER RC9
PROJECT GP-F			Day		SHEET I OF
DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	0-1.2 Gley (5/N) Sandy clay SC 1.2-4 Gley(S/N) mottled with yellow brown (10YR6/16) Sandy clay (SC)/ SM	NA	NA	RC9-2'	Probe 4 Ft Recover 3.4 Ft TD = 4 Ft

r	120	EMC DDI			7 10 0	20	HOLE NUMBER	Della
PROJEC				Dest	/ - 17 -	17.	SHEET / CF	
DEPT		DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	<u>1</u>	REMARKS	<u> </u>
DEF( (FT 2 3 4		EMS DRIL =ertilizer Plant DESCRIPTION OF MATERIALS O-0.5 SM Brown (10YR 4/2) Silty sand dry 1065C O.5 - 21.6 SC Sandy Clay yellow brown (10YR 6/46) Wet at 2.5 Ft approx 0.5 Ft bg1.	GEOLODIST C.	Dr. y GROTECH SAMPLE OR CORE BOX NO. N A	7-19-0	Pril Rece	REMARKS	Ē
			аг Ж					

				EMS DRIL	LING LOO	<u> </u>	7-19-9	99	HOLE NUMBER 5/	6
	PROJECT	GP I	Fertilizer			2. Dax			SHEET / SF	
	DEPTH. (FT)	USCS GRAPHIC LOG		PTION OF MATERIALS	FIELD SCREEND RESULTS	NG GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
$\left( \right)$		101 C	0-0.4 104R4/2	Dk brown ) Silty sand	NA	NA	× 516-2'		be 4 F+	
			0.4 - 1	-t. Dry Ft red				Teco	over 3.2 F	
			(2.5YR	4/8) graund $1ay(SC)$ .	-lly					
	שווו						516-41		)=4Ft	
	4-11		SC e	an (10YR6/ bandyclay ict. it both fof simple	3) <u> </u>	¥	¥	1.3.		
	111		0.5 F	F of sample	Γ					Ē
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	r				<u></u>	7-19-9	19 HOLE NUMBER S17
	PROJECT	0.0	EMS DRILL		Duy	1-11-	SHEET IOFI
	DEPTHL (FT)		Fertilizer Project C DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
(			0-0.3 dk brown	NA	NA		Recover 3.21 = Probe 41
			(10YR4/2) Silty ser tops.il			SI7-2'	Water contact =
			0.3-0.5 red (sc)				approx 3 Ft bgl. =
	2-		(2.5YR 4/8) sendy			个 517-4'	Ę
	3-		Clay			511-1	· E
	4-		0.5 - 4 ten (1	\$\$R7/3)		er kur	TD=4F+ E
	4-		at bottom 0.2 FF			27-14-79 7-14-79	Ē
			of sampler. miste				<u> </u>
			increases w/depth.	-			Ē
			Very moist 2.5Fl 3.0 Ft of sumpler.				
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[	EMS DRILLI	NG LOG		7-19-90	HOLE NUMBER S 18	
PROJECT OD FACT			Dav		SHEET 10FI	
DEPTH USCS	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
	DESCRIPTION OF MATERIALS Description of MATERIALS Description of Materials Description of Materials Description of Materials Description of Materials Description of The Materials	NA	NA	518-21 518-21 518-41	TD = 4Ft	
	of 2 ft. color twn (10887/3). 3.7-4 red (1084/3) mottled with black (2.5/N) sand end rock gravel size Fragments. Wet/set at 0.3 ft bottom of sempler.			<del>Si3-14</del> co 7-14-14		

			EMS DRILL	NG LOG		7 - 19 - 99	HOLE NUMBER S	۹]
	PROJECT	P Fer			Dav		SHEET 0	FI
	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
$\left( \right)$			0-0.8 Black (2.5/N) silty sand topsoil w/ red (10 R/3)	NA	NA	\$19-2'	Recover 3.8' Probe 4 Ft	
	2 2 3		Dry 0.8-4 glex(7/107)			519-4'		
	+ +		Sundy (SC) and clay SM silty sund.				TD=4F1	
	11111		wet 1 Ft-4Ft,					
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		EMS DRILI	ING LOG		7-19-9	19	HOLE NUMBER	520
PROJECT	GP F	ertilizer Plant	GEOLOGIST C.	Dav				FI
DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
		0-2.4 Ft (Gley 3/1 Mucky clay, Fairly Plastic. wet 2-2.4 Ft 2.4-4 Color change		NĄ	\$20-2'	D.	oucr 3,6 be 4 Ft	
2 3		abrupt at 2.4Ff to (6/105) gley. Lithology also change	5		\$20-4 <sup>1</sup>	בתד	4 F+	
+ 		to (SM) Silty Sand and Sundy clay (SC Saturated at 29 to 4 Ft. Very plastic gley clay (6/10%)			نهر. وهن <u>که مح</u> ک	l		
hultul		noted at 3.8 Ft to 4 Ft.						
Tuntul								
			a					

		EMS DRILI	ING LOG		7-19-99		HOLE NUMBER	-6
PROJECT	GP-1	Fertilizer Plant	GEOLOGIST C.D				SHEET IOFI	
DEPTH. (FT)		DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
		0-1.2 brown silty sand topsoil (1083) (SM) dry w/ organics Fragments of (1083) Fed brick. (108614) 1.2-4 tan and gley (7/N) sandy clay (SC)/silty	2) NA 3)		SAMPLE NO.	Rec	= 4F+	

		EMS DRILLI	NG LOG	7-1	9-99	HOLE NUMBER 527
	PROJECT GP F	ertilizer Project @	ologist <u>C</u> .	Day		SHEET / OF/
	DEPTH USCS (FT) GRAPHIC	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
(				NA	\$27-z <sup>1</sup>	Probe 4 Ft Recover 3.8' Contact water at 1.6 Ft by 1 approx TD: 4 Ft
		silty sand seturate at 1.6 bgl.	8			

r	EMS DRILL			7-19-89	HOLE NUMBER S28
PROJECT GP		HOLOOIST C			SHEET LOFI
DEPTH. USCS (FT) GRAPHIC	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	0-1(SM) Brown (10YR 3/2) and gley (7/N) silty Sand Ury and loose 1-4 (SM) gley (7/N) silty sand		NA	₹ 528-4'	Probe = 4F4 ecover=3.8F4
	becoming Sendy clay with increasing depth 3-4 ft. Mattled with yellow (10 rradio Saturate) at 1.2 for bg1.			T	

1		EMS DRILL		7.	19-99	HOLE NUMBER 529
i.	PROJECT GULE	ort Fertilizer Plant 19	EOLOGIST C.	Day	<u> </u>	SHEET I OF I
8	DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
		SM Silty send 0-0. Brown (IOYR) 3/2 mattled with Fed 10 R 3/3 brick chips. 0.7-4 Ft SC	7 NA	NA	S:29-21	Recover 3.8 Probe 4 FL
		0.7-4 Ft Sc gley 7/N Sudy Clay. Saturates at approximately 1.1 Ft bgi.			S29-41	

r		NC LOC	~	- 19 - 99	HOLE NUMBER S 30
PROJECT GP	EMS DRILL Fertilizer Plant	HEOLOOIST	Day	11 11	SHEET 10F1
DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	DESCRIPTION OF MATERIALS O - 1 (SC) Dark brown Sandy clay organic rich topsoil 1 - 4 SC (7/N) gley Sandy clay; set at 1.1 Ft bg1.	NA	NA	S30-2'	

	·		EMS DRILL			7-23-9	HOLE NUMBER SE	TOIMUL
	PROJECT	oulFa-			)ay	1 63-1	SHEET / 6 f	=/
	DEPTH. (FT)	USCS GRAPHIC	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
(			0-0.2 Deck Gray (Gle (3/108) silty send topsail (SM)		NA	T9100W- 2'	Probe = 4 F1 Recover = 3 Ff	
	2 11		0.2 - 0.5 (SP) Yellow- brown (loyr 7/3) well souted qtz sand Dty			79100W- 4'		
	4		0.5-1.1 Red (lors) brick chip layer. Dry.	3)	V.		TD=4Ft	
	111111		1.1-4 SM/SC gle Gray (3/108) silty Sund, slighty moist. Changing to (1081/6					
			Sandy clay (SC) at bottom 0.4Ft.				ĸ	
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	111111							
	Luuluu	4 						
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	TITIT							
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			EMS DRILLI			9		40
			FT FEFTILIZEF PLANT		Day		SHEET OF	= 1
	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	BEMARKS	
	5		0-1.5 (Sc) Yellow -	NA	NA	140-21	Probe 4 Ft	E
			brown (loyr 6/6)			0.00	Recover 3.81	E
	T -						1400001 3.0	-
	_		Sandy Clay, Poorly Plastic. moist					E
	2 _		SM. mulerate	Y				<b>—</b>
	-		1.5-4 Star with	ĺ				F
	3 —		Surted gtz Sand			N40-4'		<b>F</b>
	-		sorted 9tz Sand tan (10YR 8/3) Very muist 1.5-3' Seturated 3-4 Ft.					E
	ц_		Very muist 1.5-31				TD = 4Ff	<u></u>
	` <u>-</u>		Saturated 3-4 Ft.					F
	-	-						E
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	-	4						F
	_	1						E
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1			EMS DRI	LLT	NG LOG	<u></u>	7-23-	99	HOLE NUMBERS 9	0
	PROJECT	SulFpar			OLOGIST (	. Dav			SHEET / OF	_
	DEPTH. (FT)	USCS GRAPHIC LOC	DESCRIPTION OF MATERIALS	54	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
								-		┎
$\left( \right)$			0-2.3 Dark gles		NA	NA	5910-21	Rea	cover = 3,8	1
	1=	/././	0-2.3 Durk gley (4/N) (SC) sundy	clwj						E
	2	////	Suturated		1					E
	2 -		2.3 - 4 gley (65 SM/SW Silty se becoming all sand ct lower interval.	56Y						<b>F</b>
	=	////		1			5910-4			F
	3 _		SM/SW Silfy Se	20						E
			occoming all Sanu et lower interval.	•						E
		£							D = 4Ft	F
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	r	FM(	S DRILLIN	C LOC		7-23-4	G HOLE N	MBER S/1/O
	PROJECT CUIFO	rt Fertilizer 7	S DIVILLII		Day		SHEET	10F1
	DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATER	IALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	1	REMARKS
		0-2.3 (SM) brown loyr 6/ silty sand ch to (SW) san	4 unge	NR	51110-21	51110-2	1 1 51	
	2	2.3-4 yellow- (SW) and b 8/N Sand(c	brown uhits lean)		51110-4	S 1110-4 <sup>1</sup>		
	4 111 1111	wet 2,3-4	· _			¥	<u>TD=4F</u>	
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<b></b>	EMS DRILLI	NG LOG		7-23-99	HOLE NUMBER \$12/0
PROJECT C. T			Day		SHEET IGFI
DEPTH. USCS (FT) ORAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	0-0.7 Dark gley (3/N)(SM) silty Sand 0.7-4 (SM) yellow-	ŅΑ	NA	(1933) 1210-21 1210-41 1210-41	Recover = 3.81
3-1-1-1 	brown (10YR 6/6) silty sund w/ 2.YR 5/8 mottling.			spli+ DEQ	E
Implement					

	×									100	HOLE NUMBER	
					EMS	DRILLI	NG LOG		7/23	99	HOLE NUMBERS 3	4
	PROJECT DEPTH	USCS 1	Port		ION OF MATERIA	TIANI	FIELD SCREENING RESULTS	Da V GEOTECH SAMPLE	ANALYTICAL	T	SHEET / GFI REMARKS	
	(FT) Q	USCS DRAPHIC LOG						OR CORE BOX NO.	SAMPLE NO.	<u> </u>	····	l
(	5 =1	1111	0-1	-4 R	od (1	lo R/3/3) With rgenic	NA	NA	C 24. 1	Reco	be = $4FF$	F
(	ノ世		bri	ck cf	TPS 1	with			1001-2	Pro	bc = 4FF	E
		e + e	(SM	) bla	ick o	192010						E
	I I	1 1	ma	Her		-						F
	2-1			- 4.0		<b>A</b> .				4		<b>_</b>
	Ť.	11		·· ד		• <b>v</b>						F
	3-1'.	1-1-	(0	YR 6	13 9	silty						E
	34	1 1 .	Sa	nd u t	set a	F 3.0			534-4'			E
	4 11	11	. F	+-			<u> </u>				1=4F4	<u> </u>
	· =	2										F
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EMS DRIL	LI	NG LOG		7/23/	99 HOLE NUMBER 536
				· · ·	SHEET 10F1
		FIELD SCREENING RESULTS	GEDTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
DEPTH. USC3 DESCRIPTION OF MATERIALS		FIELD SCREEMING RESULTS	GEDTECH SAMPLE	ANALYTICAL SAMPLE NO.	97 <u>536</u> SHEET 10F1

:		EMC DD	πττ	NG LOG	- 1-	23-99	HOLE NUMBER	37
PROÆCT (	SP Fee			A	Dav 1-			F(
DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS		FELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	<u> </u>
		0-0.4 White Ca chips and chert g (d) inch dm) Dry 0.4-4 (SC/SW) Dark tan (10) Sandy clay. Lith and color chang noted at 3.7-1 change to gley (d Sitt and gtz s Wet at 3.2 Ft	5/2) 5/2) 1		MA		Recover 2.4 Probe 4Ft TD=4Ft	
		Wei 41 3.2 Ft		ж				

Г	10		EMS DRILL	LING LOG	<u></u>	7/23	99 HOLE NUMBER S 38
$\mathbf{H}$	PROJECT	LIFOR	+ Fertilizer Plant		Day		SHEET / OF/
ŀ	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
				NA	NA V	538-2 <sup>1</sup> 538-4' 538-4'	Recover 2.4Ft Probe 4'
			1			× v	
						9	
			2	3			

54								la alca		HOLE NUMBER 54	
	PROJECT	1 10	F E 1.1				Day	23 99	123/17		
	DEPTH. (FT)	GULFPER USCS GRAPHEC LOG	t Fertil	DESCRIPTION OF MATER	<u>NT  </u>	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
<			Dark silty O-C	Gray (Gli Sand D	ey j (sm) ry	AN	NA	540-2' 540-2' DUP	Rec. Prol	over = 2.2 bc = 4ft	
and the second	2 11 11 1		Dry	2 Light 1) sans (sc)				540-4' 540-41			
	4	-"  " "   -" "  "   -" "  "  "  "  "  "  "  "  "  "  "  "	7/3)	sundy at 3	clay	<u> </u>	¥	DUP	TD	= 4 Ft	
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	11111									i.	
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					1123 99	HOLE NUMBER S4	
	PROJECT GUIFS	EMS DRILI	DEOLOGIST	, Dav	10311		FI
		DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH BAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	<u>× ,                                    </u>
	DEPTH USCS (FT) GRAPHIC LOG			<u> </u>	<b>1</b> ,	Recover 3.651	J
(		0-1.5 SM yellow	NA	NA	544-2		E
	一三部制	brown silty sand			,	Probe 4Ft	E
		1.5-2 SC Black (2	.s/N)				F
	2-1//				544-4'		<u> </u>
	王氏的	Sandy Clay (moist)			544-4		F
	3	Sandy clay (moist) w/ some wood chips 2-4 tan (107R6/4)					E
		2-4 tan SM					þ
	4	- silty send (loyr 6)	3)  <u> </u>	¥ ,	¥.	T.D=4ft	<u> </u>
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(n)				NGIOC		7 23 99	HOLE NUMBER C	45
PROJECT C	<b>n</b> . Sk	Fertiliz	MS DRILLI		, Day	110311		1 <del>7</del> 17
DEPTH USCS	Front	DESCRIPTION OF M	el Filenti	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	<u> </u>
	10-0 (10	0.4 SM P(313 1 brick	sand	NA	NA		Recover = 2 Probe 4Ft	3
	0.4 	+- 1: asp nips en 4 SN 11600 brow	s clay. A/sc and	(		545-4'		
4 <del></del>	it g	4 SN 11bw brow 1ey Si nd Sand	Ity sand Y clay		<u> </u>		7D=4F+	<u> </u>
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mpm							183	
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10		EMS DRILL	ING LOG		7/23/9	9 HOLE NUMBE	S46
PROJECT	GP F	ertilizer Plant	GEOLOGIST	Day		SHEET	oFI
DEPTH (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMAI	UK3
2		0-0.5 Concrete chips 0.5-4 3C (10YR) Sandy Clay	NA 6/2)	NA	546-2' 546-2' 5plit DEQ	Probe 4 F Recover 3	
4_		-				TD = 4F4	
				1 			
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				<u> </u>	A C HOLE NUMBER C 13 17
	PROJECT CALIFORT Fostilizer Plant OF	NG LOG		723	99 HOLE NUMBER S-47 SHEET LOFI
	DEPTH USCS DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
(	Silty Sand (SM)	NA	NA	S47-2'	Recover 3.8FF Probe 4Ft
	2 O.7 - 1.2 red (10R3/3) brick chips dry				
	3 - (Le I. 2 - (SC) Dark - (Le Gray brown (10)R3/2)		V		
	4 = +.11. Sandy clay Poorly = plastic - moist. = 2.3-4 (Sm) Dark				
	= Gray brown (10YR3/2 = (310Y) silty sand				
000000000000000000000000000000000000000	Dotton 0.3 Ft.				
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	х				HOLE NUMBER
	EMS DRILL		<u> </u>	7/23	99 548
	GULFANT ICTTIZE Flant	FIELD SCREENING RESULTS	DEV GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	SHEET IOFI REMARKS
	(FT) GRAPHIC LOG		OR CORE BOX NO.		
(	H/SGY Silty sand	NA	NA	538-2'	Recover = 2.9Ft Probe 4 Ft
		3 [			Ē
	2 - Brick chips Dry				[
	H Dark Gray (Gley)			538-4	E
	3-1: (4/56) SM silty			1	[
	E Sand moist to very	$\vee$			TD=4F+ =
	4 moist at bottom.				E
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		0.15	EMS DRILLI			723	49 3	549 F1
	PROJECT DEPTH	Gulfpor	H Fertilizer Plant OEC DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	Day GEOTECH SAMPLE	ANALYTICAL SAMPLE NO.	REMARKS	<u>, , , , , , , , , , , , , , , , , , , </u>
	(FT)	USCS GRAPHIC LOG		<u> </u>	OR CORE BOX NO.			
1	5 =	\$96.05		NA	NA	1 549-2'	Recover=3.6	E
5	_, =	, U, C, C, C	Chips and sand. Noted		ſ	5110	Probe 4Ft	<u> </u>
		421212	Gley (7/596) apparent					F
			Oxidized Copper Zone 0.3-0.4 Ft. (SM)					F
	2-	11/11/	0.3-0.4 FT. (SM)					E
	-	4-14-6	0.4-1 Red 10R/3/3			549-41		E
	3-	4444	brick chips Dry.					_
	=			V				E
	4-	1411	1 - 2.2 SH Durk	<u> </u>	¥	<u>₩</u>	TD=4F+	<u> </u>
	-		Gruy (3/105) silty					F
			Sind Vory moist	22				E
	_							E
	_	]	Z.Z-B SM (lorely) Silly sand yellow-					<b></b>
	=		Sitty sand Yellow-					E
			brown very moist					<u> </u>
			3-4 SM (165787/3)					E
	_		3-4 SM (16587/3) Yellow - tan silty					=
		1	Sand. Saturcted					E
	_		at 3.4 Ft.					F
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ł						Naala	4 HOLE NUMBER C	50
	PROJECT	0.10-	EMS DRILL	ING LOG		112319	SHEET IOF	
2	DEPTHL (FT)		Ct Fertilizer Plant Description OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
				, NA	NA	\$50-2'	Recover=2 Ft Probe=4Ft	
	2 111 N		0,3-9' Red 10 R 3/3 brick chips 0.9-1:1 Black (2.5/N (CL) with creasate			\$50-4'		
			Odor. 1.1 1.7 Dark Gray			550-7	TD=4Ff	
			Gley (\$GY) Sandy Clay (SC) 1.7-4 (SC) Yellow.					
			brown (10YR 6/6) Sandy cley, wet					=
			3.8-4 84.				~	
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12		EMS DRIL	LING LO	G	7 23 99	HOLE MIMBER
PROJECT	C. 15-	rt Fertilizer Plant	GEOLOGIST C	. Day		SHEET LOFI
DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREEN RESULTS		ANALYTICAL SAMPLE NO.	REMARKS
2		0-0.6 SC rod-br (SYRS/8) Sundx Cley dry 0.6-4 SM gray		- NA	S54-21	Pribe 4F4 Recover 2.94
3		gley (4/tor) silty sand changing to G(565) at 2 Ft Wet 3.2 Ft.	<u>k</u>		5 54-4'	TD=41
			2			
						E

					7 23 22	HOLE NUMBER C'C C
	PROJECT C. E.	EMS DRILL			7-23-99	HOLE NUMBER SSS
	DEPTH USCS (FT) USCS LOG	+ Fertilizer Plant G Description of materials	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
(		0-0.5 SM silty sand, dark gray (4/108) Dry 0.5-4 SC Grey (Gley) (6/108)	NA	MA	\$ 55-2' \$ 55-2' Dup \$ 55-4' \$ 55-4'	Probe 4 ft Recover 3.8 ft
	3	Sundy clay w/ yellow brown (IOYR 5/8) mottling. wet 3-4			555-4' DUP 1	
(						

									HOLE NUMBER S	<u> </u>
			EMS DRIL			-	7 23/9	9		
	PROJECT	GUIFA	Act Fertilizer Plant DESCRIPTION OF MATERIALS		<u>_</u>	Day GEOTEOTH SAMPLE	ANALYTICAL		REMARKS	F1
	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		-	
(	5		0-1.4 SM/SC		NA	NA	556-2'		be 4Ft	Ē
	EN	1. Johnal	silty sand and sa	ωų	- (	1		Rea	20Ver = 3.8	E
	=	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	clay mixture gley (6/107) 4/ (7.57R 5/8) som							F
	23	1.1.	(1.5YR 5/8) 2 m							
			gravel.							E
	3 -		1.4-1.6 SM				S56-4' Split DER			-
	1		Red (100 - 12)	1			356-4			E
	4 <u> </u>	前年	Red (lor 3/3) sua and brick chips.	đ		<u> </u>	*	TD	= 4 F+	- <b>F</b>
	'		Dry		19					E
			1.6 - 4 SC/SM							F
			(i + i) = (i + i)			4				E
	=		Gley (6107) Sendy Clay - Firm w/ Silty send at 0.21 From bottom.	1						F
			City - Frim inf							F
			Silty send at 0.21							E
			From Do Rom .							F
	=	-								F
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				3						-
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		NC LOC		7/23	HOLE NUMBER S	57
	EMS DRILL	EOLOGIST C.J	Day		SHEET / CF	
PROJECT GUFFOU DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
	0-1.1 Silty clay and Sund SC/SM dark gray brown (105R+/2) Dry W/ Some gravel present.	NA \	NA	557-2'	Probe 4Ft Recover = 3.5	
2 3 1111	brown (IOVR6/6) Silly Send, moist.			↑ 557-4 <sup>1</sup>	7D=4F+	
	1.5-3.7 (SM) Durk gray (gley) (4/56Y) Silty sand, moist 3.7-4 (SW) pooly to moderately sorted gtz sand. wet,	<b>V</b>				
		•			л Э	

		EMS DR	ILLI	NG LOG		712319	9		58
PROJECT	Gulfport			LOOIST C.J	Jay		8	SHEET IOF	1
DEPTH	uses	DESCRIPTION OF MATERIALS		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
(FT)	USC3 GRAPHIC LOG	0-0.2 SM Bley : sand top soil (4/	sitty				Prob	e=4 Ft	F
				NA I	NA	558-2'	Recov	e=4Ft her = 3.4F	ŧĘ
2		0.2-2 SC/CL 6 (4/10) and Brow (107R 4/2) Sanda Clay and Clay. Dr Some gravel press	~ * *			558-H <sup>i</sup>		52	
4-		2 - 4 (Sm) Gley (5/100	<u>}</u>	V			TD:	= 4FF	<u> </u>
		Silty send w/ yell brown (loyr s/8. mettling noted at	) )						
		3.7-4.							Ē
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	EMS DRILL	ING LOG		7 23 9	HOLE NUMBER S 59
PROJECT P			Day		SHEET OF
DEPTH. USCS	Fort Fertilizer Plant   Description of MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
(FT) GRAPHIC LOG	(Gley) (5/107) moist	NA	NA	5-59-2'	Probe 4Ft E Recover 3.3Ft
2	with moisture increasi with depth 3-4 (SC) Dark Gra	3		5 54-41	
3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	Sandy clay w/ yellow-brown to YR (6/16) Sandy clay	- -			
4	mottling, Wet at 3.8 - 4.0 Ft.				TD = 4ft -
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IIIII	20 20			Þ	
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2	<u>.</u>		INC LOC		23-99	HOLE NUMBERS 60
	PROJECT PULLO	EMS DRILL		Day		SHEET 10F1
	DEPTH USCS	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	DEPTH USCS (FT) GRAPHIC LOG					Andre 11 EL E
1		0-0.3 Black (Sm)	NA	NA	560-2'	
		Silty sand and organi	a I			Recover = 3.81 =
	1/1	W/ topsoil Dry				E
		0.3-2.9 (SC) 6/ex				E
	2-1/1/	(5/SPB) with vellow				E
		(5/SPB) with yellow brown (LOYR 6/6)			,	E E
	3	mottling sendy clay			560-4	
		metting sandy clay wet at 0.9 Ft.				TD=4F+ E
	4	2.9 SW Tan (10YR6)		<u> </u>	¥	
	E	moderate to woll	9			F
	_	sorted sand - satura	6			
	1	gt well rounded to				E E
	1	gt well rounded to subrounded.				E
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EMS DRILING LOG     T-23-9     Image: Description of the second of the		· · · · · · · · · · · · · · · · · · ·		DIG TOG			HOLE NUMBER S7	
$\frac{1}{2} = \frac{1}{2} = \frac{1}$						23-99		
D = 1  Derk Silty Sand (4/N)  Dry (Sn) NA $VA$ $VA$ $S7I-2'  Recovery = 2.8  Probe = 4F4  TD = 4F$			ertilizer Plant	<u> </u>		ANALYTICAL	1011	{
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		DEPTH. USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATEROLS	RESULTS	OR CORE BOX NO.	SAMPLE NO.		
1 - + SM yellow. brown (loYR 6/6) Sandy-Silt. wet 3 - 4 Ft. 	$\left( \right)$		0-1 Durk silty sund (4/N) Dry (	im) NA	Nħ	571-2'	Recavery = 2.8 Probe = 4Ft	
3 - 4 Ft. 4		4						
		G 111	Sandy silt. wet			571-4		
		- 그님피아이	3-4Ft.					 
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5					7-23-9	9 HOLE NUMBER	77
1	0.15	EMS DRILL		Day	· 25-9		,F[
	PROJECT Gulfp	ort Fertilizer Project @ DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL	REMARKS	<del>***</del>
	DEPTH. USCS (FT) GRAPHIC LOG		RESULTS	OR CORE BOX NO.	SAMPLE NO.		
		0-15 Grav SM		A . A	\$72-2'	Probe 4 Ft	F
(		city - 1 (et a)	NA	NA		RECOVER 3.	FHE
		0-7.5 Gray SM Silty signal (56B) moist	1 1	1			-
	74114					;	F
	っ日期時	1.5-4 SM Yellow brown (IOYR 6/6) boloisture increases W/depth- moist- very moist					
ſ		brown (103R616)					Е
		papisture increases			572-4'		E
	3-11:14	les / depthe moist -					
		very moist				TD=4F+	E
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	PROJECT	C.P.F	EMS DRILI Fertilizer Plant	GEOLOG				<u> </u>	SHEET / OF /	
	DEPTH	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	<b>`</b>	REMARK\$	
	(FT)	1.1.1.1	A A F D L AL G	m				Para	wory= 3.6	' ₹
(	$\mathbf{b} \equiv$		0-0.5 Durk Gtey (S		NA	NA		R CCC	e = 4Ft	Έ
5	-1-	1/-/-/	(a.s/N) silty sen topsoile organics	5			\$73.2	Probe		-
		////								E
	2-	//./	0.5-3 SC/SM	.th			1			-
		///	Yellow - brown (10)R	ſΥ			573-4			E
	3-	1.9.1	Santy clay change							
			to Sm at 3Ft.							F
	4-		3- 3.5 SM/SP				V V		D = 4F +	- <u>E</u>
	=		change to tan (10)RS	s/4)						Þ
	-		and white (8/N)							E
	=		change to tan (10)RS and white (8/N) Well sorted clean 9tz sand,							F
			TIC Sendi							<u> </u>
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	PROJECT	CulF	Dort	Fertilize			. Day		[]	SHEET IOFI	
4	DEPTH. (FT)	USCS GRAPHIC LOG	1	DESCRIPTION OF M		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
					ed 10 R 3/3 5	NA I	NA	574-2	Prob Reca	be = 4Ft over = 3.6F	
	2		0.8	5 - 0.8 1) sitty s 1 - 3.2	SC			×			
	3 1 1 1		(10 cl 3.2	YR6/4) ay wet 4 (SP	sandy at 2 Ft. ) white	· · ·		574-4' split Dea	Ę	= 4 F +	
			Ver	y well sor nd. wet	ted qtz						
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	ulu										
	пцп										
	11111										
	11111										

					MS DRILLI	NG LOG		7 23/9	9	HOLE NUMBER	575
1	PROJECT	GULFPO	t Fart	lizer	Plast G		Day				F/
	DEPTH	USCS GRAPHIC LOG		CONTRACTOR	MATERIALS	FIELD SCREENING	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
		LOG	0-2 Silty Dry	SM Sand to	gley(4/10) topsoil	NA	NA	\$75-2' (1530) \$75-2' DUP	Rec Prol	over=.3. be 4ff	7
	2		2-4 silty	S M sand	gier (6/10) wet at			ANP AVP			
	3_		2.5	Ft.				<b>5</b> 75-4' (1530)	<b>—</b>		
	4_							V V		D= 4 Ft	<u> </u>
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×	EMS DRILLI	NC LOC		7/23	HOLE NUMBER 5	7/.
PROJECT P.JC	Part Fertilizer Project OF		. Day		SHEET 1 o F	1
DEPTH USCS	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
	0-1 SC/SM Black (3/N) Silty Clay and silty send at bottom of interval 1-4 gley (7/10%) Suturated at 1 Ft.		NA	\$76-2'	Recovery = 33 Probe = 4ft	
<b>4</b>				_ <b>\</b>	TD = HF+	
		19				

	-					HOLE NUMBERS 77
		EMS DRILL			3-99	SHEET (OF)
	PROJECT GULFAST	+ Fertilizer Plant	GEOLOGIST C.D	GEOTECH SAMPLE	ANALYTICAL	REMARKS
	DEPTH USCS (FT) GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	
(		0-1.1 Dark Gley (3/N silty send.	NA	NA	577-2 '	Recovery = 3.3 FF Probe = 4 Ft Contact water = (1.3 Ft byl =
	2	1.1-3,1 Yellow-br silty sand (SC) saturated from 1.3 3.1-4 gley send (SW) 7/N moder to poorly sorted saturated	τωer L			Contact water = 1.3 Ft byl =
	3	3.1-4 gley send			577-4 <sup>1</sup>	TD = 4Ft
	4 1	(SW) //N moder to poorly sorted		¥		
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2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4	PRO				OLOGIST	2. Dav			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	DE				FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	S	9 197	
3-1:1:1 Si Hy Sand (SM) 3-1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:	6		0-0.7 Day	rk gray	NA	NA	\$78-2'		#E
3-1:11 Si Hy Sand (SM) 3-1:11 wet a 2Ft. Observed S78-4'	Ť		Jiey SINJ	Silty (SM)		1			E
3-11 Si Hy Sand (SM) 3-11 Si Hy Sand (SM)			0.7-4 Gle	1 (6/N)				at zff.	Ē
3-11/19 wet a 2Ft. observed 578-4		E	Silly Sand	(SM)	• • • •				E
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	3	3 - 1 1			4		578-4'		È
4 30 ft.			10426/16 4	ellow brown	N	X	J	TD=HF+	È
	4		mottling Fr	om 2,5	¥	- ¥			E
		=	+ 3,0 ft.						E
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i			EMS DRILLI	NG LOG	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-23-99	T	HOLE NUMBER 580	5
	PROJECT	Bulfpe		XLOOIST C	, Day			SHEET 10P	1
	DEPTH (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
<			6-0. 0-1.2 Derk Gray (Gley 4/N) SM 1.2-24 Gley (5/N) SM wet at 1.2'			580-2'	-		
						580-4'	TD	= 4 F <del>1</del>	
				2					
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l			EMS DRILLI	NG LOG	77	23/99		HOLE NUMBER 5	92
	PROJECT	GP		nlogist 🧭	C. Day			SHEET S92	IOF
	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
$\langle$			0-1 Black topsoil (2.5 N) (SM)	NA	NA	592-2 <sup>1</sup> 1 <del>751</del>	Rec Pr	overy = 3.9F obc = 4Ft	
	2		1-2 SC yellow-brn (10YR (/6)			2			
	با ا ا ا		2-3 SW yellow-brown (10YR 6/6)			592-4	3	4	
	4-		3-4 SW gley (8/N) white	<u></u>		2	TI	)=4F+	
	111		white	4				5- X	
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ł	PROJECT	Gulto	Sart	Fertilizer Pl			Dev		SHEET 10F1	
ł	DEPTH	USCS GRAPHIC LOG	T	DESCRIPTION OF MATERIALS		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
				0.8 Bluck + SM) silty s (2.5 5/N gley		NA	ſν A	514-2	Rowery = 3.3 Probe = 4Ff	
4112	2-1-1-3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-			8-2.4 Durk (SM) Silty S (4/N)				594 -4'		
20	4       		2 (* S	.4-4 white sw) clean whi inturcted at 2	te Sand 2.4Ft				TD = 4Ft	
		e R								
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							a.			
			-3							
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				EMS DRILLI	NG LOG	<u></u>	7 23 9	9	HOLE NUMBER 59	6
	PROJECT	CD F	stilizer Pr		LOGIST C.	Dav			SHEET POFI	
	DEPTH. (FT)	USCS GRAPHIC LOG	DESCRIPTION	OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
		100	0-0.95 5	M Rink			▲	Dec	NCT=3.8	E
(					NA	NA	596-21			E
		/////	(2.5/N) 5	ilty Sand			576-2		oe 4Ft	<u> </u>
		////	Dry	e n			T	Con 1.	tact water 8 Ft Byl	E
	2-		0-95-1.8	SC Scaller braine					727	E
			Sandy clas	yellow brown wet at					-	E
	3-	1.14	1.8 Ft				596-41			E
			1.8 - 46+	SM /CW				TD	= 4 Ft	E
	4	<u>in an an a</u>	silty soud	Cualler			¥			E
			Silty Salo		_					Ę
			brown (10	15 K 6/6) Wet	-					E
			JUTY Sa	(1120 8/2)						F
			maderetly	DYR 6/6) wet nd chuse (loyr 8/3) souted gt sand						
			1.000 1.1							E
										E
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		EMS DRILLI	NG LOG			HOLE NUMBER SO	8
PROJECT	21.12			, Day		SHEET I OFI	
DEPTH		DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	_
		0-1.3 SC Durk Gley (2.5/N) Sandy clay 1.3-4 SM/SW	NA	NA	598-2'	Recovery = 3.4 Probe = 4Ft	
3-		light teggley (7/10) Silty sand changing to moderately sorted gtz sand wet at 1.3 Ft			598-4' ¥	TD=4Ft	
		wet at 1.3 ,					

			EMS DRILLI	NG LOG	7-2	3-99	HOLE NUMBER\$ / 12	. 1
	PROJECT	C.D.			Day		SHEET 10F1	
	DEPTH. (FT)	USCS GRAPHIC	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
(		β 	U-1 SM Black (SM) Silty sund topsoil	NA	NA	1 5/12-2	Recover = 3.7 Probe = 4Ff	
	2		1-1.7 yellowbrown (durk (SC) 10 YR 5/4	)		-*		
	3-11	1 1				5 <i>i 12 -</i> 4'		
	4		1.7 - 2.2 yellow-brown (10886/6) SM Silty Sand.	••••		<u> </u>	TD= 4 Fł	
	1111		2.2-4 (8/N) gley White clean gtz Sand. wet 3-4Ft				i	
	1111						· · · · · · · · · · · · · · · · · · ·	
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						7-7	3-00	 HOLE NUMBER S/	14
PROJECT	Gulf	0+	<u>EM</u>	er Plant	NG LOG	. Day	3-99	 SHEET <b>S[]</b>	<u>/4</u>
DEPTH. (FT)		DUFT	DESCRIPTION OF MAT	ERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	 BEMARKS	
		511+	6 Black y sand t anics. 3 SC	(2.5/N) p s i 1 (SM)	¢∩A	NA	S114-2' Split DEQ S114-2'	vcr= <u>3.3</u> Ft be=4Ft rtectwate 3.8 <sup>4</sup>	-
		4eli 100-	ow brown F 3-4 SW	(10YR6/C			5114-4'	D= 4 <i>Ft</i>	
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PROJECT C.P.F	ertilizer Plant	GEOLOGIST C	. Day	<u>aj 11</u>	SHEET JO	
DEPTH USCS (FT) GRAPHIC LOG	T DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
	0-1- (SM) Silly Sand top soil Black (2.5/N)	NE	NE	5116-21	Recovery = 3.6 Arobe = 4 Ft	
2-1/2/	Black (Z.S/N) 1-3.7 SC/SN silty sand and silty clay			*		
3	yellow - brown (10YR6/16)		V	\$116-4	TD=4Ff	
	3.7-4 light tan (lorr 3/2) STV Sand, moderately Sunted.					
	Sunteda	×		e.		
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	<u>-</u>	8 M				
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				E	MS_DRILLI	NG LOG		7-23-9	9	HOLE NUMBER S /	18
	PROJECT	GULFY	<u>20-+</u>		2 Br Plant OF		Day_			SHEET SI18 REMARKS	loF
	DEPTH. (FT)	USCS GRAPHIC LOG		DESCRIPTION OF M		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.			
(			6-0 Sar	J Durk	silty gley (z.s.11)	٨٨	NA	5118-2	Rec	be 4Ft	
	2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.58 -	2.2 (SI n (10YR	M) yellow- 6/6) silty ure increases				₩ <i>₹€</i>		
	3-							5118-4			
	4		clea	4(SW) n sand	wet.			Y	TI	) = 4 F+	E
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l.		DIG LOC	<u> </u>	7-27-09	HOLE NUMBER
PROJECT CALLEO	EMS DRILL	GEOLOGIST	C.D.	7-23-99	SHEET I OF I
DEPTH. USCS		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
	1 0-23(SC) yellow-bi (10.7R5/4) sandych moist		NA	A 5122-2	3.8 Ft
2	2.3-3.6 (SM) yellow brown (IOYR 6/6) Silty sund wet at			*	Probe 4 Ft
3	3.2. Ft. (SM) 3.6-4 (SW) white			5122-4'	TD = 4F1
	(8/N) and yellow				
IIII	brown (10% 5/8) 9tz send : saturated				
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						- 1- 2/2	-	HOLE NUMBER	Latt
			EMS DRIL			<u>7/23/9</u>	9	ster S124	124 10F
	PROJECT	USCS	t Fertilizer Plant DESCRIPTION OF MATERIALS	L		GEOTECH SAMPLE	ANALYTICAL SAMPLE NO.	 REMARKS	
	(FT)	GRAPHIC LOG		<u>(;)</u>		OR CORE BOX NO.			
(	2 3 4 4			[₹ <sup>3</sup> ) <sup>‡</sup>		CECTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO. S 124 - 2' S 124 - 4'	 D = 4 Ft	
(									
(					5				

1	 EMS DRIL	LING LOG	7-:	23-98	HOLE NUMBER S/26	
	port Fertilizer Plant	GEOLOGIST C	.Day	·	SHEET / OF/	
	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS	
	O-1.1 Black 2.5/N Silty Clay (SC) top Soil W/ organic 1.1-3.3 SC yellow brown Sandy Clay (10YR 6/6) 3.3-4 SW light tan (TOYR 8/4) Saturated gtz Sand	NA S	NA VA	SAMPLE NO.	Recovery= 3.6 Probe = 4ft	
	7					

	Г — — — — — — — — — — — — — — — — — — —	EMS DRILLI	NG LOG	7-2	13-99		HOLE NUMBER S12	8
	PROJECT GUIFO	ort Fertilizer Project and	LOOIST C.	Dey			SHEET I OF	1
	DEPTH. USCS	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.		REMARKS	
	(FT) GRAPHIC LOG							
1		0-0.4 Dark Gley	NA	NA	\$128-2	Recov	ver = 3.3 F	۴E
		(3/N) (SC) Sindy	44	,	DUP	Prob	e 4Ft	E
					5128-2			E
		Clay wet						F
		A H. H. CM (			<u> </u>			F
		0.4-4 SM/SW						F
	∃.  1/5	Yellow brown loyel/6						F
	3-1:1:1:	Silty Sand Wet at						_
1	그	all interval.						_
		mottling (2.YRS/8)				TD	= 4+F+	
	4-1	Fed brown .						E
		No 2-4 Ft Sample internal Collected due to wet						F
		collected due to wet						F
	1	interval.						E
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**APPENDIX E** 

# GROUNDWATER SAMPLING LOGS AND MONITORING WELL SURVEY DATA

## **GROUNDWATER SAMPLING LOG**

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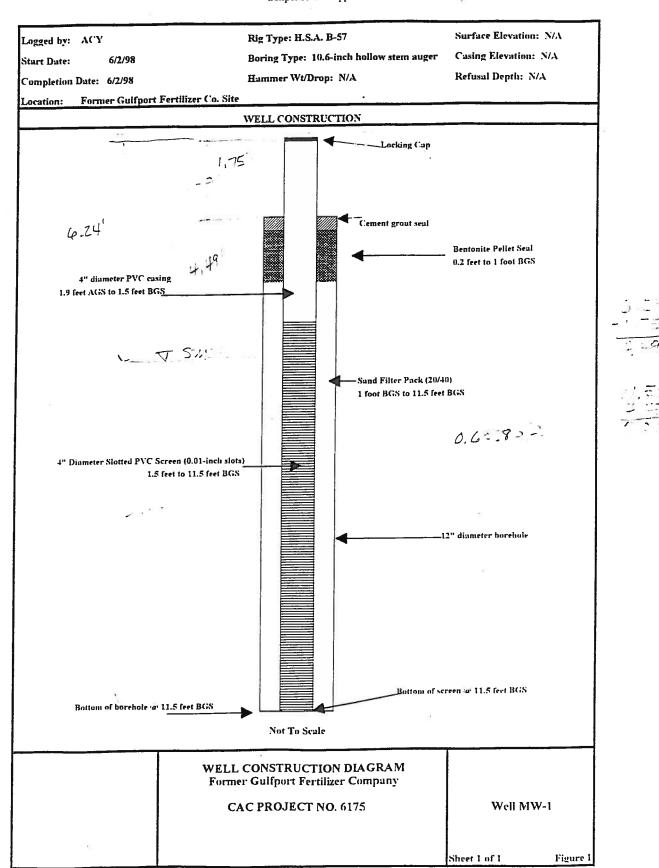
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	INT (MP) <u>To</u>		<u>) ( 21 <sup>*</sup> 21</u> D INTERVAL:		WELL NO: <u>// .</u> DIAMETER: DEPTH: _/ / , 5	·/ //
PURGE DATA	A		DINIERVAL:		7/23/99 5	
Well Depth Below Mp		.25	WELL DIAMETER	<u>0,333</u>	(/	
- INITIAL WATER LEVEL		<u>7])</u>	AREA OF WELL (sq ft)			
= WATER COLUMN (ft)	6.	<u>83</u> x	VOLUME PER FT (gals/l	n <u>0.6529</u>	= 4.44	_ galions
TIME	WATER LEVEL		pH	SC	PURGE VOLUN	
06:20		25°C	3.16	1250		2.1
09·15		29'2	3.31	1000		Z. /
09:35	6.62	28°C	3.35	1000	± 26	0,55
09:50	6.62	28.5°C	3.32	1000	± 27	0.0
10:05	-					0,0
//:/1	6:63					-
SAMPLING D	ATA			DATE/TIME _	7/23/95 11.	16
PARAMETERS				METHOD		
FIELD PARAME	TERS	۰F	pH	S	C	

Engineering & Management

Well Construction Diagram Former Gulfport Fertilizer Company Gulfport, Mississippi

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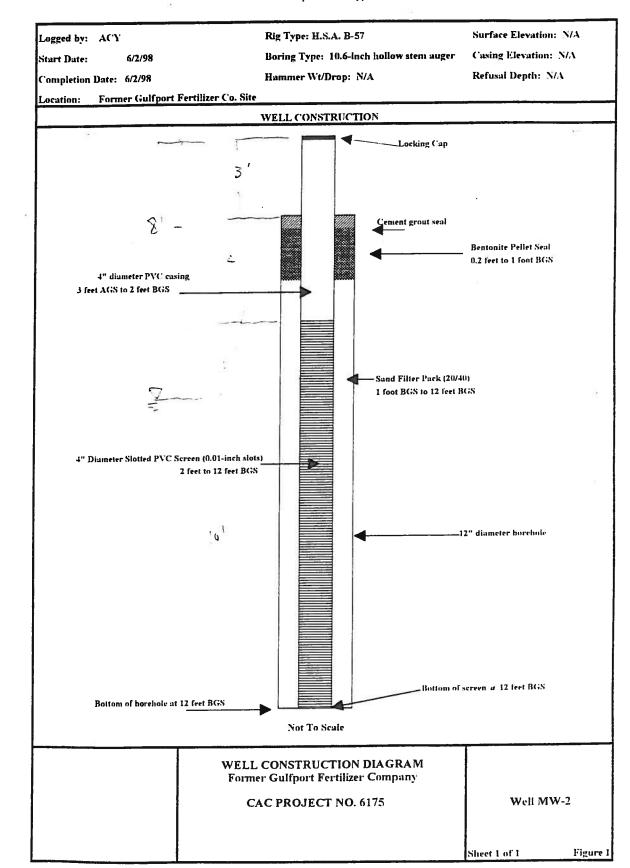
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# **GROUNDWATER SAMPLING LOG**

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CLIENT: <u>HANC</u>	OCK BANI	K		DA1	TE: 114 23 , 19 9
PROJECT LOCAT	TION: 33Rp	STREET GU	KEPOM NAS	PRO	DECT NO: <u>98 HB O O I</u>
FARMER GUL	FRONT FEE	TILIZER SIT	6-	<u> </u>	
WELL INFOR	MATION			and the second	
LOCATION					WELL NO: <u>Mル- こ</u>
MEASURING POI	INT (MP) To A	SF CASING	(31,5"A6		<b>DIAMETER</b> : <u>4</u>
CASING STICK-L	т <u>315<sup>"</sup>/2.4</u>	<u>3')</u> screene	D INTERVAL:		DEPTH: 12-0 865
PURGE DATA					
METHOD SLOW	U FURGE (	(pai/min)		DATE/TIME	7/23/95
WELL DEPTH BELOW MP	15.0		WELL	0.333	
INITIAL WATER LEVEL	<u>(8,0</u>	<u>)</u>	AREA OF WELL (sq ft)		
= WATER COLUMN (ft)	7,0	) x	VOLUME PER FT (gals/if)	0.6528	= <u>4.57</u> gallo
<u>TIME</u>	WATER LEVEL	TEMP	pH	SC	PURGE VOLUME GALLONS
		<u></u>	<del></del>		
				<u></u>	
					• <u></u>
	<u></u>				- <u></u>
SAMPLING D	АТА			DATE/TIME	
PARAMETERS			·····	_METHOD _	
FIELD PARAMET	TERS	°F	pH		SC
	TIONS AND F	EMARKS			

Well Construction Diagram Former Gulfport Fertilizer Company Gulfport, Mississippi



ING G SERVICES, INC.

CLIENT: Butler Services of Mississippi, Inc. (Proposed Soil Sample Locations) JOB SITE: 33rd Street, west of Hwy 49 and adjacent to the west margin of railroad track. KES Project No.: 99060

All Elevations are based on USGS monument Number "J191 1955" as published in the City of Gulfport bench mark book page 113.

Elevation of the North monitoring well at mark on top of pipe =	31.06'
Grade at the North monitoring well =	29.27'
Elevation of the South monitoring well at mark on top of pipe =	33.86'
Grade at the South monitoring well =	31.27'



**APPENDIX F** 

HEALTH AND SAFETY PLAN

#### **HEALTH AND SAFETY PLAN**

Subsurface Investigation Gulfport Fertilizer Plant Site 33<sup>rd</sup> Street, Gulfport, MS

This Health and Safety Plan outlines the basic safety requirements for the site/assessment work to be performed at the above site. The plan addresses the expected potential hazards that may be encountered on this project. If changes in site or working conditions occur as the activities progress, addenda to this plan will be provided.

The provisions set forth in this plan will apply to all employees and subcontractors of Butler Services of Mississippi that will be working on this project. The subcontractors may request to increase the safety requirements what is described herein with a written request to and approval from the Butler Services Safety Officer.

#### **AUTHORITY FOR SAFETY**

The Butler Site Safety Officer (SSO) will be responsible for implementing the requirements of the site safety plan. Mr. Denton Bates will be designated SSO for this project.

The SSO is responsible for addressing the following items:

- Implementing the provisions of the HASP.
- Dissemination of information contained in the plan to all on-site personnel involved in the project through a daily safety meeting.
- Ensure all onsite workers have proof of OSHA 40-Hour Health and Safety Training.
- Review on-site safety supplies and equipment inventory.
- Procedures for reporting accidents or incidents.

The SSO has the authority to suspend work at any time he finds nonconformance to the plan or discovers that the provisions of the plan are inadequate for worker safety.

#### MEDICAL SURVEILLANCE

Butler personnel and it's subcontractors engaged in project activities must be participants in a medical surveillance program and must be cleared by the examining physician to wear respiratory protection and protective clothing, if necessary, for working with hazardous substances. All applicable State and Federal occupational safety requirements are to be observed.

#### HAZARD ASSESSMENT

#### Chemical hazards

The constituents of concern that may be encountered on the site are lead and arsenic in the soil and groundwater. These contaminants are the result of the manufacture of phosphate fertilizer at the site. When the fertilizer plant was in operation the type of phosphate commonly manufactured at that time was normal super-phosphate. Normal super-phosphate is manufactured by introducing sulfuric acid to phosphate rock (tri-calcium-phosphate). Typically, the phosphorous pentoxide, referred to as P205, and calcium oxide content of the rock used in production at the time the plant was operating was about 33% and 48%, respectively. The remainder of the

constituents in the phosphate rock consisted of lead and arsenic as well as a low percentage of other compounds such as aluminum, iron, carbon dioxide, fluorine and miscellaneous trace elements.

The typical exposure pathways include inhalation, ingestion and dermal absorption. Ingestion is the primary exposure pathways of concern. Level "D" protection consisting of hard hats, steel toed boots, long trousers, long sleeve shirts and protective gloves will be mandatory on site.

Table 1

Anticipated Contaminants				
CONTAMINATE	HIGHEST OBSERVED PEL/TLV IDLH CONCENTRATION ppm or mg/m <sup>3</sup> ppm or mg/m <sup>3</sup>	SYSTEMS/EFFECTS OF ACUTE EXPOSURE		
Lead Arsenic	Soil 11,000 ppm Soil 325 ppm	See MSDS – Attachment A See MSDS – Attachment A		

Controls and procedures of this plan will be used to keep exposures below the lowest recommended limit.

#### **Physical Hazards**

The work area shall be secured and the area restricted during the soil and groundwater

The location of underground utilities shall be marked prior to the initiation of subsurface activities at the site. Mississippi one-call (1-800-227-6477) has been contacted to cause to have the utility companies mark utility locations at the site, Verification No. 99071214410706. Known utilities at the site include a buried underground utility cable along the railroad right-of-way on the eastern boundary of the site.

Whenever possible work should be scheduled during the cooler parts of the day. The following protocols are to be used to counter heat stress:

- Allow workers to replace body fluids, water will be available at the site. Liquids for electrolyte replenishment will be available at the discretion of the SSO.
- Cool vests will be made available. Their use will be designated at the discretion of the SSO, if a lack of shade in the work zones results in their need regardless of the temperature.
- Allow workers to obtain adequate shade from direct exposure to the sun during rest periods in the treeshaded area on the north end of the property.
- At the discretion of the SSO, workers' vital signs will be monitored (i.e., body temperature, blood pressure and heart rate). If deemed necessary by the SSO, workers will be fitted with be fitted with heat stress monitors.
- Field personnel are encouraged to maintain their physical fitness.
- Intake of diuretics (coffee or alcohol) should be minimized prior to field work

#### **GENERAL PROJECT SAFETY REQUIREMENTS**

Project activities will be conducted in accordance with the minimum safety requirements:

- Eating, drinking and smoking will be restricted to designated areas. All personnel will be required to wash hands and face before eating, drinking or smoking in designated areas.
- Gross decontamination and removal of all personal protective equipment will be performed prior to leaving the site. Contaminated protective clothing will be removed and collected for disposal.
- The SSO will be responsible for taking the necessary steps to protect on-site personnel from physical hazards, including falling objects, falls from elevations, slip and trip hazards, and for providing proper equipment and appropriate safety equipment.
- On-site personnel will be cautioned to observe each other for the effects of the presence of toxic exposure such as headaches, dizziness, nausea, blurred vision, cramps, irritation of the eyes, skin or respiratory tract, changes in skin complexion/color, changes in motor coordination, changes in personality or changes in speech or pattern.

#### WORK ZONES

All areas within 15 feet of soil boring operations will be designated as Exclusion Zones. Cones or yellow caution tape will be used, if necessary, to deny public access to these areas. Surveillance of the areas will be performed by all on-site personnel to deny public access. Work will stop immediately when unauthorized access to the Exclusion Zones occurs.

#### PROTECTIVE EQUIPMENT REQUIREMENTS

On-site personnel are required to wear the following clothing and equipment, as a minimum while in the work areas:

- Hard Hat
- Steel Toed Boots
- Long Trousers
- Long Sleeve Shirt
- Protective Gloves

Cool vests and heat stress monitors will be available on-site if the ambient temperature is above 90° F and the SSO determines their use is appropriate. At the discretion of the SSO, a lack of shade may result in the need for cool vests regardless of the temperature.

#### **EMERGENCY RESPONSE PROCEDURES**

At a minimum, the following equipment will be present on-site and be readily accessible for use in the event of emergency:

- Emergency eye-wash bottle
- First Aid Kit
- 10 Pound NFPA approved Class ABC Fire Extinguisher

If suspected hazardous waste comes into contact with the eyes, the victim's eyelids must be held open and the eyes rinsed with eyewash solution for a minimum of 15 minutes. The victim must then be taken to a hospital for further treatment.

If suspected hazardous waste comes into contact with the skin, the affected areas must be held open and the skin rinsed with water for a minimum of 15 minutes. If further irritation exists, the victim must be taken to a hospital for further treatment.

If a fire starts, a Fire Department must be called immediately. Attempts to put out a fire should be considered only if there is little risk in doing so. Chemical fires will not be approached under any circumstance. In the case of chemical fires, the site will be vacated immediately.

In the event of an accident resulting in physical injury, first aid will be administered and the injured worker will be transported to the nearest hospital for emergency treatment.

#### **EMERGENCY TELEPHONE NUMBERS**

A list of emergency telephone numbers is attached to this site safety plan. Telephone numbers for the utility companies with services in the area are also included in the list of emergency telephone numbers.

#### **EMERGENCY MEDICAL TREATMENT**

In the event of injury or illness requiring emergency medical care beyond on-site capabilities, the following resources will be utilized as appropriate:

Local Emergency Hospital:	Memorial Hospital at Gulfport 4500 13 <sup>th</sup> Street Emergency (228) 865-3420 Main (228) 867-4000
Ambulance Service:	American Medical Response Emergency 911

The hospital is located approximately seven (7) minutes at a distance of 2.9 miles from the site traveling east along 33<sup>rd</sup> Street to US Highway No. 49, then south on US Highway No. 49 to US Highway No. 90, then west along US Highway No. 90 to Broad Avenue, then north on Broad Avenue to 13<sup>th</sup> Street. The hospital is located in the first block on the left side of 13<sup>th</sup> Street. A map is attached to this plan with directions from the site to the hospital.

This site safety plan has been prepared to prescribe minimum procedural and equipment requirements for worker protection in accordance with OSHA guidance for Hazardous Waste Site Activities.

This document was prepared by:

WD BATES, Site Safety Officer

DATE: \_\_\_\_\_

ATTACHMEN	TS:
EMER	GENCY CONTACTS
HOSPľ	TAL ROUTE MAP
Α-	MATERIAL SAFETY DATA SHETTS FOR LEAD AND ARSENIC

**B-** EQUIPMENT DECONTAMINATION PROCEDURES

# **EMERGENCY CONTACTS:**

National Response Center Hotline	800-424-8802
US EPA Region IV	800-424-8802
CMA Chemical Referral Center	800-262-8200
CHEMTREC	800-424-9300
Mississippi Department of Environmental Quality	601-961-5171
Mississippi Emergency Management Agency	601-352-9100
City of Gulfport Fire Department	911
City of Gulfport Police Department	911
Mississippi State Highway Department	601-833-7811
Mississippi State Health Department	601-894-2271
Poison Control Center	601-684-7361

### **MEDICAL EMERGENCY:**

Local Emergency Hospital: Memorial Hospital at Gulfport 4500 13<sup>th</sup> Street Emergency (228) 865-3420 Main (228) 867-4000

Ambulance Service:

American Medical Response, Inc. Emergency 911

### **UTILITY CONTRACTS:**

City of Gulfport Department of Public Works (Water and Sewer)	228-868-5765	
Mississippi Power Company	800-487-3275BellSouth	
Telephone	800-227-6477	

### ATTACHMENT B EQUIPMENT DECONTAMINATION PROCEDURES

- The sampler and sample tubes will be cleaned using tap water and Liquinox. A brush will be used, if necessary, to remove particulate matter and surface films during cleaning.
- The equipment will then triple rinsed thoroughly with tap water, analyte free water and pesticide-grade isopropanol followed by a final rinse of analyte free water only. If analyte free water is not available, the equipment will be allowed to air dry following the solvent rinse. A solvent rinse will not be applied to PVC items or plastic items.
- Once the equipment has been cleaned it will be removed from the decontamination area and covered with aluminum foil when not in use.
- Equipment to be stored overnight will be wrapped in aluminum foil and covered with clean, unused plastic.
- The rinsate will be containerized and transferred to drums for characterization and disposal off-site in a permitted facility.

