# enSearch

Koppers Inc MASTERFILE RELATED STATUS ATTACHMENTS TASKS

ID	Branch	SIC	County	Basin	Start	End
876	Timber and Wood Products	2491	Grenada	Yazoo River	11/09/1981	

Physical Address (Primary)	Mailing Address
1 Koppers Drive	PO Box 160
<u>Tie Plant, MS 38960</u>	Tie Plant, MS 38960

Telecom Type	Address or Phone
Work Phone Number	(662) 226-4584, Ext. 11

Alt ID	Alt Name	Alt Type	Start	End
2804300012	Koppers, Inc.	Air-AIRS AFS	10/12/2000	
876	Koppers Inc Grenada Plant	Air-Notification	05/23/2008	
876	Koppers Inc	Air-Notification	02/10/2010	
096000012	Koppers, Inc.	Air-Title V Fee Customer	12/11/2006	
096000012	Koppers Industries, Inc.	Air-Title V Operating	03/11/1997	03/01/2002
096000012	Koppers Industries, Inc.	Air-Title V Operating	01/13/2004	03/26/2007
096000012	Koppers, Inc.	Air-Title V Operating	03/26/2007	01/01/2009
096000012	Koppers, Inc.	Air-Title V Operating	10/28/2009	09/30/2014
876 001	Koppers Company, Inc. Forest Products	GARD	12/08/1981	
MSR220005	Koppers Industries, Inc.	GP-Wood Treating	09/25/1992	
MSD007027543	Koppers Industries, Inc.	Hazardous Waste-EPA ID	08/27/1999	01/23/2007
MSD007027543	Koppers, Inc.	Hazardous Waste-EPA ID	01/23/2007	
HW8854301	Koppers Industries, Inc.	Hazardous Waste-TSD	06/28/1988	06/28/1998
HW8854301	Koppers Industries, Inc.	Hazardous Waste-TSD	11/10/1999	03/26/2007
HW8854301	Koppers, Inc. (Owner)	Hazardous Waste-TSD	03/26/2007	09/30/2009
TIVV00043UI	Koppers, Inc./ Beazer East Inc.	Hazardous Waste-TSD	02/10/2010	01/31/2020
876	Koppers Industries, Inc.	Historic Site Name	11/09/1981	12/11/2006
876	Koppers, Inc.	Official Site Name	12/11/2006	
MSP090300	Koppers Industries, Inc.	Water - Pretreatment	11/14/1995	11/13/2000
MSP090300	Koppers Industries, Inc.	Water - Pretreatment	09/18/2001	08/31/2006

MSP090300	Koppers, Inc.	Water - Pretreatment	03/26/200702/28/2012
MSU081080	Koppers Industries, Inc.	Water - SOP	11/09/1981 11/30/1985

Program	SubProgram	Start Date End Date
Air	Title V - major	06/01/1900
Hazardous Waste	Large Quantity Generator	08/27/1999
Hazardous Waste	TSD - Not Classified	06/28/1988
Water	NPDES Storm	02/17/2010
Water	PT CIU	11/14/1995
Water	PT CIU - Timber Products Processing (Subpart 429)	11/14/1995
Water	PT SIU	11/14/1995

	Longitude	Metadata	S/T/R	Map Links
.00	.06 (089.785572)	<b>Point Desc:</b> PG- Plant Entrance (General). Data collected by Mike Hardy on 11/8/2005. Elevation 223 feet. Just inside entrance gate.	Section: Township: Range:	MGIS Google Maps
		Method: GPS Code (Psuedo Range) Standard Position (SA Off) Datum: NAD83 Type: MDEQ		<u>MapQuest</u>

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## RCRA POST-CLOSURE PERMIT RENEWAL APPLICAT FOR CLOSED FORMER RCRA SURFACE IMPOUNDMENT

## KOPPERS INC. GRENADA, MISSISSIPPI FACILITY EPA ID NO.: MSD 007 027 543 PERMIT NO.: HW-88-543-01

**Prepared** for:

**BEAZER EAST, INC.** 

Prepared By:

**Key Environmental, Inc.** 200 Third Avenue Carnegie, Pennsylvania 15106

April 4, 2008



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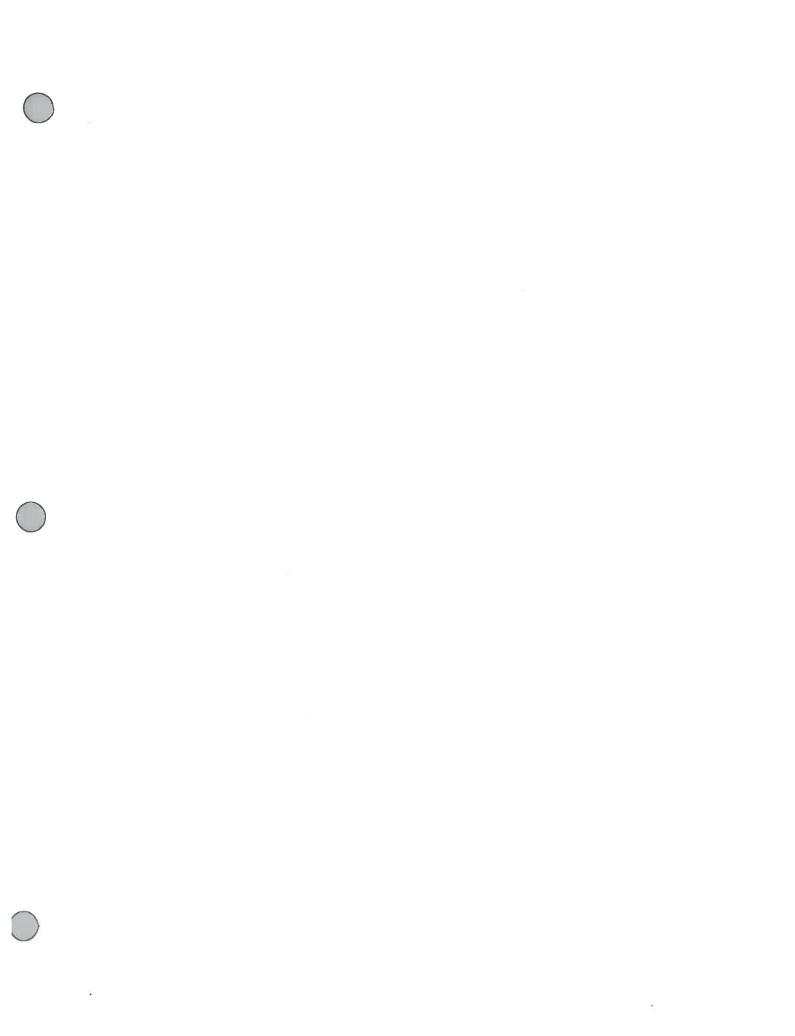
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**APRIL 4, 2008** 



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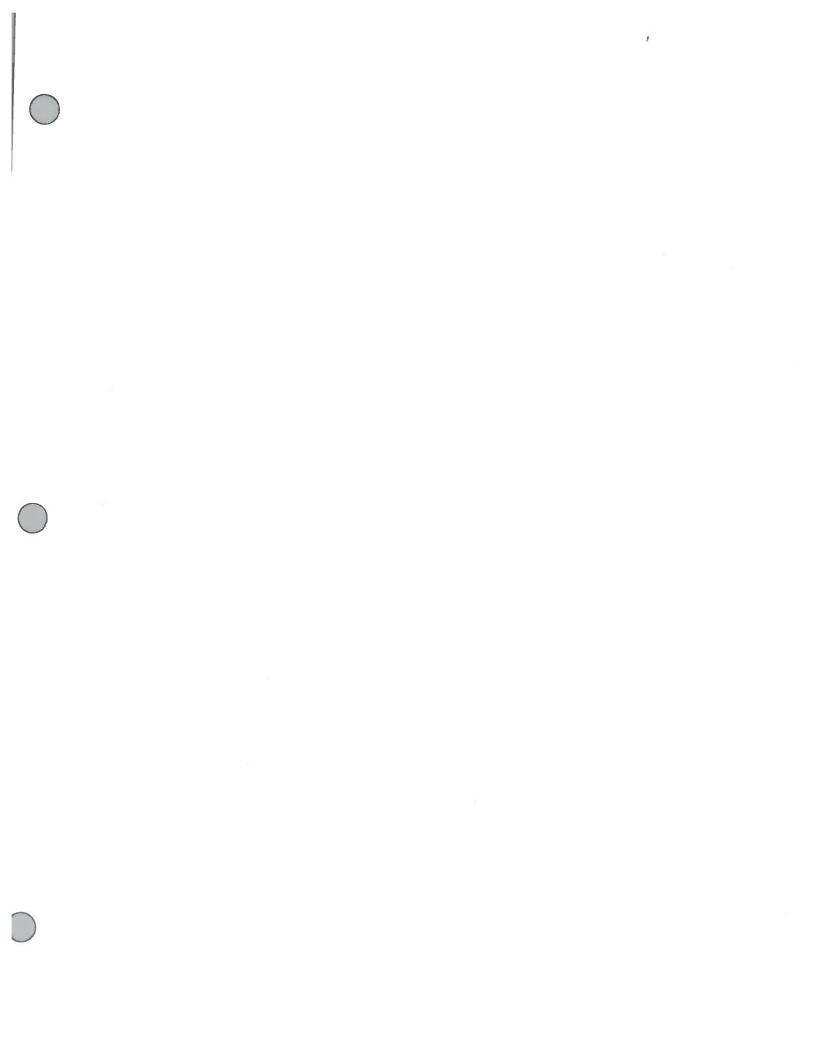
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RCRA Post Closure Permit Renewal Application Koppers Inc. Wood Treating Facility Grenada, Mississippi

## CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Document:

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RCRA Post-Closure Permit Renewal Application For Closed Former RCRA Surface Impoundments Koppers Inc. Grenada, Mississippi Facility

Robert S. Markwall (Name)

Kickmarkevec (Signature)

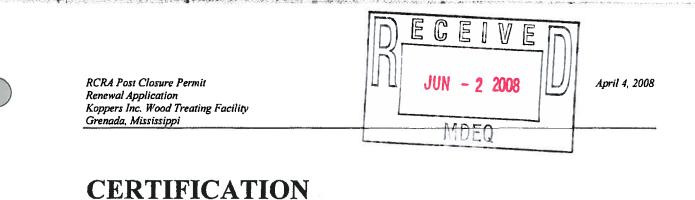
Vice President (Title)

Beazer East, Inc (Company Name)

04/03/08 (Date)

iv





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Document: **RCRA** Post-Closure Permit Renewal Application For Closed Former RCRA Surface Impoundments Koppers Inc. Grenada, Mississippi Facility

Ribert S. Markwell (Name)

Signature)

Vice President (Title)

Beazer East, Inc (Company Name)

047 / 0 3 / 0 8 (Date)



## **EXHIBIT 1 – 40 CFR 270.28 DOCUMENT LOCATOR PAGE**

Required Paragraph Pursuant to §270.28	Description	Applicable Section in Permit Renewal Application
270.11	Signatories to permit applications and reports	Certification Page
270.13	Contents of the Part A Application	Appendix A
270.14(b)(1)	General description of the Facility	Section 2.1
270.14(b)(4)	Security procedures pursuant to 264.14 or request for a waiver	Section 7.2.2
270.14(b)(5)	General inspection schedule pursuant to 265(b), where applicable	Section 7.2.3
270.14(b)(6)	Justification for waiving preparedness and prevention requirements of part 264, subpart C	Section 7.2.1
270.14(b)(11)	Facility location information	Sections 2.1.1 and 2.2
270.14(b)(13)	Copy of the post-closure plan	Section 7.2
270.14(b)(14)	Documentation that notices have been filed pursuant to 264.119	Section 7.2.6
270.14(b)(16)	Most recent post-closure cost estimate pursuant to 264.144 and financial assurance pursuant to 264.145	Section 7.2.7 and Table 3
270.14(b)(18)	Where applicable, proof of coverage by a State financial mechanism in compliance with 264.149 or 264.150	Section 7.2.7 and Appendix K
270.14(b)(19)	Topographic map	Figures 2 and 3
270.14(c)	Additional information requirements	Section 5.0
270.14(d)	Information requirements for solid waste management units	Sections 4.0 and 8.0



#### **1.0 INTRODUCTION**

In accordance with Federal Regulations in 40 CFR Parts and 270 and the Mississippi Hazardous Waste Management Regulations (MHWMR) 264 and 270, this Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit Renewal Application (Renewal Application) is being submitted for the closed surface impoundment (SI) (the Facility) at the Koppers Inc. (Koppers) wood treating plant (Site) located in Tie Plant, Mississippi, Grenada County. Because the Federal Hazardous and Solid Waste Amendment (HSWA) portion of the RCRA Permit and the State of Mississippi Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment permit together constitute the full RCRA Permit (Permit) for the Facility, this Renewal Application has been prepared to meet both regulatory requirements. Beazer East, Inc. (Beazer) requests that the MDEQ recognizes that only Beazer operated the Facility. Koppers has owned the real property comprising the Site since late 1988, but has never operated the Facility. Accordingly, Beazer requests that MDEQ delete Koppers from the Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment Permit for Post-Closure Care of the sole permit as the sole permittee.

The Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment Permit issued by the State of Mississippi (Permit No. HW 88-543-01) became effective on November 10, 1999 and will expire on November 10, 2009. The HSWA portion of the Permit for EPA ID No. MSD 007 027 543 issued by the United States Environmental Protection Agency (USEPA) Region 4 became effective on October 2, 1998 and will expire October 2, 2008. Pursuant to the Federal HSWA Permit Condition I.D.2 (40 CFR 270.10(h)), and Mississippi Permit No. HW-88-543-01 Section I.E.2, the Permittee shall submit a complete application for a new permit at least 180 days before the permit expires.

The Grenada wood treating plant was built in 1904 by the Ayer & Lord Tie Company (A&L). In 1930, A&L was acquired by the Wood Preserving Corporation, a subsidiary of The Koppers Company. In 1940, The Koppers Company liquidated the Wood Preserving Corporation to form its own wood preserving division. Thereafter, in 1944, The Koppers Company merged with three other companies to become Koppers Company, Inc. Koppers Company, Inc. owned the Grenada Plant until its sale to Koppers Industries, Inc. (n/k/a Koppers Inc.) on December 29, 1988. Koppers Industries, Inc. purchased not only the Grenada Plant at that time, but also the rights to the name "Koppers." As a result of the sale, Koppers Company, Inc. changed its name to Beazer Materials and Services, Inc. ("BM&S"), in January 1989, and then BM&S changed its name to Beazer East, Inc. on April 16, 1990. This history is summarized in the following table for your convenience.



Site Ownership History		
Ayer & Lord Tie Company builds the Grenada wood treating plant	1904	
The Wood Preserving Corporation, a subsidiary of The Koppers Company, acquires A&L	1930	
The Koppers Company liquidates the Wood Preserving Corporation to form its own wood preserving division	1940	
The Koppers Company merges with three other companies to become Koppers Company, Inc.	1944	
Koppers Company, Inc. sells the wood treating business and assets to Koppers Industries, Inc.	December 29, 1988	
Koppers Company, Inc. changed its name to Beazer Materials and Services, Inc. (BM&S)	January 26, 1989	
Beazer Materials and Services, Inc. was changed to Beazer East, Inc. (Beazer)	April 16, 1990	
Koppers Industries, Inc. changed its name to Koppers Inc. (Koppers)	2003	

Prior to closure, the SI stored hazardous waste material, K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol). In the summer of 1988, all K001 sludge and visually contaminated soils were removed from the SI and shipped to a permitted off-site disposal facility. Closure activities for the SI were initiated in July 1989 which included removal of accumulated rainwater, placement of clean soil fill, construction of a soil-bentonite cap and cover system. Closure activities for the SI were completed by the end of October 1989. The closure construction documentation and closure certification for the SI were submitted to the MDEQ in January 1990.

This reapplication is organized into the following sections with supporting documentation contained in the appendices:

- Section 2.0 of this application presents a description of the Site and the Facility;
- Section 3.0 provides information regarding waste characterization;
- Section 4.0 presents process information for the closed former RCRA SI;
- Section 5.0 includes a description of the Site hydrogeology and groundwater quality related to the Site;



- Section 6.0 discusses corrective action;
- Section 7.0 provides closure and post-closure requirements for the closed former SI including financial assurance information;
- Section 8.0 presents information for solid waste management units; and,
- Section 9.0 provides a list of references cited.

The Part A application is included as Appendix A and supporting documentation is provided in the referenced appendices.



#### 2.0 FACILITY DESCRIPTION, LOCATION, AND TOPOGRAPHY

This section of the renewal application provides a general description of the Koppers Wood Treating Plant Site and the Facility (the closed former RCRA SI). Details include contact information, Facility location and topographic information, a description of the historic activities conducted at the former RCRA SI, and floodplain information. The information provided throughout Sections 2.1 and 2.2 satisfy the regulatory requirements for the renewal application pursuant to 40 CFR 270.14(b)(1) – general description of the Facility, 40 CFR 270.14(b)(11) – Facility location information, and 40 CFR 270.14(b)(19) – topographic map.

#### 2.1 GENERAL DESCRIPTION

The wood treating plant was constructed in 1904 to pressure treat railroad cross ties. Preservatives used include pentachlorophenol (mixed in No. 2 diesel fuel) and creosote. The Koppers plant currently pressure treats railroad cross ties, switch ties and poles. The closed RCRA SI was constructed in the mid-1970's as part of the plant's wastewater treatment system and was used until 1988 to treat wastewater resulting from the wood preserving operations.

The contact for the Facility (closed SI) is:

Mr. Michael Bollinger Environmental Program Manager Beazer East, Inc. One Oxford Centre, Suite 3000 Pittsburgh, Pennsylvania 15219

The contact for the Koppers Wood Treating Plant is:

Mr. Vance R. Haskin Koppers Inc. 1 Koppers Drive Tie Plant Road Tie Plant, Mississippi 38960

The plant's mailing address is:

P.O. Box 160 Tie Plant, Mississippi 38960

#### **Description of Site**

The Site is located approximately 1 mile southeast of Grenada, Mississippi, near U.S. Highway 51 as shown on Figure 1. The Site is located in the town of Tie Plant, Mississippi, a rural town with a small residential community located to the northeast. The 171-acre Site is approximately 1.2 miles long and 0.3 miles wide. The Illinois Central Railroad services the Koppers plant and forms the western boundary and cultivated fields form the eastern boundary. Two streams flow



northeast across the Koppers plant towards the Batupan Bogue: the Northern Stream in the northern portion of the Koppers plant and the Central Ditch in the central portion of the plant.

A topographic map for the Site and the surrounding region is included as Figure 2. A Facilityspecific topographic map detailing pertinent Site features and showing the topography of the SI both prior to closure (as of 1/23/1989) and post-closure (as of 11/21/1989) is presented as Figure 3. Meteorological and wind distribution data obtained from the Federal Aviation Administration, Grenada, Mississippi AAF included in Appendix B.

#### 2.1.1 Description of Closed RCRA Surface Impoundment

The Facility (closed RCRA SI) was constructed in the mid-1970's as part of the plant's wastewater treatment system and was used until 1988 to treat wastewater resulting from the wood preserving operations. No records exist concerning the construction of the SI, but it appears that the SI was constructed by excavating into the natural clay soil and using the excavated material to construct the dike around the SI. During the operation of the SI, bottom sediment sludge (K001) was generated. In the summer of 1988, all K001 sludge and visually contaminated soils were removed from the impoundment and shipped off-site to Chemical Waste Management, Inc., located in Emelle, Alabama for disposal. Prior to closure of the SI, a RCRA permit application was submitted to the MDEQ and Hazardous Waste Management Permit No. 88-543-01 became effective on June 28, 1988 for the operation and post-closure care of the closed SI. The SI was closed in 1989 and certification of closure for the SI was included in the *Closure Construction Documentation Report for the Surface Impoundment Closure* (Keystone, 1989).

#### 2.2 FACILITY LOCATION CRITERIA

#### 2.2.1 Floodplain Standard

The Koppers Site is not located within a 100-year flood plain except for a small area near the central area of the Site. The closed SI is more than 7 feet above this 100-year flood plain. Consequently, no additional flood proofing is required to prevent potential constituent releases from the closed SI during flooding. This information was obtained from the Flood Insurance Rate Map Number 280060 0125B for Grenada County Mississippi. A copy of the map is presented in Appendix C.



#### 3.0 WASTE CHARACTERISTICS

The Grenada, Mississippi Wood Treating Plant, closed former RCRA SI is in post-closure, therefore, no waste will be treated, stored, or disposed of at the closed RCRA former SI during the Post-Closure Period. In accordance with 40 CFR 270.28, the Chemical and Physical Analysis requirement of 40 CFR 270.14(b)(2) and the Waste Analysis Plan requirement defined in 40 CFR 270. 14(b)(3) and 264. 13 (b) do not apply.

The hazardous waste previously contained in the closed SI was K001, defined in 40 CFR 261 as "bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol". Appendix D provides a waste analysis for the K001 sludge. No wastes have been placed in the closed SI since it was closed in 1989. Therefore, a Waste Analysis Plan is not applicable for this Renewal Application.



#### 4.0 PROCESS INFORMATION

The information presented in Section 4.0 satisfies the requirements regarding the Facility pursuant to 40 CFR 270.14(D) regarding the information requirements for solid waste management units (SWMUs). Section 8.0 of this Renewal Application satisfies information requirements for SWMUs for the Koppers Wood Treating Plant Site.

The SI was constructed in the mid-1970's to accept process wastewater containing creosote and/or pentachlorophenol. The SI was rectangular, measuring approximately 295 feet by 115 feet. Total depth, including the side berms was approximately 7 feet. The SI was constructed from compacted native clayey soil. The solids from the wastewater settled out in the SI forming a sludge, which was regulated as a K001 listed RCRA hazardous waste (40 CFR S261.32). On July 17, 1984 a sludge sample was collected from the bottom of the SI, prior to its closure, and analyzed for organic and inorganic constituents. The sludge analysis is included in Appendix D. The SI was closed as a landfill in 1989. After the SI was dewatered, all sludge and visually contaminated soils were removed from the SI and transported off-site to a permitted landfill for disposal. The closure activities consisted of placing clean soil fill in the SI and constructing a soil-bentonite cap and vegetated soil cover. Figure 3 presents the as-built final ground surface contours and Figure 4 presents the as-built cross sections of the closed SI. Figure 5 is a current photograph of the surface impoundment.



#### 5.0 GROUNDWATER PROTECTION

This section discusses the Post-Closure Care groundwater monitoring program to be carried out under this permit period. This section describes also the existing groundwater monitoring data that has been completed at the Site in the vicinity of the closed former RCRA SI: this includes interim status groundwater monitoring data collected from 1982 through 1988 and the post-closure care monitoring data collected from 1988 through the present. The information presented in this section satisfies the additional information requirements regarding groundwater protection pursuant to 40 CFR 270.14(C).

#### 5.1 INTERIM STATUS GROUNDWATER MONITORING DATA

Interim status groundwater monitoring was initiated for the then-operating/subsequently closed SI in 1982 and continued until the issuance of the Permit, which was issued by MDEQ in June 1988. In accordance with 40 CFR 265 and MHWMR 265, groundwater upgradient and downgradient of the closed SI was monitored to determine if the closed SI was impacting groundwater quality. A description of the interim status groundwater monitoring well network, data collected from these wells, and results of the interim status monitoring program are discussed in this section.

The interim status monitoring well network was modified as directed by MDEQ several times from 1982 through 1987. In accordance with 40 CFR 265.91(a) one well (R-1) was installed hydraulically upgradient of the SI and three wells (R-2, R-3, and R-4) were installed hydraulically downgradient of the SI. In 1984, the original well system was expanded under the direction of the MDEQ to include installation of five additional wells (R-5 through R-9). Following the installation of the five wells, a bimonthly sampling and analysis program was initiated to further define the groundwater flow pattern. Results of the bimonthly sampling and analysis program indicated that wells R-5 and R-6 were hydraulically upgradient wells and wells R-7, R-8 and R-9 were hydraulically downgradient of the closed SI. However, groundwater quality data from wells R-5 and R-6 were not considered by MDEQ to be characteristic of background groundwater quality. In 1986, five additional wells (R-08B, R-10, R-10B, R-11 and R-12) were installed and in 1987 two wells (R-09C and R-09D) were installed to further characterize groundwater quality and flow. The "B", "C", and "D" series wells were installed to characterize groundwater quality at depth.

A shallow hydraulic gradient at the interim status monitoring wells for the SI made it difficult to assess the upgradient well location. As a result, the additional wells that were installed helped to determine the groundwater flow direction. Based on the subsequent well installations and determination of the groundwater surface elevation, it was determined that the groundwater flow direction at the SI was to the east-northeast, and wells R-01 (and later, R-1R, which replaced R-1) and R-10 were located hydraulically upgradient of the SI.



Boring logs and well construction details for the interim status wells are presented in Appendix E.

#### Interim Status Monitoring Data

Groundwater sampling was conducted at various well locations throughout the interim status period from 1982 through 1987. From March 1982 through 1984, groundwater sampling was conducted at wells R-01 through R-04. Wells R-05 and R-09 were sampled following their installation in July 1984 through February 1985. Quarterly sampling was also conducted at wells R-05 through R-09 during 1986. Wells R-08B, R-10, R-10B, R-11 and R-12 were sampled in a supplemental sampling round conducted in November 1986. The interim status detection monitoring program was initiated in January 1987. Monitoring wells R-01, R-10, R-07, R-08 and R-09 were sampled under the interim status detection monitoring program Analytical data collected during interim status are included as Appendix E-2 of the 1987 Permit Application.

#### 5.2 MONITORING DATA UNDER THE PERMIT FROM 1988 THROUGH 1998

Under the June 28, 1988 Permit; eight wells monitored the closed SI consisting of two upgradient wells (R-01R and R-10) and six downgradient wells (R-07, R-08, R-08B, R-09, R-09C and R-09D). Figure 6 presents the locations of these wells. The detection monitoring program initially included analyses for pH, conductivity, total dissolved solids, total organic carbon, PAHs, total phenols, and pentachlorophenol. Pursuant to the Permit modification in February 1990, groundwater samples collected from wells monitoring the closed SI were analyzed for the following constituents: PAHs (EPA Method 8310), acid extractable phenolics (EPA Method 8040), phthalates (EPA Method 8060), total and dissolved chromium (EPA Method 601 OA) and mercury (EPA Method 7470) and field pH, specific conductance and temperature. A summary of historical data collected during the detection monitoring program required by the 1988 Permit are provided in Appendix E-4 of the *Post-Closure Care Permit Renewal Application* (1997 Permit Renewal Application) (Fluor Daniel GTI, 1997) and the *Post-Closure Care Permit Renewal Application* (1999). Boring logs and well construction information are provided in Appendix E.

#### Statistical Procedures under the 1988 and 1998 Permits

Previous SI groundwater data had shown that over 90 percent of the up gradient and downgradient monitoring well analyses were below laboratory reporting limits. Because the majority of the permit constituents were below the laboratory reporting limits, a background mean value could not be determined, and the Behrens-Fisher method could not be used for statistical evaluation.

In accordance with Section IV.F of the 1988 Permit, a statistical evaluation was to be completed using the Behrens Fisher Student's t-test or an equivalent method approved by the MDEQ. However, because of the high number of non-detects in the groundwater monitoring data, two documents were prepared by Dr. William R Kodrich, Clarion University of Pennsylvania, detailing statistical alternatives to address this situation. These documents were submitted to



MDEQ by Beazer on September 11, 1990, for MDEQ's approval for applying the statistical alternatives to the post-closure detection monitoring program for the impoundment. The September 11, 1990 submittal included the following two documents that presented:

- 1. Results of statistical analyses of data for the original five parameters specified in the Koppers Industries Inc. (KII) Grenada permit issued to Kopper's Grenada Facility.
- 2. Recommended statistical procedures for comparing mean background monitoring well concentrations with mean downgradient compliance monitoring well concentrations at KII's Grenada Facility.

In these documents, Dr. Kodrich presented several statistical methods to be used under various monitoring data situations (e.g., the percentage of non-detects). These methods are included in those recommended in the United States Environmental Protection Agency's (EPA) guidance document, *Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (1992)*. These methods also met the requirements of Mississippi Hazardous Waste Management Regulations 264.

As stated, the statistical evaluations were selected based on the frequencies of detection of the constituents and the statistical distributions of the concentrations in the background samples collected from wells R-0IR and R-10. Statistical evaluations are included in Appendix E-1 of the 1997 Permit Renewal Application and the 1999 Revised Permit Renewal Application. Because so many nondetect results were reported in this monitoring program, the data are not normally distributed. Therefore, a parametric statistical analysis such as a t-test or parametric analysis of variance where arithmetic means and standard deviations are used as a basis for decision analysis is inappropriate. The arithmetic means and standard deviations would not accurately represent the data and use of the parametric tests would most likely result in the derivation of incorrect conclusions. Therefore, nonparametric statistical tests were used to evaluate the data.

Statistical evaluations of the groundwater data were conducted as part of the 1987 Permit Application and the data showed that monitoring wells R-01 and R-10 are located up-gradient with respect to the closed SI and were determined to provide data representing background groundwater quality. The statistical evaluations also indicate that no statistically significant difference exists in comparing concentrations of the permit constituents in the downgradient monitoring wells to those concentrations measured in the up gradient monitoring wells.

During past semi-annual sampling events conducted under the 1998 Permit, the detection of constituents was very infrequent. The downgradient data were compared to a pool of upgradient data collected from wells R-01R and R-10 since the second half of 1990. For those constituents statistically analyzed using the Poisson Tolerance Limit, no downgradient concentration ever exceeded the limit. Therefore, any infrequent constituent detection was not regarded as significant. For those constituents statistically analyzed using the Wilcoxon Rank-Sum Test, downgradient concentrations were also never found to be statistically greater than the upgradient concentrations.



#### 5.3 SITE GEOLOGY AND HYDROGEOLOGY

Regional and Site geology and hydrogeology are most recently described in the Complete Phase II RCRA Facility Investigation Report (Phase II Report, 2003) (GeoTrans, AMEC, and Groundwater Insight, July 2003). In the Phase II Report, data collected during investigations conducted during 1997, 1998, and 2000 were combined with data reported previously in the Interim Measures Workplan (AWD, 1994), to provide updated interpretations. Section 5.3.1 of this Permit Renewal presents the updated Site geology and hydrogeology from the Phase II Report. Section 5.3.2 presents hydrogeologic information specific to the Facility (closed SI units) in order to satisfy the additional information requirements of 40 CFR 270.14(c).

#### 5.3.1 Site Geology and Hydrogeology

The uppermost aquifers in the vicinity of the Site are the Holocene-Pleistocene channel sands, which correlate with the Upper Silt and Sand Zones. These are underlain by the Upper Low-Permeability Zone, which probably correlates with the Basic City Shale; and the Lower Sand Zone, which correlates with the Meridian Sand. These are underlain by a laterally continuous layer of clay and silt, which is greater than 150 feet thick on Site and probably correlates with the upper member of the Wilcox Group.

**Fill Zone** - Much of the Site north of Central Ditch has fill materials overlying the native geologic materials. The fill varies in thickness from 0 to approximately 10 feet and is comprised of a broad range of grain sizes, from clay to gravel, and materials, including bricks and wood debris. The deeper portions of the fill are often saturated, whereas the shallower fill materials are dry.

**Upper Silt and Sand Zones** - The Upper Silt and Sand Zones are present below fill or near the land surface over most of the Site. This zone is partially saturated and includes areas of perched water on clay or silt lenses or within former impoundments or the former wood disposal area. The hydraulic conductivity of this zone is approximately 8 ft/day. The zone is unconfined to semi-confined. The moderate hydraulic conductivity is due to the presence of silt and clay in the aquifer.

Horizontal groundwater flow in this zone is generally northeastward toward Batupan Bogue, and is consistent with regional flow. However, Site topography and land use affect local flow directions. For example, in the vicinity of the Central Ditch in the central area of the Site, shallow groundwater flows toward the Central Ditch.

**Upper Low-Permeability Zone** - The Upper Low-Permeability Zone underlies the Upper Silt and Sand Zones. The zone is heterogeneous in composition and variable in thickness over the Site, ranging from zero to approximately 18 feet. This zone is comprised of interbedded layers of clay and silt, with intermittent sandy lenses. The Upper Low-Permeability Zone is present beneath the Former Wastewater Treatment System, including the former impoundments and wood disposal area. The Upper Low-Permeability Zone extends beyond the Central Ditch in the



middle of the Former Wastewater Treatment System area, becoming thinner to non-existent at the Ditch to the southwest and northeast. The zone appears to be discontinuous in localized areas and may allow the Upper Silt and Sand Zones to be in contact with the Lower Sand Zone.

The silt and clay beds of the Upper Low-Permeability Zone are expected to have hydraulic conductivities that are several orders of magnitude lower than the sand beds of the Upper Silt and Sand Zones. The Upper Low-Permeability Zone acts as a local partial confining unit above the Lower Sand Zone and, where present, also impedes the downward migration of DNAPL (HSI, 1996).

*Lower Sand Zone* - The Lower Sand Zone underlies the Upper Low-Permeability Zone. The Lower Sand Zone ranges in thickness from approximately 90 to 165 feet. The zone behaves as a confined aquifer and has an estimated average hydraulic conductivity of 36 ft/day. Groundwater flows generally north and northeastward across the Site in the Lower Sand Zone and appears to be relatively unaffected by surface topography and activities. There is a downward vertical groundwater gradient over much of the Site. The difference in potentiometric surface elevations between the Upper Silt and Sand Zones and the Lower Sand Zone is as much as three to four feet in the southern and western portions of the Site. The magnitude of the downward gradient diminishes toward the northeast and a very slight upward gradient exists in the eastern portion of the Site.

*Lower Confining Zone* - The Lower Confining Zone underlies the Lower Sand Zone. This zone is at least 150 feet thick at boring D96-4 and hydraulically separates the Lower Sand Zone from the deeper regional aquifers of the Middle and Lower Wilcox Group.

#### 5.3.2 Facility-Specific Hydrogeologic Information

Figures 2 and 3 of this Renewal Application satisfy the 40 CFR 170.14(c) surface water flow and topographic map requirements. Additional requirements, including groundwater flow and location of the monitoring wells are satisfied by Figures 6 and 7. Figure 7 presents the groundwater potentiometric surface contours for the two semi-annual monitoring events conducted in 2007. Figure 6 shows the locations of the Site monitoring wells, highlighting the wells located upgradient and downgradient of the closed SI that are used in the monitoring program. Flow velocities and hydraulic gradients as determined for the 2007 semi-annual events are presented in Table 2.

#### 5.4 CURRENT GROUNDWATER MONITORING DATA

The groundwater monitoring program for the closed RCRA SI includes semi-annual gauging and sampling of two upgradient monitoring wells (R-01R and R-10) and six downgradient monitoring wells (R-07, R-08, R-08B, R-09, R-09C, and R-09D) (Figure 6). In addition, to provide accurate determinations of groundwater flow rate and direction around the closed SI, up to thirteen additional wells are gauged during the semi-annual events. Monitoring activities are completed in accordance with the requirements of the Permit and the procedures provided in Appendix E-5 of the Permit (Sampling and Analysis Plan). Note that on January 31, 2002,



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Beazer requested an interpretation of Permit language from MDEQ to clarify the Permit requirements to gauge Site monitoring wells. MDEQ confirmed (in a letter dated February 12, 2002) that the Permit requires gauging of only the eight sampled wells listed in Parts III.B.1.a and III.B.1.b of the Permit. However, in order to provide accurate determinations of groundwater flow rate and direction around the closed SI, Beazer voluntarily gauges additional wells during the semiannual sampling events.

Groundwater elevation measurements and groundwater potentiometric surface maps for the monitoring events are provided in Appendix F. Note that observations of DNAPL in non-RCRA gauging well R-20 have been consistent throughout the monitoring program.

Throughout the monitoring program, groundwater flow in the vicinity of the closed RCRA SI has been determined to be northeastward from the impoundment area. Groundwater flow velocities are calculated in accordance with the requirements of the Permit. The average hydraulic gradients calculated for groundwater across the closed RCRA SI have ranged from 0.002 feet/feet to 0.010 feet/feet. Using the conductivity of 8.63 feet/day (slug test results for A level wells [Hydro-Search Inc., December 1996]) and effective porosity of 0.3 (estimated from Freeze and Cherry, 1979), the average linear groundwater flow velocity in the vicinity of the closed RCRA SI ranged from 0.058 feet/day (21 feet/year) to 0.288 feet/day (104.9 feet/year). The groundwater flow velocities constitute a conservatively high estimate of the potential constituent transport velocity because aqueous constituents are usually subject to interactions with the soil matrix, which can significantly retard the rate of transport relative to the groundwater flow velocity.

As required by the Permit, the groundwater samples are analyzed for the constituents listed in Table 3. Following receipt of the data from the laboratory, analytical data is reviewed for completeness and quality using the protocols of the United States Environmental Protection Agency (USEPA) National Functional Guidelines and USEPA method specifications. Groundwater analytical data collected under the Permit are included with this Permit Renewal in Appendix G. Data collected throughout this monitoring program are consistently non-detect at concentrations equal to or greater than their respective estimated quantitation limits.

Statistical evaluations have consisted of empirical evaluations of the data, performed semiannually in accordance with Appendix E-6 of the 1998 Permit. Consistent with the conclusions drawn from the statistical evaluations performed under the 1987 Permit, described in Section 5.2, these evaluations demonstrate that there is no evidence of a release from the closed unit.

#### 5.5 PROPOSED POST-CLOSURE CARE MONITORING PROGRAM

The Permit indicates that the post-closure detection monitoring program shall continue throughout the active life of the SI, including the closure period, and throughout the post-closure period (Part IV.G.3). The Mississippi Hazardous Waste Regulations incorporate by reference the federal regulations in 40 CFR Part 264. As indicated in 40 CFR Part 264.117(a)(2), the Administrator may shorten the post-closure care period for the hazardous waste unit, if it is



found that the unit is closed, and if the owner finds that the reduced period is sufficient to protect human health and the environment. Based on the removal of waste material, capping of the unit in accordance with the closure plan, the subsequent certification of closure, the extensive analytical data base and the statistical evaluations completed to date indicating the absence of unit-related constituents in the groundwater, the closed SI has not, and will not adversely impact groundwater, and subsequently human health and the environment. As such, the conditions of the closed SI meet the requirements for modifying the detection monitoring program. The modifications and rationale for the modifications are described in the following sections.

#### Wells Proposed to be Included in the Monitoring Program

The current detection groundwater monitoring program for the closed SI consists of eight wells (R-01R, R-07, R-08, R-08B, R-09, R-09C, R-09D and R-10). The detection program will continue to include this network of wells. Wells R-01R and R-10 are the upgradient wells. The remaining wells are downgradient point of compliance wells. The majority of the wells (R-01R, R-07, R-08, R-09, and R-10) are installed within the upper sand aquifer at depths ranging from 17 to 31 feet bgs. Wells R-08B, R-09C and R-09D are completed in the lower sand at depths ranging from 36 to 87 feet bgs.

#### Proposed Required Analytical Parameters

Analytical parameters will include the constituents of the current monitoring program listed in Table 3. These constituents include pentachlorophenol as well as the semivolatile constituents listed in 40 CFR 261 Appendix VII – Basis for listing hazardous Waste K001 Constituents. In addition, acenaphthene, fluorene, anthracene, phenanthrene, and pyrene, constituents associated with creosote will continue to be included. Groundwater samples collected during the detection monitoring program will be analyzed in accordance with Sampling and Analysis Plan provided in Appendix H.

#### Proposed Biennial Monitoring Frequency

Based on the consistent lack of detectable concentrations of the constituents of interest, the frequency of monitoring is proposed to be modified from semiannual to once every other year (biennial).

#### Statistical Evaluations

Groundwater analytical data from the downgradient wells will be compared to their estimated quantitation limits upon receipt of the data. If the detected concentrations are less than their respective Reporting Limits (RLs), no further action will be taken. If the concentration of any constituent is greater than its RL in at least one well then a statistical evaluation will be performed as described in Appendix H (Sampling and Analysis Plan).



#### Proposed Biennial Reporting

A biennial groundwater monitoring report will be submitted to MDEQ and will include information, as follows:

- Static groundwater level elevations;
- Potentiometric maps from the biennial sampling event;
- Groundwater flow rate and directions in uppermost aquifer;
- Evaluation of the groundwater surface elevations to determine whether the locations of wells are adequately placed to characterize groundwater flow direction and potential constituent migration; and,
- Comparison of background analytical data from upgradient wells R-01R and R-10 to the analytical results from downgradient wells.

#### 5.6 COMPLIANCE MONITORING PROGRAM

Compliance groundwater monitoring downgradient of the closed impoundment area is not applicable based upon the groundwater monitoring data generated to date. If future Post-Closure Care groundwater detection monitoring data indicate that Facility-related constituents are present in groundwater in the uppermost aquifer at the compliance wells at concentration limits that are specified for the Facility, then a compliance monitoring program will be developed in accordance with 40 CFR Part 270.14 and Part 264.99.



#### 6.0 CORRECTIVE ACTION

Based on nineteen years of post-closure monitoring, Beazer does not anticipate that any groundwater corrective action for the closed SI will be necessary. Should corrective action for the closed SI be dictated by future groundwater monitoring, as proposed herein, that corrective action would be selected and implemented in conjunction with any Site-wide corrective action determined to be necessary through the RFI/CMS and subsequent Site-wide corrective action evaluation. As such, corrective action is not required pursuant to 40 CFR 270.14(C).



7.0

This section discusses the activities performed in closing the former RCRA surface impoundments and the activities to be performed at the closed surface impoundments during this permit period. Sections 7.1 and 7.2 regarding closure plans and activities as well as the post-closure plan satisfies the requirements for the renewal application pursuant to 40 CFR 270.14(b)(13). Subsections 7.2.1 through 7.2.8 address specific requirements of 40 CFR 270.28, as follows:

- Section 7.2.1 presents justification for waiving the Post-Closure Preparedness and Prevention Plan requirements pursuant to 40 CFR 270.14(b)(6);
- Section 7.2.2 presents post-closure security requirements pursuant to 40 CFR 270.14(b)(4);
- Section 7.2.3 presents the post-closure inspection schedule and maintenance plan pursuant to 40 CFR 270.14(b)(5);
- Section 7.2.4 identifies that as per 40 CFR 270.14(b)(28) a Contingency Plan is not required because this is an application for a post-closure permit;
- Section 7.2.5 identifies that as per 40 CFR 270.14(b)(28) a Personnel Training Program is not required because this is an application or a post-closure permit;
- Section 7.2.6 addresses post-closure notices pursuant to 40 CFR 270.14(b)(14);
- Section 7.2.7 addresses the cost estimate and financial assurance mechanism for postclosure pursuant to 40 CFR 270.14(b)(16); and,
- Section 7.2.8 addresses the certification of completion of post-closure care pursuant to 40 CFR 264.120.

#### 7.1 CLOSURE PLANS, ACTIVITIES, AND CERTIFICATION

Closure activities for the SI were completed in October 1989. The construction Documentation Report for Surface Impoundment Closure (Keystone, 1989) was submitted to the MDEQ certifying that the SI was closed in accordance with the specifications of the Facility's closure plan. A copy of the closure certification document is included in Appendix I.

*Closure Performance Standard* - The SI was closed in a manner that: 1) minimizes the need for further maintenance, and 2) controls and minimizes or eliminates, to the extent necessary to prevent threats to human health and the environment, post-closure escape of hazardous waste or hazardous constituents to groundwater or surface water or to the atmosphere. In general, this performance standard was achieved by removing liquids, bottom sludges and visually contaminated soils, and was ensured by the construction of a low-permeability soil-bentonite cap and vegetative soil cover. In addition groundwater monitoring will continue to document any changes in groundwater quality in the vicinity of the closed SI.

*Inventory Removal, Disposal, or Decontamination of Equipment* - In 1988, all K001 sludge and visually contaminated soils were removed from the SI and shipped off-site to Chemical Waste Management, Inc. located in Emelle, Alabama for disposal. Accumulated rainwater was pumped from the impoundment to the Grenada POTW in accordance with a letter, dated May 2,



1989, from the State of Mississippi, Bureau of Pollution Control, Industrial Pretreatment Division. Dewatering activities were completed by July 18, 1989. The SI was filled with clean material and covered with a low-permeability soil-bentonite cap. Closure activities were completed by the end of October 1989.

After completion of the final soil fill lift, the dozer was decontaminated. Decontamination was accomplished by scraping, shoveling and sweeping all of the soil from the dozer. Soil removal was performed while the dozer was still within the limits of the SI. Following the removal of soil, the dozer was moved to the plant's concrete-lined equipment wash-down area. All remaining soil and dirt was removed by cleaning the dozer with steam and high pressure water. All rinseate was collected and conveyed to the wash-down area sump, which connects to the plant wastewater treatment system. As required by the approved closure plan, soil removed from the equipment was placed in the SI beneath the soil-bentonite layer.

Liquid and sludges were removed from the SI prior to construction of the cap and cover. After the sludge and visually contaminated soil were removed from the SI, the subgrade was prepared, and the SI dikes were excavated and placed in the SI as fill material. A key trench was excavated with a dozer around the perimeter of the SI. Clean soil fill material from an off-site borrow source was placed in the SI. The fill material was placed in approximately 8-inch lifts and compacted to at least 90 percent of the maximum dry density. Placement and compaction of the soil fill continued until the grades required for the soil-bentonite subbase were achieved.

Soil from a pre-approved off-site borrow source and bentonite were used to construct the clay barrier cap with a permeability less than  $1 \times 10^{-7}$  cm/sec, The soil-bentonite layer was constructed by placing and spreading the soil into 8-inch lifts over the entire SI. This process was continued until a compacted cap two feet thick was constructed. After grading the final lift, the surface of the soil-bentonite layer was rolled smooth with a steel drum roller in preparation for the installation of the filter fabric and drainage layer.

A one-foot layer of drainage material was placed over the soil-bentonite layer. The drainage layer was then covered with geotextile fabric. Finally 18 inches of cover soil was placed over the geotextile fabric overlying the drainage layer. The soil cover was seeded and mulched to establish a vegetated cover.

A drainage channel was constructed along the western side of the capped SI to convey run-off from the west area. The channel begins at the middle of the western side of the cap and extends past the southern end of the cap until it connects with the existing drainage channel that runs from west to east. Surface grading was used around the remaining portions of the capped SI to direct run-off away from the closed SI.

*Minimization of Liquid Migration* - To minimize infiltration, the cover will drain by a final slope of approximately 4 percent. Also, infiltration beyond the vegetated cover is minimized because of the underlying drainage layer and compacted soil-bentonite which allow infiltration to flow to the perimeter channels.



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**Maintenance Needs** - The closure design minimizes the required future maintenance of the closed landfill. It is intended to minimize any threats to human health and the environment because any post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated runoff, or waste products or constituents to groundwater or surface water or the atmosphere are controlled. The liquid portion of the sludge and contaminated soils were removed from the SI prior to construction of the cover. The design of the soil-bentonite cap, drainage layer, and vegetated soil layer promote positive drainage. These measures minimize the infiltration into the disposal area, and isolate the landfill from the local groundwater system. Minimum maintenance will be performed to keep the cover functional.

**Drainage and Erosion** - Free drainage of precipitation off the cover will be provided by the slope of the soil cover and topsoil layers. The drainage of infiltration by the conducting zone above the soil-bentonite cap is provided by the drainage layer. The drainage layer is constructed of sand which permits drainage to the collection channels. The potential for the drainage layer clogging is reduced by the use of a geotextile fabric atop the sand zone. Drainage is controlled by using off-site diversion ditches, on-site collection channels, surface grading and vegetation. The on-site collection channels are designed to control the on-site surface water and outlet it to existing drainage courses. The cover erosion potential was calculated using the Universal Soil Loss Equation. The final cover design was selected to minimize erosion.

Settlement, Subsidence and Displacement - The soils that comprise the cover are compacted, cohesive fill material, excluding the drainage layer. These materials are not expected to significantly consolidate under the applied cover overburden loading. Calculations estimating cap settlement were presented in the approved Closure Plan. The potential for waste consolidation is precluded because the waste sludges have been removed and replaced by compacted cohesive backfill. The potential for consolidation of the backfill is governed by the compaction criteria for placement and overburden loading. The overburden load has not to date, and is not expected to, cause significant consolidation of the compacted cohesive backfill.

**Freeze/Thaw Effects** - The soil-bentonite barrier layer is located below the average frost penetration depth reported for the geographical area. The frost penetration depth in the Grenada, Mississippi area is approximately 10 inches. The depth of cover is 3 feet over the soil-bentonite cap and reduces to a minimum of 12 inches at the edge. This provides adequate frost protection for the low-permeability cap.

#### 7.2 POST-CLOSURE PLAN

Requirements for post-closure care include inspection, maintenance, and groundwater monitoring. This Post-Closure Care Plan for the closed SI includes inspection, monitoring, and maintenance activities that have been performed for the last nineteen years under the current permit. These activities will continue to be performed in accordance with the above-cited regulations. There are approximately 11 years remaining in the original 30-year post-closure period.



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The post-closure contacts during the post-closure period are:

Facility Contact: Mr. Michael Bollinger Environmental Program Manager Beazer East, Inc. One Oxford Centre, Suite 3000 Pittsburgh, Pennsylvania 15219 (412) 208-8864

Site Contact: Mr. Vance R. Haskin, Plant Manager Koppers Inc. 1 Koppers Drive P. O. Box 160 Tie Plant, Mississippi 38960 (662) 226-4584

#### 7.2.1 Post-Closure Preparedness and Prevention

Pursuant to 40CFR 270.14(b)(6), this section provides the justification for waiving the Post-Closure Preparedness and Prevention Plan. The closed units include a constructed soil/bentonite cover over subsoils that may contain residual levels of constituents. Waste materials (*i.e.* sludge or liquid products) are not present within the units. The groundwater monitoring results have demonstrated that constituents are not present in groundwater at the closed units. There is no possibility of fire, explosion, or immediate release of hazardous waste constituents that would constitute a threat to human health or the environment. Therefore, it is recommended that a Post-Closure Preparedness and Prevention Plan not be required.

#### 7.2.2 Post-Closure Security

The SI was closed in a manner that controls and minimizes or eliminates, to the extent necessary to prevent threats to human health and the environment, post-closure escape of hazardous waste or hazardous constituents to groundwater or surface water or to the atmosphere. In general, the performance standard was achieved by removing liquids and bottom sludges and by constructing a low-permeability cap and vegetated soil cover.

During the post-closure period, signs are posted and maintained on each side of the closed SI. The warning signs read "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT". The signs are legible from a distance of 25 feet and posted at all directions of approach. Access to the closed SI is controlled by a fence located around the perimeter and an entrance gate.

In addition, the entire perimeter of the Koppers Wood Treating Plant is fenced. All Koppers Plant personnel are instructed to report any unusual activities or security incidents to a supervisor who may in turn contact the police. All visitors are instructed to report to the plant office.



#### 7.2.3 Post-Closure Inspection Schedule and Maintenance Plan

The following features are subject to inspection during the post-closure period:

- Security control devices,
- Erosion damage;
- Cover settlement, subsidence, and displacement;
- Vegetative cover condition;
- Integrity of run-on and run-off control measures;
- Cover drainage system function; and,
- Well condition.

The post-closure care of the closed SI system will be conducted by the operator during the postclosure care period.

#### Cover Inspection

The operator will conduct annual inspections of access and security systems (i.e., fences and gates). The operator will also examine the cover integrity, including vegetative cover condition, potential erosion damage and cover subsidence and run-on and run-off control system integrity. The results of the inspections and any corrective action taken will be placed on an inspection log sheet which is presented under Forms.

The annual inspection frequency is justified because the forces of nature are likely to cause relatively slow rates of change. For instance, the most likely natural force to affect change to the cover is rainfall runoff. However, even if several large, closely-spaced rainstorms were to cause accelerated erosion, the annual inspection schedule would still allow the operator sufficient time to take appropriate action.

#### Groundwater Monitoring System Inspection

The following features related to the groundwater monitoring system (all Facility wells) and benchmarks will be subject to inspection and maintenance during each biennial sampling event conducted during the post-closure care period:

- Groundwater monitoring wells;
- Monitoring well covers;
- Locks;
- Surface seals; and,
- Benchmark integrity.

Surface grout around the monitoring wells will be replaced or repaired if the significant cracks, loose or missing grout are observed. Monitoring wells will be re-surveyed if there is any noticeable change in the well such as subsidence or moved protector pipe. The monitoring wells will be kept locked when not in use. Missing or broken padlocks or caps will be replaced as needed.



The established benchmarks will be inspected, and if needed, repair work will be conducted to ensure that the proper elevation has been retained.

The result of the inspections will be placed on an inspection log which is included under Forms. The inspection log will also provide for reporting any variances noted and remedial action taken.

The operator will be responsible for maintenance activities at the closed SI. Additional labor and equipment operators may be needed occasionally and their costs have been included in the postclosure cost estimate. Maintenance activities at the closed SI will be triggered by problems/deficiencies which will be noted in the annual inspections for the cover or during the biennial groundwater monitoring inspections. Observations of the problem/deficiencies could result in initiation of one or more of the following maintenance activities (as appropriate):

- Repair of security control devices;
- Erosion damage repair;
- Correction of settlement, subsidence and displacement;
- Mowing, fertilization, and other vegetative cover maintenance;
- Repair of run-on and runoff control structures; or,
- Well repair or replacement.

#### 7.2.4 Contingency Plan

According to 40 CFR 270.28, a Contingency Plan, per the requirements of 40 CFR270.14(b)(7), is not required because this is an application for a post-closure permit.

#### 7.2.5 Post-Closure Personnel Training

According to 40 CFR 270.28, the personnel training requirements of 40 CFR270.14(b)(12) are not required because this is an application for a post-closure permit.

#### 7.2.6 Post-Closure Notices

Documentation that notices required under 270.14(b)(14) and 264.119 have been submitted are described in this section. Closure of the SI as a landfill was completed in 1989. The report titled, *Closure Construction Documentation Report for the Surface Impoundment Closure* is included as Appendix I. This report contains documentation of closure construction to verify that the SI was closed in accordance with the approved closure plan. The operator and engineer certification of closure is included in Attachments A and B of this report.

Appendix J contains a copy of a survey plat submitted to the local zoning authority which indicates the location and dimension of the closed SI. The plat was prepared and certified by a professional land surveyor and contains a note, which states the area described hereon previously contained a Waste Management Unit. The use of the described area is restricted and any future uses must not disturb the integrity of the final cover without prior approval of the State of Mississippi, Department of Natural Resources.



#### 7.2.7 Cost Estimate and Financial Assurance Mechanism for Post-Closure

In accordance with 270.14(b)(16), Table 4 summarizes the Post-Closure Cost Estimate in current dollars. The cost estimate for post-closure will be updated annually.

The current established financial assurance mechanism for post-closure care as required by 40 CFR 270.14(b)(18) and 40 CFR 264.145 is presented in Appendix K.

#### 7.2.8 Certification of Completion of Post-Closure Care

No later than 60 days after completion of the established permit period, Beazer will submit to MDEQ (by registered mail), a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan. The certification will be signed by Beazer and an independent registered professional engineer.



#### 8.0 INFORMATION REQUIREMENTS FOR SOLID WASTE MANAGEMENT UNITS

Current information regarding the solid waste management units at the Koppers Wood Treating Site is presented in the CMS Workplan (GeoTrans and Groundwater Insight, 2006). Sections from the CMS Workplan, including the RCRA Facility Assessment History, RCRA Facility Investigation History, Corrective Action History, and Conceptual Facility Model are presented below.

#### 8.1 RCRA FACILITY ASSESSMENT HISTORY

In 1987, the Environmental Protection Agency (EPA) conducted a RCRA Facility Assessment (RFA) of the Site, documented in the report, *RCRA Facility Assessment of the Koppers Industries, Inc., Grenada, Mississippi* (EPA, 1987). The RFA identified the following 13 Solid Waste Management Units (SWMUs):

SWMU 1	Oil/Water Separator
SWMU 2	Surface Impoundment
SWMU 3	Spray Irrigation Field
SWMU 4	Boiler
SWMU 5	Boiler Ash Landfill
SWMU 6	Process Cooling Reservoir
SWMU 7	Container Storage Area
SWMU 8	Drip Track Area
SWMU 9	Chemical Unloading Area
SWMU 10	Underground Storage Tank
SWMU 11	Former Wastewater Treatment System
SWMU 12	North Waste Piles
SWMU 13	South Waste Piles

#### 8.2 RCRA FACILITY INVESTIGATION HISTORY

In 1988, a Phase I RFI of each SWMU identified in the RFA was performed. This investigation included: drilling and sampling 43 borings; installing and sampling 47 groundwater monitoring wells; and, collecting and analyzing eight (8) sediment samples and four (4) surface water samples. The findings of this investigation, presented in the report, *Soil and Groundwater Investigation of Solid Waste Management Units, Koppers Industries, Inc. Plant, Grenada, Mississippi* (Keystone, 1989), were submitted to the MDEQ with recommendations proposing additional investigations of the SWMUs. This Report was accepted as the Phase I RFI Report by the EPA and MDEQ.

In December 1989, the MDEQ concurred that additional investigations were warranted. Subsequently, Beazer prepared the report, *Phase II RFI Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada Mississippi* (Keystone, 1990), to outline the scope of work and the procedures to be implemented during the additional investigations of the SWMUs.



Responses to comments by the EPA and the MDEQ on the document were incorporated as revisions titled *Supplemental Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada, Mississippi* (Keystone, 1991). In January 1991, the MDEQ and the EPA approved the Supplemental Work Plan, and Phase II RFI field activities began in May 1991. These activities included: collecting and analyzing 24 sediment samples, seven (7) surface soil samples, drilling and sampling 75 soil borings, and collecting and analyzing 25 groundwater samples and 14 surface water samples.

The Draft Phase II RCRA Facility Investigation, Koppers Industries, Inc., Grenada, Mississippi (Dames & Moore, 1992) was completed in 1992 and revised in 1994 based on EPA comments. Beazer received a second set of comments on the revised Draft Phase II RFI Report from the EPA on June 12, 1996 (EPA, 1996). Beazer submitted a response to the EPA comments on August 30, 1996 (Beazer, 1996). The RCRA Facility Investigation, Work Plan Addendum, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (work Plan Addendum) (Hydro-Search, Inc. [HSI], 1997) was prepared in accordance with that response. Supplemental field investigations were conducted during May and June 1997. These investigations included: drilling and sampling 74 soil borings; installing seven (7) geoprobe holes and collecting 14 groundwater samples from these geoprobe holes; and installing and sampling two (2) groundwater monitoring wells.

The 13 SWMUs were investigated in detail during the Phase I and Phase II RFI studies. Most of the SWMUs are located in the central area of the Site, as shown in Figure 2-2 of Appendix L. The Former Wastewater Treatment System was the focus of an Interim Measures investigation conducted in 1996 that consisted of 24 soil borings, ten (10) test pits, and a pump test. The Interim Measures investigation was documented in the report, *RCRA Interim Measure Predesign Investigation Report and Conceptual design* (HSI, 1996). Additional field work, consisting of 24 sediment transects and samples, was performed in August 1998 to support the Interim Measures.

The RCRA Permit (MSD 007 027 543) was reissued in September 1998 and four additional SWMUs were identified in the Permit, as follows:

SWMU 14	Temporary Storage of Soil
SWMU 15	Two Soil Containment Structures
SWMU 16	Old Oil/Water Separator
SWMU 17	Old South Drip Pad/Track

The RCRA Permit reissued in 1998 also specified that three of the SWMUs, initially identified in 1987, required no further action. These SWMUs are:

SWMU 2	Surface Impoundment
SWMU 3	Spray Irrigation Field
SWMU 5	Boiler Ash Landfill

Beazer submitted the Revised Final Phase II RCRA Facility Investigation Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (Revised Final RFI) (HSI GeoTrans and



Ogden, 1998) to the EPA on November 13, 1998. Additional field work was performed in December 1998 to characterize an area newly identified in the reissued RCRA Permit, consisting of 15 soil samples. In addition, 18 sediment samples were collected from the Northern Stream for additional characterization. The Work Plan to Complete Phase II RCRA Facility Investigation, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (Work Plan to Complete RFI) (HSI GeoTrans, 1999) was submitted in August 1999 to address the EPA's May 20, 1999 comments on the Revised Final RFI. The EPA approved the Work Plan to Complete RFI on March 27, 2000, and activities were implemented from June through September 2000. This sampling included: nine (9) soil sampling locations; 15 sediment samples in the Northern Stream; ten (10) vertical profile borings with groundwater sampling; installation of three (3) groundwater monitoring wells; and baseline natural attention sampling.

In March 2002, the EPA requested Beazer to characterize soils in the vicinity of an area referred to as the former "creosote hole". Beazer submitted the Work Plan to Characterize Soil in the Vicinity of the Former "Creosote Hole", Koppers Industries/Beazer East, Inc., Tie Plant, Mississippi (GeoTrans, 2002) in June 2002 to the EPA. The EPA approved this work plan on January 10, 2003, and sampling and analysis of four (4) soil samples from two (2) soil borings were performed in March 2003. A technical memorandum titled, Results of Soil Characterization, Vicinity of the Former "Creosote Hole", Koppers Industries/Beazer East, Inc., Tie Plant, Mississippi (GeoTrans, 2003) was submitted to the EPA on April 17, 2003.

Beazer submitted the Complete Phase II RCRA Facility Investigation Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (Complete RFI) (GeoTrans, AMEC, and Groundwater Insight, 2003) to the EPA on July 25, 2003, and the Addendum to the Complete RFI Risk Assessment and Sediment Toxicity Work Plan for Northern Stream Sediments (AMEC, 2005) was submitted to the EPA on January 28, 2005. On April 29, 2005, the EPA approved the Complete RFI and commented on the Sediment Toxicity Testing Work Plan. The EPA approved the Sediment Toxicity Testing Work Plan on March 30, 2006, and the Evaluation of Chemistry and Toxicity of Northern Stream Sediments was submitted to the EPA on June 30, 2006 (AMEC, 2006).

#### 8.3 CORRECTIVE ACTION HISTORY

Beazer has investigated the Site with over 200 soil borings, 47 sediment samples, 95 groundwater monitoring wells, and 18 surface water samples. Beazer has closed or removed many of the SWMUs at the Site and implemented an Interim Action to mitigate discharge of dense non-aqueous phase liquid (DNAPL) to the Central Ditch. This subsection provides a brief description of the Site SWMUs, summarizes previous investigations at each SWMU, and reviews corrective actions taken at each SWMU. A complete characterization of the investigation results at each SWMU is provided in the Complete RFI. Consistent with previous discussions of the Site, the SWMU discussion is subdivided into the three areas of the Site: the northern area, the central area, and the southern area. Additionally, this subsection includes a description of the nature and extent of Site constituents in groundwater.



#### 8.3.1 Northern Area

The Northern area of the Site is relatively unimpacted and features wood storage areas, the former spray irrigation field (SWMU 3), the north waste piles (SWMU 12), and the Northern Stream, as shown in Figure 2-2 of Appendix L. The town of Tie Plant adjoins the property boundary to the northeast, and the Illinois Central Railroad forms the western boundary. The Northern Stream at the northern portion of the Site flows northeast towards the Batupan Bogue.

#### SWMU 3 – Spray Irrigation Field

The Former Spray Irrigation Field (SWMU 3) was in use from at least 1975 until mid-1988 and was closed in 1991, in accordance with a closure plan approved by the EPA in January 1991. The RCRA permit reissued in 1998 specified that SWMU 3 required no further action.

#### SWMU 12 – North Waste Piles

The North Waste Piles (SWMU 12) consisted of construction debris, treated and untreated scrap wood, railroad iron, scrap metal, rubber tires, and other inert material. Six (6) soil samples were collected in 1991 to characterize potential soil impacts at SWMU 12.

#### Northern Stream

The Northern Stream is a small local drainage that crosses the north edge of the Site. 37 sediment samples have been collected from the Northern Stream in 1991, 1998, 2000, and 2006, to characterize potential Site impacts to the stream sediments. Six (6) surface water samples were collected from the Northern Stream in 1991 to assess potential Site impacts to the stream.

#### 8.3.2 Central Area

The Central area of the Site comprises the main wood-treating facilities and includes 11 SWMUs: the oil/water separator (SWMU 1); the closed RCRA surface impoundment (SWMU 2); the boiler (SWMU 4); the process cooling reservoir (SWMU 6); the container storage area (SWMU 7); the drip track area (SWMU 8); the chemical unloading area (SWMU 9); the underground storage tank (SWMU 10); the former wastewater treatment system (SWMU 11); the old oil/water separator (SWMU 16); and the old south drip pad/track (SWMU 17). The Central Ditch in the central area of the Site flows northeast towards the Batupan Bogue.

#### SWMU 2 – Closed RCRA Surface Impoundment

SWMU 2 was in use from at least 1975 until mid-1988. This former surface impoundment was formally closed under RCRA in 1988. The State of Mississippi issued Hazardous Waste Management permit No. 88-543-01 on June 28, 1988, as Amended in February 1990 and reissued in November 1999, for post-closure care of the Surface Impoundment. The Mississippi



Department of Natural Resources (MDNR) regulates the post-closure care of this unit, and the RCRA Permit reissued in 1998 specifies that SWMU 2 required no further action.

#### SWMUs 1, 4, 9, and 10 – Central Process Area

The Central Process Area is comprised of pressurized cylinders, work and storage tanks, and includes SWMUs 1, 4, 9, and 10. The Central Process Area is within the active wood-treating plant. The soils in the Central Process Area have been characterized by 39 soil samples collected in 1991, 18 surface soil samples collected in 1977 and four (4) soil samples collected in 2003.

#### SWMU 6 - Process Cooling Reservoir

The soils in the Process Cooling Reservoir (SWMU 6) have been characterized by 13 soil samples collected in 1991. Two (2) sediment samples and two (2) surface water samples were collected in 1991 from the Process Cooling Reservoir for characterization purposes.

#### SWMU 7 – Container Storage Area

The Container Storage Area (SWMU 7) stores containers for less than 90 days. Two (2) soil samples were collected in 1991 and 12 surface soil samples were collected in 1997 to characterize potential Site constituents in soil around the Container Storage Area.

#### SWMU 8 – Drip Track Area

The drip tracks (SWMU 8) were unlined until 1991 and preservatives from newly treated wood dripped onto Site soil. In 1991, a concrete catchment system was installed which included lining and berming several hundred feet of drip tracks. Approximately 3,200 cubic yards of soil materials were removed during the drip track reconstruction. These soil materials were placed in engineered containment structures, subsequently designated the Two Soil Containment Structures (SWMU 15). Soils in the Drip track Area (SWMU 8) were characterized with 49 soil samples collected in 1991 and 12 surface soil samples collected in 1997.

#### SWMUs 11 and 16 - Former Wastewater Treatment System and Old Oil/Water Separator

Soils in the Former Wastewater Treatment System (SWMU 11) were assessed with 33 soil samples collected in 1991. The Former Wastewater Treatment System (SWMU 11) was the focus of an Interim Measures investigation conducted in 1996, and Interim Measures Action conducted during 1999 to 2000. The Former Wastewater Treatment System included two (2) former impoundments. A former wood disposal area was located just west of the Former Wastewater Treatment System. The old Oil/Water Separator (SWMU 16) was located west of, and adjacent to, the former wood disposal area. The piece of equipment was taken out of service, cleaned, and backfilled in 1988.

The SWMU 11 Interim Measures (IM) were implemented between April 1999 and May 2000. Work was performed in accordance with the *Interim Measures Work Plan, SWMU 11* (HSI



GeoTrans, 1999b). Interim Measures at the Former Wastewater Treatment System (SWMU 11) were designed to mitigate further discharge of DNAPL into the Central Ditch, and to eliminate potential exposure pathways to wood-treating compounds in the Central Ditch sediment. To accomplish these two objectives, the IM activities included:

- Excavating approximately 30,000 cubic yards of impacted sediment from the Central Ditch;
- Re-lining the ditch with a geosynthetic clay liner, clean import material, and bank armor;
- Consolidating the excavated sediment in the Former Wastewater Treatment System and former wood disposal area, and installing a low-permeability cover with a geosynthetic clay liner over the excavated sediment to reduce the groundwater hydraulic gradient toward the Central Ditch;
- Installing a subsurface vertical containment barrier along the north bank of the Central Ditch, an under-drain beneath the re-lined ditch, and DNAPL recovery wells behind the containment barrier, to contain and collect DNAPL and mitigate continuing seeps into the Central Ditch; and
- Performing ongoing DNAPL collection.

The results of the IM activities were presented in the Interim Measures SWMU11 Documentation Report (HSI GeoTrans, 2000a). the EPA approved the Interim Measures SWMU11 Document Report on October 16, 2003.

#### SWMU 17 – Old South Drip Pad/Tracks

The Old South Drip Pad/Tracks were identified as SWMU 17 in the reissued 1998 RCRA Permit as an area where preservatives from newly treated wood dripped onto Site soil. Soils at SWMU 17 were investigated with 19 soil samples collected in 1991, 1998 and 2000.

#### Central Area Surface Soil PCDD/PCDF Sampling

Thirty-two (32) surface soils in the central area were sampled for PCDDs/PCDFs in areas of documented pentachlorophenol use, due to association between PCDDs/PCDFs and impurities in technical grade pentachlorophenol.

#### **Central Ditch**

The Central Ditch sediments were addressed by the SWMU 11 Interim Measures implemented from April 1999 through May 2000. On-Site sediment in the Central Ditch was excavated from beneath the upstream railroad bridge to the east property boundary. A minimum of three (3) feet of visually impacted sediment was removed from the ditch bottom; in some areas, up to five (5) feet of sediment were removed. Approximately 5,000 cubic yards of sediment were removed



from the on-Site portion of the Central Ditch. The off-Site Central Ditch excavation consisted of removing up to five (5) feet of visually impacted sediment from the ditch bottom and from buried stream channels, from the east property boundary to the Batupan Bogue. Following excavation, a minimum of three (3) feet of clean backfill material was placed in the off-Site Central Ditch bottom. Approximately 24,200 cubic yards of sediment were removed from the off-Site portion of the Central Ditch. The sediment was placed in a sediment disposal area north of the Central Ditch.

A portion of the on-Site Central Ditch was relined, and a DNAPL recovery system was installed. Nine (9) under-drain sumps were installed beneath the on-Site portion of the Central Ditch, and clean import material was emplaced in the remediated Central Ditch. In addition, a sealed-joint, sheet pile cutoff wall was installed along the north bank of the on-Site Central Ditch to inhibit DNAPL migration to the Central Ditch, and five (5) DNAPL recovery wells were installed along the north side of the cutoff wall.

The design and implementation of the Interim Measures were based upon historical analytical data for 13 sediment samples collected in 1991 and 31 sediment samples collected in 1998. In addition, six (6) surface water samples were collected from the Central Ditch in 1991.

#### 8.3.3 Southern Area

The southern area of the Site is relatively unimpacted and features wood storage areas, the boiler ash landfill (SWMU 5), the south waste piles (SWMU 13), the temporary storage of soils (SWMU 14), and two (2) soil containment structures (SWMU 15). Cultivated fields/woodlands adjoin the property boundary to the east, and the Illinois Central Railroad forms the western boundary. An air conditioning manufacturing facility is located west of the railroad tracks at the southern tip of the Site.

#### SWMU 5 – Boiler Ash Landfill

The Boiler Ash Landfill (SWMU 5) was closed pursuant to a negotiated Order with the MDEQ and documented in the reports, *Final Report, Groundwater Quality Assessment, Boiler Ash Disposal Area* (Chester Environmental, 1993) and *Supplemental Investigation Addendum to Boiler Ash Landfill Groundwater Quality Assessment* (Dames & Moore, 1994). The RCRA Permit reissued in 1998 specified that SWMU 5 required no further action.

#### SWMU 13 – South Waste Piles

The South Waste Piles (SWMU 13) consisted of untreated wood and empty railroad spike drums. The south waste piles were removed prior to 1989. 13 soil samples were collected in 1991 around SWMU 13 to characterize potential Site impacts.



#### SWMUs 14 and 15 – Temporary Storage of Soil and Two Containment Structures

The Temporary Storage of Soil (SWMU 14) formerly contained soil excavated from around the tank process area. The two Soil Containment Structures (SWMU 15), formerly contained soil excavated from the drip track area (SWMU 8). SWMUs 14 and 15 were removed in the fall of 1996 and documented to the EPA and MDEQ (Fluor Daniel GTI, 1997).

#### 8.3.4 Groundwater

The nature and extent of Site constituents in groundwater have been characterized using groundwater analytical results from the most recent groundwater data at and downgradient of the Site. Groundwater beneath the Site is impacted by constituents including pentachlorophenol, benzene, and PAHs. The major groundwater impacts are beneath the Central Process Area, Former Waste Treatment System, the Drip Track Area, and the Old South Drip Pad/Track; these impacts attenuate within a short distance of these areas, as described below.

Selected groundwater wells completed in the Upper and Lower Sand Zones were sampled in 1997 and 2000 to further characterize the horizontal and vertical extent of Site constituents in groundwater. Figures 2-3 and 2-4 in Appendix L present the distribution of pentachlorophenol and benzene, respectively, in the Upper Sand Zone. The PAHs detected in groundwater at the Site consist predominantly of naphthalene, a two-ring compound with a relatively light molecular weight (compared to other PAH compounds) that degrades relatively easily. Figure 2-5 in Appendix L presents the distribution of naphthalene and total PAHs in the Upper Sand Zone.

Figures 2-6 and 2-7 in Appendix L present the distribution of pentachlorophenol and benzene, respectively, in the Lower Sand Zone. Figure 2-8 of Appendix L presents the distribution of naphthalene and total PAHs in the Lower Sand Zone. Figures 2-3 and 2-8 represent the most recent constituent data.

The contours depicted in Figures 2-3 through 2-8 of Appendix L were generated using the analytical data from the groundwater samples collected in 1997 and 2000. The historical data (pre-1977) posted on the Figures are presented for information purposes.

#### **Upper Sand Zone**

Pentachlorophenol is present in the Upper Sand Zone groundwater (Figure 2-3 of Appendix L) mainly under the Central Process Area and extends approximately 800 feet east of the Site boundary.

The benzene footprint in the Upper Sand Zone groundwater, shown in Figure 2-4 of Appendix L, is similar in shape and size to that of pentachlorophenol and is mainly located under the Central Process Area.

The naphthalene and total PAH concentrations are also centered under the central area as shown in Figure 2-5 of Appendix L (the Central Process Area, former Wastewater Treatment System, Drip Track Area, and Old South Drip Pad/Track). The isoconcentration lines for the naphthalene concentrations are the same isoconcentration lines for the total PAH concentrations. The naphthalene concentrations comprise approximately 95% of the total PAH concentrations.

The constituents in the Upper Sand Zone groundwater are attributed to Site operations conducted mainly in the Central Process Area, former Wastewater Treatment System, the Drip Track Area, and in the Old South Drip Pad/Track. The relatively small area of pentachlorophenol, benzene, and PAH concentrations, which are mainly contained within the Site boundary, support this conclusion.

#### Lower Sand Zone

As shown in Figure 2-6 of Appendix L, the pentachlorophenol in the Lower Sand Zone groundwater is present under the Central Process Area and extends approximately 250 feet east of the Site boundary, parallel to and bounded on the south by the Central Ditch.

The benzene footprint in the Lower Sand Zone (Figure 2-7 of Appendix L) is similar to the benzene footprint in the Upper Sand Zone; benzene is mainly located under the Central Process Area and concentrations above the MCL extend downgradient to the east. Benzene concentrations in the Lower Sand Zone have remained relatively constant over the 1991 to 2000 time period. Benzene concentrations are generally higher in the Lower Sand Zone compared to the Upper Sand Zone, with the area of highest concentration being further east by approximately 200 to 300 feet in the Lower Sand Zone.

The extent of the naphthalene and total PAHs in the Lower Sand Zone groundwater (Figure 2-8 of Appendix L) is similar to the distribution of naphthalene and total PAHs in the Upper Sand Zone and is primarily located under the Central Process Area, the former Wastewater Treatment System, the Old South Drip Pad/track area, and just east of the Drip Track Area. The isoconcentration lines for the naphthalene concentrations are the same isoconcentration lines for the total PAH concentrations. This reflects the fact that the naphthalene concentrations comprise approximately 95% of the total PAH concentrations.

Field activities performed during the summer of 2000 refined the understanding of the lateral and vertical extent of Site constituents in the Lower Sand zone. The lateral extent of Site constituents in the Lower Sand Zone has been defined with the results of the temporary vertical boring sampling. The vertical extent of Site constituents within the Lower Sand Zone has been characterized with the temporary vertical borings that were sampled at approximately 20-ft. intervals until the Lower Confining Zone was encountered. The 2000 investigation indicated that the Lower Sand Zone ranged from 90- to 165-feet thick. Site constituents are almost exclusively detected in the upper 35 to 45 feet of the Lower Sand Zone; this is the portion that is monitored by Site wells.

The distributions of pentachlorophenol, benzene, and PAH in the Upper and Lower Sand Zones reflect the limited downgradient migration of these constituents from their sources. Each



constituent exhibits a substantial reduction in concentration within a relatively short distance from the source areas.

#### 8.4 CONCEPTUAL FACILITY MODEL

The conceptual Facility model is based on the Site hydrogeology; the constituent distribution at the Site, and the constituent migration pathways.

#### 8.4.1 Site Hydrogeology

The Site is located on a terrace approximately 10 to 15 feet above the floodplain of the Batupan Bogue. The subsurface stratigraphy is defined by six generalized lithological zones, as described below, from the shallowest to the deepest:

Fill Zone	Thickness ranges from 0 to 10 feet.
Upper Silt Zone	Thickness ranges from 5 to 8 feet.
Upper Sand Zone	Thickness ranges from 5 to 15 feet.
Upper Low-Permeability Zone	Thickness ranges from 0 to 18 feet.
Lower Sand Zone	Thickness ranges from 90 to 165 feet.
Lower Confining Zone	Thickness is at least 150 feet.

The channel fill sand beneath the floodplain of Batupan Bogue is comprised of discontinuous lenses of silt, fine sand, and silty clay eroded from the surrounding hills. Above these materials is a layer of silt deposited as wind-blown dust, known as loess. The channel fill sand correlates with the Upper Silt and Sand Zones.

The channel fill sand systems are in contact with the underlying Basic City Shale and Meridian Sand, where these formations were cut by the scour trench system. The Basic City Shale consists of silt and clay, with some fine sand, and correlates with the Upper Low-Permeability Zone at the Site. The Meridian Sand is comprised primarily of clean, fine, quartz sand in the vicinity of the Site and correlates with the Lower Sand Zone.

The Upper Silt and Sand zones are partially saturated and include areas of perched water on clay or silt lenses or within former impoundments. The hydraulic conductivity of these zones is approximately eight (8) feet per day (ft/day). These zones are unconfined or semi-confined, and groundwater flow is generally northeastward toward the Batupan Bogue. Site topography, however, affects local flow directions. For example, in the vicinity of the Central Ditch, shallow groundwater flows toward the Central Ditch.

The Upper Low-Permeability Zone is expected to have hydraulic conductivities that are several orders of magnitude lower than the Upper Silt and Sand Zones. The Upper Low-Permeability Zone acts as a local partial confining unit above the Lower Sand Zone. The Lower Sand Zone behaves as a confined aquifer and has an estimated average hydraulic conductivity of 36 ft/day. Groundwater flows north and northeastward across the Site in this zone and is unaffected by



surface topography. The Lower Confining Zone is at least 150 feet thick and hydraulically separates the Lower Sand Zone from the deeper regional aquifers of the Middle and Lower Wilcox Group.

#### 8.4.2 Constituent Distribution

Potential source areas are concentrated in the central area of the Site at the Central Process Area, the Drip Tracks, the Old South Drip Pad/Track Area, and the Former Wastewater Treatment System. Soil and groundwater impacts have been observed below these areas, while DNAPL has been observed mainly below the Former Wastewater Treatment System and Central Process Area. The constituents of potential concern at the Site from investigation activities include: pentachlorophenol; benzene, PAHs; and PCDDs/PCDFs.

PCDDs/PCDFs are byproducts or impurities present in pentachlorophenol. Scientific literature documents that PCDDs/PCDFs strongly adsorb to organic soil particles because of their high lipophilicity and low water solubility. PCDDs/PCDFs are considered insoluble in water with a solubility less than 1 ug/L and are considered immobile in soil due to their  $K_{OC}$  values that exceed  $1\times10^6$  (Montgomery and Welkom, 1996). PCDDs/PCDFs exhibit little potential for significant leaching or volatilization once sorbed to particulate matter. The literature also documents the low mobility of the dissolved PCDD/PCDF compounds in groundwater systems. The groundwater wells with pentachlorophenol concentrations that exceed 1,000 to 2,000 micrograms per liter (ug/L) are located in the creosote DNAPL area. Groundwater samples from these wells contain creosote NAPL emulsion; and a PCDD/PCDF analysis of this water will not provide a quantification of dissolved-phase constituents, but rather will be an assessment of the creosote DNAPL emulsion. Therefore, PCDDs/PCDFs are not considered to be a dissolved-phase constituent in groundwater.

#### 8.4.3 Migration Pathways

Historical Site activities have potentially resulted in impacts to surface and subsurface soil, groundwater, surface water, and stream sediment. Figure 2-9 of Appendix L is a block diagram of the surface and subsurface conditions in the Central Plant Area of the Site, as viewed toward the north. The figure encompasses part of the Central Process Area, the Old South Drip Pad/Track, the Former Wastewater Treatment System, and the Central Ditch with its discharge to Batupan Bogue. This figure also illustrates the subsurface conditions with section cuts through and along the Central Ditch. The section cuts show the six lithologic zones and the apparent migration of DNAPL into the Upper Silt and Sand Zones with some accumulation above the Upper Low-Permeability Zone. An approximation of dissolved phase migration is shown in the Upper Sand Zone.

DNAPL has been detected primarily below the Former Wastewater Treatment System and Central Process Area; fewer observations have been noted in the Drip Track Area and in the Old South Drip Pad/Track. In the Former Wastewater Treatment System area, DNAPL has been observed in the Upper Sand and Upper Low-Permeability Zones in perched, thin, coarse layers above finer-grained silt- and clay-rich horizons. The Upper Low-Permeability Zone impedes the



downward migration of DNAPL. The migration of DNAPL beneath the Former Wastewater Treatment System is further impeded by: the vertical, sealed-joint, steel sheet pile cutoff wall immediately north of the Central Ditch, and the DNAPL recovery wells and the DNAPL underlain system in the Ditch, all installed as part of the IM.

Constituents in DNAPL below the Former Wastewater Treatment System and Central Process Area dissolve slowly in groundwater. Most of the constituents comprising the DNAPL are very insoluble.

#### 8.4.4 Natural Attenuation Summary and Conceptual Model

An evaluation of Monitored Natural Attenuation is presented in the CMS Workplan (GeoTrans and Groundwater Insight, 2006). The natural attenuation summary and conceptual model from Section 4.5 of the CMS Workplan are presented in this section.

Natural attenuation evidence evaluated to date indicates that the current distribution of dissolved Site constituents in groundwater is stable. Since the risk associated with the current configuration is negligible, monitored natural attenuation (MNA) is strongly indicated as an effective remedy for constituents in groundwater. Work conducted to date has not provided an estimate of the time required for the plume to diminish. For practical purposes, the most effective means of making this determination is through an effective long term monitoring program.

Redox and electron acceptor trends at the Site are consistent with constituent biodegradation. Dissolved oxygen concentrations were typically elevated in the Upper Sand Zone relative to the Lower Sand Zone, because oxygen is replenished more effectively to the Upper Sand Zone. This may contribute to the lesser extent of most constituents in the Upper Sand Zone.

An inversely proportional trend was observed between dissolved oxygen and constituents, indicative of oxygen depletion due to aerobic constituent biodegradation. Site conditions also appear to be favorable for natural utilization of nitrate as an electron acceptor, although the supply of nitrate in background groundwater is relatively low. There is also evidence for the utilization of other major electron acceptors (i.e., iron (III), manganese (IV), sulfate and carbon dioxide) in biodegradation reactions at the Site. Sulfate may be of particular importance in this regard.

Constituent biodegradation is generally not nutrient-limited, with the widespread presence of nitrogen species (either nitrate or ammonium), and orthophosphate detected in groundwater at most locations. Results for dissolved carbon dioxide are consistent with constituent biodegradation, and indicate that at least a portion of this biodegradation proceeds to complete mineralization. Microbial data show the presence of microbes capable of metabolizing pentachlorophenol. They also provide evidence of greater microbial biomass in groundwater containing Site constituents, consistent with microbial growth using constituents as a carbon source.



Simulation results from the analytical model BIOSCREEN indicate that the current distributions of naphthalene, benzene and pentachlorophenol are influenced and limited by biodegradation. Results suggest that even in the absence of constituent biodegradation, plume concentrations should be stable in the zone within 1000 feet of the constituent source area. When biodegradation is added to the simulations, constituent plumes stabilize in even shorter distances and less time.

The BIOSCREEN simulations conservatively assume that the source zones will emit constituents indefinitely. Consequently, they do not provide an estimate of the time required for the plume to recede. For practical purposes, the most effective means of determining the status and rate of plume shrinkage is through an effective long term monitoring program. This approach is technically defensible because there is negligible risk associated with the current plume configuration, and the evaluation indicates that the current configuration is stable. A conceptual diagram summarizing the trends described above is proved in Figure 4-24 of Appendix L.

#### 8.4.5 Summary and Conclusions of the Site-specific Risk Assessment

This presentation of the summary and conclusions of the Site-specific Risk Assessment is excerpted from Section 3.1 of the CMS Workplan (GeoTrans and Groundwater Insight, 2006).

A human and ecological risk assessment was performed for the Site, the results were included in the Complete RFI (GeoTrans, AMEC, and Groundwater Insight, 2003). The human health risk assessment evaluated potential risks to receptors from potential exposure to constituents in soil, surface water, sediment, and groundwater at the Site. Hazard indices associated with all the potential exposure to off-site and on-site media and exposure areas (with the exception of hypothetical future use of off-site groundwater as drinking water at certain locations) are less than 1, indicating that no adverse noncarcinogenic health effects are expected to occur. Hazard indices associated with the hypothetical future use of off-site groundwater as drinking water are less than 1 at three off-site monitoring well locations and exceeded 1 at one off-site and three boundary area monitoring well locations. The three boundary area wells are located near the eastern Site boundary in the central portion of the Site, near and north of the Central Ditch. The off-site well is located east of the boundary wells in the central portion of the Site, near and north of the Central Ditch. Estimated potential carcinogenic risks associated with the all potential exposure to off-site and on-site media and exposure areas (with the exception of hypothetical future use of off-site groundwater as drinking water), are within or below the EPA's target risk range  $(1 \times 10^{-6} \text{ to } 1 \times 10^{-4})$ . Potential risks associated with the hypothetical future use of off-site groundwater as drinking water are within or below the EPA's target risk range at one boundary monitoring well and at four off-site monitoring well locations and exceeded EPA's target risk range at two boundary monitoring well locations. These boundary area wells are located near the eastern Site boundary in the central portion of the Site, near and north of the Central Ditch. It should be noted that no current exposure to off-site groundwater exists, and no potential future exposure to off-site groundwater is expected to occur, because the site and surrounding area are supplied with municipal drinking water.

The ecological evaluation concluded that potential risks to terrestrial receptors on-site are



unlikely because the active wood-treating operations preclude the existence of important ecological habitat in operational portions of the Site.

The Interim Measures eliminated any potential current or potential future risk from exposure to sediment and surface water in the Central Ditch, both on-site and downstream. Potential effects to benthic macroinvertebrates, but not other wildlife using the Northern Stream, was identified to have the potential to occur in a limited portion of the on-site area of the Northern Stream, but are not expected to occur downstream of the Site. Additional sediment toxicity testing for the Northern Stream was performed in 2006. The results of the sediment toxicity testing confirmed that the benthic macroinvertebrate community in the Northern Stream is not adversely affected.

The Environmental Indicators of both Current Human Exposures Under Control (CA 725) and Migration of Contaminated Groundwater Under Control (CA 750) received "YE" designations from the EPA in September 2005, documenting that these Site indicators are under control.

Based on the implementation of the Site corrective actions (including SWMU closures, SWMU 11 Interim Measures, and the Soil/Waste Pile closure actions) and the results of the Site-specific risk assessment, the risks associated with exposure to Site soil, sediment and surface water are within the EPA's acceptable range for all current and reasonable future use scenarios. The only remaining potentially unacceptable risks that remain at the Site are associated with potential exposure to groundwater within certain portions of the Site and limited off-site areas adjacent to the central portion of the Site. It should be noted that no current exposure to off-site groundwater is expected to occur, because the Site and surrounding area are supplied with municipal drinking water.

#### 8.4.6 Corrective Action Objectives

The Corrective Action Objectives (CAOs) for the Site were presented in the Complete RFI (GeoTrans, AMEC, and Groundwater Insight, 2003) and were again summarized in Section 3.2 of the CMS Workplan (GeoTrans and Groundwater Insight, 2006) with a discussion of the current status of achieving the CAOs. This summary is repeated in this section.

Soil:

1. Mitigate potential unacceptable risk due to direct contact exposure to Site surface soil.

Under the current and reasonable future use conditions for the Site, the risks associated with potential exposure to soil are within the EPA's acceptable range. The hazard indices associated with potential exposure to these constituents are less than 1 and the estimated potential carcinogenic risks associated with exposure to these constituents are within or below the EPA's target risk range. To ensure conditions remain protective of human health and the environment, Institutional Controls will be prepared and recorded to restrict the land use of the Site to industrial.

#### Groundwater:

1 Control potential unacceptable exposures to on-site groundwater through institutional



controls; and,

2 Mitigate future potential exposure to groundwater constituents that exceed MCLs or acceptable risk levels.

The installation of the barrier wall immediately upgradient of the on-site Central Ditch as part of the IM partially contains impacts in the Upper Sand Zone groundwater. The evaluation of natural attenuation at the Site, presented in the Complete RFI and also in Section 8.4.4 of this Permit Renewal Application, demonstrates that the groundwater plumes in the Upper and Lower Sand Zones are stable. To ensure the conditions identified in the risk assessment remain valid, Institutional Controls will be prepared and recorded to prevent use of certain portions of groundwater on-site (above the Lower Confining Zone) or within the footprint of the off-site groundwater plume.

#### 8.4.7 Natural Attenuation Work Plan

This section presents the Natural Attenuation Work Plan originally presented in Section 4.6 of the CMS Work Plan (GeoTrans and Groundwater Insight, 2006).

The natural attenuation work conducted to date at the Site has compiled a considerable body of evidence supporting the feasibility of MNA. This existing evidence will be augmented with an additional CMS data collection program. The program is summarized in Table 4-7 of Appendix L, and sampling locations are shown in Figure 4-25 of Appendix L. Through this program, an additional sample set will be collected at wells located in the following key locations: 1) at the plume front; 2) within the plume; 3) side-gradient of the plume; 4) within the source area; and, 5) upgradient of the plume. At each of these locations, samples will be collected in both the Upper Sand Zone and the Lower Sand Zone.

Samples will be analyzed for a range of laboratory analytical parameters that have been shown to be useful in evaluating natural attenuation. These parameters will include the following Site constituents: PAHs, BTEX, and pentachlorophenol. They will also include the geochemical parameters: nitrate, iron, manganese, sulfate and methane. Field parameters including ORP, DO and water levels will also be collected. This program will consist of one sample set, however, a second set will be collected if the initial are not consistent with existing data and conclusions. The CMS Report will provide a comparison of the additional data against all previous information from the sampled wells.

Provided that the results are consistent with previous information, a Long Term Natural Attenuation Monitoring Program will be initiated at the Site. The locations, parameters and frequencies for this monitoring program are summarized in Table 4-7 of Appendix L. The Long Term Natural Attenuation Monitoring Program will be confirmed in the CMS Report, and is designed to provide the following:

 efficient and early detection of any future expansion in the extent of dissolved phase constituents;



- confirmation of the ongoing effectiveness of dissolved phase constituent biodegradation; and
- ongoing evaluation of the rate of source depletion.

The Long Term Natural Attenuation Monitoring Program has been developed with consideration of the following Site components:

- vertical constituent distributions;
- lateral extent of constituents;
- trends in constituent indicators parameters; and
- potential for additional constituent migration.

The CMS Report will provide a description of contingency actions, to be initiated if future monitoring results show that the plume is advancing. The technical basis for identifying plume advancement will also be provided.



#### 9.0 **REFERENCES**

AMEC, 2005, Addendum to the Complete RFI Risk Assessment and Sediment Toxicity Work Plan for Northern Stream Sediments, January 28, 2005.

AMEC, 2006, Evaluation of Chemistry and Toxicity of Northern Stream Sediments, June 30, 2006.

AWD Technologies, Inc. (AWD), 1994. Interim Measures Work Plan, Koppers Industries, Inc., Grenada, Mississippi. Prepared for Beazer East, Inc., Pittsburgh, PA, June 6, 1994.

Chester Environmental, 1993, Final Report, Groundwater Quality Assessment, Boiler Ash Disposal Area, 1993.

Dames & Moore, 1994, Supplemental Investigation Addendum to Boiler Ash Landfill Groundwater Quality Assessment, 1994.

Fluor Daniel GTI, 1997, Post-Closure Renewal Application, Koppers Industries, Inc., Grenada, Mississippi Facility, Prepared for Beazer East, Inc., December 1997.

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GeoTrans, 2003, Results of Soil Characterization, Vicinity of Former "Creosote Hole", Koppers Industries/Beazer East, Inc., Tie Plant, Mississippi, April 17, 2003.

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GeoTrans and Groundwater Insight, 2006. Revised Corrective Measures Study Workplan, Koppers Inc. Grenada Facility, Grenada, Mississippi. Prepared for Beazer East, Inc., December 2006.

HIS, GeoTrans, and Ogden, 1998, Revised Final Phase II RCRA Facility Investigation Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi, 1998.

HSI and GeoTrans, 1999, Work Plan to Complete Phase II RCRA Facility Investigation Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi, 1999.

HSI and GeoTrans, 2000, Interim Measures SWMU 11 Documentation Report, 2000.

Hydro-Search, Inc., 1996, RCRA Interim Measure Predesign Investigation Report and Conceptual Design, 1996.



Hydro-Search, Inc., 1997, RCRA Facility Investigation, Work Plan Addendum, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi, 1997.

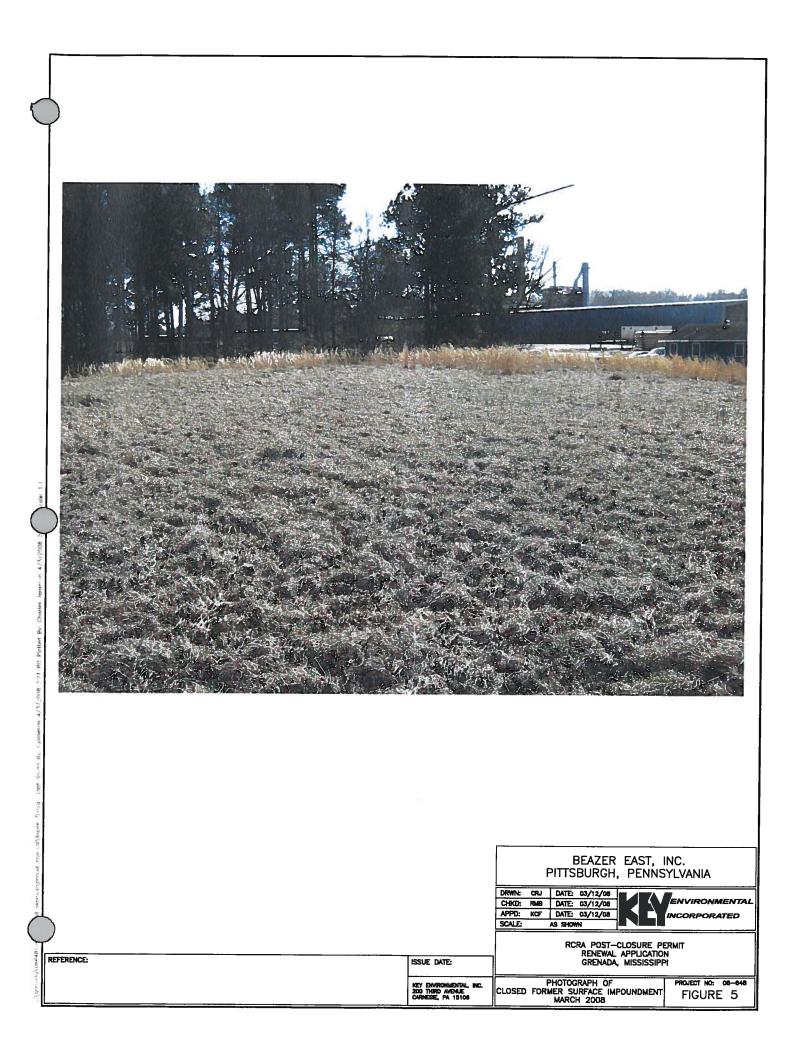
Keystone, 1989, Soil and Groundwater Investigation of Solid Waste Management Units, Koppers Industries, Inc. Plant, Grenada, Mississippi, 1989.

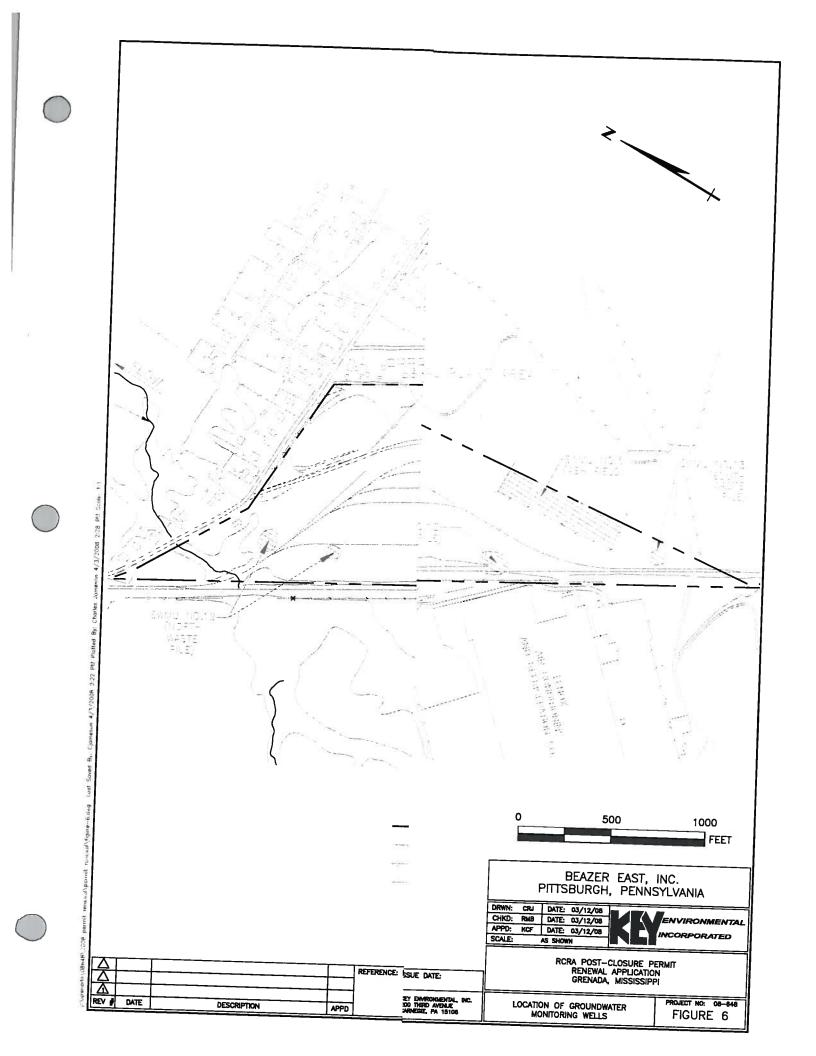
Keystone, 1990, Phase II RFI Work Plan, RCRA Facility Investigation, Koppers Industries, Inc., Grenada, Mississippi, 1990.

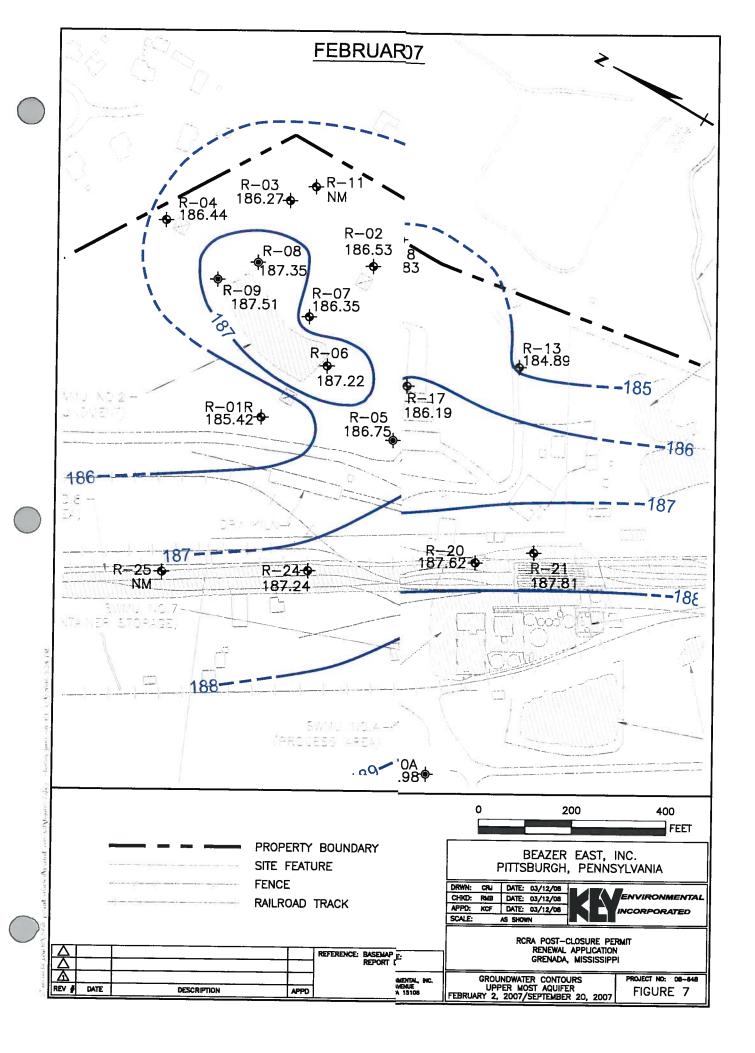
Keystone, 1991, Supplemental Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada, Mississippi, 1991.

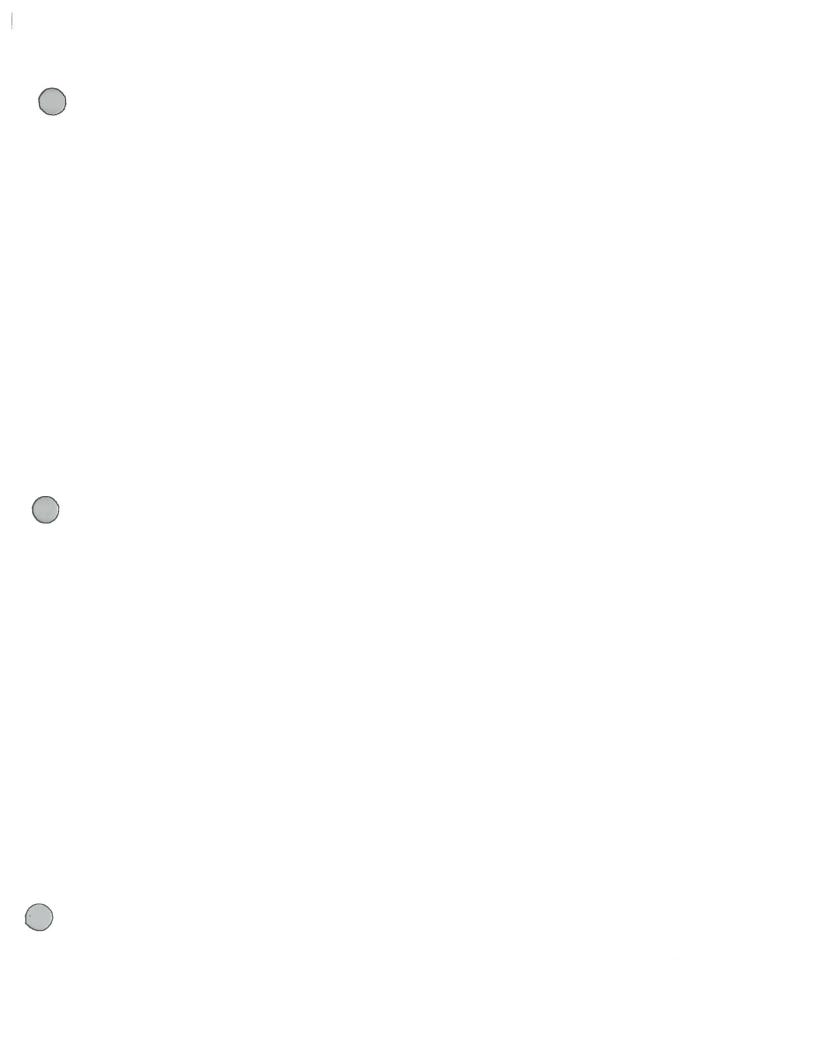
ThermoRetec, revised 1999, Post-Closure Renewal Application, Koppers Industries, Inc., Grenada, Mississippi Facility, Prepared for Beazer East, Inc., revised March 1999.











# FORMS



# Koppers Inc. Grenada Wood Treating Facility Grenada, Mississippi Closed Surface Impoundment Inspection Report

		21.1. aug - 1		 	 	 	
	Benchmark Integrity						
	Well Casing						
	Well Locks						
t Inspectior	Surface Variation						
Impoundment Inspection	Grass Cover						
	Tampering						
	Warter Ponding						
	Erosion						
	Warning Signs						
spection	Fence Lock						
Security Inspection	Fence Gate						
	Fence Perimeter						
Date of	Inspection						
Inspected Rv							





### **EQUIPMENT CALIBRATION FORM**

INSTRUMENT:

SERIAL NO.:

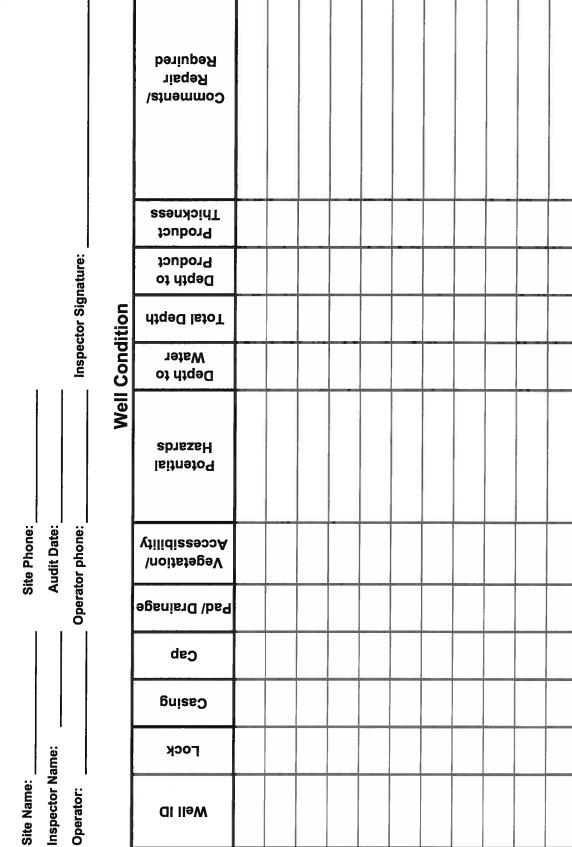
DATE	TIME	PARAMETER		CALIBRATION READING	CALIBRATION RECORDED BY
		pH S.U.	4.00 S.U.	S.U.	
			7.00 S.U.	S.U.	
			10.00 S.U.	S.U.	
		Specific Conductivity(u	mhos/cm)	umhos/cm	
		Temperature (°	C)	°C	

INSTRUMENT:

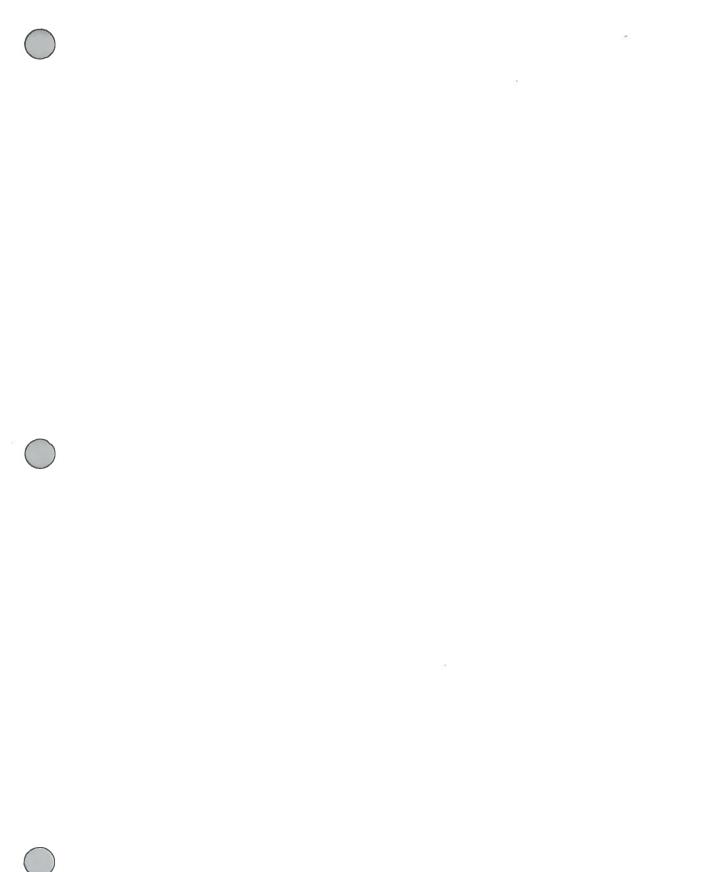
SERIAL NO.:

	DATE	TIME	PARAMETER		CALIBRATION READING	CALIBRATION RECORDED BY
- [				4.00 S.U.	S.U.	
			pH S.U.	7.00 S.U.	S.U.	
				10.00 S.U.	S.U.	
			Specific Conductivity(ur	nhos/cm)	umhos/cm	
			Temperature (°(	C)	°c	

Field and Technical Services, LLC RCRA Facility Groundwater Monitoring Well Inspection



FM = Flush Mount \* GC = Good Condition \* NL = Needs Lock \* NR = Needs Replaced \* RP = Replaced Lock \* SU = Stick Up



# **APPENDIX A**

## RCRA HAZARDOUS WASTE PART A PERMIT APPLICATION FORM [40CFR270.13]

				OMB#: 2050-0034	Expires 11/30/2005			
$\bigcirc$	SEND COMPLETED FORM TO: The Appropriate State or	United States Environmental Protection Agency						
	EPA Regional Office.	RCRA SUBTITLE C SITE IDENTIFICATION FORM						
		Reason for Submittal:						
	1. Reason for Submittai	To provide Initial Notification of Row waste, universal waste, or used oi	egulated Waste I activities)	Activity (to obtain an EPA ID Numb	ber for hazardous			
	(See instructions on page 14.)	To provide Subsequent Notification of Regulated Waste Activity (to update site identification information)						
	MARK ALL BOX(ES)	As a component of a First RCRA	Hazardous Was	te Part A Permit Application				
	THAT APPLY	As a component of a Revised RC	RA Hazardous V	Waste Part A Permit Application (Ar	mendment #)			
		As a component of the Hazardous	s Waste Report		-			
	2. Site EPA ID Number (page 15)	EPA ID Number I_M I S I D I I 0 I 0 I 7 I I 0 I 2 I 7   I 5   4   3 I						
	3. Site Name (page 15)	Name: Koppers Inc.						
	4. Site Location information (page 15)	Street Address: 1 Koppers Drive						
		City, Town, or Village: Tie Plant	SI	ate: Mississippi				
$\bigcirc$		County Name: Grenada	Zi	p Code: 38960				
	5. Site Land Type (page 15)	Site Land Type: 🛛 Private 🗌 Cour	ty District	🗌 Federal 🛄 Indian 🛄 Municipa	al 🔲 State 🗌 Other			
	6. North American Industry Classification	A. 1 <u>312111114</u>		B.	<u></u> _			
	System (NAICS) Code(s) for the Site (page 15)	C.		D.				
		Street or P. O. Box: PO Box 160						
	7. Site Mailing Address	City, Town, or Village: Tie Plant						
	(page 16)	State: Mississippi						
		Country: USA		Zip Code: 38960				
	8. Site Contact Person	First Name: Vance	MI: R	Last Name: Haskin				
	(page 16)	Phone Number: Extension: 662-226	-4584	Email address: haskinvr@kop	opers.com			
	0. One reter and	A. Name of Site's Operator: See 12.	Comments	Date Became Operator (mm/do	d/yyyy): mid 1970's			
	9. Operator and Legal Owner of the Site	Operator Type: 🛛 Private 🗌 Coun	ty 🔲 District	🗆 Federal 🔲 Indian 🗌 Municipa	I 🗌 State 🗌 Other			
	(pages 16 and 17)	B. Name of Site's Legal Owner: Ko	opers Inc.	Date Became Owner (mm/dd/y	yyy): 12/29/1988			
$\bigcirc$		Owner Type: 🛛 Private 🗌 Coun	ty 🔲 District	🗌 Federal 🔲 Indian 🔲 Municipa	al 🔲 State 🗌 Other			

EPA Form 8700-23 (Revised 3/2005)

(

	EPA ID NO: I M	ISIDII0I0	<u>  7    0</u>	121711	<u>5 </u>	4 I 3 I OMB#: 2050-0034 Expires 11/30/2005		
		Street or P. O. Box: 4	36 Seventh	Avenue				
	9. Legal Owner (Continued)	City, Town, or Village	e: Pittsburg	ļh				
	Address	State: PA						
		Country: USA				Zip Code: 15219-1800		
	10. Type of Regulat Mark "Yes" or "	ed Waste Activity No" for all activities; c	omplete any	y additional	boxes a	as instructed. (See instructions on pages 18 to 21.)		
	A. Hazardous Waste A Complete all parts for							
	Y ⊠ N □ 1. Generato If "Yes",	or of Hazardous Waste choose only one of the	e following	- a, b, or c.		N 🛛 2. Transporter of Hazardous Waste		
	🛛 a. LQ	G: Greater than 1,000 k of non-acute hazardo			ΥØΝ	N 3. Treater, Storer, or Disposer of Hazardous Waste (at your site) Note: A hazardous waste permit is required for this activity.		
	🔲 b. SQ	G: 100 to 1,000 kg/mo ( of non-acute hazard			YDN	N 🛛 4. Recycler of Hazardous Waste (at your site)		
	🗍 c. CE	SQG: Less than 100 kg of non-acute haza			YDM	N I 5. Exempt Boiler and/or Industrial Furnace		
	In addition,	indicate other generat	if "Yes", mark each that applies.					
$\bigcirc$	Y 🔲 N 🖾 d. United States Importer of Hazardous Waste					Exemption b. Smelting, Melting, and Refining		
$\bigcirc$	Y 🗌 N 🛛 e. Mixed Waste (hazardous and radioactive) Generator					Furnace Exemption		
					YDN	N 🛛 6. Underground Injection Control		
	B. Universal Waste Ad					C. Used Oil Activities Mark all boxes that apply.		
	Y □ N ⊠ 1. Large Quantity Handler of Universal Waste (accumul 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of unive waste generated and/or accumulated at your site. If the mark all boxes that apply:					Y □ N ⊠ 1. Used Oil Transporter if "Yes", mark each that applies. □ a. Transporter □ b. Transfer Facility		
			<u>Generate</u>	Accumulate	2	Y IN N Z. Used Oil Processor and/or Re-refiner If "Yes", mark each that applies.		
	a. Batteri	es				a. Processor		
	b. Pestici	des				Y □ N ⊠ 3. Off-Specification Used Oil Burner		
	c. Thermo	ostats				Y □ N ⊠ 4. Used Oil Fuel Marketer		
	d. Lamps					If "Yes", mark each that applies.		
		specify)				of Off-Specification Used Oil to Off-Specification Used Oil Burne		
		(specify)				b. Marketer Who First Claims the Used Oil Meets the Specification		
		specify)						
$\bigcirc$		ion Facility for Univers ardous waste permit ma		d for this acti	vity.			

 $\langle$ 

#### EPA ID NO: M S D 10 0 7 0 0 2 7 1 5 4 3 0 0MB #: 2050-

OMB #: 2050-0034 Expires 11/30/200!

#### 11. Description of Hazardous Wastes (See instructions on page 22.)

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

F032	F034	F035	K001		

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

F032	F034	F035	K001		

#### 12. Comments (See instructions on page 22.)

Koppers Inc. owns the Site property and operates a wood preserving plant on the Site property. Beazer East, Inc. (Beazer) is the operator of a closed unit (the Facility) located on the Site Property. This unit (the Facility) was operated from the mid-1970's to 1988 and closed In 1988 it includes (1) one former surface impoundment that contained bottom sediment sludge from the treatment of waste water from wood preserving processes that use creosote and pentachlorophenol (K001). Koppers inc. never operated the Facility. Beazer requests the MDE to recognize that only Beazer operated the Facility. Koppers has owned the real property comprising the Site since late 1988, but has neve operated the Facility. Accordingly, Beazer requests that the MDEQ delete Koppers inc. from the Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment portion of the Permit for the Facility and that Beazer remain on the Permit as the sole Permittee.

**13. Certification.** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations For the RCRA Hazardous Waste Part A Permit Application, all operator(s) and owner(s) must sign (see 40 CFR 270.10 (b) and 270.11). (See instructions on page 22.)

	Signature of operator, owner, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
1	Jani Sty	LEULIES HYDE VP Sately Environmentel Attains	4/3/08
	file Suta line	Rhat S. Malwell Vies fravidat	04/03/00
1	-	Blazer East Inc.	

EPA Form 8700-23 (Revised 3/2005)

Page 3 of

<u></u>			0 2 7 1	5   4   3		Expires 11/30/2005
11. Descriptio	on of Hazardous	Wastes (See instru	ictions on page 22.)			MDEQ
handled at	des for Federaliy your site. List the page if more spac	em in the order they	ous Wastes. Please are presented in the	list the waste cooregulations (e.g.,	des of the Federal haz D001, D003, F007, U	ardous wastes 112). Use an
F032	F034	F035	K001			
hazardous	s wastes handled a	gulated (i.e., non-F at your site. List the r waste codes.	Federal) Hazardous am in the order they a	Vastes. Please ! e presented in th	ist the waste codes of e regulations. Use ar	i the State-regulated additional page if
more space						
E032 12. Comment Coppers Inc. or I closed unit (t t includes (1) c preserving pro	F034 s (See instruction whe site Site proper he Facility) located one former surface cesses that use cre at only Beazer one	F035 F035 ns on page 22.) rty and operates a wo on the Site Property impoundment that co cosote and pentachic cosote and pentachic rested the Facility. Ko	<ul> <li>This unit (the Facilit ontained bottom sedin prophenoi (K001). Kop oppers has owned the</li> </ul>	<ul> <li>was operated from ent sludge from the pers inc. never op real property compared</li> </ul>	7. Beazer East, Inc. (Be om the mid-1970's to 19 ne treatment of waste v erated the Facility. Bea orising the Site since la e Hazardous Waste Ma	988 and closed in 198 vater from wood ser requests the MDE ate 1988, but has neve
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F032 12. Comment Koppers Inc. or a closed unit (t t includes (1) c preserving pro- to recognize the post-Closure C Permit as the s 13. Certificati supervision in submitted. Base the information there are signif- For the RCRA H	F034 s (See instruction whe Facility) located one former surface cesses that use created at only Beazer operacility. Accordingly care of the closed h ole Permittee.	F035 The series of the person of person of the person of person of the second pentachlor rated the Facility. Key, Beazer requests the azardous waste surface of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of persubmitted is, to the large of the person of person of person person person of the person of person	this document and al o assure that qualifier sons who manage th	attachments wer personnel prope esystem, or those attachments wer or belief, true, in or the esystem, or those and belief, true, in or those	om the mid-1970's to 19 ne treatment of waste v erated the Facility. Bea prising the Site since la e Hazardous Waste Ma	direction or te the information ponsible for gatherin to range the the the ten 1988, but has neve the 1988, but has neve the 1988, but has neve the the service direction or the the information ponsible for gatherin te. I am aware that or knowing violations
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### EPA ID NO: | M | S | D || 0 | 0 | 7 || 0 | 2 | 7 || 5 | 4 | 3 |

OMB #: 2050-0034 Expires 11/30/2005

#### United States Environmental Protection Agency HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See	First Name: Michael												MI: W Last Name: Bollinger								
instructions on page 23)	Phone Number: 412-208-8864 Phone Number Extension:													ion:							
2. Facility Permit Contact Mailing	Street or P.O. Box: One Oxford Centre, Suite 3000																				
Address (See instructions on	City, Town, or Village: Pittsburgh													State: PA							
page 23)	Country: USA													Zip Code: 15219							
3. Operator Mailing	Stre	et or l	P.O. I	Box:	Or	ne C	)xfo	rd C	ent	re, S	Suite	e 30(	00								
Address and Telephone Number	City	, Tow	ı, or	Vilia	ge:	Pit	tsb	urgh	2												
(See instructions on page 23)	Stat	e: PA																			
	Cou	ntry:	JSA										Zip	Code:	152	19	Phone Number: 412-208-8864				
4. Legal Owner	Stre	et or l	P.O. I	Box:	Ko	opp	ers	Inc.	, 43	6 Se	ven	th A	ver	nue							
Mailing Address and	City	, Tow	n, or	Villa	ge:	Pit	tsb	urgt	ו					-							
Telephone Number (See instructions on	Stat	e: PA																			
page 23)	Cou	ntry:	JSA								_		Zip	Code:	152	19	Phone Number: 412-227-2001				
5. Facility Existence Date (See instructions on page 24)	Facil	lity Exi	stenc	e Da	te (n	nm/	dd/y	ууу):	: Mi	d-19	70's										
6. Other Environmental	Permit	s (See	instru	ictio	ns o	n pa	ige 2	24)													
A. Permit Type (Enter code)				В.	Perr	nit M	lumi	ber					C. Description								
													No other environmental permit exists for the RCRA- regulated facility. (Surface impoundment closed as a iandfili)								
7. Nature of Business (P	rovide	a brie	fdeso	ripti	on;	see	instr	ucti	ons	on p	age	24)									
Koppers inc. owns the S unit (the Facility) located includes (1) one former preserving processes th	d on th surface	e Site e impo	prope undr	erty. Ient f	This that	uni con	t (the taine	e Fac ed bo	cility ottor	v) wa n se	s op dime	erate ent si	ed fr ludg	om the je from i	mld-' the tr	1970's to 1988 reatment of wa	ste water from wood				

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8. Process Codes and Design Capacities (See instructions on page 24) - Enter information in the Sections on Form Page 3. A. PROCESS CODE - Enter the code from the list of process codes in the table below that best describes each process to be used at the facility. Fifteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For .other. processes (i.e., D99, S99, T04 and X99), enter the process information in Item 9 (including a description). B. PROCESS DESIGN CAPACITY - For each code entered in Section A, enter the capacity of the process. 4. ANOUNT. Extended to enter the process information in the set on place lines are needed to enter the capacity of the process.

1. AMOUNT - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter

the total amount of waste for that process.

2. UNIT OF MEASURE - For each amount entered in Section B(1), enter the code in Section B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list. C. PROCESS TOTAL NUMBER OF UNITS - Enter the total number of units for each corresponding process code.

PROCESS CODE	PROCESS		ATE UNITS OF MEASURE ESS DESIGN CAPACITY	PROCES		PROCESS	APPROPRIATE MEASU FOR PROCESS CAPACI	RE 5 DESIGN
1	<u>Disposal:</u>				Treatmen	t (continued):		
D79	Underground Injection Well Disposal	Gallons; Liters; Day	Gallons Per Day; or Liters Per	T81 T82 T83 T84	Cement K Lime Kiin Aggregat Phosphat	e Kiln	For T81-T93: Gallons Per Day; Liters Per Hour; Short Tons P	
D80	Landfill	Acre-feet; Hectan Hectares; Cubic	e-meter; Acres; Cubic Meters; Yards	T85 T86	Coke Ove Blast Fun Smelting,	n	Kilograms Per Hour; Metric Tons F Tons Per Hour; Short T Per	er Day; Metric
D81	Land Treatment	Acres or Hectare	8	T87	Refining Furnace Titanium Chioride	Dioxide Oxidation Reactor	Hour; Liters Per Hour; I Hour; or Million Btu Per	
D82	Ocean Disposal	Gallons Per Day o	or Liters Per Day	T88	Pulping L Furnace	Reforming Furnace Jquor Recovery		
D83	Surface Impoundment Disposal	Gallons; Liters; C	Cubic Meters; or Cubic Yards	т89	The Reco Values	ion Device Used in very Of Sulfur ent Sulfuric Acid		
D99	Other Disposal	Any Unit of Meas	ure in Code Table Below	T90 T91	Halogen / Other Ind	Acid Furnaces ustrial Furnaces 40 CFR §260.10		
	Storage:			]				
S01	Contain <del>a</del> r	Gallons; Liters; C	Cubic Meters; or Cubic Yards	T92 T93				
S02	Tank Storage	Gallons; Liters; C	Cubic Meters; or Cubic Yards					
S03	Waste Pile	Cubic Yards or C	ubic Meters					
S04	Surface Impoundment Storage	Gallons; Liters; C	Cubic Meters; or Cubic Yards					
S05 Drip Pad		Gallons; Liters; A or Cubic Yards	Acres; Cubic Meters; Hectares;	T94	Containm Treatmen	ient Bullding - it	Cubic Yards; Cubic Meters; Short T Per Hour; Gallons Per Hour; Liters Hour; Btu Per Hour; Pounds Per Ho Short Tons Per Day; Kilograms Per	
S06	Containment Building Storage	Cubic Yards or C	ubic Meters				Hour; Metric Tons Per Day; Gallons Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour	
S99	Other Storage	Any Unit of Meas	ure in Code Table Below		Miscellan	eous (Subpart X);		
	Treatment:			ļ				
T01	Tank Treatment	Gallons Per Day;	Liters Per Day	X01	Open Bui Detonatio	ming/Open on	Any Unit of Measure in Below Short Tons Per Hour; M	
T02	Surface Impoundment Treatment	Gallons Per Day;	Liters Per Day	X02	Mecha	nical Processing	Hour; Short Tons Per D Per Day; Pounds Per H Per Hour; Gallons Per H Hour; or Gallons Per D	ay; Metric Tons bur; Kilograms lour; Liters Per ly
тоз	Incinerator	Gallons Per Hour Pounds Per Hour Per Hour; Gallon	lour; Metric Tons Per Hour; r; Liters Per Hour; Btu Per Hour; r; Short Tons Per Day; Kilograms s Per Day; Liters Per Day; Metric r Million Btu Per Hour	X03	т	hermal Unit	Gallons Per Day; Liters Per Hour; Short Tons P Kilograms Per Hour; Metric Tons F Tons Per Hour; Short T Per Hour; or Million Btu	er Hour; Per Day; Metric ons Per Day; Bti
T04	Other Treatment	Hour; Short Tons Metric Tons Per I Tons Per Day; Bt Liters Per Hour; d	Liters Per Day; Pounds Per s Per Hour; Kilograms Per Hour; Day; Metric Tons Per Hour; Short u Per Hour; Gallons Per Day; or Million Btu Per Hour					A
80	Boller		Sallons Per Hour; Liters Per our; or Million Btu Per Hour	X04	Geol	ogic Repository	Cubic Yards; Cubic Met Hectare-meter; Gallons	; or Liters
				X99		her Subpart X	Any Unit of Measure Lis	UNIT OF
UNIT OF MEASURE		UNIT OF MEASURE CODE	UNIT OF MEASURE		UNIT OF MEASURE CODE	UNIT OF MEASURE	· · · · · · · · · · · · · · · · · · ·	MEASURE CODE
		6	Short Tons Per Hour Metric Tons Per Hour		D	Cubic Yards		C Y
	y	E	Short Tons Per Day		W			в
	y	<u> </u>	Metric Tons Per Day		<u> </u>			A
		н	Pounds Per Hour			Hectares	••••••	Q
		v	Kilograms Per Hour		R	Hectare Meters		F
			Million BTU Per Hour		X	BTU per Hour		1

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						v has a stanson	American sector to the sector of the	
		T			Item 8 (shown in line number X-1 below): A facilit B. PROCESS DESIGN CAPACI	y nas a storage TV	C.	nold 533.788 gallons.
			А.			<u> </u>	Process	
Li	ine	Pro		Code		(2) 11-14-6	Total	
Nur	mber		From			(2) Unit of	Number of	
			abov		(1) Amount (Specify)	Measure (Enter code)	Units	East Official Use O
X	1	S	0	2	5 3 3.7 8 8	G		For Official Use O
	<u> </u>	+	<u>+</u>		One surface impoundment (the Facility)	6	001	_
	1				closed as one landfill. All visible waste was removed; however, clean closure was not achieved.			
	2							-
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	6						<u> </u>	-
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	8			†				4
	9						<u>+</u>	4
1	0						1	4
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	2							1
	3			<u> </u>				]
! 	4 5							7
'04 a			er the	e unec	ore than 15 process codes, attach an addition			
. Ut	her Pr	991 III	ACCINE .	<b>.</b>	sequentially, taking into account any lines the sequentially of the sequential sequences of the sequences of		d for "other" pi	
	her Pr	991 III	ILGIII -	<b>.</b>	tructions on page 25 and follow instructions	from Item 8 fe	d for "other" pi or D99, S99, T04	
Line Numl Enter Sequel	her Pi s) ber #s in nce	Proc	A.	See ins		from Item 8 fo Y (2) Unit of Measure	d for "other" pi	and X99 process
Line Numl Enter Sequer with Ite	her Pr s) ber #s in nce em 8)	Proc (Fron	A. ess (S	See ins	tructions on page 25 and follow instructions B. PROCESS DESIGN CAPACIT (1) Amount (Specify)	from Item 8 fe Y (2) Unit of Measure (Enter code)	d for "other" pi or D99, S99, T04 C. Process Total	
9. Ot code Line Numi Enter sequent with ite X	her Pi s) ber #s in nce	Proc	A.	See ins	tructions on page 25 and follow instructions B. PROCESS DESIGN CAPACIT	from Item 8 fo Y (2) Unit of Measure (Enter	d for "other" p or D99, S99, T04 C. Process Total Number of	and X99 process D. Description of
ine lumi Enter equer ith ite	her Pr s) ber #s in nce em 8)	Proc (Fron	A. ess (S	See ins	tructions on page 25 and follow instructions B. PROCESS DESIGN CAPACIT (1) Amount (Specify)	from Item 8 fe Y (2) Unit of Measure (Enter code)	d for "other" p or D99, S99, T04 C. Process Total Number of Units	and X99 process D. Description of Process
ine umi inter iquer ith ite	her Pr s) ber #s in nce em 8)	Proc (Fron	A. ess (S	See ins	tructions on page 25 and follow instructions B. PROCESS DESIGN CAPACIT (1) Amount (Specify)	from Item 8 fe Y (2) Unit of Measure (Enter code)	d for "other" p or D99, S99, T04 C. Process Total Number of Units	and X99 process D. Description of Process
ine umi Inter Enter Eque	her Pr s) ber #s in nce em 8)	Proc (Fron	A. ess (S	See ins	tructions on page 25 and follow instructions B. PROCESS DESIGN CAPACIT (1) Amount (Specify)	from Item 8 fe Y (2) Unit of Measure (Enter code)	d for "other" p or D99, S99, T04 C. Process Total Number of Units	and X99 process D. Description of Process
ine lumi Enter equer ith ite	her Pr s) ber #s in nce em 8)	Proc (Fron	A. ess (S	See ins	tructions on page 25 and follow instructions B. PROCESS DESIGN CAPACIT (1) Amount (Specify)	from Item 8 fe Y (2) Unit of Measure (Enter code)	d for "other" p or D99, S99, T04 C. Process Total Number of Units	and X99 process D. Description of Process
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ine lum Enter equer vith ite	her Pr s) ber #s in nce em 8)	Proc (Fron	A. ess (S	See ins	tructions on page 25 and follow instructions B. PROCESS DESIGN CAPACIT (1) Amount (Specify)	from Item 8 fe Y (2) Unit of Measure (Enter code)	d for "other" p or D99, S99, T04 C. Process Total Number of Units	and X99 process D. Description of Process

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10. Description of Hazardous Wastes (See instructions on page 25) - Enter information in the Sections on Form Page 5.

A. EPA HAZARDOUS WASTE NUMBER - Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in Section A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Section A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in Section B, enter the unit of measure code. Units of measure which must be used and the

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE	]
POUNDS	Ρ	KILOGRAMS	к	12
TONS	т	METRIC TONS	M	

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

#### D. PROCESSES

#### **1. PROCESS CODES:**

For listed hazardous waste: For each listed hazardous waste entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the listed

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the nonlisted hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. Enter the first two as described above.

2. Enter .000" in the extreme right box of Item 10.D(1).

3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 10.E.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in Item 10.D(2) or in Item 10.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in Section A. On the same line complete Sections B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

2. In Section A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Section D(2) on that line enter .included with above. and make no other entries on that line.

3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 10 (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three

Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

	Line Number Line Line Kaste No. (Enter code)		Ha	zard			B. Estimated C. Annual Unit of Quantity Measure	Unit of	D. PROCESSES									
			)	of Waste (Enter code)	(1)	PRC	CES	ss co	DDES	S (En	ter d	code,	(2) PROCESS DESCRIPTION- (If a code is not entered in D(1))					
	X	1	K	0	5	4	900	Р	T	0	3	D	8	0	T	1	T -	
	X	2	D	0	0	2	400	Р	T	0	3	D	8	0	<u> </u>		+	
	X	3	D	0	0	1	100	P	T	0	3	D	8	0			+	
$\bigcirc$	X	4	D	0	0	2			<b></b> -	-	3	<u> </u>	0	0		╂──	+	
					•	·	•		L	L			L			L		Included With Above

### EPA ID NO: <u>| M | S | D | 0 | 0 | 7 | 0 | 2 | 7 | 1 5 | 4 | 3 |</u> OMB #: 2050-0034 Expires 11/30/2005

(

A. D.			B.	B.	the Additional Sheet(s) as necessary; number pages as 5 a, etc.)													
L	Line Waste No.			Estimated Annual Quantity	C. Unit of	D. PROCESSES												
	mber		vvas Entei				Measure (Enter code)	(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION- (If a code is not entered in D(1))	
1		ĸ	0	0	1	0		D	8	3							The former surface impoundme (the Facility) was closed as a landfill in 1989. The closure construction documentation report was submitted to MDEQ i December 1989.	
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1	3	$\left  - \right $										+	+					
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	ne	A. EPA Hazard Waste			s	B. Estimated Annual Quantity	C. Unit of Measure	E. PROCESSES (2) PROCESS DESCRIPTION-									
	nber	(	Ente	r coa	le)	of Waste	(Enter code)	(1) PROCESS CODES (Enter code)								)	(If a code is not entered in E(1))
4	0																
			┨──	-	-					<u> </u>	<u> </u>	<u> </u>		<u> </u>	<u> </u>		
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11. Map (See instructions on pages 25 and 26) See Figures 1 and 2

Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

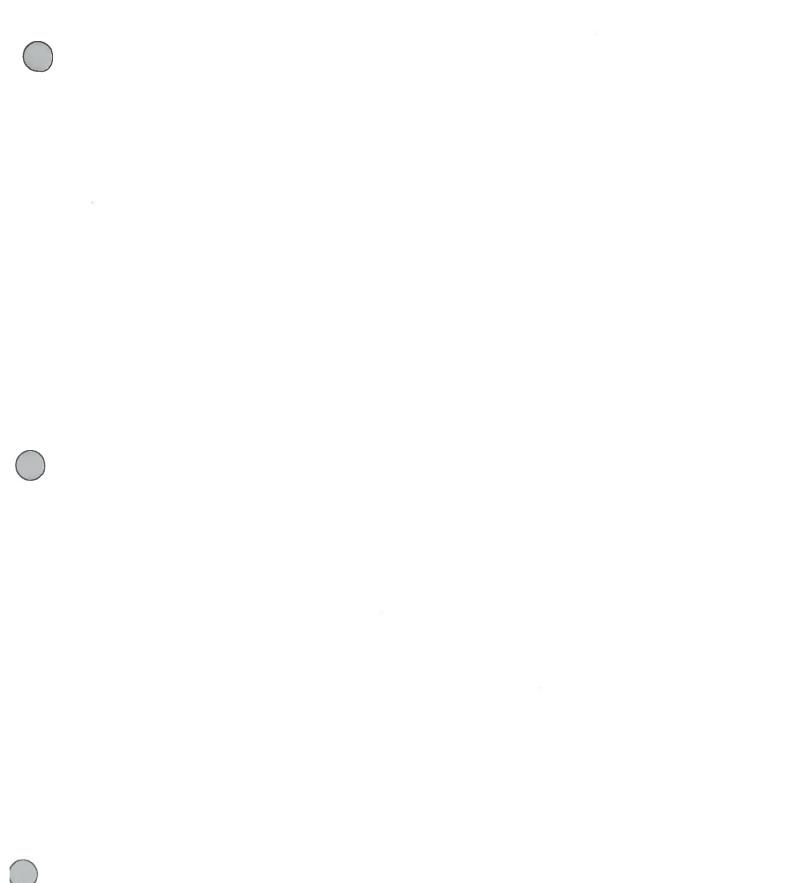
12. Facility Drawing (See instructions on page 26) See Figure 3

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

13. Photographs (See instructions on page 26) See Figure 5

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see Instructions for more detail).

14. Comments (See instructions on page 26)



# **APPENDIX B**

# METEROLOGICAL AND WIND DISTRIBUTION DATA

 $\bigcirc$ 

AIR WEATHER SERVICE 2076111 DATA CONTROL UNIT (WEATHER) THE AIR FORCE FROM HOURLY OBSERVATIONS FROM DAILY OBSERVATIONS SURFACE WEATHER OBSERVATIONS REW ORLEANS PORT OF EMBARKATION לאלן אסו מאות לאלן נמיי אולן אסו מאות לאלן נמיי URIFORM SUMMARY OF Ginner LISS AAF LA. NEVI ORLEANS, 13323 DEPARTIMENT OF PART A- DERIVED PART B- DERIVED

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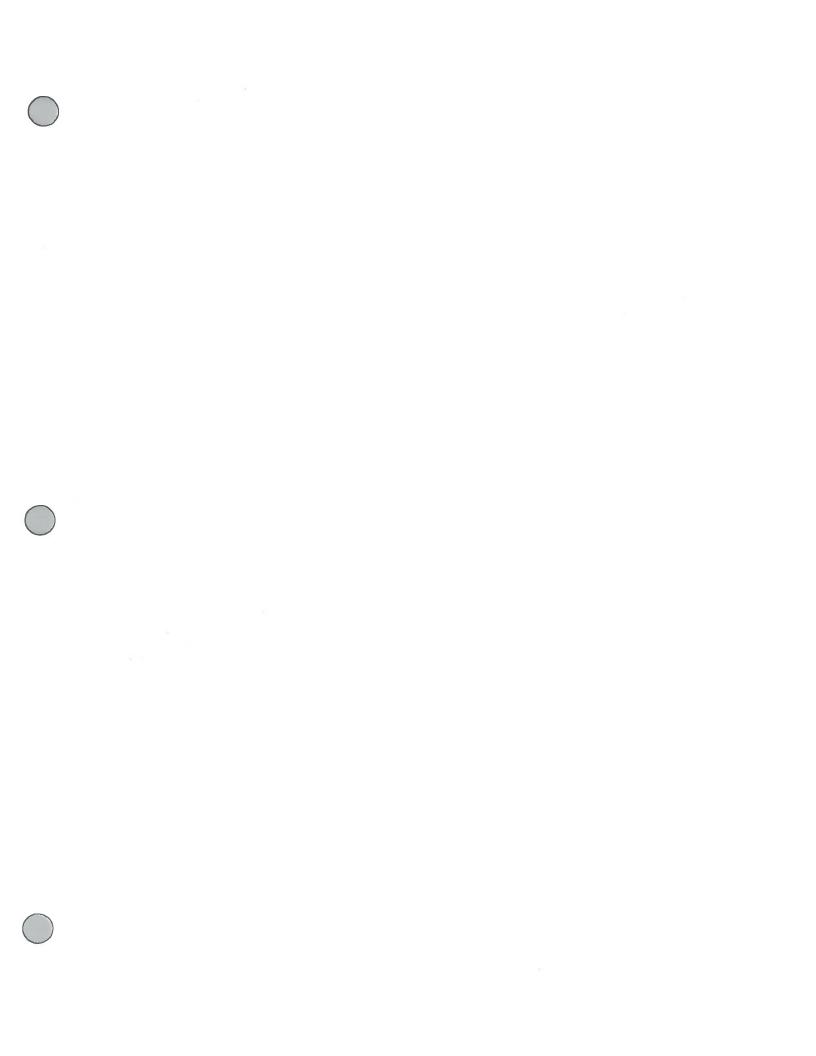
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# APPENDIX C FLOOD INSURANCE RATE MAP

# **APPENDIX D**

# **IMPOUNDMENT SLUDGE ANALYSIS**

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TABLE 1

un di Lohuy-Ro REVISION NO: 1 SECTION C

KOPPERS COMPANY, INC.

CHEMICAL & ALLIED PRODUCTS

GRENADA, MS

•

### SAMPLE COLLECTION DATA

		DATE					
LAB AMPLE NO.	SAMPLE SOURCE	COLLECTED	RECEIVED				
GM-262	R-1	7/17/84	7/18/84				
 GM-263	R-2	7/17/84	7/18/84				
GM-264	R-3 :	7/17/84	7/18/84				
GM-265	R-4	.7/17/84	7/18/84				
4-256	TO SPRAY FIELD	.7/17/84	7/18/84				
GM-267	FIELD BLANK (sample had been acidified with NaHSO4)	7/17/84	7/18/84				
GM-268	SPRAY FIELD SOIL	7/17/84	7/18/84				
GM-269	LAGOON BOTTOMS	7/17/84	7/18/84				
		<u>j</u> e.	3.00				
			<u>  .</u>				

'CTED BY: E. G. Huth :

M. Long

ENVIRONMENTAL RESOURCES DEPARTMENT ENVIRONMENTAL ANALYS'S LABORATORY MONROEVILLE SCIENCE & TECHNOLOGY CENTER 20



REPORT OF DATA

SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

SUBMITTED TO:

Mr. Bob Hepner Koppers, Inc. Research Dept. 440 College Park Drive Monroeville, PA 15146

 $\mathbf{C}$ 

DHANA A. SCAMMELL TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER DIRECTOR OF QUALITY ASSURANCE

-

.

#### LABORATORY CHRONICLE

SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

1

			Date
	Received/Ref	rigerated	07/19/34
	Organics		
	Extract		07/23/84 07/24/84 07/25/84
	Analyze	d .	
	1.	Yolatiles	07/27/84
	2.	Acid	08/07/84
	3.	Base/Neutrals	08/03/84
8	4.	Pesticides/PCBS	07/27/84 - 08/01/84*
	5.	Herbicides	08/01/84
	Inorganics		
	1.	Metals	08/14/84
	2.	Cyanide _	Not Requested
	3.	Phenols	Not Requested

"Second column confirmation analysis which serves to verify the presence or absence of the Pesticides/PCB's.

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#### QUALITY ASSURANCE NOTICE

CompuChem Sample No. 31897

Although not required by the Federal Register, December 3, 1979 (modified July, 1982) Volatile Method 624 procedure, the laboratory prepares VCA blanks when compositing water samples and preparing low and medium level hezardous waste VOA samples. This is to insure that the glassware used is free from contamination, and to monitor the possibility of cross-contamination from high levels of volatile organic compounds in some samples and the laboratory atmosphere.

The compositing or method blank ( $\frac{2}{31981}$ ) prepared with this sample contained the compound(s) listed below. Sample data associated with this blank have been adjusted and/or flagged according to the EPA-recommended methods.

Compound(s)	Concentration Found In Sample (ug/kg)	Applicable Oualifier*
Methylene Chloride	28	

The following data qualifiers are used by EPA and adopted by CompuChem® for reporting purposes:

NDE = The concentration of a priority pollutant in the blank is greater than  $\frac{1}{2}$  the detection limit and is greater than  $\frac{1}{2}$  the concentration in the sample.

\*No adjusted sample concentration is reported.

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### COMPOUND LIST

### - VOLATILES CREANICS

#### SAMPLE ICENTIFIER: GM 259 COMPUCHEM SAMPLE NUMBER: 31897

	u <sup>−2</sup>	×	CONCENTRATION (UG/KG)	DETECTION LIMIT (UG/KG)
2Y. 3Y. 4Y. 5Y. 6Y. 7Y. 8Y. 9Y. 10Y. 11Y. 12Y. 13Y. 14Y.	CHLOROMETHANE YINYL CHLORIDE CHLOROETHANE BROMOMETHANE ACROLEIN ACRYLONITRILE METHYLENE CHLORIDE TRICHLOROFLUOROMETHANE 1,1-DICHLOROETHYLENE 1,1-DICHLOROETHANE TRANS-1,2-DICHLOROETHYLENE CHLOROFORM 1,2-DICHLOROETHANE 1,1,1-TRICHLOROETHANE		(UG/KG) BOL BDL BDL SDL SDL SDL BDL BDL BDL BDL BDL BDL BDL BDL BDL B	(UG/KG) 10 10 10 10 100 100 100 10 10
15V. 16Y. 17V. 18Y. 19Y. 20V. 21V. 22V. 23V. 24Y.	CARBON TETRACHLOROETHANE CARBON TETRACHLORIDE BROMODICHLOROMETHANE 1,2-DICHLOROPROPANE TRANS-1,3-DICHLOROPROPENE TRICHLOROETHYLENE BENZENE CIS-1,3-DICHLOROPROPENE 1,1,2-TRICHLOROETHANE DIBROMOCHLOROMETHANE BROMOFORM 1,1,2,2-TETRACHLOROETHYLENE		BOL BOL BOL BOL BOL BOL BOL BOL BDL	10 10 10 10 10 10 10 10 10 10
26Y. 27Y. 28Y. 29Y. 30Y. 31Y.	1,1,2,2-TETRACHLOROETHANE 1,1,2,2-TETRACHLOROETHANE TOLUENE CHLOROBENZENE 2-CHLOROETHYL VINYL ETHER DICHLORODIFLUOROMETHANE <sup>T</sup> BIS(CHLOROMETHYL)ETHER <sup>T</sup>		BDL 19 20 BDL BDL BDL BDL	10 10 10 10 10

BDL=BELOW DETECTION LIMIT \*See Quality Control Notice

<sup>†</sup>See Data Report Notice

COMPOUND LIST

#### ACID EXTRACTABLE ORGANICS

#### SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

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		CONCENTRATION (UG/KG)	DETECTION <sup>†</sup> LIMIT (UG/KG)
1A. 2A. 3A. 5A. 6A. 7A. 9A. 10A. 11A.	PHENOL 2-CHLOROPHENOL 2-NITROPHENOL 2,4-DIMETHYLPHENOL 2,4-DICHLOROPHENOL P-CHLORO-M-CRESOL 2,4,6-TRICHLOROPHENOL 2,4-DINITROPHENOL 4-NITROPHENOL 4,6-DINITRO-O-CRESOL PENTACHLOROPHENOL	70000(1) BDL BDL 8000 BDL BDL BDL BDL BDL BDL BDL BDL	5000 5000 5000 5000 5000 5000 5000 500

BDL=BELOW DETECTION LIMIT TSee Data Report Notice. Additionally, sample analyzed using a 10:1 dilution, thus the higher than normal detection limits.

(1)Quantitated using secondary ion

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLE CREANICS

#### SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

	з •	CONCENTRATION (UG/KG)	DETECTION <sup>†</sup> LIMIT (UG/KG)
13.	N-NIT ROSOD IMETHYL AMINE	BDL BDL	12000
23.	BIS (2-CHLOROETHYL) ETHER	BDL	12000 12000
36.	1,3-DICHLOROBENZENE	BDL	12000
48.	1,4-DICHLOROBENZENE	BDL	12000
58.	1,2-DICHLOROBENZENE	BDL	12000
63.	BIS (2-CHLOROISOP ROPYL) ETHER	BDL '	12000
7.B .	HEXACHLOROETHANE	BDL	12000
83.	N-NITROSODI-N-PROPYLAMINE NITROSENZENE	3DL	12000
98.	ISOPHORONE	BDL	12000
108. 116.	BIS(2-CHLOROETHOXY) METHANE	BDL	12000
128.	1,2,4-TRICHLOROBENZENE	BDL	12000
135.	NAPHTHALENE	280000(1)	12000
14B.	HEXACHLOROBUTADIENE	BDL	12000
158.	HEXACHLOROCYCLOPENTADIENE	BDL	12000
	2-CHLORONAPHTHALENE	BDL	12000
178.	DIMETHYLPHTHALATE	BDL	12000
183.	ACENAPHTHYLENE	BDL	12000
198.	2,6-DINITROTOLUENE	BDL	12000
208.	ACENAPHTHENE	120000	12000
213.	2,4-DINITROTOLUENE	BDL	12000
223.	DIETHYLPHTHALATE	BDL	12000
233.	FLUORENE	110000	12000
243.	4-CHLOROPHENYL PHENYL ETHER	BDL	12000
253.	DIPHENYLAMINE (N-NITROSO)	BDL	12000
	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	12000
275.	4-BROMOPHENYL PHENYL ETHER	BDL BDL	12000 12000
288.	HEXACHLOROBENZENE	DUL	12000

BDL=BELOW DETECTION LIMIT TSee Data Report Notice. Additionally, sample extract could not be concentrated to the required volume, and sample was analyzed using a 20:1 dilution, thus the higher than normal detection limits.

(1)Quantitated using secondary ion

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLE ORGANICS (Page Two)

#### SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

		CONCENTRATION (UG/KG)	DETECTION <sup>†</sup> LIMIT (UG/KG)
293. 303. 313. 325. 353. 353. 353. 355. 355. 355. 35	PHENANTHRENE ANTHRACENE DI-N-BUTYLPHTHALATE FLUORANTHENE BENZIDINE PYRENE BUTYLBENZYLPHTHALATE BUTYLBENZYLPHTHALATE BENZO(A)ANTHRACENE 3,3'-DICHLOROBENZIDINE CHRYSENE BIS(2-ETHYLHEXYL)PHTHALATE DI-N-OCTYLPHTHALATE BENZO(B)FLUORANTHENE BENZO(A)PYRENE INDENO(1,2,3-C,D)PYRENE DIBENZO(A,H)ANTHRACENE BENZO(G,H,I)PERYLENE	430000(1) E3000 BDL 400000(1) BDL 250000 BDL 72000 BDL 65000 BDL 75000 51000 28000 BDL BDL BDL BDL BDL	12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 30000 30000
400.	Drute (e) il sti titi teur		

BDL=BELOW DETECTION LIMIT

TSee Data Report Notice. Additionally, sample extract could not be concentrated to the required volume, and sample was analyzed using a 20:1 dilution, thus the higher than normal detection limits.

(1) Quantitated using secondary ion.

#### COMPOUND LIST -- PESTICIDES/PCB'S

#### SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

	. <sup>29</sup>	CONCENTRATION (UG/KG)	DETECTION <sup>†</sup> LIMIT (UG/KG)
1P.	ALDRIN	BDL	400
22.	ALPHA-BHC	BDL	400
3P.	BETA-BHC	BDL	400
4P.	GAMMA-BHC	BDL	400
5P.	DELTA-BHC	BDL	400 -
6P.	CHLORDANE	BDL	400
7P.	4,4'-D9T	BDL	400
8P.	4,4'-DDE	BDL .	400
9P.	4,4'-DDD	BDL	400
10P.	DIELDRIN	BDL	400
11P.	ALPHA-ENDOSULFAN	BDL	400
122.	BETA-ENDOSULFAN	BDL	400
13P 🗸	ENDOSULFAN SULFATE	BDL	400
14P.	ENDRIN	BDL	400
15P.	ENDRIN ALDEHYDE	· BDL	400
16P.	HEPTACHLÜR	BDL	400
172.	HEPTACHLOR EPOXIDE	BDL	400
18P.	PC3-1242	BDL	4000
19P.	PCB-1254	BDL	4000
20P.	PCB-1221	BDL	4000
21P.	PCB-1232	BDL.	4000
222.	PCB-1243	BOL	4000
23P.	PCB-1260	BDL	4000
242.	PCB-1016	BDL BDL	4000
252.	TOXAPHENE	BDL	4000
26P.	METHOXYCHLOR	DUL	4000

EDL=BELOW DETECTION LIMIT TSee Data Report Notice. Additionally, sample analyzed using a 200rl dilution to properly evaluate the GC Chromatogram, thus the higher than normal detection limits.

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### COMPOUND LIST - SOWA/RORA HERBICIDES

SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

		Ť	•	CONCENTRATION (MG/L)	DETECTION <sup>†</sup> LIMIT (MG/L)	
- 1H.	2, 4-D	<b>(*</b> 3)		BDL .	20.0	
28.	2, 4-D 2,4,5-TP (Silvex)			BDL	2.0	

BDL=BELOW DETECTION LIMIT <sup>†</sup>See Data Report Notice. Additionally, sample analyzed using a 200-1 dilution to properly evaluate the GC Chromatogram, thus the higher than normal detection limits.

### COMPOUND LIST - INORGANICS (METALS)

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## SAMPLE IDENTIFIER: GM 259 COMPUCHEM SAMPLE NUMBER: 31897

INORGANICS		CONCENTRATION	DETECTION LIMIT <sup>†</sup>
PRIORITY POLLUTANTS		(UG/G)	(UG/G)
<ol> <li>ANTIMONY, TOTAL</li> <li>ARSENIC, TOTAL</li> <li>BERYLLIUM, TOTAL</li> <li>CADMIUM, TOTAL</li> <li>CHROMIUM, TOTAL</li> <li>COPPER, TOTAL</li> <li>COPPER, TOTAL</li> <li>MERCURY, TOTAL</li> <li>NICKEL, TOTAL</li> <li>SELENIUM, TOTAL</li> <li>SILYER, TOTAL</li> <li>THALLIUM, TOTAL</li> <li>ZINC, TOTAL</li> </ol>	5	5.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2	0.50 0.50 0.20 0.10 0.50 1.0 0.50 0.0020 1.0 0.10 0.50 0.50 0.50 0.20

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BDL=BELOW DETECTION LIMIT <sup>†</sup>See Data Report Notice

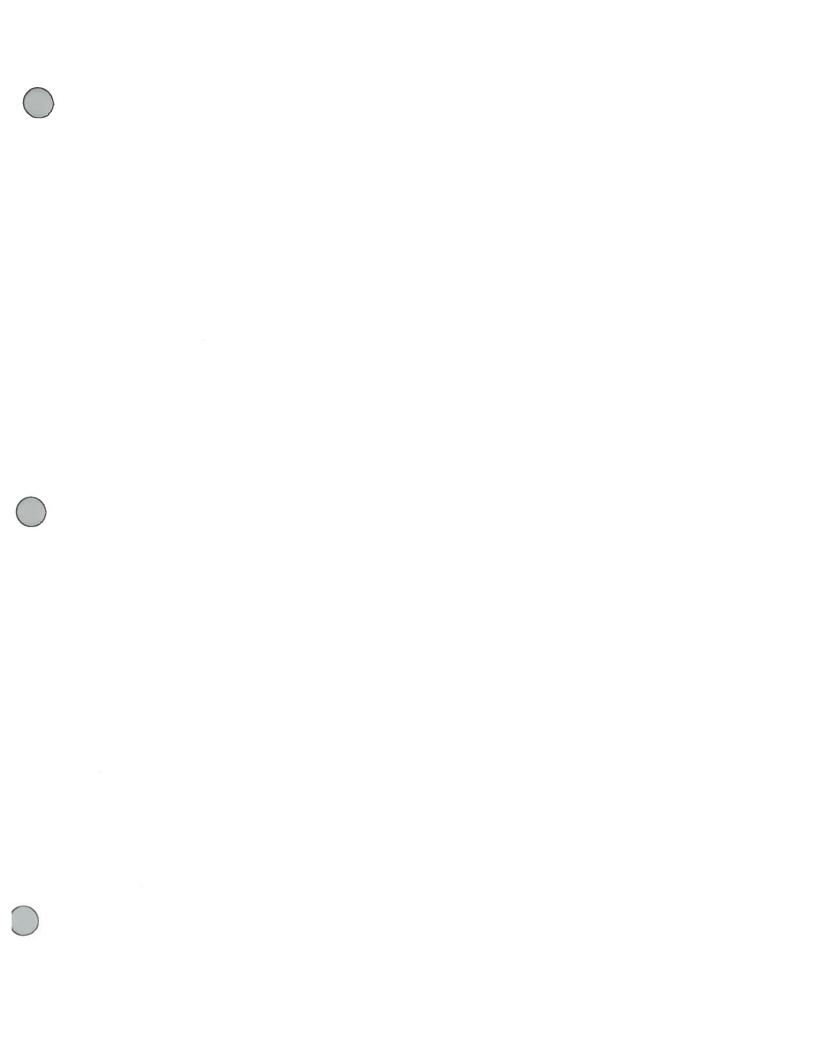
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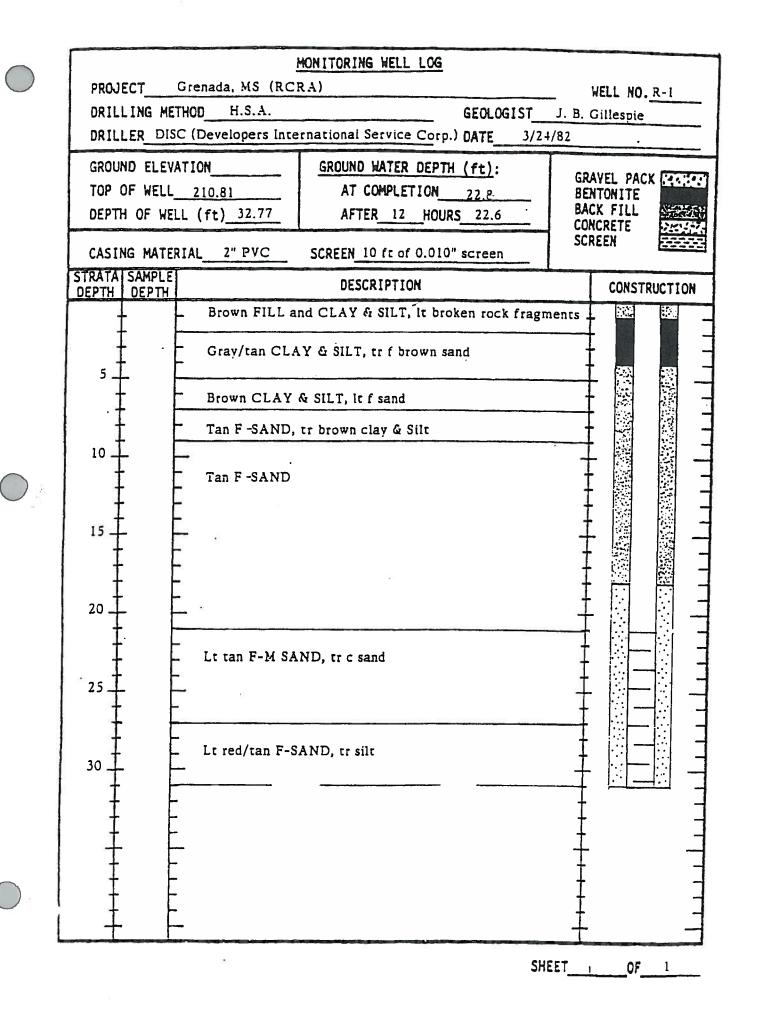
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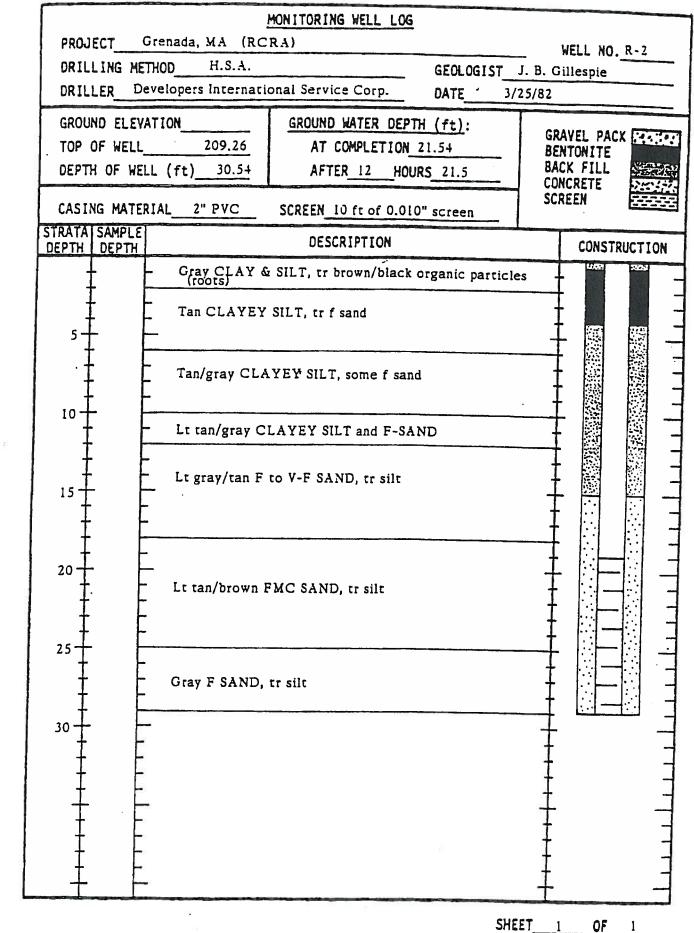


## **APPENDIX E**

## BORING LOGS AND MONITORING WELL DETAILS



PROJI				Wood Plant	Geologist: D. S		10	
Drilling Me Driller: PF	tho 10F	: HOLL Ession	OW STEM AU AL SERVICE	NDUSTRIES, ITC.	Date : MARCH	128, 1989		
Ground E Top of We Depth of V	leva oll E Wei	ition: lev.: l: 29.5 Ff		Sample Colle G-grab T-s S-splitspoon C- Cosign Material: 2 ° PVC	rcck core	GRAVEL PACK BENTONITE GROUT SCREEN		
Ground W At Comp	letic	SPT		Screen: 2" PVC (0.01"				· ·
Depth a		Blow		Descriptio	n			Construction
u u			C	oarse GRAVEL (FILL)				
		-	(	Drange-brown SILT . patches (decompo	osed organics)	, trace		55555 575555
-5	s	7,8,12		light gray silt and o	clay (mottles/ve	eins)		
	S	2,3,5		ight gray/ buff fine o quartz, trace mat	clean SAND, w fic grains	rell-sorted		\$\$\$\$\$\$\$\$\$\$\$\$
20 	S	6,6,8 9,12 <u>,1</u>		Light buff fine to me coarsens gradu	ally with depth			
	S	8,8,10		Buff/gray fine to meet trace rust bands, trace	dium clean SAI ce clay	ND,		
Ē			-	Bottom of B	oring at 30.5 fe	et		
		1						



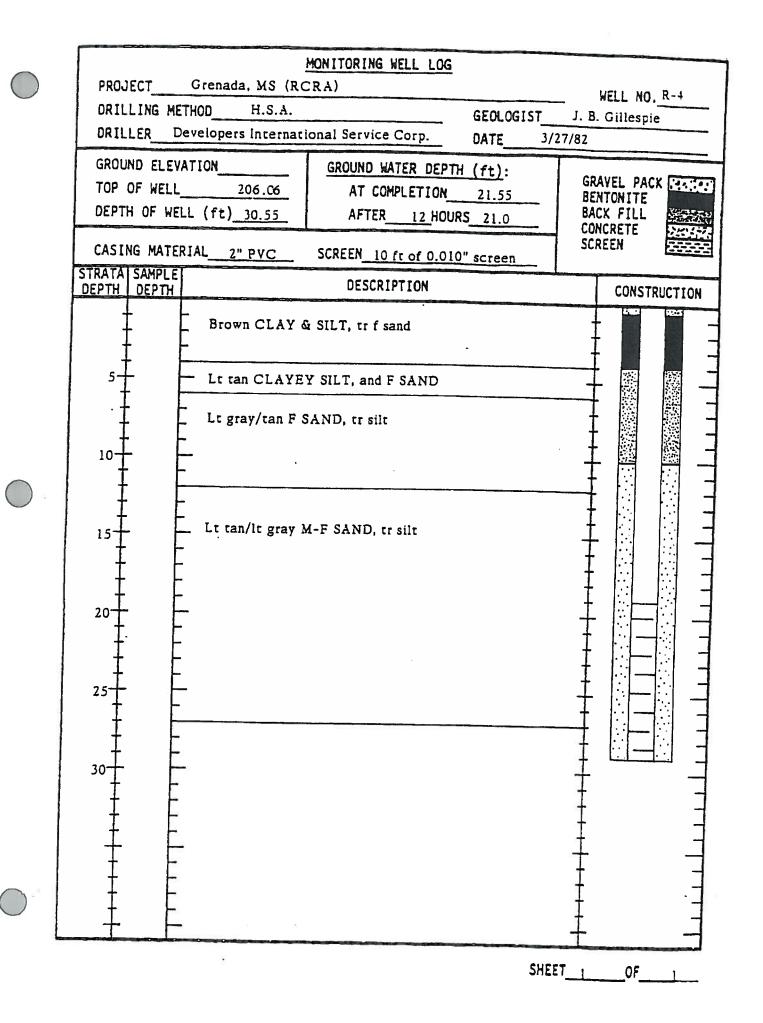
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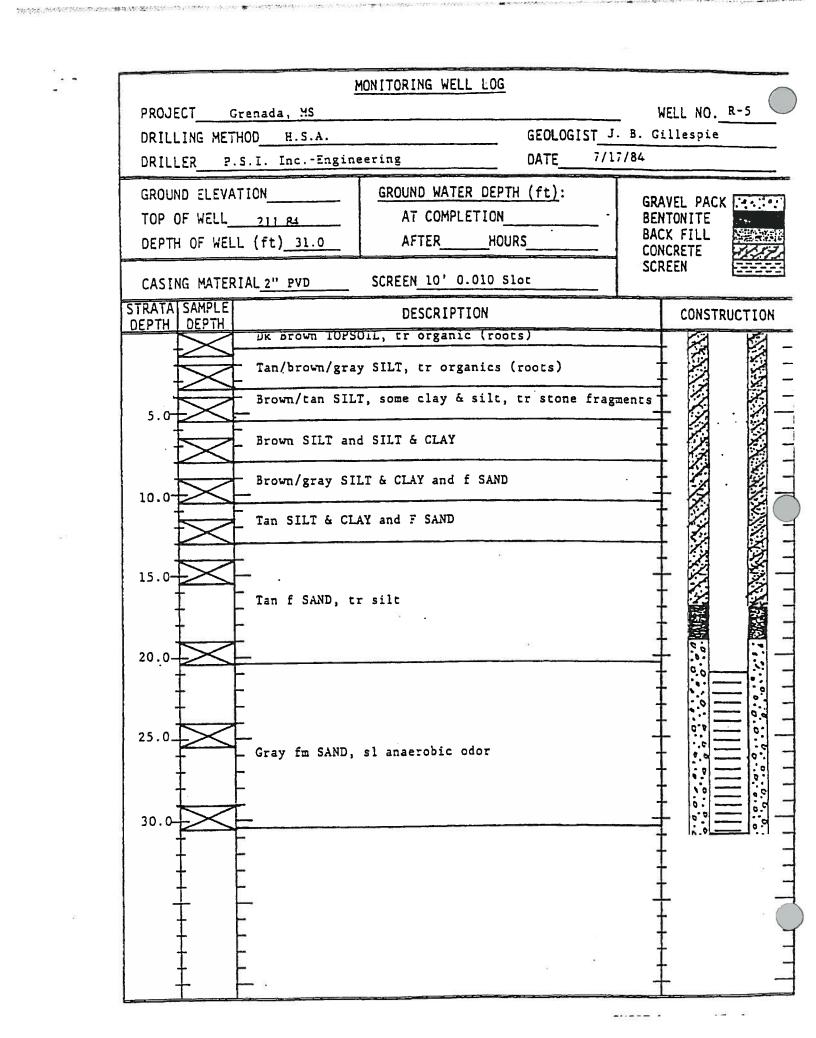
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	+	•	MONITORING WELL LOG					
1		Grenada, MS (RC HOD <u>H.S.A.</u>	CRA)	GEOLOGIST		IELL NO		
			nal Service Corp.	DATE3/		GIllespie		
GROUND		والمحادث والمراجع والمحادث والمحاز المحادث والمحاد	GROUND WATER DEP	and the second	1			
		206.96	AT COMPLETION		BEN	VEL PACK	844 ( <b>9</b> 7)	
DEPTH (	OF WEL	L (ft) <u>29.8</u>	AFTER 12 HO			K FILL		
		IAL <u>2" PVC</u>	SCREEN 10 ft of 0.01	0" screen		EEN		
STRATA SA DEPTH D			DESCRIPTION			CONSTR	UCTION	
+		- Brown/gray S	ILTY CLAY, tr f sand		+	64592	1	
1 1	ļ	-						
5	E	- Brown/gray C	LAYEY SILT, it f san	d	1			
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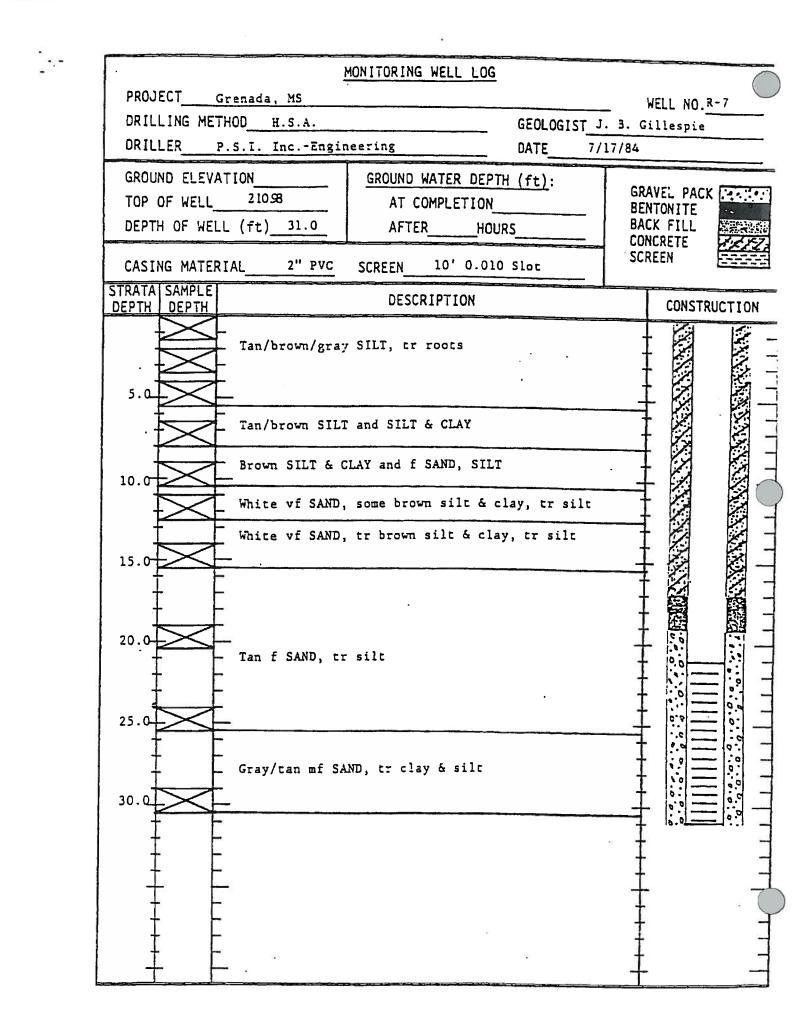


K	E Ronm	(STON) IENTAL RESOURCES	E , inc.	W	ELL LOG	: R	-5B		
PROJ	JECT	T: COLLIER	LANDFILL		N: GRENAD	A, MS	5		
DRILLIN DRILLEI	DRILLING METHOD: MUD ROTARY GEOLOGIST: DRILLER: LAYNE-WESTERN COMPANY,INC DATE: 8-10-88								
Ground E Top of We Depth of V	ell Ele	w.:	Sample Collectic G-grab T-shel S-splitspoon C-rock Casing Material: Screen:	by tube	GRAVEL PACK BENTONITE GROUT		SCREEN		
	eldu B	iPT llow bunts	Screen: Descrip	tlon			Constru		
			SEE R-5 BORING LOG DESCRIPTIONS FRO						
	5 14	- - - 19 <u>12</u>	Brown Grey mf SAND, tra	ce to little Silty	Clay				
- 40 s	s 1 2	2 12	Dark Brown CLAY & SILT,	trace to little fm	i Sand	-			

PRO	JE	CT: A	LOCATION: PORTSMOUTH, VA						
DRILL	ing Er:	METHOD: LAYNE-W	MUD ROTARY GEOLOGIST: ESTERN COMPANY INC. DATE: 8-10-8	8					
Ground			<u>Sample Collection</u> G-grab T-shelby tube S-splitspoon C-rock core	GRAVEL PACK BENTONITE					
Top of ' Depth o			Casing Material: Screen:	GROUT	<u> </u>	CAVE-IN			
Depth	Sample	SPT Blow Counts	Description			Construction			
_	F		Brown fm SAND, little Silty Clay		-				
			Grey fmc SAND, little to trace Silty C	Clay	_				
45 	s	7 10 8							
				<u> </u>					
50			Brown Silty Clay, Trace of little f Sa	and	_				
	s	5911	Gray mf Sand, Trace Clay						
_		-	BOTTOM OF BORING 52.5'						
					_				
						1			
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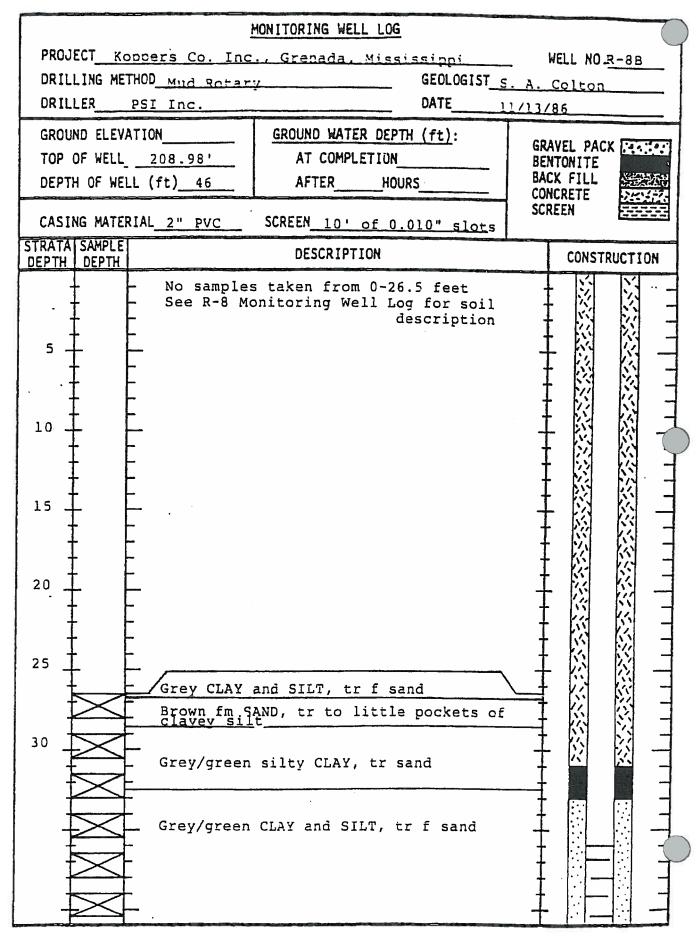
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	м	DNITORING WELL LOG	00000000000000000000000000000000000000	
$\bigcirc$	PROJECT Grenada, MS	SATIONING NEEL EUG		
	DRILLING METHOD H.S.A.		GEOLOGIST J. B.	WELL NO.R-6
	ORILLER P.S.I. IncEngine	ering	DATE7/17/8	
	GROUND ELEVATION TOP OF WELL 213.04 DEPTH OF WELL (ft)31.0	GROUND WATER DEPTH AT COMPLETION AFTER HOURS		GRAVEL PACK BENTONITE BACK FILL
		SCREEN_ 10' 0.010 SIG		CONCRETE CONCRETE
	STRATA SAMPLE DEPTH DEPTH	DESCRIPTION		CONSTRUCTION
	Brown SILT, and	SILT & CLAY, tr ston	e fragments	
	Tan/gray SILT			100-
	5.0 Gray/brown SILT	& CLAY	-	
	10.0 Tan/white f SANI	), tr silt		
	15.0			
	20:0 Rust/gray fm SAN	D and CLAY & SILT		
	25.0 Gray CLAY & SILT	, tr f SAND		
	Gray fmc SAND, t	r silt	-	
	30.0			
			-	



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		MONITORING WELL LOG	
	PROJECT <u>Grenada.MS</u> DRILLING METHOD <u>H.S.A.</u>		WELL NO. R-8
	DRILLER P.S.I. IncEngin		I. B. Gillespie
	GROUND ELEVATION		/17/84
	TOP OF WELL 214.53	GROUND WATER DEPTH (ft):	GRAVEL PACK
	DEPTH OF WELL (ft) 31.0	AT COMPLETION	BENTONITE BACK FILL
	1	AFTERHOURS	CONCRETE
	CASING MATERIAL 2" PVC	SCREEN 10' 0.010 Slot	SCREEN
	STRATA SAMPLE DEPTH DEPTH	DESCRIPTION	CONSTRUCTION
	- Brown SILT		
	Brown SILT and	ŠILT & CLAY	
	5.0		
	Brown SILT & CI	· A V	
	10.0		
	Gray CLAY & SIL	T, tr vi sand	
	White/tan vf SA	ND. tr silt	
	20.0		
8			
	25.0		
	Gray/tan fmc SAN	ND, TR SILT	
	30.0		
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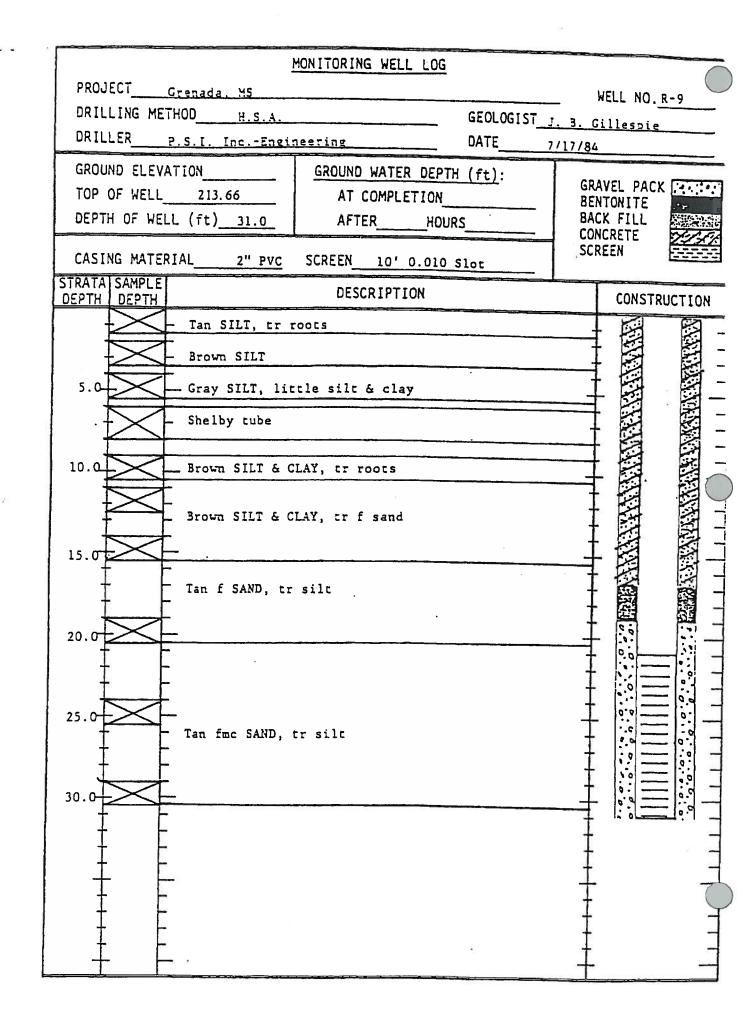


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		MONITORING WELL LOG	Statistics of the			
PROJECT Ke	oppers Co. Inc., G	renada, Mississippi		-	WELL NO.	R-88
DRILLING MI	ETHOD <u>MudRota</u>	rv	GEOLOGIST <u>s</u>	. A.	Colton	
and the second sec			DATE 11/1	3/86		
GROUND ELEN	and a second	GROUND WATER DEPTI	<u>H (ft)</u> :	GR	AVEL PACI	( Tax Mari
	L <u>208-98'</u> ELL (ft) <u>46</u>	AT COMPLETION AFTER HOUR		- BE	NTONITE	
		{S	CO	CK FILL NCRETE		
CASING MATE		SCREEN		SC	REEN	
STRATA SAMPLE DEPTH DEPTH		DESCRIPTION	i		CONSTR	UCTION
Ţ	Brown fm SILT	SAND, tr pockets	of CLAY and		-	-
+	Grey clay	yey SILT, tr to li	ittle f sand			
45	Brown fm	SAND, tr silt	- # 14		_  ]	台 _
. 🖡		boring @ 45.5'				<u> :: </u> _
+				ł	-	
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			TON AL RESOURCE			ELL LOG	-		
			renada R	CRA LOCA Geologi	No. of Concession, Name of Street, or other	: Grenada, <sup>ramer</sup>	Missi	ssippi	
Driller:	Р. 9	S. I. IncE	sh Rotary Engineering	Date:		ust 26, 1987			
Top of Depth	Well of W	Elev.: 2 /ell: 63.4		Sample Collection G-grab T-shelby tube S-splitspoon C-rock core		GRAVEL PAC BENTONITE GROUT			
Ground At Cor	nple	the second s	:	Casing Material: 2" I.D. PVC Screen: 10' of 0.010 " Sictled		SCREEN			
Depth	Sample	SPT Blow Counts		- Description				Construction	
5 10 10 10 10 10 10 10 10 10 10 10 10 10				Refer to well log R-9D for descrip	otions				

1

## Sheet 1 of 2

K	F	Z, YS	TONI L RESOURCES	T INC.		WE	LL LOG	(R-)	9C)	
PRO	JE	CT: Gr	enada RC	RA	LOCAT	ION:	Grenada,	Missi	ssippi	
Drilling Driller:	Meti P. S	hod: Wasi S. I. IncE	h Rotary ngineering		Geologist: Date;		amer Ist 26, 1987			Ι.
Top of Depth	Well of W	vation: 21 Elev.:215 /ell: 63.4 fe	5.99 feet eet	G-grab S-splitspoon	Collection T-shelby tube C-rock core		GRAVEL PACH BENTONITE GROUT		00000000	
Ground At Cor		ter Depth: tion:		Casing Material: 2" I Screen: 10' of 0.010	.D. PVC * Slotted		SCREEN			
Depth	Sample	SPT Blow Counts		Descri	ption				Construction	
			Re	fer to well log R-9D fc	ar descriptions					
70			17						2of2	

		CT: R-90		R-9D Well Nest		N: Grenada,M	ississ	ippi
Driller:	P. S	. I. IncEng	ineering		-	igust 25, 1987		
Top of	Ground Elevation: 213.87 feet Top of Well Elev.:216.67 feet Depth of Well: 90 feet			S-splitspoon C	-shelby tube -rock core	GRAVEL PACK BENTONITE GROUT		
Ground At Col	Ground Water Depth: Casing Material: 2" I.D. PVC At Completion: Screen: 10' of 0.010" slotted				PVC otted	SCREEN		
Depth	Sample	SPT Blow Counts		Descripti	ion		c	onstructio
-	s s	-	-	Tan brow	rn SILT, tr. roots		_	
5	S			Gray SILT,	little clay	0.0000		
	Т	-						
- 10 	S	-					-	
_	S	-		Brown SILT & CL	AY, tr. f sand, tr. roo	ts		
— 15 —	S	-						
- 20	S	-		TapłSA	AND, tr. silt	2	-	
-				1411 37	4NU, 0. Sit			
- 25	S							
-		_	G	Gray mf SAND, little siit, tr.	clay,some wood frag	jments		
- 30 	S	-						
-				35-35.2' Rust mi S				
- 35	S	7,14,18			1 A MEN 1944 194			1.5.5 15.4

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Sheet 1\_ of 3\_

K		Z, EYS] ONMENTAL		E S, INC.		W	ELL LOG	(R-	9D)		
PRC	OJE	ECT: R-9	C and F	-9D Well I	Nest L	OCATIO	N: Grenada,I	Missis	sippi		1
	Drilling Method: Wash RotaryGeologist:C. CramerDriller: P. S. I. IncEngineeringDate:August 25, 1987									1	
Top of Depth	and Elevation: 213.87 feet of Weil Elev.:216.67 feet th of Weil: 90 feet			Sample Collection     GRAVEL PACK       G-grab     T-shelby tube     BENTONITE       S-splitspoon     C-reck core     GROUT						22222	
At Co	omple			Casing Materia Screen: 10' of	0.010" sicited		SCREEN				
Depth	Sample	SPT Blow Counts		D	escription				Constr	uction	
	5 S	15,20,28		Rust mf SAN	ND, tr. siit, tr. gr.	ay silty clay la	minae			****	
50		15,16,17		Ru	ust mf SAND, tr.	gray silt					(
	S S	18,24,34	Bro	own mf SAND &	SILT, micaceou	s,some small	silty clay pockets				
70	S	27,50/5		Gray	I SAND & SILT	,micaceous			N. AND		(
80	S			Gray f S	AND, some silt,	micaceous					

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Sheet 2\_of 3\_

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KEY ENVIRONME	STON]	E , inc.	well log (R-9D)
PROJECT:	R-9C and R	ويراجع والمحمد والمناقبة فالمنافقة التقام والبائلة أأخاله المرجع والمتباد فيستباد والمستعد والها	ION: Grenada,Mississippi
Drilling Method: 1 Driller: P. S. I. Ind	icEngineering	Geologist: Date:	C. Cramer August 25, 1987
Ground Elevation Top of Well Elev, Depth of Well: 90	.: 216.67 feet 0 feet	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core	GRAVEL PACK BENTONITE GROUT
Ground Water De At Completion:	epth:	Casing Material: 2" I.D. PVC Screen: 10' of 0.010" slotted	SCREEN
Depth 2 Blo	ow unts	Description	Construction
85 S 31,5	50/5	Gray f SAND, some silt, micace	eous
90 95 100		Bottom of Boring-90 feet	

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	MONITORING WELL LOG	70
	c., Grenada, Mississippi	
DRILLING METHOD Hollow	Stem Auger GEOLOGIST	WELL NU. <u>R-10</u>
DRILLER PSI Inc.	DATE 11/3	/86
GROUND ELEVATION	GROUND WATER DEPTH (ft):	
TOP OF WELL 208.78'	AT COMPLETION	GRAVEL PACK
DEPTH OF WELL (ft) 27	AFTERHOURS	BACK FILL
CASING MATERIAL 2" PVC	SCREEN 10' of 0.010" slots	SCREEN
STRATA SAMPLE DEPTH DEPTH	DESCRIPTION	CONSTRUCTION
No sample	s taken oring Log for soil descriptio	- 図 図 -

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		MON ITORING WE			
PROJECT Kopper	<u>s Co. Inc</u>	<u>Grenada. Miss</u>			WELL NO. R-10B
DRILLING METHOD DRILLER		,		GIST <u>s.a</u> .	
	PSI Inc.		the second s	11/14/86	5
GROUND ELEVATION	and the second secon		ER DEPTH (ft):	G	RAVEL PACK
TOP OF WELL 20		AT COMP		8	SENTONITE
DEPTH OF WELL (f	t) <u>4/</u>	AFTER	HOURS		ACX FILL
CASING MATERIAL	2" PVC	SCREEN 10'	of 0.010" sl	ots	CREEN
STRATA SAMPLE DEPTH DEPTH		DESCRIPT	LION		CONSTRUCTION
	No sample See B-l E	es taken Boring Log 1	for soil desc	cription	

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PROJECT_KOPPERS CO. Inc Greands. Nississippi       WELL NOR_10B         ORILLING METHOD_Mud Rotary       GEOLOGIST_S.A. Colton         DRILLERPSI IncOATE1/14/85       GROUND ELEVATION         TOP OF WELL_208.94'DEPTH (ft):       GROUND MATER DEPTH (ft):         DEPTH OF WELL (ft)_47       AT COMPLETION         CASING MATERIAL_2" PVCSCREEN 10' OF 0.010" slots       SRAVEL PACK EXCERT         STRATA SAMPLE       DESCRIPTION       CONSTRUCTION         45				MONITORING WELL LOG			
DRILLING METHODMud Rotary       GEOLOGIST_S.A. Colton         DRILLER       PSI Inc       DATE         DRILLER       PSI Inc       DATE         GROUND ELEVATION       GROUND WATER DEPTH (ft):       GRAVEL PACK         TOP OF WELL       208.94'       AT COMPLETION       BENTONITE         DEPTH OF WELL (ft)_47       AFTERHOURS       GRAVEL PACK       DESCRIPTION         CASING MATERIAL       PVC       SCREEN 10' of 0.010" slots       SCREEN         STRATA SAMPLE       DESCRIPTION       CONSTRUCTION          No samples taken		PROJECT Konner				(	$\Box$
DRILLER       PSI Inc.       DATE       11/14/86         GROUND ELEVATION       GROUND WATER DEPTH (ft):       GRAVEL PACK BENTONITE BACK FILL CONCRETE         TOP OF WELL 208.94'       AT COMPLETION       BENTONITE BACK FILL CONCRETE         DEPTH OF WELL (ft) 47       AFTER HOURS       GRAVEL PACK SENTONITE BACK FILL CONCRETE         CASING MATERIAL 2" PVC       SCREEN 10' of 0.010" slots       SCREEN         STRATA SAMPLE       DESCRIPTION       CONSTRUCTION         AFS       No samples taken       See B-1 Boring Log for soil description         45       -       -					OLOGIST C	WELL NO. R-10B	
GROUND ELEVATION       GROUND WATER DEPTH (ft):         TOP OF WELL 208.94'       AT COMPLETION         DEPTH OF WELL (ft) 47       AFTER HOURS         CASING MATERIAL 2" PVC       SCREEN 10' of 0.010" slots         STRATA SAMPLE       DESCRIPTION         DEPTH DEPTH       DESCRIPTION         CONSTRUCTION       CONSTRUCTION         45       No samples taken         See B-1 Boring Log for soil description       45							
TOP OF WELL 208.94'       AT COMPLETION       GRAVEL PACK         DEPTH OF WELL (ft) 47       AFTER HOURS       BENTONITE         CASING MATERIAL 2" PVC       SCREEN 10' of 0.010" slots       CONCRETE         STRATA SAMPLE       DESCRIPTION       CONSTRUCTION         Mo samples taken       See B-1 Boring Log for soil description       CONSTRUCTION						786	4
DEPTH OF WELL (ft) 47       AFTER HOURS       BACK FILL CONCRETE SCREEN         CASING MATERIAL 2" PVC       SCREEN 10' of 0.010" slots       BACK FILL CONCRETE SCREEN         STRATA SAMPLE DEPTH DEPTH       DESCRIPTION       CONSTRUCTION         No samples taken See B-1 Boring Log for soil description       AFTER HOURS       Image: Construction for the state of the s		i				GRAVEL PACK	
CASING MATERIAL     2" PVC     SCREEN     10' of 0.010" slots     CONCRETE SCREEN       STRATA SAMPLE DEPTH     DESCRIPTION     CONSTRUCTION       No samples taken See B-1 Boring Log for soil description     Image: Construction		1			·		2
CASING MATERIAL <u>2" PVC</u> SCREEN <u>10' of 0.010" slots</u> STRATA SAMPLE         DEPTH       DESCRIPTION         CONSTRUCTION         No samples taken         See B-1 Boring Log for soil description         45						CONCRETE	
DEPTH DEPTH DESCRIPTION CONSTRUCTION No samples taken See B-1 Boring Log for soil description			2" PVC	SCREEN 10' of 0.010'	<u>slot</u> s	JUREEN	
A5- A5- A5- A5- A5- A5- A5- A5-				DESCRIPTION		CONSTRUCTION	-
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			NO SAMPIE See B-1 B	s taken oring Log for soil d	escription	$\begin{bmatrix} I \\ I \end{bmatrix} \begin{bmatrix} -I \\ I \end{bmatrix}$	]
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	MONITORING WELL LOG		and and the Constant of States of States of
PROJECT Koppers Co. Inc.	Grenada, Mississippi	_	WELL NO. R-11
DRILLING METHOD Mud Rotary DRILLER PSI Inc.		<u>S. A.</u>	Colton
	DATE 11/	12/86	
GROUND ELEVATION TOP OF WELL	GROUND WATER DEPTH (ft): AT COMPLETION	GR	AVEL PACK
DEPTH OF WELL (ft) 25	AFTER HOURS	85.	NTONITE CK FILL
CASING MATERIAL 2" PVC		COI	NCRETE REEN
STRATA SAMPLE	SCREEN 10' of 0.010" slots DESCRIPTION	L	
DEPTH DEPTH			CONSTRUCTION
No sample	es taken Boring Log for soil descript.	. 1	
	Soring boy for soir descript.	ion	- 図 図 コ
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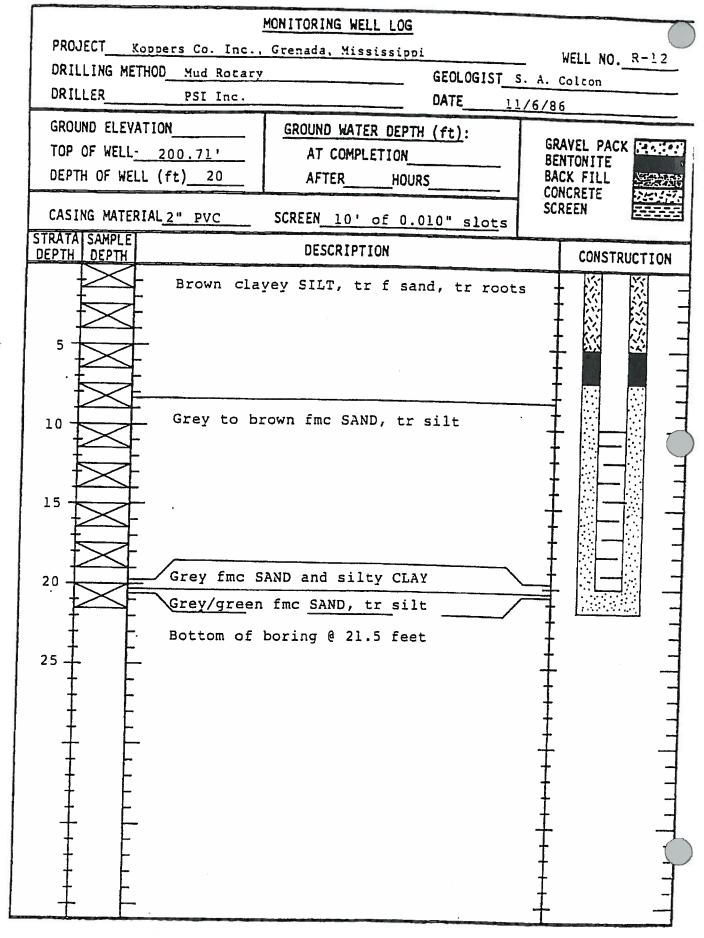
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K			TAL RESOURCES	E S, INC.	W	ELL LOG	R	-12B
PRC	JE	CT: (	GRENADA	WOOD PLANT	LOCATION	SRENAD	A, MS	
			D: MUD ROTAF WESTERN COM		GEOLOGIST: DATE: AUGU	S. COLTON ST 15, 1988		
Top of	Wel	evation: I Elev.:		S-splitspaan C	shelby tube	GRAVEL PACK BENTONITE GROUT		
Depth	9	eil: 41 SPT Blow Count		Casing Material: Screen: Des	cription	GNUU		Construction
5 10 15 20 20			S	EE R-12 BORING LOG FOF FROM 0	R GEOLOGIC DESC TO 24.5 FEET	RIPTIONS		
25  -	S	247		Grey mfc SAND	, trace to little Clay	ey Silt		
30 30 	s	8 11 8		Grey mic SAND,	trace to little Clay			
35     40	S	6 35 38 		195				

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PROJECT: GRENADA WOOD PLANT       LOCATION: GRENADA, MS         DRILLING METHOD: MUD ROTARY DRLLER: LAYNE WESTERN COMPANY, INC.       GEOLOGIST: S. COLTON DATE: AUGUST 15, 1988         Ground Elevation:       G-grab       GRAVEL PACK         Top of Well Elev.:       G-grab       Screen         Depth of Well Elev.:       G-grab       GROUT         Counte       Casing Material: Screen       GROUT       CAVE-IN         Depth of Well Elev.:       Description       Construction         4       Biow       Description       Construction         4       Biow       Description       Construction         4       Biow       Description       Construction         4       Biotrom OF BORING 43.5'       BOTTOM OF BORING 43.5'       BOTTOM OF BORING 43.5'	KEYSTON ENVERONMENTAL RESOURCE	E s, inc.	WELL LOG	R-12B
DRILLER: LAYNE WESTERN COMPANY, INC.     DATE: AUGUST 15, 1988       Ground Elevation:     G-grab     T-shelby tube     GRAVEL PACK     SCREEN       Top of Well Elev.:     G-grab     T-shelby tube     GRAVEL PACK     SCREEN       Depth of Well: 41'     Casing Material:     GROUT     CAVE-IN       Depth ©     SPT     Blow     Cave-IN       Depth ©     S 8 14 15     Construction       45     Ground S     BOTTOM OF BORING 43.5'     Ground S	the state of the second se		the second s	, MS
Top of Well Elev.:     G-grab     T-shelby tube     Grave     SCREEN       Depth of Well: 41'     Casing Material:     GROUT     CAVE-IN       Depth of Well: 41'     Casing Material:     CAVE-IN     CAVE-IN       Depth of Well: 41'     Blow     Construction     Construction       Screen:     Description     Construction	DRILLER: LAYNE WESTERN CON	020201	GIST: S. COLTON UGUST 15, 1988	
Depth     SPT Blow Counts     Description     Construction       45     -     -     -       45     -     BOTTOM OF BORING 43.5'     -	Top of Well Elev.:	G-grab T-shelby tube S-splitspoon C-rock core	BENTONITE	
s 8 14 15 BOTTOM OF BORING 43.5'			GROUT	
		BOTTOM OF BORING 43.5'		

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Sheet 2 of 2

PRO			TONI L RESOURCES	WOOD PL	ANT L	OCATION	I: GRENAD	)A, MS	5	
DRILL	ing : ER: 1	METHOD	: MUD ROTARY /ESTERN COM	Y IPANY, INC.		GEOLOGIST; DATE: 8-3-88	S. COLTON			
Ground Top of \				G-grab	nole Collection T-sheib 2000 C-rock	y tube	GRAVEL PACK BENTONITE		SCREEN	
Depth o				Casing Material Screen:	:		GROUT	<u></u>	CAVE-IN	
Depth	Sample	SPT Blow Counts			Descri	otion			Constru	ction
-	s	147_		Brown SILT	& CLAY, trace	f Sand, trace f	m Gravel			
	s s	366 126_		Brown Clays	y SILT, trace f	Sand				
-				Brown fm S/	AND, little Silt a	ind Clay				
-	S	457		Brown fm	SAND, trace S	iit				
	S	4 7 12		Brown Si	ty CLAY, some	fine Sand			図	
- 15	s	8 12 13			AND, trace Sil 11.5 trace Clay			_		
-	8	8 11 1 <u>3</u> -						_	巡	
- 	S -	6 10 1 <u>4</u>			1					
-								8. <u></u>		
- 25 	s	 8911_								
-				Grov		t i Silty Clay p	ockets			
<u> </u>	s	4 7 1 <u>8</u>		Grey						
-					BOTTOM OF	BORING 31.5'				
		-								

	K	K F	Z, CYS ONMENT	TON]	E , inc.	N	/ELL LOG	i : R-	16	
	PRO	OJE	CT:	GRENADA	WOOD PLA	NT LOCATIO	N: GRENAL	DA, MS	3	4
				): MUD ROTAR' VESTERN COM	IPANY, INC.	DATE: 8-18-	: S. COLTON 58			1
1			evation: I Elev.;		G-grab	le <u>Collection</u> T-shelby tube on C-rock core	GRAVEL PACK BENTONITE			
1			'eli: 20,5'		Casing Material: Screen:		GROUT	<u> </u>		
C	epth	Sample				Description			Construction	
	- 5	S 9 5	7109 	-	Brown	Clayey SILT, trace f Sand				
E		s	889		Brown	n f SAND, trace to little Sil	8	-		
F	-10	s	121_		В	rown Grey fmc SAND				$\bigcap$
E		s	212		Grey mc SAND, lit	ile Clay pockets, trace wo	od fragments			
	- 15	S	122_		Grey C	ayey SILT, some f Sand		-		
E	- 20	Ş.	- 237_		Grey fm SA	ND, little to some Silty Cla	y products			
E			-		BOT	TOM OF BORING 21.5'		-		
E	- 25									
F										
F	- 30		4							
F									1	
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K	E	YS NMENT	TON]	E, , inc.	W	ELL LOG	i : R-*	17
PRO	JE	CT:	GRENADA	WOOD PLANT	LOCATION		DA, MS	5
			D: MUD ROTAR' WESTERN COM	PANY, INC.	GEOLOGIST: S DATE: 8-11-88			
Ground Top of V				Sample Collect G-grab T-sh S-splitspoon C-roo	i <u>on</u> elby tube ck core	GRAVEL PACK BENTONITE		
Depth of			r	Casing Materiai: Screen:		GROUT	KKK K	CAVE-IN
Depth	Sample	SPT Blow Count		Desc	ription			Construction
-	G	-	-				_	巡察
_ ł	G		1					
- 5		6 10 9	-				a de la calegaria de la calega	
-	s			Brown Clayey S	ILT, trace f Sand			
_ [	s	6 9 1 Ī	]				_	
10	s	6 12 11					_	
- [							_	※ ※
- 15	S	6 14 9	]					
	s	7 12 9					_	
-		-	1	Grey White f SA	ND, trace Silt		-	
- 20	s .	9 18 22		@ 19.5	- 21' Sand is fm		_	
				@ 19.7	" - 20" Clay pocke	t	_	
- 25	s	7 14 19		@ 25' - 32.5 Sa	nd is fmc and cont	ains Clay pockets	s 🚽	
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- 30							_	
·  -	s	4 7 13					-	
-  -				BOTTOM OF EO	BING 32 5'			
- 35				COLLAPSE TO 2			_	
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K	F	Z, YS	TON]	E , INC.	W	ELL LOG	: R-1	18		C
PRC	JE	CT: (	GRENADA	WOOD PLANT	LOCATION	I: GRENAD	DA, MS	3		
			: MUD ROTAR' VESTERN COM		GEOLOGIST: DATE: 8-2-88					
Ground	d Ele	vation:			helby tube	GRAVEL PACK		SCREEN		
Top of				S-splitspoon C-r Casing Material:	ock core	BENTONITE GROUT		CAVE-IN		
Depin		ell: 31'	1	Screen:			N.S.	T		
Depth	Sample	Blow Counts		Des	cription			Construct	tion	
E	s	399_								
E	s	359		Brown Clayey SILT, tra	ace f Sand, trace fir	ne Gravel				
5	s	1 5 13		و و و و و و و و و و و و و و و و و و و				図	<b>※</b>	
-		-		Brown Silty CL	AY, trace fine Sand				<b>※</b>	
F	s	9 12 18					_		刻一	
10	s	10 16 3 <u>2</u>	5	Brown Grou fm S	AND, trace to little	Cile .			巡上	(
-				@ 30' trace C		Sik	_			
F	s	12 14 16			nay sunigers				巡上	
- 15	s	10 18 15								
-		-					_			
20	s'	15 13 <u>15</u>								
_							_			
- 25	s	11 18 1 <u>7</u>								
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<u> </u>	s	579								
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K	E	Z, YS	TON] AL RESOURCES	T-JNC.			W	ELL LOG	i : R-1	19	
PRO	JE	CT:	GRENADA	WOOD	PLANT	LO	CATION	I: GRENAL	DA, MS	;	
			D: MUD ROTARY WESTERN COM			GE	OLOGIST: TE: 8-16-8	S. COLTON B			
Ground Top of <sup>1</sup>				S-s	plitspoon	T-shelby t		GRAVEL PACK BENTONITE		SCREEN	
Depth o				Casing Mat Screen:	terial:			GROUT	<u></u>	CAVE-IN	
Depth	Sample	SPT Blow Count			C	)escripti	on			Constru	ction
5	G G s	211					.T, little fm : to 50% fmc				33333333333333333333333333333333333333
10	s s s	2 1 1 woh 3 6					ce to little f : SILT, trace f			****	
15 	s	4 5 11	 	<u></u>	Grey	SILT, trace	Sand				
20 20 	<u>s</u>	4 6 1 <u>0</u>		644 64 No. 19 Augusta	Brown	fine SAND	, trace Silt				
25 	S	- 457_			Grey m	SAND, trad	ce Silt				
		-	-		BOTTOM	OF BORI	NG 27'	3			
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										<u>1</u> of	4

			TON]					_	
PRO				WOOD PLANT	LOCATION		DA, MS	S	
			): HOLLOW STE VESTERN COM		GEOLOGIST: DATE: 8-16-88				
Ground	Ele	vation:	-		-shelby tube	GRAVEL PACK		SCREEN	
Top of \				S-splitspoon C Casing Material:	-rock core	BENTONITE GROUT		CAVE-IN	
Depth o				Screen:		GHUUI	<u> </u>		
lepth	Sample	SPT Blow Counts		De	scription			Constru	ction
-	G			FILL (a	sohalt, gravel)			151	रज
-	G	-							刻
-	G	_		Brown Silty	Y CLAY, trace Silt			1	約
— 5 -	~			Brown C	LAY, trace Silt			図	紉
•	G							図	図
-	G	_			y Brown Silty CLAY trace f Sand				巡
- 10	S	4 12 <u>21</u>		_	25' little to some f Sar	nd			巡日
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	S	11 15 19						図	図
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- 20	s .	10 14 13							
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				@ 15' - 16.5' San	nd is Brown Black				
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Sheet \_1\_ of \_1\_

PRO		CT:		WOOD PLANT	LOCATION	I: GRENAD	A, MS	;	
			HOLLOW STE		GEOLOGIST: DATE: 8-15-8				
Ground Elevation: Top of Well Elev.:				Samole Collection G-grab T-sheiby tube S-splitspoon C-rock core BENTONIT			СК		
Depth of Well: 28' Depth E Blow Counts				Casing Material: Screen: De	GROUT		CAVE-IN Constru		
		Counts							
-	G			FILL (black gravel, asphalt, cinders, fmc sand)				- 図	
- 5	G	-		Dark Grey Black	Silty CLAY, trace fm	Sand			
_	G	-					_		
_	G	-					7		
10 		-	•						
-	s	6 10 16			LT, trace to little f Sa			図	K
- 15		-			AND & SILT, trace C Sitty CLAY, little f San			2.2	1
-	s	4 10 4					_		
-		-		AANING CLEAN HIN	: SAND, trace to little	SII	_		
20 	s <sup>·</sup>	591 <u>1</u>			48		-		
-		-					4		
- 25	s	3712					_		
							_		
- 30		4					_		
-				EOTTOM	OF BORING 30"				
-		4					1		
- 35		1		3					
:		4					4		
_							-		

PROJEC	T:	GRENADA	WOOD	PLAN	r lo	CATION	: GRENA	DA, MS	; 	
		D: HOLLOW STE WESTERN COM				OLOGIST: TE: 8-15-8	J. DINUNZIO B			
Ground Eleva	ition:		G-g		T-shelby ti		GRAVEL PACK		SCREEN	
Tap of Well Elev.: Depth of Well: 28'			S-s Casing Mat		C-rock cor	e	BENTONITE	2222	CAVE-IN	
	SPT	1	Screen:						r	
	Blow ount	a	Description					Construction		
s 4	10 9	FILL (	Black Brown	ı m Gravel	and Sand,	little Silt, tra	ce brick fragmen	its)	影	13
	223	1					7			談
- 5 - 5	232									該
- s 2			Black Br	own Grey	Silty CLAY,	trace f San	d	_	図	該
- <u>s</u> 2	222	-						-	図	談
10s2	2 1 2									阙
	23									澎
									22.2	223
s <sup>_2</sup>	12_		ł	Dark Grey	- Grey SILT	& CLAY				
_	-									
20 s · 2	24			Gray Gra	en Clayey S	ILT.		-		
= 🗖								_		
- 25		1		rev Brown	Green mc S	SAND		-		
s 6	47_	-	@ 25' - 26.5' trace to little silt, trace wood fibers							
_	-	-			e silt, trace v				E	E
30 s 6	10 11	-	-							
-  ++		1		BOTTOM	OF BORING	G 31.5'		_		
- 35	-							-		
	-							_		

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K	F	Z, YS	TONI L resources	F., inc.	W	ELL LOG	: R-2	23	
				WOOD PLANT		and the second secon	A, MS	; 	
			: MUD ROTARY /ESTERN COM		GEOLOGIST: DATE: 8-15-8				
Ground Top of V Depth c	Weil	Elev.:		S-splitspoon C- Casing Material:	shelby tube	GRAVEL PACK BENTONITE GROUT		SCREE	N
Depth	Sample	SPT Blow Counts		Screen: De:	scription	L	<u> 677</u>	Const	lon
	s	473_	FILL	(cinders, little Silt, little fm	Sand, and f grave	, tar in bottom 2°)		闷	阙
- - - 5	s	134		Brown SILT & C	LAY, trace f Sand				
-	s	246_		Brown	Silty CLAY			闼	該
-	9	878		Brown f SAN	ID, trace Silt				公
- 	S	787_		Brown f SANE	& CLAY & SILT				
- - - 15	S	577					-		
-	S			Grey mf SA	ND, trace silt				
- 20 -	5								
-				BOTTOM	OF BORING 22		_		
- 25 - -									
- 30		-							
-							-		
35		_		e					
-									
_									
							Sheet	<u>1</u> of	1

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KE VR(	Z, YS	TON] L RESOURCES	T, INC.	W	ELL LOG	: R-2	24	(
OJE	СТ: (	GRENADA	WOOD PLANT	LOCATION	I: GRENAL	DA, MS	)	
			G-grab T	-shelby tube	GRAVEL PACK			
			Casing Material:		GROUT	<u></u>	CAVE-IN	
Sample	SPT Blow Counts			escription			Construction	
s	18 21 10		FILL (asphalt,gravel,	Black Brown Silty Cla	ay, f Sand)		影談	1
s	2 2 5		Black Grey S	Silty CLAY, trace f S	and			
5	257_		. Grow to Dark Br					
s	444		@ 5' - 9' tra	cs f Sand		-		
s	346				nd	-		
s	12 19 18					L.F.		
s	9 13 1 <u>4</u>			•		_		
			Grey White fm	SAND, trace to little S	Silt	Ξ		
) s	687_					-		
						-		
	768-		@ 25' - 26.5 tr	race silty clay, trace r	oot fragments	-		
s	4911		Grey Brown a	nc SAND, trace Silt				
	no samole					-		
	_		Grey Br ,	rcwn Silty CLAY		-		
	-		EOTTON	OF BORING 37		$\neg$		
	OJE LING LER d Ele f Well of W eldung s s s s s s s	OJECT: 0 LING METHOD LER: LAYNE W nd Elevation: f Well Elev.: of Well: 32' S 18 21 10 S 2 2 5 S 7 S 4 4 4 S 3 4 6 S 12 19 18 S 9 13 14 S 5 6 8 7 S 7 6 8 S 7 6 S 7 6	OJECT:       GRENADA         LING METHOD: HOLLOW STELER: LAYNE WESTERN COM         Ind Elevation:         f Well Elev.:         of Well:       32'         Image: SPT Blow Counts         s       18 21 10         Image: SPT Blow Counts         s       12 19 18         s       9 13 14         Image: SPT G 8         S       7 6 8         Image: SPT G 8         S       7 6 8         Image: SPT G 8         Image: SPT G 8         Image: SPT G 8         S       7 6 8         Image: SPT G 8         Image: SPT G 8         Image: SPT G 8         Image: SPT G 8 <tr< td=""><td>LING METHOD: HOLLOW STEM AUGER LER: LAYNE WESTERN COMPANY, INC. ad Elevation: f Well Elev.: of Well: 32' SPT Blow Counts S 18 21 10 FILL (asphalt, gravel, S 2 2 5 Black Grey 5 S 2 5 7 Grey to Dark Br S 4 4 4 S 12 19 18 S 12 19 18 S 12 19 18 S 9 13 14 Grey White fm S 6 8 7 S 7 6 8 Care Erown is S 4 9 11 Grey Erown is S 4 9 11 Care Erown is Care Erown is S 19 11 S 12 19 18 S 7 6 8 Care Erown is S 19 11 S 10 S 10 S 10 S 10 S 7 6 8 Care Erown is S 10 S 10 S 10 S 10 S 10 S 10 S 10 S 7 6 8 Care Erown is Care Erown is S 10 S 10 S</td><td>DJECT:     GRENADA WOOD PLANT     LOCATION       LING METHOD: HOLLOW STEM AUGER     GEOLOGIST: DATE: 8-11-8     GEOLOGIST: DATE: 8-11-8       Ide Elevation:     Samola Collection G-grab     T-shelby tube       ide Elevation:     G-grab     T-shelby tube       ide SPT     Blow     Description       ide SPT     Blow     Description       ide SPT     Black Grey Silty CLAY, trace f S       ide SPT     Grey to Dark Brown Silty CLAY       ide SPT     Grey White fm SAND, trace to little S       ide SPT     Grey White fm SAND, trace to little S       ide SPT     Grey Erown mc SAND, trace Silt       ide SPT     Grey Erown mc SAND, trace Silt</td><td>CDJECT:     GRENADA     WOOD     PLANT     LOCATION:     GRENADA       LING METHOD: HOLLOW STEM AUGER     GEOLOGIST:     J. DINUNZIO     DATE:     8-11-88       Id Elevation:     G-grab     T-shelby tube     GRAVEL PACK       Id Elevation:     G-grab     Description     GROUT       Id Elevation:     Gray Environmental Elevation:     Gray Environmental Elevation:       Id Elevation:     Grav Erown Elevation:     Gray</td><td>DJECT: GRENADA WOOD PLANT       LOCATION: GRENADA, MS         LING METHOD: HOLLOW STEM AUGER       GEOLOGIST: J. DINUNZIO         LER: LAYNE WESTERN COMPANY, INC.       DATE: 8-11-88         Id Elavation:       G-grab         If Well:       32'         Casing Material:       GROUT         Screen:       DescrIption         Image: Blow       DescrIption         Image: Streen:       DescrIption</td><td>DJECT: GRENADA WOOD PLANT LOCATION: GRENADA, MS LING METHOD: HOLLOW STEM AUGER LING METHOD: HOLLOW STEM AUGER LING METHOD: HOLLOW STEM AUGER GEOLOGIST: J. DINUNZIO DATE: 8-11-98  d Elevation: Graves Date: 8-17-88  GRAVEL PACK GRAVEL P</td></tr<>	LING METHOD: HOLLOW STEM AUGER LER: LAYNE WESTERN COMPANY, INC. ad Elevation: f Well Elev.: of Well: 32' SPT Blow Counts S 18 21 10 FILL (asphalt, gravel, S 2 2 5 Black Grey 5 S 2 5 7 Grey to Dark Br S 4 4 4 S 12 19 18 S 12 19 18 S 12 19 18 S 9 13 14 Grey White fm S 6 8 7 S 7 6 8 Care Erown is S 4 9 11 Grey Erown is S 4 9 11 Care Erown is Care Erown is S 19 11 S 12 19 18 S 7 6 8 Care Erown is S 19 11 S 10 S 10 S 10 S 10 S 7 6 8 Care Erown is S 10 S 10 S 10 S 10 S 10 S 10 S 10 S 7 6 8 Care Erown is Care Erown is S 10 S	DJECT:     GRENADA WOOD PLANT     LOCATION       LING METHOD: HOLLOW STEM AUGER     GEOLOGIST: DATE: 8-11-8     GEOLOGIST: DATE: 8-11-8       Ide Elevation:     Samola Collection G-grab     T-shelby tube       ide Elevation:     G-grab     T-shelby tube       ide SPT     Blow     Description       ide SPT     Blow     Description       ide SPT     Black Grey Silty CLAY, trace f S       ide SPT     Grey to Dark Brown Silty CLAY       ide SPT     Grey White fm SAND, trace to little S       ide SPT     Grey White fm SAND, trace to little S       ide SPT     Grey Erown mc SAND, trace Silt       ide SPT     Grey Erown mc SAND, trace Silt	CDJECT:     GRENADA     WOOD     PLANT     LOCATION:     GRENADA       LING METHOD: HOLLOW STEM AUGER     GEOLOGIST:     J. DINUNZIO     DATE:     8-11-88       Id Elevation:     G-grab     T-shelby tube     GRAVEL PACK       Id Elevation:     G-grab     Description     GROUT       Id Elevation:     Gray Environmental Elevation:     Gray Environmental Elevation:       Id Elevation:     Grav Erown Elevation:     Gray	DJECT: GRENADA WOOD PLANT       LOCATION: GRENADA, MS         LING METHOD: HOLLOW STEM AUGER       GEOLOGIST: J. DINUNZIO         LER: LAYNE WESTERN COMPANY, INC.       DATE: 8-11-88         Id Elavation:       G-grab         If Well:       32'         Casing Material:       GROUT         Screen:       DescrIption         Image: Blow       DescrIption         Image: Streen:       DescrIption	DJECT: GRENADA WOOD PLANT LOCATION: GRENADA, MS LING METHOD: HOLLOW STEM AUGER LING METHOD: HOLLOW STEM AUGER LING METHOD: HOLLOW STEM AUGER GEOLOGIST: J. DINUNZIO DATE: 8-11-98  d Elevation: Graves Date: 8-17-88  GRAVEL PACK GRAVEL P

				WOOD PLANT	GEOLOGIST:		A, MS	;	
			: HOLLOW STE ESTERN COM		DATE: 8-12-8				
Ground Top of V				<u>Samole Colle</u> G-grab T-s S-splitspoon C-	shelby tube	GRAVEL PACK BENTONITE		SCREEN	
Depth o	of W∈	oll: 31'		Casing Material: Screen:		GROUT	<u> </u>	CAVE-IN	
Depth	Sample	SPT Blow Counts		De	scription			Constru	ctlor
-	s	7 15 15		FILL (asphalt, Gravel, E	Brown Clayey Silt, t	race fine Sand)			1
-	s	213		Black Green CLAY, tra	ce Silt, trace roots,	trace f Sand		図	
5	s	367_		Grey B	rown Silty CLAY			図	
				Tan fin	e SAND & SILT			闼	
	S	5797	<		, trace f Sand, trac	e Gravel			
10	s	9 15 1 <u>6</u>		Green Grey to Bro	own to Grey fm SAN	D			
-				_	contains 50 % Clay	ay Silt			区
_	S	7 11 15	•	@ 10.3' - 12.	5' trace to little Silt		_		
<u> </u>	S	8912					-		
-		-					s <del></del>	55	
_				White to white Brow	wn fm SAND, trace	to little Silt	_		227655
<u> </u>	S	7 10 9					-		
- 1	-								
-		-							▋.
- 25		]							
-	s	486_							
-		4		Red Brown fmc SAND, I	race to little Brown	Grey Silty Clay			
		-							
_ 30	s	no samote					_		▋
- [									
-		7					_		
- 35		-		воттом с	F BORING 35'				
		]					_		
-		-					-		

K	E	Z, YS	TON] L RESOURCES	E, , inc.	W	ELL LOG	i : R-2	26	
PRO				WOOD PLANT	LOCATION		DA, MS	3	
DRILL	.ING .ER:	METHOD	: MUD ROTARY ESTERN COM	PANY, INC.	GEOLOGIST: DATE: 8-12-8	8 .			
Ground Top of				<u>Sample Colle</u> G-grab T-s S-splitspoon C-t	inelby tube	GRAVEL PACK		SCREEN	I
		ell: 33'		Casing Material: Screen:		GROUT	<u></u>	CAVE-IN	3
Depth	Sample	SPT Blow Counts		Des	cription			Construction	1
	s	797		FILL (cinders	, Clay, red mc Sand	)		रित हरन	-
	s				SILT, trace fm San				
5 	s	345_		Brown Clayey SILT to	SILT & CLAY, trac	e fm sand			
10	s	5 17 <u>18</u>							
	s s	6 11 12 6 10 9		Brown SILT &	CLAY,		-		
	-			@ 10.75' G	rey White f SAND				
20 	S	6 11 <u>12</u> -							
25	S	233_		Brown Green Silty	CLAY, trace f Sand	1	111		
30									
	s	478		Grey mf SA	ND, trace Siit		-		
		-		BOTTOM	OF BORING 33'				
				8					

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K	E	z, YS	TONI AL RESOURCES	Ŧ			W	ELL LOG	i : R-2	27	
			· · · ·	وي المراجع ا		- 10					
PRO			GRENADA		PLANI		CATION		DA, ME	) 	
			: MUD ROTARY VESTERN COM				EOLOGIST: ATE: 8-12-8				
Ground	Ele	vation:		G-g		T-shelby		GRAVEL PACK		SCREEN	
Top of				S-sp Casing Mat	olitspoon erial:	C-rock o	910	BENTONITE GROUT	2223	CAVE-IN	
Depth o		SPT	r	Screen:					<u>SSS</u>	<u> </u>	
Depth	Sample	Blow Counts				Descript	lon			Constru	iction
-	s	433_		Brown Clay	ey SILT, tr	ace fm Sa	nd, trace to	little f gravel		該	阙
E	s	1 2 1		Brown C	LAY & SIL	.T, trace fr	n Sand, trace	e fgravel		図	
5	s	112		<u></u>					-		阙
E									-		闼
E	S	346		<b>D</b>		trace for	Cond trees	Convel			
E	S	235		Brown		,uace in	Sand, trace f	Gravei			
F	s	245									
- 15	s	235	1								
E						-					
20		-			Brown	im SAND,	trace Clay		_		
F	S	467_				•					
F		_			BOTT	OM OF BC	RING 23				
- 25		_									
FI		_									
		-							7		
30									_		
		-									
35		1									
EI		-							_		
		F									
F		-							-		
Conception product specific									Sheet	<u>1</u> of	1

K	E	YS NMENTA	TONI al resources	- , INC.	W	ELL LOG	: R-2	28	
PRO	JE	CT: (	GRENADA	WOOD PLANT	LOCATION	: GRENAL	DA, MS	;	1
			: HOLLOW STE ESTERN COM		GEOLOGIST: DATE: 8-10-88				
Ground	l Ele	vation:			shelby tube	GRAVEL PACK			
Top of				S-splitspoon C- Casing Material:	rock core	BENTONITE GROUT	মন্দ	CAVE-IN	
Depth o Depth	elqm	SPT Blow		Screen:	scription		5223	Construction	
	<u> </u>	Counts						K4 834	
F	S	677_		Red Brown to Brown S	ilty CLAY, trace to l	ittle f Sand	_	図図	
F	s	4 4 6							
5	9	357_				to little ( Cood		國國	
	5	368		Brown Green C	LAY, trace Siit, trace	e lo mule i Sano			
-10	s	6 11 13			<u></u>			國國	
F				Grey White, Red Brown	fm SAND, trace to s	some Silt			
F.	5	12 10 7				, 			
- 15 -	s	6 9 1 <u>1</u>		Grey Brown m S Red Brown Silty CL					
E		-							
20	S	456_							
		_					-		
- 25		-		Grey to Grey W	/hite fm SAND				
	s	496-							
_		-							÷
30				BOTTOM	OF BORING 29'				
_		-							
		-							
_		_					_		
		_					_		

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			AL RESOURCES					ELL LOG			
PRO		-	GRENADA				GEOLOGIST:		DA, MS	<u> </u>	
			WESTERN COM			••	DATE: 8-10-8	3			
Ground Top of \				S-	Sample ( grab splitspoon	T-shelb	y tube	GRAVEL PACK BENTONITE		SCREEN	
Depth o				Casing Ma Screen:	aterial:			GROUT		CAVE-IN	
Depth	Sample	SPT Blow Count	a			Descrip	otion			Constru	iction
-	s	459.	-		Dark Brown	Silty CL	AY, trace I Sa	nd		該	該
-	S	688		A			9.50 1				
- 5	s	456	-	Brown	CLAY to Si	ity Clay, t	race Silt to littl	e f Sand			
-	s	-									
- 10		344				1 A 11 - 14	0			図	
-	9	2 3 8		Red Brow	n CLAY, so	me White	Grey Im San	d, trace Silt		図	
-	5	4910	-						_		
— 15 -	S	652							-		673-89
		-	-						_		
- 20	S.	224_							_		
		-	Br	own to Grey	fm SAND,	little to s	ome Silt, trace	to little Clay			
- 25									2		
·	S	no sampte							-		
		_	1						_		E
- 30 -	s	no samo <del>le</del>	1								
: [					BOTT	OMOFB	ORING 31.5'		-		الخديب ا
- 35					,						
		-							7		
			2						=		
			L		-				Sheet	<u>1</u> of	

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K	E	YS'	TONI L RESOURCES	F, inc.			W	ELL LOO	à : R-(	30	
PRO	JEC	CT: 0	RENADA	WOOD	PLAN	r lo	CATION	I: GRENA	DA, MS	3	1
DRILLI	ING N ER: L	ATHOD	MUD ROTARY	( PANY, INC.			EOLOGIST: ATE: 8-17-8	S. COLTON B			
Ground	Elev	vation:		G-	<u>Sample (</u> grab	T-shelby	tube	GRAVEL PACK			
Top of V Depth o				Casing Ma	splitspoon aterial:	C-rock co	19	BENTONITE GROUT	222	CAVE-IN	
		SPT Blow		Screen:		Descript			E.C.C.A	Construction	1
Depth	Sample	Counts				Descript					1
E	5	4 6 16							_		
Εl	s	7 10 9			Brown C	Clayey SILT	', trace f Sar	nd			
5	S	12 19 3 <u>1</u>									
E	3	-									
		8 10 10 6 10 10									
ΈΙ	8								-		
F	S	4811			\ <b>\/</b> 5#	e f SAND,t	raca Silt		-		
	9	10 11 12					4' Sand is fm	I	-		
FI		-				-	5 Sand is m				
20	s	- 10 11 <u>12</u>			•						
F		-									
E		-									
25	9	379_							-		
ΕI											
30	5	134			(	@ 31.5' is C	Clay		<b>.</b>		
E		-			BOT	TOM OF BC	ORING 31.5'				1 12
E 35		-			,						
El		_									
		-									
E									Sheet	1 of 1	

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		K	E	YS'	<b>FONI</b> L RESOURCES	F. , INC.	W	ELL LOG	:R-3	31
	L					WOOD PLANT	LOCATION		A, MS	
	DR DR		ng ER: I	METHOU LAYNE W	HOLLOW STE	IPANY, INC.	DATE: 8-17-84			
	Grou	und	Elev	vation:	-		-sheiby tube	GRAVEL PACK		
	1 ·			Elev.: di: 34'		S-splitspoon C Casing Material:	-rock core	BENTONITE GROUT	<u>888</u>	
		-		SPT		Screen:				
	Depi	th	Sample	Blow Counts		De	escription			Construction
	-		G	-	FILL (Black m	n Gravel,some fmc Sand,	little asphalt, little Bla	ack Brown Silty Cl	ay)	
	F					Black Grey to Grey Gre		ty CLAY		
	F	5	G			@ 3' - 5' some woo @ 7.5' - 9' trace to	little wood fragments			
	F					@ 7.5' - 1 1' little to	some f sand		-	
	F		s	347						
	F	10	\$	4 5 15						
ċ	F		-	 787		Grey Gre	een f SAND & SILT			
	E.	15	S	/8/						
	F	10	s	578						
	F			-	(	Gray Brown to Brown Wh	ite fm SAND, trace to	little Silt		
	F	20	S -	477						
	F									
	F			-			<u></u>	<u></u>		
	F	25	s	10 10 <u>5</u>	F	Red Brown fm SAND, trace	Silt, trace black orga	anic streaks		
	E			1						
	L	30		_						
	F	30	S	759-	G	Grey Brown fmc SAND, tr	ace to little Brown Gri	een Silty Clay	_	
	F									
	F	35				BOTTOM	OF BORING 35			
	F			-		20110			_	
	`									
	E									
									Sheet	1 of 1

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K	F	Z, VYST	ON	E s. inc.	W	ELL LOG	(M	-1)	
PRO	JE	CT: Gro	undwal	er Monitoring	LOCATION	: GRENADA	a, Mi	SSISSIPPI	1
		METHOD: MU PSI, INC.	JD ROTAR	1	GEOLOGIST: DATE: Octobe	S. A. COLTON # 19, 1987		ويستريد فالمال والمكار المتراقي مشروع المتراج	1
Top of	Well	Elev.: 215.00 all: 26 feet	) feet	<u>Sample Coll</u> G-grab T- S-splitspoon C Casing Material: 2" I.D. F Screen: 10° of 0.010" sk	sheiby tube rock core	SAND PACK BENTONITE GROUT SCREEN			
Depth	Sample	SPT Blow Counts		Descripti				Construction	
	2 N N N	4,6,4 6,6,8 5,5,5 4,4,5		un clayey SILT, un SILT and CLAY tr fm sand			11111		
10 15 20	S S S S S	4,5,10 8,10,9 6,7,5 5,8,6 7,8,11	Tan	fmc SAND, tr silt	, tr clay				
- 25	S S	13,18,13 9,9,10	Brou	un siity CLAY, tr	to little fm :	sand			
30	2			Bottom of Bo					
- 35									$\left( \right)$
- 40						ang ang akang a	Sheet 1		

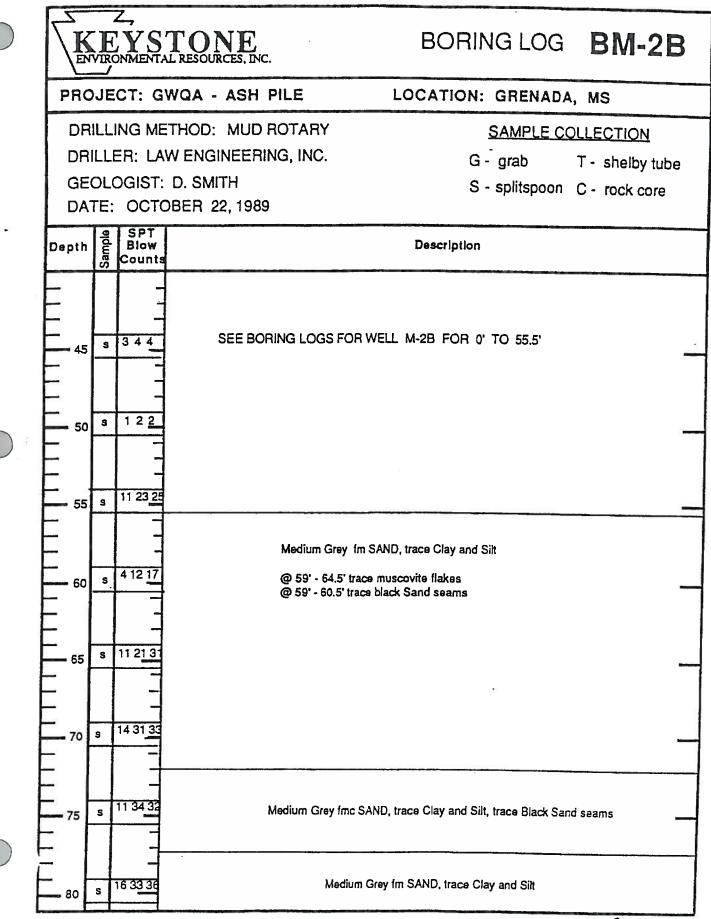
K	F	Z, YST XMENTAL I		E W	ELL LOG (	M-2)
PRO	JE	CT: Gro	undwat	er Monitoring LOCATIO	N: GRENADA,	MISSISSIPPI
DRILL	ING	METHOD: MI PSI, INC.		المحمد والمحادث المتحد والمحمد	S. A. COLTON or 19, 1987	
Top of	Weil	Elev.: 215.21 all: 27.5 feet	3 føet	Samole Collection G-grab T-sheiby tube S-splitspoon C-rock core Casing Material: 2° I.D. PVC Screen: 10' of 0.010° slotted	SAND PACK BENTONITE GROUT SCREEN	
Depth	Sample	SPT Blow Counts		Description		Construction
_	s	3,6,13 _	Bro	wn/black mf SAND, little sil	t and cinders	
	S	3,4,5	Broц tr	on clayey SILT to SILT and Cl fm sand	.AY,	
5	S	4,6,7 _				
-	s	5,4,5 -				
<u> </u>	S	4,5,9 _			and	
_	s	5,7,9 -	Brou	un SILT and CLAY, little fm sa		
- 15			Brou	un SILT and CLAY, some fm s	and	
_	S	13,16,24	Tan t sc	to brown/grey fmc SAND, tr ome silty clay (18 to 18.5 fe	clay et)	
_	S	5,6,15				
20	s	9,10,16			·	
_	S					
<u> </u>	s	8,12,16 -	Grey	/brown SILT and CLAY, tr f s	and	
-	S	8,8,8		-		
30		_		Bottom of Boring 29'		-
_		-				-
_						-
<u> </u>				-		-
-		-		~~.		7
		_				-

KEYSTONE ENVIRONMENTAL RESOURCES, INC.	BORING LOG	BM-2B	(
PROJECT: GWQA - ASH PILE	LOCATION: GRENADA	, MS	
DRILLING METHOD: MUD ROTARY	SAMPLE CC	DLLECTION	1
DRILLER: LAW ENGINEERING, INC.		T - shelby tube	
GEOLOGIST: D. SMITH DATE: OCTOBER 22, 1989	S - splitspoon	C - rock core	
epth E SPT Blow Boy Counts	Description		
s 3 10 11		• • • • • • • • • • • • • • • • • • •	
s 101			
-5 s 3 3 4 -		-	
s 123			
= 10 web / 6		-	
s 2 1 2 <sup></sup>			
s 2 2 4_			
5 8 4 6 -			
= 20 SEE BORING LOGS FOR V	WELL M-28 FOR 0' TO 55.5'		
s 212			
- 25 3 3 4 5			
-			
s 2 2 3 30			
s 111_			
35 <u>s 122</u>			
			$\left( \right)$
40 s woh/6*			

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KEYSTON ENVIRONMENTAL RESOUR	NE CES, INC.	BORIN	NG LOG	BM-2	В
PROJECT: GWQA -	ASH PILE	LOCATION:	GRENADA	, MS	
DRILLING METHOD: DRILLER: LAW ENGI GEOLOGIST: D. SMI DATE: OCTOBER 2	NEERING, INC. TH	G	<u>SAMPLE CC</u> - grab - splitspoon		
Depth E SPT Blow Counts		Description			
	@ 84' - 85.5' trace   @ 89' - 89.5' trace   @ 90' Tan f Sand,	AND, trace Clay and Silt Black organics (bone coal) brown organics (patches of ittle Clay and Silt, trace Mu dark brown organics (3/8*	peat) scovite flakes (4*	•	
	ВОТ	TOM OF BORING 100.5'		ji I	
				Sheet <u>3</u> of	3

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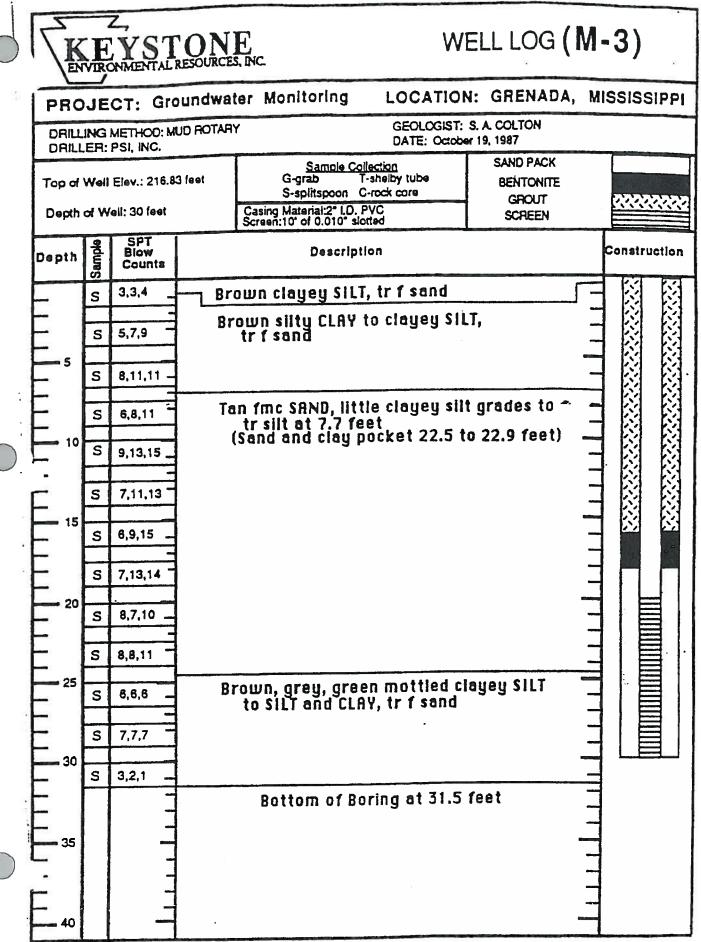
PRO	JE	CT: G	WQA - AS	SH PILE		LOCATIO	N: GRENAD	A, MS		
			): MUD ROTAR GINEERING, IN		ан алан алан алан алан алан алан алан а	GEOLOGIST	: D. SMITH DBER 21, 1989			
Ground					Samole Colle	ction	GRAVEL PACK		CODEEN	
Top of	Well	Elev.:		G-gr S-sp	ab T-s olitspoon C-r	helby tube ock core	BENTONITE		SCREEN	
Depth o	of Wa	ell: 47.5'		Casing Mate Screen: 2" P	orial: 2" PVC VC (0.010 sk	ots)	GROUT	KKK	CAVE-IN	
Depth		Blow Counts			Desc	ription			Constru	ictio
	s	3 10 11		Black FiL	L( Sand and C	Clay, trace Sand a	and Gravel)		REAL OF	
_	s	101							图	
- 5	-	2.2.4	11	aht Grev CLAY	(& SILT, Silt #	and Clay to Clay a	and Silt		图	1
-	S	334_				atches / mottles				
_	s	123				lack - weathering o f Sand, trace R	to rust colored silt) ust Silt patches	_		
10	5	woh / 6*					on on paiones			
-										
-	S	212			Light Grey /	Rust Silty CLAY				议
— 15 -	s	224_						_	膨	刻
-	g	 846 <sup></sup>				n SAND, some cla wn / rust streaks	ay to light Grey	_	膨	刻
- 20				@ 20' - 21.5'	little to some	clay		_		圆
-	S	113_						-		
-	s	212	Light Grey / C	range Brown /	and the second	rey mc Sand Silty Clay trace Da	ark Brown organics(	olant)	國	闷
25	5	345_					pvc casing set at 2			闷
-		J 4 J		Hard	i Orange Brow	n CLAY & SILT				阂
: [	s	223		25' - 25.5' trace 27.5' - 29' trace		rganics (decompo	osed plant matter)	-	闼	阂
- 30 -	s	111	@ 2	29.5' - 31' little '	vf to f Sand	s of medium Grey	Clay and Silt			刻
-		4						-===		
- 35	s									
:	-	122		Grey Silty CLA' to medium gray			csed plant matter	) _		
:			J							
- 40	S	woh / 6" 1 2								

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PROJECT: GWCA - ASH PILE       LOCATION: GRENADA, MS         DRILING METHOD: MUD ROTARY DRILER: LW ENGINEERING, INC.       GEOLOGIST: D. SMITH DATE: OCTOBER 21, 1993       SCREEN         Ground Elevation:       Grand Collection Cognab       GRAVEL PACK Series (24 VC) Screent; 21 PVC (0,010 soles)       GRAVEL PACK BRUTONTE BRUTONTE Construction       SCREEN         Depth # 98       BPTW Counts       Description       Conceck core Construction       Construction         SAME AS ABOVE       Image: Counts       Construction       Construction         SAME AS ABOVE       Image: Counts       Construction         Same 4: 47.5       Same Clay (9 49'- 50.5' Itile Clay       Image: Counts         So is 12.2       Medium Grey (mc SAND 9 44' - 4.55' some Clay (9 49'- 50.5' Itile Clay       Image: Counts         So is 12.2       Medium Grey (mc SAND, trace Silty Clay (patch))       Image: Counts         So is 12.2       Some Grown find SAND       Image: Counts         So is 12.2       Some Grown find SAND       Image: Counts         So is 12.2       Some Grown find SAND       Image: Counts         So is 12.2       Some Grown find SAND       Image: Counts         So is 12.2       Some Grown find SAND       Image: Counts         So is 12.2       Some Grown find SAND       Image: Counts         Some Grown find SA		YS'	TON] L RESOURCES	E., INC.	W	ELL LOG	Μ	-2B	C
DRILLER: LAW ENGINEERING, INC.     DATE: OCTOBER 21, 1989       Ground Elevation:     C-grab     T-shibly tube     GRAVEL PACK       Top of Weil Eleva:     C-grab     T-shibly tube     BENTONTTE       Depth dival: 47.5'     Casing Martinit 2* ACC     GROUT     CAVE-IN       Depth dival: 47.5'     Casing Martinit 2* ACC     GROUT     CAVE-IN       Depth dival: 47.5'     Casing Martinit 2* ACC     GROUT     CAVE-IN       Depth dival: 47.5'     Casing Martinit 2* ACC     GROUT     Construction       -45     B 3 4 4     Medium Grey Im SAND	PROJE	CT: G	WQA - AS	SH PILE	LOCATIO	N: GRENAD	a, ms		
Ground Elevation: Top of Well Elev.: Depth of Well: 47.5' Calling Mageral: 2' AVC Casing Mageral:									
Depth of Walk: 47.5     Cauling Material: 2" AVC Screen: 2" PVC (0.010 slots)     GROUT     CAVE:IN       Depth 1     5     5     5     12.2       As     3 4 4     Medium Grey fm SAND       Boy     0     0.5       Medium Grey fm SAND     0       Boy     0       So     1 2.2       Medium Grey fm SAND     0       Boy     0       So     1 2.2       Medium Grey fmc SAND, trace Silty Clay (patch)       Medium Grey fmc SAND       SEE BORING LOG FOR BORING EM-2B FOR 55.5'- 100.5'	Ground Ele	avation:		<u>Sample C</u> G-grab	T-shelby tube	·			
Depth     Bow Grounts     SPT Counts       a     3 4 4       As     a       a     3 4 4       Medium Grey fm SAND       B     B       G     45 - 45.5' some Clay       G     45 - 50.5' little Clay       So     5       1     12 2       Medium Grey fmc SAND, trace Sity Clay (patch)       G     Grange Brown fmc SAND       SEE BORING LOG FOR BORING 55.5'       SEE BORING LOG FOR BORING BM-2B FOR 55.5' - 100.5'	•					GROUT	<u> </u>	CAVE-IN	
A5         3         3         4.4         Medium Grey im SAND	Depth Bdurg	SPT Blow Counts		<u> </u>				Construction	
45       9       Medium Grey Im SAND         (9) 44' - 45.5' some Clay       (9) 49' - 50.5' little Clay         (9) 49' - 50.5' little Clay       (9) 49' - 50.5' little Clay         50       s       11 23 25         Medium Grey Imc SAND, trace Silty Clay (patch)       (9) 49' - 50.5' little Clay         55       s       11 23 25         Orange Brown Imc SAND       BOTTOM OF BORING 55.5'         60       SEE BORING LOG FOR BORING BM-2B FOR 55.5' - 100.5'         60       -         70       -         71       -         72       -         73       -         80       -         75       -         80       -         75       -         80       -         75       -         76       -         77       -         80       -         80       -         80       -         75       -         80       -         80       -         80       -         80       -         80       -         80       - <td< td=""><td></td><td>-</td><td></td><td>SA</td><td>ME AS ABOVE</td><td></td><td></td><td></td><td></td></td<>		-		SA	ME AS ABOVE				
45       9       Medium Grey Im SAND         (9) 44' - 45.5' some Clay       (9) 49' - 50.5' little Clay         (9) 49' - 50.5' little Clay       (9) 49' - 50.5' little Clay         50       s       11 23 25         Medium Grey Imc SAND, trace Silty Clay (patch)       (9) 49' - 50.5' little Clay         55       s       11 23 25         Orange Brown Imc SAND       BOTTOM OF BORING 55.5'         60       SEE BORING LOG FOR BORING BM-2B FOR 55.5' - 100.5'         60       -         70       -         71       -         72       -         73       -         80       -         75       -         80       -         75       -         80       -         75       -         76       -         77       -         80       -         80       -         80       -         75       -         80       -         80       -         80       -         80       -         80       -         80       - <td< td=""><td>=  </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	=								
50       s       1 2 2         50       s       1 2 2         Medium Grey Imc SAND, trace Silty Clay (patch)	- 45 s	344		Mediur	n Grey fm SAND				0
50       s       1 2 2         Medium Grey fmc SAND, trace Silty Clay (patch)		-							
50	- L	-		@ 49'	50.5' little Clay				
s5       a       11 23 25       Orange Brown fmc SAND         BOTTOM OF BORING 55.5'       BOTTOM OF BORING 55.5'         60	- 50 s	122							
s5       a       11 23 25       Orange Brown fmc SAND         BOTTOM OF BORING 55.5'       BOTTOM OF BORING 55.5'         60	=								
35	=  _	-		-		y (patch)			•
50 50 50 50 55 55 55 55 55 55	- 55 s	11 23 23							
85         -           70         -           71         -           72         -           80         -	-			5071					
85         -           70         -           71         -           72         -           80         -	-								
	60								
	- '	-		SEE BOHING LOG FOR		5.50 • 100.5			
	=								
	- 65						_		
	-	-							
	-								
	- 70								
	-								
	_	-							
	- 75								
	- [						-		
	-						_		$\mathbf{\vee}$
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K	E	YST	ON	E 5, DVC.	WI	ELL LOG (	M	-4)
PRO	JE	CT: Gro	undwal	er Monitoring	LOCATION	I: GRENADA	<b>, M</b>	SSISSIPPI
DRILL	ING ER:	METHOD:ML PSI, INC.	D ROTARY	,	GEOLOGIST: DATE: Octobe	S. A. COLTON r 19, 1987		
Top of	Wəli	Elev.: 215.8 ell; 27.5 feet	6 feet	<u>Sample Co</u> G-grab S-splitspoon Casing Material:2" I.D.f Screen: 10° of 0.010° si	F-shelby tube C-rock core	SAND PACK BENTONITE GROUT SCREEN	-	
Depth	Sample	SPT Blow Counts		Descript	ion			Construction
-	S	1,3,4	Br	own clayey SIL	T to silty CLA	Y, tr f sand		
-	S	13,15,18	Br	own clayey SIL	T, tr to and f	sand		
-	S	14,13,11-	Br	own, tan f SAN little silty clay	D, tr silt 5.75 to 6.1	feet	1	
- 10	s s	8,10,12 8,10,14	25.					
-	s	9,12,13						
- 15 - -	S	6,9.10 -						
- - - 20	S	10,12,14 7,8,11						
-	s s	3,3,5	Br	own, grey SILT	and CLAY, tr	c sand		
- 25	s	3,5,8						
30	s	6,7,8			Dering 20'			
-		_		Bottom of	ounny 29			
- - 35							_	
-		-						
40				•			Sheet	

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PROJECT:       GRENADA WOOD PLANT       LOCATION:       GRENADA, MS         DRILLING METHOD:       MUD POTARY DATE: 10-19-89       GEOLOGIST: D. SMITH DATE: 10-19-89       SCREEN         Ground Elevation:       G-grado       GRAVEL PACK       Screen       Screen         Top of Well Eleva:       Casing Material 2" PVC Screen: 2" PVC (0.010 slots)       GRAVEL PACK       Screen       Screen         Depth       §       SPT (Counts)       Description       Construction         5       -       -       -       -       -         5       -       -       -       -       -       -         10       -       -       -       -       -       -       -       -         10       -	KEYSTONI ENVIRONMENTAL RESOURCES	E WI	ELL LOG : M-5
DRILLER: LAW ENGINEERING       DATE: 10-19-99         Ground Elevation:       G-grab       1-shelty tube       GRAVEL PACK       SCREEN         Top of Well Elev.:       G-grab       1-shelty tube       GRAVEL PACK       SCREEN         Depth of Well:       27.5°       Casing Material: 27 PVC       GROUT       CAVE-IN         Depth of Well:       27.5°       Casing Material: 27 PVC       GROUT       CAVE-IN         Depth of Well:       27.5°       Casing Material: 27 PVC       GROUT       Construction         Depth of Well:       27.5°       Casing Material: 27 PVC       Construction       Construction         Depth of Well:       27.5°       Screen: 2° PVC (0.010 slots)       Description       Construction         Depth of Well:       SEE BORING LOG FOR BORING M-58	PROJECT: GRENADA	WOOD PLANT LOCATION	: GRENADA, MS
Ground Elevation.     G-grab     T-shelky tube     BENTONITE     SCREEN       Depth of Well: 27.5*     Casing Material: 2* PVC     GROUT     CAVE-IN       Depth of Well: 27.5*     Casing Material: 2* PVC     GROUT     CAVE-IN       Depth of Well: 27.5*     Casing Material: 2* PVC     GROUT     CAVE-IN       Depth of Well: 27.5*     Casing Material: 2* PVC     GROUT     CAVE-IN       Depth of Well: 27.5*     Casing Material: 2* PVC     GROUT     CAVE-IN       Depth of Well: 27.5*     Casing Material: 2* PVC     GROUT     CAVE-IN       Depth of Well: 27.5*     Casing Material: 2* PVC     GROUT     Construction		GEOLOGIST: DATE: 10-19-8	D. SMITH 9
Depth of Well:       27.5'       Casing Meterial:       2* PVC       GROUT       CAVE-IN         Depth       @g       SPT       Blow       Description       Construction         Depth       @g       SPT       Description       Construction         5		G-grab T-shelby tube	
Depth     Ellow Counts     Description     Construction			
SEE BORING LOG FOR BORING M-58 (no samples taken)	Depth E SPT Blow S Counts	Description	Construction
		(no samples taken)	1-58
	- 30	BOTTOM OF BORING 25'	

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K	E	Z, YS	TON] L RESOURCES	E , inc.	W	ELL LOG	М	-5B	
PRO	JE	CT: G	WQA - AS	SH PILE L	OCATIO	N: GRENAD	A, MS		
			: MUD ROTAR SINEERING, IN		GEOLOGIST	: D. SMITH DBER 23, 1989			7
Ground Top of V			-	<u>Sample Collectior</u> G-grab T-shelb S-splitspoon C-rock	y tube	GRAVEL PACK BENTONITE			I
Depth o	of W∈	ali: 50'		Casing Material; 2" PVC Screen; 2" PVC (0.010 slots)	•	GROUT	<u></u>	CAVE-IN	
Depth	Sample	SPT Blow Counts		Descript	on			Construction	n
	S	5 14 12		FILL( Brown orange	Sand and Gr	avel, trace slag)			团
		-		Brown SIL	some Clay		_	<b>1</b> 後	
5 5	S	233_		Orqnge Brow	1 CLAY & SIL	T			*****
	S	123_		y Brown to light Grey / Orange E rganics (decomposed plant mate		f SAND, some Cla	y,		
15	<u>s</u>	234_		Light Grey CLAY & SILT , @ 15' - 15.8' trace Ora @ 15.8' - 16.5' trace v	nge Brown C				1111111
20 20  25	S	5 14 14		Light Grey Tan mc SAND,	race I Sand a	und Silt			
	S	8 11 12	Ora	ange Brown Silty CLAY, trace lig	ht Grev Silty	Clay (mottles)			
30	s	232		Medium Grey Silty CLAY @ 29.5' - 31' trace Ora	6*	PVC casing set at	30'		
- 35		woh/6= 1 2  woh/ <u>18</u> -			2				

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K	E	YS'	TON] L resources	E , inc.		V	/ELL LOG	M	-5B
PRO	JE	CT: G	WQA - AS	SH PILE		LOCATIO	N: GRENAD	A, MS	
						GEOLOGIST DATE: OCT	T: D. SMITH OBER 23, 1989		
Top of \	ACJECT: GWQA - ASH PILE ILLING METHOD: MUD ROTARY ILLER: LAW ENGINEERING, INC. Ind Elevation: of Well Elev.: h of Well: 50' Casing Material: 2" Screen: 2" PVC (0. Casing Material: 2" Screen: 2" PVC (0. Medium Grey Or 			litspoon C-r	helby tube ock core	GRAVEL PACK BENTONITE GROUT			
Depth c Depth	a of Well Elev.:     G-grab       pth of Well: 50'     Casing Material: 2"       string Material: 2"     Screen: 2" PVC (0.)       a				scription	GROUT	<u>SSS</u>	Construction	
_	Ű	-			SAME	AS ABOVE			
- - - - 45	S			Medium G	rey Orange Bi	rown mottled vf S	SAND, some Clay		
50	5	224	м	ledium grey mo	SAND, trace	medium gray sil	ty Clay (patches)		
_					BOTTOM	OF BORING 50.5	,		
55  		-							
60						<i>,</i>			
- 65									
								-	
- 70 		-							
- 75									
-		-							
- 80									2 2

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	MONITORING WELL LOG		(	7
PROJECT Grenada, Miss. Sora	vfield	_	WELL NO. SF-1	4
DRILLING METHOD HSA	GEOLOGIST	C.A. C		-
DRILLER PSI	DATE8/21	/85		
GROUND ELEVATION	GROUND WATER DEPTH (ft):	68	AVEL PACK	7
TOP OF WELL 212.74	AT COMPLETION	BE.	NTONITE	
DEPTH OF WELL (ft)	AFTERHOURS		CK FILL	
CASING MATERIAL 2" PVC	SCREEN 10' 0.010 slotted PVC	SCI	REEN	
STRATA SAMPLE DEPTH DEPTH	DESCRIPTION		CONSTRUCTION	
Brown silty C	LAY, tr gravel, tr roots, moist	-		]
		1	的闷	-
5 Light gray an pockets, tr o	d brown mottled silty CLAY, tr sil rganics, moist	۲ –	上岗 図-	-
				1
		. 4		
				4
Rust to orange	e, and light gray mottled silty CL	ay, ‡		Ŧ
some organic :	stains, tr concretions (m gravel),	1		
		+		
		+		7
Gray f SAND at	nd SILT, tr clay, moist to wet	‡		1
				1
Gray to Rust	SAND, little silt, tr clay, wet	+	-	-
- Gray silty CL	NY, tr sand, wet	+		
Gray SILT and	f SAND, wet	Ī		]
Rust to bl	.ack f SAND, tr silt, wet	=		-
30		1	 	1
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		MONITORING WELL LOG			
	Grenada, Miss. Sp			WELL NO.	57-2
	ETHOD <u>HSA</u> PSI	GEOLOGIST	C.A. ( 2/85	Cramer	
DRILLER	131	DATE	2/85		
GROUND ELE	VATION	GROUND WATER DEPTH (ft):	GR	AVEL PAC	Y [14.
TOP OF WEL	L211.04	AT COMPLETION	8E.	NTONITE	V 1.44
DEPTH OF W	ELL (ft)	AFTERHOURS		CK FILL NCRETE	
CASING MAT	ERIAL 2" PVC	SCREEN 10' 0.010 slotted PVC		REEN	
STRATA SAMPL DEPTH DEPTH		DESCRIPTION		CONSTR	RUCTI
+	_ Light brown	silty CLAY, some roots, moist		- 🔨	N
+	Light brown	and gray mottled clayey SILT, tr r	oots,		
+	moist				
5	Brown and wh	ite silty CLAY, fractured, dry	-		
· <del>†</del>	- Tan clayey S	ILT, tr white silt pockets, moist	-	- 次	
Ţ	E			- 1.1	1
10 +	Light gray a	nd rust CLAY and SILT, moist	-	-   //	
Ŧ	White tan	and rust f SAND, tr to some silt,			
t	moist	and fust i brind, th to some sill,	+		R
15	<u> </u>			-	N.
Ţ	F		1	11	
÷	-		+	<b>•••</b>	: •
20 1	F		1		_
- + +	Tan mf SAND.	little silt, wet			
1	- Blue gray si		‡		
25				·  : .	- ::
Ŧ	Tan to gray m	nf SAND, little silt, wet	1		_ ::
t	E		-+		- :.
30-			1		-
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+	-		Į		
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PROJECT G	renada, Miss. Spr	MONITORING WELL LOG rayfield		W	ELL NO.
DRILLING ME			GEOLOGIST	C.A. Cr	amer
DRILLER	PSI		DATE	8/22/85	
GROUND ELEY TOP OF WELL DEPTH OF WE	211.09	GROUND WATER DEPTH AT COMPLETION AFTER HOURS		BENT	VEL PACK
	RIAL 2" PVC	SCREEN 10' 0.010"	slotted PVC	SCRE	EN EE
STRATA SAMPLE DEPTH DEPTH		DESCRIPTION		T	CONSTRUCT
	Tan and gray moist Rust and gray moist White f SAND Rust, tan and	and SILT, moist white laminated mf S, ay lens, 15-15.5, 19.	r organic si T, tr f sand		
25 	Tan to gray f	SAND, little to some	silt, wet		

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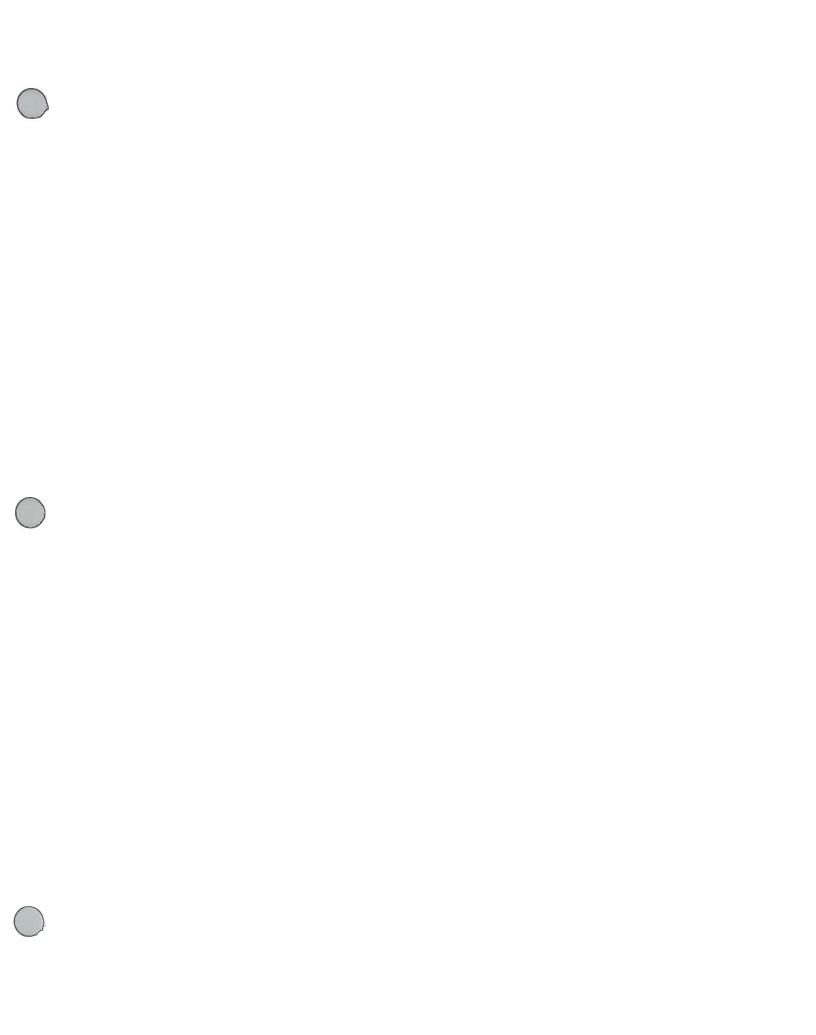
			MONITORING WELL LOG			
		Grenada, Miss. S	prayfield		WELL NO. S	F-4
	DRILLING		GEOLO	GIST_C.A		
F	DRILLER	PSI	DATE	8/23/8	5	
	GROUND E	······································	GROUND WATER DEPTH (ft):		GRAVEL PACK	
		ELL 212.19	AT COMPLETION		BENTONITE	
$\vdash$	DEFIN UP	WELL (ft)	AFTER HOURS	(	BACK FILL CONCRETE	
			SCREEN			
	TRATA SAMP DEPTH DEP		DESCRIPTION		CONSTRUC	TTON
	Ŧ	the second s	CLAY, some organics, tr sand	, moist		
	‡		· ·		+	XI I
	5 +				1   次  -	公二
	J T	- tr organic s	n mottled clayey SILT, tr ro tains, moist	bots,	士凶	ショ
	·Ţ				土均日	
	10	Light gray a	nd orange mottled, SILT and	CLAY,	1 図	以日
	+	_ come c sand	size black concretions, mois	st	1 校一	ショ
	Ŧ	-	·			21
	15	White, tan,	and rust laminatedf SAND to	mf SAND,		
	t	tr silt, moi:	SC			
	÷	-	•			
	20		•			-
	‡				+	
	ł	lan to gray s	silty CLAY, moist to wet			
	25	<u> </u>				
	+ +	Gray f SAND a	nd SILT, wet AND, little silt, tr clay, w			
	t					
	30	<b>}</b> -		۔ ۔۔		
	Ŧ	F	· · · ·	 	+	1
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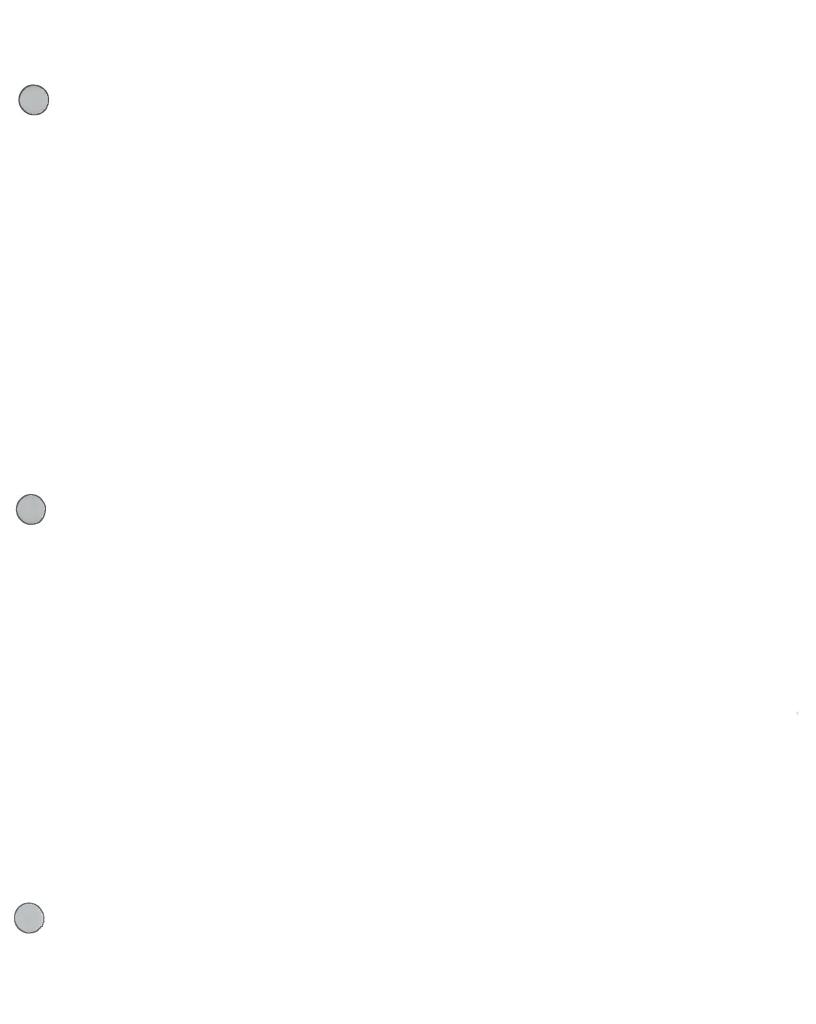
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			da Wood Plant Location: Grenada, MS	
Driller: Geolo	J Metho LAYNI Jist: D. AUGUST	E-WES SMI7	DLLOW STEM AUGER <u>Sample collection</u> TERN COMPANY, INC. G-grab T-shelby tube 다쉬 S-splitspoon C-rock core	
Strata Depth		Blow Count	Description	
	_5_	5 5	FILL (cranje-brown SILT, Some sard and grave)	_
	-5-	3 5 5	Drange-hrown/rust motiled CLAY AND SILT, Trace Organics (decomposed)	
	_5 _	367	Stiff orange-brown Aust/gray mattled CLAY AND SILT to SILT AND CLAY, trace organics (decomposed)	-
5 —	- <u></u>	356	-	
_	5_	3-5		-
_	5	25		÷
	5_	25~		-
-		-	Bottom of Boring at 10.5 feet	-
_		-		
		-		
15-			· _	
-		-		-
1				0.00

		7			
	KE	YSTONI	E	Boring Logy 7	
$\bigcirc$	EN	VIRONM	ENTA	L RESOURCES, INC. Boring Log: B-	Ś
j	Proj	ect: G	rena	da Wood Plant Location: Grenad	a, MS
	Drilling	Metho	DI HO	OLLOW STEM AUGER Sample colle	ction
	Geolo	gist: D	SMIT	STERN COMPANY, INC. G-grab	T-shelby tube
		AUGUST		S-splitspoon	C-rock core
	Strata Depth		Blow Count		
		L5_	<sup>3</sup> 4 - 5	Light brown CLAY AND SILT, rust/gray	motilei
			5		-
		- 5 -	56	Light gray rust orange-brown mattled CLAY AND	- -
		5	<sup>3</sup> 5 - 4	1) 4.5-6 fet trace decomposed organ	
			2	2 9 9.5 6 Jer Mace a campuler of ye	""U
	5	5	56		
		5_	3 <sub>.5</sub> - 8	Stiff orange-brown gray mottled SILTY an	2 <i>µ</i>
			3		
	$  \top$	5	- <sup>4</sup> 5		1
		5	35		-
	10-		-6	Brans - Lioun grow mottled & SALVE 38 13.5 Rest 1. JAT 900	AND - AND
		ł	- 1	Bottom of Boring at 10.5 f.	ut -
			_ ·		
		- T	-		-
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	15-+	+			
	-	+	-		4
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$\bigcirc$	TABLE	
		TATA A PART A PART

## TABLE 1 FEBRUARY 1998 MONITORING REPORT BEAZER EAST, INC. GRENADA, MISSISSIPPI

	8661/21/20	a LabNet	02/26/98		2.5 U
			5		D
	8621/21/20	Recra LahNet	86/97/70		ร
-4	8661/11/20	Recra LabNet	02/25/98		2.5 U
	8661/11/20	Recra LabNet	02/25/98		2.5 U
76-1	8621/11/20	Recra LabNet	02/25/98		2.5 U
CC-N	02/11/1998	Recra LabNet	02/25/98		2.5 U
K-3	8601/11/20	Recra LabNet	02/25/98		2.5 U
11-31	8661001720	Recra LabNet	86/57/20		2
K-LK DUF	8661/01/20	Recra LabNet	02/25/98		25 U
X-I-X	8661/01/20	Recra LabNet	02/25/98		25 U
	Secondale Date	Analytical Laboratory	Analysis Date	Method 2060 by GC (us/L)	Bis(2-ethylhexyl)Phthalate
	_	2		L	-

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 2 FEBRUARY 1998 MONITORING REPORT BEAZER EAST, INC. GRENADA, MISSISSIPPI

	R-IR	R-IR DUP	R-10		R-9	R-9D		R-9C		R-7	8 <b>2</b>	**			Ĩ	
Sample Date	02/10/1998	8661/01/20	02/10/1998		62/11/1998	02/11/1998	_	02/11/1998		8661/11/20	02/11/1998	8661	8661/21/20	8	8661/21/20	
Analytical Laboratory	Recra LabNet	Rocra LabNet	Recra LabNet	r	Recra LabNet	Recra LabNet	Ţ	Recra LabNet		Recra LabNet	Recra LabNet	LabNet	Recra LabNet	¥	Recra LabNet	*
Analysis Dute	02/24/98	02/24/98	02/24/98		02/24/98	02/24/98		02/24/98	-	02/24/98	02/25/98	5/98	02/25/98	- 	02/25/98	ſ
Phenolics - Method 8040 by GC (ug/Li)				-			-									
2.3.4.6-Tetrachiorophenol	2.5 U	22	U 2.5	D	2.5 L	1 2.5	D	2.5	ò	2.5 U	2.5	S	2	D	2	D
2.4.6-Trichlorophenol	2.5 U	า	u 2.5	D	2.5 U	2.5	D	2.5	þ	2.5 U	2.5	s U	2.5	D	າ	D
2.4-Dichlarachenol	U U	-	u  1	D	ר ו	-	D	1	D	ת ו	-	D	-	D		D
2.4.Dimethylations	- n	1	U 1	D	ר ו	1	D	1	D	1	1	D	-	D	-	D
2.4-Dinitrophenol	30 D	8	06	D	30 L	30	D	30	D	30 U	Ħ	<b>n</b>	8	D	8	D
2-Charaband	n	-	1 1	þ	ר -	1	D	-	þ	ח ז	-	D		Þ	-	D
2-Nitronhenol		-	<u>ر</u>	D	ר -	1	D		þ	ח ו	-	D	-	D	1	5
4 Nitrosterol	2.5 U	25	u 22	D	2.5 U	U 2.5	D	2.5	D	2.5 U	2.5	S	2. <b>5</b>	D	22	Э
4.6-Dinimo-2-methylahenol	2.5	1 2.5	U 25	D	2.5 U	U 2.5	D	2.5	D	2.5 U	2.5	s U	2.5	D	ว	Э
4.Chare-3-methylahenol	1		U 1	D	-	1	D	1	þ	ח ז		2	-	D	1	5
Preschioroshenoi	2.5 U	า	U 2.5	D	2.5 L	U 2.5	D	2.5	D	2.5 U	2.5	s U	22	D	22	Э
Phenol	-	1	U 1	D	1	1	D		D	1		D		D	1	þ
									-							



TABLE 3	FEBRUARY 1998 MONITORING REPORT	<b>BEAZER EAST, INC.</b>	<b>GRENADA, MISSISSIPPI</b>
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	R-1R		R-IR DUP	R-10		R-9	06-X		- -	R-7	8-X		R-66		8- <b>0</b> 8
Semple Date	8661/01/20	-	8661/01/20	8661/01/20		8661/11/20	8661/11/20	8661/11/20	3661	8661/11/20	51/11/20	86	8661/21/20		8661/TUT
Analytical Laboratory	Recra LabNet	Ä	Rocra LabNet	Rocra LabNet	,t	Recra LabNet	Recra LabNet	Recra LahNet	abNet	Recra LabNet	Recra LabNet	bNet	Rocra LabNet		Recra LabNet
Analysis Date	02/17/98		02/17/98	C2/17/98		02/17/98	02/17/98	02/17/98	86/	02/17/98	02/18/98	28	02/18/98		02/18/98
PAHs - Method 8310 (mg/L)					-									L	
Naphthalene	7	D	2	1 2.1	_	ר 7	1 2	U 2	D	2 1	2	D	6	D	7
Accomptionylene	7	D	2	1	þ	2 L	1 2	U 2	D	2	2	ົ	7	D	7
Acemephthene	7	'n	2	1 2	D	ר ר	1 2	0 2	D	2	2	D	7	D	ы
Fluorene	0.2	n	0.2 U	1 0.2	D	0.2 L	1 0.2	U 0.2	2	0.2	U 0.2	D	0.2	D	0.2
Phenanthrene	0.23		<u>10</u>	0.64		0.I L	0.1	U 0.1	D	0.1	0.1	D	0.1	D	0.1
Anthrocoe	0.1	D	0.I U	0.1	D	0.I U	0.1	U 0.1	n	0.1	U 0.1	D	0.1	D	0.1
Proceediese	0.2	2	0.2 U	1 0.2	D	0.2 L	1 0.2	U 0.2	5	0.2	0.2	D	0.2	D	0.2
Pyreae	0.2	D	0.2 L	1 0.2	Þ	0.2 L	1 0.2	U 0.2	D	0.2	0.2	þ	0.2	D	0.2
Benno(a)anthracene	0.02	2	0.62	0.02	D	0.02 L	0.02	U 0.0	2 U	0.02	0.02	D	0.02	þ	0.0
Chrysene	0.15	2	0.15 L	0.15	D	0.15 L	0.15	U 0.1	5 U	0.15 (	0.15	n	0.15	2	0.15
Benzo(b) fluoranthene	0.0	2	0.02	0.02	D	0.02 L	0.02	U 0.0	2 U	0.02	0.02	D	0.02	D	0.02
Benzo(k) fluorathene	0.0	n	0.02	0.02	D	0.02 L	0.02	U.0.0	2 U	0.02	0.02	D	0.02	D	0.02
Benzo(a)pyrene	0.0	2	0.62	0.02	þ	0.02 L	0.02	U 0.0	2 V	0.02	0.02	D	0.02	D	0.02
Dibenzo(a,h)anthracene	0.03	n	0.03	0.03	þ	0.03 L	0.03	U 0.0	3 0	0.03	0.03	D	0.03	'n	0.03
Benzu(g,h,l)perylene	8	D	0.05 L	0.05	Þ	0.05 L	0.05	U 0.0	5 U	0.05	0.02	D	0.0	D	0.03
Indeno(1,2,3-c,d)pyreae	0.05	D	0.05	0.05	D	0.05 L	0.05	U 0.0	2 C	0.05	0.05	D	0.02	D	0.00

				BEAZER ] GRENADA,	BEAZER EAST, INC. GRENADA, MISSISSIPPI					
Semple D	R-1R	R-LR DUP	R-10	R-9	Q6-X	R-9C	R-7	R.8	K-53	<b>1</b> 2
Sample Date	02/10/1998	8661/01/20	8661/01/20	02/11/1998	02/11/1998	02/11/1998	8661/11/20	8661/11/20	8661/21/20	8661/TU20
Amilytical Laboratory	Recra LabNet	Recra LabNet	Recre LahNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Rocra LabNet
ate .	02/16,23/98	02/16,23/98	86/62/98	02/16,23/98	02/16,23/98	02/16,23/98	02/16,23/98	02/16,23/98	02/16,23/98	02/16,23/98
Metals (mg/L)										
Chromium - Total	01 10	01	10 N	0	01 U	9	10 U	0 0		
Mercury - Total	0.4	0.29	0.28	0.2 U	0.2 U	0.2 U	0.24	0.2 U	5.0	0.2 U
Chromium - Soluble	10	10 10	10 U	10 U	10 01	10 10	10 N	10 U	10	10
Mercary - Soluble	0.2 U	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

TABLE 4 FEBRUARY 1998 MONITORING REPORT



	R.418 06/17/1998 Recra LabNet 09/06/1998 0.1 U
	R-8A 08/17/1998 Recra LabNet 09/0698 0.1
	R-7 08/17/1998 tecra LabNet . 09/06/1998 0.1 U
	R-7 08/17/1998 Recra LabN 09/06/1998 0.1
	C L1998 abNet 1998
	R-9C 08/17/1998 Recra LabNet 09/06/1998 0.1
AUGUST 1998 MONITORING REPORT BEAZER EAST, INC. GRENADA, MISSISSIPPI	R-9D 08/17/1998 Recra LabNet 09/06/1998 0.1 U
	R-9D 08/17/1998 Recra LabN 09/06/1998
	A 1798 AabNet 5798
	R-9A 08/17/98 Recra LabNet 09/06/98 0.1
	AA Book Dook Dook U
	R-10A 08/17/1998 Recra LabNet 09/06/98 0.1
	DUP 998 998 998 0
	R-IR DUP 08/17/1998 Recra LabNet 09/06/98 0.1
	t 098 098 098
	R-IR 08/17/1998 Recra LabNet 09/06/1998
	bery (tog/L) valate
	Sample ID Sample Date Analytical Laboratory Analytis Date Acthod 2000 by GC (ug/L Big(2-ethylhexyl)Phthalate
	Sa Sa Analyt An Method B Bis(2-eth

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**TABLE 1** 

TABLE 2 AUGUST 1998 MONITORING REPORT BEAZER EAST, INC. GRENADA, MISSISSIPPI

Sample ID	R-IR	R-11	R-1R DUP	R-10A	Ř	R-9A	R-9D		R-9C	R-7	-	R-6A		R-5B	Γ
Sample Date	08/17/1998	08/1	08/17/1998	08/17/1998	08/17	08/17/1998	08/17/1998		08/17/1998	08/17/1998		08/17/1998		8661/11/30	
Analytical Laboratory	Recra LabNet	Recra	Recra LabNet	Recra LabNet	Recra	Recra LabNet	Recra LabNet	Ħ	Recra LabNet	Recra LabNet	et	Recra LabNet		Recra LabNet	
Analysis Date	8661/50/60	66	86/20/60	86/20/60	)/60	86/50/60	8661/50/60		8661/20/60	09/05/1998	_	86/50/60		8661/50/60	-
Thenolics - Method 2040 by GC (ug/L)											-				<u> </u>
2,3,4,6-Tetrachlorophenol	2		2 U	4	2	2	7	D	2 0	7	D	7	n	1	þ
2,4,6-Trichlorophenal	7 7		2 U	4	n D	2 N	4	D	2 U	7	þ	7	D	7	þ
2,4-Dichlorophenoi	1		1 U	1	2	1 N	1	D	1 0		D	1	D	1	Э
2,4-Dimethylphenol	1	-	1 U	1	2	1 N	1	D	1	1	þ	1		7	<u> </u>
2,4-Dinitrophenol	2		2	7	 D	~	7	D	7	7	D	7	D	2	Э
2-Chlorophenol	1		1 U	1	2	n 1	1	D	1		D	1	D	1	р
2-Nitrophenol	1	-	1 U	1	2	n 1	1	D	1	1	D	1	D	1	D
4-Nitrophenol	4		2 U	4		2 N	Ś		2	4		7	D	4	
4.6-Dinitro-2-methylphenol	2	-	2 U	6		2 U	7	D	2 U	7	þ	7	D	2	þ
4-Chloro-3-methylphenol	-	-	1 U	1	Þ	n 1	1	D	1	-	C	1	D	1	D
Pentachiorophenol	ר 7	-	2 U	6	2	2 0	3	D	2 U	2	D	7	D	7	D
Phenol	1	1	1 U	1	D	1 0	-	D	1	-	D	1	þ	1	þ
													-		

U - Compound was analyzed for, but not detected at the given detection limit.



		UEPORT		I
	3	ORING F	T, INC.	SSISSIPP
$\bigcirc$	TABLE 3	AUGUST 1998 MONITORING REPORT	<b>BEAZER EAST, INC.</b>	<b>GRENADA</b> , MISSISSIPPI
		<b>STI 1998</b>	BEA2	GRENA
		AUGL		

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Sample ID	R-IR	R-IR DUP		R-10A	R-9A		R-9D	R-9C		R-7		R-8A	R-5B	æ
Sample Date	08/17/1998	08/17/1998		8661/11/80	8661/17/80		08/17/1998	08/17/1998		08/17/1998		08/17/1998	8601/1/1/80	86
Analytical Laboratory	Recra LabNet	Recra LabNet		Recra LabNet	Recra LabNet		Recra LabNet 08/20/1008	Recra LabNet	Ţ,	Recra LabNet 08/29/1098		Recra LabNet Mt/29/1998	Recra LabNet	PNet 800
PAHs - Method 8310 (ng/L)	00/07/000										╟			
Naphthalene	2.5 U	2.2	D	2 U	1	D	2 U	7	D	7	D	2.2 U	2.4	
Acensphthylene	2.5 U	2.2	þ	2 U	7	n	2 U	2	D	2	D	2.2 U	2.4	
Accmphthene	2.5 U	2.2	D	2 U	2	D	2 U	7	D	7	D	2.2 U	2.4	
Fluorene	0.25 U	0.22	D	0.2 U	0.2	D	0.2 U	1 0.38		0.2	D	0.22 U	0.42	<u> </u>
Phenauthrene	0.62 U	0.56	D	0.5 U	2.0	D	0.5 U	1 0.71		0.5	D	0.56 U	0.94	-
Anthracene	0.12 U	0.11	D	0.1 U	0.1	D	0.1 U		D	0.1	D	0.11 U	0.15	
Fluoranthene	0.25 U	0.22	D	0.2 U	0.2	D	0.52	0.68		0.2	D	0.22 U	0.73	
Pyrene	0.25 U	0.22	D	0.2 U	0.2	þ	0.46	0.57		0.2	D	0.22 U	0.7	
Benzo(a)anthracene	0.025 U	0.022	D	0.02 U	0.038		0.094	0.12	_	0.02	D	0.022 U	0.18	~
Chrysene	U 0.19	0.17	D	0.15 U	0.15	D	0.16	0.19		0.15	D	0.17 U	0.36	
Berzo(b) fuoranthene	0.025 U	0.022	þ	0.02 U	0.036	-	0.12	0.14		0.02	D	0.022 U	0.16	
Benzo(k)fluoranthene	0.025 U	0.022	D	0.02 U	0.02	D	0.044	0.051		0.02	D	0.022 U	0.04	0
Benzo(a)pyrene	0.025 U	0.022	D	0.02 U	0.029		0.066	0.046		0.02	n	0.022 U	0.08	~
Dibenzo(a,h)anthracene	0.038 U	0.033	D	0.03 U	0.03	D	0.34	0.25		0.03	n	0.033 U	0.42	<b>_</b>
Benzo(g,h,i)perylene	0.062 U	0.056	D	0.05 U	0.05	D	0.089	0.073		0.05	D	0.056 U	0.11	
Indeno(1,2,3-c,d)pyrene	0.062 U	0.056	D	0.05 U	0.05	D	0.06	0.052		0.05	D	0.056 U	0.06	

U - Compound was analyzed for, but not detected at the given detection limit.

Sample ID	R-JR	R-IR DUP	R-10A	R-9A	R-9D	R-9C	R-7	R-SA	R-5B
Sample Date	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	8661/11/80
Analytical Laboratory	Recra LabNet								
Mctals (ue/L)									
Analysis Date	8661/60/60	8661/60/60	8661/60/60	8661/60/60	8661/60/60	8661/60/60	8661/60/60	8661/60/60	8661/60/60
Chromhum - Total	100	53	100	58	10 U	10 U	140	22	10 U
Analysis Date	8661/16/80	08/31/16/30	8691/16/80	05/31/98	08/31/1998	08/31/1998	8661/16/80	8661/16/80	08/31/1998
Mercury - Total	0.46	0.2 U	0.2	0.2 U	1 0.2 U	0.2 U	0.46	0.2 U	0.2 U
Analysis Date	8661/72/60	8661/22/60	8661/77/60	8661/772/60	8661/22/60	8661/77/60	8661/77/60	8661/77/60	8661/72/60
Chronium - Soluble	10 U	10 U	10 L	1 10 U	10 U	10 U	10 U	10 U	10 U
Analyzis Dute	86/31/1298	08/31/16/80	8601/16/80	08/31/98	8691/16/80	8601/IE/80	8661/16/80	866T/TE/80	8601/15/80
Mercury - Soluble	0.2 U	0.2 U	0.2	) 0.2 U	1 0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

U - Compound was analyzed for, but not detected at the given detection limit.



Table 1 Analytical Summary First Semi-Annual 1999 Groundwater Sampling Grenada Facility Tie Plant, Mississippi

02/17/1999 0.02 U 0.02 U 0.02 U 0.05 U 0.02 U 0.05 U 0.15 U BLANK 0.1 U 0.2 U 0.2 U 0.03 U 0.5 U 0.2 U 0.2 U 0.1 U 2 U --2 U 10 10 10 0.2 Duplicate 0.15 U 0.03 U 0.02 U 0.05 U 0.02 U 0.05 U 0.02 U 0.02 U 0.2 E 0.2 U 0.2 U 5 C 0.5 U 0.1 U ∩ ₽ 2 U 0.2 U **R-10A** 0.2 U 10 U 57 ∍ 0.7 2 2 2 02/17/1999 0.15 U 0.02 U 0.05 U 0.02 U 0.03 U 0.02 U 0.2 U 0.05 U 0.02 U 0.3 E 0.2 U 0.5 U 0.1 U ) 1 **R-10A** 10 U **D** D 2 U 2 0 2 U ⊃  $\supset$ ∍ 63 0.2 0.2 2 2 2 02/17/1999 0.05 U 0.02 U 0.02 U 0.02 U 0.02 U 0.15 U 0.03 U 0.05 U 0.2 U 0.2 U 0.5 U ы С R-09D 0.2 U 0.2 U 0.1 U 2 () ) 1 2 U 2 U **>** > 0 - - - - - - 0 0 - - - - - - 0 2 C 2 C  $\supset$ ⊃ 0.2 2 2 02/17/1999 2 E 0.15 U 0.05 U 0.02 U 0.03 U 0.05 U 0.02 U 0.02 U 0.2 U 0.2 U 0.02 U 2 U D F 0.5 U 0.1 U 2 U 0.2 U R-09C 0.2 U 0.2 U 10 10 10 ⊃ ככ ⊃ ∍ Σ 2 2 2 N 2 02/17/1999 0.15 U 0.05 U 0.03 U 0.02 U 0.02 U 0.02 U 0.02 U 0.2 U 0.2 U 3.4 E 0.05 U 0.5 U 0.2 U 0.1 U 2 U -1 10 U 41 2 U ⊃ R-09 ⊃  $\supset$ 2 2 2 2 2 Σ ⊃ ⊃  $\supset$ ⊃ 0.2 2 2 2 2 2 2 02/17/1999 0.15 U 0.03 U 0.02 U 0.02 U 0.05 U 0.02 U 0.2 E 0.05 U 0.02 U 0,2 U 0.2 U 0.5 U 0.1 U 0:2 U R-08B 0.2 U 2 U ) -7. C 10 U 0 00 ⊃ 2 U ) 0.2 2 2 2 02/17/1999 0.02 U 0.05 U 0.02 U 0.2 E 0.15 U 0.03 U 0.05 U 0.02 U 0.02 U 0,2 U 0,2 U 0.5 U 0.2 U 0.2 U 0.1 U 2 U ) -2 U 10 U 43 2 U R-08 Σ С ) ∍  $\supset$ 2 2 2 Σ ) ⊃ 0.2 02/17/1999 0.15 U 0.03 U 0.02 U 0.05 U 0.02 U 0.05 U 0.02 U 0.02 U 0.3 E 0.2 U 0.2 U 0.1 U 2 C 7 C 0.5 U 0.2 U 2 U 0.2 U 10 U ⊃ R-07 0.2 ⊃ 62 2 02/17/1999 0.05 U 0.02 U 0,05 U 0.15 U 0.03 U 0.02 U 0.02 U 0.02 U 0.2 U 0.2 E 0.2 U 0,5 U 0.2 U R-01R 0.1 U 2 U 2 U ∩ -0.2 U 10 U 2 C 2 C - -- -) 1 2 U C C C  $\supset$ Σ ∍ 0.2 52 2 2 2 2 NG/L NG/L NG/L NGL UG/L NG/L NG/L NG/L NG/L NG/L NG/L NG/L NGL NGL ngl UG/L NG/L NG/L ЛGL NGIL ЛGЛ NG/L ngr Ugr nG/L UG/L NG/L NG/L NG/L NG/L NG/L NG/L UGL **BIS(2-ETHYLHEXYL) PHTHALATE** 4,6-DINITRO-2-METHYLPHENOL 2,3,4,6-TETRACHLOROPHENOL 4-CHLORO-3-METHYLPHENOL BENZO(B)FLUORANTHENE **BENZO(K)FLUORANTHENE** DIBENZ(A,H)ANTHRACENE NDENO(1,2,3-CD)PYRENE 2,4,6-TRICHLOROPHENOL BENZO(G,H,I)PERYLENE **PENTACHLOROPHENOL** CHROMIUM - SOLUBLE 2,4-DICHLOROPHENOL **BENZ(A)ANTHRACENE** 2.4-DIMETHYLPHENOL MERCURY - SOLUBLE 2,4-DINITROPHENOL CHROMIUM - TOTAL BENZO(A)PYRENE **MERCURY - TOTAL** 2-CHLOROPHENOL FLUORAN THENE ACEPHTHYLENE 2-NITROPHENOL 4-NITROPHENOL Sample Location: ANTHRACENE ACEPHTHENE PHENTHRENE Method 7470A Method 6010B Sample Date: PHTHALENE FLUORENE Method SIM CHRYSENE PYRENE PHENOL

Notes

E inducates estimated concentiution due to low levels of Bisl2-ethylhexyllphthalate above the method reporting limit in the method blank;

sample results less than twenty limits the level found in the method blank are flagged "E".

U Indicates compound analyzed for but not detected.

Table 2 Analytical Summary Second Semi-Annual 1999 Groundwater Sampling Grenada Facility Tie Plant, Mississippi

				: ]	14410000					
Sample Location:		R-01R	R-07	R-08 08/25/1999	R-08B	R-09 08/25/1999	R-09C	R-09D 08/25/1999	R-10A 08/26/1999	FB-01
Method 6010B										
CHROMIUM - SOLUBLE	NG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHROMIUM - TOTAL	UG/L	39	18	53	10 U	23	14	10 U	32	10 U
Method 7470A										
MERCURY - SOLUBLE	NGr	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
MERCURY - TOTAL	UG/L	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Method SIM										
2,3,4,6-TETRACHLOROPHENOL	NG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 UJ
2.4,6-TRICHLOROPHENOL	NG/L	2	2 UJ	2 ()	2 UJ	2 UR	2 UJ	2 0.1	2 UJ	2 UJ
2,4-DICHLOROPHENOL	NGL	1 07	5	1	3	1 UR	1 01	3-	5	1 01
2.4-DIMETHYLPHENOL	NG/L	1 1	1	3	3	1 UR	1 01	5	3	3
2,4-DINITROPHENOL	NG/L	2	2 UJ	2 UJ	2 U	2 UR	2 UJ	2 W	5 7	2 U
2-CHLOROPHENOL	NG/L		5	1 01	5	1 UR	5	3-	3	3
2-NITROPIFENOL	NG/L	-	1 UJ	1 1	3	1 UR	3	1 01	5-	3
4.6-DINITRO-2-METHYLPHENOL	NG/L	2	2 U	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 1
4-CHLORO-3-METHYLPHENOL		-	3	- 1	n r	1 UR	5	5	5	1 02
4-NITROPHENOL	ngr		2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 01	2 UJ
ACENAPHTHENE	NG/L		2 UJ	2 M	2 UJ	2 UJ	2 UJ	2 01	2 UJ	2 UJ
ACENAPITHYLENE	NG/L		2 NJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
ANTHRACENE	NG/L		0.1 UJ	LU L 0	01 01	0.1 U	01 00	0.1 UJ	0.1 UJ	0.1 UJ
<b>BENZ(A)ANTHRACENE</b>	NG/L		0.02 UJ	0.02 UJ	0.02 UJ	0,02 UJ	0.04 J	0.03 J	0.02 UJ	0.02 UJ
BENZO(A)PYRENE	ngr		0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	L 20.0	0.02 UJ	0.02 UJ	0.02 UJ
BENZO(B)FLUORANTHENE	NG/L		0.02 UJ	0.02 J	0.02 UJ	0.02 UJ	L E0.0	0.02 UJ	0.02 UJ	0.02 UJ
BENZO(G.H.I)PERYLENE	NGL		0.05 UJ	0,05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
BENZO(K)FLUORANTHËNE	NG/L	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 J	0.02 UJ	0.02 UJ	0.02 UJ
BIS(2-ETHYLHEXYL) PHTHALATE	NG/L		0.4 UJ	0.6 UJ	0.8 UJ	0.5 UJ	2,1 J	4	0.4 UJ	0.2 J
CHRYSENE	NG/L	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ
DIBENZ(A,H)ANTHRACENE	ngr		0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ
FLUORANTHENE	NG/L		0.2 UJ	0.21 J	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
FLUORENE	ngr		0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
INDENO(1,2,3-CD)PYRENE	nGr		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
NAPHTHALENE	NG/L	2 UJ	2 UJ	2 UJ	2 00	2 UJ	2 UJ	2 01	2 W	2 UJ
PENTACHLOROPHENOL	ngr	2 01	2 UJ	2 01	2 U	2 UR	2 UJ	2 01	2 M	2 UJ
PHENANTHRENE	ngr	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5.UJ
PHENOL	ngr	3	5	5	- 00	1 UR	5		5	<b>7</b>
PYRENE	NG/L	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
Nules										
u Indicates estimate value.										

d Indicates estanars -----. R Indicates a rupected value. U Indicates comprised analyzed but not detected.

t:\users\jatkins\BEAZ7-03611\9908sum-for-App.xls

Analytical Summary 2000 First Semi-Annual and Second Quarter Background Groundwater Sampling Grenada Facility Tie Plant, Mississippi **TABLE 3** 

Method 8270C 2.3.4.5.TETRACHLOROPHENOL 2.4.5.TRICHLOROPHENOL 2.4.5.TRICHLOROPHENOL 2.4.5.TRICHLOROPHENOL 2.4.DINETHYLPHENOL 2.4-DINETHYLPHENOL 2.4-DINITROPHENOL 2.4-DINITROPHENOL 2.4-DINITROPHENOL												400 - AUF-X	FB-01 - FR
	2 2 2 <u>5</u> 8 5 1	ł		ANAZIENIZA	0007/60/20	0002/60/20	0002/80/20 0002/60/20	02/08/2000	02/09/2000	06/06/2000	06/08/2000	06/06/2000	06/06/2000
	2 2 2 2 2 F	10 11	19	1	1 4								
			2 9	2 5				10 C	₽ 0	1 1 1	10 0	10 U	40
		2	2	0.01				10 0	10 U		1		
	·	2	⊃ ₽	10 C				1					10 U
		1 20 0	10 01	10 11	Ę			2 ;				ŏ	10 U
		20 13	2	2 2								10 U	10 U
_	_	3 9	3 5	3	2:2			20 C			50 U		
		2 8	2 2	2	0 : 2 :	5	2 C	⊒ 0 (1	10 U	10 U	10 U	- = - =	5 = 8 <del>=</del>
			3					20 0				2 2	
	ר   10							11 01					
ACENAPHTHYLENE   UGA	AL 10 U	10 0	0 0	10 U				2 :			0 0 0		
ANTHRACENE	μ 10 U	10 11	; ;	2 5	2 5			0 02			1 O C	10 U	
BENZO/AJANTHRACENE		2 5	2 9	2 :				⊃ 2			10 U		
		2 :	2	0	0 0			₽ 0					
-	202	0		2 2 2				10 11			2		
UORANTHENE	ר 1 ק	10 U	₽ 2		10 11								
CHRYSENE   UG/L	L 10 U	10 11	101								□ □ □	10 C	
DIBENZO(A HIANTHRACENE LICH	10 11	) = ; ;						10 U			10 C		
		2 9	2:	2				- 10 10		10 U	101		
	2	2	0 01	0 0 0	10 C			10 11				2	
-	10 O	5 5	5 0 0	10 U	10 U			. :			2		
INDENO(1,2,3-CD)PYRENE UGA	1. 10 U	10 U	10 U	10 1	) = ; ;			2:			0 0		10 U
	AL 10 U	1 1	) <u>-</u>			2 :		10 0		5 U	10 U	10 U	
PENTACHLOROPHENOI			2 5	2 6				5	10 U		10 U.		2 5
		3	2	200	2023			20 C	50 U		5		
	20.0	10 C	0 0 0	 ₽	0 C			100			3 :	20 20	50 0
PHENOL   UGA	7 1 10 N	5 U	10 U	10 U	10 11				2 :	2		10 C	10 C
PYRENE	λ 10 U	10 U	10 11		2 4			2:			0 D	10 U	10 U
Notes;									10 U	5 0	10 U	10 11	10 1

U indicales compound was analyzed for, but not delacted. J indicalas an estimate value.

•

						27-28	R-08B	80-2
HENOL SL	-	9/13/00	9/13/00	9/13/00	9/13/00	9/12/00	9/12/00	8/13/00
סר								
	UGL	10 U	10 U	10 U	10 U	-0 10	10 U	10 U
	UGA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	UGL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	NGA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	UG/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U
	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IENOL	UG/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U
	UGIL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	NGL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	UGIL	10 U	5 C	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	NGIL	10 U	- 10 10	10 U	10 U	10 U	0 0 ⊂	10 U
	UGL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	ЧgЛ	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	NG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	UGIL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	NG/L	10 U	₽ 0	10 U	10 U	10 U	10 U	10 U
PYRENE	NG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U

U indicales compound was analyzed for, but not detected.

F:Projects/03811/Reports/Semi-Annual/2SA-00 Table 5.xts

Page 1 of 2

1/12/01

First Semi-Annual 2001 Groundwater Sampling Event Summary of Analytical Data February 13-14, 2001 **Table 2** 

# Grenada Facility Tie Plant, Mississippi

Sample Location:		R-01R	R-08	R-08B	R-09	R-09C	000-A
Sample Date:		2/14/2001	2/14/2001	2/14/2001	2/14/2001	2/14/2001	2/14/2001
Method 8270C							
2,3,4,6-TETRACHLOROPHENOL	NG/L	10 U	10 U	N G;	10 U	10 11	101
2.4.5-TRICHLOROPHENOL	NG/L	10 U	10 U	10 U	10 U	10 1	2 5
2,4,6-TRICHLOROPHENOL	ngr	10 U	10 U	10 U	10 U	10 1	2 0
2,4-DIMETHYLPHENOL	ngr	10 U	10 U	10 U	10 U	10 11	2 5
2,4-DINITROPHENOL	NG/L	50 U	50 11				
2-CHLOROPHENOL	NG/L	10 U					
4-CHLORO-3-METHYLPHENOL	NG/L	20 U	20 N				
ACENAPHTHENE	UG/L	10 U	10 II				
ACENAPHTHYLENE	NG/L	10 U	10 U	10 U	10 U	10 11	
ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 11	2 2 2 2 2
BENZ(A)ANTHRACENE	NG/L	10 U	10 U	10 U	10 U	10 1	
BENZO(A)PYRENE	NG/L	10 U	10 U	10 U	10 11	5 C	
BENZO(B)FLUORANTHENE	NG/L	10 U	10 U	10 U	10 1		
CHRYSENE	NG/L	10 U	10 U	10 U	101	2 0	
DIBENZO(A,H)ANTHRACENE	NG/L	10 U	10 U	10 U	10 11		
FLUORANTHENE	NG/L	10 U	10 U	10 U	10 1	2 0	
FLUORENE	NG/L	10 U	10 U	10 U	10 U	2 0	
INDENO(1,2,3-CD)PYRENE	NG/L	10 U	10 U	10 U	10 U	10 1	
NAPHTHALENE	UG/L	10 U	10 U	10 U	10 U	10 1	
PENTACHLOROPHENOL	NG/L	50 U	50 U	50 U	50 U	50 11	
PHENANTHRENE	NG/L	10 U	10 U	10 U	10 11	) = }	200
PHENOL	NG/L	10 U	10 U	10 U	5 5	2 4	
PYRENE	NG/L	10 U					
Noles:							

U indicates compound was analyzed for, but not detected.

## Table 2 Summary of Analytical Data

# First Semi-Annual 2001 Groundwater Sampling Event February 13-14, 2001

# Grenada Facility

Tie Plant, Mississippi

Sample Location:		R-09D - DUP	R-10A	ER-01 - ER
Sample Date:		2/14/2001	2/14/2001	2/14/2001
Method 8270C				
2,3,4,6-TETRACHLOROPHENOL	nG/L	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	ng/L	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	NG/L	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	NG/L	10 U	10 U	10 U
2,4-DINITROPHENOL	NG/L	50 U	50 U	50 U
2-CHLOROPHENOL	NG/L	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	NG/L	20 U	20 U	20 U
ACENAPHTHENE	NG/L	10 U	10 U	10 U
ACENAPHTHYLENE	NGL	10 U	10 U	10 U
ANTHRACENE	NG/L	10 U	10 U	10 U
BENZ(A)ANTHRACENE	NG/L	10 U	10 U	10 U
BENZO(A)PYRENE	NGL	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	NG/L	10 U	10 U	10 U
CHRYSENE	NG/L	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	NG/L	10 U	10 U	10 U
FLUORANTHENE	NG/L	10 U	10 U	10 U
FLUORENE	NG/L	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	NG/L	10 U	10 U	10 U
NAPHTHALENE	NG/L	10 U	10 U	10 U
<b>PENTACHLOROPHENOL</b>	NGAL	50 U	50 U	50 U
PHENANTHRENE	NGA	10 ∪	10 U	10 U
PHENOL		10 U	10 U	10 U
PYRENE	NG/L	10 U	10 U	10 U
Notes:				

U indicates compound was analyzed for, but not detected.



P001

Summary of Analytical Data Second Semiannual Groundwater Sampling Event August 14 and 15, 2001 Grenada Facillty Tie Plant, Mississippi Table 3

Sample Location:		R-01R	R-07	R-08	R-08B	R-09	260-R	and Joura	000 0		
Sample Date:		8/15/2001	8/15/2001	8/15/2001	8/15/2001	8/15/2001	8/15/2001	8/15/2001	R14 E12004	AUT-71	FB-01 - FB
Method 8270C										1002/01/0	1002/91/9
2,3,4,6-Tetrachlorophenol	NGI	10 U	-0 -	10 U	10 U	10 U	10 11	Ę	10 11	1 07	
2,4,5-Trichlorophenol	nGr	10 U	10 U	10 U	10 U				2 5		
2,4,6-Tiichlorophenol	л <sub>о</sub> г	10 U	2 1								
2.4-Dimethylphenol	NG/L	10 U		5 t	2 0						
2.4-Dinitrophenol	ng/	50 U	20 0	20 12							
2-Chiorophenol	n G/L	10 U		2 2 2							
4-Chloro-3-methylphenol	NG/L	20 U	20 0	2 12							
Acenaphthene	NG/L	10 U	3 <del>2</del> > =								
Acenaphthylene	UGL	10 U	2 Q	> = ? <del>-</del>	2 0						
Anthracene	NGL	10 U	10 0	2 0	; = ; =						
Benz(a)anthracene	ngr	10 U	0 O	1 CT							
Benzo(a)pyrene	NGL	10 U	2 5	2 0							
Benzo(b)fluoranthene	ngr	10 U	0 0 0	10 01	2 0						
Chrysene	nGr	10 U	10 U	10 1							
Dibenzo(a,h)anthracene	ЧGЛ.	10 C	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 1	
Fluoranthene	ЛGГ	10 U	10 1								
Fluorene	Ю	10 U	10 1								
Indeno(1,2,3-cd)pyrene	UGN.	10 U	10 0	10 1							
Naphthalene	Л ОСИ	10 C	10 U	10 U	10 11						
Pentachlorophenol	лGr	50 U	20 U	50 U	50 U	50 U	50 U				
Phenanthrene	-NGVI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 11
Phenol	NG/L	10 U	10 0	10 1							
Pyrene	NGA	5 U	10 U	10 U	10 0						
Notes:											

U indicates compound was analyzed for, but not detected.

Tabl 2

### Summary of Analytical Data First Semiannual Groundwater Sampling Event February 11 and 12, 2002

Grenada Facility

Tie Plant, Mississippi

						-					
Sample Date:		2/11/02	2/12/02	R-08 2/12/02	R-08B 2/11/02	R-09 2/12/02	R-09-DUP	R-09C	R-09D	R-10A	EB-01- EB
Method 8270C								10121		701117	71/71/7
2,3,4,6-TETRACHLOROPHENOL	NGL	10 U	10 U	10 U	9.6 U	9.7 U	10 11	10 11	10 11	11 01	
2,4,5-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	2 1 1	2 0		2 6
2,4,6-TRICHLOROPHENOL	UGL	10 ∪	10 U	10 U	9.6 U	9.7 U	10 U	10 U		2	2 5
2,4-DIMETHYLPHENOL	NG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U		2 0	2 5
2,4-DINITROPHENOL	NGL	50 U	50 U	50 U	48 U	49 U	50 U	20 C	51 U	50 U	51 12
2-CHLOROPHENOL	NGL	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 C	1
4-CHLORO-3-METHYLPHENOL	NGL	20 U	20 U	20 U	19 U	19 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	<b>NG/L</b>	10 U	10 C	10 C	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	<b>JON</b>	10 U	10 U	10 C	9.6 U	9.7 U	10 U	10 U	10 0	10 U	
ANTHRACENE	<b>UGIL</b>	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 01
BENZO(A)ANTHRACENE	NGL	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 C	10 U	0 0 0 0
BENZO(A)PYRENE	NGL	10 U	10 U	-0 0	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	NG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	<b>UG/L</b>	10 U	10 U	10 C	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A, H)ANTHRACENE	NGA	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	NG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	NG/L	0 0	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	NGL	⊃ 9	10 ∪	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	NGA	20 C	20 C	50 U	48 U	49 U	50 U	50 U	51 U	50 U	51 U
PHENANTHRENE	ЧgЛ	10 U	10 U	10 0	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
PHENOL	NGL	0 ∪	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
PYRENE	NG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
Notes:											

U indicates compound was analyzed for, but not detected.

Table 3Summary of Analytical DataSecond Semiannual Sampling EventAugust 12 and 13, 2002Grenada FacilityTio Dlant Miscisciani

				Tie P	Tie Plant, Mississippi	ississi	ppi				
Sample Location:		R-01R	R-07	R-08	R-08B	R-09	R-09C	R-09C - DUP	R-09D	R-10A	FB-01 FB
Sample Date:		8/12/02	8/13/02	8/13/02	8/13/02	8/13/02		8/13/02	8/13/02	8/12/02	
Method 8270C											
2,3,4,6-TETRACHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	NGA	51 U	53 U	55 U	50 U	50 U	51 U	50 U	51 U	52 U	50 U
2-CHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	∞ 10 U
4-CHLORO-3-METHYLPHENOL	NG/L	20 U	21 U	22 U	20 U	20 U	20 U	20 U	20 U	21 U	20 U
ACENAPHTHENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
<b>BENZO(A)ANTHRACENE</b>	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	NG/L	51 U	53 U	55 U	50 U	50 U	51 U	50 U	51 U	52 U	50 U
PHENANTHRENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	NG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Notes:											

U indicates compound was analyzed, but not detected.

Table 2 First Semiannual 2003 Groundwater Analytical Data Grenada Facility Tie Plant, Mississippi

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2710/2003         2710/2003 <t< th=""><th></th><th></th><th>R-01R</th><th>R-07</th><th>R-08</th><th>R-08B</th><th>R-09</th><th>R-09C</th><th>R-09C - DUP</th><th>R-09D</th><th>R-10A</th></t<>			R-01R	R-07	R-08	R-08B	R-09	R-09C	R-09C - DUP	R-09D	R-10A
UGM         38 U         10 U         10 U         98 U         9.7 U         10 U         98 U         9.8 U <t< th=""><th>Sample Date:</th><th></th><th>2/10/2003</th><th>2/10/2003</th><th>2/10/2003</th><th>2/10/2003</th><th>2/10/2003</th><th>2/10/2003</th><th>2/10/2003</th><th>2/10/2003</th><th>2/10/2003</th></t<>	Sample Date:		2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003
UGAL         9.8 U         10 U         10 U         9.8 U         9.	Method 8270C										
UGA         38 U         10 U         10 U         98 U	2,3,4,6-TETRACHLOROPHENOL	NG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U		9.8 U	9.8 U
UGAL         9.8 U         10 U         10 U         9.8 U         9.7 U         10 U         9.8	2,4,5-TRICHLOROPHENOL	NG/L		10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
UGAL         38 U         10 U         10 U         38 U         97 U         10 U         98 U         98 U         98 U         98 U         98 U         98 U         99 U         50 U         98 U         99 U         90 U <th< td=""><td>2,4,6-TRICHLOROPHENOL</td><td>NGL</td><td>9.8 U</td><td>10 U</td><td>10 U</td><td>9.8 U</td><td>9.7 U</td><td>10 U</td><td>9.8 U</td><td>9.8 U</td><td>9.8 U</td></th<>	2,4,6-TRICHLOROPHENOL	NGL	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
UGAL         49 U         51 U         49 U         50 U         51 U         49 U         50 U         49 U         40 U <th< td=""><td>2,4-DIMETHYLPHENOL</td><td>NG/L</td><td>9.8 U</td><td>10 U</td><td>10 U</td><td>9.8 U</td><td></td><td>10 U</td><td>0.8.6</td><td>9.8 U</td><td>9.8 U</td></th<>	2,4-DIMETHYLPHENOL	NG/L	9.8 U	10 U	10 U	9.8 U		10 U	0.8.6	9.8 U	9.8 U
UGA         9.8 U         10 U         10 U         9.8	2,4-DINITROPHENOL	UGL	49	50 U	51 U	49 U	49 U	50 U	49 U	49 U	49 U
·         UGAL         20 U         20	2-CHLOROPHENOL	UG/L	9.8 U	10 U	10 U	0.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
UGA $0.0$ A <td>4-CHLORO-3-METHYLPHENOL</td> <td>UGL</td> <td>20 U</td> <td>20 U</td> <td>20 U</td> <td>20 U</td> <td>19 U</td> <td>20 U</td> <td>20 U</td> <td>20 U</td> <td>20 U</td>	4-CHLORO-3-METHYLPHENOL	UGL	20 U	20 U	20 U	20 U	19 U	20 U	20 U	20 U	20 U
E         UGA         9.8 U         10 U         10 U         10 U         9.8 U         9.7 U         10 U         9.8 U <td>ACENAPHTHENE</td> <td>UGL</td> <td>9.8 U</td> <td>10 U</td> <td>10 U</td> <td>9.8 U</td> <td></td> <td>10 U</td> <td>9.8 U</td> <td>9.8 U</td> <td>9.8 U</td>	ACENAPHTHENE	UGL	9.8 U	10 U	10 U	9.8 U		10 U	9.8 U	9.8 U	9.8 U
UCAL         98 U         10 U         9.7 U         10 U         9.8	ACENAPHTHYLENE	UGA		10 U	10 U	9.8 U	9.7 U	10 U		9.8 U	9.8 U
CENE         UGAL         9.8 U         10 U         10 U         9.8	ANTHRACENE	UGAL		10 U	10 N	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
UGAL         9.8 U         10 U         10 U         9.8 U         9.	<b>BENZO(A)ANTHRACENE</b>	UGL	9.8 U	10 U	10 U	9.8 U		10 U	9.8 U		9.8 U
UGAL         9.8 U         10 U         9.8 U         9	<b>BENZO(A)PYRENE</b>	UGIL	9.8 U	10 U	10 U		9.7 U	10 U	9.8 U		9.8 U
UG/L         9.8 U         10 U         9.8 U         9	<b>BENZO(B)FLUORANTHENE</b>	UG/L	9.8 U	10 U	10 U	0.8.0	9.7 U	1 05 U	9.8 U	9.8 U	0.8.0
IENE         UGAL         9.8 U         10 U         9.8 U         9.	CHRYSENE	UG/L	9.8 U	10 U	10 U	9.8 U		10 U	9.8 U	9.8 U	9.8 U
UGA         9.8 U         10 U         9.8 U         9.	DIBENZO(A,H)ANTHRACENE	UGL		10 U	10 U	0.8.6	9.7 U	10 U	9.8 U	9.8 U	0.8.0
UG/L         9.8 U         10 U         9.8 U         149 U         7.0 U         9.8 U         9	FLUORANTHENE	UGL		10 U	10 U	0.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
VE         UG/L         9.8 U         10 U         9.8	FLUORENE	UGL	9.8 U	10 U	10 U	9.8 U		10 U		9.8 U	9.8 U
UGAL         9.8 U         10 U         9.8 U         9	INDENO(1,2,3-CD)PYRENE	UG/L	9.8 U	10 U	10 U	9.8 U		10 U	9.8 U	9.8 U	9.8 U
·         UG/L         49 U         50 U         51 U         49 U         50 U         49 U         50	NAPHTHALENE	UGA	9.8 U	10 U	10 N	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
THRENE         UG/L         9.8 U         10 U         10 U         9.8 U         9	<b>PENTACHLOROPHENOL</b>	UGL	49 U	50 U	51 U	49 U	49 U	50 U	49 U	49 U	49 U
UG/L         9.8 U         10 U         10 U         9.8 U         9.7 U         10 U         9.8	PHENANTHRENE	UGL	9.8 U	10 U	10 U	0.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
UGAL 9.8 U 10 U 10 U 1 9.8 U 1 9.7 U 1 10 U 1 9.8 U 1 9.8 U 1	PHENOL	UG/L	9.8 U	10 U	10 U	0.8.0	9.7 U	10 U	9.8 U	9.8 U	9.8 U
	PYRENE	NG/L		10 U	10 U	0.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U

Notes: U indicates compound was analyzed, but not detected. 1 of 1

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# Table 3 Summary of Analytical Data 2003 Second Semiannual Groundwater Sampling Event Grenada Facility - Tie Plant, Mississippi

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		R-01R	R-07	R-08	R-08 - DUP	R-08B	R-09	R-09C	R-09D	R-10A
	UNITS	8/12/2003	8/12/2003	8/12/2003	8/12/2003	8/12/2003	8/12/2003	8/12/2003	8/12/2003	8/12/2003
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4,5-TRICHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4,6-TRICHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4-DIMETHYLPHENOL	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4-DINITROPHENOL	NG/L	51 U	54 U	53 U	50 U	49 U	49 U	49 U	48 U	49 U
2-CHLOROPHENOL	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
4-CHLORO-3-METHYLPHENOL	NG/L	20 U	21 U	21 U	20 U	19 U	19 U	19 U	19 U	20 U
ACENAPHTHENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
ACENAPHTHYLENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
ANTHRACENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
BENZO(A)ANTHRACENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
BENZO(A)PYRENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
<b>BENZO(B)FLUORANTHENE</b>	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
CHRYSENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
DIBENZO(A,H)ANTHRACENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
FLUORANTHENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
FLUORENE	1 NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
INDENO(1,2,3-CD)PYRENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
NAPHTHALENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
PENTACHLOROPHENOL	NG/L	51 U	54 U	53 U	50 U	49 U	49 U	49 U	48 U	49 U
PHENANTHRENE	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
PHENOL	NG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
PYRENE	NGL	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
Notes:										

U indicates compound was analyzed, but not detected.

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# Table 2 Summary of Analytical Data 2004 First Semiannual Groundwater Sampling Event Grenada Facility - Tie Plant, Mississippi

	INITS	R-01R 03/30/04	R-07 03/30/04	R-08 03/30/04	R-08B	R-09	R-09C	R-09C-DUP	R-09D	R-10A
Method 8270C		100000	100000	1000000	1000000				+0/00/00	+0/00/00
2,3,4,6-TETRACHLOROPHENOL	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	NG/L	50 U	53 U	51 U	49 U	50 U	50 U	51 U	51 U	50 U
2-CHLOROPHENOL	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	NG/L	20 U	21 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	NG/L	10 U	11 U	10 N	9.8 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
<b>BENZO(A)ANTHRACENE</b>	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
<b>BENZO(A)PYRENE</b>	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 01	10 U
<b>BENZO(B)FLUORANTHENE</b>	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE		10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A, H)ANTHRACENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
<b>PENTACHLOROPHENOL</b>	NG/L	50 U	53 U	51 U	49 U	20 U	50 U	51 U	51 U	50 U
PHENANTHRENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
PHENOL	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
PYRENE	NG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
Notes:										

U indicates compound was analyzed, but not detected.

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### Table 3Summary of Analytical Data2004 Second Semiannual Groundwater Sampling EventGrenada Facility - Tie Plant, Mississippi

		R-01R	R-01R - DUP	R-07	R-08	R-08B	R-09	R-09C	R-09D	R-10A
	UNITS	08/10/04	08/10/04	08/10/04	08/10/04	08/10/04	08/10/04	08/10/04	08/10/04	08/10/04
Method 8270C										
2,3,4,6-Tetrachlorophenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	µg/L	9.3 U	10 U	10 U	10 Ü	10 U				
2,4-Dimethylphenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinltrophenol	µg/L	47 U	50 U	50 U	50 U	50 U	50 U	51 U	52 U	50 U
2-Chlorophenol	µg/L	9.3 U	10 Ú –	10 U						
4-Chloro-3-Methylphenol	µg/L	19 U	20 U	20 U	20 U	20 U	20 U	20 U	21 U	20 U
Acenaphthene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	μg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	µg/L	47 U	50 U	50 U	50 Ú	50 U	50 U	51 U	52 U	50 U
Phenanthrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	_µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

U indicates compound was analyzed, but not detected.



# 2005 First Semiannual Groundwater Sampling Event Grenada Facility - Tie Plant, Mississippi Summary of Analytical Data Table 2

		Upgradient Weils	ent Wells			Dow	<b>Downgradient Wells</b>	Vells		
							R-08B			
		R-01R	R-10A	R-07	R-08	R-08B	DUP	R-09	R-09C	R-09D
	UNITS	2/21/2005	2/21/2005	2/21/2005	2/21/2005	2/21/2005	2/21/2005	2/21/2005	2/21/2005	2/21/2005
Method 8270C										
2,3,4,6-Tetrachlorophenol	hg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4,5-Trichlorophenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4,6-Trichlorophenol	hg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4-Dimethylphenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4-Dinitrophenol	µg/L	47 U	47 U	50 U	49 U	50 U	52 U	51 U	48 U	50 U
2-Chlorophenol	hg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
4-Chioro-3-Methylphenol	µg/L	19 U	19 U	20 U	19 U	20 U	21 U	20 U	19 U	20 U
Acenaphthene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Acenaphthylene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Anthracene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Benzo(a)anthracene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Benzo(a)pyrene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Benzo(b)fluoranthene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Chrysene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Dibenzo(a,h)anthracene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Fluoranthene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Fluorene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Indeno(1,2,3-cd)pyrene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Naphthalene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Pentachlorophenol	µg/L	47 U	47 U	50 U	49 U	50 U	52 U	51 U	48 U	50 U
Phenanthrene	hg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Phenol	hg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	0.5 U	10 U
Pyrene	Jg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U

### Notes:

DUP indicates duplicate sample

U indicates compound was analyzed, but not detected.

6/22/2005 F:\PP\_\_\_\_CTS\Beazer\Grenada\03611\Reports\Semi-Annual\1SA-05\1SA-05 Table 2

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## 2005 Second Semiannual Groundwater Sampling Event Grenada Facility - Tie Plant, Mississippi Summary of Analytical Data Table 3

	UNITS	R-01R 9/20/2005	R-07 9/20/2005	R-08 9/20/2005	R-08B 9/20/2005	R-08B-DUP 9/20/2005	R-09 9/20/2005	R-09C 9/20/2005	R-09D 9/20/2005	R-10A 9/20/2005	ERB-01 9/20/2005
Method 8270C										200210412	
2,3,4,6-TETRACHLOROPHENOL	hg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4,5-TRICHLOROPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4,6-TRICHLOROPHENOL	рg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4-DIMETHYLPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4-DINITROPHENOL	µg/L	50 U	50 UJ	56 U	49 U	50 U	51 U	49 U	52 U	49 U	49 U
2-CHLOROPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
4-CHLORO-3-METHYLPHENOL	рg/L	20 U	20 UJ	22 U	20 U	20 U	20 U	19 U	21 U	20 U	19 U
ACENAPHTHENE	µg/∟	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
ACENAPHTHYLENE	р <u>9</u> /Г	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
ANTHRACENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
BENZO(A)ANTHRACENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
BENZO(A)PYRENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
BENZO(B)FLUORANTHENE	hg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
CHRYSENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
DIBENZO(A,H)ANTHRACENE	hg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
FLUORANTHENE	µg∕L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
FLUORENE	hg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
INDENO(1,2,3-CD)PYRENE	рgЛ	10 U	10 UJ -	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
NAPHTHALENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
PENTACHLOROPHENOL	hg/L	50 U	50 UJ	56 U	49 U	50 U	51 U	49 U	52 U	49 U	49 U
PHENANTHRENE	hg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
PHENOL	н9/г	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
PYRENE	hg/г	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U

### Notes:

U indicates compound was analyzed for but not detected J indicates estimated value ERB - Equipment rinse blank DUP - Field duplicate sample µg/L = micrograms per liter

Summary of Analytical Data 2006 First Semiannual Groundwater Sampling Event Grenada Facility - Tie Plant, Mississippi Table 2

		Upgradient Wells	ent Wells			Dowr	Downgradient Wells	Vells		
							R-08B-			
		R-01R	R-10A	R-07	R-08	R-08B	DUP	R-09	R-09C	R-09D
ANALYTE	UNITS	2/1/2006	2/1/2006	2/1/2006	2/1/2006	2/1/2006	2/1/2006	2/1/2006	2/1/2006	2/1/2006
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4,5-TRICHLOROPHENOL	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4,6-TRICHLOROPHENOL	NG/L	9.7 U	10 U	0.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4-DIMETHYLPHENOL	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4-DINITROPHENOL	NG/L	49 U	51 U	49 U	49 U	51 U	51 U	47 U	51 U	49 U
2-CHLOROPHENOL	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
4-CHLORO-3-METHYLPHENOL	NG/L	19 U	20 U	20 U	19 U	20 U	20 U	19 U	20 U	19 U
ACENAPHTHENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
ACENAPHTHYLENE	NG/L	9.7 U	10 U	0.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
ANTHRACENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
BENZO(A)ANTHRACENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
BENZO(A)PYRENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
BENZO(B)FLUORANTHENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
CHRYSENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
DIBENZO(A,H)ANTHRACENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
FLUORANTHENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
FLUORENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
INDENO(1,2,3-CD)PYRENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
NAPHTHALENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
PENTACHLOROPHENOL	NG/L	49 U	51 U	49 U	49 U	51 U	51 U	47 U	51 U	49 U
PHENANTHRENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
PHENOL	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
PYRENE	NG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U

Notes:

DUP indicates duplicate sample. U indicates compound was analyzed, but not detected.



### 2006 Second Semiannual Groundwater Sampling Event Grenada Facility - Tie Plant, Mississippi Summary of Analytical Data Table 3

		Upgradient Wells	ant Wells			Dov	Downgradient Wells	ells		
ANALYTE	UNITS	R-01R 9/18/2006	R-10A 9/18/2006	R-07 9/18/2006	R-08 9/18/2006	R-08B 9/18/2006	R-08B - DUP 9/18/2006	R-09 9/18/2006	R-09C 9/18/2006	R-09D 9/18/2006
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	0.6 U
2,4,5-TRICHLOROPHENOL	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
2,4,6-TRICHLOROPHENOL	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
2,4-DIMETHYLPHENOL	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
2,4-DINITROPHENOL	NG/L	51 U	49 U	49 U	47 U	49 U	48 U	49 U	47 U	48 U
2-CHLOROPHENOL	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
4-CHLORO-3-METHYLPHENOL	NG/L	20 U	20 U	19 U	19 U	19 U	19 U	19 U	19 U	19 U
ACENAPHTHENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
ACENAPHTHYLENE	NG/L	10 U	0.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
ANTHRACENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
BENZO(A)ANTHRACENE	NGAL	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
BENZO(A)PYRENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
BENZO(B)FLUORANTHENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
CHRYSENE	NGA	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6°U
DIBENZO(A,H)ANTHRACENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
FLUORANTHENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
FLUORENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
INDENO(1,2,3-CD)PYRENE	NGL	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
NAPHTHALENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
PENTACHLOROPHENOL	NG/L	51 U	49 U	49 U	47 U	49 U	48 U	49 U	47 U	48 U
PHENANTHRENE	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
PHENOL	NG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
PYRENE	NGA	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U

Notes:

DUP Indicates dupticate sample. U indicates compound was analyzed, but not detected.

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### Table 2 Summary of Analytical Data 2007 First Semiannual Groundwater Sampling Event Grenada Facility - Mississippi

		Upgradient Wells	nt Wells			Dowi	<b>Downgradient Wells</b>	Vells		
							R-08B-			
		R-01R	R-10A	R-07	R-08	R-08B	DUP	R-09	R-09C	R-09D
ANALYTE	UNITS	2/2/2007	2/2/2007	2/2/2007	2/2/2007	2/2/2007	2/2/2007	2/2/2007	2/2/2007	2/2/2007
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
2,4,5-TRICHLOROPHENOL	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
2,4,6-TRICHLOROPHENOL	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	0.4 U	9.6 U	9.4 U	9.4 U
2,4-DIMETHYLPHENOL	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
2,4-DINITROPHENOL	NG/L	51 U	49 U	47 U	48 U	49 U	47 U	48 U	47 U	47 U
2-CHLOROPHENOL	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
4-CHLORO-3-METHYLPHENOL	NG/L	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U
ACENAPHTHENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	0.4 U	9.6 U	9.4 U	9.4 U
ACENAPHTHYLENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
ANTHRACENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
<b>BENZO(A)ANTHRACENE</b>	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
BENZO(A)PYRENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
BENZO(B)FLUORANTHENE	NG/L	10 U	0.7.U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
CHRYSENE	NGAL	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
DIBENZO(A, H)ANTHRACENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
FLUORANTHENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
FLUORENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
INDENO(1,2,3-CD)PYRENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
NAPHTHALENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
PENTACHLOROPHENOL	NG/L	51 U	49 U	47 U	48 U	49 U	47 U	48 U	47 U	47 U
PHENANTHRENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
PHENOL	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
PYRENE	NG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U

Notes:

DUP indicates duplicate sample.

U indicates compound was analyzed, but not detected.

UG/L indicates micrograms per liter

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### 2007 Second Semiannual Groundwater Sampling Event Grenada Facility - Mississippi Summary of Analytical Data Table 3

R-01R         R-01R-DUP         R-10A         R-07         9/20/20/20         9/20/20/20			'n	<b>Upgradient Wells</b>	ls			Downgrad	<b>Downgradient Wells</b>		
R-01R         R-01         N-01         N-01 <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>											
UNITS         9/20/07         9/20/2010         9/20/2010         9/20			R-01R	R-01R-DUP	R-10A	R-07	R-08	R-08B	R-09	R-09C	R-09D
LOROPHENOL         UGA         11         9.5 U         11 U         10 U	LYIE	UNITS	9/20/07	9/20/2007	9/20/07	9/20/2007	9/20/2007	9/20/2007	9/20/2007	9/20/2007	9/20/2007
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	od 8270C										
PPHENOL         UG/L         11U         9.5U         11U         10U         10U           PHENOL         UG/L         11U         9.5U         11U         10U         10U           PHENOL         UG/L         UG/L         11U         9.5U         11U         10U         10U           ENOL         UG/L         UG/L         11U         9.5U         11U         10U         10U           OL         UG/L         UG/L         11U         9.5U         11U         10U         10U           OL         UG/L         11U         9.5U         11U         10U         10U         10U           VIL         UG/L         11U         9.5U         11U         10U         10U         10U           NE         UG/L         11U         9.5U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5U         11U         10U         10U         10U           MTHENE         UG/L         11U         9.5U         11U         10U         10U         10U           F         UG/L         11U         9.5U         11U         10U         10U         10U	,6-TETRACHLOROPHENOL	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	0.9.6	9.6 U
PHENOL         UG/L         11U         9.5U         11U         10U         10U           ENOL         UG/L         11U         9.5U         11U         10U         10U           CIL         UG/L         UG/L         54U         54U         54U         52U         52U           OL         UG/L         UG/L         11U         9.5U         11U         10U         10U           OL         UG/L         21U         19U         21U         21U         10U         10U           NH         UG/L         21U         19U         21U         21U         10U         10U           HYLPHENOL         UG/L         11U         9.5U         11U         10U         10U         10U           NE         UG/L         11U         9.5U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5U         11U         10U         10U         10U	-TRICHLOROPHENOL	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
ENOL         UGAL         11 U         9.5 U         11 U         10 U         <	-TRICHLOROPHENOL	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
VOL         UG/L         54 U         54 U         52 U         50 U         10 U <th1< td=""><td>DIMETHYLPHENOL</td><td>UG/L</td><td>11 U</td><td>9.5 U</td><td>11 U</td><td>10 U</td><td>10 U</td><td>11 U</td><td>10 U</td><td>9.6 U</td><td>9.6 U</td></th1<>	DIMETHYLPHENOL	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
OL         UG/L         11U         9.5 U         11U         10U         10U         10U           IHYLPHENOL         UG/L         21U         19U         21U         21U         21U         21U           VE         UG/L         11U         9.5 U         11U         10U         10U         10U           VE         UG/L         11U         9.5 U         11U         10U         10U         10U           NE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10	DINITROPHENOL	<b>UG</b> L	54 U	48 U	54 U	52 U	52 U	53 U	52 U	48 U	48 U
HYLPHENOL         UG/L         21U         39U         21U         10U         10U <th1< td=""><td>LOROPHENOL</td><td>NG/L</td><td>11 U</td><td>9.5 U</td><td>11 U</td><td>10 U</td><td>10 U</td><td>11 U</td><td>10 U</td><td>9.6 U</td><td>9.6 U</td></th1<>	LOROPHENOL	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
UG/L         11U         9.5 U         11U         10U         10U         10U           NE         UG/L         11U         9.5 U         11U         10U         10U         10U           UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U           MTHENE         UG/L         11U         9.5 U         11U         10U         10U           ANTHENE         UG/L         11U         9.5 U         11U         10U         10U           THRACENE         UG/L         11U         9.5 U         11U         10U         10U           UMARENE         UG/L         11U         9.5 U         11U         10U         10U           PYRENE         UG/L         11U         9.5 U         11U         10U         10U           PYRENE         UG/L         11U         9.5 U         11U         10U         10U           PYRENE         UG/L         11U         9.5 U         11U         10U <td>LORO-3-METHYLPHENOL</td> <td>NG/L</td> <td>21 U</td> <td>19 U</td> <td>21 U</td> <td>21 U</td> <td>21 U</td> <td>21 U</td> <td>21 U</td> <td>19 U</td> <td>19 U</td>	LORO-3-METHYLPHENOL	NG/L	21 U	19 U	21 U	21 U	21 U	21 U	21 U	19 U	19 U
NE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           E         UG/L         11U         9.5 U         11U         10U         10U         10U           ANTHENE         UG/L         11U         9.5 U         11U         10U         10U         10U           ANTHENE         UG/L         11U         9.5 U         11U         10U         10U         10U           THRACENE         UG/L         11U         9.5 U         11U         10U         10U         10U           PYRENE         UG/L         11U         9.5 U         11U         10U         10U         10U           PYRENE         UG/L         11U         9.5 U         11U         10U         10U         10U           PYRENE         UG/L         11U         9.5 U         11U	VAPHTHENE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
UGA         11U         9.5 U         11U         10U         10U         10U           ACENE         UGA         11U         9.5 U         11U         10U         10U         10U           E         UGA         11U         9.5 U         11U         10U         10U         10U           ANTHENE         UGAL         11U         9.5 U         11U         10U         10U         10U           ANTHENE         UGAL         11U         9.5 U         11U         10U         10U         10U           IMRACENE         UGAL         11U         9.5 U         11U         10U         10U         10U           IMRACENE         UGAL         11U         9.5 U         11U         10U         10U         10U           IMRACENE         UGAL         11U         9.5 U         11U         10U         10U         10U           IMPACENE         UGAL         11U         9.5 U         11U         10U         10U         10U           IMPACENE         UGAL         11U         9.5 U         11U         10U         10U         10U           IMPACENE         UGAL         11U         9.5 U         11U         1	VAPHTHYLENE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
ACENE         UG/L         11U         9.5 U         11U         10U         10	HRACENE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
E         UG/L         11U         9.5U         11U         10U         10U         10U           ANTHENE         UG/L         11U         9.5U         11U         10U         10U         10U           ANTHENE         UG/L         11U         9.5U         11U         10U         10U         10U           IHRACENE         UG/L         11U         9.5U         11U         10U         10U         10U           UG/L         11U         9.5U         11U         10U         10U         10U           UG/L         11U         9.5U         11U         10U         10U         10U           PYRENE         UG/L         11U         9.5U         11U         10U         10U         10U           PYRENE         UG/L         11U         9.5U         11U         10U         10U         10U           UG/L         11U         9.5U         11U         10U         10U         10U         10U           HENOL         UG/L         11U         9.5U         11U         10U         10U         10U           HENOL         UG/L         11U         9.5U         52U         52U         52U         52U </td <td>20(A)ANTHRACENE</td> <td>NG/L</td> <td>11 U</td> <td>9.5 U</td> <td>11 U</td> <td>10 U</td> <td>10 U</td> <td>11 U</td> <td>10 U</td> <td>9.6 U</td> <td>9.6 U</td>	20(A)ANTHRACENE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
ANTHENE         UG/L         11U         9.5 U         11U         10U         10U <th1< td=""><td>ZO(A)PYRENE</td><td>NG/L</td><td>11 U</td><td>9.5 U</td><td>11 U</td><td>10 U</td><td>10 U</td><td>11 U</td><td>10 U</td><td>9.6 U</td><td>9.6 U</td></th1<>	ZO(A)PYRENE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
UG/L         11U         9.5U         11U         10U         10U         10U           THRACENE         UG/L         11U         9.5U         11U         10U         10U         10U           UG/L         11U         9.5U         11U         10U         10U         10U         10U           UG/L         11U         9.5U         11U         10U         10U         10U         10U           UG/L         11U         9.5U         11U         10U         10U         10U         10U           IPYRENE         UG/L         11U         9.5U         11U         10U         10U         10U           HENOL         UG/L         54U         52U         52U         52U         10U         10U           HENOL         UG/L         11U         9.5U         11U         10U         10U         10U         10U	ZO(B)FLUORANTHENE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
THRACENE         UG/L         11         9.5 U         11 U         10 U	YSENE	LG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
UG/L         11U         9.5 U         11U         10U         10U<	NZO(A,H)ANTHRACENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
UG/L         11U         9.5U         11U         10U         10U </td <td>DRANTHENE</td> <td>UG/L</td> <td>11 U</td> <td>9.5 U</td> <td>11 U</td> <td>10 U</td> <td>10 U</td> <td>11 U</td> <td>10 U</td> <td>9.6 U</td> <td>9.6 U</td>	DRANTHENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
PYRENE         UG/L         11U         9.5 U         11U         10U         10U <th1u< th="">         10U         10U         <th1u< <="" td=""><td>DRENE</td><td>NG/L</td><td>11 U</td><td>9.5 U</td><td>11 U</td><td>10 U</td><td>10 U</td><td>11 U</td><td>10 U</td><td>9.6 U</td><td>9.6 U</td></th1u<></th1u<>	DRENE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
UG/L         11 U         9.5 U         11 U         10 U <th10 th="" u<="">         10 U         10 U         <th< td=""><td>NO(1,2,3-CD)PYRENE</td><td>UG/L</td><td>11 U</td><td>9.5 U</td><td>11 U</td><td>10 U</td><td>10 U</td><td>11 U</td><td>10 U</td><td>9.6 U</td><td>9.6 U</td></th<></th10>	NO(1,2,3-CD)PYRENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
HENOL         UG/L         54 U         48 U         54 U         52 U         52 U           UG/L         11 U         9.5 U         11 U         10 U         10 U           UG/L         11 U         9.5 U         11 U         10 U         10 U	HTHALENE	ngr	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
UG/L 11U 9.5U 11U 10U 10U 10U 10U 10U 10U 10U 10U 10	<b>FACHLOROPHENOL</b>	NG/L	54 U	48 U	54 U	52 U	52 U	53 U	52 U	48 U	48 U
	VANTHRENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
	VOL	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
PYRENE   UG/L   11 U   9.5 U   11 U   10 U   10 U   -	NE	NG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U

Notes:

DUP indicates duplicate sample.

U indicates compound was analyzed, but not detected. UG/L indicates mlcrograms per liter

### **Field Duplicates**

Field duplicates are independent samples which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process. Duplicate samples are to be included at a minimum rate of one for every twenty samples (5% of total) and will be submitted to the laboratory as "blind" samples. If less than twenty samples are collected during a particular sampling episode, one duplicate shall be performed.

Duplicates of water samples shall be obtained by alternately filling sample containers from the same sampling device for each parameter.

### Matrix Spike / Matrix Spike Duplicates

A matrix spike is an aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix. Matrix spike duplicates are intra-laboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. Site-specific matrix spike/matrix spike duplicate (MS/MSD) samples shall be collected and submitted for each sample matrix at a rate of one per 20 samples (5% of total).

### 4.1.5 Sample Management and Handling

This section addresses the following aspects of sample handling and custody:

- Sample labeling procedures;
- Sample preservation and bottle requirements; and,
- Chain of custody and analytical request procedures.

### Sample Labeling

Sample labeling will be conducted in accordance with the requirements outlined in the following KEY SOP:

• SOP #114 – Sample Handling, Preservation, Packaging, and Shipping.

All samples will be labeled with a unique field identification number based on the sample matrix or collection method, the sample location and/or interval, and other pertinent information. Sample labels will be completed using waterproof permanent markers. The labels will be completed and verified by the sampling technician at the time of sample collection. Information marked on the label will consist of the following:

- Client/Facility;
- Sample identification number;
- Sampling technician's initials;
- Date and time of sample collection;



- Preservatives used; and,
- Laboratory analyses to be performed.

### Sample Preservation and Bottle Requirements

Sample bottle and preservation requirements are described in KEY SOP #114. The certified clean sample bottles will be provided by the analytical laboratory.

### Sample Chain of Custody

Each sample shipment will be accompanied by a chain-of-custody form. This form may be provided by the analytical laboratory or by the Contractor.

The chain-of-custody form creates a legal record of sample possession. This form indicates the sample designation, the date and time of sample collection, sampler's name(s), bottle types, and numbers of bottles used. The samples are to remain in the custody of the sample team or designated custodian (which includes overnight couriers who follow chain of custody procedures) until delivery to the laboratory. The sample custodian maintains custody of the sample to ensure their integrity has not been compromised. A sample is under custody if any of the following conditions are met:

- It is in possession of the custodian or a designated member of the sampling team;
- It is in plain view, after being in possession;
- It was in possession and is locked up (secured); and,
- It is in a designated secure area.

Upon delivery to the laboratory, the chain-of-custody form will be transferred to the laboratory sample custodian. When the form is complete, it should indicate no lapses in sample possession.

Copies of the chain-of-custody forms will be maintained in the project records. If samples are shipped via couriers, the courier freight bills (one for each shipment) will also be maintained in the project records. All samples will be shipped in accordance with U. S. Department of Transportation (DOT) regulations. KEY SOP #105 discusses sample custody and is included in Attachment A to this SAP.

### 4.1.6 Sample Packaging and Shipping

Proper packaging and shipping of samples will minimize the potential for sample breakage, leakage, or cross contamination and will provide a clear record of sample custody from collection to analysis. Sample custody and shipping protocol are detailed in SOP 114 (Attachment A).

Once properly packed, samples will be shipped to the laboratory via an overnight express service (guaranteeing prompt delivery and package tracking), a courier service, or by the field samplers. The analytical coordinator should be notified of any weekend activities as well.

The COC and shipping documentation will be retained in the project files. The Field Manager is responsible for notifying the Project Quality Assurance Officer of daily sampling activities, sending him/her copies of COCs, and verifying intact arrival of all sample containers by calling the analytical coordinator the day of anticipated arrival.

### 4.1.7 Equipment Decontamination Procedures

This section describes the methods for decontamination of field equipment that could introduce contamination from one sample collection location to another. The equipment may include tubing, water level measurement devices, or any other non-dedicated or reused equipment used during field activities. Decontamination of sampling equipment will be performed between each monitoring well as a quality assurance (QA) measure (to prevent cross contamination between samples) and a safety precaution (to maintain a clean working environment). Equipment decontamination procedures are detailed in SOP 115 (Attachment A).

Waste products of decontamination, such as waste liquids, solids, rags, and gloves will be segregated and containerized in 55-gallon drums and disposed of properly based on the nature of contamination. The Field Manager will ensure that the proper decontamination procedures are followed and that all waste materials produced by decontamination are properly managed.

The site safety officer will enforce safety measures that provide the best protection for all persons involved directly with sampling and or decontamination. Subcontractors will be required to follow the decontamination procedures stated in their contracts (and outlined in this section). It is the responsibility of all personnel involved with sample collection or decontamination to maintain a clean working environment and to ensure that contaminants are not introduced to the environment through negligence.

### 4.2 SAMPLING SCHEDULE

Groundwater monitoring will be performed on an every other year (biennial) basis for the duration of the permit renewal.

### 4.3 **REPORTING**

The results of each biennial groundwater monitoring event will be presented in separate biennial reports. Each report will present the gauging data, field parameter data, and analytical data from the most recent event. The reports will also present the groundwater flow direction and linear groundwater flow velocity as described in Section 4.1.2 (based on groundwater contours drawn from the groundwater elevation data).

### 4.3.1 Statistical Analysis

The laboratory will meet the Estimated Quantitation Limits (EQLs) for the constituents listed in Table 4-1 using U.S. EPA Method 8270C. Low-level metholdology will be used by the laboratory in order to achieve MCLs for those constituents with MCLs, specifically benzo(a)pyrene and pentachlorophenol. Groundwater analytical data from the monitoring



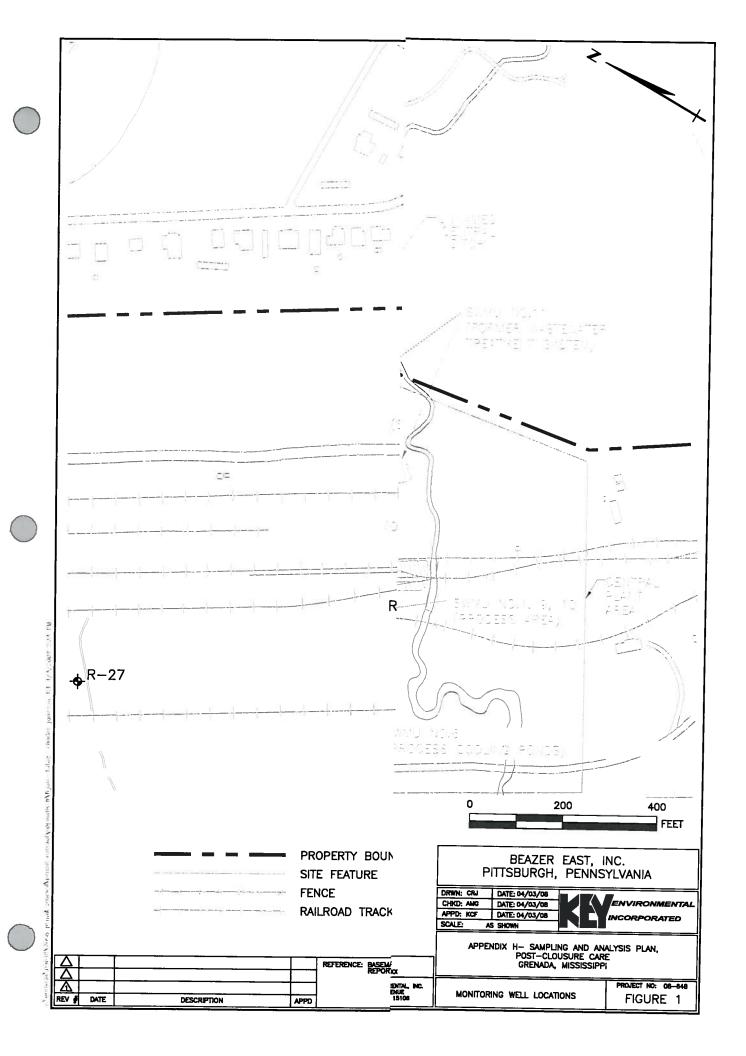
wells will be compared to reporting limits (RLs) identified in Table 4-1 for each constituent. If the detected concentrations are less than their respective RLs, no further action will be taken. If the concentration of any constituent(s) is greater than its RL in at least one well then a statistical evaluation will be performed.

### Table 4-1 Reporting Limits for Semivolatile Organics

Compound	CAS	Reporting Limit (µg/L)
Acenaphthene	83-32-9	10
Acenaphthylene	208-96-8	10
Anthracene	120-12-7	10
Benzo(a)anthracene	56-55-3	10
Benzo(a)pyrene	50-32-8	0.2
4-Chloro-3-methylphenol	59-50-7	20
2-Chlorophenol	95-57-8	10
Chrysene	218-01-9	10
Dibenz(a,h)anthracene	53-70-3	10
2,4-Dimethylphenol	105-67-9	10
2-4-Dinitrophenol	54-28-5	10
Fluoranthene	206-44-0	50
Fluorene	86-73-7	10
Indeno(1,2,3-cd)pyrene	193-39-5	10
Naphthalene	91-20-3	10
Pentachlorophenol	87-86-5	1
Phenanthrene	85-01-8	10
Phenol	108-95-2	10
Pyrene	129-00-0	10
2,3.4,6-Tetrachlorophenol	58-90-2	10
2,4,5-Trichlorophenol	95-95-4	10
2,4,6-Trichlorophenol	88-06-2	10

Statistical evaluation of the analytical data will be conducted in accordance with applicable permit conditions to determine whether concentrations of constituents in compliance point monitoring wells are significantly above any concentration limits that are specified for the Facility.

FIGURE



**ATTACHMENT A** 

### **#103 - ENVIRONMENTAL SAMPLE PREPARATION**

### **1.0 SCOPE AND PURPOSE**

This Standard Operating Procedure (SOP) presents procedures for selecting appropriate sample containers and preservatives when collecting environmental samples for analysis at a selected laboratory. Procedures for packaging and shipping environmental samples are presented in Key SOP #114.

Environmental samples are those that are anticipated to be relatively low in analyte concentration. These samples consist of materials that may have been impacted by source area materials, but do not consist of source area materials such as sludge, material from drums, material from bulk storage tanks, *etc.* Examples of environmental samples include: soil samples collected adjacent to or underlying a source area, stream and sediment samples, and groundwater samples (which do not contain non-aqueous phase liquid).

### 2.0 REQUIRED MATERIALS

Required materials for sample containers and preservation may include:

- various sized glass containers (with Teflon<sup>®</sup>-lined lids or caps, clear or amber colored);
- various sized polyethylene containers (with Teflon<sup>®</sup>-lined lids or caps);
- nitric acid;
- sulfuric acid;
- hydrochloric acid;
- sodium hydroxide; and,
- sodium thiosulfate.

Project-specific, appropriate sample container size, sample volume, holding times, and preservatives should be presented in the Quality Assurance Project Plan (QAPjP).

### **3.0 METHODOLOGIES**

### **Sample Containers**

To limit potential chemical or physical changes in a sample during collection and transport, the sample container selection should be based on the following:

- Sample containers should be new and certified clean prior to sampling activities;
- Sample containers should be constructed of non-reactive materials; and,
- Sample containers should not chemically or physically alter the sample.



The most widely used containers for aqueous samples are composed of glass or polyethylene. Aqueous Samples

### **Glass** Containers

Glass containers will be used when organic compounds are the analytes of interest. Sample volume will be sufficient to fill each sample container to allow the laboratory to attain the method-specific detection limits. Specific to volatile organic analysis, sample volume will be sufficient to fill each sample container so that no air bubbles are present. Once the sample container is full (and preserved if appropriate), it will be sealed with a Teflon<sup>®</sup>-lined screw cap. Specific container sizes for each analytical category are presented in the project-specific QAPjP.

### Polyethylene Containers

Polyethylene containers will be used for aqueous samples when metals and/or inorganic analytes are the parameters of interest. One-liter polyethylene bottles with solid polyethylene or polyethylene-lined caps will generally be used to collect groundwater samples for metals and inorganic analysis. Once the sample container is full (and preserved if appropriate), it will be sealed with the polyethylene screw cap. Specific container sizes for each analytical category are presented in the project-specific QAPjP.

### Solid Samples

Sample containers for the soil matrix are typically clear glass with a volume of 8 ounces. Larger sample containers may be necessary depending upon the number and type of analyses.

### **Sample Preservation**

Sample preservation is important to retard physical and chemical alterations of unstable analytes within the sample matrix. Sample preservation methods are limited and are generally intended to:

Retard biological action;

- Retard hydrolysis of chemical compounds and complexes;
- Limit photolysis;
- Reduce volatility of constituents; and,
- Reduce sorption effects.

Preservation is usually limited to acidification, treatment with an alkaline chemical, reducing light exposure, filtration, and refrigeration.



Prior to any form of preservation, the following parameters, at a minimum, will be measured in the field on water samples and recorded in the field notebook:

• pH;

- Specific conductance; and,
- Temperature.

These field measurements record baseline information on the water sample prior to external influences such as temperature, dissolved carbon dioxide, or oxygen affecting the sample.

### Acidification

Acidification of samples is generally performed for two purposes. Acidifying a (water) sample serves to limit metal adsorption to the sample container and will maintain the metal in a dissolved state. Secondly, acidification will act to inhibit bacterial growth. Samples to be acidified for either purpose will require a minimum volume of 100 ml and will be acidified to a pH < 2. Acidification is performed immediately after taking field measurements or following sample filtration.

### Alkaline Treatment

Samples are preserved with an alkaline chemical (*e.g.* NaOH) to form salts with volatile compounds such as cyanide. Samples undergoing this preservation require a minimum volume of 100 ml and will be treated to a pH >12.

Preservation of the sample will be performed by the addition of NaOH until the desired pH is achieved (pH > 12). Preservation of a water sample is performed immediately after the field measurements are collected and recorded.

### **Filtration**

Filtration of samples will be used only for specific analytical parameters. It will be used when the dissolved metal content of water is of concern. Filtration will not be performed for samples to be analyzed for volatile organics, semi-volatile organics, or total recoverable metals.

When sample filtration is required, the sample will be drawn through a 0.45 micron filter. The filter material will either be paper or fiberglass dependent on the nature of the sampled water. Filtration is performed immediately following the field measurements and prior to any other preservation methods. If the sample contains a significant level of suspended solids, a paper prefilter will be used prior to the 0.45 micron filter.



### Temperature Control

All field samples that are to be analyzed by the laboratory will be sealed and then refrigerated during transfer to and storage at the laboratory. Refrigeration of samples is a bacterial inhibitor and slows the chemical and biological changes of a sample exposed to an oxidizing atmosphere. Transfer and storage of samples will be between 0°C and 10°C, with a target temperature of 4°C. Solid samples are typically limited to this preservation method.

### Laboratory Selection and Coordination

Choosing a qualified analytical laboratory is an integral part of sampling activities. Regulatory program requirements and certifications must be considered in selecting the laboratory to ensure that the laboratory is capable of meeting project-specific requirements. Also, the provisions of any Consent Orders or Unilateral Orders applicable to the project must be reviewed and communicated to the laboratory to ensure project-specific requirements are met.

### Laboratory Selection

- An analytical laboratory will be chosen based on the following criteria:
- Capabilities of the laboratory including performance history, certifications, and regulatory program experience;
- The qualifications and experience of the laboratory staff;
- Availability of a designated technical client representative who serves as a single point of contact for all Key projects;
- Quality and completeness of standard deliverables, including electronic data transfer availability;
- The specified analyses and turnaround time; and,
- The adequacy of the laboratory's quality assurance/quality control program.

### **Coordination**

After selecting a laboratory, the laboratory will be contacted and the following information requested pertaining to the sampling activities:

• Identification of a responsible party to act as sample custodian at the laboratory who is authorized to accept samples and verify the data entered from the accompanying chain-of-custody forms into the laboratory tracking system.



- Provisions for a laboratory sample custody log consisting of serially numbered, standard laboratory tracking report sheets.
- Specifications of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.

The laboratory will be notified within 48 hours prior to receipt of samples. The samples will be packaged and shipped *via* express courier or hand delivered within 48 hours of collection to the laboratory. The laboratory will then be contacted to verify receipt of the samples and estimated turnaround time.

### Sample Packaging and Shipping

Proper sample packaging and shipping accomplishes the following:

- Allows individual samples to be tracked through transport and analysis;
- Limits the possibility of breaking or losing a sample bottle during transport; and,
- Is part of formal chain-of-custody (COC) procedures (tracking of possession of the samples).

Samples will be packaged and shipped according to the procedures in Key SOP #114, "Sample Handling, Preservation, Packaging, and Shipping."

### 4.0 DATA RECORDING OR MANAGEMENT

(Reserved)

### **5.0 REFERENCES**

U.S. Environmental Protection Agency, 1986. RCRA Groundwater Monitoring Technical Enforcement Guidance Document. OSWER-9950.1. September 1986.

U.S. Environmental Protection Agency, 1986. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 3<sup>rd</sup> Edition (with revisions).

U.S. Environmental Protection Agency, 1987. A Compendium of Superfund Field Operations Methods, Part 1. EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. Compendium of ERT Groundwater Sampling Procedures. EPA/540/P-91/007. January 1991.



### **#104 - SAMPLING EQUIPMENT DECONTAMINATION**

### **1.0 SCOPE AND PURPOSE**

This Standard Operating Procedure (SOP) presents methods for on-site decontamination of field sampling equipment. Decontamination is performed as a quality assurance measure and a safety precaution. Decontamination prevents cross-contamination between samples and also helps to maintain a clean working environment for the safety of the field personnel.

Although this SOP defines on-site decontamination procedures, it is highly recommended that (1) dedicated disposable sampling implements are used whenever possible, and (2) sufficient dedicated sampling implements are taken to the field so that the need for field decontamination is eliminated or reduced. For example, in collecting groundwater samples, dedicated, disposable bailers should be used, where practicable.

Decontamination is mainly achieved by washing and rinsing with liquids which include; soap and/or detergent solutions, tap water, distilled water, acetone, hexane, and nitric acid. The actual procedure will vary depending on project-specific requirements as listed in the Quality Assurance Project Plan (QAPjP), the type of equipment to be used, and the analytical parameters of interest.

### 2.0 REQUIRED MATERIALS<sup>1</sup>

- Distilled water;
- Phosphate-free detergent (e.g., Liquinox, Alconox)
- Potable water supply;
- Hexane;
- Acetone;
- Isopropanol;
- 10% Nitric acid;
- Paper towels;
- Cleaning brushes;
- Aluminum foil;
- Gloves;
- Safety glass;
- Protective clothing;
- Cleaning containers (e.g., buckets, pans); and
- Dedicated squirt bottles for each solvent above and/or distilled water.



<sup>&</sup>lt;sup>1</sup> Depending on project-specific requirements, not all materials may be necessary.

#### **3.0 METHODOLOGY**

It is the primary responsibility of the field team leader to assure that the proper decontamination procedures are followed. Project-specific decontamination procedures are to be included in the field SAP. It is the responsibility of the project safety officer (or designee) to develop and implement safety measures which provide protection for all persons involved directly with decontamination.

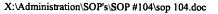
The contaminants encountered and type of equipment used will dictate the type of field decontamination procedures required. At a minimum, the following procedures will be used:

- Remove adhered material from the sampling equipment by brushing and/or rinsing with tap water;
- Wash with non-phosphate detergent and tap water;
- Rinse with distilled tap water;
- Rinse with appropriate solvent<sup>2</sup>, if organic constituents are of interest;
- Rinse with 10% nitric acid, if metals are a constituent of interest;
- Rinse with distilled water; and
- Air dry or dry with clean paper towels.

#### **Safety Precautions**

At a minimum, eye protection, safety shoes, and gloves are to be worn. There are several types of gloves that may be worn, depending on equipment being cleaned, type and extent of equipment contamination, and cleaning solutions or solvents being used.

Polyvinyl gloves may be worn when the equipment to be decontaminated is not heavily coated with constituents such as tars/oils. In cases where heavy accumulations of tars/oils are present on the equipment, neoprene or similar chemically compatible gloves are recommended. If a potential for skin contact exists, protective clothing should be worn.



<sup>&</sup>lt;sup>2</sup> Note the specific solvent will be dictated by project-specific requirements.

#### 4.0 QA/QC PROCEDURES

To insure that sampling equipment is cleaned properly, and does not lead to cross-contamination of samples, field rinsate blanks will be collected. A rinsate blank will consist of pouring or pumping deionized organic-free water over the specific sampling device or through the device after it has been cleaned. The rinsate sample is performed in the field and generally one rinsate blank is collected each day of sampling or at a rate of 1 per 20 for each parameter, which ever is less, for each matrix being sampled or for each type of sampling instrument decontaminated and reused per day. The rinsate samples are analyzed for the specific parameters of concern (for each matrix). Rinsate blanks are not required if dedicated sampling equipment is used. Additional quality assurance samples may be collected if deemed necessary by project specific requirements. All project specific quality assurance sampling will be defined in the sampling and analysis plan (SAP) or QAPjP prior to initiation of the field work.

#### **5.0 RECORDING REQUIREMENTS**

The field team leader will maintain a record of the decontamination procedures.

#### 6.0 REFERENCES

United States Environmental Protection Agency, January 1991. Compendium of ERT Groundwater Sampling Procedures. EPA/540/P-91/007. Washington D.C.



## **#105 - CHAIN OF CUSTODY**

#### **1.0 SCOPE AND PURPOSE**

This Standard Operating Procedure (SOP) presents procedures for documenting possession/custody of environmental samples from the time of collection through delivery to the receiving analytical laboratory. At this point, internal laboratory records should document sample custody until final disposition. This SOP also discusses sample identification and the use of chain-of-custody (COC) forms.

Possession of the samples must be traceable from the time each is collected until analysis is completed. To document sample possession, chain-of-custody procedures are followed. Chain-of-custody evidence includes all documentation associated with the sample including the chain-of-custody form, sample label, custody seal, courier's receipt (if applicable), and field notebook.

A sample is under custody if one or more of the following criteria are met:

- It is in possession of the custodian or a designated member of the sampling team;
- It is in plain view, after being in possession;
- It was in possession and is secured against tampering; and,
- It is placed in a designated secure area.

#### 2.0 REQUIRED MATERIALS

- Sample container labels;
- Chain-of-custody forms;
- Field notebook;
- Shipping Airbills;
- Locks or Packaging Tape; and,
- Custody seals.

#### **3.0 METHODOLOGIES**

The Project Manager (or designee) is responsible for ensuring that sample labeling is completed in accordance with this SOP and that chain-of-custody forms are completed for sample shipments. All individuals relinquishing and receiving samples shall sign, date, and record the time on the chain-of-custody forms.

#### Sample Identification

Blank sample labels will be supplied by the analytical laboratory and affixed to the sample container. Sample labels will be completed using waterproof permanent markers or ink. The



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labels will be filled out at the time of sample collection by the field sampling personnel. The following identifying sample information will be included on the label:

- Client/Site;
- Sample identification alpha-numeric code;
- Sample collector's initials;
- Date and time (military) of sample collection;
- Analytical method; and,
- Laboratory analysis to be performed.

## **Chain-of-Custody Forms**

Once the sample containers have been filled with the sampled media and properly labeled, they will be prepared for shipment to the receiving analytical laboratory. Coolers containing samples will be accompanied by a chain-of-custody form (see example COC form in Figure 1).

The field team leader (or designee) shall complete a chain-of-custody form for each lot of packaged samples (*e.g.*, cooler). COC forms shall be completed in ink. Any transcription errors shall be corrected by striking the erroneous information with a single horizontal line. The corrected information shall be added immediately adjacent to the strikeout. The sampler should initial the correction.

The following information will be recorded on the COC form:

- Client/Site;
- Name(s) of sampler(s);
- Sample identification alpha-numeric code;
- Date and time (military) of sample collection;
- Type of sample (e.g., soil, groundwater);
- Number of containers per sample location;
- Requested analyses;
- Type of containers and preservatives used;
- Name and address for the completed laboratory reports;
- Name and address for laboratory invoices; and,
- Specific instructions/notes for the laboratory, as necessary.

Any area of the COC, where sample information is not completed, should have a hatched line drawn through to show that this portion of the COC will not be completed.

Each COC will be placed in a waterproof plastic bag and affixed to the underside of the shipping container lid. Samples will be packaged properly for shipment as described in SOP #114, Sample Handling, Preservation, Packaging, and Shipping, and dispatched to the appropriate laboratory for analysis. Shipping containers will be padlocked or otherwise sealed for shipment to the laboratory.



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All shipments should be accompanied by the completed Chain-of-Custody Record. The original record will accompany the shipment to the laboratory, and a copy will be retained by the field team leader for the project file. Shipping bills and receipts must be retained as part of the chain-of-custody documentation.

Upon receipt of the samples by the laboratory, the laboratory person assigned to log-in samples will confirm that the shipping container seals are in good condition and have not been disturbed. The original chain-of-custody form is to be signed and dated by the laboratory person logging in the samples. In addition, the receiving laboratory is to inspect each sample and indicate the condition of the sample on the COC. The receiving laboratory is to retain a copy of each chain-of-custody form along with the shipping bill. Internal laboratory chain-of-custody procedures will be followed once samples are logged in by the receiving laboratory.

## 4.0 DATA RECORDING/MANAGEMENT

As discussed in Section 3.0, information related to tracking environmental samples will be recorded on the COC forms which will be retained in the project files.

#### 5.0 REFERENCES

U.S. Environmental Protection Agency, 1986. RCRA Groundwater Monitoring Technical Enforcement

U.S. Environmental Protection Agency, 1986. Test Methods for Evaluating Solid Waste, *Physical/Chemical Methods*, SW-846 3<sup>rd</sup> Edition (with revisions).

U.S. Environmental Protection Agency, 1987. A Compendium of Superfund Field Operations Methods, Part 1. EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. Compendium of ERT Groundwater Sampling Procedures. EPA/540/P-91/007. January 1991.



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Figure 1 Example Chain-of-Custody Form



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## **#106 - FIELD LOGBOOK**

#### **1.0 SCOPE AND PURPOSE**

This Standard Operating Procedure (SOP) presents procedures for proper documentation of site activities with respect to the daily field logbook. Field logbooks are the primary source of documentation for site activities, and serve as legal record of all occurrences during those activities.

## 2.0 REQUIRED MATERIALS

The required materials for maintaining a field log book include a water-resistant, permanently bound notebook and a pen with permanent ink.

#### **3.0 METHODOLOGIES**

Pertinent information regarding the site and work procedures must be documented. Information recorded in the notebook should be noted with the date and time of entry. The following items are commonly included as logbook entries:

- Name and location of site;
- Date and time of arrival and departure;
- Name of person keeping log;
- Names and affiliations of project personnel;
- Sampling event description; including methodology, sample numbers and volumes, description of samples, date and time of sample collection, and name of collector;
- Prevailing weather conditions;
- Technical measurements and readings;
- Diagrams and sketches;
- Description of equipment used;
- List and descriptions of photographs; and,
- Equipment calibration information.

Information should be recorded in permanent ink for the legal record. The company name, address, and phone number should be entered at the beginning of the log book. The pages of the logbook should be numbered for ease of reference. Blank spaces should be crossed out and initialed. All notes should be written at the time of observation. Changes or deletions should be crossed out with a single line and initialed by the individual making the change. At the end of each field day, the project scientist/engineer or designee should sign and date each page of the notebook on which entries were made to verify the day's activities.



## 4.0 QA/QC PROCEDURES

At the end of each day of field activities, the individual or individuals maintaining the field log book should review the notes for accuracy and completeness. Corrections, deletions, or additions should be initialed and the time and date should be noted.

#### 5.0 DATA RECORDING AND MANAGEMENT

It is recommended that a running activity log be maintained, indicating the times of activities and observations; recorded data be written in the form of tables with an appropriate title; and that diagrams be included to illustrate pertinent information. Log books should be labeled with the project name, project number, and a consecutive number for cataloging purposes.

#### **6.0 REFERENCES**

Environmental Research Center, University of Nevada - Las Vegas, March 1989, <u>Soil Sampling</u> <u>Quality Assurance User's Guide</u>, EPA/600/8-89/046.

Fetter, C. W., 1994, <u>Applied Hydrogeology</u>, Macmillan College Press Publishing Company, New York, New York, 691 p.

U.S. EPA, September 1986, RCRA <u>Ground-Water Monitoring Technical Enforcement Guidance</u> <u>Document</u>, OSWER-9950.1

#### **#109 - GROUNDWATER LEVEL MEASUREMENTS**

#### **SCOPE AND PURPOSE**

This section provides general instructions for the accurate measurement of groundwater levels using various methods/equipment. The methods conform to those presented in American Society for Testing and Materials Method D 4750-87.

#### **APPLICABILITY**

The procedures presented will permit the accurate determination of water levels (depth to water measurements) in wells and piezometers. The data produced can be used in conjunction with well top-of-casing (TOC) elevations to calculate groundwater elevations and subsequently determine groundwater flow gradients and directions, and vertical gradients. The data may also be used to evaluate drawdown in pumping and/or observation wells during aquifer characterization tests.

#### **DEFINITIONS**

Top-of-Casing (TOC):	The point of the well riser from which all measurements are made and for which the elevation is surveyed. If the TOC is not identified on the well casing, measurements should be taken from the northernmost point on the lip of the riser.
Depth to Water:	Distance measured from TOC to the water surface in feet (to tenths and hundredths).

## PROCEDURES

Depth to water measurements can be collected using several methods:

- Graduated tape and marker chalk indirect reading; and,
- Electronic water level indicator (E-tape) direct reading.

In general, the equipment is not dedicated for use at any one particular site or well and should, therefore, be carefully and thoroughly decontaminated between each use. Decontamination procedures are discussed in SOP No. 115. Equipment may be dedicated to a well or series of site wells if the investigation is of sufficient scope and length to support the additional cost (particularly the E-tape and electronic water level indicator). Substantial contamination (*e.g.*, floating product) in a well may also necessitate the dedication of measuring equipment.



#### GENERAL

The measurement for each well should be repeated until two consecutive readings are recorded that are  $\pm 0.01$  foot (this may not be practical during aquifer pump tests). The data will be recorded in the field logbook; for indirect methods, record both measurements—DO NOT PERFORM SUBTRACTION/ADDITION IN YOUR HEAD. All measuring devices will be decontaminated between wells.

#### **GRADUATED TAPE**

A heavy object (plunker or popper) is taped or otherwise attached to the end of a graduated tape (marked to hundredths of a foot). The plunker will help to keep the tape taut while measuring; and, since the tape tends to cling to the inside wall of the well, it will assist in lowering the tape. The first one to two feet of the tape are coated with chalk, and then the tape is slowly lowered down the well. The user will be able to determine that the water surface has been reached by (a) the "plunking" sound made by the weight when the water surface is reached, or (b) the apparent decrease in weight of the tape as the plunker/tape become buoyant in the liquid. After the water surface is encountered, the tape is lowered an additional six inches to a foot and the total length of tape in the well from the TOC is noted and recorded. When the tape is removed from the well, the point at which the chalk is wetted (washed off) is noted and recorded. By subtracting the length of tape that was below the water surface (wetted) from the total tape length extended from TOC, the depth to water can be calculated. It is important that all measurements be recorded and the calculation made from the recorded data. Never make the calculation in your head.

#### **ELECTRONIC WATER LEVEL INDICATOR OR E-TAPE**

E-tapes are constructed of two-strand insulated wire with a heavy metal object attached at the end to act as a weight. When the water surface is encountered, an electric circuit is completed, which is indicated at the surface by activation of a light or buzzer,

Some E-tapes are graduated to 0.05 foot while others are marked only every 5 or 10 feet. If the tape is marked to the nearest 0.05 foot, the depth to water from the TOC is interpolated between the marks and recorded to the nearest 0.01 foot. When the tape is marked only every 5 or 10 feet, the depth at which water is encountered is calculated by marking the length of line extended from TOC at the time of circuit completion and measuring the distance to hundredths of a foot from length marker, and adding or subtracting this distance as appropriate. Record both measurements and perform the calculation in the notebook; do not make the calculation in your head.

## #114 - SAMPLE HANDLING, PRESERVATION, PACKAGING, AND SHIPPING

## **1.0 SCOPE AND PURPOSE**

This Standard Operating Procedure (SOP) describes the procedures associated with the handling, preservation, packaging, and shipment of environmental samples for laboratory analysis or testing. Environmental samples may consist of air, groundwater, surface water, sediments, soil, non-aqueous phase liquid (NAPL), and/or sludges. The objective of sample preparation, handling, packaging, and shipping protocols is to develop standard procedures which will preserve the integrity of the samples and minimize the potential for sample tracking errors, sample spillage or leakage, and/or sample container breakage. The field team leader is responsible for the implementation of the sample handling, preservation, packaging, and shipping requirements outlined in the project-specific sampling and analysis plan (SAP).

## 2.0 REQUIRED MATERIALS

Required materials may include the following:

- Sample containers (preserved, as necessary);
- Sample bottle labels;
- Chain-of-Custody forms;
- Sample cooler;
- Bubble wrap or other suitable packing material;
- "Blue Ice" (i.e., reusable, freezable ice packs) or sealed bagged ice;
- Shipping bills (Federal Express, Airborne, etc.);
- Packaging tape; and,
- Zip lock plastic bags.

## 3.0 METHODOLOGIES

## 3.1 Sample Handling

## Sample Containers

Sample containers and appropriate preservatives (where necessary) will be supplied by the analytical laboratory. After the respective sample containers have been filled with appropriate sample media and preserved as necessary, samples will be properly identified using sample container labels, and the samples will be stored at an appropriate temperature (usually  $<4^{\circ}C$ ) to preserve the integrity of the samples.

## Sample Preservation

Preservatives will be supplied by the laboratory. Where possible, preserved containers should be



supplied by the lab. Common preservatives include hydrochloric acid (HCl), sulfuric acid ( $H_2SO_4$ ), nitric acid ( $HNO_3$ ), or sodium hydroxide (NaOH). Samples will be preserved in accordance with EPA protocol specified in SW-846 or the project specific protocols outlined in the quality assurance project plan (QAPjP). Use of the preservatives will be noted on the COC for each particular sample and analytical parameter.

## Sample Labels

Blank sample labels will be supplied by the analytical laboratory and affixed to the sample container. Sample labels will be completed using waterproof permanent markers or ink. The labels will be filled out at the time of sample collection by the field sampling personnel. The following identifying sample information will be included on the label:

- Client/Site;
- Sample identification alpha-numeric code;
- Sample collector's initials;
- Date and time (military) of sample collection;
- Analytical method; and,
- Laboratory analysis to be performed.

## Chain-of-Custody Forms

A chain-of-custody (COC) record will be established and maintained to document sample possession from the time of collection until receipt by the laboratory. Once samples are received by the laboratory, they will be handled under the laboratory internal COC procedures. Field sampling personnel will initiate a COC record by recording the following minimum data as the samples are collected:

- Client/Site;
- Name(s) of sampler(s);
- Sample identification alpha-numeric code;
- Date and time (military) of sample collection;
- Type of sample (e.g., soil, groundwater);
- Number of containers per sample location;
- Requested analyses;
- Type of containers and preservatives used;
- Name and address for the competed laboratory reports;
- Name and address for the laboratory invoices; and,
- Specific instructions/notes for the laboratory, as necessary.

Sample COC forms will be placed in waterproof plastic bags and taped to the underside of the cooler lids. Sample COC forms will generally be supplied by the subcontracting analytical laboratory.



Subsequently, at each change of possession, the COC record will be signed by the person relinquishing the samples and by the person receiving the samples. The date and time of the transfer of possession of the sample will be recorded on the COC form; this occurs when the samples are transferred from the sampling personnel to the courier and when the samples are received at the analytical laboratory. Sample COC forms shall be completed in ink. Any transcription errors shall be corrected by striking the erroneous information with a single horizontal line. The correct information will be added immediately adjacent to the strikeout. The sampler should initial the correction. (Refer to SOP #105 for additional information).

## 3.2 Sample Packaging and Shipping

All samples will be transported to the analytical laboratory in durable, waterproof, secured metal or plastic coolers. Sample coolers will generally be supplied by the laboratory. All samples will be packaged very carefully to prevent sample breakage. Samples will be shipped *via* overnight carrier (*e.g.*, Federal Express, Airborne, United Parcel Service) or hand delivered to the analytical laboratory, generally within 48 hours of collection. However, project specific protocols will be checked to assure that specified sample holding times are not exceeded in the event that samples are not shipped on the same day that they were collected. Additionally, the sample security and preservation must be maintained if samples are not to be transported immediately to the laboratory. The following procedure should be followed for packaging samples for shipment to the laboratory for testing and/or analysis.

- 1. Place plastic bubble wrap matting or suitable material over the base and bottom corners of each cooler or shipping container.
- 2. Obtain a chain-of-custody record (similar to the example shown in Figure 1) and enter all the appropriate information as discussed above. Chain-of-custody records will include complete information for each sample. One or more chain-of-custody records shall be completed for each cooler or shipping container as needed to manifest each sample.
- 3. Place bubble wrapping or other suitable material around glass bottles and place standing upright on the base of the cooler, taking care to leave room for packing material and ice or equivalent. Rubber bands or tape may be used to secure wrapping completely around each sample bottle.
- 4. Place additional bubble wrap and/or Styrofoam pellet packing or equivalent material throughout the voids between sample containers within each cooler.
- 5. Place cold packs or ice in heavy duty "zip-lock" type plastic bags, completely close the bags, and distribute such packages over the top of the samples. Add additional bubble wrap and/or Styrofoam pellets or other packing materials to fill the balance of the cooler or container.



- 6. If shipping the samples by express, courier, or delivery service, sign the chain-ofcustody record thereby relinquishing custody of the samples. The date and time of custody transfer should be recorded on the chain-of-custody form. The custody transfer should be documented when directly transferring custody to a receiving party or when transmitting to a shipping service for subsequent receipt by the analytical laboratory. The shipping service should not be asked to sign chain-ofcustody records.
- 7. Remove the last copy from the chain-of-custody record and retain with the field records. Place the original and remaining copies in a "zip-lock" type plastic bag and tape the bag to the underside of the lid of the cooler or shipping container.
- 8. Close the top or lid of the cooler or shipping container and with another person gently rotate the container to verify that the contents are packed so that they do not move. Improve the packaging if needed and reclose.
- 9. Packaging tape should be wrapped entirely around the sample shipping containers. A minimum of two full wraps of packaging tape will be placed in at least two places on the cooler or shipping container. Some project-specific QAPjPs may require custody seals be placed on the sample shipping containers. Sign and date the chainof-custody tape.
- 10a. When transporting samples by automobile to the laboratory, and where periodic changes of ice are required, the cooler should only be temporarily closed so that reopening of the cooler can be easily performed. In these cases, chain-of-custody will be maintained by the person transporting the samples and chain-of-custody tape need not be used. If the cooler is to be left unattended, then chain-of-custody procedures should be implemented.
- 10b. If shipment is required, transport the cooler to an overnight express package terminal or arrange for pickup. Obtain copies of all shipment records as provided by the shipping service.
- 11. Upon receipt of the samples, the analytical laboratory will open the cooler or shipping container and will sign "received by laboratory" on each chain-of-custody form. The laboratory will verify that the chain-of-custody tape has not been broken previously and that the chain-of-custody tape number corresponds with the number on the chain-of-custody record. The analytical laboratory will then forward the back copy of the chain-of-custody record to the sample collector to indicate that sample transmittal is complete.



## 4.0 QUALITY CONTROL

Quality control samples such as rinsate blanks and duplicates will be specified by the project QAPjP. A sample jar containing water should be sent as a temperature blank with each sample shipment requiring temperature preservation to ensure proper temperature is maintained. Also, a trip blank, provided by the laboratory will accompany shipments with samples intended for volatile organic chemical (VOC) analysis.

## 5.0 DATA RECORDING/MANAGEMENT

The documentation for supporting the sample handling, preservation, packaging and shipping will consist of chain-of-custody records, shipping records laboratory reports. In addition, a description of sample packaging procedures will be written in the Field Log Book. All documentation will be retained in the project files.

#### 6.0 REFERENCES

U.S. Environmental Protection Agency, 1986. RCRA Groundwater Monitoring Technical Enforcement Guidance Document. OSWER-9950.1. September 1986.

U.S. Environmental Protection Agency, 1986. Test Methods for Evaluating Solid Waste, *Physical/Chemical Methods*, SW-846 3<sup>rd</sup> Edition (with revisions).

U.S. Environmental Protection Agency, 1987. A Compendium of Superfund Field Operations Methods, Part 1. EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. Compendium of ERT Groundwater Sampling Procedures. EPA/540/P-91/007. January 1991.



## **#117 - GROUNDWATER SAMPLING**

#### **SCOPE AND PURPOSE**

This section presents the methods and equipment necessary for collection of groundwater samples. The procedures presented are based on standard industry practices and are usually required by state and federal agencies.

#### APPLICABILITY

These procedures are applicable to groundwater sampling programs for evaluating conditions at hazardous and solid waste disposal facilities and non-regulated sites.

#### **DEFINITIONS**

All terms in this section are in common usage or are defined within the text.

#### PROCEDURES

The standard procedures outlined below may be modified on a site-specific basis depending upon the constituents of interest, the ultimate data usage, and in recognition of agency policies. Methods deviating from the Key Environmental, Inc. (KEY) SOP should be discussed in the preparation of the sampling plan and revisions approved by the Project Manager and the Geosciences Manager.

Groundwater samples are generally not to be collected less than one to two weeks after well installation is completed. This should be taken into account when developing a schedule for implementation and completion of a field investigation.

#### EQUIPMENT

An extensive equipment list is included to aid in preparation of the sampling event (Appendix 117-A). In most cases, a pump or bailer can be used for purging and sampling. The type of pump or bailer selected will be dependent upon the well diameter, depth to water, and, in some cases, the sample parameters. There are many available pump models manufactured; several are discussed below:

#### X Suction Lift Pumps

#### Advantages:

- Readily available, relatively portable, and inexpensive.

#### **Disadvantages:**

- Use is limited to situations where depth to water is less than 20 feet.



- Reducing the pressure on the water may cause the volatile organic compounds (VOCs) to come out of solution. These pumps are not recommended for sample collection.

#### X Portable Submersible Pumps

#### **Advantages:**

- Portable; can be used to sample several monitoring wells in a brief period of time.
- Dependent upon the size of the pump and pumping depths; relatively large pumping rates are possible.

#### Disadvantages:

- Most submersible pumps require a minimum well casing inside diameter of 4 inches.

#### X Air Lift Pumps

#### Advantages:

- Portable; light-weight; easily transported and handled in the field.
- Capable of handling lifts of as much as 100 feet.
- Capable of producing flows of several gallons per minute (flow rate is dependent on lift).

#### **Disadvantages:**

- Air contacts the sample, which can cause a loss of volatile fraction; consequently, not acceptable for collecting samples for organic analysis.
- Not suitable for collecting samples for pH sensitive parameters such as metals.
- Requires bottle gas or oiless air compressor to drive the pump.

#### X Bladder Pumps

#### Advantages:

- Portable light-weight; easily transported and handled in the field.
- Small diameter pumps are available, which can easily accommodate 2-inch diameter monitoring wells.

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- Drive gas does not touch sample; generally accepted method for collecting samples for all groundwater testing parameters.

#### **Disadvantages:**

- Slow pumping rates make them inefficient for pumping large volumes of water.
- Require compressed gas source, either bottled gas or oiless air compressor.

Bailers used by Remcor are constructed of various materials (Teflon<sup>TM</sup>, stainless steel, or polyvinyl chloride) and are available in various diameters and lengths. Additional bailer options include bottom or top filling and bottom or top draining. The appropriate bailer should be identified in the site work plan in accordance with specific study needs:

#### Advantages:

- Able to be constructed from a wide variety of materials compatible with the parameter of interest.
- Sufficiently economical and convenient to allow a separate bailer to be assigned to each well to minimize the potential for cross contamination.
- No external power source required.
- Low surface to volume ratio reduces outgassing of volatile organics.

#### **Disadvantages:**

- Sometimes impractical to evacuate stagnant water in a well with a bailer.
- Transfer of water sample from bailer to sample bottle can cause aeration.
- Cross contamination can be a problem if equipment is not adequately decontaminated prior to each use.

#### **GROUNDWATER PURGING/SAMPLING**

All pertinent information should be documented in the field notebook(s) and on the Groundwater Well Purge Sheet. Prior to on-site activities, the sampling team members should read and clearly understand the site-specific sampling plan. The following methods should be followed at all sites unless alternate procedures are specifically addressed in the sampling plan:



- **Step 1** The land surface around the well protective casing should be covered with plastic sheeting to limit contact between the ground surface and purging/sampling equipment.
- Step 2 Measure the depth to the static water level and the total depth of each well from the top of the well casing and record the data in the field notebook. Subtract the depth to static water from the total well depth to calculate the length of the water column in each well.
- **Step 3** Calculate the volume of water in the well according to the following formulae:

$$V_{cf} = (r^2)(L)$$

where:

 $V_{cf}$  = volume of water in cubic feet (ft3)

 $\mathbf{r} = \mathbf{radius}$  of the well in feet

L = length of the water column in feet.

and

 $V_{gal} = V_{cf} \times 7.481$ 

where:

 $V_{gal} =$  volume in gallons  $V_{cf} =$  volume in ft<sup>3</sup>

- Step 4 Measure sufficient length of rope and/or discharge line necessary for bailer or pump as appropriate.
- Step 5a Unless directed otherwise by the sampling plan, Ipump) install the pump with the pump intake located immediately above the screened portion of the well. If a pump is not dedicated to each well, the pump should be thoroughly rinsed with distilled water between each location and new discharge line should be used for each well. Care should be taken to sample the least impacted well first and subsequent wells sampled in ascending order of impact.

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- Step 5b A laboratory-cleaned bailer with new disposable rope attached should be used at each well. The rope should be cut to sufficient length to allow the bailer to be lowered to the bottom of the well. While purging with a bailer, care must be taken to minimize turbidity in the samples. Never let the bailer fall into the well, lower it slowly to the water surface. Fill the bailer from the top of the water column and retrieve slowly until the bailer is free of the water column.
- Step 6 Measure the necessary purge volumes by pumping or bailing into a graduated bucket. If the purged water contains a nonaqueous phase (free product) or it is required by the sampling plan, the graduated bucket should be intermittently emptied into a larger storage container (55-gallon drum). If no free product is present and the water is not a hazardous waste, the purged water may be disposed of on the ground away from the top of the well. If sufficient water is not present for purging of the required volumes, the well should be bailed dry and permitted to recharge prior to sampling. The time required for purging should be recorded in the field notes and on the Groundwater Well Purge Sheet.

If feasible, sampling should follow immediately after purging; in general, within two hours of completion of purging. If additional time is required to allow the well to recover before sufficient water is available for sampling, this should be recorded in the field notes.

Step 7a Decrease the discharge rate and fill aliquots in the following order:

(for pumps)

- Field parameters, pH, specific conductance, temperature
- X VOCs there should be no headspace in these sample bottles
- X Semivolatile organic compounds
- X Pesticides and polychlorinated biphenyls
- X Metals
- X Water quality parameters (sulfate, chloride, nitrate, etc.)
- Step 7bThe initial bail after purging should be used to fill the VOC bottles and the(for bailers)remainder for measurement of field parameters. Remaining sample bottles should be<br/>filled in the order indicated in Step 7a above.
- **Step 8** Preservatives should be added as appropriate after collecting each sample, excluding dissolved metals. The dissolved metals sample should be filtered using a 0.45-micron filter, then preserved as appropriate.

Sample labels can be affixed prior to sampling or following collection. The labels should be taped on the bottles using clear tape to prevent smearing or the labels falling off the bottles due to moisture.



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- Step 9 Record the approximate time of sample collection in the field notes and chain-ofcustody (COC) form (SOP No. 105). Samples should be placed in iced coolers (4 to 10 degrees centigrade) immediately after collection.
- Step 10Dispose of all disposable rope and disposable health and safety equipment as solid<br/>waste unless otherwise directed in the sampling plan.

## APPENDIX 117-A EQUIPMENT LIST

Pumps (sized to well, specifications reviewed with respect to well installation and water levels);

Bailers (Teflon<sup>™</sup>, polyvinyl chloride [PVC], stainless steel; bottom or top-filling; bottom or top-draining);

Rope;

PVC discharge line (and other appropriate material);

Latex gloves (and other suitable protective clothing);

Water level indicator;

Garbage bags/plastic sheeting;

pH and specific conductance meters; thermometers;

Permanent markers;

Clear tape;

Packing tape;

Duct tape;

Chain-of-custody forms and seals;

Analytical request forms;

Preservatives, hydrochloric acid, nitric acid, sulfuric acid, sodium hydroxide);

pH paper;

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Methanol;

Nitric acid;

Spray bottles;

Distilled water;

Laboratory deionized water;

Groundwater Well Purge Sheets;

Paper towels;

Rags;

Alconoxo® soap;

Buckets (5-gallon);

Sample filtering system and 0.45-micron filters;

Blue ice or freezer bags and ice;

SS-gallon drums for containerizing purge water (when required);

Well keys;

Field logbook; and,

Key Environmental, Inc. SOPs



ATTACHMENT B



## **GROUNDWATER SAMPLE COLLECTION RECORD**

Project No.: Project Name:		808-091			_ Time: St Fi	art: nish:	am/pm am/pm
Location: Grena	ada, MS						
Weather Condit	ions:			Collector:		Sign	
1. WATER LEV	VEL DATA (n	neasured fro	m top of well c			Conversion 1	
			-	Casing Type:		(e x ci Casing I.D. (in)	Conv. Fact.
	•			ng Diameter:		1	0.041
			(ft		(=)	2	0.163
	lume:					3	0.367
2. WELL PURG						4	0.653
a. Purge N	lethod:					6	1.470
			ove: Three				
d. Require	d Total Purge	Volume (1f	x 2c):				
Mat David	Term		Smar Cand	Notes		1	
Vol. Purged (total gal)	Temp (°C)	pH (s.u.)	Spec. Cond.	notes			
(total gal)		(5121)					
				<u>.</u>	<u></u>		
				5			
Sample Ident	thod(s): ification (name,	, time, date):					
Analytical Pa and Methods Comments:				table Phenolics)-8270			· · · · · · · · · · · · · · · · · · ·
-		-	2700 ( V 106%		179 D 11 22		



## **EQUIPMENT CALIBRATION FORM**

INSTRUMENT: \_\_\_\_\_

SERIAL NO.:

DATE	TIME	PARAN	METER	CALIBRATION READING	CALIBRATION RECORDED BY
			4.00 S.U.	S.U.	
		pH S.U.	7.00 S.U.	S.U.	
			10.00 S.U.	S.U.	
		Specific Conductivity(u	mhos/cm)	umhos/cm	
		Temperature (°	C)	°C	

INSTRUMENT: \_\_\_\_\_

SERIAL NO.:

DATE	TIME	PARA	METER	CALIBRATION READING	CALIBRATION RECORDED BY
			4.00 S.U.	S.U.	
		pH S.U.	7.00 S.U.	S.U.	
			10.00 S.U.	S.U.	
		Specific Conductivity(u	mhos/cm)	umhos/cm	
		Temperature (°	C)	°C	

# **APPENDIX I**

# CLOSURE CONSTRUCTION DOCUMENTATION REPORT FROM SURFACE IMPOUNDMENT CLOSURE

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#### CLOSURE CONSTRUCTION DOCUMENTATION REPORT FOR SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MS

Prepared for:

## BEAZER MATERIALS AND SERVICES, INC. PITTSBURGH, PENNSYLVANIA

Prepared by:

#### KEYSTONE ENVIRONMENTAL RESOURCES, INC. 3000 TECH CENTER DRIVE MONROEVILLE, PA 15146

**PROJECT NO. 176975** 

#### **DECEMBER 1989**

DCC #R 415

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#### 1.0 INTRODUCTION

This document presents a summary of the construction activities associated with the closure of the surface impoundment at the Koppers Industries, Inc. (KII), wood treating plant located in Grenada, Mississippi. The construction work was performed by Green and Green Construction Company, of Grenada, Mississippi. The work was inspected and supervised by Keystone Environmental Resources, Inc. (Keystone), on behalf of Beazer Materials and Services, Inc. (BM&S). BM&S, formerly Koppers Company, Inc., was the previous owner of the Grenada facility. BM&S has retained the status of "operator" of the surface impoundment and the responsibility for this unit under the terms of the sales contract with the new owner, KII.

The surface impoundment was constructed in the mid-1970's as part of the plant's wastewater management program and were used until 1988 to treat wastewater resulting from the wood preserving operations. No construction records exist in the company files, but verbal history indicates that the impoundment was constructed by excavating into the natural clay soils and the surface was mechanically compacted. Apparently, the excavated material was used to construct the dikes around the impoundment. During its operation, bottom sediment sludge (K001) (as defined in 40CFR Part 261.32) was generated. In the summer of 1988, all K001 sludge and visibly contaminated soils were removed from the impoundment and were shipped off-site. A description of these activities and copies of the waste manifests are included in Appendix C of this report.

This report contains the documentation of closure construction to verify that the impoundment has been closed in accordance with the approved closure plan. This report is divided into six sections. Section 2.0 contains a narrative description of the closure activities. Section 3.0 describes the inspection and quality control performed during construction. Section 4.0 presents the As-Built drawings of the completed construction and the survey plat with the deed restriction notification. Section 5.0 contains the construction schedule and Section 6.0 presents photographic documentation of construction activities. Appendix A contains the daily construction inspection reports. Appendix B contains the soil testing data and results. Appendix C contains a description of the sludge removal operations and copies of the waste

manifests. The "Operator Certification of Closure" is contained in Attachment A and "Professional Engineer Certification of Closure" is contained in Attachment B.

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#### 2.0 CLOSURE ACTIVITIES

The following sections briefly describe the construction activities which were performed to complete closure of the surface impoundment in accordance with the approved plan. Additional information on closure construction activities is included in Appendix A in the form of construction inspection daily reports. A photographic record illustrating the construction activities is also included in Section 6.0, and these photographs are referenced in the descriptions of closure activities.

#### 2.1 Health and Safety Training

Construction personnel received 40 hours of Hazardous Waste Operations and Emergency Response Training in accordance with the requirements of 29 CFR 1910.120. The training was conducted during the week of June 25, 1989.

Since all K001 sludges had previously been removed from the work area, Level D personnel protective equipment was used throughout the construction activities.

#### 2.2 Construction Start-up Meeting

An informal, on-site construction start-up meeting was held on July 19, 1989. The meeting was attended by both the construction engineer and foreman from Green and Green Construction Company and the resident inspector and project manager from Keystone Environmental Resources, Inc. The construction activities, sequence and schedule were reviewed; construction quality assurance testing, inspections and responsibilities were discussed; and, questions concerning the execution of closure were discussed and resolved.

#### 2.3 <u>Site Preparation</u>

Equipment was mobilized to the site during the week of July 9, 1989 and site preparation work began on July 12. Initially, the equipment consisted of a track hoe and a dozer. Additional pieces of equipment were mobilized throughout the job as was required to accomplish the construction. Site preparation work consisted of brush and fence removal, removal of rainwater from the impoundment, and proofrolling of the subgrade. These activities are discussed in the following sections.

#### 2.3.1 Clearing

The fence and all trees and brush within a ten foot wide area around the impoundment were removed prior to the completion of dewatering.

#### 2.3.2 Impoundment Dewatering

In accordance with the letter, dated May 2, 1989, from the State of Mississippi, Bureau of Pollution Control, Industrial Pretreatment Division, accumulated rainwater was pumped from the impoundment to the Grenada POTW. Dewatering activities were initiated by Koppers Industries, Inc. personnel on June 19, 1989 and were completed by the contractor on July 18, 1989.

After dewatering was completed, the pump and intake and discharge hoses were taken to the plant's equipment wash down area and were decontaminated by steam cleaning. Both internal and external surfaces were decontaminated.

#### 2.3.3 Subgrade Preparation

After the accumulated rainwater was removed from the impoundments, the subgrade was prepared by tracking with the dozer. Wet subgrade soils were conditioned by spreading them in order to expedite their drying (see Photo 2).

#### 2.4 Excavation of Impoundment Dikes

When the subgrade was prepared, the impoundment dikes were excavated and placed into the surface impoundment as fill material (see Photos 3 and 4). Photo 5 shows the impoundment after placing and compacting the dike soils.

#### 2.5 Soil-Bentonite Key Trench Excavation

After the impoundment dikes were excavated and placed in the impoundment, a key trench was excavated with the dozer around the perimeter. The trench was excavated into the existing side slopes of the impoundments to a depth determined from the slopes and elevations of the final contours. The excavated soil was placed into the impoundments as fill.

#### 2.6 Soil Fill

After completion of the cut and fill of the dikes and key trench material, clean soil fill from an off-site borrow source was placed in the impoundments (See Photo 6). The fill was spread into lifts of approximately eight (8) inches, loose thickness and compacted to at least 90 percent of the maximum dry density obtained from the Standard Proctor Test Method for compaction (ASTM D-698). In-place densities were checked periodically throughout fill placement to verify that this minimum standard was met. The soil testing, conducted to approve the borrow source prior to construction and as quality assurance documentation during construction, is discussed in Section 3.2. Placement and compaction of the soil fill continued until the grades required for the soil-bentonite subbase were achieved.

#### 2.7 Equipment Decontamination

After completion of the final soil fill lift, the dozer was decontaminated. Decontamination was accomplished by scraping, shovelling and sweeping all of the soil from the dozer. Soil removal was performed while the dozer was still within the limits of the impoundment. Following the removal of soil, the dozer was moved to the plant's concrete lined equipment wash down area. All remaining soil and dirt was removed by cleaning the dozer with steam and high pressure water. All rinseate was collected and conveyed to the wash down area sump, which connects to the plant wastewater treatment system. As required by the approved closure plan, soil removed from the equipment was placed in the impoundment beneath the soil-bentonite layer.

#### 2.8 Soil-Bentonite Layer

Soil from a pre-approved off-site borrow source and bentonite were used to construct the clay barrier soil layer. Prior to construction, the borrow source was sampled. Soil from the borrow source was mixed with bentonite and the resultant soil-bentonite mixture was remolded and tested in the laboratory to demonstrate that the clay soil could be placed and compacted to achieve an in-place coefficient of permeability less than  $1 \ge 10^{-7}$  cm/sec. The soil testing program and construction quality assurance program are discussed in Section 3.2.

The soil-bentonite layer was constructed by placing and spreading the soil into an eight (8) inch (loose thickness) lift over the entire impoundment. Bentonite was then applied to the soil at a rate of between 2.2 and 3.0  $lbs/ft^3$ . The bentonite was mixed into the soil by tilling and/or disking until the bentonite was uniformly distributed throughout the soil lift (See Photos 7 through 13).

The soil-bentonite layer was then compacted with the rubber-tired roller. The soilbentonite layer was compacted to at least 95 percent of the maximum dry density obtained from the Standard Proctor Test Method for Compaction (ASTM D-698). The moisture content was adjusted, as required, to assure that the placement soil moisture content exceeded the optimum moisture content for the soil.

To document that the constructed soil-bentonite layer had a coefficient of permeability less than  $1 \times 10^{-7}$  cm/sec, two "undisturbed" samples were obtained from each lift and tested in the laboratory (See Photo 14). The results of the laboratory permeability tests indicated that the original first lift of the soil-bentonite layer had a coefficient of permeability greater than  $1 \times 10^{-7}$  cm/sec and, therefore, did not meet the requirements of the approved closure plan. This lift was subsequently added to the soil fill zone and the elevations of the remaining cap components were adjusted accordingly. Four more soil-bentonite lifts totaling two (2) feet in thickness (compacted) were then placed using increasing amounts of bentonite. Following completion of placement of the last lift of the soil-bentonite layer, the final surface was shaped and graded to conform to the intent of the design drawings. The surface of the soil-bentonite layer was rolled smooth with a steel drum roller in preparation for the installation of the filter fabric and the drainage layer.

#### 2.9 Geotextiles and Drainage Layer

A one-foot layer of drainage material was then placed over the soil-bentonite layer. Prior to construction, the drainage layer material was tested to verify that its coefficient of permeability was greater than  $1 \times 10^{-2}$  cm/sec. The drainage layer material was placed in a single, 12-inch thick lift and was compacted to at least 75% relative density. A non-woven geotextile was placed around the edge of the impoundment cap area and extended approximately two (2) feet beneath the drainage layer material (See Photos 17 and 18). Soil testing and quality control programs are discussed in Section 3.2. The drainage layer was completed by shaping the outer edges to a 4 horizontal to 1 vertical slope, lapping the geotextile over the slope and covering the layer with geotextile (See Photos 21-23). Photo 24 shows how the 18" overlap on the edges was stapled.

## 2.10 Cover Soil

Eighteen inches of cover soil was placed over the geotextile overlying the drainage layer. The first lift was placed by progressively placing and spreading the soil with end loaders so that the equipment did not track directly on the geotextile (See Photos 20 and 25). The soil was placed in lifts of approximately eight (8) inches, loose thickness and compacted with a rubber-tired roller. The cover soil was compacted to a dry unit weight corresponding to at least 90 percent of the maximum dry density obtained from the Standard Proctor Test method for Compaction (ASTM D-698).

### 2.11 Stone Protection

Stone protection was placed along the side slopes of the drainage layer against the filter fabric (See Photo 19). The two feet of coarse stone was placed to a slope of four (4) horizontal to one (1) vertical.

## 2.12 Top Soil

Top soil was placed over the coversoil layer (See Photo 26). A minimum of six (6) inches of topsoil was placed and spread to establish the finished elevations and slopes for the cap construction. The topsoil was placed and lightly compacted and then prepared for seeding.

### 2.13 Drainage Structure

A drainage channel was constructed along the western side of the capped surface impoundment to convey run-off away from the west area. The channel begins at the middle of the western side of the cap and extends past the southern end of the cap until it connects perpendicularly with an existing drainage channel that runs from west to east (See Photo 33). Surface grading was used around the remaining portions of the capped area to direct run-off away from the closed surface impoundment.

### 2.14 Vegetation

To complete the closure construction, the capped area was seeded and mulched to establish vegetal cover. The topsoil was prepared for seeding by applying fertilizer and tilling to incorporate the fertilize throughout the topsoil layer (See Photos 27-29). A seed mixture, consisting of the following:

Common Name	Rate (lbs/acre)
Bermuda Grass (Common) hulled	20
Fescue	35
Rye	112

was applied to the capped area by a hand seeder (See Photo 30). The seeded area was then mulched with straw at the rate of 4,000 pounds per acre. Immediately following the application of the mulch, it was lightly compacted with a tractor-pulled culti-packer which crimped the mulch into the seed bed (See Photo 31). Photo 32 shows an overview of the seeded cap.

2-6

In order to insure that the construction was performed in accordance with the intent of the approved closure plan and the design drawings and construction specifications, Keystone provided a full-time resident inspector throughout most of the construction period. Additionally, a local soil testing consultant (Mid-South Testing Company) was used to provide soil testing services during the borrow source approval phase and throughout construction. Soil permeability testing was provided by Springer Engineering in Starkville, MS. These activities are summarized in the following sections.

## 3.1 Construction Inspection and Daily Reports

Keystone's resident inspectors were on-site during all construction activities except for dewatering, brush clearing and fence removal. The resident inspector was responsible for visual inspection of the closure construction, coordination of the testing conducted by the soils consultant, assisting the contractor with interpretation of the design drawings and specifications, and preparation of construction inspection daily reports. The construction inspection reports included information about the weather, contractor personnel, equipment employed, inspectors and visitors on-site, and a summary of the daily activities. Copies of these reports are included as Appendix A.

## 3.2 Soil Testing

Soil testing was performed prior to construction to approve the contractor's proposed borrow sources and during construction as quality assurance documentation. The testing performed during construction included both field testing and laboratory testing of samples from the construction. The various testing is described in the following sections and the test data and results are included as Appendix B.

### 3.2.1 Borrow Source Approval Testing

The contractor's proposed borrow source, for each of the soil layers required for the cap construction, was tested to verify compliance with the respective project material

specifications. The unclassified soil fill, soil for the soil-bentonite layer and the cover soil were each tested to determine natural moisture content, grain size distribution, Atterberg Limits and moisture density relationship (Standard Proctor Test Method for Compaction ASTM D698). Samples of the soil-bentonite soil were also remolded, at the optimum moisture content, to a dry unit weight corresponding to 95 percent of the maximum dry unit weight obtained from the Standard Proctor Test and tested to determine the coefficient of permeability. The drainage layer material was tested to determine grain size distribution, coefficient of permeability and minimum and maximum densities. The topsoil material was tested to determine natural moisture content, grain size distribution and Atterberg Limits. The stone protection material was tested to determine grain size distribution.

# 3.2.2 Construction Quality Assurance Testing

Field testing of the various soil layers was conducted throughout the construction to verify that the fill materials were placed and compacted as required by the construction specifications and to verify that the construction satisfied the intent of the design.

### 3.2.2.1 Soil Fill

In-place density tests were performed on the soil fill. The tests indicated that the inplace density equalled or exceeded the dry density corresponding to 90 percent of the maximum dry density obtained from the Standard Proctor Test. Additionally, the corresponding moisture contents from these tests ranged from -0.9 percent to +1.9percent of the optimum moisture content.

### 3.2.2.2 Soil-Bentonite Layer

In-place density tests and laboratory permeability tests were performed on the soilbentonite soil layer. Sixty-three density tests and ten permeability tests were performed. All final density tests performed on the soil-bentonite layer indicated that the in-place dry density exceeded the dry density corresponding to 95 percent of the maximum dry density obtained from the Standard Proctor Test. The corresponding moisture contents exceeded the optimum moisture content except for three tests and they were within 1% of the optimum. Several of the moisture contents exceeded the limit of 3 percent above the optimum moisture content specified in the construction specifications; but, for these ten tests, the soil-bentonite layer did not exhibit any deflection under heavy equipment travel. Two samples of the in-place soil-bentonite layer were obtained on each soil-bentonite lift with 3-inch diameter shelby tube samplers. Each sample was tested in the laboratory to determine the coefficient of permeability of the soil-bentonite soil layer. The test results indicated that the first soil-bentonite lift did not meet the permeability requirements of the approved closure plan. This lift was left in place and incorporated into the soil fill zone, but that the next four lifts (2 feet total) did meet the required minimum permeability criteria.

### 3.2.2.3 Drainage Laver

In-place density tests were performed on the drainage layer. A total of eight density tests were performed. All final density tests performed on the drainage layer indicated that the in-place dry density exceeded 75 per cent relative density.

### 3.2.2.4 Cover Soil

In-place density tests were performed on the cover soil layer. A total of sixteen density tests were performed. All final density tests indicated that the in-place dry density exceeded 90 percent of the maximum dry density obtained from the Standard Proctor Test. The corresponding moisture contents averaged 4.3 percent below the optimum moisture content.

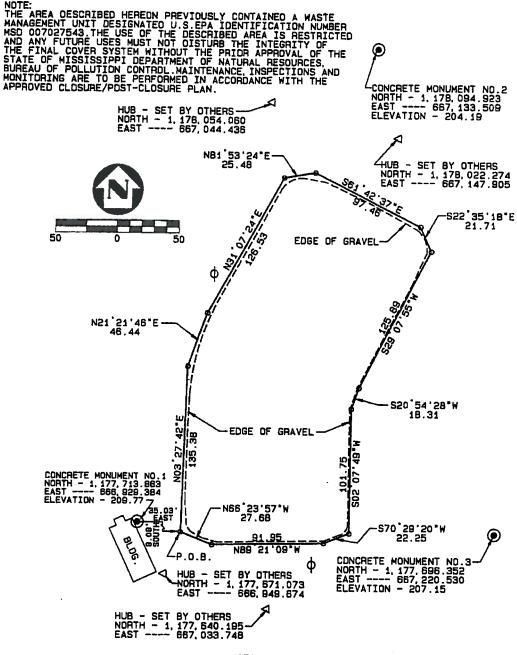
# 4.0 DRAWINGS

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The following drawings show the plan view and the cross-sections of the cap and surface impoundment and the survey plat with deed restriction notification.

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NOTE:

#### - DESCRIPTION ---

A PART OR PARCEL OF SECTION 28, TOWNSHIP 22 NORTH, RANGE 5 EAST, GRENADA COUNTY, MISSISSIPPI AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BESIMINA A POINT THAT IS 9.08 FEET SOUTH AND 35.03 FEET EAST OF CONCRETE MONUMENT NO.1 THENCE RUN NORTH 03 27'42"EAST FOR 135.38 FEET TO A POINT; THENCE RUN NORTH 21'21'48"EAST FOR 46.4 FEET TO A POINT; THENCE RUN NORTH 31 07'24"EAST FOR 128.53 FEET TO A POINT; THENCE, RUN NORTH 81'53'24"EAST FOR 25.48 FEET TO A POINT; THENCE RUN SOUTH 61'42'37" EAST FOR 97.46 FEET TO A POINT; THENCE RUN SOUTH 23'5'18"EAST FOR 21.71 FEET TO A POINT; THENCE RUN SOUTH 20 07'55"WEST FOR 125.89 FEET TO A POINT; THENCE RUN SOUTH 20'54'28"MEST FOR 18.31 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN SOUTH 02'7'49"WEST FOR 10'1.75 FEET TO A POINT; THENCE RUN NORTH 85'21'09"WEST FOR 91.95 FEET TO A POINT; THENCE RUN NORTH 65'23'57"WEST FOR 27'68 FEET TO THE POINT OF BEGINNING OF HEREIN DESCRIBED PARCEL OF LAND CONTAINING 40', 728'681 SO'FT OR 0'935 ACRES MORE OR LESS.

.....

and the second
I. JACK T. WILLIS, SR., HEREBY CERTIFY THAT IS HAVE HADE A SURVEY OF THE LANDS DESCRIBED HEREINABOVE AND SHAT THE PLAT, AND DESCRIPTION OF SAID LANDS ARE TRUE AND CORRECT TO THE REST OF MYS KNOWLEDGE AND BELIEF.
WITNESS MY SIGNATURE, THE 2 DAY OF 1890.
- fait it we still a se
REGISTERED PROFESSIONAL ENGINEER NO. 4020 F

	Cate Date: 2540489 Plot Date: 1305280			Project Start : 26,0403 Project Finish: 3100769	1967, 1985, 1985, 1987	1
Pred Verdin Stratter Statter 10 1955 - Betalan I. Danzan Janwood	INC, Sheet 1 of 1 INC,	SURFACE IMPOUNDMENT CLOSURE BEAZER MATERIALS AND SERVICES, CDENADA MC	surface Azer Mater		Astivity Bur/Briy Dutes Orlinal Activity Pregress Bur	
· · ·	· · ·					
SEED AND NOLCH	· · ·	310CTB9	2 300CTB9		5 SEED AND MULCH	165
UNALINAGE STRUCTURES	· ·					
	· · ·	31DCT89	1 310CTB9		0 DRAINAGE STRUCTURES	160
STONE PROTECTION	· · ·	300CT89	4 270CT89		5 STONE PROTECTION	<b>1</b> 22
COVER SOIL/TOPSOIL PLACEMENT	• • •	2010000				
	· · · · · · · · · · · · · · · · · · ·	аллетия	1 200CTRG	1 DI AL'EMENT 44	O COVER SOTI /TODSOTI DI ACEMENT	150
FILTER FABRIC PLACEMENT		2500789	5 100CT89	CEMENT 16	5 FILTER FABRIC PLACEMENT	145
DRAINAGE LAYER CONSTRUCTION	· ·	1900789	0 1000789	NSTRUCTION 10	0 DHAINAGE LAYER CONSTRUCTION	140
135 - FINAL GRADE SOIL-BENTONITE	· · ·	90CTB9	1 90CT89		5 FINAL GRADE SOIL-BENTONITE	135
NT & PEAM. TEST	SOTL-BENT. PLACEMENT	13SEP89	3 7AUG89	ENT & PEAM. TEST 38	D SOIL-BENT. PLACEMENT & PERM.	061
· · · · ·	A25 UNCLASSIFIED FILL PLACEMENT	31JUL89	8 24JULB9		5 UNCLASSIFIED FILL PLACEMENT	125
	120 Equipment decontamination	29-101-89	1 29-001-89	MINATION	DECONTAMINATION	120
	A15 Key Thènch Excavation	27JULB9	1 27JUL89		5 KEY TRENCH EXCAVATION	115
· · · ·	A10 Subgrade Preparation	22JUL B9	4 19JUL69		) SUBGRADE PREPARATION	110
	105 Hre-construction meeting	18JUL89	18JUL89	MEETING 1	5 PRE-CONSTRUCTION MEETING	105
· · ·	. 100 Cleaning and Grubbing	18JUL 89	16JUL89	BING 3	CLEARING AND GRUBBING	100
• •	20 Eguipment Mobilization	12JUL 89	12JUL89	ATION 5	EQUIPMENT MOBILIZATION	ິ
	EALTH AND SAFETY TRAINING	29JUNB9		TRAINING 4	HEALTH AND SAFETY TRAINING	10
41 48 25 2 9 46 23 30	3 10 17 24 31 7 14 21 28 4	FINISH 35	DE.ILINRO			ACTIVITY ID

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# 5.0 <u>SCHEDULE</u>

The following schedule identifies the start and completion dates of each activity during the closure.

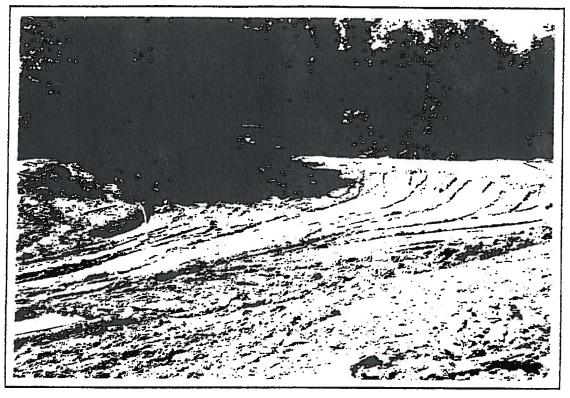
:

# 6.0 <u>PHOTOGRAPHS</u>

The following photographs represent a brief pictorial account of the closure and are referenced in Section 2.0.

DCC #R415

.3



PHOIDUL: Subgrade Preparation: Dewatering and Tracking

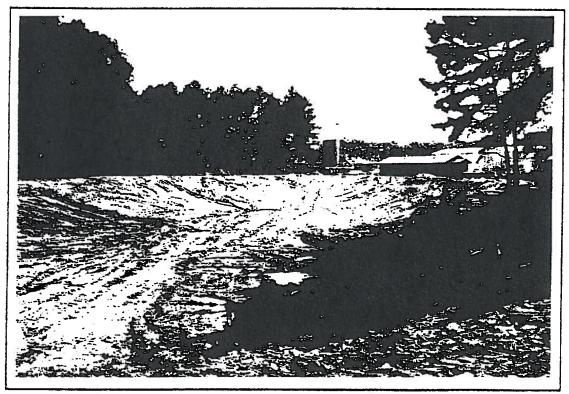


PHOTO 2: Subgrade Preparation: Spreading Soil to Dry

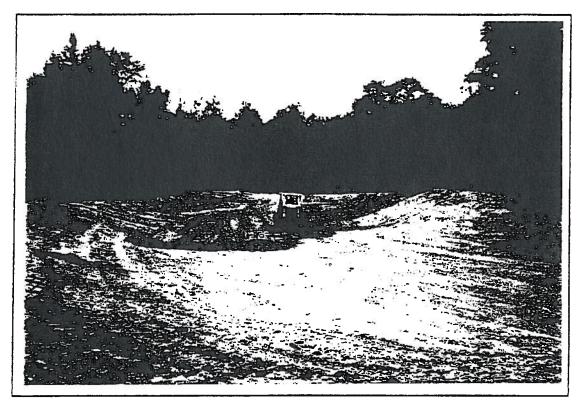


PHOTO 3: Cut and Fill of Dike Material Using D5H and D6H Dozers

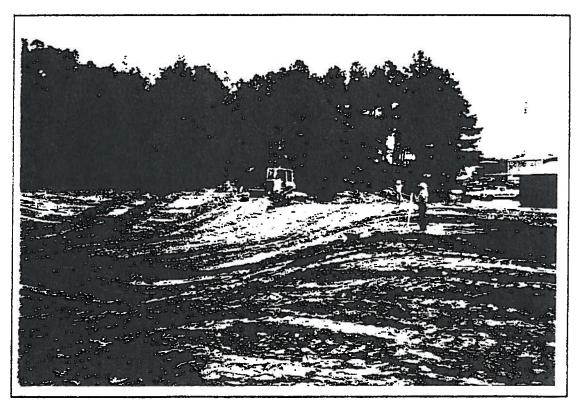


PHOTO 4: Checking Grade Elevation During Cut and Fill

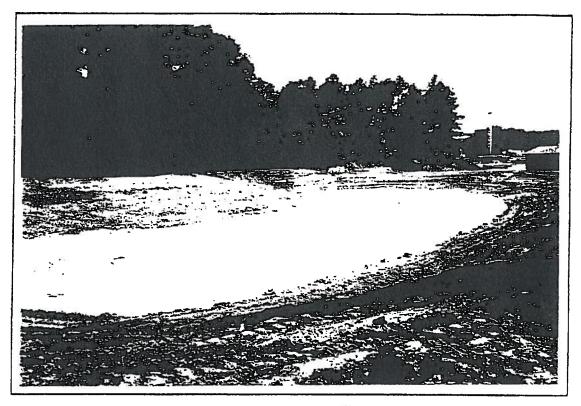


PHOTO 5: Rolled Surface During Cut and Fill

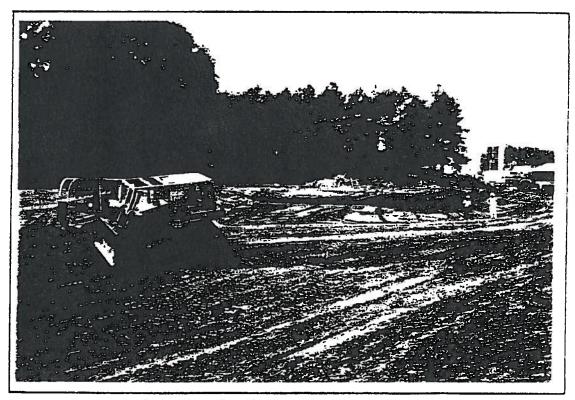


PHOTO o: Beginning of Unclassified Fill

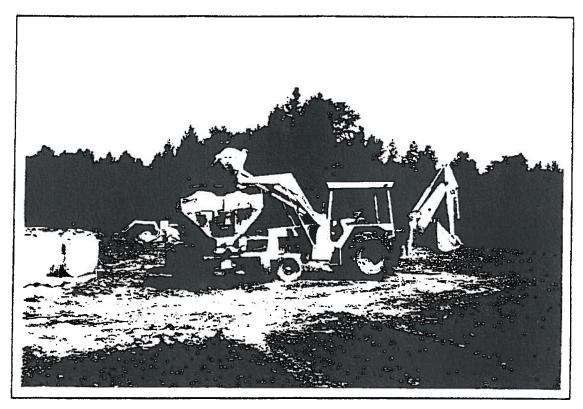


PHOTO 7: Loading Bentonite into the Spreader with the Backhoe

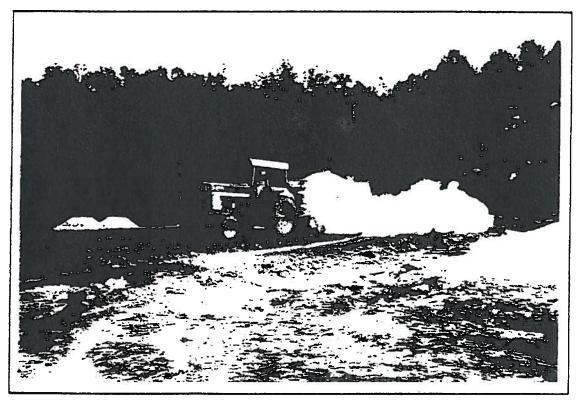


PHOTO 8: Spreading Bentonite

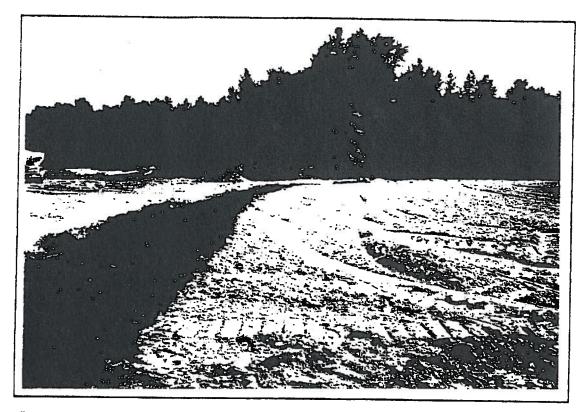


PHOTO 3: Soil-Bentonite Surface After Spreading Bentonite

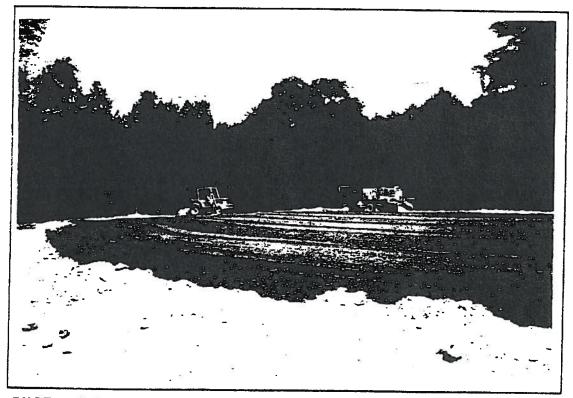


PHOTO 10: Watering and Tilling Soil-Bentonite

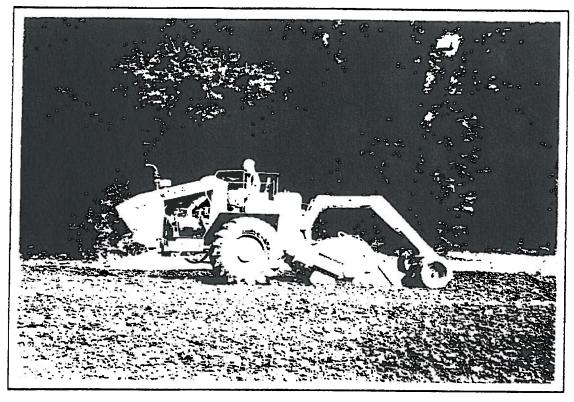


PHOTO 11: Tilling Soil-Bentonite

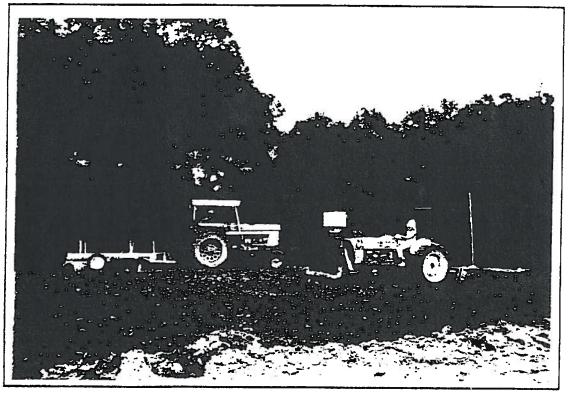


PHOTO 12: Disking and Tilling Soil-Bentonite

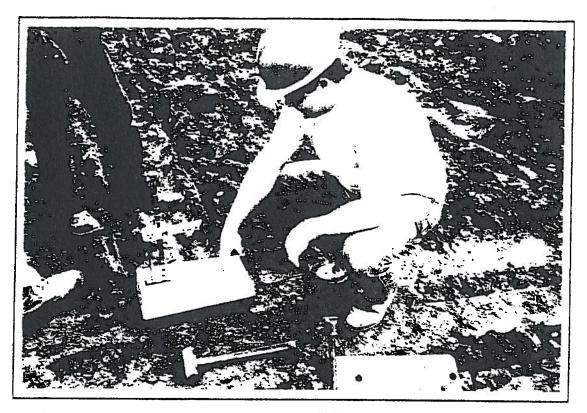


PHOTO 13: Checking Moisture Content with Humboldt Nuclear Tester

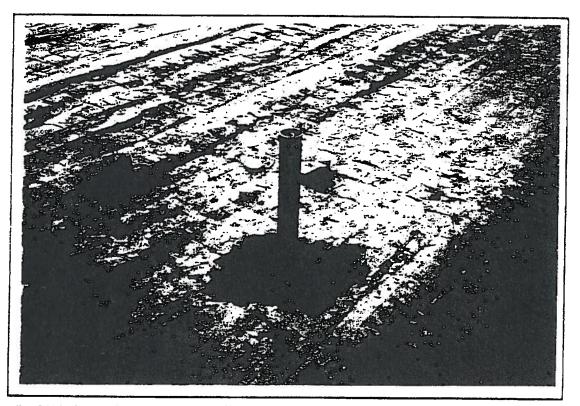
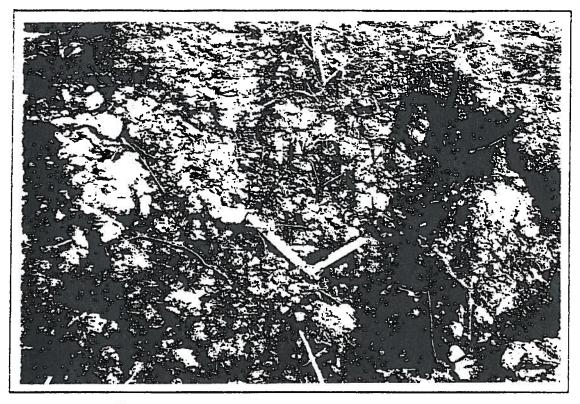


PHOTO 14: Digging Out Shelby Tube



PHGTO 15: Old Feeder Lines to Lagoon

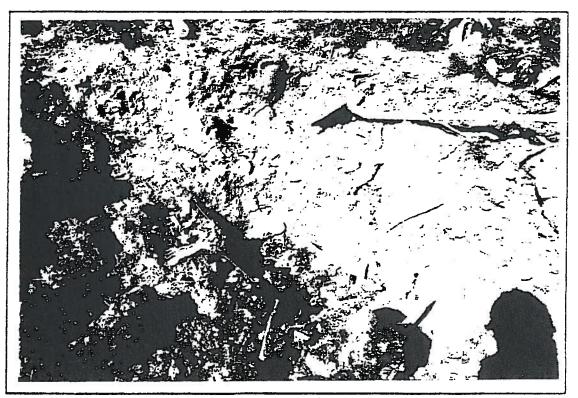


PHOTO 15: Old Feeder Pipes to Lagoon - Cut and Backfilled 10' with Cemer.

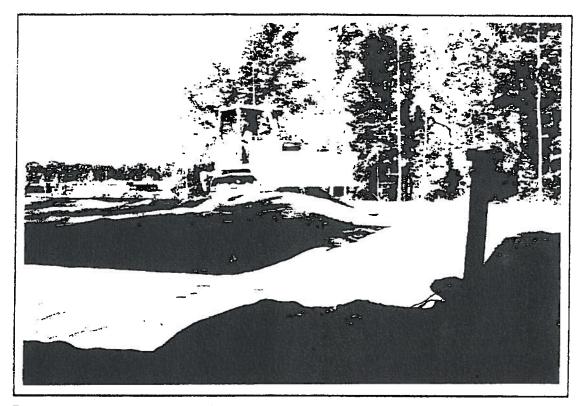


PHOTO 17: Pushing Sand (Drainage Layer) into Position with 350D Doter

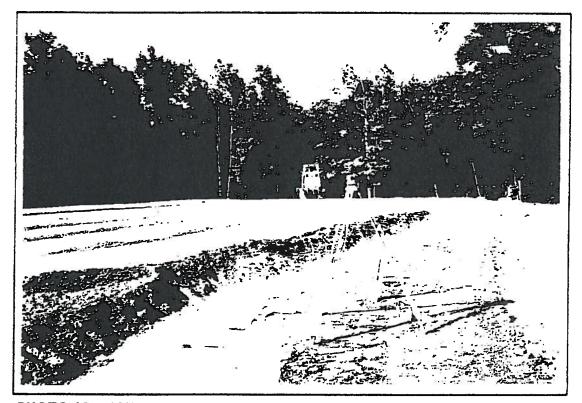


PHOTO 18: 350D Dozer Grading Drainage Layer

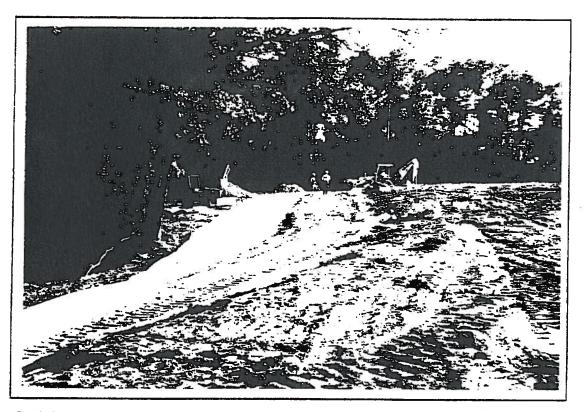


PHOTO 19: South End: Raking Gravel into Position



PHOTO 20: Placing Filter Fabric onto Drainage Layer and Pushing Cover Soil onto the Fabric

14. 14.2



PHCTO 31: Folding Filter Fabric back over the Ten-Foot Extension

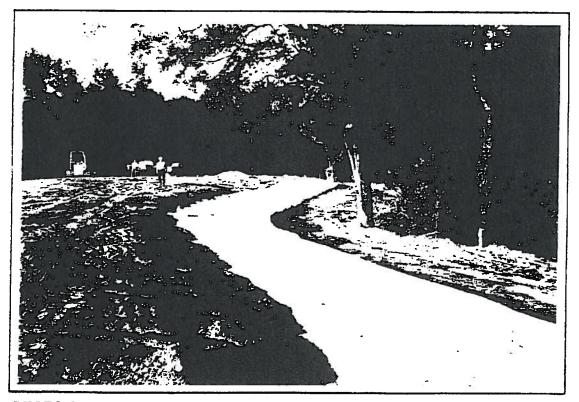


PHOTO 22: East Side Extension: Ready for Cover Soil

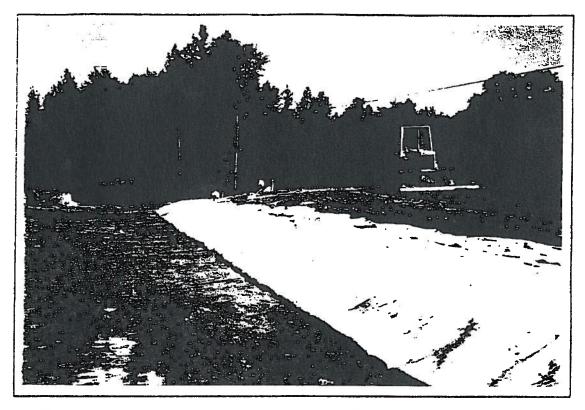


PHOTO 33: Folding Back Filter Fabric on West Side

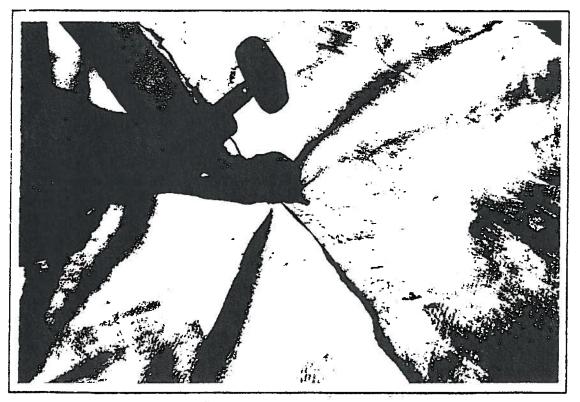
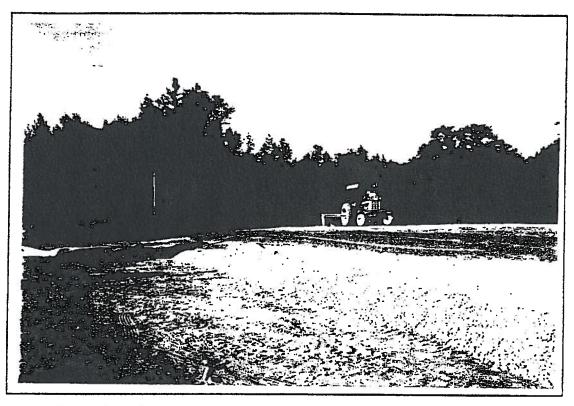


PHOTO 24: Stapling Overlaps



PHCTO 25: Grading Cover Soil

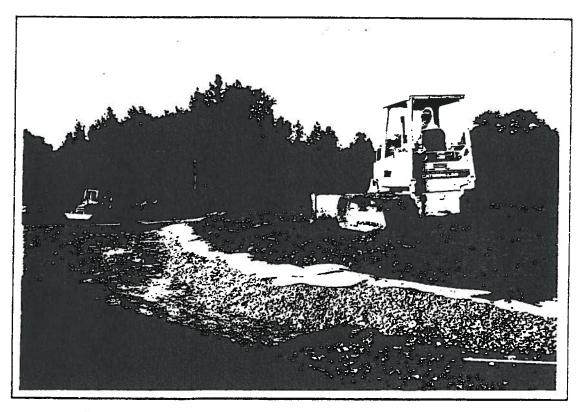
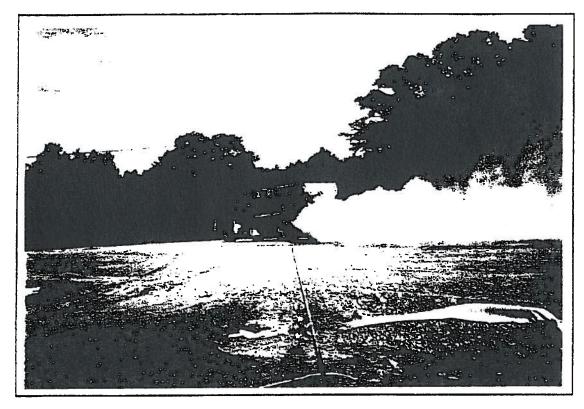


PHOTO 26: Grading Top Soil Along West Side



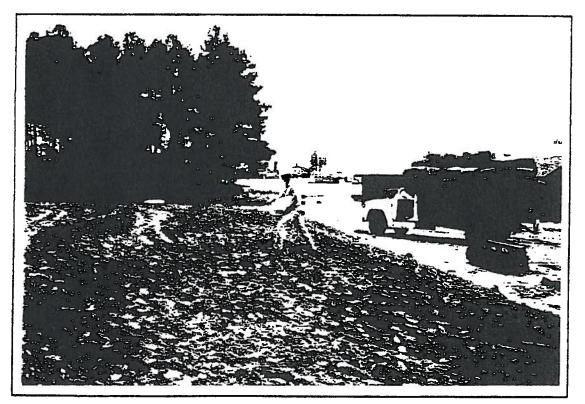
PHOTD 27: Applying Limestone with Truck-Mounted Agricultural Spreader



PHOTO 28: Applying Fertilizer with Tractor-Pulled Agricultural Spreader



PHOTE 23: Disking Lime and Fertilizer



PHOTC 30: Grass Seeding with Hand Spreader

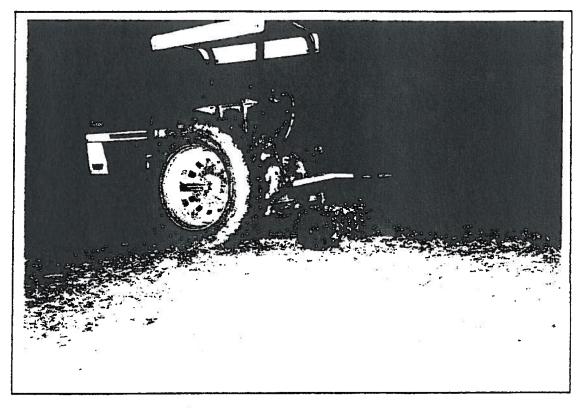


PHOTO 31: Tractor-Pulled Crimper for Seed and Mulch

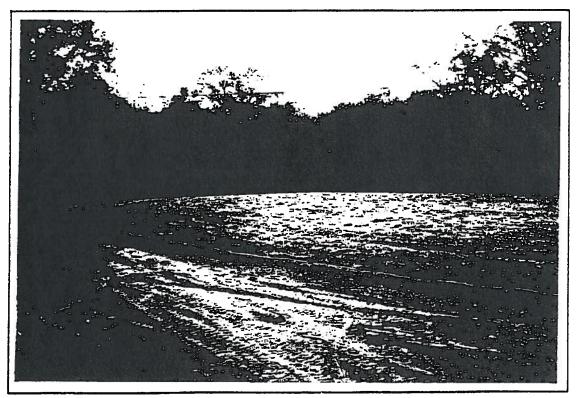
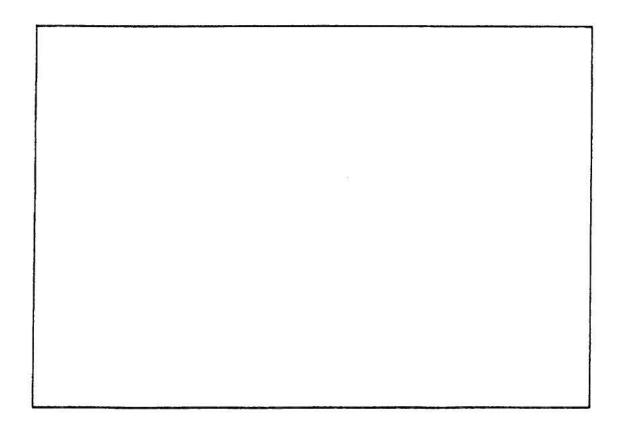


PHOTO 32: Northwest View of Finished Cap



PHOTO 33: Seeded Drainage Ditch from West Side of Cap



# APPENDIX A

**Daily Construction Inspection Reports** 

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## KEYSTONE ENVIRONMENTAL RESOURCES, INC. CONSTRUCTION INSPECTION DAILY REPORT

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: 7/19/89 REPORT NO.: 1 SHEET 1 of 5 BY: TPK
WEATHER: MOSTLY SUNNY, HUT	
PRECIPITATION: (inches) TEMPERATURE: I	LOW_71_HIGH_87_
CONTRACTOR PERSONNEL ON SITE: <u>GLERN &amp; GRE</u>	PN:
JOE WILLING, RICKEY DENLEY, TO	M BOURLEDAY
EQUIPMENT EMPLOYED: TRACK HEE, D54	DOZER
INSPECTORS ON SITE: TELRY KIRCHNER : KEY	STONE
QUALITY CONTROL TESTS AND SAMPLES: NONE	
VISITORS ON SITE: 44 G : NEW TURNAGE, JO	HN GREN
KEYSTONE : MIKE BOLLINGER	······································
SUMMARY OF ACTIVITIES: MIKE AND I A	
12:30 PM. GREEN & GREEN AERSON	UER WERE
CLEARING A TEN- FOOT ZONE AROUN	D THE
SURFACE IMPOUNDMENT OF TREES ;	FENCING
AND WHAT REMAINED OF THE DISC	ONNECTED
DUMP SYSTEM WHICH FOD THE S.I.	5 ts

### KEYSTONE ENVIRONMENTAL RESOURCES, INC. CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.DATE: 7/19/89SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 1KOPPERS INDUSTRIES, INC.SHEET 2 of 2GRENADA, MISSISSIPPI PLANTBY: 794

SUMMARY OF ACTIVITIES (cont.):\_\_\_\_\_ BECAUSE OF THE EXCESS RAIN OVER THE PAST FOR WORKS, THE IMPOUNDMENT HAD TO BE PUMPED DRY WITH A RENTAL PUMP DISCHARGING TO THE LOGAL A.D.T.W. THIS RAIN LEFT THE BOTTOM OF THE IMPOUNDMENT MUDDY, SO THE CONTEACTORS TODAY ALSO WORLE SACAIDING OUT THE SUIL TO EXPEDITE ITS DRYING. FINISHAD 5:30 AM 

BEAZED M		CTION INSPECTION SERVICES, INC.	
SURFACE	IMPOUNDMENT INDUSTRIES, MISSISSIPP	CLOSURE INC.	REPORT NO. SHEET 1 of BY: TPK
		-	AFTERNOON : CLOUDY
			PERATURE: LOW 48 HIGH
		l on site: <u>care</u> e	
	TURNAG		CLESKEY, RICKEY DA
FOUTDMEN	- FMDIAVED.		D5H DOZER
EQUIFMENT	EMPLOIED.		JU DULER
INSPECTOR	S ON SITE:	TERRY KIRCH.	NER : KEYSTONE
			NONE
QUALITY C	ONTROL TEST	TS AND SAMPLES:_	
<u></u>		·	ER : KEYSTENE
VISITORS	on site: /	·	ER : KEYSTENE
VISITORS	on site: /	NIKE BOILING	ER : KEYSTENE
VISITORS	on site: /	NIKE BOILING	ER : KEYSTENE
VISITORS	on site: /	NIKE BOILING	ER : KEYSTENE
VISITORS	on site: /	NIKE BOILING	ER : KEYSTENE
VISITORS	on site: /	NIKE BOILING	ER : KEYSTENE

KEYSTONE ENVIRONMENTAL RESOURCES CONSTRUCTION INSPECTION DAILY F	EPORT
BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 721 REPORT NO.: SHEET 1 of BY: TPK
WEATHER: AN OVERCAST AN AART PRECIPITATION: O (inches) TEMPERATURE:	LY CLOUDY
CONTRACTOR PERSONNEL ON SITE: 6200 ( 61 JOE WILLING, JOE DAVE MCCLESKEY)	2022 CONST.
EQUIPMENT EMPLOYED: <u>NSH DOZER</u> , RUBRAR- 1064 TRACTOR	T, RE) LUR
INSPECTORS ON SITE: TEERY KIRCHNER & K	EYSTON E
INSPECTORS ON SITE: TEERY KIRCHNER & K	EYSTONE
QUALITY CONTROL TESTS AND SAMPLES: <u>Ajony</u>	N 7 GREEN
QUALITY CONTROL TESTS AND SAMPLES: <u>NONE</u> VISITORS ON SITE: <u>JOHN GROOM</u> GREEN SUMMARY OF ACTIVITIES: <u>ARZINED</u> 7:53 M A 30 FOOT SECTION OF THE	N 7 GREEN A.M. DIKE WAS
QUALITY CONTROL TESTS AND SAMPLES: <u>NONE</u> VISITORS ON SITE: <u>JOHN GROOM</u> GLEFF SUMMARY OF ACTIVITIES: <u>ARCIVED</u> 7:50 M <u>A 30 FOOT SECTION OF THE</u> <u>PUSHED IN BY THE DOZER TO B</u>	N 7 GREEN AM DIKE WAS E USED AS
QUALITY CONTROL TESTS AND SAMPLES: <u>NONE</u> VISITORS ON SITE: <u>JOHN GROOM GROOM GROOM GROOM</u> GROOM SUMMARY OF ACTIVITIES: <u>ARZINED 7:00</u> <u>A 30 FOOT SECTION OF THE</u> <u>PUSHED IN BY THE DOZER TO B</u> <u>A RAMP FOR THE TRUCKS TO DI</u>	AM. AM. DIKE WAS E USED AS JMA PROM.
QUALITY CONTROL TESTS AND SAMPLES: <u>NONE</u> VISITORS ON SITE: <u>JOHN GROOM</u> GLEFF SUMMARY OF ACTIVITIES: <u>ARCIVED</u> 7:50 M <u>A 30 FOOT SECTION OF THE</u> <u>PUSHED IN BY THE DOZER TO B</u>	AM. AM. DIKE WAS E USED AS JMA PROM.
QUALITY CONTROL TESTS AND SAMPLES: <u>NONE</u> VISITORS ON SITE: <u>JOHN GROOM GROOM GROOM GROOM</u> GROOM SUMMARY OF ACTIVITIES: <u>ARZINED 7:00</u> <u>A 30 FOOT SECTION OF THE</u> <u>PUSHED IN BY THE DOZER TO B</u> <u>A RAMP FOR THE TRUCKS TO DI</u>	AM. AM. DIKE WAS E USED AS JMA FROM. MA FROM.

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# KEYSTONE ENVIRONMENTAL RESOURCES, INC. CONSTRUCTION INSPECTION DAILY REPORT

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 7234 REPORT NO.: SHEET 1 of BY: TPK
WEATHER: AM: SUNNY, MILD ; PM PRECIPITATION: O (inches) TEMPER CONTRACTOR PERSONNEL ON SITE: GRAN	ATURE: LOW 12 HIGH 8
JOE DAVE MELLESKEY, NEIL	-
EQUIPMENT EMPLOYED: D5H DOZER RUBBER-TIRNI ROZUR	, IOLL TRACTOR,
INSPECTORS ON SITE: TERM KIRCH A	
VISITORS ON SITE: <u>None</u>	·····
SUMMARY OF ACTIVITIES: ARE 7:007	Ι <u>Μ</u> .
SOLT AND BOULACED IT WIT	
PROF - ROLED WITH TRAITOR	- PULLED FLIBBER-
TIRED ROLLER.	
	JRE: Thurse P. Kinhr

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KEYSTONE	ENVIE	RONMENTAL	RES	OURCE	S, INC	
CONSTRUC	TION	INSPECTIO	DN D	AILY	REPORT	

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE: REPORT NO SHEET 2 BY: -

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SUMMARY OF ACTIVITIES (cont.):\_\_\_\_\_

LE-TOSK CENTERLINE TO GET TOP LOCATION

FOR INTERSECTION OF GRADE OF EXISTING

GROUND TO CAP

10:30 AM. - FINISHED SUBGRADE WORK

STARTED UNCLASSIFIED FILL.

ATTACHMENTS: \_\_\_\_\_\_\_SIGNETURE: Terrei P. Kinhne

KE	YSTONE ENVIRONME ONSTRUCTION INSP	NTAL RESOURCES, ECTION DAILY REP	INC. PORT
		INC.	DATE: 7/23/89 REPORT NO.: 5 SHEET 1 of 1 BY: 784
WEATHER:			
PRECIPITATION	:(inches)	TEMPERATURE: I	.OWHIGH
CONTRACTOR PE	RSONNEL ON SITE:		
			2 2
EQUIPMENT EMP	loyed:		· · · · · · · · · · · · · · · · · · ·
			. <u></u>
INSPECTORS ON	SITE:		
QUALITY CONTR	OL TESTS AND SAM	PLES:	
VISITORS ON S	ITE:		
SUMMARY OF AC	rivities: No	WORK TODA	iy
<u> </u>			- 5,70
ATTACHMENTS:	······	_SIGNATURE: TL	unce F. Kuhni

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# KEYSTONE ENVIRONMENTAL RESOURCES, INC. CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: 7/24/89 REPORT NO.: 6 SHEET 1 of 2 BY: TPK
WEATHER: PAZTLY SUNNY, HUMID
PRECIPITATION: 2.5 (inches) TEMPERATURE: LOW 45 HIGH 52
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.
JOE WILLING. JOE DAVE MELLESKEY, RICKEY DENLEY,
TOM DOUBLEDAY, JOHN SUGAS, NEIL TURNAGE
EQUIPMENT EMPLOYED: DSH DOZER, SUMD FUMP
NEH DOZER, RIBRER-TIRED ROLLER, POLLE TRATTOR
INSPECTORS ON SITE: TEREY KIRCHNER : KEYSTONE JEFF VANCE : MID-SOUTH TESTING
QUALITY CONTROL TESTS AND SAMPLES: (SMALLTION & MOISTLYCE)
VISITORS ON SITE: NONE
SUMMARY OF ACTIVITIES: ARR. 7:00 A.M.
RAIN FROM MARLY SUNDAY MORNING WAS
PUMPED OUT LATVING LUTTER PONDS TO BE
RE-WORKED WITH DOZERS.
LAID 1ST AND DO LIFTS, ROLLAD HAID

TESTED FOR MOISTURE AND LOINPALTION, SEE AFTACHMENTS (THIS FINISHED DIKE PHTERIAL). ATTACHMENTS: 6-1, 6-2 SIGNATURE: JEMME P. Kindmin

BEAZER MATERIALS & SERVICES, INC.DATE: 7|24|80SURFACE IMPOUNDMENT CLOSUREREPORT NO.:  $\underline{q}$ KOPPERS INDUSTRIES, INC.SHEET  $\geq$  of  $\leq$ GRENADA, MISSISSIPPI PLANTBY:  $\underline{\neg P} \prec$ 

SUMMARY OF ACTIVITIES (cont.):
STARTED 320 LIFT OF UNCLASSIFIED
MATERIAL. THIS SOIL CHIME FROM
GREEN & GREEN'S BORRON PIT AT THEIR
GHRAGE LOCATION.
FINISTED AT 6:30 AM
ATTACHMENTS:SIGNATURE: Turne P. Kindme-

· · · · · · · ·

		ATTACHMEN	T 6-1	DATE 7/24/89	$\bigcirc$
	TEST NO,	90 MOISTURE	Noits A4MOS	1 ST UNCLASSIFIED	
	1	19.2	95.8		
	え	16.3	95.2		
	3			N(i)	
	Ч				
	5				
	6				
	7				$\bigcap$
	8			$\sum (a)$	$\bigcirc$
	9				
	10				
	11				
÷	る				
	13				
1	14				
	15			-	

	ΑττΑ CHMEN	т <u>6-2</u>	DATE 7 (34/89
TEST NO.	Po MoiSTURE	MOITS AGMON	-2 " UNCLASSIFIED
ł	20.5	96.4	
ಎ	22.7	97. le	
3	18.7	9kr.5	
Ч			
5			
6	(-22+32)	COMPACTION 295%	(2)
7			
z			$\left( \begin{array}{c} \leq (3) \end{array} \right)$
9			
10			
11			
12			
13			
. 14			
15			2.5

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: $7689$ REPORT NO.: 7 SHEET 1 of 1 BY: $784$
WEATHER: An: OVERLY AN: AACTLY PRECIPITATION: O (inches) TEMPERATURE: LA CONTRACTOR PERSONNEL ON SITE: GREAN & GREAN JOE WILLING, RICKEY DENLEY, JOE JOHN SUGGS	W 65 HIGH 83
EQUIPMENT EMPLOYED: 05H DOZOL, 1064 RUBBER-TIRES RELEA	TOTO2
UNALITY CONTROL TESTS AND SAMPLES: NOUSITY	4 MSISTURE
VISITORS ON SITE: JOHN GRAN (6+6), TAN	HUDSON (CHT.)
SUMMARY OF ACTIVITIES: 7:00 HM. FINISHED PLALING 3RD LIFT. FSLIED AND TESTED, THE 4T LUMAS ALSO PLACED FOR POD AND SEE ATTACHMENTS FOR RESULT	4 LIFT
ATTACHMENTS: 7-1,7-2 SIGNETURE: Time	me P. Kinhun

		ATTACHMEN	T <u>7-1</u>	DATE 7/25/89
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BEAZER MATERIALS & SERVICES, INC.DATE: <a href="https://www.services.com">date: <a href="https://www.services.com"></a>date: </a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a>
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BEAZER MATERIALS & SERVICES, INC.DATE: 7/27/87SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 7KOPPERS INDUSTRIES, INC.SHEET 1 of \_\_\_GRENADA, MISSISSIPPI PLANTBY: \_\_\_FK

WEATHER: AN: SUNNY HAZY HIST ! PM: OVWECAST COOT TEMPERATURE: LOW 47 HIGH 83  $PRECIPITATION: \bigcirc (inches)$ CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN CON ST. JOE WILLING, RICKEY DENLEY, JOE DAVE MCCLESREY JOHN SUGGS NEIL TURNAGE EQUIPMENT EMPLOYED: 65# DOZEN , JOUR TRACTOR RUBBER-TIRED ROLLER INSPECTORS ON SITE: TERPY KIRCHNER KEYSTERE SEFE VANCE: MID-SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: DENSITY 4 MOISTURE SEE ATTACHMENTS VISITORS ON SITE: JOHN GREEN 16+6 Long SUMMARY OF ACTIVITIES: AR. 1'00 AM Tin -7# KOLLINS AND TESTER PLACEN TH OF UNCLASSIFIED SOL LIFTS 107" ALHCOD, ROLLED AND TESTED 17650 SEE ATTACHMENTS 6730 AM FINISHED AT

ATTACHMENTS: 9-19-2,9-3,9-4 SIGNETURE: TA Kinter

	ATTACHMEN	T <u>9-1</u>	DATE 7/27/89
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BEAZER MATERIALS & SERVICES, INC.	DATE: $7 \rightarrow 8/89$
SURFACE IMPOUNDMENT CLOSURE	REPORT NO.: 10
KOPPERS INDUSTRIES,INC.	SHEET 1 of 1
GRENADA, MISSISSIPPI PLANT	BY: $7P\mu$

WEATHER: <u>AN:</u> SUMMY, MILD; <u>AN: NUELAST (BRIZHE)</u> THEN CLEARING PRECIPITATION: <u>TRACE</u> (inches) TEMPERATURE: LOW <u>6</u> SHIGH <u>8</u> CONTRACTOR PERSONNEL ON SITE: <u>GREEN 4 GREEN 1</u> <u>JOE WILLING</u>, <u>RICKEY DENLEY</u>, <u>JUE NAVE <u>A'CLESKEY</u></u> <u>JOHN SUGGS</u>, <u>NEIL TURNAGE</u> EQUIPMENT EMPLOYED: <u>DSH DOZER</u>, <u>IOLOGE TRACTOR</u>, <u>BUBREZ-TIRED POLLER</u>, <u>BACKHOE</u> INSPECTORS ON SITE: <u>TERZY KIRLIHNEZ</u> <u>KRYSTENE</u>

QUALITY CONTROL TESTS AND SAMPLES: DENSITY & Man 5 TORE

SEE ATTACHMENTS

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: <u>APP: 7'DDHM</u> <u>ROLLED AND TESTED 10<sup>TH</sup> - SOUTH</u> <u>PLACED AND TESTED II<sup>TH</sup> LIFT</u> <u>PECEIVED TRUCK LOAD OF BENTONITE (49,44015)</u> <u>STUDED IT IN A TRENCH WT BY THE RACKHSE</u> <u>ATTACHMENTS: 10-1</u> SIGNETURE: <u>Frime</u> P. Kuhm

		ATTACHMEN	T 10-1	BATE 7/28/89	$\bigcirc$
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BEAZER MATERIALS & SERVICES, INC.	DATE: 7 39 89 REPORT NO.: 11
SURFACE IMPOUNDMENT CLOSURE	REPORT NO.: 1
KOPPERS INDUSTRIES, INC.	SHEET 1 of 1
GRENADA, MISSISSIPPI PLANT	BY:

WEATHER: <u>AMY PARTY CLOUDY MILD</u>, <u>AMY SOUNY</u>, HOT PRECIPITATION: <u>O</u> (inches) TEMPERATURE: LOW <u>68</u> HIGH <u>85</u> CONTRACTOR PERSONNEL ON SITE: <u>GREEN & GREEN</u>! <u>JOE WILLING</u>, <u>FICKEY DEVLEY</u>, <u>JOE DAVE MULLIESKEY</u>,

JOHN SIGGS , NELL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, DOLL: TRACTOR, 20, BBOR-TIRON ROLLAR

INSPECTORS ON SITE: TERRY KIRCHAR KEYSTONE JEFF VANCE : MID-SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: DENSITY & MOISTURE SEE ATTACHMENT VISITORS ON SITE: NONE

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	ATTACHMEN	т <u>11-і</u>	BATE 7/29/89	$\bigcirc$
TEST NO.	Po MOISTURE	оГ Конто А41902		
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BEAZER MATERIALS & SERVICES, INC. DATE: SURFACE IMPOUNDMENT CLOSURE REPORT NO. : SHEET 1 of KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT BY: TPK WEATHER: SUNNY, HUT. HUMID TEMPERATURE: LOW 61 HIGH 51 PRECIPITATION: \_\_\_\_\_ (inches) CONTRACTOR PERSONNEL ON SITE: Gilen & Gilen ! JOE WILLING, FICKEY DENLEY , DE DAVE ACLESKET TOHN SUCIOS NEIL TURNACE EQUIPMENT EMPLOYED: DSH DOZER, LOCK TRACTOR THEK HOE WHTER TRUCK, RUBBER-TIRED ROLLERL, TILLER (BONTHE INSPECTORS ON SITE: TER2Y KIRCHNAL ! KEYSTONE JEFF VANCE ! MID-SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: MOISTURE CHECKS VISITORS ON SITE: NONE SUMMARY OF ACTIVITIES: AZZ 7 55 HIM WHTERES 1ST LIFT OF SOIL-BENTONITE LAYER WITH APPREX GOOD GAL OF WATER. TILLES AND COMPACTED A SMALL SECTION TO CHECK MOISTURE, APPLIES BENTONITE (39,470 165) =2 2.2 16/FT3) AND TILLED IT IN. LOADED TREE DEARLY ONTO TRUCKS -240/ Da-1 J. VANCE HERE ALL NAY P. Kuch ATTACHMENTS: \_\_\_\_\_\_\_SIGNETURE: 14 mil

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BEAZER MATERIALS & SERVICES, INC.       DATE: 7 31 87         SURFACE IMPOUNDMENT CLOSURE       REPORT NO.: 13         KOPPERS INDUSTRIES, INC.       SHEET 1 of 1         GRENADA, MISSISSIPPI PLANT       BY: 77K
WEATHER: SUNNY, HOT
PRECIPITATION: $\bigcirc$ (inches) TEMPERATURE: LOW <u>68</u> HIGH <u>88</u>
CONTRACTOR PERSONNEL ON SITE: <u>GREEN &amp; GREEN CONST</u>
JOE WILLING RICKEY DENLEY, JOE DAVE MILLEYEY,
JOHN SUGGS, NEIL TURNAGE
EQUIPMENT EMPLOYED: D5+ D3ZER, 10KL: TEHETSL,
TILIER ROUER.
INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE
MIKE BOLLINGER: KEYSTONE JEFF VANCE MID SOUTH TESTING
QUALITY CONTROL TESTS AND SAMPLES: DONS ITT & MOISTURE
SEE ATTACHMENT.
VISITORS ON SITE: NOWE
SUMMARY OF ACTIVITIES: ARR. 7:00 HM.
A NEW PROCTOR WAS TAKEN OK THE SOIL
MIX-TURE GIVING NON MOISTURE OFTIMUM OF 19.8% (MAX' 22.85)
RECEIVED TWO MORE TRUCK LOADS OF BENTERVITE
(49,040 165; 49,520 165) - DROVE TWO SHELBY TUBES
INTO SOIL / RENTON ITE AND TOOK THEM TO SPRINGER MIGR.
IN STARKVILLE, MS. M. BULLINLAL SUPARVISED.
ATTACHMENTS: 13-1 SIGNATURE: Turnie P. Kunhin

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9	22.4	100.2	
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BEAZER MATERIALS & SERVI SURFACE IMPOUNDMENT CLOS KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLA	SURE	DATE: $\frac{3}{2}$ REPORT NO.: 14 SHEET 1 of 1 BY: TPL	, , ,
WEATHER: SVOLCHST	MILD		•
PRECIPITATION: (inch	hes) TEMPERATUR	E: LOW 62 HIGH 78	
CONTRACTOR PERSONNEL ON	SITE: SREPN +	GREEN ?	
JOE WILLING	JOHN SUGGS		)
<u>.</u>			
EQUIPMENT EMPLOYED:		, PUSH START TRACTOR)	, ,
loule TRACTOR, 5	SCRAPER		(
JEPT VANCE ! MID -			
QUALITY CONTROL TESTS AN	ND SAMPLES: SAMPL	LES TAKEN FROM 1 ST	
VISITORS ON SITE: NON		LIMITS (FOR 1,2,5 ADD)	, 162 of Benj,
SUMMARY OF ACTIVITIES:	ARR. 7: DAM	1. FIN. 5:30	•
RAINER YESTERDAY	. GOT RESUL	TS OF SHERBY	1
TUBE PERMABILIT	TESTS BOT	H FAILED	,
10-3, B. 8×10-41	)		
TILLED SSIL ALL	DAY - ONCE	PER HOUR TO	
HELP DAY IT OUT			
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BEAZER MATERIALS & SERVICES, INC.DATE: \$\8\8\9SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 15KOPPERS INDUSTRIES, INC.SHEET 1 of 2GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER: SUNNY, MILD PRECIPITATION: O (Inches) TEMPERATURE: LOW HIGH CONTRACTOR PERSONNEL ON SITE: <u>GREEN & GREEN ;</u> <u>JOE WILLING</u> JOHN SUGGS (BOTH 7-5:30) <u>RICKEN DEWLEY</u> JOE DAVE MICHBERY (ROTH 1-5:30) EQUIPMENT EMPLOYED: JOU'LE TEACTOR DISK MIPLEMENT; <u>SUGAPER</u>, INSPECTORS ON SITE: <u>TERRY KIRCHNER</u> KEYSTONE JEFF VANCE : MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY & MOISTURE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: <u>ARE:</u> JAM FINISHED 5:30 SINCE THE FIRST SOIL-BENTONITE LIFT DID NOT PASS THE PERMEMBILITY, IT WAS DECIDED (MLB) TO INCORPORATE THIS LIFT AS PHET OF THE UNCLASSIFIED FILL AND NOT AS THE FIRST LIFT OF THE SOIL-BENT LAYER, MET WITH JEFIE VANCE TO SEE RESULTS OF ATTERBORG UMITS TESTS FOR THE THREE SAMPLES ATTERBORG UMITS TESTS FOR THE THREE SAMPLES

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE:  $\frac{g}{g}\frac{g}{g}$ REPORT NO.: 15 SHEET  $\supseteq$  of  $\supseteq$ BY:  $\mathbb{TPR}$ 

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SUMMARY OF ACTIVITIES (cont.):\_\_\_\_ OF THE IN- PLACE SOIL WHICH LUERE GIVEN CF OF. AND FOUNDS Exters) 2 WE'LL PROBABLY USE 2 73 3 165 BENTONITE EXTER. ONCE DER HSUR JOHN SUGGS DISKED UNTIL NOON AFTER LUNCH - JOE DAVE RICHED AND JOE CAME AND WORLD UNTIL 5AM. RETOOK CENTER LINE AND GRADE LINES NEIL WERE RE-ESTAPLISHED. FAILER ONE) RE LIFT WAS ROLLEN AND WILL INCORPORATED INTO UNICLASSIFIED. THEREFORE, DENSITY AND MOISTURE TESTS WHE TAKEN. ATTACHMENTS: \_\_\_\_\_\_SIGNETURE: Turne P. Kunne

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: \$ 9 89 REPORT NO.: 14 SHEET 1 of T BY: TPK

WEATHER: SUNNY, MILD

PRECIPITATION: O (Inches) TEMPERATURE: LOW 67 HIGH 84 CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST: JOE WILLING, RICKEY DENLEY, JOE DAVE MCCLESKEY, JOHN SUGGS

EQUIPMENT EMPLOYED: <u>D5H DOZER</u>, <u>1066 TRACTOR</u>, DISR, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TORY KIRCHNER: KEYSTONE; MIKE BULLINGER: KEYSTONE; JEFF VANCE! MID SUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: SAMPLES TAKEN FOR GRAIN SIZE DIST., PROCTOR, AND OFT. MOIST. ANALYSIS VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: <u>7:35 AM</u>, <u>F</u>, <u>N</u>. <u>7:35 DM</u> STARTED KENT LIFT [NEW 1ST LIFT OF SOIL-BENT] USING SOIL WITH MORE (LAY CONTENT. <u>MID-SOUTH TERTING TOOK SAMPLES FOR</u> <u>6241N SIZE DIST</u>, <u>PROCTOR AND OPT MOISTURE</u>, <u>0LD 1ST LIFT WAS OFF GRADE SLIGHTLY</u>, <u>SO HIGH SANDY SECTION WAS REMOVED</u>. ATTACHMENTS: <u>SIGNATURE: TWAN</u> <u>P. Kuhn</u>

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: <u>8 10 89</u> REPORT NO.: <u>17</u> SHEET 1 of <u>1</u> BY: <u>TPK</u>
WEATHER: SUNNY, MILD	
PRECIPITATION: <u>O</u> (inches) TEMPERATURE:	LOW 64 HIGH 85
CONTRACTOR PERSONNEL ON SITE: 6200 4	62000 !
JUE WILLING, RICKEY DENLEY,	JOE DAVE MICLESKEY,
JOHN SIGGS.	
EQUIPMENT EMPLOYED: <u>D5H</u> DCZER	·····
INSPECTORS ON SITE: TERRY KIRCHNER, MIKE JEFF VANCE ' MAD - SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES:	(YA AY)
VISITORS ON SITE: ハランモ	
SUMMARY OF ACTIVITIES: 7:00 Am	Fin. 6:00 pm
SCRAPED CLAY LAYER SECTION	
CORNIAL AND REMOVED EXCESS S	
BELON IT, RE-SET GRADE	STAKES HFTER
FEPLACING THE CLAY LAYER.	

ATTACHMENTS:\_\_\_\_\_\_SIGNATURE: Towner P. Kuchner

BEAZER MATERIALS & SERVICES, INC.DATE:  $\frac{8}{118}$ SURFACE IMPOUNDMENT CLOSURE<br/>KOPPERS INDUSTRIES, INC.REPORT NO.: 15GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER:	HOT	SUNNY	HAZY		·
	,	,	TEMPERA		<u>Чнісн 86</u>
CONTRACTO	r Persoi	NNEL ON SIT	E: <u>Cheeni</u>	4 ARDEN	CONST :
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EQUIPMENT EMPLOYED: DSH DOZER, AGE, SPRENDER?,

INSPECTORS ON SITE: TELLY KIRCHNAL & MIKE BOLUNGER : KEYSTONE; JEFT VIINCE : MID- SOUTH FOING QUALITY CONTROL TESTS AND SAMPLES: MOISTURE.

VISITORS ON SITE: NONE

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WEATHER: <u>SUNNY</u>, HOT, HUMID PRECIPITATION: <u>O</u> (inches) TEMPERATURE: LOW <u>68</u> HIGH <u>87</u> CONTRACTOR PERSONNEL ON SITE: <u>GREEN + GREEN CONST</u>: <u>JOE WILLING</u>, <u>RICKEY</u> <u>DENLEY</u>

EQUIPMENT EMPLOYED: 5H ASTER TO PUSH SHERRY TURE FSUR IOKE TEACTOR, DISK IMPLEMENT,

INSPECTORS ON SITE: T. KIRCHNER, M. BOLUNGEL : KEYSTONE ; JEFF VANCE : MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY + MOISTURE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: 7:05 AM 1 FIN. 12 MORE DISKED SOME OF THE LIFT AREAS FROM VESTERDAY'S WATERING, THEN ROLLED WHEN THE SOIL APPEARED TO HAVE DRIED. GAG THEN DRIVE SHERRY TUBES WITH DOZER AFTER COMPACTION + MOISTURE TESTS WERE DONG. DROVE TUBES TO SPRINDER ENGLI FOR ANALYSIS. ATTACHMENTS: 19-1 SIGNETURE: TOWNER P. Kinh

	ATTACHMEN	19-1	DATE 8/12/89	$\bigcirc$
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5	25.5	100.1		
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DATE: 8/18 BEAZER MATERIALS & SERVICES, INC. REPORT NO .: 20 SURFACE IMPOUNDMENT CLOSURE SHEET 1 of KOPPERS INDUSTRIES, INC. BY: CMR GRENADA, MISSISSIPPI PLANT WEATHER: Sonry, Humid > rained approximately linch on Blin PRECIPITATION: (inches) TEMPERATURE: LOW 70 HIGH 92 CONTRACTOR PERSONNEL ON SITE: Joe Willing , Ricky Denny (also 3 truck drivers for Green & Green havled in EQUIPMENT EMPLOYED: Caterpillar D5H, International tractor w/ disk attachment INSPECTORS ON SITE: Clucis Rescher QUALITY CONTROL TESTS AND SAMPLES: Jeff Vence sampled sieve analysis and after burg limits the clay stock pile " twice a performed VISITORS ON SITE: None SUMMARY OF ACTIVITIES: Standing water in perimeter of atternoon, merddy areas was pomped out in the morning. In the Hem. 3 trucks hau help dry to of the cap were dick 501 and. stock Dilea clay in morning and atknoon in one area. Worked from 7:00 to

ATTACHMENTS:

\_\_\_\_\_\_SIGNITURE: Chuitan: M. Raw

WEATHER:\_ Hazy partly sunny Hot PRECIPITATION: O (inches) TEMPERATURE: LOW 70 HIGH 93 CONTRACTOR PERSONNEL ON SITE: Joe Willing John Tom Doubleday (left at 10:00 Am Hours worked 7:00 to 5:30

EQUIPMENT EMPLOYED: International Formall w/ disky Caterpuller 514. International w/ rubber timed compacter vobhller

INSPECTORS ON SITE: Chris Ruscher

QUALITY CONTROL TESTS AND SAMPLES: 2 50 mbles from strkpile #1 PI=12 78% passing server, 2 14 PI, RS% passing sieve (#200) - see below for more VISITORS ON SITE:

SUMMARY OF ACTIVITIES: Wet a reas (around portimeter) were disk and then recomported. Jeff Vance tested tilled, leveled ne results were ocutions Hum bolt #2 2492 ministore 97.1 19.7 #4 27.4% marstere 97.3% rel density vel densil 23.4 (Doc Willing) and le have to rework I said the

SIGNITURE: \_ Chuton M. Russ ATTACHMENTS:\_

<b>KEYSTONE ENVIRONMENTAL RESOURC</b>	ES, INC.
CONSTRUCTION INSPECTION DAILY	REPORT (Su
BEAZER MATERIALS & SERVICES, INC.	DATE: 8
SURFACE IMPOUNDMENT CLOSURE	REPORT NO
KOPPERS INDUSTRIES, INC.	SHEET 1 of
GRENADA, MISSISSIPPI PLANT	BY: <u>emr</u>

a na bara da d

WEATHER: Hot Humid Hazy in	morning sonny in atknoon
PRECIPITATION:(inches)	TEMPERATURE: LOW 70_HIGH_94
CONTRACTOR PERSONNEL ON SITE: Tom Doubleday (left at 2:00)	
John Suggs, Joe Winning	

Worked from 7:00 to 3:30

EQUIPMENT EMPLOYED: Intermbond farmell w/ disk, Caterpillar D5H

INSPECTORS ON SITE: Chris Rascher

QUALITY CONTROL TESTS AND SAMPLES: \_\_\_\_\_ MONE\_\_

VISITORS ON SITE: \_\_\_\_ none

SUMMARY OF ACTIVITIES: The cap for the LACO The capped was w/ an approximate cirid staked out 40 spacing - altern stock 3 vows by Tom +Len spread our the Cap soil was levelog moved soil from stakeds Joe W. John 5. e how 1:30 to 3:30. Not enough soil to cover last 501 x6" at north end. -50'250' \_\_\_\_\_SIGNITURE: Christian' M ATTACHMENTS:\_\_\_\_

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: 0 21/89 REPORT NO.: 03 SHEET 1 of 2 BY: CMR

and growing and

Hot WEATHER: Humid Sunn PRECIPITATION: 0 (inches) TEMPERATURE: LOW 74 HIGH 96 CONTRACTOR PERSONNEL ON SITE: John Sugas, Joe Willing Ton

7:00 to 7:30

EQUIPMENT EMPLOYED: 1 double axle dump haved in 4 load of clay, DSH dozer, John Deere frontend loader backhoe, Pex notohller, water truck, International Formall w/ disk, compactor \$ lime spreader INSPECTORS ON SITE: Chris Rescher

QUALITY CONTROL TESTS AND SAMPLES: Jef Ubnce 12:30 to 7:60 <u>70 moishine - vondom samples uncompacked</u> VISITORS ON SITE: John Green (awner of Green & Green)

SUMMARY OF ACTIVITIES: John Sugas, 10m Dasbleday, Rok level stakes 2 rocks (2-3 hours). Truck having Temoved more (Joe Willin) LAD Was and dozer leveled area clar 31/2 loads of bentonik were Cap was votohilled after each load of benton te was applied. The 52 addied near 11:00 AM. locd 1 he load Was (18,450 gross), the second weighed 14,170 lbs 13.450.1bs ATTACHMENTS:\_ \_SIGNITURE:

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

200 200 20

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DATE: B|21/89 REPORT NO.:23 SHEET 2 of 2 BY: CMR

SUMMARY OF ACTIVITIES (cont.): and the third land fourth Roto hilling 20,000 lbs . done ю was weighed 6 Hivst two tilling took each ind nn 674 looken bentoniter was no Vance e places rand 2 3% 7% 19,4 20% total at 7003 of 140). 120 random 10 dety comp MAG were ms t len oca 29% resu ISU all the rere. 1976 welt w aveas were atemp dozer decided to đ PWO ( cM DQC 10 M

ATTACHMENTS:\_

signiture: Chustrai M. Assoc

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

WEATHER: NON

SERVICES, INC. CLOSURE INC. I PLANT SUMMY Humid DATE: <u>8|22|89</u> REPORT NO.: <u>2</u> SHEET 1 of <u>3</u> BY: <u>CMR</u>

PRECIPITATION: (inches) TEMPERATURE: LOW 74 HIGH 99 CONTRACTOR PERSONNEL ON SITE: Joe Winning, Tom Doubleday, Joe Suggs, Ricky Denny

EQUIPMENT EMPLOYED: Interaction | Furmall w/ disk & compactor Bomas (Dmin.), D5H dozer under truck

INSPECTORS ON SITE: Chris Rascher

QUALITY CONTROL TESTS AND SAMPLES: Jef Vance took 7 monthe and 7 velochedonily us Humbolt at 11 locations. Took 2 shelly tubes. VISITORS ON SITE:

SUMMARY OF ACTIVITIES: John Succes compacted for 2 hrs rubber hred compator. Tom D. and Ricky D, ve placed blad noto hibd on leax ton this ω. Obvious wet spots Hem alittle . 50 min w/ Bomac to help day lorations encompasing the (onDection 1. hote testine. Dovcent mousthre and relative densi chosen for Hem bot were performed SIGNITURE: Chu ATTACHMENTS:

R - 81

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: <u>8 22/8</u>9 REPORT NO.:<u>24</u> SHEET <u>2</u> of <u>3</u> BY: <u>CMR</u>

SUMMARY OF ACTIVITIES (cont.):\_ times loca and # Ca lorr area.s ano rework The aveas sprondine ad inter that UISUAlly a a peoreo reworked other areas uns also reworke and water #11 The ne tested rea Dassed reworked arcas were area ₩3 did not. (see attached table avec mked ±., 1Cu aven 12/ assed sampli near ta Samples 100 + h0 10 PM Þ Nd 72 as to w contusion there was some 240125%. Jeff Vance 1105 ~ Dtrum MOISHA stated Was 24.27

SIGNITURE: Citutian M. Paus

ATTACHMENTS:\_\_\_

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a - James a catalogue 3053 CMR ( 24-1 tosts taken on 8/22/89 \*/p ST#1, ST#2 - sheldy tube sanples ତ୍ୟ 5 5 5 ° 3

approximate locations

	1st Sampling					
	% moisture %	•		2 nd Sampling	3rd Samj	duce
1	23.5 (25.8,25.2)	95.2 (94.8, 95.8) ( m/sta	din present	r	•	
2	25.0	95,5	passed	•#		
3	230	101.7	did not pass	fail	26,7	96.6
4	26,2	97.6	pers			pessed
5	ઽ૫.8	95.0	Pass			-
6	24,9	9 <b>3</b> .5	pes s			$\bigcirc$
7	25,3	97.3	pass			
8	<b>24.2</b> (26,3)	<b>95,3</b> (945)(rehst)	P455			
9	27,5	951	pcs>			
10	24.7	<b>93.</b> 7	Pass			
11	23.1	100.3	didnot pass	24.2 <b>%</b> 97.8	passed	

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BEAZER MATERIALS & SERVICES, INC.DATE:  $\frac{8|29|89}{REPORT NO.:25}$ SURFACE IMPOUNDMENT CLOSUREREPORT NO.:25KOPPERS INDUSTRIES, INC.SHEET 1 of 3GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER: SUNNY HOT. HUMID : MORNING AND AFTERNOON PRECIPITATION: TRACE (inches) TEMPERATURE: LOW 73 HIGH 95 CONTRACTOR PERSONNEL ON SITE:\_\_\_\_ GREEN & BREEN : JUE WILLING , RICKEY DENLEY , JOHN SUGGS EQUIPMENT EMPLOYED: CATERALLAR DSH DOZER, INTERNATIONAL FARMALL TRACTOR, BACK HOE, TWO TRALLER TRUCKS, RUBBER-TIERD ROLLER INSPECTORS ON SITE: TERRY KIRCHNER KEYSTONE QUALITY CONTROL TESTS AND SAMPLES: NONE VISITORS ON SITE: JEFF VANCE : MID-SOUTH TESTING SUMMARY OF ACTIVITIES: STAKTED AT 7:00 AM STOPPED AT MID-SOUTH TESTING TO GET RESULTS OF GRAIN SIZE AND ATTORBACE LIMITS TESTS, 78% 83% GRAIN SIZE (PASSING \$ 200 SINT): PLASTICITY INDEX : 15 ALRIVED AT SITE AT 7:45 AM. JOE AND RICKEY ATTACHMENTS:\_\_\_\_\_\_SIGNATURE: Time P. Kuthune-

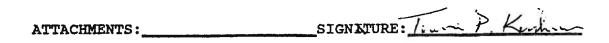
BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE: REPORT NO SHEET 2 of BY: TPK

SUMMARY OF ACTIVITIES (cont.): WENT TO GET AN ALTERNATE TILLER AS BOTH OF THE TWO PREVIOUSLY USED ONES ARE DUNN FOR REPAIRS RICKEY WAS BACK AT 8:45 WITH THE BACK HOE. TWO TRAILERS USED TO BRING IN SOIL FROM THE BORROW. JOE WILLING ISN'T SURE IF THE BORROW HAS ENOUGH CLAYEY SOIL FOR THE NEXT LIFT. MAY HAVE TO FIND A NEW PIT (JOE W.) AT 7:00 AM, JOHN, RICKEY AND JOE ARE TAKING GRIADE CHECKS AS THEY PLACE THE STAKES.

LIFT IS IN PLACE.

AFTER LUNCH, THE CREW CONTINUED TO PICK UP HOCKS AND JOE W. OPERATED THE DOZER IN OKDER TO SPREAD THE APRILING BORROW MATERIAL. ONLY ONE TRUCK IS DELIVERING MATERIAL NOW.



BEAZER MATERIALS & SERVICES, INC.DATE: 3/3/39SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 35KOPPERS INDUSTRIES, INC.SHEET 3 of 3GRENADA, MISSISSIPPI PLANTBY: TPK

AT 4:30 PM, A BRIEF SHOWER CAME THROUGH ; NOTHING SIGNIFICANT FELL.

THE LAST TRUCK LOAD WAS DELIVERED AT 5:40 AT. AT 5:45, THE NORTH HALF OF THE MANDAUT WAS BEING ROLLED AS THE SOUTH HALF WAS BEING "CLEANED-UP" ACCORDING TO GRADE STAKES.

BUEPRINT CHECK WILL BE DONE TOMORIZON,

FINISHED AT LID PM

ATTACHMENTS: \_\_\_\_\_\_\_\_SIGNITURE: Time P. Kinten

BEAZER MATERIALS & SERVICES, INC.DATE:30/8SURFACE IMPOUNDMENT CLOSUREREPORT NO.:KOPPERS INDUSTRIES, INC.SHEET 1 of gGRENADA, MISSISSIPPI PLANTBY:

WEATHER: HUT ID, OVERCAST A.M.; SUNNY BY 950 PRECIPITATION: <u>0.58</u> (inches) TEMPERATURE: LOW <u>73 HIGH 93</u> CONTRACTOR PERSONNEL ON SITE: <u>GROW & GROW: JOE WILLING, RICKEY DENLEY, JOHN SUGG</u>S, <u>LEDNARD LANIER</u>, <u>LLYDE MEYERS</u> EQUIPMENT EMPLOYED: FARM TRACEDR - IH 10 66, DISK IM PLEMENT, BACK HOE, SMALL GARDEN TILLER (MASCHID TYPE A), FORD TRACTOR INSPECTORS ON SITE: TERY KIRCHNER - KEYSTERF

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JEFT VANCE MID-SOUTH TESTING

THE TOP INCH OF TWO WAS WET FROM AN

BA2LY MORNING. SHOWER. JOE W. DECIDED TO LET IT AIR DRY A LITTLE BEFORE DISKING. AT 10:45, THE TOP 3 OR 4 INCHES WORE DISKED TO SPEED UP THE DRYING. AT 11:00, THE SMALL GARDEN TILLER WAS PROGHT ATTACHMENTS: \_\_\_\_\_\_\_\_SIGNATURE: THE A. Kinhix

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: <u>33689</u> REPORT NO.: <u>30</u> SHEET <u>3</u> of <u>3</u> BY: <u>TPR</u>
SUMMARY OF ACTIVITIES (cont.):
TO THE SITE.
AT 11:30, THE FRONT LEFT TIRE ON THE WATER TRUCK WAS CHANGED (DUE TO A FLAT)
AFTER LUNCH, THE CRAW RESUMED PICKING OF
HAD LOOSENED.
LEONARD & CLYDE LEFT AT 4:00 PM.
TESTOD THE NEW TILLER - MIXED SO.SO.
4:00 PM - LORDON BONTONITE : 15,000 165 (NOT)
4:30 PM - BEGAN SPRAYING BENTONITE
5:00 PM - BEGAN DISKING SUL/BENTONITE
5:25 PM - STARTED TILLING ; 4:20 STOPADD
10-10 PM - STARTED ROLLING , 6:25 STOPPAD
- ROLLOD BERAUSE OF 50 90 CHANCE OF RAIN.
FINISHED 6:30 AM
ATTACHMENTS:SIGNITURE: True P. Kuchne

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CONSTRUCTION INSPECTION DA	
BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: $8 3  89$ REPORT NO.: <u>27</u> SHEET 1 of <u>2</u> BY: <u>TPK</u>
WEATHER: FOGGY, PARTLY SUDNY A.M.	
PRECIPITATION:(inches) TEMPERA	TURE: LOW 74 HIGH 95
CONTRACTOR PERSONNEL ON SITE:	
GREEN & GREEN : JOE WILLING, F	LICKEY DENLEY,
JOHN SUGES, JOE DAVE MCC	LOSKEY
EQUIPMENT EMPLOYED: IH ISLE TRAC	TOR SPREADER,
DSH CAT. DOZER, DISK IMPLEMEN	•
INSPECTORS ON SITE: TERRY KIRCHNE JEFF VANCE : MID-SOUTH TEST	
QUALITY CONTROL TESTS AND SAMPLES: 10 (SEE ATTACHMENT)	
VISITORS ON SITE: NONE	
SUMMARY OF ACTIVITIES: APRIL	DOAM
THE SPREADER WAS LOADED WI	TH THE SROND
APPLICATION OF BONTONITE : WE	EIGHT = 15,450 165 (NT)
STARTED SPREADING AT 8-10	
DISKED THIS APPLICATION, BU	T LUILL ROTOTILL
THE THIRD APPLICATION OF	

ATTACHMENTS: 27-1 SIGNATURE: Think A. Kink

BEAZER MATERIALS & SERVICES, INC.DATE:8 31 80SURFACE IMPOUNDMENT CLOSUREREPORT NO.:0KOPPERS INDUSTRIES, INC.SHEET d of gGRENADA, MISSISSIPPI PLANTBY:

SUMMARY OF ACTIVITIES (cont.):\_\_\_\_\_ THE THIRD LOAD OF BENTONITE WEIGHED 15,380 165 (NOT) CALLED MIKE BOLLINGER (KEYSTONE) ABJUT ADDING EXTRA BONTONITE, HE SAID TO ADD ABOUT 5000 EXTER POUNDS SINCE THE REJULTS DE THE LAST LIFTS' PERMEABILITY TESTS WERE SO CLOSE TO THE DESIGN SPERS. THE FOURTH LOAD OF BENTONITE WEIGHED 5,940 165 (NET). FINISHED SPREADING BENTENITE AT 11:30 AM. DISKED SOIL / BENTENITE FROM 11:30 -12:00. TILED FROM 12:45 - 1:45. WATER WAS THAN APPLIED TO BRING UP THE MOISTURE CONTENT. AFTER WATERING, THE SOIL WAS ROTOTILED AGAIN AND THEN ROLLED WITH THE RUBRER-TIRED ROLLER. JEFF VANCE OF MID-SOUTH TESTING TOOK MOISTURE AND DENSITY TESTS (SEE ATTACHMENT FOR RESULTS ). SOME OF THE TESTS SHOWED EXCESS MOISTURE AND LOW COMPACTION. MORE WILL BE THEN TOMORROW. FINISHED 6:30 ATTACHMENTS:\_\_\_\_\_\_SIGNITURE: Turn P Kinh

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		ATTACHMEN	T <u>27-1</u>	BATE 8/31/89	$\bigcirc$
	TEST NO.	Po MoiSTURE	NOITS A4MOS		
	j	27.0	96.6		
	2	29.0	92.8	- 8	
	3	26.0	98.8	7 ° )	
	Ч	31.8	39.8	la	
	5	31.6	87.8	5	
	6	24.4	98.2	910	
	7	25.5	98.3	$\left\langle \begin{array}{c} 3 \\ 3 \end{array} \right\rangle$	$\bigcirc$
	8	27.0	95.le		$\bigcirc$
	9	26.5	94.5	2	
	10	26.0	96.3		
	11				
•	12				
	13				
	14				
	15				
				8.	

BEAZER MATERIALS & SERVICES, INC.DATE: 9 (187)SURFACE IMPOUNDMENT CLOSUREREPORT ND.: 28KOPPERS INDUSTRIES, INC.SHEET 1 of 2GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER: <u>SUBDY</u>, Hot, HUMIN PRECIPITATION: <u>O</u> (inches) TEMPERATURE: LOW <u>71</u> HIGH <u>94</u> CONTRACTOR PERSONNEL ON SITE: <u>SREEN & GREEN: JOE WILLING</u>, <u>RICKEY DENCEY</u>, <u>JOHN SUGGS</u>, <u>JOE NAVE MCCLOSKEY</u> EQUIPMENT EMPLOYED: <u>IHIGHE TRACTOR</u>, <u>CAT. 55H bord</u>, <u>DISK IMPLEMENT</u>

QUALITY CONTROL TESTS AND SAMPLES: MOISTURE AND DENSITY

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 A.M. SEVERAL AREAS APPEARED TOO WET; THEREFORE; THESE AREAS WERE DISKEN IN ORDER TO EXPEDITE THESE AREAS WERE DISKEN IN ORDER TO EXPEDITE THESE AREAS WERE DISKEN IN ORDER TO EXPEDITE WERE THEN ROLLED AND MOISTURE AND DENSITY TESTS I SERE TAKEN (SEE ATTACHNENT).

ATTACHMENTS: 28-1 SIGNITURE: Time & Kinch

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: 9/1/89 REPORT NO.: 35 SHEET 2 of 2 BY: TPK

SUMMARY OF ACTIVITIES (cont.):	-
SHELBY TUBES WERE THEN PUSHED INTO	
THE SOIL FOR PERMEABILITY SAMPLES.	
AT 10:00 AM., SAMPLES WERE TAKEN TO	
SPRINGER ENGINEERING IN STARKVILLE MS	
FOR TESTING.	_
RETURNED TO PLANT BY 3:00 PM. TO	
STORE EQUIPMENT THEN WENT TO HIRPORT	
FOR FLIGHT BACK TO DITTSRUZGH.	
	_
	-
ATTACHMENTS: 25-1 SIGNETURE: June P. Kun	k

>		ATTACHMEN	T 28-1	6ATE 9/1/29
	TEST NO.	90 MOISTURE	To MOITIAAMOS	
	ł	25.5	99.0	٥.٢.
	ನ	27.0	97.8	0.K.
	3	29.8/31.4	94.3/92.4	~~~ 4 lc
	Ч	31.7/28.7	91.0 /94.8	26
	¥ 5	25.5	99.7	ok
	1 6	24.3	99.8	ok
	7			3,5
	8			
	9			2
	10			
	11			
	12	•		APPROXIMATELY THE SAME
	13		LOCI	ATIONS AS NOS. 3 AND 4, DECTIVELY; HOWEVER, THEY
	. 14		L'SER.	E TAKEN 4 HOURS LATER.
	15			

BEAZER MATERIALS & SERVICES, INC.DATE: 9/9/86SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 39KOPPERS INDUSTRIES, INC.SHEET 1 of 3GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER: MILD & LOUDY IN MORNING I SUNNY, HOT HUMID IN AFTERNOON PRECIPITATION: 0 (inches) TEMPERATURE: LOW 73 HIGH 95 CONTRACTOR PERSONNEL ON SITE:\_\_\_ JOHN SUGGS 5. GREEN : RICKEY MANLEY SREW EQUIPMENT EMPLOYED: INTERNAL FARMALL WITH DISK. LASE \$50 DOZER (USNG CHISEL PLOW), INT. FARMALL WITH BENTONITE SPREASER, BOMAG RETOTILLER WATER TRUCK, CASE BACK HOE INSPECTORS ON SITE: TERY KIRCHNER QUALITY CONTROL TESTS AND SAMPLES: NONE VISITORS ON SITE: NONE SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 AM. JOHN SUGAS WAS USING THE DISK TO BREAK-UP SOIL FURTHER AFTER RICKEY DENLEY MADE A PASS WITH THE \$50 DOZER USING THE CHISEL PLOW TO LOOSEN SOIL. AFTIME THIS THEY BOTH WHE PICKING UP ANY ROCKS GREATER THAN SIX INCHES.

in	DIAMETER.	FURTHER	DISKING	WAS	THAN	DONE	
							•
<b>ΑΤΤΑ</b>	CHMENTS:		SIGNATURE:	1 krin	i P.	. Ruk	ni~

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE: REPORT NO SHEET 2 of BY: TPK

SUMMARY OF ACTIVITIES (cont.):
TO UNGVER ANY REMAINING POCKS.
AT 11:15, THE SPREADER WAS LOADED WITH THE
FIRST BATCH OF BONTONITE TO RE STEPAD.
AT 11:45, THE BENTONITE WAS SAKAND.
FIRST APPLICIATION: 15, 410 165 (NFT)
AT 1:00 PM, THE SOIL AND BONFONITE WAS
MIXED USING THE DISK.
AT 1:10 . THE BOMAG ROTOTILLER WILS USED TO
PROVIDE BETTER MIXING AND TO INSURE THAT
IT WAS PILKED TO A DEDTH DE SIX INCHES.
FINISHER TILLING AT 3:00 AM.
MORE LOOSE ROCKS LARGER THAN SIX INCHES
IN DIAMETER WERE REMOVED.
AT 3:15, THE SECOND APPLICATION WAS
LOADED INTO THE SPREADER? WEIGHT : 15,110 165 (NET)
3:50 STARTED TILLING SOIL BENTONITE USING
BOMAG TILLER AND SMALL (MASCHIO) TILLER.
TIHED LOAD OF BENTENITE WEIGHED 14,560 165 (NET)

ATTACHMENTS:\_\_\_\_\_\_\_SIGNITURE: Tenner P. Kinkn-

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

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DATE: REPORT N SHEET of BY: T

SUMMARY OF ACTIVITIES (cont.):
CALLED MIKE BOLLINGER (KEYSTONE) ABOUT
ADDING EXTRA BENTSNITE AGAIN ON THIS
LIFT AS WAS DONE ON THE LAST LIFT.
HE SAID TO GO AHAID AND ADD EXTRA.
FOURTH LOAD WEIGHED 7, 160 165 (NET)
THEREFORE TOTAL BENTONITE ADDED WAS:
15T 15.610 165
200 15,110
300 14,560
4 <sup>TH</sup> 7,160
TOTAL 50,440 165
AT 4:30 THE THIRD AND FOURTH LONDS
OF BONTON, TE WERE TILLED INTO THE SOIL
USING BOTH TILLES AGAIN.
FINISHED TILLING AT 8:30 PM
ATTACHMENTS:SIGNATURE: Turner P. Kinhm

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: 9 10 89 REPORT NO.: 30 SHEET 1 of 2 BY: TPK
WEATHER: SVERCHST, DRIZZLING (FAINLED LAST ,	
PRECIPITATION:(inches) TEMPERATURE:	LOW_11_HIGH_85_
CONTRACTOR PERSONNEL ON SITE:	
GROON & GROON . JOE WILLING (2	HRS)
equipment employed: N'SNE	
INSPECTORS ON SITE: TERRY KIRCHNER	······································
QUALITY CONTROL TESTS AND SAMPLES: NONE	
VISITORS ON SITE: None	
SUMMARY OF ACTIVITIES: ALRIVED AT 7:00	
APPZ=XIM ATELY ONE INCIT OF RAIN	FELL THOUGH
THE NIGHT SINCE THE RAIN WAS	NOT EXPECTED,
THE LIFT WAS NOT ROLLED LAS	T NIGHT.
THIS LEFT THE FAIN SATURATE T	
OF THREE IN GHES TO THE EXTEN.	-
WAS TOO WET TO DISK DRY	
ATTACHMENTS:	Frinci P Kindner

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Carlo a superior de la companya de l

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT SUMMARY OF ACTIVITIES (cont.): <u>I REPURED</u> TEUICE MORE DURING THE

SINCE THE SUN WAS OBSCURRED BY CLOUDS

ALL DAY THE SOIL NEVER DRIED.

÷ ;;

\_\_\_\_\_SIGNITURE: Terma D. Kinkner ATTACHMENTS:\_\_

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BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: $\frac{9/11/89}{1189}$ REPORT NO.: $\frac{31}{21}$ SHEET 1 of $\frac{3}{21}$ BY: $\underline{TPK}$
GALMADAY MIDDIDDIIII I MAMI	

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE: 9/1/89 REPORT ND.:31 SHEET 2 of 3 BY: TPK

SUMMARY OF ACTIVITIES (cont.):\_\_\_\_\_ THAT WATER CONTENT WAS IN EXCERS OF THE 24.2% ALCENTABLE MOISTURE LIMIT OF OPTIMUM 127.2 °lo TO ABOVE OFTIMUM DLUS LUNCH, STORM CLOUDS BEGAN TO MOVE AFTER THE 850 D TRACTOR TRACKED OVER نمز 50 THE SURFACE TO PARTIALLY ROLL THE TOP IN CASE IT RAINES. JEFF VANCE OF MID-SOUTH TESTING TOSK MORE SAMPLES AND BUTH WARE LOW (20 % AND 21.8%) INDICATING THAT MUCH MOISTURE HAD EVAPORATED IN SOME SECTIONS WHILE STHARS STILL APATALD WET. SINCE THE RAIN FROM SUNDAY MUSRIING ONLY WET THE TOP D'OR 3", MIXING OF THE WHOLE IS" MIGHT CREATE THE PERFECT MOISTURE. THEREFORE, THE FORD TRACTOR W/ MASCHIO TILLOR MADE TWO PHSSES BUT ONLY TILLED TOP 4"; 50 THE DISK WAS BROUGHT OLT IN SPEAR MIX THE FULL LE" SEPTH. TO THIS TIME, THE MOISTURE APPEARED SIGNATURE: Terimi ATTACHMENTS:\_\_\_\_\_

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: <u>9/11/89</u> REPORT NO.: <u>31</u> SHEET <u>3</u> of <u>3</u> BY: <u>TP4</u>
SUMMARY OF ACTIVITIES (cont.):	<u> </u>
TO HAVE DROPPED BELOW OPTIMU!	n, BUT
IT WAS TOO LATE TO BEGIN F	22DING
NATER, TILLING AND ROLLING	•
THEREFORE, THE TOP WAS ROLLE	A) IN CASE
OF RAIN TONIGHT.	
FINISHED AT LOS AM	

ATTACHMENTS: \_\_\_\_\_\_\_\_\_SIGNITURE: Trunce P. Kinhine~

BEAZER MATERIALS & SERVICES, INC.DATE:  $\frac{1}{2}/3^{\circ}$ SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 32KOPPERS INDUSTRIES, INC.SHEET 1 of 2GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER: AM! DUERCHST, MILD , 9:00 AM: MAZILY SUNNY HOT HUMIN PRECIPITATION: (inches) TEMPERATURE: LOW 7/ HIGH 4 CONTRACTOR PERSONNEL ON SITE: GREEN & GILFEN CONST RICKEY DENCEY, CLYDE MEYERS. EQUIPMENT EMPLOYED: IH IDEL: TRACTOR, DISK IMACON FUT, WATER TRUCK, RUBBER- TIRES ROLLER INSPECTORS ON SITE: TERLY KIRCHNER KEYSTONE JEFE VHNCE: MID-SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: MOISTORE AND DENSITY TESTS VISITORS ON SITE: JOHN GREEN (PRES. OF GREEN + GREEN ) SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 AM JEFF VANCE TOOK SEVERAL MOISTURE AND COMPACTION TESTS, THE RESULTS WERE RELOW SPECIFICATIONS FOR BOTH MOISTURE AND COMPACTION. THEREFORE, THE SOLL WAS DISKED IN PREPARATION OF ADDING WATER. BASED ON RESULTS OF THIS MORNINGS TESTS, ONE

ATTACHMENTS: 32-1, 32-2 SIGNETURE: Terrer P.

Lindn.

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

2.44

DATE: <u>912/89</u> REPORT NO.:<u>32</u> SHEET <u>2</u> of <u>2</u> BY: TPK

SUMMARY OF ACTIVITIES (cont.):\_\_\_\_ TRUCKLOAN OF WATER WAS AMED. THE SOIL WAS THEN DISKED ASHIN AND THEN ZOLLED WITH THE IH 1046 TRACTOR AND (SIX PASSES). FUBBAR- TIRES ROLLER SIX MOISTURE AND COMPACTION TEST WHE TAKEN AND ALL BUT ONE TEST FAILED IN FITHER MOISTURE OR COMPACTION DERCENTAGE THE SOIL WAS AFTER LUNCH DISKAD AGAIN TRUCKLOANS 4000 600 AND THIS TIME, TWO MORE WALE ADDED. THEN DISKED AND ROLLED (SIX AASSE AREAS WORD THEN TESTED FOR MOISTURE ELEVEN AND COMPACTION SEE ATTACHMENT LESULTS WERE ACLENTABLE. THEREFORE, TWO SHELBY TURE SAMPLES WERE DRIVEN AND THEN SEALED WITH WAX. SINCE IT WAS TOO LATE TO TAKE THOM TO THE LAB, WILL I TAKE THEM TOMORROW MORNING TO SPRINGER ENGINEBRING FOR ANALYSIS OF PERMOARILITY, FINISHAD AT 6:00 DM.

ATTACHMENTS: 32-1, 32-2 SIGNETURE: Time P. Kindimin

		ATTACHMEN	T <u>32-1</u>	LATE 9/12/89	$\bigcirc$
	TEST NO,	90 MOISTURE	Jo LONTO A4MOD		
	ł	21.4	104.3		
	え	29.2/24.3	91.3/93.6		
	3	20.9	107.6		
	Ч	22.8	103.3	5	
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	TEST NO,	NoiSTURE	Noito Aquad	-	
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	ಎ	24.7	97.8	. אد	11 10
	3	25.2	101-1	ok.	
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	7	25.9	103.1	35	654
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	11	27.2	94.7	った	
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BEAZER MATERIALS & SERVI SURFACE IMPOUNDMENT CLOSE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLAN	URE		DATE: 913 REPORT NO. SHEET 1 of BY: TPK	3
WEATHER: NOT APPLICA	ABIE			
PRECIPITATION: <u>~/A</u> (inche	es) TEMPE	RATURE	LOW_NIA_HIGH_A	<u>، / د</u>
CONTRACTOR PERSONNEL ON S	SITE: No.	NE		
<u> </u>			· · · · · · · · · · · · · · · · · · ·	
EQUIPMENT EMPLOYED:	DNE			
INSPECTORS ON SITE: NO	. <u></u>	SNE		
VISITORS ON SITE: محمد	Ŧ			5
SUMMARY OF ACTIVITIES:				
STOPPED BY MID-	SOUTH TE	STING -	TO PICKUP	
SAND SAMPLE TO T	HKE TO S	DRINGE	2 PNGINERALINI	s
FOR FALLING HEAD	PERMEABIL	ITY TE	ST AND	
RELATIVE DENSITY T				
_				
PERATIVE DENSITY 7 SHELBY TUBES FOR THEY SHOULD BE RE	ANALYSI	5 05	ARMER BILI-	<u> </u>

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	CONSTRUCTION INS	ENTAL RESOURCE PECTION DAILY	REPORT
SURFACE IN KOPPERS IN	TERIALS & SERVICES, MPOUNDMENT CLOSURE NDUSTRIES,INC. MISSISSIPPI PLANT	INC.	DATE: 9 REPORT N SHEET 1 BY:
	POURING RAIN		
PRECIPITA	rion: ? (inches)	TEMPERATURE	LOWHIG
CONTRACTO	R PERSONNEL ON SITE	: NONIE	<u> </u>
equipment	EMPLOYED: <u>^Gree</u>		
THODRORODO	ON STIPPA THREE	KURCHNER : KE	2X TONG
	S ON SITE: <u>TEAR</u>		75794E
QUALITY CO			-75750E
QUALITY CO VISITORS (	ONTROL TESTS AND SA	MPLES: <u> </u>	
QUALITY CO VISITORS C SUMMARY OF	ONTROL TESTS AND SAM	MPLES: NONE	DO ANY L
QUALITY CO VISITORS O SUMMARY OF	DNTROL TESTS AND SAND DN SITE: <u>None</u> Pactivities: <u></u> レル	MPLES: NONE	DO ANY L
QUALITY CO VISITORS O SUMMARY OF	DNTROL TESTS AND SAND DN SITE: NONE F ACTIVITIES: UN AIN INTENSITY	MPLES: NONE	DO ANY L
QUALITY CO VISITORS O SUMMARY OF	DNTROL TESTS AND SAND DN SITE: NONE F ACTIVITIES: UN AIN INTENSITY	MPLES: NONE	DO ANY L
QUALITY CO VISITORS O SUMMARY OF	DNTROL TESTS AND SAND DN SITE: NONE F ACTIVITIES: UN AIN INTENSITY	MPLES: NONE	DO ANY L

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE: 1019 REPORT NO. SHEET 1 of BY: TH

WEATHER: SUNNY, MILD PRECIPITATION: (inches) TEMPERATURE: LOW 45 HIGH 80 CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST : RICKEY DENLEY JOE DAVE MCLECKEY EQUIPMENT EMPLOYED: IH 1066 TRACTOR, FORD 3000 TRACTOR. Box SCRAPER, DRUM ROLLER INSPECTORS ON SITE: TELRY KIRCHNER : KEYSTONE QUALITY CONTROL TESTS AND SAMPLES: NONE VISITORS ON SITE: JOE WILLING : GILDON - GLEDN SUMMARY OF ACTIVITIES: 6+6 USED THE BOX SCRAPER TO GET A UNIFORM GRADE ON THE BENTSNITE SURFACE AND THEN AVLED THE DRUM FOLLER TO ALTHEVE A SMOOTH SURFACE. I APRILLAD AT 12:30 AM FROM PITTSBURGH AND TWO GOG MEN WERE DIGGING ATTACHMENTS: \_\_\_\_\_\_\_\_SIGNATURE: Teurce P. Kenhne

BEAZER MATERIALS & SERVICES, INC.	DATE: $10 9 5?$
SURFACE IMPOUNDMENT CLOSURE	REPORT NO.: 35
KOPPERS INDUSTRIES, INC.	SHEET $2$ of $2$
GRENADA, MISSISSIPPI PLANT	BY: TPK

SUMMARY OF ACTIVITIES (cont.):\_\_\_\_\_ SUT THE MUD FROM ALOUND THE TIMO PIPES WHICH ORIGINITULY FED INTO THE MPAUNISMENT. WHEN THIS WITS WEAR , THEY REPLACED THE AUD INSIDE THESE PIPES WITH A LEMENT MIXTURE IN SEDER TO ARMANENTLY SEAL THE PIPES. ENOUGH COMPUT LUAS MIKED TO BACKFILL THE PIPES TON FEET. THIS TOU FOOT BEGAN APPLOXIMITELY TON FET FROM THE TOP OF THE KEY TRONGH OF THE CLAY LAYER

FINISHOS AT 3 PM.

ATTACHMENTS:\_\_\_\_\_\_SIGNATURE: T. P. Kinhum

- 21

DATE: 10/10/89 BEAZER MATERIALS & SERVICES, INC. REPORT NO.: 34 SURFACE IMPOUNDMENT CLOSURE SHEET 1 of a KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT BY: TAK WEATHER: CLEAR, MILD PRECIPITATION: O (inches) TEMPERATURE: LOW 55 HIGH 79 CONTRACTOR PERSONNEL ON SITE: GAEDO & GAEDO CONST JOE WILLING, RICKEY DOULEY, JE DAVE ACCUESKEY EQUIPMENT EMPLOYED: It IOLG TRACTOR, FORD 3000 TRACTOR, Box SCRAPER, DEVIN LOLLOR, CASE 8500 DOZER INSPECTORS ON SITE: TELRY KIRCHNER : KEYSTONE QUALITY CONTROL TESTS AND SAMPLES: NONE VISITORS ON SITE: NONE SUMMARY OF ACTIVITIES: AREIVED AT 7:00 AM COT ONE 15' ROLL OF FILTER FARRIE IN HALF AND LAID IT ALOUND SOUTH END , EAST SIDE AND NORTHEND, ONTO THIS FABRIC SAND WAS PLACED, COVERING 3 FREE (2 FRET BEYOND THE SO' DISTANCE E FROM CENTER LINE). THE SAND TRUCKS BACKED ONTO THE LLAY

ATTACHMENTS: \_\_\_\_\_\_SIGNATURE: Turner P. Kinhver

BEAZER MATERIALS & SERVICES, INC	DATE: 13/13/89
SURFACE IMPOUNDMENT CLOSURE	REPORT NO.: 34
KOPPERS INDUSTRIES, INC.	SHEET 2 of 2
GRENADA, MISSISSIPPI PLANT	BY: TPK

SUMMARY OF ACTIVITIES (cont.):
LAYER IN ORDER TO SPOT-PLACE THE SAND
AND ELIMINATE EXCESS PUSHING OF THE SAN
INTO POSITION. ANY GROOVES MADE BY
THE TRUCKS WARE EITHER RELED WITH THE
DRUM ROLLER OR BACK-DRAGGED WITH
THE RLADE OF THE 850 D BEER REFOLE
ANY SAND WAS LAIN.
ABOUT HALF OF THE SAND REQUIRED WAS
DELIVERED TODAY.
FINISHAD 5:30 PM.
-
ATTACHMENTS: SIGNETURE: Town D. Kulu

KEYSTONE CONSTRU	ENVIRONMENTAL F CTION INSPECTION	RESOURCES, INC.
BEAZER MATERIALS & SURFACE IMPOUNDMENT KOPPERS INDUSTRIES, GRENADA, MISSISSIPP	CLOSURE INC.	DATE: 10/11/89 REPORT NO.:37 SHEET 1 of 3 BY: TAK
WEATHER: CLEAP	L, COOL	
		PERATURE: LOW 48 HIGH 84
CONTRACTOR PERSONNE	l on site: <u>4(6</u>	EN É GREEN :
JOE WILLING	RICKEY DE	ENLEY, JOE DAVE MCCLESK
	·	31
EQUIPMENT EMPLOYED:	8506 boze	P, TRAILER TRUCKS
INSPECTORS ON SITE:	TERRY KIRCH	NAR : KEYSTONE
•		
QUALITY CONTROL TES	TS AND SAMPLES:	NONE
VISITORS ON SITE:	NONE	
15110A0 OA 5112.		10 Uz
SUMMARY OF ACTIVITI	ES- AREINED	7:00 AM.
		5 7:30 AM DELIVERING
SAND .	IE Para ita	R OF THE FILTER
		527
FABRIC AROUND		
LEAVING ABO	2005	et open rok
TRUCK TRAF	FIC.	
ATTACHMENTS:	SIGN	VETURE: Termin P. Kinh

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BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT		DATE: 10/11/89 REPORT NO.:37 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.)		
WHEN THE SAND LI	FT LOOKED	-DLL,
THE TRUCKS WERE	STOPAD AND	THEY
CHECKED GRADE I	T LOOKS LI	KE ABOUT
A DOZEN LOHDS WI	LL STILL B	E NEDEN 5

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ATTACHMENTS:	_SIGN &TURE:	livensi	P. Kinhin

BEAZER MATERIALS & SERVICES, INC.DATE: 10123SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC.REPORT NO.: 35GRENADA, MISSISSIPPI PLANTBY: 1PK
WEATHER: SUNNY, MILD W/ MORNING FOG
PRECIPITATION: O (inches) TEMPERATURE: LOW 54 HIGH 85
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN !
JOE WILLING, RICKEY DENLEY, JOE DAVE M'CLEXKLY
EQUIPMENT EMPLOYED: 853 D DOZER
INSPECTORS ON SITE: TERRY KIRCHNER ! KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: JEFE VANCE : MID-SONTH TESTING
SUMMARY OF ACTIVITIES:
13 TRUCKLOADS OF SHAD WERE DELIVERED,
BRINGING THE SURFACE VERY CLOSE TO
GRADE SPECS.
THE GRAVE EDGES WERE FAKED TO BRING
THEN AS LLOSE AS AJSSIBLE TO A
4:1 SLOPE (H:V)
ATTACHMENTS: SIGNATURE: TERMI P. Kundme

BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10/12/39 REPORT NO.:3X SHEET 2 of 2 BY: TPK
GREMADA, MIDDIDDIFTI TEMAI	B1. <u>1PC</u>

SUMMARY OF ACTIVITIES (cont.): ET LOOKS LIKE ONE MORE LOAD OF SAND WILL BE NEEDED TO LLOSE GAP WHERE TRUCKS BACKED UP ONTO SAND. JEEF VANCE STOPPED BY AND E ASKED HIM TO COME TOMORROW FOR DRY DENSIT! TESTS AND TO GET A SAMPLE OF THE BOERON AIT'S SOIL TODAY TO RUN A NEW PROCTOR TEST ON IT. HE'LL GET SAMPLE TOMORROW.

FINISHED 5:30 AM.

ATTACHMENTS:	SIGNATU	æ:	Towne

P. Kunhuer

KEYSTONE	ENVIE	RONMENTAL	RESOURCE	ES, INC.
CONSTRUC	TION	INSPECTIO	N DAILY	REPORT

BEAZER MATERIALS & SERVICES, INC.DATE: 10/13/89SURFACE IMPOUNDMENT CLOSUREREPORT NO.:39KOPPERS INDUSTRIES, INC.SHEET 1 of 3GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER: SUNNY, MILD 19 AM. F36 ', AFTARNON HUMID PRECIPITATION: O (inches) TEMPERATURE: LOW 54 HIGH 75 CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN : JOE WILLING, RICKEY DENLEY, JOE DAVE MICLESKEY EQUIPMENT EMPLOYED: 850 D DOZER INSPECTORS ON SITE: TERRY KIECHNER KEYSTONE JEFF VANCE : MID-SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: DRY MENSITY TESTS VISITORS ON SITE: SUMMARY OF ACTIVITIES: FINISHED SAND LAYER AND TURNED FILTER FABRIC UP AND OVER THE EDGE OF THE SAND SO THAT THE GRAVEL COULD BE PLACED AGAINST THE BUTSIDE RIM OF THE CONDUCTING ZONE. \*\*\*

ATTACHMENTS:\_\_\_\_\_\_SIGNATURE: Time P. Knohman

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SURFACE KOPPERS	MATERIALS & SERV IMPOUNDMENT CLOS INDUSTRIES, INC. MISSISSIPPI PL	SURE	DATE: $10 13 89$ REPORT NO.: $35$ SHEET $2$ of $3$ BY: TPK
SUMMARY	OF ACTIVITIES (	cont.):	
JEFT	= VANCE OF	MID-SOU	TH PERFORMED
DRY	BENSITY T	ESTS W/ 1	TUMBOLDT
NUC	LAR MACH.	NE. TAR	GET DENSITY WAS
_CAL 0	CULATED ACC	ORDING TO	THE FOLLOWING
EQUA	TIGN :		
	m,	N. BRY DENSIT	Y X MAX DRY DONSITY
DRY	DENSITY = M	AX DRY DEN -	0.75 (MAX. D.D MW. DD.)
		e	KEN DEN)
DRY De	NSITY = 90	14 × 106.3	= 101.8
	106	·375 (10k.3	-90.4)
TETST	DRY WANSITY	Jo MOISTURE	
	108.9 o.K	5.7	<u> </u>
_ <u></u> 2	107.1 ak	5.7	
3	107.8 ok	5.9	
ч	10 le le ok	5.1	213
5	109,9 or	5.5	- 4
له	108.8 .	4.6	3
7	106.9	6.2	
8	10 kr.1 ok	4.9	
ATTACHME	NTS:	SIGNET	RE: Journa D. Kinhrim

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: 10/13/89 REPORT NO.:39 SHEET 3 of 3 BY: 7PK
SUMMARY OF ACTIVITIES (cont.): JEFF VANCE AND I WENT TO	
BORROW PIT TO GET A SAMPLE	
COVER SOIL LAYER SO THAT A	
PROCTOR TEST (ANALYSIS COULD	BE EVALUATED.
FINISHED AT 5:30 PM.	
B	
ATTACHMENTS:SIGNATURE:	mes P. Kulim

	KEYSTONE ENVIRONMENTAL RESOURCES, INC. CONSTRUCTION INSPECTION DAILY REPORT
SI K(	EAZER MATERIALS & SERVICES, INC.DATE: 10/14/89JRFACE IMPOUNDMENT CLOSUREREPORT NO.:40DPPERS INDUSTRIES, INC.SHEET 1 of TRENADA, MISSISSIPPI PLANTBY: TPK
W	EATHER: FOGGY, COOL
PI	RECIPITATION: O (inches) TEMPERATURE: LOW 55 HIGH 83
С	ONTRACTOR PERSONNEL ON SITE: <u>GREN + GREEN</u> :
	JOE WILLING, RICKEY DENLEY, JE DAVE MECLESKEY
EQ	DUIPMENT EMPLOYED: BACK HOE
<del></del>	ALITY CONTROL TESTS AND SAMPLES: NONF
VI	SITORS ON SITE: NOVE
	MMARY OF ACTIVITIES: FINISHED PLACING AGGREGHTE
su	MMARY OF ACTIVITIES: FINISHED PLACING AGGREGHTE WITH THE BACK HOE BY 9:00 AM. THEN STHERE
su	MMARY OF ACTIVITIES: FINISHED PLACING AGGREGHTE WITH THE BACK HOE BY 9:00 AM. THEN STHERE
	MMARY OF ACTIVITIES: FINISHED PLACING AGGREGHTE NITH THE BACK HOE BY 9:00 AM. THEN STARE TO RAKE IT INTO PLACE AND 4:1 SLOPE.
su	MMARY OF ACTIVITIES: FINISHED PLACING AGGREGHTE NITH THE BACK HOE BY 9:00 AM. THEN STARE TO RAKE IT INTO PLACE AND 4:1 SLOPE. JOLD JUE W. THAT HE NEEDED TO DO A
su	MMARY OF ACTIVITIES: FINISHED PLACING AGGREGHTE NITH THE BACK HOE BY 9:00 AM. THEN STHRE TO RAKE IT INTO PLACE AND 4:1 SLOPE. TOLD JUE W. THAT HE NEEDED TO DO A DUANTITY IN-PLACE SURVEY. HE'LL GET WITH
su 	SITORS ON SITE: NOVE MMARY OF ACTIVITIES: FINISHED PLACING AGGREGHTE WITH THE BACK HOE BY 9:00 AM. THEN STARE TO RAKE IT INTO PLACE AND 4:1 SLOPE. TO RAKE IT INTO PLACE AND 4:1 SLOPE. JOLD JUE W. THAT HE NEEDED TO DO A DVANTITY IN-PLACE SURVEY. HE'LL BET WITH NEAL TO SEE THAT IT IS DONE, FINISHED BY 12 MOON TACHMENTS:SIGNEGURE: TENING P. Kuchn

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KEYSTONE ENVIR			
CONSTRUCTION	INSPECTION	N DAILY	REPORT

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE:	- 10	15	89
REPORT	NC	·:-	TH.
BY:	-PK	-	

			COOL	, FOGGY		
PRI	ECIPITAT	NION: Ò	(inches)	TEMPERATURE	: LOW St	HIGH
co	NTRACTOR	PERSONNE	L ON SITE:	GREEN of G	ARIEN LO	sust:
	NEIL	TURNA	<u>sē, Joe</u>	WILLING	, Dours	BOYD
		×			-	ti.
EQI	JIPMENT	EMPLOYED:	TRANS	IT RON		
~						
IN	SPECTORS	ON SITE:	TERRY	KIRCHNER	KEYSTO	シード
011		NTROL TES	TS AND SAM	iples: home		
.201						
		ON SITE:	NONE			
V T S	SITURS C	A SIIE.				
					the second se	
			FS. ALL	2:00 Am		
 SUI	MARY OF	ACTIVITI	ES: AFR.	1:00 AM		-'rvpi
	VEIL ,	JUE AND	Nous	DID QUAR	-TITY 5	-rvp1
	YEIL ;	JUF AND SAND P	AND ALL	DID QUAR	27174 51 YER.	
	FOR FINIS	307 AND SAND 7 HED POT	100 ACC	DID QUAR DEEGATE LA AM. LEE	YER. JER.	UTTSBU
	FOR FOR FINIS	30F AND SAND F HED FOT 546 St	9:00 AND ALL	DID QUAR DEEGATE LA AM LEE DE THEIR	YER. JER. JER. JER. JER. TRUCKS	HRE
	FOR FOR FINIS	30F AND SAND F HED FOT 546 St	9:00 AND ALL	DID QUAR DEEGATE LA AM. LEE	YER. JER. JER. JER. JER. TRUCKS	HRE
	FOR FOR FINIS	30F AND SAND F HED FOT 546 St	AND ALL 9:00 AID ALL NGN'T +	DID QUAR DEEGATE LA AM LEE DE THEIR	YER. JER. J FOR A TRUCKS MTIL IC	4 RE 6 19 199

BEAZER MATERIALS & SERVICES, INC.DATE: 101881SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 42KOPPERS INDUSTRIES, INC.SHEET 1 of 2GRENADA, MISSISSIPPI PLANTBY: TAK

WEATHER: COLD, OVERCAST, INTERMITTENT ARIZZUM PRECIPITATION: TRAGE (inches) TEMPERATURE: LOW 10 HIGH 50 CONTRACTOR PERSONNEL ON SITE: GRIEN & GREEN COUST: JOE WILLING (SDAY), JOHN GREEN AND JTHORS FROM LONCRETE PLANT

EQUIPMENT EMPLOYED: 2025R

INSPECTORS ON SITE: TERRY KIRCHNAR ! KAYSTANE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NOWE

SUMMARY OF ACTIVITIES: APPINED FROM PITTSDURGH HEST 12:30 PM. JOHN GREEN AND OTHERS WERE SPREADING OUT FILTER FARRIC. A RAMP OF GVAR SOIL WAS BUILT ON WAST SIDE SO THAT THE TRICKS COULD BACK UP ANTO -A-T AND DUMP THEIR LOADS, ABOUT 3/4 OF SURFACE LUAS COVAGE WITH FABRIC. ATTACHMENTS: \_\_\_\_\_\_SIGNATURE: Town P. Kink

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: $10 18 89$ REPORT NO.: $12$ SHEET $2$ of $2$ BY: $124$
SUMMARY OF ACTIVITIES (cont.): THE TRUCKS STOPPED ABOUT 1:3 THE RAIN CHARE FORCING THE JO NOWN AS THE TRUCKS COULD A IT IN AND OUT OF THE BORN	or to shut
FINISHED AT 1:30 . WENT D. SMITH W NRILLERS AT S OF PLANT TO CHECK OUT PRSE	DUTH DUD
ATTACHMENTS:SIGNATURE:	in P. Kinding

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KEYSTONE	ENVIE	RONMENTAL	RESOURCI	2S, INC.
CONSTRUC	TION	INSPECTIC	ON DAILY	REPORT

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BEAZER MATERIA SURFACE IMPOUN KOPPERS INDUST GRENADA, MISSI	RIES, INC.	DATE: 101981 REPORT NO.: 13 SHEET 1 of 1 BY: TPK
	CAST, COLD, SUGHT	
	<u>0.1</u> (inches) TEMPERAT SONNEL ON SITE: <u>GÉCERI</u>	
JOE WILLIN	NEIL TURNAGE	Dova BoyD
EQUIPMENT EMPLA	DYED: NOVE	
	SITE: $Terry Kirchale$ tests and samples: $Ne$	
	L TESTS AND SAMPLES:	
QUALITY CONTROI	TESTS AND SAMPLES: No TE: NONE WITIES: INTERNIT	NE ANT DEIZZUE
QUALITY CONTROM VISITORS ON SIT SUMMARY OF ACTI AT PLANT	L TESTS AND SAMPLES: <u>No</u> TE: <u>Nor</u> E	NE INT DEIZZUE AT BOURDNI ANDA.
QUALITY CONTROL VISITORS ON SIT SUMMARY OF ACTI AT PLANT GROOM + GR	TESTS AND SAMPLES: No NE: NONE NITIES: INTERNITY SITE WITH RAIN	NE AT BEIZZUE AT BERRON AREA. SHUT DOWN AS
QUALITY CONTROL VISITORS ON SIT SUMMARY OF ACTI AT PLANT GREAN + GR TRUCKS CA	TESTS AND SAMPLES: No NE: NONE VITIES: INTERNITY SITE WITH RAIN DECIDED TO S N'T PULL THE HILL IT. FINISHED AT	NE AT BEIZZUE AT BORZON AREA. SHUT DOWN AS FRON THE

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BEAZER MATERIALS & SERVICES, INC. DATE: 10/20 REPORT NO. : SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. SHEET 1 of GRENADA, MISSISSIPPI PLANT BY: TPK WEATHER: SUNNY, COLD PRECIPITATION: (inches) TEMPERATURE: LOW 32 HIGH 55 CONTRACTOR PERSONNEL ON SITE: 6 Ren + 5 REPEN ! BENJY HOWARD B97D , 2306 EQUIPMENT EMPLOYED: DO LGP DOZER, IH TRIKTOR WY BOX SCRAPET, RUBBERT TIRD POLLER INSPECTORS ON SITE: TELRY KIRCHNER = KEYSTONE JEFF VANCE: MID-SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: COMPACTION AND MOISTURE TESTS W/ HEMADLDT TESTER (NUCLEA2 VISITORS ON SITE: JOHN GREEN, NOL TURNAGE : GREAT + GREAN SUMMARY OF ACTIVITIES: ARE. 7:00 AM 6+ G FINISHED LAYING OUT THE FILTER FABLIC AND THE SPREAD OUT THE FIRST LIFT OF THE COVER SOIL, FINISHED ROLLING THE FIRST LIFT BY 1:30 PM. JEFF VANCE OF MID-BOUTH TESTING TOOK COMPACTION AND MSISTURE TESTS W/ HUMBOLDT TESTER. ATTACHMENTS: 44-1 SIGNITURE: Town P. Kuch

BEAZER MATERIALS & SERVICES, INC.DATE: 10/20 87SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 44KOPPERS INDUSTRIES, INC.SHEET 2 of 2GRENADA, MISSISSIPPI PLANTBY: 1PK

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SUMMARY OF ACTIVITIES (cont.):
OPTIMUR MOISTURE IS 18 70. ALL TESTS
PASSED HAVING 29590 COMPACTION AND
± 5% OF OPTIMUM MOISTURE.
DIANE SMITH OF KEYSTONIE BEDUGHT THE
DRILLERS DOWN TO WORK ON THE SURPOUNDING
WELLS : STABILIZING MOST WITH A NOW
CONCRETE BASE AND RODA, RING REB (THE
WELL KNOCKED DOWN BACK IN JULY).
TRUCKS STARTED ABOUT 3 PM DELIVERING
COVER SOIL FOR SECOND 9" LIFT.
NEIL T. OF G+G SURVEYED FOR GRADE ONLY
WILL NEED A FEN MORE LOADS TOMOGROW
FINISHED Le PM.
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ATTACHMENTS:SIGNATURE: T.P. Kink

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		ATTACHMEN	- 44-1	LATE 10/20/89	$\bigcirc$
	TEST NO.	Jo MoiStule	NOITS A4MOS		
	1	15.1	95.1		
	ನ	14.6	132.5	( a g	
	3	1 Le .4	99.4	731	
	Ч	الوركة	104.1		
	5	14.5	106.1	6 5 11	
	9	15.0	991	6 5 4	
	7	15.5	1.00.1		$\bigcirc$
	8	14.6	95.4	123	$\bigcirc$
	9	14.3	105,3	123	
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BEAZER MATERIALS & SERVICES, INC.DATE: 18/21/89SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 45KOPPERS INDUSTRIES, INC.SHEET 1 of 2GRENADA, MISSISSIPPI PLANTBY: TPK
WEATHER: CLEAR, COLD
PRECIPITATION: 0 (inches) TEMPERATURE: LOW 32 HIGH 53
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN
BENJY HOWARD, DOUG BOYD NOL TORNAGE
EQUIPMENT EMPLOYED: IH JOLGE TRACTOR BOX SCHARZ,
DBOLGP DOZER, BACK HOE
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: JOHN GLERN ! GREEN + ERREN
SUMMARY OF ACTIVITIES: TWO TRUCKS DUMPED
THIS MORNING TO FILL IN LOW SPOT.
HEIL, BENIST AND DOUG TOOK GRADE
SURVEY. BENJY THEN LAN THE DUZAL
TO EVEN OUT THE SURFACE AND FIND OUT
11: MORZE SOIL IS NEEDED, AT 2:40 AM,
MORE TRUCKS CAME TO FILL IN GAPS AND
ATTACHMENTS:SIGNETURE: Time P. Kindow

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BEAZER MATERIALS & SERVICES, INC.DATE: 10218SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 15KOPPERS INDUSTRIES, INC.SHEET 2 of 2GRENADA, MISSISSIPPI PLANTBY: 724

SUMMARY OF ACTIVITIES (cont.):
TO STOCKPILE SOME SOIL FOR THE
BACKHOE TO PLACE SOIL AROUND EDGES
TRYING TO GET CLOSE TO 4:1 SLOPE.
LOOKS CLOSE TO GRADE AND WILL BE
CHECKED TOMORROW OR MONDAY,
FINISHED AT G AM
ATTACHMENTS:SIGNATURE: T.P. Kuchin

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 22 89 REPORT NO.: 46 SHEET 1 of BY:PK
WEATHER: CLEAR, COLD	
PRECIPITATION: O (inches) TEMPERATURE:	LOW 35 HIGH 55
CONTRACTOR PERSONNEL ON SITE: NONE	
	r.
EQUIPMENT EMPLOYED:	
INSPECTORS ON SITE:	
QUALITY CONTROL TESTS AND SAMPLES:	
VISITORS ON SITE:	
SUMMARY OF ACTIVITIES: ACKINGS 7:00	AM.
WAITED TWO HOURS - NO ONE	FROM GH & CHME.
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ATTACHMENTS:SIGNNTURE:	P.Kinhm

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BEAZER MATERIALS & SERVICES, INC. DATE: 10/23/8 SURFACE IMPOUNDMENT CLOSURE REPORT NO .: KOPPERS INDUSTRIES, INC. SHEET 1 of GRENADA, MISSISSIPPI PLANT BY: TPK WEATHER: CLOUDY, MILD PRECIPITATION: \_\_\_\_(inches) TEMPERATURE: LOW 45 HIGH 60 CONTRACTOR PERSONNEL ON SITE: GILDEN + GILDEN ; BENSY HOWARD, DOUG BOYD NOL TURNAGE EQUIPMENT EMPLOYED: <u>b30LGP b0Zal</u>, IH ISGG TRACE, Box SCRAPER INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE JEFF VANCE MID-SOUTH TESTING QUALITY CONTROL TESTS AND SAMPLES: [OMPACTION AND MOISTURE TESTS VISITORS ON SITE: JOHN GILLEN : GILLEN + GLEEN SUMMARY OF ACTIVITIES: ALR. 7 AM. PUSHED COVER SOIL TO MAKE GRADE, REPAIRED MINOR RIPS IN FILTER FABRIC AND SLOPES ENGES AROUND S.I. ABOVE GRAVEL. JEFE VANCE TOOK COMPACTION AND MOISTURE TESTS; COMPACTION WAS GOOD, BUT MOISTUR WAS MORE THAN 5 TO LOW RE THAN OPTIMUM. 4-1-\_\_\_\_\_SIGNATURE: True P ATTACHMENTS:

BEAZER MATERIALS & SERVICES, INC.DATE: 10/23/87SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 17KOPPERS INDUSTRIES, INC.SHEET 2 of 2GRENADA, MISSISSIPPI PLANTBY: TPK

SUMMARY OF ACTIVITIES (cont.):
JOHN GREEN INSISTAN THAT SOL WAS NOT
DRY. I CALUD MIKE BOLLINGER OF
KEYSTONE AND HE SAID TO GET ANOTHER
PROCTOR OR TWO AND THAT THESE WILL
BE COMPARED TO TODAY'S TEST RESULTS.
(ORIGINAL PRECTOR MAY NOT BE RARESOUTHTINE.)
CLEANED UP SURFACE WITH TRACTOR AND
Box SCRAPH2
FINISHED 7 PM
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antenia en la construcción de la c

ATTACHMENTS:\_\_\_\_\_\_SIGNETURE: T.P. Kul

		ΑττΑ CHMEN	т <u>47-1</u>	DATE 10/23/89	$\bigcirc$
	TEST NO,	Po MOISTURE	of MOITS AGNOS		
	1	13,4	111.4		
	ನ	13.9	94.5		
21	3	13.0	87.0	54	
	Ч	11.6	104.4		
	5	10.1	P, CCI		
	ما	9.4	102.6	4	
	7	13-0	102,0		$\bigcirc$
	8	_		1321	$\bigcirc$
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BEAZER MATERIALS & SERVICES, INC.DATE: 10/24/89SURFACE IMPOUNDMENT CLOSUREREPORT ND.: 48KOPPERS INDUSTRIES, INC.SHEET 1 of 2GRENADA, MISSISSIPPI PLANTBY: TPK
WEATHER: SUNNY, MILD
PRECIPITATION: O (inches) TEMPERATURE: LOW 50 HIGH 77
CONTRACTOR PERSONNEL ON SITE: GREAN + GREAN '.
BENJY HOWARD, DOUG BOYD, NEIL TURNAGE
EQUIPMENT EMPLOYED: D37612 D3762
INSPECTORS ON SITE: TERY KIRCHNER : KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: NOLE
SUMMARY OF ACTIVITIES: AR2 7 AM. DISCOVEREDS THAT EXTENSION DIMENSION OF
IMPOUNDMENT CAP WAS APPROXIMATELY TEN PET
SHORT ALL ARDIND CORRECTED THIS BY
LAYING DET FILTER LLOTH AROUND EDGE
AND PUTTING MORE SAND ONTO THE CLOTH.
BOTH MIKE B. AND JOHN G. KNOW ABOUT THIS.
ATTACHMENTS:SIGNATURE: T.A. Kuchun

BEAZER MATERIALS & SERVICES, INC.DATE: 10 34 89SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 48KOPPERS INDUSTRIES, INC.SHEET 30 of 3GRENADA, MISSISSIPPI PLANTBY: TAK

SUMMARY OF ACTIVITIES (cont.):
GILG OFDERED This MORE ROLLS OF FILTER
FABRIC WHICH ARE NEEDED TO FINISH
EXTENSION. SPECS WERE RELAYED TO
MIKE B. AND HE O.K THOM.
FINISHED BAST SIDE AND HALF OF WEST SIDE.
REMOVED WEST SIDE RAMP SO THAT
FABRIC AND SAND CAN BE ALACED THERE
To MORROW.
FINISHED 7 AM
10-1 Martin - Carl Martin - Carl
ATTACHMENTS:SIGNATURE: T.P. Kuch

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BEAZER MATERIALS & SERVICES, INC.DATE: 10125 89SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 49KOPPERS INDUSTRIES, INC.SHEET 1 of 2GRENADA, MISSISSIPPI PLANTBY: TPK

WEATHER: CLEAR, COOL PATCHY FOG PRECIPITATION: O (inches) TEMPERATURE: LOW 48 HIGH 8 CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN 1 DAY DOUG BGYD, BENJY HOWARD, NEIL T. EQUIPMENT EMPLOYED: BACK HOE INSPECTORS ON SITE: TELLY KIRCHNEZ KEYSTONE QUALITY CONTROL TESTS AND SAMPLES: NONE VISITORS ON SITE: JEFF VANCE: MID-SOUTH TESTING SUMMARY OF ACTIVITIES: AR. 7 AM. REMOVED FORD TRACTOR FROM SITE. LAID OUT FILTER FABRIC ALONG REMAINSOR OF DEST SIDE AND DOWN TOWARD SOUTH BUD. GOT THREE LOADS OF GRAVEL AND STARTED SPOTTING IT AROUND SAND OSGE WITH THE BACK HOE. ATTACHMENTS:\_\_\_\_\_\_SIGNETURE: T.P. Kunden

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SUMMARY OF ACTIVITIES (cont.):
JEFF VANCE OF MID-SOUTH TESTING
STOPPED BY TO RELAY RESULTS OF
NEW PROCTOR TESTS ON THE COVER SOIL
OPTIMUM MOISTURE PARCENTS ARE AS FOLLOWS:
SANDY SECTION - 14 90 OPT. MOIST.
CLAYEY SECTION - 1770 OPT. MOIST.
THEREFORE, RESULTS FROM 10/03 ARE OK.
FINISHED Le: 30 PM
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ATTACHMENTS:SIGNATURE: T.A. Kuk

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BEAZER MATERIALS & SERVICES, IN SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: $10 24/89$ REPORT NO.: $50$ SHEET 1 of $2$ BY: $TPK$
WEATHER: <u>CLEAR</u> , <u>LOOL</u> , PRECIPITATION: <u>(inches)</u> CONTRACTOR PERSONNEL ON SITE: <u>boug</u> <u>boyd</u> , <u>Bousy</u> <u>Ho</u>	GREEN + GREEN :
EQUIPMENT EMPLOYED: <u>b30 L6P 1</u> Bac SCRAPER, IH 1066	
INSPECTORS ON SITE: TERRY K	
VISITORS ON SITE: None	
4 IMMENIATELY THEREAFTE A QUANTITY SURVEY STATIONS AT TOP OF J- GRAVEL.	WITH SAND AND GRAVER DR NETL T. TOOK (X-SERT.) WITH E SAND AND BOTTOM AND BOTTOM
ATTACHMENTS:	SIGNETURE: T.P. Kunhnen

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: 10/26/89 REPORT NO.: 50 SHEET 2 of 2 BY: TPK

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SUMMARY OF ACTIVITIES (cont.):
THE DOZER PUSHED ABOUT 12 LOADS OF
COVER SOIL ONTO THE TEN FOOT EXTENSION.
MORE GRAVEL WAS ADDED TO THE SIDES AFTER
FABRIC WAS PULLED UP AT THE GORNERS.
Box subaper was Then used to SHAPE
UP THE SURFACE. LET ABOUT A FOOT
ON THE SIDES FOR SPILLOFF FROM THE
TSP SOIL TO BE ADDAD.
CALLED MIKE B. TO CHECK ON THE
POSSIBLE CHANGE IN GRASS SEED AS BERMUDA
PLOBABLY WON'T START HERE THIS TIME OF YEAR.
GIG KERSMMENDS RYE (AN ANNIAL) AND
FEBCUE AND SOME BERMUDA (FOR SPRING START).
ALSO, MIKE WILL CHECK ON CHANGING
ASPHALT TACK COAT TO CRIMP METHOD FOR
MULCH HE SHOULD KNOW BY TOMORROW,
FINISHED AT LE: 30 PM

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ATTACHMENTS:	_SIGNATURE:_	<u> </u>	Kuchner

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 27 89 REPORT NO.: 51 SHEET 1 of 2 BY: TPK
WEATHER: SUWNY, MILD	1
PRECIPITATION: O (inches) TEMPERATURE: L	ow_41_HIGH_81_
CONTRACTOR PERSONNEL ON SITE: GREAV + GREA	<u>کې کې ا</u>
DOUG BOYD, BOUTY HOWARD, NOL	TURNAGE (3)
EQUIPMENT EMPLOYED: BOULDP ASTAL, THISE BOX SERAPER	4 TRACTOR
INSPECTORS ON SITE: TAULY KIRCHNAL :K	LYSTONE
QUALITY CONTROL TESTS AND SAMPLES: ~ >>>=	
VISITORS ON SITE:	
SUMMARY OF ACTIVITIES: A22 7 AM.	
FINISHED GRADING COVER SOIL, NEIL-	T. TOSK
QUANTITY SURVEY WITH TOP TO	E OF THE
COVAL SOIL.	
STARTED TOP SOIL ABOT 9:30	Pm
STAPPED WHILE SURVEYING - RE	
11:30 AM, AGAIN WITH TWO TE	VCKS.
ATTACHMENTS:SIGN TURE:	A. Kinhun

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BEAZER MATERIALS & SERVICES, INC.DATE: 10 27 87SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 51KOPPERS INDUSTRIES, INC.SHEET 2 of 2GRENADA, MISSISSIPPI PLANTBY: TPK

SUMMARY OF ACTIVITIES (cont.): MORE GRADING WAS DONE ARDING THE GRAVEL EDGE, SPOTTING LOADS TO EVEN OUT THE EDGE, PLACED FILTER FABRIC OVER NE SIDE OF GRAVEL FOR FINIAL PUSH OF TOP SOIL

ABOUT\_ 5 Pm EXTRA TRUCKS BROUGHT 6-30 TOP SOIL UNTIL

FINISHED Le: 30 AM.

ATTACHMENTS: \_\_\_\_\_\_SIGNATURE: T.P. Kinh

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT DATE: 10/28/89 REPORT NO.:52 SHEET 1 of \_\_\_\_\_ BY:\_\_\_\_PK

WEATHER: 50007 Cool PRECIPITATION: 0 (inches) TEMPERATURE: LOW 40 High 78CONTRACTOR PERSONNEL ON SITE: 610207 + 510203

Bai JY HOWARD, DOUG BOYD

EQUIPMENT EMPLOYED: DBOLGP DO-ZOR

INSPECTORS ON SITE: TERRY KIRCHNAL : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: Nor

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR 7:50 AM RAKED OUT SIDES OF GRAVEL EDGE, NO TRUCKS UNTIL 9:30 AM. ALMOST ENSUGH TOP SULL BELIVERED TODAY. WILL NEED A FEW LOADS TOMORROW. WILL GRADE ON MONDAY. FINISHED 7:50 DM ATTACHMENTS:\_\_\_\_\_\_SIGNATURE: T.P. Kinhren

CONSTRUCTION INSPECTION DAIL	Ces, inc. Y report
BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10/2 REPORT NO SHEET 1 0 BY: TPK
WEATHER:	
PRECIPITATION:(inches) TEMPERATU	RE: LOWHIGH
CONTRACTOR PERSONNEL ON SITE:	
EQUIPMENT EMPLOYED:	
INSPECTORS ON SITE:	
QUALITY CONTROL TESTS AND SAMPLES:	
VISITORS ON SITE:	
VISITORS ON SITE:	

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BEAZER MATERIALS & SERVICES, INC.DATE: 10/36/87SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANTDATE: 10/36/87REPORT NO.:54 SHEET 1 of SSHEET 1 of SBY: TPK
WEATHER: PARTLY CLOUDY, MILD
PRECIPITATION: O (inches) TEMPERATURE: LOW 50 HIGH 82
CONTRACTOR PERSONNEL ON SITE: GROON + GROON '
Bensy HowARD, DOUG BOYD, NOL TURNAGE,
CHA, 2LES
EQUIPMENT EMPLOYED: D3CLGP D5ZER
INSPECTORS ON SITE: TELLY KIRCHWELL' KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES:
VISITORS ON SITE: JOHN GILCON : GILCON & GLOD
SUMMARY OF ACTIVITIES: APL 7:D AM
NEL T. BLUE-TOP SURVEYED WITH
BENJY + DOUG, THEN BENJY GRADED
TOP SOIL TO GET UNIFORM TOP SURFACE.
STRAW ARRIVAL ABOUT 9:30 AM.
LIME ARRIVAD 2:10 (= 1000 lbs). IT WAS
SPREAD WITH RENTAL SPREADER? DRIVER.
ATTACHMENTS:SIGNATURE: T. P. Kuchnin

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BEAZER MATERIALS & SERVICES, INC.DATE: 10 30 89SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 54KOPPERS INDUSTRIES, INC.SHEET 2 of 2GRENADA, MISSISSIPPI PLANTBY: TPK

SUMMARY OF ACTIVITIES (cont.):\_\_\_ \$50 15/AC × 0.8 AC 660 165 2:20 APPLIED APPROX 2:40 DISKED LIME AND FERTILIZER (2 PASSES SEEDS : (FALON TALL): 0% ENDU AHYTE, 9 5/89, 1) FESCUE LOT # 18-9-5-TF No. 023798 35 165 / ACRE HULLED BERMUDA: (2) 66050 1005 20 165/ACRE 3) RYE : 150 165 TOTAL COMPACTED LIGHTLY WITH TRACTOR - PULLED 4:40 - 5:10 pm. CULTI- PACKER SPREAD ~ 100 BALES OF STRAW BY HAND COMPACTED WITH TRACTOR-AULIED CRIMPER

8:00 PM FINISHED AT ATTACHMENTS:\_\_\_\_\_\_SIGNATURE: T.P. Kurhnen

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT DATE: 10 31 89 REPORT NO.:55 SHEET 1 of 2 BY: TPK

CONTRACTOR PERSONNEL ON SITE: GROON & GROON

BENTY HOWARD, DOUG BOYD

EQUIPMENT EMPLOYED: DBC LGP DBZER, BACK HGE

INSPECTORS ON SITE: TALLY KIRCHNEL! KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NOVE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARE: 7:00 AM. SPREAD 4-5 MORE BALES OF STRAN TO LOVAL ANY SPOTS LEFT FROM LAST NIGHT'S SPREADING. BULKED ALL LODSE PILES OF GRAVEL, SAND AND COURL STIL OVER ANTO ONE SERTION. DIG TRENCH AND APPLIED SOED & STRAW. ATTACHMENTS:\_\_\_\_\_\_SIGNATURE: T.P. Kunh

BEAZER MATERIALS & SERVICES, INC.DATE:  $10/31/8^{\circ}$ SURFACE IMPOUNDMENT CLOSUREREPORT NO.: 55KOPPERS INDUSTRIES, INC.SHEET 2 of 2GRENADA, MISSISSIPPI PLANTBY: -TPK

METER CHECKING GRADE OF THE TRENCH.

THE EDGE OF THE FILTER FABRIC WAS THEN OUT / TRIMMEN AROUND THE CAP.

RAKED GRAVEL TO SLOTE.

TOO DARK TO THRE FINIAL PICTURES TONIGHT

WILL GET THEM IN THE MORNING.

FINISHES AT LE PM.

ATTACHMENTS:\_\_\_\_\_\_SIGNETURE: T.P. Kuhnen

	STRUCTION INSPECTION	ESOURCES, INC. DAILY REPORT
BEAZER MATERIAI SURFACE IMPOUNI KOPPERS INDUSTE GRENADA, MISSIS	RIES, INC.	DATE: 11/1/6 REPORT NO.: SHEET 1 of BY: TPK
WEATHER:	L, HAZY, SUN	not.
		ERATURE: LOW 49 HIGH 7
CONTRACTOR PERS	CONNEL ON SITE: GREE	and by birlion cons-
NEIL TURNA	the , boug Boys	, BENJY HOWARD
EQUIPMENT EMPLO	YED: NONC	·····
	ананананананананананананананананананан	
INSPECTORS ON S	ITE: TERRY KIRCH.	NOK KEYSTONE
	ITE: TERRY KIRCH	
	TESTS AND SAMPLES:	
QUALITY CONTROL	TESTS AND SAMPLES:	
QUALITY CONTROL VISITORS ON SIT	TESTS AND SAMPLES: E:^」C~E	
QUALITY CONTROL VISITORS ON SIT SUMMARY OF ACTI	TESTS AND SAMPLES: E:^」C~E	L'ONE L'GREEN REMISSIEN
QUALITY CONTROL VISITORS ON SIT SUMMARY OF ACTI ALL OF TH	TESTS AND SAMPLES: E: VITIES: ER ER EMAINING	L'ONE L'GREEN REMISSIEN
QUALITY CONTROL VISITORS ON SIT SUMMARY OF ACTI ALL OF TH	TESTS AND SAMPLES: E: VITIES: ER ER EMAINING	KONE L GREEN REMOVED EQUIPMENT.
QUALITY CONTROL VISITORS ON SIT SUMMARY OF ACTI AUL OF TH I TOOK	TESTS AND SAMPLES: E: VITIES: ER ER EMAINING	KONE L GREEN REMOVED EQUIPMENT.

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# APPENDIX B

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# Soil Testing Data and Results

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# PERMEABILITY TESTING

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Springer Engineering, Inc. 206 Glenn Street Starkville, MS 39759 601-323-2296

September 29, 1989

MID-SOUTH TESTING LABORATORIES, INC. Attn: Mr. Jeff Vance 133 Mound Street Grenada, Mississippi 38901

RE: Permeability Analysis Kopper's Lagoon Grenada, Mississippi

Dear Mr. Vance:

Attached hereto is a recapitulation of test results obtained on samples submitted from the project referenced above. Please feel free to contact us should you have any questions concerning the information provided or if we may be additional assistance. Our invoice for services rendered is enclosed.

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We appreciate the opportunity to assist Mid-South Testing Laboratories on this project.

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Sincerely,

de L. Pritchard, P.E.

CP:cs

# PERMEABILITY ANALYSIS KOPPER'S LAGOON GRENADA, MISSI6SIPPI

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*DATE SAMPLED	DESCRIPTION	<u>COEFF. OF PERMEABILITY</u> (cm/sec)
7-31-89	Clay Liner - North Clay Liner - South	$1.4 \times 10^{-5}$ 8.2 x 10^{-6}
7-31-89	Coarse Sand Fill Harris-Pit	$6.9 \times 10^{-3}$
8-12-89	Clay Liner - S-1 Clay Liner - S-2	$1.4 \times 10^{-8}$ B.4 × 10 <sup>-9</sup>
8-22-89	Clay Liner - ST-1 Clay Liner - ST-2	$7.9 \times 10^{-8}$ 7.7 × 10 <sup>-8</sup>
9-1-89	Clay Liner - North Clay Liner - South	$4.2 \times 10^{-8}$ $6.2 \times 10^{-8}$
9-12-89	Clay Liner - North Clay Liner - South	$3.6 \times 10^{-8}$ 8.4 × 10^{-9}
9-12-89	Course Sand Fill	$5.6 \times 10^{-2}$

\*Samples Delivered To Laboratory By Keystone Environmental Consultants.

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# DRAINAGE LAYER

# **Sieve Analysis**

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TMD-602 MI REV. 4-70)	D-SOUTH TESTING L P. O. Box 147 - Grenada, Missi	415 First St	reet	
<u> </u>			MISS.	
PLANT LETTER			DAT	E 9-13-127
		PROJ. NO.	HEADEN	5 LAGOOR
		COUNTY	Colonia ;	, ,
MATERIAL 1-122 5A	<u>A:- ('</u>			//1
NO. CARS		QUAN. REF		
CONSIGNEE (.ICEn	+ (-recn	DESTINAT	10N 5:72	
CONSIGNEE ( ) CEN PRODUCER MAChing / 1.5	Stene	ADDRESS		
TYPE OF CONSTRUCTION TO				
	SIEVE ANALYS	IS (PER CENT	PASSING)	
CAR NO. SATISFACTORY CARD NO.				
2½ SIEVE				
2 <sup>···</sup> SIEVE 1½ <sup>···</sup> SIEVE				
1½" SIEVE				
1'' SIEVE				
الله SIEVE				
3/8" SIEVE	100			
No. 4 SIEVE	98.6	1	- 128 17 1002 13.	
No. 8 SIEVE No. 10 SIEVE	89.5			
No. 10 SIEVE No. 16 SIEVE	87.5			
No. 20 SIEVE				
No. 30 SIEVE				
No. 40 SIEVE No. 50 SIEVE	35.0			
No. 50 SIEVE No. 60 SIEVE				
No. 80 SIEVE	1.3			
No. 100 SIEVE				
No. 200 SIEVE	0.7			
PER CENT LOSS ON WASH COLOR TEST				
FINENESS MODULUS	8			
· · ·				
This material has been inspec	ted and is			for use in the above
construction.				
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REMARKS:			<u> </u>	
Distribution:		SIGNED	41.11	and
Original to Testing Engin			1110	
1 copy to District Engine 1 copy to Project Engines		/	// ·	MATERIALS INSPECTOR

(

- 1 copy to Project Engineer; 1 copy for Plant File.

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MATER	IALS	INSPE	ECTOR

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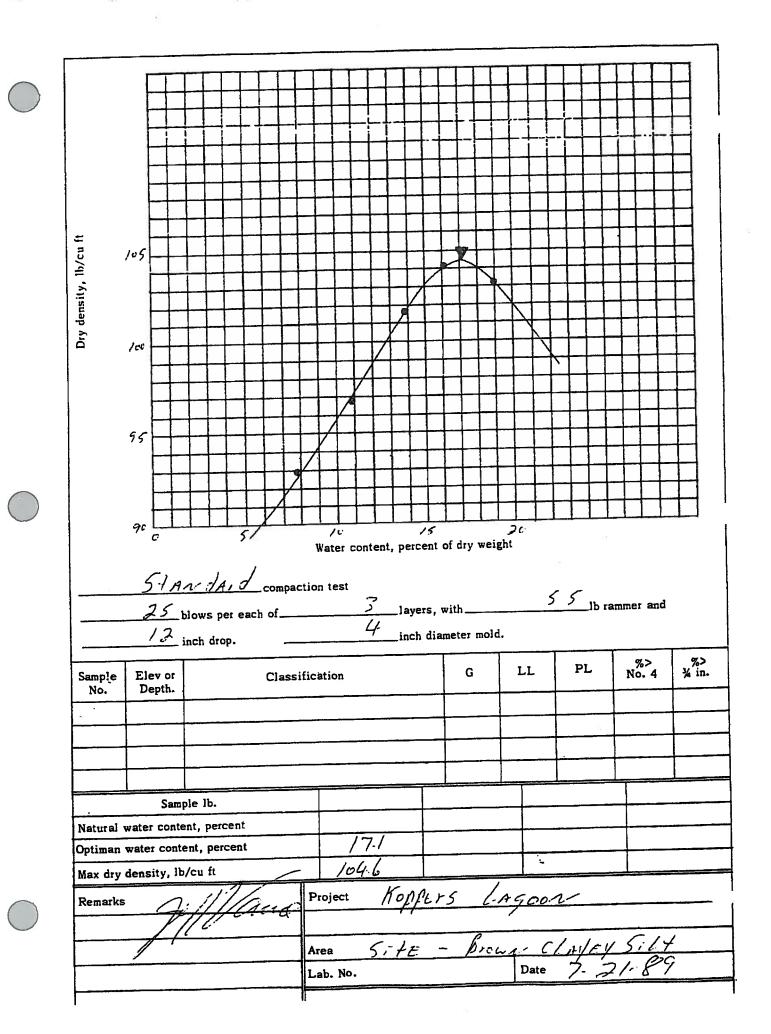
## STANDARD PROCTOR TESTS

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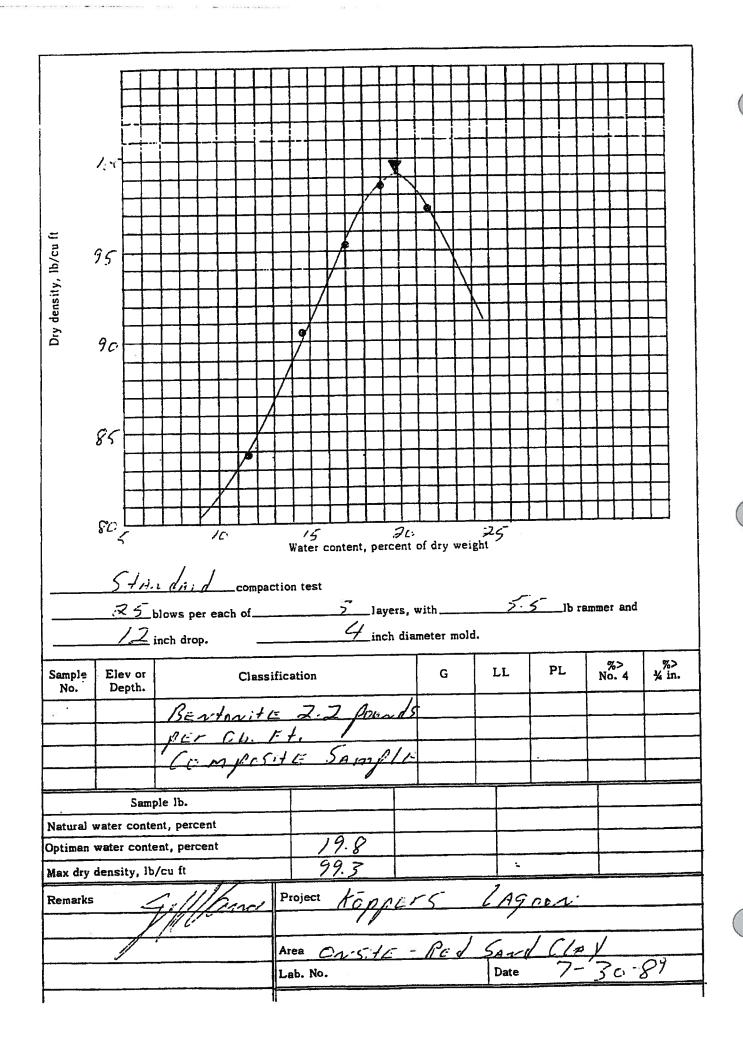
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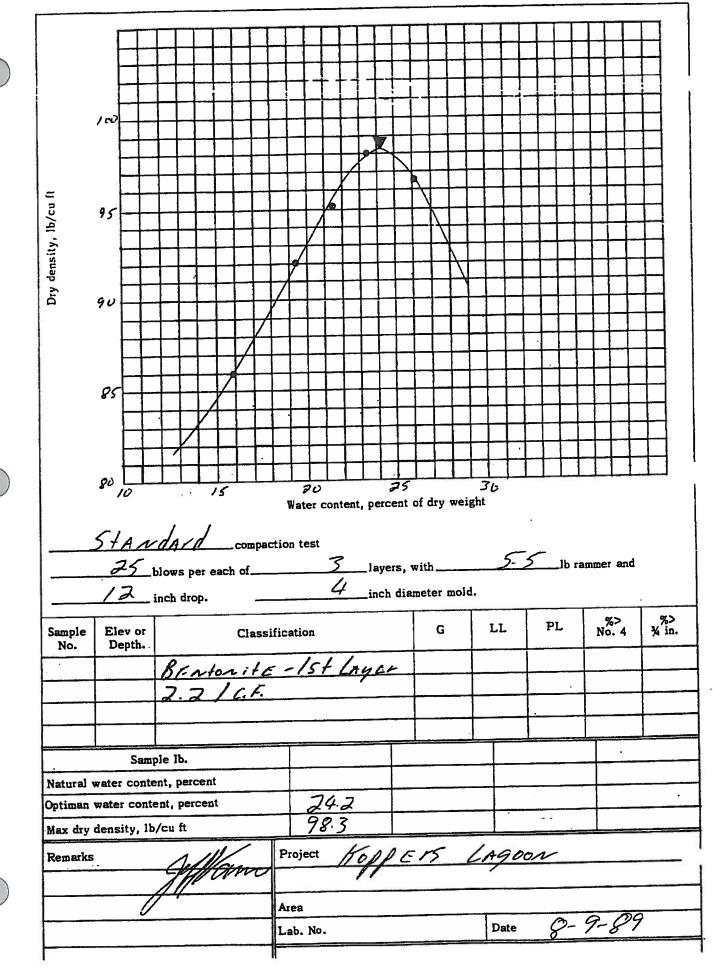


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му,				+	┝┤		$\downarrow$				-+	$\uparrow$	1-	┝─╉	+	╀─	┼─┤	-+-	+-	$\square$	$\mathbf{H}$	$\top$		
iens	┣─┨			┼╌┥	╂─┤	+	$\Lambda^-$	╉─	$\vdash$			-†-	$\mathbf{k}$											
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2	95	- [				1								$\square$	_	+	┦┦			-	$\left  \right $	_+		
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				-	1/4	-+	+		-		┝╌┤		+	$\left  \cdot \right $		+-	┼┨	-+-	-+-	┼─	┼┼	-+		
				+	$\left\{ -\right\}$			+-		┼──	$\left  \right $	+		+	-+-	+	┼╌┥	-+	+	+-	+	-+		
	90		╋╍╉╼	+	┼┤		╉	+	+		$\left[ - \right]$		+-		+	1								
		8		f			╈	+-	+															
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			IZ					1	1								+		+-	┿	+-+	$\vdash$		
	85 L		<u>[]</u>	10				15		<u> </u>		30	<u> </u>									<b></b>		1
	>																							
. • .	51	A,2 .	la,	<u>d</u>	com	pact	ion	test				cent					_							
	51	<u>An</u> _blow	s per	d each	.com	pact	ion	test	•	3	_lay	eis,	with	נ			5	5	1ь	гал	omer	and	I	
	51.	<u>An</u> blow	s per	each	.com 1 of	pact	ion	test	•	3	_lay	eis,	with	נ			5.	5	1Þ	гал. 				
	51.	_blow _ inch	s per	each	1 of	pact:	ion '	test	•	3	_lay	eis,	with	נ				1	1P	ram		and 	7. 14.1	;> in.
Sample	51. 25 12 Elev or	_blow _ inch	s per	each	1 of		ion '	test	•	3	_lay	eis,	with	ег п				1		ran				;> in.
Sample No.	51. 25 12 Elev or	_blow _ inch	s per	each	1 of		ion '	test	•	3	_lay	eis,	with	ег п				1		ran				;> in.
Sample No.	51. 25 12 Elev or	_blow _ inch	s per	each	1 of		ion '	test	•	3	_lay	eis,	with	ег п				1		fân				,> in.
Sample No.	51. 25 12 Elev or	_blow _ inch	s per	each	1 of		ion '	test	•	3	_lay	eis,	with	ег п				1		fan				,> in.
Sample No.	51 25 12 Elev or Depth.	_blow _ inch	s per drop.	each	1 of		ion '	test	•	3	_lay	eis,	with	ег п				1		ſâπ				;> in.
Sampļe No.	51 25 12 Elev or Depth.	_blow _ inch	s per drop.	each	1 of		ion '	test	•	3	_lay	eis,	with	ег п				1		fân				5> in.
Sample No.	51 25 12 Elev or Depth.	_blow _ inch	s per drop.	each	1 of		ion '	test	•	3	_lay	eis,	with	ег п			L	1		ſÂΠ				;> in.
Sample No.	SA Sa water con	_blow _inch	s per drop.	each	1 of		ion '	ion		3	_lay	eis,	with	ег п				1		fan				
Sample No.	Sa water cor density,	_blow _inch	s per drop.	each nt nt	Cla	ssifi	ion icati	ion	7.	3	_1ay	eis,	with	G	nold.			1	PL					;> in.
Sample No. Natural Optiman Aax dry	Sa water cor density,	_blow _inch	s per drop. b. percen ft	each nt nt	Cla	ssifi	ion icati	ion	7.	3	_1ay	h di	with	G	nold.		L 		PL					;> in.
Sampļe No. Natural Optiman Aax dry	Sa water cor density,	_blow _inch	s per drop. b. percen ft	each nt nt	Cla	ssifi	ion icati	ion ////	7.	3	_1ay	h di	with	G	nold.		L 		PL					;> in.

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	F	┼╌╀							_		$\left\{ - \right\}$		╞╌┼╴	+-				-+-	╉╍┪╸	╉╋	
	10	ŢŢ		$\downarrow \downarrow$		┼┼		+	$\rightarrow$		┼╌╂	+		+	┝╼╋	-†-	╉╼╂				
	-	++	+-	++		┼┼	-+-	┼╌┨						$\mathbf{I}$			$\square$				_
											$\left  \right $	Æ	$\left  \right $	+			┼╌┤		╉╉		
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/cu	95	++	-+-	┼╌╂	-+-	┼┨	+							$\bot$	П	X			++		<b>  </b>
Dry density, 1b/cu ft	E						$\square$			$- \downarrow$			┼╋	+	$\left  \cdot \right $	+	+	┝╌┼╴	╌┼╾╂		
ensit	-	╶┨╌┥		+		┽┥			$\left  \right $	Æ	╀╴		++								
ry d		┥┥	_	++	-+-				Z		1		$\square$		$\downarrow$		+	┝╌┼		_	$\left\{ - \right\}$
	90							+	$\mu$	3	+-	┝╌┠╸	┼┼	_	+		╉╌	┼┼			+-1
	ŀ			+			$\vdash$	$\forall$		┝╶╂╴	+			1							$\Box$
	ŀ							1			T					-		╀╌╄		$\vdash$	+-
	85						A	+-	┢	┝╌┼	┿	┼╌┼╴	++	+	┿	$\left  \right $		++			
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	Ì	-				1			T	$\square$	_	$\square$	╧╋	_	+-	┨╌╂		┼┦		$\left  \right $	+-+
	ľ				14		┨╋		╀╴	╂╌╂	+	┼╂	+	-+-	+	$\dagger$					
1	ا چ ح				1 'o			15	_J	<u></u>	- <u>-</u> -	70			25						
	5						Wa	ater	cont	ent,	perc	ent ol	dry v	veißt	LC .		Q.				
	StA	n 1	 pr:	d	c	ompa	ction	test													
	7	б h	lows	per e	ach (	of			5	2	laye	rs, w	ith			5.	5	_lb r	amme	r and	
		<u> </u>							4		inch	diam	eter n	old.							
														T				۰L		%> 0.4	%> ¾ in.
Samp	Le Ele	v or			0	Class	ificat	tion					G		LI	9.		i	No	o. 4	-% in.
. NO		oth. J													_	_			1		
No.		pth.	Re		ton	; F			2.	2	Doi	and the									
		pth.	<u>Br</u>	<u>^'</u> Y	tos ru	i † 1 h: (	[		2. }	2	pni	-						69	<u> </u>		
		pth.	ße. pi	~^^ ~ Y	<del>tол</del> (и	î †1 h:(			2. }	2	ρηι	-					1	8			
		pth.	ße. pi	<u>^'</u> Y	tos Cu	;+1 _b:(	- <u>[</u>		2. }	,2 /	ροι						3	8			
			<u>Br</u> pi=		<del>tол</del> [и	і+1 <u>b:(</u>	- /·	<u>.</u>	2.	,2 /	ρηι							8			
Natur	De	Samp	ole lb. nt, pe	ercen	t	;+1 b:C	- /.	<u>.</u>										8			
Natur Optim	ral water	Samp conte	ole lb. nt, pe ent, pe	, ercen ercen	t	ī+1 Ь.С			2	2.6	2							8			
Natur Optim	De	Samp conte	ole lb. nt, pe ent, pe	, ercen ercen	t	;			29	2.6	2 7 7							5			
Natur Optim	Tal water man water dry densi	Samp conte	ole lb. nt, pe ent, pe	ercen	t .t	<u>i</u> + 1 <u>b</u> :(		oject	29	2.6	2 7 7		-5		49			6			
Natur Optim Max o	Tal water man water dry densi	Samp conte	ole lb. nt, pe ent, pe	ercen	t .t		Pro	oject	29	2.9 8.9 K	2 2 2 2 7					<u>c</u> c					
Natur Optim Max o	Tal water man water dry densi	Samp conte	ole lb. nt, pe ent, pe	ercen	t .t		Pro	oject	29	2.9 8.9 K	2 2 2 2 7				1						for i



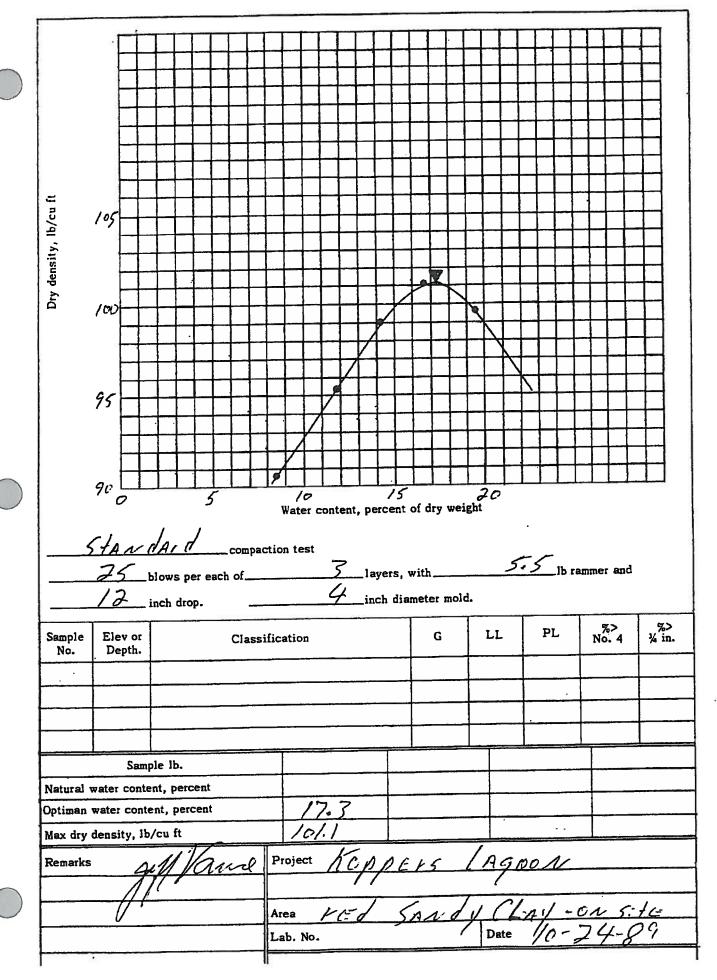


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Dry density, lb/cu ft	105 100 95 90 5																wei												
Sample No.	25 12 Elev or Depth.	inch d	drop 	•		Cla			 -	/		in	ch (	dia		G	no](	4. 	LI			PI		-		6> 5. 4		×9	;> in.
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2 <del>-1-1</del>	Sam	ple lb	),					Π											T										
	water conte							$\square$	 										·						<u> </u>				
-	water conte			ent				-	 			0	+						╀						-				
Max dry Remarks	density, Ib	.11	17	n	T.	æ		Pro	 ct	00 	h	[ 0]	 1_/	21=	· / :	5	1	4	A;	50	0				 				1
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							- 11																						

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Dry density, lb/cu ft	105																												
Dry de	100										7																		
	95							/	7																				
	9 <sub>C</sub>			5	4	+		/( Vate	I C					nt c				ght	υ										
	51A 25 12	blows	<i>A<u>r</u>i</i> s per drop	r eac	_co	mpac		n te:	st	3 2	4	lay inc	yers :h d	, w ian	ith. ete	r m	old	•		5.	5		lb r	amı	mer	an	đ		
Sample No.	Elev or Depth.				CI	assi	fica	tion	ı							G		1	LL			PL	,		% No.	,> . 4	T	% ¾ ii	> 1.
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	San vater cont water cont		erce	_																									
Max dry d							-+	10	<u> 4</u>  .	-			+				<u></u>		2				320	$\neg$					
Remarks		Ħ	ļĮ	<i>Cà</i>	n	e e		ojec	t	Ko		ρ	E	ŁS		7	A	<i>q</i>	@ c	4	, ,								
							Are Lat	a 5. N	_	- ;;	<u>+                                    </u>		-	E .	<u> </u>	1			Date	<u>~ (</u>	//			24	4-	-8	29		

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## SOIL-BENTONITE LAYER

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## Atterberg Limits

### MID-SOUTH TESTING LABORATORIES, INC. P. O. Box 147 - 133 South Mound Street Grenada, Mississippi 38901 Report on SOIL SAMPLES Lab. Nos.\_\_\_\_\_ Proj. No. Keppers Lagren Road\_\_\_\_\_ County Carented Submitted by Mid Scutth Testing Sampled by Marce Reported to Krystene Ever Date Sampled 7 31-8 Producer\_ONS:16 Scil. (raw Scil) Date Received\_\_\_\_\_\_ 7 31-89 8.2.89 \_\_\_ Date Reported\_\_\_\_ TEST RESULTS\* Lab. No. Sample No. Station No. Depth\_\_\_\_ PHYSICAL CHARACTERISTICS Liquid Limit 20 Plastic Limit Plasticity Index SH kage Limit nkage Ratio Centrifuge Moisture Field Moisture Volume Change MECHANICAL ANALYSIS no %Pass No. 10 Sieve 90.1 %Pass No. 40 Sieve Fo. %Pass No. 60 Sieve %Pass No. 200 Sieve 19. %Pass No. 270 Sieve q % Silt 10 % Clay % Colloids Dust Ratio\*\* Consistency\_ HCL Reaction GROUP U. S. C. Est. CBR Bearing Capacity

\*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Hf ance Reported by\_\_\_

)	МІ	P. O. Box	TESTING LA 147 - 133 Sou nada, Mississ	uth Mound	d Street			
Report on SOIL SAMPLES	S						,	
Lab. Nos					Proj. No	Koppe.	15 LAGO	C. 2
			1		Country	Gran	ada	
Road				<u></u>				
Submitted by Mid	Schtl	1 TC	sting	·	_ Sampled l	by UA.	NCE	
					Data Sam	pled	7.81	
Reported to 11-61	STONE	<u> </u>			_ Date San	ipied		<u> </u>
Submitted by Mid Reported to Kill Producer ONS: 1.	E SA.	mple	5		_ Date Rec	eived		
		1			Data Da-	orted	-0-09	?
Bentun toper- Cu. Et.	10- 1-	7 P. J.	TEST RESU	LTS*			<u> </u>	
SENTEN. TOPEY- Cu. Ft.	I FOLY de	- FCusci						
Lab. No.		7	3			[	<b></b>	ļ
Sample No.	//							
Station No.								
Depth	<u>]</u>	PH VSIC	CAL CHARA	CTERIST	ICS			
	<u>-</u>				1	T	1	1
Liquid Limit	30	32	34					+
Plastic Limit	20	20	17					+
Plasticity Index	10	12	13	·		<del> </del>		+
Shrinkage Limit			*i			<u> </u>		+
Shrinkage Ratio			<u></u>	÷		╂		- 2
Centrifuge Moisture					<del>_</del>			1 .
Field Moisture					+			+
Volume Change		<u>_</u>			1	<u> </u>		
		MEC	CHANICAL A	ANALYSIS	5			
Or De La Maria 10 Cierro	100	100	100					<u> </u>
%Pass No. 10 Sieve	97	91	90					<u> </u>
%Pass No. 40 Sieve	61	63	59					
%Pass No. 60 Sieve	34	73	3/					
%Pass No. 200 Sieve								
%Pass No. 270 Sieve	<u> </u>							
<u>% Silt</u>	f							
<u>% Clay</u>		34			1			
% Colloids	<u>+</u>		1		I	1		1
Dust Ratio**	<u> </u>	<u> </u>	††			1		
Consistency	+		11					
HCL Reaction	+		<u> </u>			1		
GROUP	<u>+</u>		11					1
<u>U. S. C.</u>	+	l	11		1			1
Est. CBR	<u> </u>					<u> </u>		
Bearing Capacity	1	L	J			20		

\*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by

\*Particles above 0.074 mm. in diameter by sieve method; particles belo hydrometer method. \*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve. All SAMPLES had 2.2pds per CL. F.t. bir Fore Additional Bentowite WAS Added. Reported by Jeff ane Reported by\_

A REAL PROPERTY AND A REAL

Report on SOIL SAMPLE	S						,	
					Proi. No.	KEDPER	s lagres	
Lab. Nos	2014	÷				The .		
Road								
Submitted by Mid	South Z	Testin	9		_ Sampled	by UP	NCE	
		-				0	-9-89	
Reported to KE45	tene L	Uil.						
Producer ONSite	-BEFORE	BEN	tonita	£	Date Rec	eived		
					Date Rep	orted \$	-10-89	
			TEST RES	111 TS*				<u></u>
			1231 K23	+	T	1	1	
Lab. No.								
Sample No.								
Station No.			·					
Depth			1					
		PH YSI	CAL CHAR	ACTERIST				
Liquid Limit	33	35				<u> </u>		
Plastic Limit	19	20						
Plasticity Index	14	_15						
S' pkage Limit								-
a inkage Ratio			1					
Centrifuge Moisture								
Field Moisture						+		
Volume Change			1		1	L		
		ME	CHANICAL	ANALYSIS	5			
%Pass No. 10 Sieve	100	100						
%Pass No. 40 Sieve	93.	95				+		
%Pass No. 60 Sieve	89	90						<u> </u>
%Pass No. 200 Sieve	87	85						<u> </u>
%Pass No. 270 Sieve								
% Silt								
% Clav								
% Colloids			1					
Dust Ratio**	T				1			
Consistency								
HCL Reaction					1			<b> </b>
GROUP	1							<b> </b>
U. S. C.		1						<u> </u>
Est. CBR								
Bearing Capacity							_1	1

\*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Mance Reported by\_

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Report on SOIL SAMPLE	-5				• .	,	
Lab. Nos				Proj. N	o. Koppe	15 LAJ	CON
Road				County	Gree	15 LAY LADA	
		<u> </u>					
Submitted by Mid	South	16STI	19	Sample	d by//	NCE	
Submitted by Mid Reported to Key	1540-1		/	Date S:	ampled	- 11-89	
Reported to <u>122</u>	151026						
Producer 15+ / Afr	- BENto	crite		Date R	eceived		
/				Date R	eported	-14-89	
		Т	EST RESULTS	*			
Lab. No.							
Sample No.	1	2					
Station No.							
Depth							
<u></u>		PHYSICA	L CHARACTE	RISTICS			
Liquid Limit	38	37					
Plastic Limit	20	19					
Plasticity Index	18	18					
Shrinkage Limit							
Shrinkage Ratio							
Centrifuge Moisture							
Field Moisture							
Volume Change		L_					
		MECH	IANICAL ANA	LYSIS			
%Pass No. 10 Sieve	100	100					
%Pass No. 40 Sieve	94	95					
%Pass No. 60 Sieve	88	9/					
%Pass No. 200 Sieve	86	86					
%Pass No. 270 Sieve				<u> </u>			
% Silt					·		
% Clay							
% Colloids							
Dust Ratio**							
Consistency							
HCL Reaction		L			<u> </u>		
GROUP		<b>_</b>		<u></u>			
U. S. C.							
Est. CBR		<b> </b> -					·
Bearing Capacity		ll					l

\*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

A THE REPORT OF THE PARTY OF TH

Jeff! anci Reported by

Report on SOIL SAMPLE	S					Kaa	- 1	
Lab. Nos			·····		_ Proj. No	hepper	<u>s lago</u> da	$r\nu_{-}$
					County	C. r.C.A.M.	da	
Road					_ county	<u>· · · · · · · · · · · · · · · · · · · </u>		
Road	1 South	Test	1. 2. 4		Sampled by	1_1/A2	CE	
Submitted by							-10.09	
Reported to KI-61	Stone.				Date Samp	led	18 81	-
Reported to		- 11		· cuil	Data Baca	ived		
Producer UNS. tc Sto	CKP.LE.	- INd IA	LJET-PAL	SUL	_ Date Rece			2
			7		Date Repo	rted	- 19-87	
		· · · · · · · · · · · · · · · · · · ·	TEST RESU	11 TC*				
	*		IESI KESU		<u>,                                     </u>		1	
Lab. No.								
Sample No.		.2						
Station No.		<b></b>			·			
Depth		<u> </u>	CAL CHAR	ACTERISTI	CS			
		St		T T	T		1	1
Liquid Limit	32	34		<b></b>				
Plastic Limit	20	20		<u> </u>				
Plasticity Index	12	14		<u></u>				
Sr 'nkage Limit								
nkage Ratio		<u> </u>						
centrifuge Moisture	+			1				
Field Moisture							1	
Volume Change	1	1	CHANICAL	ANAL YSIS				
				1	1		1	
%Pass No. 10 Sieve	100	100						
%Pass No. 40 Sieve	90	95		+	1			
% Pass No. 60 Sieve	85	89						
%Pass No, 200 Sieve	18	83						
%Pass No. 270 Sieve								4
% Silt								+
% Clay								
<u>% Colloids</u>								
Dust Ratio**								
Consistency	-+	+						+
HCL Reaction							<del></del>	+
GROUP							_ <u>_</u>	
<u>U.S.C.</u>		1						
Est. CBR Bearing Capacity	+							
pedring capacity							• • • • • • • • • •	

\*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Jeff and Reported by

	м	P. O. Box	147 - 133	LABORATOF South Mound sissippi 38901	Street			
Report on SOIL SAMPLE	S							
Lab. Nos			24		Proj. No	Keppi	15 LAGO	<u>.1/</u>
Road					_ County	Gre	15 LAGO	
Submitted by Mid	Sec. th	Test	1.2 9		Sampled I	by L'An	.66	
Submitted by <u>M</u> .d Reported to <u>Mz.us</u>	4-16	<u></u>	/		Date Sam	inled 8	2589	ĵ
	·	Stor K	PIE-	- KAL is 1	Data Ras	oived		
Producer <u>Onsit</u> THIND LIF	$c = -S_{c-1}$	5 F(C /1	// [ [	1744 3116-		erveq	29.81	;
······································					_ Date Rep	orted <u>d</u>	01.51	
			TEST RE	SULTS*		1		
Lab. No.						{	<b>_</b>	<b>_</b>
Sample No.		7				ļ	+	
Station No.								<b></b>
Depth		DUVCIO		RACTERISTI	~ <	I		<u> </u>
		PHYSIC		KAC IEKISIN			· · · · · · · · · · · · · · · · · · ·	1
Liquid Limit	35	57		_				
Plastic Limit	20	/						
Plasticity Index	/5	16						
Shrinkage Limit								
Shrinkage Ratio							+	
Centrifuge Moisture					· · · · · · · · · · · · · · · · · · ·	<u> </u>		+- ·
Field Moisture								+
Volume Change		MEC		ANALYSIS			_ <b>L</b>	
	110 (0)	(				·····		1
%Pass No. 10 Sieve	10:0						+	+
%Pass No. 40 Sieve	91	- 73 - 90					+	+
%Pass No. 60 Sieve	86						<u> </u>	+
%Pass No. 200 Sieve	ÇC:							+
%Pass No. 270 Sieve								1
% Silt					·····	t		1
% Clay			·					1
% Colloids						t	1	1
Dust Ratio** Consistency						1	1	
HCL Reaction				1 1		1	1	1
GROUP								
U. S. C.					······			
Est. CBR								
Bearing Capacity								<u> </u>

\*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

\*\* Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Jeff and Reported by\_

ACCEPTION AND ADDRESS OF ADDRESS

Report on SOIL SAMPLE	ES S							
Lab. Nos					Proj. No. Krffers Ingan			
	1				_ County_ Granda			
Road 4th LiF	<u> </u>	. <u></u>		<u></u>	County	( re not	<u> </u>	<u></u>
Submitted by Mi	1 Scuth	TEST	ing			y IAAA		
		_			Data Sami	oled <u>9-</u>	5.89	
Reported to <u><u>n</u>Ely</u>	Stert				Date Sam	Jieu		<u> </u>
Reported to KEL	stock 1	DIE-	YAW SO	11.	Date Rece	eived		
Producer						0 ~	09	
					_ Date Repo	orted <u>9-7</u>	-J/	
		······	TEST RESUL	TS*	······		5	
			1001 12002				I	1
Lab. No.	1							
Sample No.		7						
Station No.								
Depth					~ C		•	
	1-1	PHYSI	CAL CHARAC	TERISTIC	~2		r	
Liquid Limit	34	33						
Plastic Limit	20	19						
Plasticity Index	14							
She age Limit								+
								+-()
Centrifuge Moisture			<u></u>					
Field Moisture								
Volume Change							1	
		ME	CHANICAL AI	VALYSIS				
%Pass No. 10 Sieve	100	100	1				<u> </u>	
%Pass No. 40 Sieve	90	91						
%Pass No. 60 Sieve	83	87				<u> </u>		
%Pass No. 200 Sieve	77	8 K						
%Pass No. 270 Sieve						<u> </u>		
% Silt				<del></del>				
% Clav							+	
% Colloids		6						
Dust Ratio**			+			<u> </u>		
Consistency			<u> </u>					
HCL Reaction			.↓			<u> </u>	1	
GROUP					<u> </u>	<u> </u>		
U. S. C.			<u> </u>		<u> </u>			
Est. CBR			╉					
Bearing Capacity			_ <u></u>					

\*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

All ance Reported by\_

## BACKFILL DENSITY TESTS

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ana ana amin'ny faritr'i amin'ny tanàna amin'ny faritr'orana amin'ny faritr'

		MID-SOUT	TH TESTING L	ABORATORIES	S, INC.		
226-74	15		FIFT D DENSI	ΤΥ DATA			enada, MS
	15 opports Ligera	1 unto GEE	1 Ada	District		_Frane	
	- 1/A 2 CL	COMPONENT: (C	ircle one)	MATERIAL: (ci	rcle one)	_ IREAIMENI	
		<b>0</b> • • • • • •	Pasa	Sand Clay, Semi	i-Gr., Clay-Gr. L	ime (% by Wt.): 1st	Appi
Depth Mea	asured Inches	Block Base	Binder Base C	1855		2nd	l Appl
				esign Depth	inchesC	ement (% by Vol.)_	
Unit of De	eviationB						
1. Sectio	n No.		2	3	4	5	6
2. Test I	No.	7-24-89		7.24.69	7-24-89	7.24.89	7-24-54
3. Date		1-24-81			1		
4. Time							
5. Statio	n	A 4 . 11	South	North	CENTER	South	Sou th
6. Locat		15+ 1.F+	151 1.1.1	Davill.Ft	Judl.Ft	2. dlint	2. 11.Ft
7. Depth		151 [	13: 6:11	71.9.8			
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
isture	10. Moisture Count						
8	11. Moisture Count Ratio						
<u> </u>	12. Moisture, PCF						
	13. Standard Count						
ity	14. Density Count 15. Air-gap Count(If Used)						
Densily	16. Density Count Ratio						
	17. Wet Density, PCF						
<u> </u>	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	19.1	18.0	20.5	22.7	18.7	18.9
	From Standard	104.6	104.6	104.6	1046	104/	104%
ansit	20. Density Curve 21. Standard Density Curve Number	104.6	<u> </u>				
Standard Density	In-Place Density	95.8	961	96.4	97.6	96.5	97.0
anda	22. % of Standard 23. Specified percent of 23. Standard Density	95	95	95	95	95	95
	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER OWNE						
1	of Samples in Lot braic Sum of Deviations in Lo	ot					
	from SV -Algebraic sum of Lo No. of Smpls in Lo						
	braic spm. of deviation pplicable lots				-		
	nl No. of Samples Used						
	1 Dev. applicable lots = Bik 27 Bik 28						
	ibution:	- 01			Nell	ance	,
				Signed	THE		
				Title	11' 5.1	. 7.	
				4 1116			

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Title	

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26-74	15		FIELD DENS				Grenada, MS
	Keppers Lagues	Country (+2)	· ·· A da	_ District		Frame	
echnicia ift	- l'Ance	_COMPONENT: (c Course: Basem	ircle one)	MATERIAL: (c	ircle one) Indy, Silty, Clayey	TREATMENT:	
epih Mes				Class		2	nd Appl
	viationE		ī	Design Depth	InchesC	Cement (% by Vol.	<u>)</u>
ut of De						1	
. Section	n No.		Ø	9	/c	11	
. Test ?	No	7-25-84	7-2559	77009	7-2589	7-21-29	
Date		1-25-81	1-1> 51	173.31	1. 2. 2. 4.		1
. Time							
. Statio	n <sup>17</sup>				6111	13.14	
. Locati	ion	CENTER	SOUTH	roitli Bidlift	1.11 / 11	111 1 1	/
Depth		3rd Litt	5101.11	SIdLift	Utthe Lift	910 1.17	+
Sta. L	imits Sect. Being Tested			<b> </b>			+
	9. Standard Count						+
15	10. Moisture Count						
	11. Moisture Count Ratio					<u> </u>	<u> </u>
)	12. Moisture, PCF			ļ			
	13. Standard Count				ļ		
	14. Density Count						
Density	15. Air-gap Count(If Used)						
Dei	16. Density Count Ratio					<u> </u>	
	17. Wet Density, PCF						
st ucs	18. Dry Density, PCF						
Value	19. Moisture Content, %	14.6	130	14.9	15.8	166	<u></u>
	· From Standard	101.2	101.2	101.2	101.7	101.7	
ensi	20. Density Curve 21. Standard Density Curve Number			1			
D	In-Place Density	100.5	961	1047	1032	79.8	1
Standard Density	22. % of Standard Specified percent of 23. Standard Density	95	95	95	95	95	
	of Samples in Lot praic Sum of Deviations in Lo			-			
	from SV =Algebraic sum of Le No. of Smpls in Lo			<u>+</u>	2		
		·					
	braic sum of deviation oplicable lots						
	No. of Samples Used		<u> </u>		+		
S. Avg 1	Dev. applicable lots = Blk 27 Blk 28		<u> </u>			1/	
Distri	bution:			Signed	<u>J:111</u>	1aur	<u> </u>
					111C	( T	
				Title	1		

		MID-SOU	TH TESTING I	ABORATORIE	S, INC.		
226-74	415		FIELD DENS	ITY DATA		G	irenada, MS
1	Experis Lagran	Course Gr	EnitedA				
	•						
	an <u>IAACL</u>						
	easured Inches			Sand Clay, Sem	i-Gr., Clay-Gr. L	.ime (% by Wt.): 1s	t Appl
				Class			
Unit of D	DeviationE	Base	I	Design Depth	InchesC	ement (% by VoL)	
1. Section							
2. Test	No.	12	13		15	16	17
3. Date		7-26-81	7-26-89	7-2689	7-21-89	7-27.89	72781
4. Time							
5. Statio	n						
6. Locat	tion '						
7. Depth		5+16.Ft	511.1.Ft	letter L.F.t	lette L.F.t	7HI. L.Ft	711 LiFi
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
nre	10. Moisture Count						-
<sup>1</sup> oisture	11. Moisture Count Ratio						
	12. Moisture, PCF						C
	13. Standard Count						
	14. Density Count						
Densily	15. Air-gap Count(If Used)						
å	16. Density Count Ratio						
	17. Wet Density, PCF						
	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	15.8	189	180	16.9	168	17.7
	From Standard 20. Density Curve	101.2	101.2	701.2	101.2	101.2	101.2
Dens	21. Standard Density Curve Number			,			
Pre	22. In-Place Density 22. % of Standard	97.8	101.6	1036	104.1	103.1	102.3
Standard Density	23- Specified percent of Standard Density	95	95	95	95	95	95
24. No. 0	of Samples in Lot						
1 -	praic Sum of Deviations in Lot						
26. Dev.	from SV = Algebraic sum of Lot No. of Smpls in Lot						
	braic sum of deviation oplicable lots				-		
	No. of Samples Used		1				
g1	Dev. applicable lots = $\frac{Blk 27}{Blk 28}$						

Distribution:

Fiff anne S.C.T. Signed Title.

		MID-SOU	JTH TESTING	LABORATORII	ES, INC.	•	
226-	7415		FIELD DENS	SITY DATA		c	Grenada, MS
Project_	Keppers Ligo	Gebeunty Con	1 not dis	District		Frame	
Technic	ian LAACC	COMPONENT:	(circle one)	MATERIAL: (4	circle one)	TREATMENT:	
		Subbase		Band Clay, Sen			
Lot Size	e	Block Base					
Unit of :	Deviation	Base	. <u></u> I	Design Depth	inches	Cement (% by Vol.)	)
1. Secu	ion No.					1	
2. Test	No.	18	19	20	21	2.2	23
3. Date	, · · · · · · · · · · · · · · · · · · ·	· · · · ·					
4. Time	•						
5. Stati	on	1					
6. Loca	ition	N	5.	N	5	7	5
7. Dept	h _	8# 1.11	844 1.F4	9+1/2 (. F.+	9th LiFt	10+1. (.F.+	10+1.L.F.
8. Sta. 1	Limits Sect. Being Tested						
	3. Standard Count						
oisture	10. Moisture Count						
Mois	11. Moisture Count Ratio						
$\bigcirc$	12. Moisture, PCF						
	13. Standard Count						200
~	14. Density Count						
Density	15. Air-gap Count(If Used)						
õ	16. Density Count Ratio						
	17. Wet Density, PCF						
st ucs	18. Dry Density, PCF						
Values	19. Moisture Content, %	18.8	168	18.9	18:5	16.6.	18-5
sity	From Standard 20. Density Curve	101.2	101.2	101.2	151.7	101.2	101.2
Den	21. Standard Density Curve Number				,		
Standard Density	22. In-Place Density % of Standard	101.8	100.9	100.6	1041	104.0	104.7
Star	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. o	f Samples in Lot						
	raic Sum of Deviations in Lot						
	from SV -Algebraic sum of Lot No. of Smpls in Lot						
27. In ap	praic sum of deviation plicable lots				÷.		3.
28. Total	No. of Samples Used						
Avgl	Dev. applicable lots = $\frac{Blk 27}{Blk 28}$						
Astrib	ution:				11	1/2	

Signed	Add I and
Title	1156.7

		MID-SOUT	H TESTING L	ABORATORIES	5, INC.		
226-74	15			τν πάτα			renada, MS
n /	15 1cpp: 15 / 1990 2	County GrE.	Add	District			
<b>T</b> i - i - i -	IAICE	COMPONENT: (c	ircle one)	MATERIAL: (ci	rcle one)	IREAIMENT.	
i ifi		Course: Basem	ent Soil Design S	soil Soil(Type): Sa	ndy, Silty, Clayey	None	
		Subbase	Base	Sand Clay, Semi	-Gr., Clay-Gr. I	ime (% by Wt.): 1s	t Appl
L at Siza		Block Base	Binder Base C	ass		2n	d App1
Unit of De	eviationB	ase	D	esign Depth	Inches0	Cement (% by Vol.)	
1. Section							
2. Test l		24	25	26	27	28	
3. Date							
4. Time							
5. Statio	n						
6. Locat	ion .	Noth	Sec. 14	Sec. 11.	Genter	North	
7. Depth		1171 L.F.F	Mik L.F.I	South. Final Soil	FIRAL Scil	Final Suit	<u> </u>
8. Sta. L	imits Sect. Being Tested		-			 	
	9. Standard Count						
oisture	10. Moisture Count					 	
ois	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count						
-	14. Density Count					+	
Density	15. Air-gap Count(If Used)				17.0		
	16. Density Count Ratio					1	
	17. Wet Density, PCF					+	
Test Values	18. Dry Density, PCF		10 0		16.9	18.2	
₽ <sup>™</sup>	19. Moisture Content, 7.	18.8	19-8	17.0	and the second s	10/2	
isity	From Standard 20. Density Curve	101-2	101.7	101.2	101.2	101 2	
Standard Density	21. Standard Density Curve Number		1-1-1:	1.29	104.7	99.7	
- apa	22. 7 of Standard	1007	101:4	1029 45	95	95	
	23. Specified percent of Standard Density	95	95	72			
	of Samples in Lot				<u> </u>		
	braic Sum of Deviations in Lo				+		
	from SV -Algebraic sum of Lo	<u> </u>					
	braic sum of deviation pplicable lots						
	I No. of Samples Used	ļ					
vg 1	Dev. applicable lots = $\frac{Blk 27}{Blk 28}$					1/	

Distribution:

WASSING THE

Signed Action Cance

SOIL-BENTONITE LAYER DENSITY TESTS

MID-SOUTH TESTING	LABORATORIES, I	NC.
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226-74	415		FIELD DENSIT				enada, MS
	Keppers Lagree	County Gre	nada	_ District		Frame	
<b>-</b> • • • • •	1:120	_COMPONENT: (ci	rcle one)	MATERIAL: (cir	cle one)	TREATMENT:	
Lift	/5†	Course: Basem	ent Soil Design So	il Soil(Type) Sar	ndy, Silty, Clayey	None	
Depth Me			Base	_ Sand Clay, Semi-	-Gr., Clay-Gr. Li	me (% by W1.): 1st	Appl
Lot Size.		Block Base			÷.,		
	eviationB		Des	ign Depth	inchesCe	ment (% by Vol.)	
1. Sectio	on No.						
2. Test		1	2	3	7-31.59		6
3. Date		7-31-59	7-31.89	7-31.89	7-31.5"	7-31-84	731-81
4. Time							
5. Statio							
	tion from Q_						
§	Below Subgrade(Emb.)						
h	imits Sect. Being Tested			•			
	9. Standard Count						
8 N.	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						(
	13. Standard Count						
1	14. Density Count						
Densily	15. Air-gap Count(If Used)						<del> </del>
Der	16. Density Count Ratio						
	17. Wet Density, PCF						
tes s	18. Dry Density, PCF						
Value	19. Moisture Content, %	23.7	22.7	20.9	.741	24.7	25.4
	From Standard 20. Density Curve	99.3	99.3	<i>99.3</i>	993	99.3	99.3
Gens	21. Standard Density Curve Number					0.0.5	
ard I	In-Place Density 22. 7, of Standard	98.6	99.7	1cl-2	95:6	98.5	100.1
Standard Density	23. Standard Density	95	95	95	95	93	95
	of Samples in Lot						
	braic Sum of Deviations in Lo	t	NAID SC	WITH L	AB COP	Y	
	from SV = Algebraic sum of Lo		MIDSC				
	braic snm of deviation pplicable lots				-		
10000	I No. of Samples Used						
-	Dev. applicable lots = Bik 27 Bik 28						
		prite LAY	'Er		10/11/	anci	
	bution: 15t BEitt DENSity th FANdem As	AKEN At	-	Signed	THE		
	FANdem As	EA.			5. C.	T.	
	· · · · · · · · · · · · · · · · · · ·	-		Title			_

226-74	415 <sup>°</sup>	~	FIELD DENSIT				Grenada, MS
) piect	Keppins LAgriss	Courty	Ada	_District		_Frame	
-,	an <u>l'Azic</u>			MATERIAL: (cits		_TREATMENT	·
chaicia	an <u>['A-1 ( C</u>	COMPONENT: (C	ent Soil Design So	il Soil Type: San	dy, Silty, Clayer	None	
ift			Base	Sand Clay, Semi-	Gr., Clay-Gr. L	ime (% by Wt.):	ist Appl
epth Me	asured Inches	Subbase	Binder Base Cla	55			2nd Appl
			Des Des	ign Depth	InchesC	ement (% by Vo	1.)
nit of D	eviationBa	ise					
. Sectio	on No.		<u> </u>	9	10		
. Test	No.		7-31-59	7-31-84	7-31.51		
. Date		7-31-59	- 2-31-51	1 31 8 :			
. Time							
. Static	n						
	tion from Q					<u></u>	
. Depth	Below Subgrade(Emb.)						
. Sta. I	Limits Sect. Being Tested						
	9. Standard Count						
Molsturc	10. Moisture Count						-
	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count						-
>	14. Density Count						
Densily	15. Air-gap Count(If Used)						
å	16. Density Count Ratio						
	17. Wet Density, PCF	729 70					
 	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	23.9	70.6	27.4	206		
	From Standard 20- Density Curve	99.3	99.3	<u>99.3</u>	99.3	l	
Standard Density	21. Standard Density Curve Number						
lard	In-Place Density 22. % of Standard	98.5	103.8	100.2	1057		
Stand	23. Specified percent of Standard Density	95	95	95	95		
_	of Samples in Lot	·····					
	braic Sum of Deviations in Lot		MID-SO	UTH LA	B COP	¥	
	from SV =Algebraic sum of Lot No. of Smpls in Lot						
	ebraic snm of deviation pplicable lots				•	ļ	
	al No. of Samples Used						
	1 Dev. applicable lots = Bik 27 Bik 28					Ly_	
	ibution: 1St BENTO	NITE LAU	ner.		NIL	lance.	Ç.
			· ·	Signed	Jult		

FIELD DENSITY DATA         Grenzia, Magement de la genaria, Magement de la genaria, Magement de la genaria de la g			MID-SOU	rh testing l	ABORATORIES	5, INC.		
Technician       IAA 2424       COMPONENT: (circle one)								(
Technician       IAA 2424       COMPONENT: (circle one)	4	Capture Laguar	_County_	n. Ada	Distint	<u></u>	_ Frame	
Lift		110 111	COMPONENT: (c	ircle one)	MATERIAL: (ci	rcle one)	TREATMENT:	
Depth Measured         InchesBubbase         BaseSand Clay, Semi-Gr., Clay-Gr.         Line (% by Wc): Int Appl and Appl           Let SizeBase        Base        Base	Tecnnicia	an <u>, (</u>	Course: Basem	ent Soil Design	Soil Soil(Type) Sa	ndy, Silty, Clayey	None	
Block Base         Block Base         Class         2nd Appl							lime (% by Wt.): 1s	t Appl
Base         Design Depth         Inches         Cement (% by Vol.)           1. Section No.         /         Z         Z         G         G           2. Test No.         /         Z         Z         G         G         G           3. Date         R-12-R9         R-12-R9 </td <td>Depth Me</td> <td></td> <td></td> <td></td> <td>lass</td> <td></td> <td>2n</td> <td>d Appl</td>	Depth Me				lass		2n	d Appl
1. Section No.       /       2       3       4       5       6         2. Text No.       /       2       3       4       5       6         2. Text No.       //       2       3       4       5       6         2. Date           9       9/12-89	Lot Size.		250					
2. Test No.       1       2       3       4       5       6         3. Date       R-12-R9       R-12	Unit of D	evia(10n2						
2. Teet No.     2. Teet No.       3. Date     R-12-R9     R-12-R9 <td>1. Section</td> <td>on No.</td> <td></td> <td>-7</td> <td></td> <td>4</td> <td>5.</td> <td>6</td>	1. Section	on No.		-7		4	5.	6
3. Date         0         2. Date           4. Time         0         0           5. Station         0         0           6. Location from Q.         0         0           7. Depth Below Subgrafe(Emb.)         0         0           8. Station         0         0           9         10. Moisture Fount         0           11. Moisture Count         0         0           12. Moisture Count Ratio         0         0           13. Standard Count         0         0           13. Standard Count         0         0           14. Density Count         0         0           15. Alr-gap Count(R tised)         0         0           16. Density Count Ratio         0         0           17. Wet Density, PCF         0         0           18. Dry Density, PCF         0         0           19. Moisture Count, %         25.2         24.9         22.7         26.1         25.1           21. Specified parcent of         98.3         98.3         98.3         98.3         98.3         98.3         98.5           21. Specified parcent of         95         95         95         95         95         95	2. Test	No.	0 10 00				0-12-89	0-17-54
5. Station       6. Location from Q.         6. Location from Q.       9.         7. Depth Below Subgrade(Emb.)       9.         8. Stat. Limits Sect. Being Tested       9.         9       9.         10. Moisture Count       9.         11. Moisture Count Ratio       9.         12. Moisture, PCP       9.         13. Standard Count       9.         14. Donsity Count       9.         15. Alrege Count(If Used)       9.         16. Density Count Ratio       9.         17. Wei Density, PCF       9.         18. Bory Density, PCF       9.         19. Moisture Catent, %       252         20.       9.         21. Bandard Density       9.         22. By File Density       9.         23. Standard Density       9.         24. No. of Samples in Lot       9.         25. Algebraic Sum of Deviations in Lot       9.         26. Dev. from Stangle in Lot       9.         27. Magnets Burger in Ged       9.         27. Magnets Burger in Cont       9.         28. Algebraic Sum of Deviation       9.         29.       9.         21. Standard Density       9.         22. By fif	3. Date		8-1287	8-12-81	8-12-81	8 17 0		
6. Location from Q.	4. Time							
7. Depth Below Subgrade(Emb.)       8. Stat. Limits Sect. Being Tested       9         8. Stat. Limits Sect. Being Tested       9       9         10. Moisture Count       9       9         11. Moisture Count Ratio       9       9         12. Moisture Count       9       9         13. Standard Count       9       9         14. Density Count       9       9         15. Alr-gep Count(II Used)       9       9         16. Density Count Ratio       9       9         17. Wet Density, PCF       9       9         18. Bory Density, PCF       9       9         19. Moisture Content, %       25-2       24.9       22.7       26.1       25.1         19. Moisture Content, %       25-2       24.9       22.7       26.1       25.1       26.1         10. Moisture Content, %       25-2       24.9       22.7       26.1       25.1       26.1         19. Moisture Content, %       25-2       24.9       22.7       26.1       25.1       26.1         10. Leptace Density       97.5       97.5       97.5       97.5       97.5       97.5       97.5       97.5       97.5       95.5       95       95       95	5. Statio	n						
8. Sta. Limits Sect. Being Tested       9         9       9       10. Moisture Count         10. Moisture Count       11. Moisture Count Ratio         11. Moisture Count Ratio       12. Moisture Count         12. Moisture Count Ratio       13. Standard Count         13. Standard Count       14. Density Count         14. Density Count Ratio       15. Air-gep Count(If Used)         15. Air-gep Count(If Used)       16. Density Count Ratio         17. Wet Density, PCF       19. Moisture Content, %         18. Dry Density, PCF       19. Moisture Content, %         19. Moisture Content, %       25. Z       24. 9         20. Density Curre       98. 3       98. 3         21. Density Curre       98. 3       98. 3         22. Extendered Density       19. 5       10. 7         23. Extendered Density       99. 5       10. 7         24. No. of Samples in Lot       25. Algebraic Sum of Density of 5       25         25. Algebraic Sum of Deviations in Lot       26. Dev. from Stands in of Loc       27. Algebraic Sum of Loc         27. Magepflichabler hold       27. Algebraic Sum of Loc       27. Algebraic Sum of Loc         27. Magepflichabler hold       27. Algebraic Sum of Loc       27. Algebraic Sum of Loc         27. Magepflichabler hold	6. Locat	tion from Q						
9         9. Standard Count         0. Moisture Count           10. Moisture Count         11. Moisture Count Ratio         12. Moisture Count Ratio           12. Moisture Count         13. Standard Count         14. Density Count           13. Standard Count         14. Density Count         14. Density Count           14. Density Count         15. Air-gep Count(If Used)         16. Density Count Ratio           17. Wet Density, PCF         19. Moisture Content, %         25. 2         24.9         22.7         26.1         25.1         26.7           19. Moisture Content, %         25.2         24.9         22.7         26.1         25.1         26.7           19. Moisture Content, %         25.2         24.9         27.7         26.1         25.1         26.7           19. Moisture Content, %         25.2         24.9         27.7         26.1         25.1         26.7           19. Moisture Content, %         25.7         26.7         98.3         98.3         98.5           10. Moisture Content, %         25.7         24.9         27.7         26.1         25.7         26.7           10. Moisture Content, %         25.7         26.7         703.4         703.3         700.7         75.5         75.5         75 <td< td=""><td>7. Depth</td><td>Below Subgrade(Emb.)</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	7. Depth	Below Subgrade(Emb.)						
Open         D. Moisture Count         D. Moisture Count Ratio           11. Moisture Count Ratio         12. Moisture, PCF         13. Standard Count           12. Moisture, PCF         13. Standard Count         14. Density Count           14. Density Count         15. Air-gap Count(If Used)         16. Density Count Ratio           15. Air-gap Count(If Used)         16. Density Count Ratio         17. Wet Density, PCF           19. Moisture Content, %         25. 2         24.9         27.7         26.1         25.1         26.1           19. Moisture Content, %         25. 2         24.9         27.7         26.1         25.1         26.1           10. There Exampled         10. Moisture Content, %         25. 2         24.9         27.7         26.1         25.1         26.1           10. Moisture Content, %         25. 2         24.9         27.7         26.1         25.1         26.1           10. Moisture Content, %         25. 2         9.7         9.7         9.7         26.1         25.5         26.7         27.7         26.1         25.5         27.5         27.5         27.5         27.5         27.5         27.5         27.5         27.5         25.5         25.5         25.5         25.5         25.5         25.5	8. Sta. I.	imits Sect. Being Tested						
11. Moisture Count Ratio       12. Moisture, PCF         13. Standard Count       13. Standard Count         14. Density Count       14. Density Count (If Used)         15. Air-gap Count(If Used)       16. Density Count Ratio         16. Density Count Ratio       11. Wet Density, PCF         17. Wet Density, PCF       11. Moisture Content, %         18. Dry Density, PCF       11. Moisture Content, %         19. Moisture Content, %       25. Z       24.9         20. Density Curre       11. Moisture Content, %       25. Z         21. Standard Density       11. Curre Number       11. Moisture Content, %         22. % of Standard       98.3       98.3         23. Specified Density       97.5       102.7         23. Specified Density       97.5       95         24. No. of Samples in Lot       11.0       11.0         25. Algebraic sum of Deviations in Lot       11.0       11.0         26. Dev. from SV Algebraic sum of Lot       11.0       11.0         27. Magebraic sum of Deviations in Lot       11.0       11.0         26. Dev. from SV Algebraic sum of Lot       11.0       11.0         27. Magebraic Sum of Deviation       11.0       11.0         28. Algebraic Sum of Deviation       11.0       11.0 <td></td> <td>9. Standard Count</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		9. Standard Count						
11. Moisture Count Ratio       12. Moisture, PCF         13. Standard Count       13. Standard Count         14. Density Count       14. Density Count (If Used)         15. Air-gap Count(If Used)       16. Density Count Ratio         16. Density Count Ratio       11. Wet Density, PCF         17. Wet Density, PCF       11. Moisture Content, %         18. Dry Density, PCF       11. Moisture Content, %         19. Moisture Content, %       25. Z       24.9         20. Density Curre       11. Moisture Content, %       25. Z         21. Standard Density       11. Curre Number       11. Moisture Content, %         22. % of Standard       98.3       98.3         23. Specified Density       97.5       102.7         23. Specified Density       97.5       95         24. No. of Samples in Lot       11.0       11.0         25. Algebraic sum of Deviations in Lot       11.0       11.0         26. Dev. from SV Algebraic sum of Lot       11.0       11.0         27. Magebraic sum of Deviations in Lot       11.0       11.0         26. Dev. from SV Algebraic sum of Lot       11.0       11.0         27. Magebraic Sum of Deviation       11.0       11.0         28. Algebraic Sum of Deviation       11.0       11.0 <td>Inre</td> <td>10. Moisture Count</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Inre	10. Moisture Count						
13. Standard Count       14. Density Count         14. Density Count       15. Air-gap Count(If Used)         15. Air-gap Count(If Used)       16. Density Count Ratio         16. Density Count Ratio       17. Wet Density, PCF         19. Moisture Content, %       25.2         20. Density Curve       98.3         21. Standard Density       98.3         22. Density Curve       98.3         23. Specified percent of       95         24. No. of Samples in Lot       10.         25. Algebraic Sum of Lot       10.         26. Dev. from SV Algebraic fun of Lot       10.         27. Instrain of Lot       10.         28. Value No. of Samples Used       10.         29. Value No. of Samples Used       10.         21. No. of Samples Used       10.         23. Value No. of Samples Used       10.         24. No. of Samples Used       10.         25. Value Sum of Lot       10.         26. Dev. sequicable Lots = <u>Blk 28.</u> 10.	8	11. Moisture Count Ratio						
14. Density Count     15. Air-gap Count(If Used)     16. Density Count Ratio       16. Density Count Ratio     17. Wet Density, PCF     18. Dry Density, PCF       18. Dry Density, PCF     19. Moisture Content, %     25.2       19. Moisture Content, %     25.2     24.9       20. Density Curve     98.3     98.3       19. Moisture Content, %     25.2     24.9       21. Standard     98.3     98.3       22. Specifical percent of     25.7     103.4       23. Specifical percent of     95     95       24. No. of Samples in Lot     10.       25. Algebraic Sum of Loc     10.       26. Dev. from SV = No. of Samples in Lot     10.       27. Magebraic Sam of Geviation     10.       27. Magebraic Sam of Geviation     10.       27. Magebraic Sam of Loc     10.       28. Value of Samples Used     10.	27	12. Moisture, PCF						
15. Air-gap Count(II Used)       16. Density Count Ratio         16. Density Count Ratio       17. Wet Density, PCF         17. Wet Density, PCF       18. Dry Density, PCF         18. Dry Density, PCF       19. Moisture Content, %         20. Density Curve       98.3         21. Standard Density       98.3         22. In-Place Dansity       19. Standard         23. Specified percent of       95         24. No. of Samples in Lot       10. Standard Density         25. Algebraic Sum of Deviations in Lot       10. Samples in Lot         26. Dev. from SV = Algebraic sum of Loo       10. Samples Used         27. taskphate.shipe Offer       11. Standard Density         27. taskphate.shipe Offer       11. Con         28. Algebraic Sum of Deviation       11. Lot         29. Standard Density       11. Con         21. Standard Density       11. Standard Density         22. In-Place Dansity       11. Standard Density         23. Specified percent of       11. Standard Density         24. No. of Samples in Lot       11. Con         25. Algebraic Sum of Deviation       11. Con         26. Dev. from SV = Algebraic for Offer       11. Con         27. taskphate.shipe Offer       11. Con         28. Taskphate.shipe Offer       11. Con		13. Standard Count						
16. Density Count Ratio         17. Wet Density, PCF         18. Dry Density, PCF         19. Moisture Content, %         25. Z       24.9         20. Density Curve       98.3         21. Standard Density         Curve Number         21. Standard Density         22. g of Standard         23. Specified percent of         23. Standard Density         24. No. of Samples in Lot         25. Algebraic Sum of Deviations in Lot         26. Dev. from SV - Algebraic sum of Loc         27. Magnetic lots         28. Insplicable lots         29. Insplicable lots         21. Standard Density         22. g of Standard         23. Standard Density         24. No. of Samples in Lot         25. Algebraic Sum of Deviations in Lot         26. Dev. from SV - Algebraic sum of Loc         27. In Specific and Loc         28. Vertice and of Loc         29. Vertice and Clock         20. Vertice and Standard         21. Standard Density         22. Joint Algebraic and Clock         23. Standard Density         24. No. of Samples in Lot         25. Algebraic Sum of Lock         26. Dev. from SV - Algebraic sum of Lock         <		14. Density Count						
16. Density Count Ratio         17. Wet Density, PCF         18. Dry Density, PCF         19. Moisture Content, %         25. Z       24.9         20. Density Curve       98.3         21. Standard Density         Curve Number         21. Standard Density         22. g of Standard         23. Specified percent of         23. Standard Density         24. No. of Samples in Lot         25. Algebraic Sum of Deviations in Lot         26. Dev. from SV - Algebraic sum of Loc         27. Magnetic lots         28. Insplicable lots         29. Insplicable lots         21. Standard Density         22. g of Standard         23. Standard Density         24. No. of Samples in Lot         25. Algebraic Sum of Deviations in Lot         26. Dev. from SV - Algebraic sum of Loc         27. In Specific and Loc         28. Vertice and of Loc         29. Vertice and Clock         20. Vertice and Standard         21. Standard Density         22. Joint Algebraic and Clock         23. Standard Density         24. No. of Samples in Lot         25. Algebraic Sum of Lock         26. Dev. from SV - Algebraic sum of Lock         <	sily	15. Air-gap Count(If Used)						
18. Dry Density, PCF       19. Moisture Content, %       25.2       24.9       22.7       26.1       25.1       26.1         19. Moisture Content, %       25.2       24.9       22.7       26.1       25.1       26.1         19. Moisture Content, %       25.2       24.9       22.7       26.1       25.1       26.1         19. Density Curve       98.3       98.3       98.3       98.3       98.3       98.3       98.3         20. Density Curve Number	De	16. Density Count Ratio						L
Solution       19. Moisture Content, %       25.2       24.9       2.7.7       26.1       25.1       26.1         20. Density Curve       98.3 <td< td=""><td></td><td>17. Wet Density, PCF</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		17. Wet Density, PCF						
Solution       19. Moisture Content, %       25.2       24.9       2.7.7       26.1       25.1       26.1         20. Density Curve       98.3 <td< td=""><td></td><td>18. Dry Density, PCF</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		18. Dry Density, PCF						
From Standard       98.3       98.5 </td <td>fest alue</td> <td></td> <td>757</td> <td>24.9</td> <td>22.7</td> <td>26.1</td> <td>25.1</td> <td></td>	fest alue		757	24.9	22.7	26.1	25.1	
Image: Standard Density       1011       1011         21. Standard Density       21. Standard Density       99.5       102.7       103.4       103.3       100.1       95.5         22. 7% of Standard       99.5       102.7       103.4       103.3       100.1       95.5         23. Specified percent of 23. Specified percent of 23. Specified percent of 24. No. of Samples in Lot       95 <td></td> <td>From Standard</td> <td></td> <td></td> <td>98.3</td> <td>98.3</td> <td>98.3</td> <td>98.5</td>		From Standard			98.3	98.3	98.3	98.5
24. No. of Samples in Lot         25. Algebraic Sum of Deviations in Lot         26. Dev. from SV = Algebraic sum of Lot         26. Dev. from SV = No. of Smpls in Lot         27. in applicable lots         25. vtal No. of Samples Used         Avg 1 Dev. applicable lots = Blk 27.	ans!		10:5					
24. No. of Samples in Lot         25. Algebraic Sum of Deviations in Lot         26. Dev. from SV = Algebraic sum of Lot         26. Dev. from SV = No. of Smpls in Lot         27. in applicable lots         25. vtal No. of Samples Used         Avg 1 Dev. applicable lots = Blk 27.	A P	In-Place Density	995	1077	103.4	103.3	100.1	95.5
24. No. of Samples in Lot         25. Algebraic Sum of Deviations in Lot         26. Dev. from SV = Algebraic sum of Lot         26. Dev. from SV = No. of Smpls in Lot         27. in applicable lots         25. vtal No. of Samples Used         Avg 1 Dev. applicable lots = Blk 27.	anda		the second s					95
25. Algebraic Sum of Deviations in Lot         26. Dev. from SV = Algebraic sum of Lot         26. Dev. from SV = No. of Smpls in Lot         27. Algebraic sum of deviation         27. in applicable lots         25. vtal No. of Samples Used         Avg 1 Dev. applicable lots = Blk 27 Blk 28			13					
26. Dev. from SV = No. of Smpls in Lot         27. Algebraic sum of deviation         27. in applicable lots         28. vtal No. of Samples Used         Avg 1 Dev. applicable lots = Blk 27. Blk 28				<u>-</u>	+			
27. Algebraic sum of deviation       27. in applicable lots       2f       vtal No. of Samples Used       Avg 1 Dev. applicable lots = Blk 27 Blk 28					1	1		
2f     vtal No. of Samples Used       Avg 1 Dev. applicable lots =     Blk 27 Blk 28					+			
Avg 1 Dev. applicable lots = Blk 27 Blk 28								
	10.00	and the second	L					
Distribution: 15+ LAYER OF BENTONITE NILLI Gunc	Avg I					1	111	
Signed Hiff C	Distri	bution: 157 LAYE	r OF BEI	Novite	Signad	AL	11 an	us -
ALL SIT		•				11	ST	

2:26-74	15		FIELD DENSIT	Y DATA			renada, MS
	Toppini LAGOUN	County GAC	- AdA	Districi		_Frame,	
market to be	1:00.CE	_COMPONENT: (ci	rcle one)	MATERIAL: (cir	rcie one)	_TREATMENT:_	
Lift	an	Course: Baseme	ent Soil Design S	oil Soil(Type): San	ndy, Silty, Clayey	None	
Depth Me	asured Inches		Base	Sand Clay, Semi		me (% by Wt.): 1s	
Lot Size_		Block Base					
Unit of D	evistionB	ase	De	sign Depth	InchesC	ement (% by VoL).	
1. Sectio	m No.						17
2. Test	No.	7	8	9	10		12
3. Date		8-12-81	8-12-89	8.12-89	8-12-87	8-12-89	8.12-81
4. Time						_	
5. Statio	-						
	tion from Q						
	Below Subgrade(Emb.)						
	imits Sect. Being Tested						
	9. Standard Count						
nre	10. Moisture Count						
Molsture	11. Moisture Count Ratio						
) 2	12. Moisture, PCF				12		
	13. Standard Count						
	14. Density Count						
Density	15. Air-gap Count(If Used)						
Der	16. Density Count Ratio						
	17. Wet Density, PCF						
e	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	25.7	24.4	26.0	29.0		
	From Standard 20. Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
enst	21. Standard Density Curve Number						
D PL	In-Place Density	96.8	98.5	98.3	95.0	105.0	105.1
Standard Density	<ul> <li>22. % of Standard</li> <li>Specified percent of</li> <li>23. Standard Density</li> </ul>	95	95	.95	95	95	95
	of Samples in Lot						
	braic Sum of Deviations in Lo	t					
	from SV -Algebraic sum of Lo						
	braic sum, of deviation pplicable lots	+					
		<b></b>					
· · · · · · · · · · · · · · · · · · ·	al No. of Samples Used 1 Dev. applicable lots = <u>Bik 27</u> Bik 28	+					
)	Linev. applicable lots - Bik 28	OF REAL	tonite	1	- <i>lil</i> /	and	0
Z Distri	ibution: 15t LAYEY # 12 - OVEN	OF DEN	7 7 1	_/ Signed	Seff V	and	1
	HIZ- OVEN	-moistur	E-25.1		$\Lambda^{\prime}$		
				Title			

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226-74	15		FIELD DENSIT				Grenada, MS
	Keppers Inin	County Cire	1 Adr	District		Frame	C
Technicia	n_1212.71	_COMPONENT: (cire Course: Basemer	cle one) 11 Soil Design So	_ MATERIAL: (cir bil Soil(Type) Sar	cle one)	None	:
Depth Me	asured Inches	Subbase B	așe	_ Sand Clay, Semi-	Gr., Clay-Gr. I	.ime (5 by ₩t.):	1st Appl.
Lot Size_		Block Base I	Binder Base Cla	ISS			266 Appl
Unit of De	eviationB	ase	De:	sign Depth	InchesC	Cement (% by Vo	1.)
1. Sectio							
2. Test		1	2	3	4		
3. Date		8-19-87	8-1987	8-14.59	8-19-59		
4. Time							_
5. Statio	n						
6. Locat	ion from Q_						
7. Depth	Below Subgrade(Emb.)				•		
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
oisture	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count					<u> </u>	
	14. Density Count					<u> </u>	
Density	15. Air-gap Count(If Used)					<u> </u>	
ă	16. Density Count Ratio						
	17. Wet Density, PCF						_
nes Les	18. Dry Density, PCF						
Vali	19. Moisture Content, %	19.7	24.0	23.4	274 98.3		
Bity	From Standard 20. Density Curve	98.3	98.3	98.3	78.5		
Standard Density	21. Standard Density Curve Number			i a Cl	0.7	>	
dard	22. In-Place Density 7% of Standard	104.7	97./	102.8	97.3		
Sten	23. Specified percent of Standard Density	95	95	95		+	
24. No.	of Samples in Lot				<u> </u>		
	braic Sum of Deviations in Lo						
26. Dev.	from SV = Algebraic sum of Lo	۹ ۱					
27. Alge	braic sum of deviation pplicable lots						
CS	I No. of Samples Used						
Avg 1	Dev. applicable lots = $\frac{Blk 27}{Blk 28}$						
Distri	bution: 15+ L:Ft	OF BEN	torite.	Simod	Sitt	1/an	tê 💛
*	bution: 15t L: Ft REtEST A	Fter FAir	r And	Signed	XII	5. C. T.	_
	re compac	tion		Title	/	). (. /.	

P. MATIMATING

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226-74	15		FIELD DENSI	TY DATA			renada, MS
	15 Серестя Г. А. 900м	- Crr	- nAda	District		Frame	<del>_</del>
Technicia Lift Depth Mea Lot Size_	n	_COMPONENT: (c Course: Basem Subbase Block Base	ircle one) ent Soil Design Base Binder Base C	MATERIAL: (c	ircle one) andy, Silty, Clayey i-Gr., Clay-Gr. I		t Appl
Unit of De	eviationE	Bse	L	esign Depth			
1. Section 2. Test I		1 8-22-89	Z 8-2789	5	4 8.22-89	5 8-22-89	6 8-23-81
3. Date		8-22-81	8 2 2 0	a	<u> </u>		
4. Time							
5. Station							
	ion from Q				-		
	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
Moisture	10. Moisture Count			<u> </u>			
Wei P	11. Moisture Count Ratio		· · · · · · · · · · · · · · · · · · ·	<u></u>			
1	12. Moisture, PCF	ļ			· · · ·		
	13. Standard Count	<u> </u>			retest		
~	14. Density Count	ļ	·····	+	FEFEST		
Density	15. Air-gap Count(If Used)			1	#-5		
ă	16. Density Count Ratio						+
	17. Wet Density, PCF						
	18. Dry Density, PCF		(K)			26.7	748
Test Values	19. Moisture Content, %	24.9	25.0	23.0		26.2	
	From Standard 20. Density Curve	98.3	98.3	98.3	98.3	18.5	18.2
Dens	21. Standard Density Curve Number					97.6	95.0
ard	22. In-Place Density % of Standard	95.3	95.5	101.7	96.6	97.6	96
Standard Density	23. Specified percent of Standard Density	95	95	95	73	73	- 12
	of Samples in Lot						
	braic Sum of Deviations in Lu	ot					
	from SV = Algebraic sum of L.						
	ebraic sum of deviation pplicable lots						
	al No. of Samples Used						
	Blk 27						·
	ibution: 7	AYEY-BEN	VTONITE		NIL	Mand	2
	LNJ LI	IGET-DL	- 107- 1-	Signed	- All	<i>y</i>	
				<b></b>	.// '5.	C-T.	

Title .....

		MID-SOUT	H TESTING LA FIELD DENSIT		S, INC.	Gi	enada, MS 🥢
226-74	415	0	FIELD DENSIT				C
<b>9</b> 2	415 Kappers Lagoon	County THE	NADA	District		_ Frame	
7	ANCE	CONDONENT: (C)	cle one)	_MATERIAL: (ci	rcle one)	_TREATMENT:	
Echnici	an///////	COMPONENT: (C.	nt Spil Design So	il Soil(Type): Sa	ndy, Silty, Clayey	None	
			Base			ime (% by Wi.): 1s	: Appl
epth Me						20	d Appl
					InchesC	ement (% by Voi.)	
nit of L	DeviationE	Jase					
1. Secti	on No.	7	8	9	10	11	12
2. Test	No.			8-22-529	8-22-89	8-22-89	022-8
3. Date		8-22-89	8-22-89	8 20 81	80001	0	
4. Time							
5. Stati	0n						
6. Loca	ation from Q						
7. Depti	h Below Subgrade(Emb.)						
8. Sta. 1	Limits Sect. Being Tested						
	9. Standard Count						
uro	10. Moisture Count						
oisture	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count						
	14. Density Count						
Densily	15. Air-gap Count(If Used)						
Den	16. Density Count Ratio						
	17. Wet Density, PCF						
<i></i> 0	18. Dry Density, PCF	1					
Test Values	19. Moisture Content, %	24.8	25.3	242	27-5	24.7	231
	From Standard	98.3	98.3	98.3	98.3	98.3	78.5
Standard Density	20. Density Curve 21. Standard Density Curve Number	/ 0.2					
ð P	In-Place Density	99.5	97.3	95.3	95-1	99.7	100 5
anda	22. 7. of Standard 23. Specified percent of 23. Standard Density	95	95	95	95	95	95
	of Samples in Lot						
25. Alg	ebraic Sum of Deviations in L v. from SV =Algebraic sum of L No. of Smpls in Lo	ot					
	applicable lots						
	tal No. of Samples Used				-		
Avg	$\frac{B1k 27}{B1k 28}$	1	1			11/2	
Dist	ribution: 2Nd LA	yEr-BE	NTONITE	Signed	_ JUA	an	
		1			11'5	TT	
				Title	0.	L · /.	

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WEATHARD IN THE

MID-SOUTH TESTING	LABORATORIES, INC.

226-74	15		FIELD DEN				Grenada, MS
iers /	Coppiers LAGION	County Gr	ENADA	District		Frame	
hnicia	MANCE	_COMPONENT: (	circle one)	MATERIAL: ( Soil Soil(Type)	circle one) Sandy, Silty, Clayey	TREATMENT	Г:
	asured Inches			Sand Clay, Se	mi-Gr., Clay-Gr.	Lime (% by W1.):	
Size_		Block Base					
t of De	eviationB	lase		Design Depth	Inches	_Cement (% by Vo	1.)
Sectio	n No.		· · · · · · · · · · · · · · · · · · ·				
Test I	No.	13					
Date		8-22-89					
Time							
Statio							
	ion from Q						
	Below Subgrade(Emb.)				-		
	imits Sect. Being Tested	······································					
5(8, 1	1						
ė	9. Standard Count			-			
Moisture	10. Moisture Count			-			
Å	11. Moisture Count Ratio			+			
/	12. Moisture, PCF						
	13. Standard Count	refest					
ţ	14. Density Count	4					
Densily	15. Air-gap Count(If Used)	FIL					
2	16. Density Count Ratio						_
	17. Wet Density, PCF						
ues	18. Dry Density, PCF						
Valu	19. Moisture Content, %	242				·	
	From Standard 20. Density Curve	98.3					
ena	21. Standard Density Curve Number						
Standerd Density	22. % of Standard	97.8					
tandi	23. Standard Density	95					
	of Samples in Lot		<u>+</u>				
	braic Sum of Deviations in Lo	l					
	from SV -Algebraic sum of Lo No. of Smpls in Lot		1				
		<u> </u>					
	braic sum of deviation oplicable lots						
	No. of Samples Used						
L Avg 1	Dev. applicable lots = $\frac{B1k}{B1k}\frac{27}{28}$ bution: $\frac{2}{2}Nd$ $\frac{1}{A}$		L	<u></u>		11/	ncl_
1	bution: 7 and 10	K .	. In a sliff		-		

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Title\_

t

Fechnician. Lift Depth Meas	Image: State	COMPONENT: (ci Course: Basemo Subbase Block Base	ircle one) ent Soil Design So Base Binder Base Cla	District MATERIAL: (circo oil Soil(Type): Sand Sand Clay, Semi-( ass	dy, Silty, Clayey Gr., Clay-Gr. Li InchesCe	_TREATMENT: None me (% by Wt.): Ist 2nd ment (% by Vol.)	App1
Cechnician Lift Depth Meass Lot Size Juit of Dev 1. Section 2. Test No 3. Date 4. Time 5. Station	/- D. 2 CL sured Inches viationBa No. 0. 0. 0.	COMPONENT: (ci Course: Basemu Subbase Block Base se	ent Soil Design So Base Binder Base Cla	MATERIAL: (circ oil Soil(Type): Sand Sand Clay, Semi-( ass sign Depth	dy, Silty, Clayey Gr., Clay-Gr. Li InchesCe	_TREATMENT: None me (% by Wt.): Ist 2nd ment (% by Vol.)	App1
Cechnician Lift Depth Meass Lot Size Juit of Dev 1. Section 2. Test No 3. Date 4. Time 5. Station	/- D. 2 CL sured Inches viationBa No. 0. 0. 0.	COMPONENT: (ci Course: Basemu Subbase Block Base se	ent Soil Design So Base Binder Base Cla	MATERIAL: (circ oil Soil(Type): Sand Sand Clay, Semi-( ass sign Depth	dy, Silty, Clayey Gr., Clay-Gr. Li InchesCe	_TREATMENT: None me (% by Wt.): Ist 2nd ment (% by Vol.)	App1
Lift Depth Meas Lot Size Unit of Dev I. Section 2. Test No 3. Date 4. Time 5. Station	sured         Inches           viation         Ba           No.         0.           on from Q_         0.	Course: Basem Subbase Block Base se	ent Soil Design So Base Binder Base Cla De	oil Soil(Type): Sand Sand Clay, Semi-( ass sign Depth	dy, Silty, Clayey Gr., Clay-Gr. Li	None	App1
Depth Meas Lot Size Unit of Dev 1. Section 2. Test No 3. Date 4. Time 5. Station	sured InchesBa	Subbase Block Base	BaseBinder Base Cla	Sand Clay, Semi-( ass sign Depth	Gr., Clay-Gr. Li	me (% by Wt.): 1st 2nd 2nd	App1
Lot Size Unit of Dev 1. Section 2. Test No 3. Date 4. Time 5. Station	viationBa No. o. o.	Block Base	De	sign Depth	InchesCe	ment (% by Vol.)_	
1. Section 2. Test No 3. Date 4. Time 5. Station	No. o.		2	3			
2. Test No 3. Date 4. Time 5. Station	o.	 & 31.57	2 8-3-57	5 5: 5% 57	64 S= 31-S <sup>47</sup>	5	6
3. Date 4. Time 5. Station	on from Q_	8.31.51	2 8-31-57	5. 54.54	61 5. 31.57	5 0 31.59	6 (7 71 64)
4. Time 5. Station	on from Q	& 31.57	8-31.57	S. 31.54	51.59	6 51.5 1	
5. Station	on from Q			1	1	- J	0 11.0 /
	on from Q						
6. Locatio					+		
	Palow Subgrade(Emb.)						
7. Depth E	Seine profination						
8. Sta. Lin	mits Sect. Being Tested						
	9. Standard Count						
lsture	10. Moisture Count						
	11. Moisture Count Ratio						(
1 F	12. Moisture, PCF						
1	13. Standard Count						<u></u>
	14. Density Count						
Density	15. Air-gap Count(If Used)						
ă	16. Density Count Ratio						
	17. Wet Density, PCF						
	18. Dry Density, PCF				710	711	
Test Values	19. Moisture Content; %	27.0	79.0	76.0	31.8	51.6	- 90.2
ţ,	From Standard 20- Density Curve	98.3	<u>983</u>	48.5	98.3	9.5 3	
1 0 1	21. Standard Density Curve Number				00.0	070	98
a d	In-Place Density 22. % of Standard	966	92.8	98.8 95	89.8	87.8. 96	95
Stan	23. Specified percent of Standard Density	95	95	93	95	95	
24. No. of	Samples in Lot						
	raic Sum of Deviations in Lot						
	from SV = Algebraic sum of Lot No. of Smpls in Lot						· · · ·
27. in app	raic sum of deviation plicable lots						
tal	No. of Samples Used						
Avg 1 I	Dev. applicable lots = Bik 27 Bik 28					1	<u>+(</u>
Distrib	ution: 3rd (Ac)	Er - BEN	rtc rite	¢:	91.U	1. (.T.	t.t.R.
	/			Signed	111	107	ana internet deste

26-3							Grenada, MS
Project_	HEADLIS LAGOO	County C.	c anda	District		Frame	
Technic	ian_//////	COMPONENT: (	ircle one)	MATERIAL: (ci	rcle one)	TREATMENT:	······································
Lift							
-							
	DeviationI						
1. Secti							
2. Test		7	<u>C</u>	9	10	11	12
3. Date	·····	8-51-54	8. 31.51	8.31.84	8-31-84	9-184	9-1-,8%
4. Time		0					<u></u>
5. Stati							19) (19)
	tion from Q.						
	h Below Subgrade(Emb.)						
8. Sta. 1	Limits Sect. Being Tested						
	9. Standard Count						
bisture	10. Moisture Count						
laile	11. Moisture Count Ratio	County       County       Frame					
$\sim$	12. Moisture, PCF					withst	M. tr.
3	13. Standard Count					HA	4/115
	14. Density Count			s		1.7	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
Density	15. Air-gap Count(If Used)						
å	16. Density Count Ratio						
	17. Wet Density, PCF						
	18. Dry Density, PCF		·				
Test Values	19. Moisture Content, 7.	25.5	27.6	26:5	26	255	27.0
sity	From Standard 20. Density Curve	983	983	98.3	98.3	48.3	98.3
Standard Denslty	21. Standard Density Curve Number						
dard	22. In-Place Density 7, of Standard			94.5	96.3	99	<u>97.8</u>
Stan	23. Specified percent of Standard Density	95	95	95	95	45	95
24. No. a	of Samples in Lot						
	praic Sum of Deviations in Lot	the second se					
	from SV = Algebraic sum of Lot No. of Smpls in Lot						
27. In Sp	plicable lots						
28. Total	No. of Samples Used						
wg 1	Dev. applicable lots = Elk 27 Elk 28						
oistrit	oution: 3rd lAge	=) - BEA.	for it E	Signedi	<u>QIA (/ / / / / / / / / / / / / / / / / / /</u>	ince	
				Title	1'5.67		

		MID-SOUTI		BORATORIES	, INC.		Grenada, MS 🦯
226-741	5	_	FIELD DENSIT				
11	CAPUS LAYCON	County_G+C	1. A. dA	District		_ Frame	
• <i>-44</i>	1/pace		1	MATERIAL: (cir	cle one)	_TREATMENT	
		COMPONENT: (cur	cle one)	- INA TERRITE (	ndy, Silty, Clayey	None	
.ift			nt Soll Design S	Send Class Somi	Gr., Clay-Gr. L	ime (% by Wt.):	1st Appl
Depth Mea	sured Inches						2nd Appl
ot Size_	suite	Block Base	Binder Base Cl.	855	InchesC		
Init of De	viationBa	se	De	sign Depth	Inches 0		
1. Section	No.						
2. Test N		13	14	15	16		
3. Date		9-1-81	9.1.89	9-1-54	9-1-59		
					•		
4. Time							
5. Station	on from Q.						
	Below Subgrade(Emb.)						
				rEtest	YEFEST.		
8. Sta. L:	imits Sect. Being Tested			· H 12	11 ///		
Q	9. Standard Count			# / )	#14		
lsture	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count						
~	14. Density Count						
Donsity	15. Air-gap Count(If Used)						
å	16. Density Count Ratio						
	17. Wet Density, PCF			· · · · · · · · · · · · · · · · · · ·			_
ی د ب	18. Dry Density, PCF				04.0		
Test Valucs	19. Moisture Content, 7	79.8	31.7	75.5	24.8		
	From Stendard 20. Density Curve	98.3	98.3	98.5	98.3	ļ	
Gens	21. Standard Density Curve Number				000	,	
Standard Density	22. % of Standard	94.3	91.0	99.7	99.8		
tand	23. Standard Density	95	95	95	95	1	
	of Samples in Lot						
	braic Sum of Deviations in Lot						
26 Der	from SV -Algebraic sum of Lot						
	braic sum of deviation						
	1 No. of Samples Used Bik 27						F
Avg I	Dev. applicable lots = Blk 27 Blk 28	-	auka sha-	<u> </u>		111/-	
Distri	bution: 3rd (A410	r - BEI	v TCA-17 &	Signed			ice
	1	•		तर्त्तन व	11	5.CT.	
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226-74	15		FIELD DENSIT	Y DATA			enada, MS
	Keppers Lagers	Course Circ	· rAdA	District		_ Frame	
oject	Chiper argues	County					
echnicia	1-A.2 60	COMPONENT: (c	ircle one)	MATERIAL: (ci	rcle one)	_ IREAIMENT:	
ift	n	_Course: Basem	ent Soil Design So	oil Soil(Type): Sa	ndy, Silty, Clayey	None	
			Base	_ Sand Clay, Semi	-Gr., Clay-Gr. Li	me (% by wl.): 1st	Appl.
ot Size_		Block Base		15S			
nit of De	viationBa	se	De	sign Depth	inchesCe		
. Section	n No.						
2. Test I	No.	/	.7		<i>L</i> /		<u>(;</u>
. Date		9-12-87	9-12-89	9-1.7-81	9-17-59	1-12-84	7-12-5-
. Time						·	
5. Statio	n						
5. Locati	ion from Q						
. Depth	Below Subgrade(Emb.)						
L Sta. L	imits Sect. Being Tested						
	9. Standard Count						
TE I	10. Moisture Count						
	11. Moisture Count Ratio						<u></u>
-	12. Moisture, PCF						
	13. Standard Count		KETESt.				
	14. Density Count						
Density	15. Air-gap Count(If Used)		Ħ				
Dei	16. Density Count Ratio						
	17. Wet Density, PCF						
8	18. Dry Density, PCF		2	P		3	
T <sub>est</sub> Values	19. Moisture Content, %	28.6	24.9	24.7	25.2	242	20.0
	From Standard 20. Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
Standard Denalty	21. Standard Density Curve Number						
ard I	In-Place Density 22. % of Standard	91.4	100.2	97.8	101.1	103.9	103.0
tand	23. Standard Density	95	95	95	95	95	95
	of Samples in Lot						
	raic Sum of Deviations in Lot						
	from SV = Algebraic sum of Lot No. of Smpls in Lot			•1			
	braic sum of deviation plicable lots						-
	No. of Samples Used						
	Dev. applicable lots = Bik 27 Bik 28			······································			
L	sution: 4th 1, F.F.	Rr	fra: + 1=		10.	11/an	+C
	LI III III	-1) (	1 m / / L	Signed	-12-2	11/ 6000	

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<sup>っっ</sup> ら-74	15	2	H TESTING LAB	DATA			mada, MS 🤇
	heppers lagan	and Gue	n Ada	District		Frame	
roject	Cipirs ingas	County					
echnicia	In VANCE	COMPONENT: (ci	ircle one)	MATERIAL: (circle	e one)	TREATMENT:	
_ift			ent Soil Design Soil			None	
Depth Me			Base			e (% by Wt.): 1st2nd	
ot Size.		Block Base	Binder Base Class				
Unit of D	eviationB	ase	Desig	n Depth	_InchesCen	lent (% by vol.)	
1. Sectio	n No.						
2. Test	No.	7	8	9	10	_//	12
3. Date							
4. Time						·	
5. Statio	n						
6. Locat	ion from Q						
7. Depth	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	5. Standard Count						
Jure	10. Moisture Count						
<b>ت</b>	11. Moisture Count Ratio						(
	12. Moisture, PCF						1.1.0
	13. Standard Count	VETEST	1.E.test				<u>refest</u>
~	14. Density Count	11/	4617				#11-
Density	15. Air-gap Count(If Used)	Ħ. (i)					
Å	16. Density Count Ratio						
	17. Wet Density, PCF						
it les	18. Dry Density, PCF						28.5
T <sub>cat</sub> Values	19. Moisture Content, %	72.4	26.9	26.9	25.9	28	98.3
u ît y	From Standard 20. Density Curve	98.3	98.3	98.3	_ 98.3	98.3	78.5
Standard Density	21. Standard Density Curve Number					94.7	91
dard	22. In-Place Density 7% of Standard	102.9	99.3	96.4	103.1	94.7	95
Stan	23. Specified percent of Standard Density	95	95	_ 25	- 95	75	
24. No.	of Samples in Lot						
	braic Sum of Deviations in Lot	and the second					
	from SV -Algebraic sum of Lot						
27. in in	braic sum of deviation oplicable lots						
ta	l No. of Samples Used						
29. Avg 1	Dev. applicable lots = Bik 27 Bik 28			L			
	bution: 4th 6, F.t	REAT	CNITE		A.A.M	ins	

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		MID-SOU	TH TESTING L	ABORATORIE	S, INC.		¥:
226-74			FIELD DENSI				renada, MS
Project	Poppus Innora	County G	ENALA	District		Frame	
	11.					TOP A THENT.	
	In Mail						
Lift		Course: Baser				•	
-		Subbase					
				855			
Unit of De	eviationB	ase	De	esign Depth	InchesC	ement (% by Vol.)	
1. Section	n No.						1
2. Test l	No.	13	14	15	16	17	18
3. Date		9-12-87	9-17-834	9.12-54	9-12.89	9-12.84	9-125
4. Time							
5. Station							
	ion from Q			· · · ·			
	Below Subgrade(Emb.)						
<u> </u>	imits Sect. Being Tested						
	9. Standard Count						
e	10. Moisture Count						
Moisture	11. Moisture Count Ratio						
) ×							
	12. Moisture, PCF	1 -1 -1	41-14				TEtest
	13. Standard Count	VETEST	YEtESt				
	14. Density Count	111.17	11,12,13				#1/-
	15. Air-gap Count(If Used)	11+17	11/13-11)				
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF			- 50		222	
Val Va	19. Moisture Content, -%	23.1	24,0	25.8	24.3	27.2	27.7
sity	From Standard 20. Density Curve	98.3	<u>98.3</u>	9R.3	98,3	98.3	98.3
Standard Density	21. Standard Density Curve Number					<u> </u>	A.
dard	In-Place Density 22. % of Standard	100.2	104.0	96.4	102.1	94.6	947
Stan	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. D	f Samples in Lot						
25. Algeb	raic Sum of Deviations in Lot						
26. Dev. 1	from SV -Algebraic sum of Lot No. of Smpls in Lot						
L	raic sum of deviation plicable lots						
	No. of Samples Used						
	Dev. applicable lots = $\frac{Bik 27}{Bik 28}$						
Distrib		- RE ALT	ForitE		0.111	Au - n	
	4.11	11- 101		Signed	TAC	lance	
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DRAINAGE LAYER DENSITY TESTS

226-7	415	MID-SOU	TH TESTING	LABORATORIE	s, inc.		Grenada, MS
		ſ.					
	en VARCE						
	an_ <u>[·/·/·/ [ [ ]</u>						
				Sand Clay, Sem			ist Appl.
-	easured Inches			Class			
				Design Depth			
Unit of D	DeviationE	sase					
1. Section	on No.				/1		
2. Test	No.		2	5	4 10-13-89	5	6
3. Date		10-13-89	10-13-39	10-13-89	10-13-29	10-12-87	101581
4. Time							1
5. Static	ac						
6. Local	tion from Q						8
7. Depth	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count				<u></u>		
ture	10. Moisture Count						
Moisture	11. Moisture Count Ratio						
)-	12. Moisture, PCF				29		
	13. Standard Count				····		
	14. Density Count					10	
Density	15. Air-gap Count(If Used)						
Der	16. Density Count Ratio						
	17. Wet Density, PCF						
	18. Dry Density, PCF	108.9	107.1	107.8	106.6	109.9	108.8
Test Values	19. Moisture Content, %	~~~	5.7	5-9	51	5.5	41
	From Standard	5.1					
ansil	20. Density Curve 21. Standard Density Curve Number				· · · · · · · · · · · · · · · · · · ·		
Å P	21. Standard Density Curve Number						
Standard Density	22. % of Standard						1
	23. Specified percent of Standard Density						
	of Samples in Lot				· · · · · · · · · · · · · · · · · · ·		
f	Algebraic sum of Lot						
	from SV -Algebraic sum of Lot No. of Smpls in Lot			· · · · · · · · · · · · · · · · · · ·		<u> </u>	241
27. in ap	braic sum of deviation plicable lots	89					
	No. of Samples Used			ļ		<b></b>	
Avg 1	Dev. applicable lots = $\frac{Blk \ 27}{Blk \ 28}$			1			
	12" Fil.	L SAND	LAYEr	Signed		1/ am	e
				Title	11'5	C.T.	

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226-7	415	MID-SOU	TH TESTING		RIES, INC.	G	renada, MS 🥢
22077	Kappers LAgaca	General Contraction					
Technici	an 1: A.2 CE	COMPONENT: (	circle one)	MATERIAL	: (circle one)	TREATMENT:	
	easured Inches						
Unit of D	DeviationI	Base	l	Design Depth	Inches	Cement (% by Vol.)_	
1. Secti	on No.						
2. Test	No.	7	8		•	_	
3. Date		10-13-89	10-13-89				
4. Time							
5. Static	ac						
6. Local	tion from Q						
7. Depth	Below Subgrade(Emb.)						
8. Sta. I	imits Sect. Being Tested						
	9. Standard Count		•				
an	10. Moisture Count						
Moisture	11. Moisture Count Ratio						
	13. Standard Count						
1	14. Density Count						
Density	15. Air-gap Count(If Used)						
Dei	16. Density Count Ratio						
	17. Wet Density, PCF						
	18. Dry Density, PCF	106.9	106.1		_		
Test Values	19. Moisture Content, %	10.2	4.9	<u></u>			
	From Standard	10.0	71				
ensl	20. Density Curve 21. Standard Density Curve Number						
D PI	In-Place Density						
Standard Density	22. % of Standard 23. Specified percent of Standard Density						
	f Samples in Lot		<u></u>				
	raic Sum of Deviations in Lot						
-	from SV -Algebraic sum of Lot No. of Smpls in Lot						
the second se	Fraic sum of deviation plicable lots						
	No. of Samples Used						
¥g 1)	Dev. applicable lots = $\frac{Blk 27}{Blk 28}$			l			
				Signed	AH I	Mance C.T.	$\overline{\nabla}$
					1110		
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and provide specific structures and a second structure of a structure structure structure in a structure of second structure of the second structure of t

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Signed\_ Title\_\_\_\_

UNIF	ORM HAZA	RDOUS	T Concente	-'- 11C EDA 1D N	o. <u> 7  5   4   3  </u> (	Ma Docur	ment No.	2. Pag " of		not		he shaded ed by Fe	
	ASTE MAN		<u>IMISIUU</u> C.					<b>A. 013</b>	WMA				
	. Box 16 Plant, M	0		ste pt			1	5	Genera		* 270 m 698. **		
4. Generati	pris Phone (6)	1 ) 226	-4584		US EPA ID	Numbe	7	C.Su	n Transpo	-	iD		
Dart	Transbo	rtation	Co. 12	- 10 H D		651		D Tre	sporter's	Phone			
7. Transpor	ter Company	Name	ICO TY	1 10510	US EPA ID	4 -	,		naporter's	Same Car		<u>en stande</u>	
	ANSPOR ed Facility Name			10.	US EPA ID	Numbe	ŕ .	1999	9-938		20		
Emelle F	AL WASTE MA acility Highway 17 at N					_		H. Fec	ility's Pho	niu .	1. 		
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(As Required By The Alabama Department of Environmental Management)

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(As Required By The Alabama Department of Environmental Management)

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Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

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	<b>OPERATOR CERTIFICATION OF CLOSURE</b>
	Matthew C. Plautz
I,	(Authorized Representative)
of	Beazer Materials and Services, Inc. 436 Seventh Avenue, Pittsburgh, PA 15219
01	(Name and Address of Facility)
hereby sta	te and certify that, to the best of my knowledge and belief, the
	•
	Surface Impoundment System, EPA I.D. #MSD007027543
	(Hazardous Waste Management Unit(s)
has been o	closed in accordance with the Facility's closure plan.
ή	Signature () la so Date
	PRODERN MCR ENVIRONMENTIN SETURIZES

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DCC #R415

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#### PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, Michael W. Bollinger, a Professional Engineer registered in the State of Mississippi, hereby certify, to the best of my knowledge and belief, that I have verified closure activities at: Koppers Industries, Inc.

Koppers Industries, Inc. Grenada Plant Tie Plant, MS

for the surface impoundment system, EPA I.D. #MSD007027543, owned by Koppers Industries, Inc. and operated by Beazer Materials and Services, Inc. and that closure of the aforementioned facility has been performed in accordance with the facility's closure plan and as noted herein.

Michael W Bollinga			January 3, 1990	
Signature	an a	ist and in the second	Date	
Temporary Permit No. 8907		- 161216 - 1912	Mississippi	
Professional Engineer License	No.		for State of	

Keystone Environmental Resources, Inc. 3000 Tech Center Drive

**Business Address** 

Monroeville, Pennsylvania 15146

City/State/Zip Code

(412) 825-9600

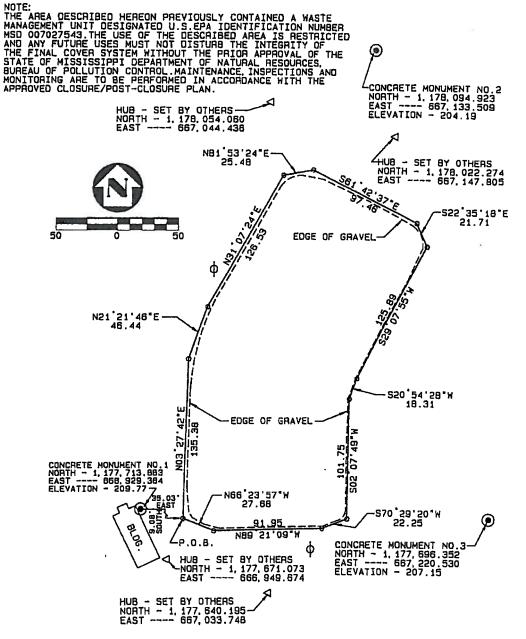
Business Telephone (With Area Code)

# **APPENDIX J**

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## **SURVEY PLAT**



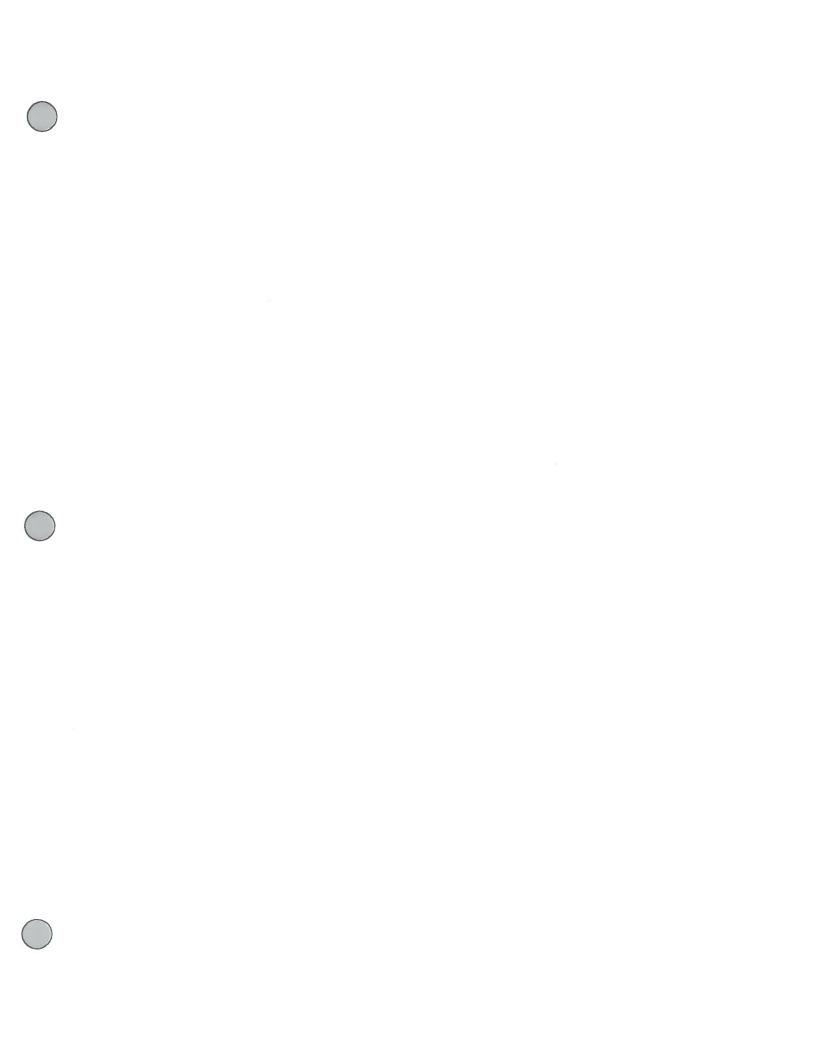
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#### -- DESCRIPTION ---

A PART OR PARCEL DF SECTION 28, TOWNSHIP 22 NORTH, RANGE 5 EAST, GRENADA COUNTY, MISSISSIPPI AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT THAT IS 9.08 FEET SOUTH AND 35.03 FEET EAST OF CONCRETE MONUMENT NO.1 THENCE RUN NORTH 03 27'42"EAST FOR 135.38 FEET TO A POINT; THENCE RUN NORTH 21 21'46"EAST FOR 48.44 FEET TO A POINT; THENCE RUN NORTH 31 07'24"EAST FOR 128.53 FEET TO A POINT; THENCE RUN NORTH 81 53'24"EAST FOR 25.48 FEET TO A POINT; THENCE RUN SOUTH 81'42'37" EAST FOR 97.48 FEET TO A POINT; THENCE RUN SOUTH 22'35'18"EAST FOR 21.71 FEET TO A POINT; THENCE RUN SOUTH 29'07'55"WEST FOR 125.89 FEET TO A POINT; THENCE RUN SOUTH 20'54'28"WEST FOR 18.31 FEET TO A POINT; THENCE RUN SOUTH 02'07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 70'29'20" WEST FOR 22.25 FEET TO A POINT; THENCE RUN NORTH 89'21'09"WEST FOR 91.95 FEET TO A POINT; THENCE RUN NORTH 66'23'57"WEST FOR 27.68 FEET TO THE POINT OF BEGINNING OF HEREIN DESCRIBED PARCEL OF LAND CONTAINING 40, 729.681 S0.FT.OR 0.935 ACRES MORE OR LESS.

WILL Com
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SAID LANDS ARE TRUE AND CORRECT TO HE ASST WAR NOWLEDGE AND BELIEF.
WITNESS MY SIGNATURE, THE 9 DAY OF THE 1999
Le Duy
- / Cet Marticle / C.
REGISTERED PROFESSIONAL ENGINEER NO. 4049,05 M S.C. REGISTERED LAND SURVEYOR NO. 2344
MISSISIPPI



### **APPENDIX K**

### FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE



PAGE:

DATE: FEBRUARY 28, 2005

IRREVOCABLE STANDBY LETTER OF CREDIT NUMBER: 3073530

BENEFICIARY EXECUTIVE DIRECTOR MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY 2380 HIGHWAY 80 WEST APPLICANT BEAZER EAST, INC. ONE OXFORD CENTRE, SUITE 3000 PITTSBURGH, PA 15219

JACKSON, MS 39204

AMOUNT USD 732,774.00 SEVEN HUNDRED THIRTY TWO THOUSAND SEVEN HUNDRED SEVENTY FOUR AND 00/100'S US DOLLARS

EXPIRATION DECEMBER 31, 2005 AT OUR COUNTERS

DEAR SIR OR MADAM:

WE HEREBY ESTABLISH OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO. 3073530 IN YOUR FAVOR, AT THE REQUEST AND FOR THE ACCOUNT OF BEAZER EAST, INC., ONE OXFORD CENTRE, SUITE 3000, PITTSBURGH, PA 15219, UP TO THE AGGREGATE AMOUNT OF U.S. DOLLARS SEVEN HUNDRED THIRTY TWO THOUSAND SEVEN HUNDRED SEVENTY FOUR ONLY (U.S.\$ 732,774.00), AVAILABLE UPON PRESENTATION OF:

(1) YOUR SIGHT DRAFT, BEARING REFERENCE TO THIS LETTER OF CREDIT NO. 3073530, AND

(2) YOUR SIGNED STATEMENT READING AS FOLLOWS: "I CERTIFY THAT THE AMOUNT OF THE DRAFT IS PAYABLE PURSUANT TO REGULATIONS ISSUED UNDER AUTHORITY OF THE RESOURCE CONSERVATION AND RECOVERY ACT OF 1976 AS AMENDED."

THIS LETTER OF CREDIT IS EFFECTIVE AS OF FEBRUARY 28, 2005 AND SHALL EXPIRE ON DECEMBER 31, 2005, BUT SUCH EXPIRATION DATE SHALL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF ONE YEAR ON DECEMBER 31, 2005 AND ON EACH SUCCESSIVE EXPIRATION DATE, UNLESS, AT LEAST 120 DAYS BEFORE THE CURRENT EXPIRATION DATE, WE NOTIFY BOTH YOU AND BEAZER EAST, INC. BY CERTIFIED MAIL THAT WE HAVE DECIDED NOT TO EXTEND THIS LETTER OF CREDIT BEYOND THE CURRENT EXPIRATION DATE. IN THE EVENT YOU

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PAGE: 2

THIS IS AN INTEGRAL PART OF LETTER OF CREDIT NUMBER: 3073530

ARE SO NOTIFIED, ANY UNUSED PORTION OF THE CREDIT SHALL BE AVAILABLE UPON PRESENTATION OF YOUR SIGHT DRAFT FOR 120 DAYS AFTER THE DATE OF RECEIPT BY BOTH YOU AND BEAZER EAST, INC., AS SHOWN ON THE SIGNED RETURN RECEIPTS.

WHENEVER THIS LETTER OF CREDIT IS DRAWN ON UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS CREDIT, WE SHALL DULY HONOR SUCH DRAFT UPON PRESENTATION TO US, AND WE SHALL DEPOSIT THE AMOUNT OF THE DRAFT DIRECTLY INTO THE STANDBY TRUST FUND OF BEAZER EAST, INC. IN ACCORDANCE WITH YOUR INSTRUCTIONS.

WE CERTIFY THAT THE WORDING OF THIS LETTER OF CREDIT IS IDENTICAL TO THE WORDING SPECIFIED IN 40 CFR 264.151(D) AS SUCH REGULATIONS WERE CONSTITUTED ON THE DATE SHOWN IMMEDIATELY BELOW.

BANK OF AMERICA, N.A.

ASSISTANT VICE PRESIDENT DATE, FEBRUARY 28, 2005 STELLA ROSALES

THIS CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS (1993 REVISION), INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 500.

ORIGINAL



Bank of America, N.A. Trade Operations Mail Code: CA9-703-19-09 333 S. Benudry Avenue, 19th Floor, Los Angeles, CA 90017

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